I. INTRODUCTION

A. As required by state and federal law, South Carolina's policy is to be prepared for any emergency or disaster, including earthquakes. Earthquakes are a sudden and violent shaking of the ground, sometimes causing great destruction, as a result of movements within the earth's crust and may occur at any time, day or night.

B. South Carolina State Regulations 58-1 and 58-101 require contingency plans and implementing procedures for major hazards, such as tsunamis, coordinated by the State with Counties that have a potential of being impacted.

C. The South Carolina Earthquake Plan defines the roles and responsibilities for intergovernmental and State Emergency Response Team (SERT) personnel to save lives, protect property, and assist the private sector in facilitating their ability to recover from an earthquake event.

II. PURPOSE

A. Identify preparedness and response procedures to an earthquake affecting South Carolina.

B. Identify roles and responsibilities of local, state, and federal agencies when preparing for and responding to an earthquake.

C. Identify resources to assist those affected by an earthquake.

D. Identify operational concepts unique to earthquake preparedness and response.

III. SCOPE

A. The South Carolina Earthquake Plan addresses operations to be conducted in coordination and mutual support with the South Carolina Emergency Operations Plan (SCEOP).

B. This plan complements the SCEOP and addresses responsibilities, processes, and actions specific to earthquake events.

C. This plan defines the threat, terminology, and the utilization of planning scenarios as a basis for earthquake preparedness and planning.

IV. FACTS AND ASSUMPTIONS

A. Facts

1. Efforts to restore roadway, railway, waterway, and airport transportation systems will begin immediately.

2. As of February 2025, for the reporting year of 2023- 2024, 4,526 facilities reported chemical inventories as required by federal EPCRA (Emergency Planning Community Right-to-Know Act) regulations. Of those 1,341 reported storing extremely hazardous substances exceeding the Threshold Planning Quantity as classified by Section 302/304 of the Federal Superfund Amendments and Reauthorization Act (SARA, Title III). Approximately 3,899 of these facilities also reported various chemical inventories of more than 10,000 pounds as classified by Section 311/312 of the SARA, Title III. These facilities are located throughout the State in both rural and densely populated areas and do not include retail gas stations, warehouses, most power sub-stations, or telephone relay battery storage sites.

3. Tourist populations will be present and in high volume. The greater Charleston area has a significant tourism industry that brings in over 7,800,000 visitors each year, with the summer and fall months being the busiest.

4. A major seismic event will affect many jurisdictions simultaneously.

5. Fires likely will occur due to ruptured gas lines and damage to electrical systems. Fire suppression may be difficult due to damage to underground water systems.

6. In a large seismic event, damage will be significant to transportation, communication, and other infrastructure systems, and will isolate communities and populations within impacted areas.

7. Bridges in areas impacted by large seismic events will incur structural damage, rendering many unusable. Access to affected areas via roadway will be significantly inhibited.

8. Broken water supply pipelines, communication services, and lack of mobility resulting from damaged transportation infrastructure will hinder response operations.

9. A large-scale earthquake may cause deaths of large numbers of animals necessitating high volumes of animal carcass movement and disposal.

10. Hazardous weather, such as tropical systems or thunderstorms and extreme heat or cold, may be a threat and will complicate response efforts.

11. When the water table is high, liquefaction will be more severe.

B. Assumptions

1. Interstate and federal aid will not be available for the first 72 hours.

2. Area ports/terminals will close pending damage assessments and channel inspections. Airports will close pending damage assessment of runways and facilities.

3. Damage assessments will be required before displaced persons can occupy emergency shelters in impacted areas.

4. Many shelters identified for use will not be available based upon compromised structural integrity; non-traditional methods of sheltering will be required in and out of impacted areas.

5. An earthquake the magnitude of the 1886 event will create sheltering requirements in excess of 50,000 citizens.

6. Movement of people and resources will be impeded due to damaged transportation networks.

7. Mutual aid resources for firefighting within impacted areas will be limited.

V. SITUATION

A. An earthquake is a sudden, rapid shaking of the earth's surface caused by a slip on a fault or other sudden stress changes in the earth. A strong earthquake can cause severe damage and a large number of casualties over a wide area. South Carolina has a significant number of fault lines and seismic activity. Some of these fault lines are located in areas of concentrated population.

B. Unlike other natural disasters, earthquakes normally occur without warning and could strike anytime. The unpredictable nature of earthquakes, foreshocks and aftershocks may cause great physical and societal impacts over a broad geographic region. Significant seismic activity is prevalent statewide.

C. Most earthquakes occur along faults or breaks between massive continental oceanic/tectonic plates that collide, slide, or separate, creating earthquakes. South Carolina, however, is located in the middle of the North American tectonic plate, which is called a passive margin. The State typically observes between 10 and 20 earthquakes per year, most are minor in scale.

D. Earthquakes are measured by Magnitude and Intensity.

1. Magnitude

a. Magnitude (M) is a measure of an earthquake's size.

b. Magnitude is measured by the USGS using the Moment Magnitude Scale. Every whole number increase (e.g., M 5.8 to 6.8) represents a tenfold increase in the measured strength of the earthquake.

c. Most earthquakes with magnitudes of less than 3.9 would not cause significant damage and may only be felt by a few people in the area of occurrence.

d. A M6.0 earthquake is considered the threshold for serious damage but considerable damage may occur in poorly built or badly designed structures in a M5.0 earthquake.

2. Intensity

a. Intensity is measured by the Modified Mercalli Intensity (MMI) Scale.

b. MMI is a subjective measure of damage based on the observed effects of an earthquake.

c. The scale categorizes intensity from I (Micro) to XII (Great).

3. Relative Comparison of Magnitude vs. Intensity

The Modified Mercalli Intensity Scale		**Effects**	**The Magnitude Scale**
I	Micro	**(I)** Not felt except by a very few under especially favorable conditions.	< 3.0
II – III	Minor	**(II)** Felt only by a few persons at rest, especially on upper floors of buildings. **(III)** Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.	3.0 – 3.9

The Modified Mercalli Intensity Scale		Effects	The Magnitude Scale
IV – V	Light	**(IV)** 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 motorcars rocked noticeably. **(V)** Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.	4.0 – 4.9
VI –VII	Moderate	**(VI)** Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Slight damage. **(VII)** 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.	5.0 – 5.9
VIII – IX	Strong	**(VIII)** 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)** 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.	6.0 – 6.9

The Modified Mercalli Intensity Scale		Effects	The Magnitude Scale
X or higher	Major to Great	**(X)** Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. **(XI)** Few, if any structures remain standing. Bridges destroyed. Rails bent. **(XII)** Total Damage. Lines of sight and level are distorted. Objects thrown into the air.	7.0 and higher

E. Earthquake Sequences

1. Foreshocks are relatively smaller earthquakes that may precede the largest earthquake in a sequence.

2. Main shocks are the largest earthquake in a sequence. Not all main shocks have foreshocks.

3. Aftershocks are earthquakes that follow the largest shock of an earthquake sequence. They are smaller than the main shock. Aftershocks can continue over a period of a weeks, months, or years. The larger the main shock, the larger and more numerous the aftershocks, and the longer they will continue.

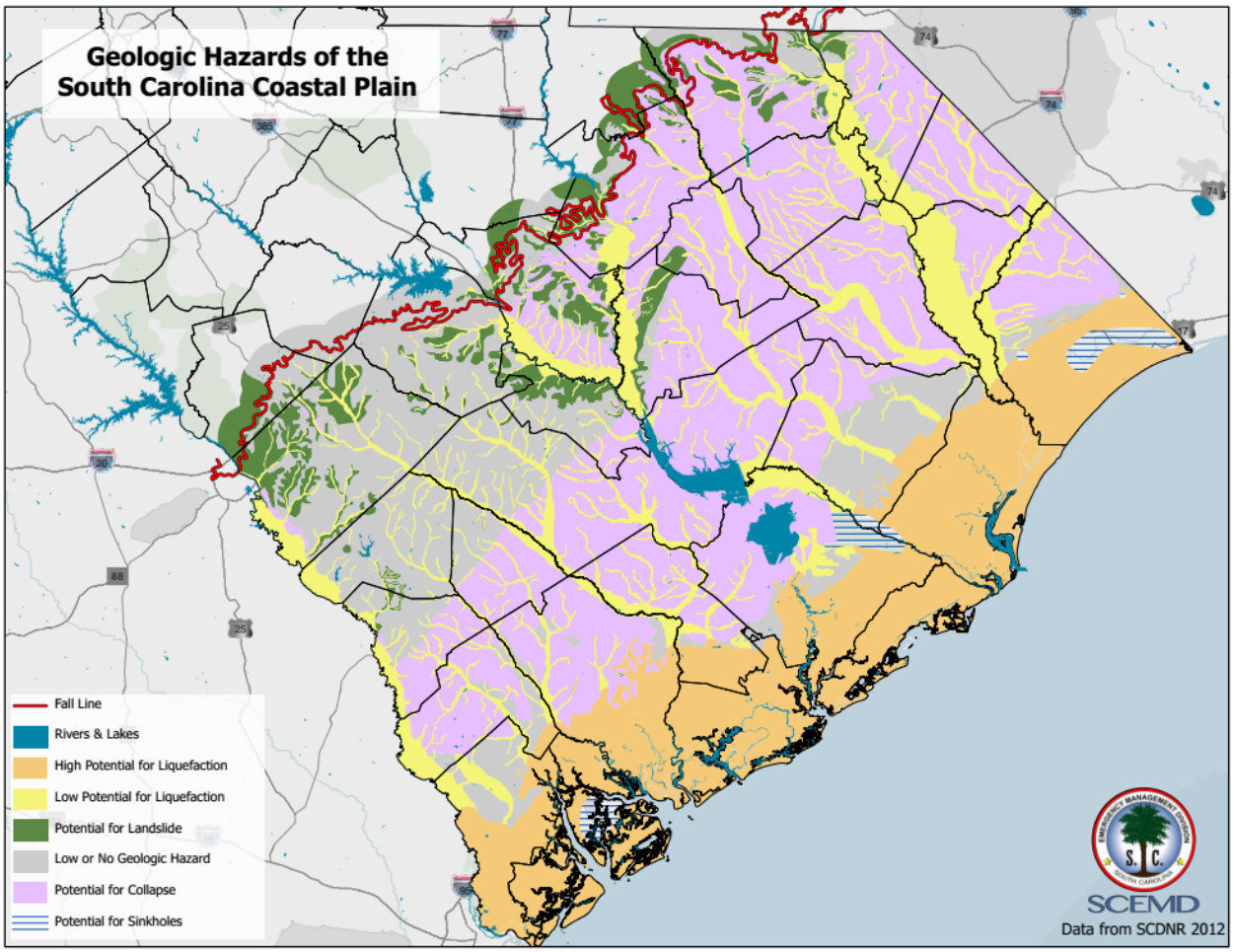


Figure 1: Geologic Hazards of the South Carolina Coastal Plain

F. Most South Carolina earthquakes occur in the Coastal Plain. The rocks deep below the surface are fractured from the break-up of Pangea. The plate in this area is weak, creating conditions in which pressure on the rocks causes seismic activity. Consequently, earthquakes occur less frequently, but more violently over a much greater area due to sub-surface geological conditions. The Tri-County coastal area is primarily composed of sand, silt, bedrock, sedimentary, and soil, increasing the effects of ground shaking. This makes the coastal counties highly susceptible to liquefaction, a process which causes saturated soils to lose their strength and behave like a liquid in response to strong ground shaking. Lower liquefaction potential extends far inland to the Fall Line.

G. The most common cause of earthquakes is the sudden rupture, or slip, of geologic faults.

H. The State of South Carolina has a history of earthquakes which have caused significant damage and long-term effects. The two most significant to occur in

South Carolina were the 1886 Summerville/Charleston earthquake and the 1913 Union County earthquake.

1. 1886 Summerville/Charleston Earthquake

   a. The 1886 Summerville/Charleston earthquake was the most damaging earthquake to occur in the eastern United States and was the most destructive United States earthquake in the 19th century.

   b. The estimated M6.9 to M7.3 (X Intensity on Modified Mercalli Scale) earthquake occurred August 31, 1886, at 9:51 pm. The main shock was followed two minutes later by an aftershock, and more aftershocks over the next three years.

   c. This earthquake was felt over 2.5 million square miles and in distant places such as Boston, MA; Milwaukee, WI, Chicago, IL, Cuba and Bermuda.

   d. Approximately 110 persons lost their lives and more than 90 percent of brick structures in Charleston were damaged.

   e. Damaging secondary effects included fires, ruptured water and sewage lines, damaged wells, and flooding from a cracked dam in Langley, South Carolina.

   f. Damages were estimated at $8 million (over $25 billion in today's dollars).

   g. Figure 2 describes the interpreted isoseismals from the 1886 Charleston earthquake. The map illustrates lines of equal felt seismic intensity, measured on the MMI scale, showing the state-wide impact in historical context. Of note, the isoseismal analysis showed:

      (1) The worst shaking (IX-X intensity) observed in Beaufort, Colleton, Dorchester, Charleston, and Berkeley Counties.

      (2) VIII-level intensity observed in Abbeville, Marlboro, Richland, and Edgefield counties.

      (3) VII-level intensity observed as far as Spartanburg and Sumter Counties.

      (4) VI-level intensity observed as far as Anderson and Cherokee Counties, as well as a majority of the Pee Dee Region from

the coastal counties of Horry and Georgetown to the region of Darlington and Florence.

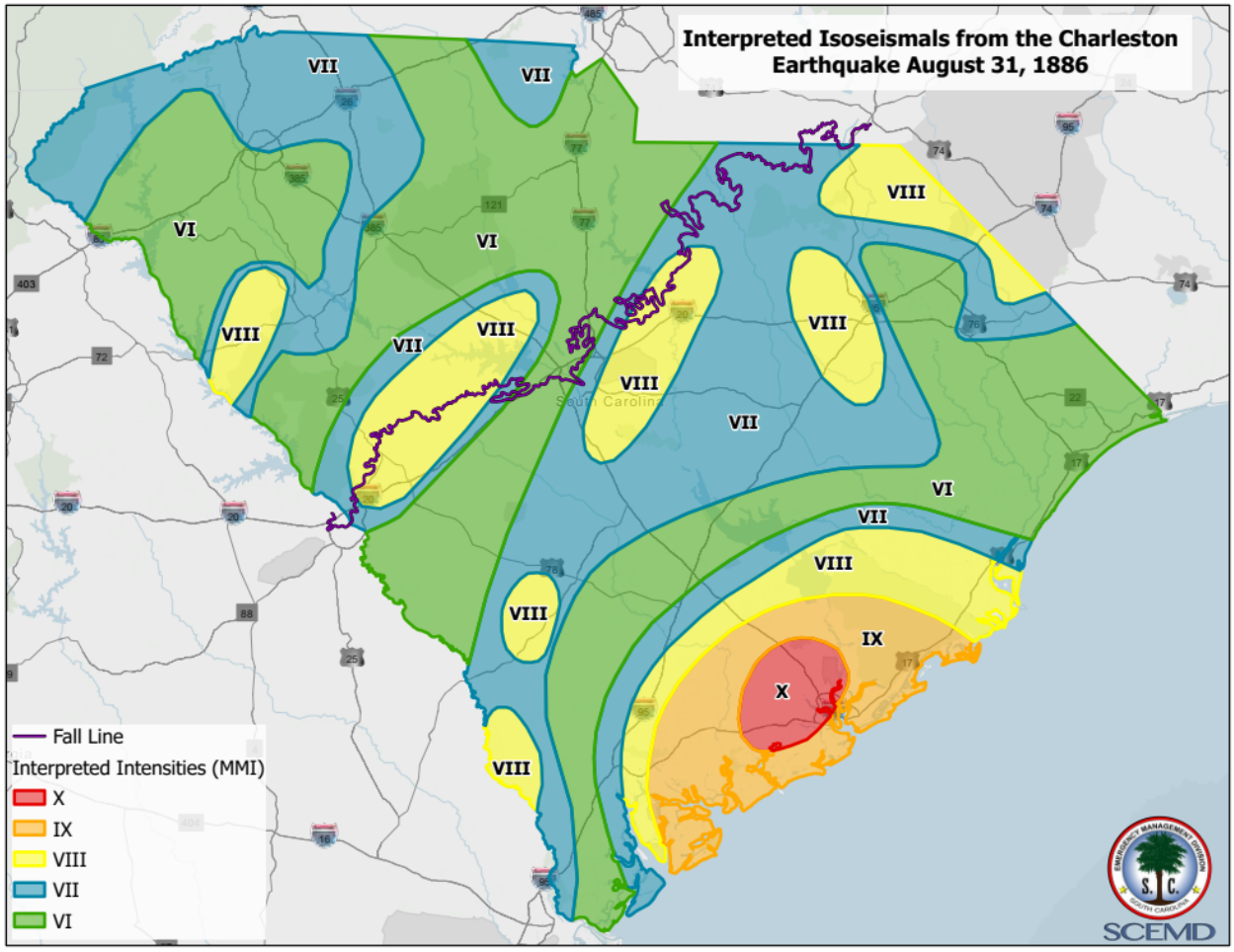


Figure 2: Interpreted Isoseismals from Charleston Earthquake

2. 1913 Union County Earthquake

   a. The 1913 Union County earthquake occurred on January 1 near the town of Union.

   b. The earthquake was felt from western South Carolina into Georgia, North Carolina, and Virginia.

   c. Damage was minimal; no deaths resulted.

   d. Based on a USGS re-evaluation of the earthquake, the magnitude is now estimated to have been 4.8.

I. Vulnerability and Hazard Analysis

1. South Carolina completed the Comprehensive Seismic Risk and Vulnerability Study for the State of South Carolina, 2022 (hereafter referred to as the Vulnerability Study). Hazus results were included in this study. The Vulnerability Study provided information about the likely effects of earthquakes on the population, and on contemporary structures and systems including roadways, bridges, homes, commercial and government buildings, schools, hospitals, and water and sewer facilities.

2. The Vulnerability Study determined that an earthquake similar to the Summerville/Charleston earthquake of 1886 is the worst-case scenario and would significantly impact the State.

3. Based on Hazus estimates, an earthquake of similar intensity and location to the 1886 event would result in economic losses exceeding $118 billion from damage to buildings, direct business interruption losses, and damage to transportation and utility systems (See Attachment A, Earthquake Planning Scenarios).

    a. Direct economic losses due to building damage (excluding business interruption losses) are estimated to exceed $110 billion; 18% of the estimated losses would be related to the business interruption of the region. Transportation and utility systems' direct economic losses would exceed $8 billion. Building damage alone would exceed $91 billion in losses due to direct business interruption. Loss estimates include rental income, business income, wages, and relocation expenses.

    b. Residential buildings would make up over 43% of the loss.

    c. An earthquake of this magnitude will potentially affect the structural integrity of over 500 bridges in the State. Approximately 85% of these are in Berkeley, Charleston, and Dorchester Counties.

4. The effects of an earthquake in South Carolina would be further worsened by the additional effects of liquefaction, collapses, sinkholes, and landslides.

5. Rapid Visual Screening Project

    a. In conjunction with the Central U.S. Earthquake Consortium (CUSEC) a Rapid Visual Screening and Critical Facility Inventory Assessment is planned for each county with a high risk of seismic activity.

b. Each county report will list the critical facilities established by the local EMD that would include but is not limited to local shelters, fire stations, police departments and government buildings.

c. The findings of each report offer a high level overview of the vulnerability of the surveyed structures to seismic activity and allows for a streamlined approach to prioritizing assessment plans with local officials.

VI. CONCEPT OF OPERATIONS

A. State agencies with coordinating, primary, and supporting responsibilities to the Emergency Support Functions (ESF) will participate in earthquake planning and training, including participation and attendance at scheduled exercises and meetings. Counties are encouraged to do the same.

B. Plan Activation

1. ≤ M4.0 Earthquakes

a. No plan activation.

b. SCEMD will document the incident and communicate with staff and local emergency managers.

2. M4.0 to M4.9 Earthquakes

a. The State Emergency Operations Center (SEOC) will remain at Operating Condition (OPCON) 3 and assess potential impacts.

b. SCEMD Operations will contact affected county(s) to assess the situation.

c. Upon assessment, SCEMD Director will determine if there is a need for further SEOC activation.

3. M5.0 to 5.9 Earthquakes

a. The SEOC will activate to OPCON 2. A transition to OPCON 1 could occur as needed upon assessment of impacts at the direction of the SCEMD Director or designee.

b. The State Emergency Response Team will recommend the Governor declare a State of Emergency to activate the SCEOP and selected ESFs.

c. The state-wide common operating picture will be developed, and damage assessments will be conducted to identify impacts.

4. M6.0 ≥ Earthquakes

a. The SEOC will activate at OPCON 1.

b. The SEOC will recommend the Governor declare a State of Emergency to activate the SCEOP and SERT, and request a Presidential Declaration.

c. The SEOC will implement the Statewide Mutual Aid Agreement, Emergency Management Assistance Compact (EMAC), and other mutual aid agreements as needed.

d. The SEOC and county emergency management offices in impacted areas will establish Alternate Emergency Operations Centers (AEOCs) as necessary.

C. Emergency Notification. Earthquake notification information, procedures and processes can be found in Annex J (Earthquakes) to the State Warning Point Standard Operating Procedures (SOP).

D. Initial priorities are not rank ordered, but simultaneous efforts to establish a common operating picture and provide immediate multi-discipline response and recovery efforts to impacted communities. These simultaneous priorities are:

1. Situational awareness

2. Life safety and life-sustaining operations

a. Search and Rescue

b. Fire Suppression

3. Preserving public health and safety

4. Incident stabilization

a. Reestablish communication

b. Assess and reestablish lines of transportation

c. Power restoration

d. Resource distribution

e. Restoration of essential government services

5. Environmental protection

6. Property conservation

E. If the SEOC is unsafe or non-functional, the State Warning Point will notify ESF/SERT members to report to the AEOC. The AEOC location and operating procedures are located in the SEOC SOP, Annex Q (Alternate Emergency Operations Center), which is located in the File Library of Palmetto.

F. Operational Phases

1. PHASE 1: Activation and Immediate Assessment (I + 24 hours)

a. SEOC is activated and a State of Emergency requested at M5.0+.

b. Priorities:

(1) Establish communications with impacted area Local EOCs.

(2) Deploy staff to County EOCs or staging areas.

(3) Activate ESF resources to staging areas outside the impacted areas.

(4) Identify potential HAZMAT threats for evaluation.

(5) Activate aerial/remote imagery assets and develop initial imagery collection plan.

(6) Develop route clearance plan and assessment priority lists.

(7) Develop list of critical facilities and shelters for assessment and stabilization.

(8) Establish viable staging operations with the ability to distribute resources and commodities.

PHASE 2: Sustain Operations (I + 24+ hours)

a. Priorities:

(1) Clear critical routes for Search and Rescue (SAR) operations, medical services, and fire suppression.

(2) Continue to identify and assess critical infrastructure and key facilities.

(3) Push commodities to impacted areas as needed.

(4) Coordinate evacuation efforts and temporary sheltering with the impacted counties.

(5) Coordinate consistent messaging in conjunction with counties.

(6) Begin initial recovery conversations and conduct damage assessments when feasible.

(7) Activate incident support base (ISB), staging areas, and commodity points of distribution (C-POD). It could take up to 72 hours to become operational.

(8) Assess impacted medical facilities and conduct evacuations (if necessary).

(9) Identify public health threats.

PHASE 3: Long-Term Recovery

a. Priorities:

(1) Integrate federal and mutual aid assistance into recovery planning and implementation activities to support affected counties.

(2) Transition coordination elements to long-term recovery operations and focus on reintegration of survivors and restoration of community services.

(3) Transition to normal supply chain activities to support private and public operations. Reprioritize or demobilize emergency supplies accordingly.

G. Operational Areas

1. A major earthquake has the potential to isolate impacted communities due to damaged infrastructure. The damage may make movement of human and material resources difficult, resulting in the need to target specific areas with a significant response effort and/or localized ICS command structure.

2. County-identified operational areas will form the basis of state response to a major earthquake. SCEMD will assist counties that choose to develop operational areas and operational area response protocols within their jurisdictions. Efforts may include area analysis to determine resource requirements or shortfalls, and assistance in mitigating the effects of a disaster.

H. Inspection of Damaged Buildings

1. Initial engineer support request for post-disaster inspection and/or evaluation will be made to the State Emergency Operations Center (SEOC) from the County Emergency Operations Centers (EOC) and, if necessary, State agencies with facilities in affected areas. Requests for engineer support will be coordinated by response priority.

2. Responsibility for Inspections of Facilities

a. Local building officials are responsible for inspecting facilities within their jurisdiction.

b. State facilities are the jurisdiction of the Office of the State Engineer.

c. The federal authorities having jurisdiction over damaged facilities are responsible for inspecting federal facilities.

I. Debris Assessment. A significant earthquake can be expected to create large amounts of debris of varying types. Capabilities to promptly and safely handle debris will be important in conducting response operations, completing restoration of services, and moving into recovery. See the South Carolina Recovery Base Plan and Attachment J, South Carolina Department of Transportation Debris Management Plan.

J. Mass Transportation. If it is determined that a large-scale evacuation of an area is required due to the impacts from damaged infrastructure after an earthquake, the state will coordinate transportation to shelters outside the impacted area using state owned buses or existing state transportation contract.

VII. DISASTER INTELLIGENCE AND COMMUNICATIONS

A. See Section VIII (Disaster Intelligence and Communications) of the SCEOP.

B. Conference Calls and Briefings

1. The SEOC will schedule conference calls with the Counties and SERT as reliable communication is established with impacted area. Prior to

communication being established the situation unit will gather information from deployed Regional Emergency Managers (REMs) and Amateur Radio Emergency Service (ARES) communication.

a. Format for calls:

(1) Opening comments from the SCEMD Director.

(2) Disaster Intelligence Group (DIG) products will be briefed. Briefing includes, but is not limited to, planning updates from working groups, latest aftershock forecasts and weather.

(3) SCEMD Chiefs will brief key section actions.

(4) SERT will brief key agency actions.

(5) County Directors will report anticipated resource requests, potential shortfalls, and suggested response actions.

(6) The SCEMD Director will discuss decisions and recommendations that will be provided to the Governor.

2. Executive Group conference calls and decision briefings will be held as requested by the Governor.

a. Format for the calls:

(1) Opening comments from the Governor.

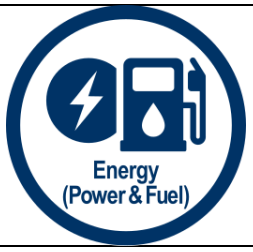
(2) SCEMD Disaster Intelligence Group (DIG) products will be briefed. These products include, but are not limited to, planning updates from working groups, latest aftershock forecasts and any inclement weather.

(3) The state agency directors will provide status of agency operations.

(4) The SCEMD Director will make recommendations to the Governor.

C. Lifeline Sector Analysis

The table below lists possible impacts to the state's lifeline sectors associated with an earthquake event. While not all-inclusive, this list assists the SERT's ability to respond effectively by proactively identifying possible areas of concern before impacts occur.

Lifeline	Scope of Possible Impacts
	• Disruption may occur because of power outages. • Outages could impact public sector information sharing platforms, dispatch centers, media transmissions, and the financial sector. Communications infrastructure could be severely damaged, leading to disruptions across the affected area and region.
	• Damage to roads, bridges and property could cause gaps in response and availability of personnel and equipment. • Structural instability, fires and possible release of hazardous materials may cause hazardous conditions. • Responders may see increased calls for assistance. • Search and Rescue operations would require additional support outside of the affected area. • Any impacts to water systems could limit fire suppression efforts. •
	• Transportation routes may be altered because of road closures or damage, bridge closures or damage, and/or railway closures or damage. • Port and airport operations may be disrupted, and infrastructure may be damaged or destroyed. • Disrupted transportation routes may affect supply chains. Ingress and egress routes may not be able to remain open for critical supplies to and from affected areas. • Blocked or damaged roadways may inhibit the restoration of power and the delivery of commodities or services. • Reentry capabilities will be impacted based on the level of damage to the transportation network. • Local transit systems could be disrupted.
	• Damage to storage containers, including pesticides and fertilizers, or transportation infrastructure could cause environmental, human, and animal health risks. • Human waste and industrial waste caused by damage to wastewater systems could lead to contamination in the impacted area. •
	• Fuel stations may be damaged, inaccessible, or without power, causing additional challenges for responders. • Power stations, power lines and gas lines could see widespread damage in the affected area. • Critical facilities running on generator power will be vulnerable to possible delays in delivery disruptions.

	• Hospitals outside of the affected area and region may see an increased number of patients seeking care. • Medical facilities in the impacted area could see major damage or be destroyed, resulting in facility evacuation. • Medical supply chains could be disrupted. • Health care facility evacuations may take longer or available options for patients due to damaged transportation infrastructure. • Emergency Medical Services may be disrupted or have slowed response times.
	• Transportation and supply chain disruptions could cause a scarcity of food, water and shelter. • Agricultural impacts could be widespread due to a lack of steady water supply and a disruption in animal feed deliveries. Potential for lack of available shelters in the affected area due to structural damage.
	• Water and wastewater systems may be offline due to power outages or flooding. • Boil water advisories may be needed due to water infrastructure impacts. • Wastewater collection systems damage could cause a buildup and discharge of human and industrial waste in the affected area. • Treatment facilities could be damaged and unable to treat drinking water or wastewater. • Water distribution system damage could impact line pressure and impact firefighting operations

D. ESF-2 (Communications) will coordinate communications support operations in accordance with Annex 2 (Communications) of the SCEOP.

1. A catastrophic earthquake may have regional impacts and/or require regional response coordination.

2. Will be the coordination point for all communications activity at the state level before, during, and after activation of the SEOC.

3. Will coordinate communications assets personnel, equipment, and services, available from federal, tribal, state, and local government agencies, volunteer groups, commercial telecommunications industry, and the United States military.

4. Will initiate actions appropriate to coordinate support for statewide communications. Every effort will be made to support local equipment and personnel needs when requested and to integrate local resources where appropriate.

5. Primary agencies will assist in the planning and execution of the above.

6. Will coordinate alternate communications systems for use in the event the existing systems are damaged and rendered inoperable.

7. The State Warning Point is the communications center for the SEOC. ESF-2 will provide technical support to include augmentation of radio operators as tasked by SCEMD.

E. A catastrophic earthquake may cause widespread communication failures across the state. Utilization of the PACE (Primary, Alternate, Contingency and Emergency) SOP will be important in coordinating operations between state and local officials.

Primary:	The best and intended method of communication between parties.
Alternate:	Common, but less-optimal method of accomplishing the task. Often monitored concurrently with primary means.
Contingency:	Method will not be as fast, easy, inexpensive, or convenient as the primary or alternate methods. Is capable of accomplishing the task(s). Often the receiver rarely monitors this method. Not desirable.
Emergency:	Method of last resort. May have significant delays, costs, and/or impacts. Often only monitored when the other means fail.

1. Primary Communication Methods

   a. Land-line phone
   b. Cellular phone
      (1) Text Message
   c. Email
   d. Palmetto EOC

2. Alternate Communications Methods

   a. Palmetto 800MHz EMD talk groups
   b. Mutual Aid Channels
   c. National Warning System (NAWAS)

3. Contingency Communications Methods:

   a. Mobile Satellite (MSAT) G-2 Radio
   b. Satellite Phone
   c. SCEMD Statewide Low Band System (LGR)

4. Emergency Communications Methods

    a. Amateur Radio
    b. High Frequency (HF) Radio
    c. WinLink data over HF
    d. Simplex Relay

5. Radio procedures will conform to established FCC regulations and licensure for operating base or mobile radio stations. All communications over LGR, 800 MHZ and Amateur Radio will be in "plain language" or "clear text."

6. Radio Officers and Radio Operators

    a. Radio officers and radio operators remain under direct control of the COML or Incident Commander/County Emergency Manager when operating and maintaining state-owned equipment in any facility outside the SEOC.

    b. Within the SEOC, radio operators will report to the SCEMD Communications Manager or designee in his/her absence as part of the State AUXC/RACES program.

7. Mobile Communications

    a. SCEMD operates a comprehensive communications trailer featuring Palmetto 800, Satellite Radio, LGR, and amateur radio apparatus. This setup is complemented by both satellite and cellular data services, ensuring robust connectivity. To guarantee sustained functionality, the trailer is furnished with an onboard generator capable of prolonged operation.

    b. SCEMD possesses a solar power trailer designed to meet supplementary power needs, enabling self-sufficiency for multiple days if required.

8. A catastrophic earthquake may have regional impacts and/or require regional response coordination. Communications with North Carolina and Georgia are possible through the following means:

    a. The FEMA National Radio System (FNARS) has terminals installed in the State EOCs of North Carolina, South Carolina, and Georgia. This radio system provides voice or teletype communications between the three state governments.

b. NAWAS has terminals installed the SWPs and the State EOCs of North Carolina, South Carolina, and Georgia.

c. Commercial, satellite, and cellular telephones.

F. Earthquake Products

1. Following a seismic event, USGS produces a suite of informative products

PRODUCT	DESCRIPTION	DISTRIBUTION FREQUENCY
PAGER	USGS PAGER provides shaking and loss estimates following significant earthquakes and for all ShakeMap scenarios. Components of PAGER include magnitude, hypocenter, Earthquake Impact Scale summary alert, fatalities, economic losses, MMI, table showing population exposed, and region-specific structure and earthquake commentary, among other items.	Following Event
Scenarios	Earthquake Scenarios describe the expected ground motions and effects of specific hypothetical large earthquakes.	Daily
ShakeMap	Provide near-real-time maps of ground motion and shaking intensity following significant earthquakes.	Following Event
ShakeCast	Application for automating ShakeMap delivery to critical users and for facilitating notification of shaking levels at user-selected facilities.	Automated tool

Felt Report: Tell Us!	Collects information from people who felt an earthquake and creates maps that show what people experienced and the extent of damage.	Following Event
Aftershock Forecast	Aftershock forecasts can provide situational awareness of the expected number of aftershocks, as well as the probability of subsequent larger earthquakes	Following a Significant Earthquake (M4+)

2. See Attachment C – USGS PAGER

G. Damage Reporting

1. Damage reports will be relayed to the Situation Unit as soon as possible.

2. These reports should minimally include the following information:

   a. Locations of collapsed structures with trapped persons

   b. Status of communications systems to include broadcast media and any portions of the county where there are no communications

   c. Status of transportation infrastructure (e.g., bridges, roads, etc.)

   d. Status of utility infrastructure (e.g., power, natural gas, water/waste water, etc.)

   e. Locations of major firefighting efforts and uncontained fires

   f. Locations providing critical medical assistance

   g. Known hazardous material releases and impacts to the public

   h. Operational capability of critical facilities (e.g., hospitals, sewage and waste stations, electrical substations, etc.)

   i. Public safety needs (e.g., security, traffic control, and law enforcement)

   j. Immediate known public mass care needs or projections

k. Public information needs

H. Public Information Dissemination

1. See Section VIII (Disaster Intelligence and Communications) and Annex 15 (Public Information) of the SCEOP.

2. See Attachment B (Sample Public Information Statements) for sample press releases and Emergency Alert System (EAS) messages.

VIII. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

B. Emergency Support Functions. Coordinating agencies will conduct a biennial review of their ESF-specific earthquake responsibilities with primary and supporting agencies.

1. ESF-1 (Transportation)

a. South Carolina Department of Transportation (SCDOT) (Coordinating Agency)

(1) Develop concepts and processes to address the movement of emergency supplies and personnel to and from isolated areas.

(2) Deploy response teams to inspect transportation infrastructure and assist in identification of transportation lifelines into impacted areas.

(3) Coordinate and compile damage assessments and estimated clearance time of roads and bridges for use by emergency and supply vehicles, to include load limitations. Priorities for ground transportation lifeline routes are:

(a) Critical facilities

(b) Interstate highways

(c) Primary roads

(d) Secondary roads

(4) Coordinate interstate mutual aid and contractor assistance to support transportation infrastructure assessment and repairs.

(5) Coordinate route priorities, restrictions, identification of critical roads to remain open, and evacuation routes as

required with ESF-16 (Emergency Traffic Management) and local emergency managers.

(6) Coordinate with ESF-13 (Law Enforcement) for law enforcement support to the response teams.

(7) Establish Air Coordination Group for coordination and management of aerial operations; coordinate as required with ESF-4, ESF-13, and ESF-19 for aviation assets.

b. Civil Air Patrol

(1) Provide aerial platforms for communication, assessment, and reconnaissance as requested.

(2) Coordinate with the ESF-1 Air Coordination Group to provide aviation assets as requested.

2. ESF-2 (Communications)

a. South Carolina Department of Administration, Office of Technology and Information Services (Coordinating Agency)

(1) Assess communications needs, prioritize requirements, and make recommendations to deploy equipment and personnel to affected areas, as required.

(2) Assist and gather communications damage assessment information from public and private telecommunications providers and provide the information to the Situation Unit and ESF-14 (Initial Recovery and Mitigation).

(3) Maintain communications with appropriate emergency operating services of Federal, State and local governments.

(4) Coordinate frequency management plans, talk-groups, and channels during emergency response operations.

(5) In coordination with SEOC Operations and SCEMD Communications Manager, assist in the identification of communication resources as required.

(6) Coordinate with FEMA for access to communications assets beyond the State's capability.

3. ESF-3 (Public Works and Engineering)

a. South Carolina National Guard (Coordinating Agency)

(1) Coordinate the deployment and use of engineers to conduct structural damage inspection and evaluation of state facilities as requested by SCEMD or the Office of the State Engineer (OSE).

(2) Coordinate with the National Society of Professional Engineers, South Carolina Department of Labor, Licensing and Regulation, Structural Engineering Association of South Carolina, American Counsel of Engineering Companies and local authorities for inspection of critical facilities (e.g., medical facilities, shelters, fire and police stations, and other government facilities.

b. Office of State Engineer (OSE)

(1) Inspected impacted State facilities.

(2) Coordinate with South Carolina Department of Environmental Services (DES) for inspection of water, sewer, facilities, and dams.

(3) Coordinate with U.S. Army Corps of Engineers (USACE) to provide augmented engineering support.

c. South Carolina Rural Water Association

(1) Provide technical assistance to support the restoration of water/wastewater services

(2) Coordinate and facilitate SCWARN resource requests and deployments

d. South Carolina Water and Wastewater Agency Response Network

(1) Provide web-based resource request portal to support the restoration water/wastewater services

4. ESF-4 (Firefighting)

a. South Carolina Department of Labor, Licensing, and Regulation (Coordinating Agency)

(1) Coordinate activation of Firefighter Mobilization. This will include:

(a) Strategy to provide fire services assets.

(b) Personnel to support missions to assess damage to critical facilities.

(c) Identification of equipment and personnel shortfalls including resources and delivery timeline.

(2) Coordinate assignment of Regional Coordinator(s) to serve as fire service liaisons.

(3) Coordinate identification of alternative water sources in affected areas (e.g., dry-hydrants, ponds, lakes, rivers).

(4) Coordinate activation of the South Carolina Emergency Response Task Force (SCERTF) Incident Support Team (IST) for deployment to affected areas for an all-hazard assessment and initial incident support as required.

(5) Coordinate with South Carolina Forestry Commission (SCFC) for activation of the SCFC Incident Management Team (IMT) and regional IMTs for deployment to affected areas.

(6) Coordinate with Federal ESF-4 (Firefighting) and the Southern Area Coordination Center (SACC) to request additional IMTs as needed.

b. South Carolina Forestry Commission

(1) Provide communications, heavy equipment and personnel to support firefighting and search and rescue efforts as requested.

(2) Coordinate with the ESF-1 Air Coordination Group to provide aviation assets as requested.

(3) Coordinate with LLR to activate the SCFC IMT and Regional IMTs for deployment to affected areas.

(4) Coordinate activation of the Southeastern Forest Fire Compact and coordinate with the United States Department of Agriculture (USDA), Forest Service, and SACC for mobilization of resources.

5. ESF-6 (Mass Care)

a. South Carolina Department of Social Services (SCDSS) (Coordinating Agency)

(1) Provide a State Mass Care Coordinator to the SEOC upon activation.

(2) Communicate with all mass care agencies and organizations to compile and exchange information concerning extent of disaster and status of response operations. Provide same information to SEOC Operations Section.

(3) Provide SCDSS staff to support shelter operations, as required.

(4) Identify shelter locations outside of impacted areas.

(5) Assist in identifying LSAs and C-PODs for issuance of critical commodities.

b. American Red Cross

(1) Establish, manage, and support shelter operations as requested.

(2) Support with Family Assistance Center efforts as requested.

(3) Provide services to help family members reconnect (reunification/welfare inquiry services).

(4) Provide meals at fixed sites and through mobile feeding units as requested and in coordination with ESF-6 partners.

(5) Distribute emergency supplies.

c. South Carolina Department of Public Health (SCDPH) (Supporting Agency and lead for Medical Equipment Power Shelters (MEPS))

(1) Provide a State MEPS Coordinator to the SEOC upon activation.

(2) Coordinate with ESF-6 partners. Provide information as requested to ESF-6 regarding MEPS operations and status.

(3) Establish, manage, support, and staff shelters as required.

(4) Identify shelter locations outside of impacted areas.

6. ESF-7 (Finance and Administration)

    a. Determine availability of critical resource items from commercial vendors.

    b. Activate vendor contracts for equipment and supplies.

    c. Support Logistics as needed at RSAs.

    d. See Annex 7 (Finance and Administration) to the SCEOP.

    e. See Attachment A (South Carolina Logistics Plan) to the SCEOP.

7. ESF-8 (Health and Medical Services)

    a. South Carolina Department of Public Health (DPH) (Coordinating Agency)

        (1) Determine and maintain operational status of healthcare facilities.

        (2) Determine availability of air medical transport.

        (3) Determine and maintain status of available medical facility landing zone capabilities.

        (4) Coordinate mental health services for responders and survivors in affected areas.

        (5) Facilitate coordination of air and ground medical transportation services as needed.

        (6) Synchronize state and local plans with the Federal National Disaster Medical System (NDMS).

        (7) Coordinate with coroners to determine need for fatality management support.

8. ESF-9 (Search and Rescue)

    a. South Carolina Department of Labor, Licensing, and Regulation (Coordinating Agency)

        (1) Integrate the South Carolina Firefighter Mobilization Plan to support search and rescue efforts in affected areas.

(2) Coordinate activation of the South Carolina Emergency Response Task Force (SCERTF) Incident Support Team (IST) for deployment to affected areas for all-hazard assessment and incident support as required.

(3) Place the Regional Building Collapse Urban Search and Rescue (US&R) Teams on alert status and deploy them as needed.

(4) Request and stage the State US&R Task Force at the State Fire Academy until assessment and resource requirements are determined. Coordinate deployment of assets as required.

(5) Request additional US&R capabilities through Emergency Management Assistance Compact (EMAC) and FEMA's National US&R Task Forces as required.

(6) Coordinate and integrate FEMA US&R teams into the State's search and rescue response to include identifying sites for US&R teams to stage.

9. ESF-10 (Environmental and Hazardous Materials Operations)

a. South Carolina Department of Environmental Services (Coordinating Agency).

(1) Coordinate the initial State-level assessment of pre-identified facilities.

(2) Provide technical guidance to affected counties and facilities as requested.

(3) Coordinate with SERT and local officials to establish priorities for response support.

(4) Assess regulated dams per established protocol and coordinate with local and state officials as needed. Provide technical guidance as needed.

(5) Provide technical assistance for water and wastewater systems in accordance with procedures outlined in Annex 10 of the SCEOP.

(6) Refer to and follow Environmental Affairs' program specific Standard Operating Procedures in response to the event.

(7) Coordinate assessment and response for potential or actual radiological releases in accordance with procedures outlined in the SCEOP, the South Carolina Operational Radiological Emergency Response Plan (SCOREP), and South Carolina Technical and Emergency Response Plan (SCTRERP).

(8) Determine and report condition of Emergency Planning and Community Right-to-Know Act (EPCRA), Tier II, and known petroleum facilities; maintain and provide to SCEMD GIS Section the layer of all Tier II and regulated petroleum facilities.

(9) Coordinate activation of DES Contingency Plan for Spills and Releases of Oil and Hazardous Substances as required.

b. South Carolina National Guard: Coordinate HAZMAT response support to DES as requested.

10. ESF-11 (Food Services)

a. South Carolina Department of Social Services (Coordinating Agency)

(1) Analyze reports of damage and shelter populations to estimate feeding requirements.

(2) Coordinate with the South Carolina Department of Education (SCDOE) and local school district food supervisors to identify food stocks already available that may be used for feeding operations.

(3) In coordination with ESF-6 (Mass Care), develop plans to transport and distribute bulk food supplies to support feeding operations in impacted areas.

(4) In conjunction with County Emergency Managers, identify facilities capable of storing food.

(5) Coordinate with the Operations Support Supply Unit/Logistics for procurement of food supplies in instances when standard ESF-11 bulk food procurement measures are exhausted or unavailable.

b. South Carolina Department of Education

(1) Coordinate with local school district food supervisors to determine inventory of food stocks available for feeding operations in impacted areas.

(2) Assist in identifying and anticipating likely food shortages and develop corresponding plans to acquire and deliver resources.

c. Feeding The Carolinas. Provide food supplies for POD or other distribution operations as requested.

11. ESF-12 (Energy)

a. South Carolina Office of Regulatory Staff (Coordinating Agency)

(1) Provide assessment of damage to electric generating facilities.

(2) Coordinate with utilities for restoration of generation facilities and transmission of electricity to damaged and affected areas.

(3) Provide assistance to ESF-1 in receiving the reports of utility company damage assessments and restoration of service to railroads.

(4) Coordinate with ESF-3 as reports of utility company damage assessments of natural gas pipelines and facilities are received.

(5) Coordinate with fuel suppliers in their distribution to consumer fuel stops in accordance with ESF-12 SOP.

12. ESF-13 (Law Enforcement)

a. South Carolina Law Enforcement Division (Coordinating Agency)

(1) Assign Law Enforcement Liaisons to Incident Command Posts (ICP) as they are established.

(2) Mobilize and deploy law enforcement assets to designated staging areas as requested.

(3) Provide law enforcement officers to security missions as identified by state and local authorities.

(4) Provide disaster intelligence and reports of observed critical facilities, roads, or bridges that have sustained damage.

(5) Coordinate with South Carolina Department of Corrections (SCDC) to provide status on the condition of correctional facilities in impacted areas. Reports will include:

(a) Locations of damage

(b) Inmate accountability

(c) Observations on building stability

(d) If law enforcement assistance is needed

(6) Coordinate law enforcement support to SCDOT response teams to maintain law and order during evaluation and inspection of transportation infrastructure.

(7) Coordinate with ESF-16 for law enforcement support along potential evacuation routes and reentry control points in impacted areas.

(8) Coordinate with the ESF-1 Air Coordination Group to provide aviation assets as requested.

b. South Carolina Department of Corrections. Provide the South Carolina Law Enforcement Division with information on status of conditions of correction facilities in the impacted areas. Information should include locations of damage, inmate accountability, observations of building stability, and an assessment of whether law enforcement augmentation is required.

13. ESF-14 (Initial Recovery and Mitigation)

a. Compile damage assessment information to support a Presidential Disaster Declaration.

b. See Appendix 6 (South Carolina Recovery Plan) to the SCEOP.

14. ESF-15 (Public Information)

a. South Carolina Emergency Management Division (Coordinating Agency)

(1) See Annex 15 (Public Information) to the SCEOP.

(2) See Attachment B - Sample Public Information Statements.

15. ESF-16 (Emergency Traffic Management)

a. South Carolina Department of Public Safety (Coordinating Agency)

(1) In coordination with county officials, ESF-1, ESF-13, and ESF-19, identify suitable ingress, egress, and potential evacuation routes in impacted areas.

(2) Staff and/or secure transportation routes and traffic control points in affected areas as required or requested.

(3) As requested, coordinate support to ESF-13 (Law Enforcement) and SCDOT response teams in order to maintain law and order during evaluation and inspection of transportation infrastructure.

(4) Provide disaster intelligence and reports of observed critical facilities, roads, or bridges that have sustained damage.

16. ESF-17 (Agriculture and Animals)

Clemson University Livestock Poultry Health (Coordinating Agency)

(1) Coordinate resources, as needed, to fulfill requests related to animal/agriculture issues including but not limited to:

(a) Agribusiness in affected areas and disruptions in supply chains.

(b) Food safety concerns.

(c) Veterinary medical care needs.

(d) Management of animals at large.

(2) Coordinate damage assessments of agribusiness and other stakeholder industries.

17. ESF-18 (Donated Goods and Volunteer Services)

a. South Carolina Department of Administration (Coordinating Agency)

(1) Activate donations management process.

(2) Prepare and coordinate donated resources and volunteer services activities.

(3) Request volunteers, as needed.

18. ESF-19 (Military Support)

a. South Carolina National Guard (Coordinating Agency)

(1) Coordinate with ESF-1 to support route clearance and debris push operations.

(2) Coordinate with the ESF-1 Air Coordination Group to provide aviation assets as requested.

(3) Coordinate with ESF-2 to provide communications support as requested.

(4) Coordinate with ESF-6 for provision of logistics support to the mass care plan.

(5) Coordinate with ESF-10 to assist in the identification and assessment of hazardous materials and hazardous material threats.

(6) Coordinate with ESF-13 to assist in security operations as requested.

(7) Coordinate with ESF-16 to support evacuation, reentry, and access control operations in affected areas.

(8) Coordinate with ESF-17 to provide South Carolina State Guard (SCSG) large animal evacuation assistance as requested.

(9) Support EMAC JRSOI operations as requested.

(10) Request additional National Guard assets through EMAC as needed to fulfill mission assignments.

19. ESF-24 (Business and Industry)

a. South Carolina Department of Commerce (Coordinating Agency)

(1) Utilize existing resources and expand relationships with business associations and other organizations that can assist in response and recovery; develop concepts to provide government resources to businesses and industries where possible.

(2) Coordinate with the insurance industry to ensure availability of adjusters and familiarity with the State's policy for post-disaster reentry.

(3) Coordinate with business and industry in impacted areas through available communications to determine extent of damage and support needs.

(4) Coordinate with the Recovery Task Force and transition to Economic Recovery Support Function to identify post-earthquake recovery issues of concern to businesses and industries. These types of issues include, but are not limited to:

(a) Loss of power

(b) Loss of transportation

(c) Loss of revenue

(d) Ability to communicate with customers

(e) Physical loss and damage

(f) Loss of inventory

(g) Potential for permanent loss

(h) Sources of financial assistance to aid businesses' recovery

(5) In conjunction with ESF-15, provide information regarding business/industry and disaster assistance programs.

(6) In coordination with the Recovery Task Force, and with input from Cyber Security and Infrastructure Security Agency (CISA) model as applicable, determine private-sector priorities for inspection, repair, and restoration of manufacturing capacity and other services.

(7) Coordinate with the South Carolina Department of Employment and Workforce to begin activation of the Disaster Unemployment Assistance (DUA) program, and in cooperation with the Recovery Task Force, begin providing strategic assessment of workforce needs and impacts.

IX. ADMINISTRATION, LOGISTICS, AND FINANCE

A. Administration and Finance. See Annex 7 (Finance and Administration) to the SCEOP.

B. Logistics

1. See Attachment A (South Carolina Logistics Plan) to the SCEOP.

2. The State will stage and distribute resources regionally in accordance with the SC Logistics Plan.

3. Regional Staging Areas

a. Multiple Regional Staging Areas (RSAs) may be established outside the disaster area.

b. RSAs may not be operational for the first 72 hours, post-incident.

4. Initial shortages of critical resources are anticipated. Daily coordination with counties will be required to prioritize distribution of resources. Anticipated resource requirements immediately after an earthquake event includes medical support, fire support, security support, search and rescue support, generators, communications support, shelters/camps, food, bottled water, cots, blankets, fuel, and heavy equipment.

5. FEMA Region 4 Logistics, in collaboration with SCEMD, identified the following commodities and resources that will be needed based on the HAZUS Earthquake Global Risk Report in the first 72 hours. See FEMA R4 Charleston Earthquake Annex (Appendix D: Logistics) for additional federal logistical support information.

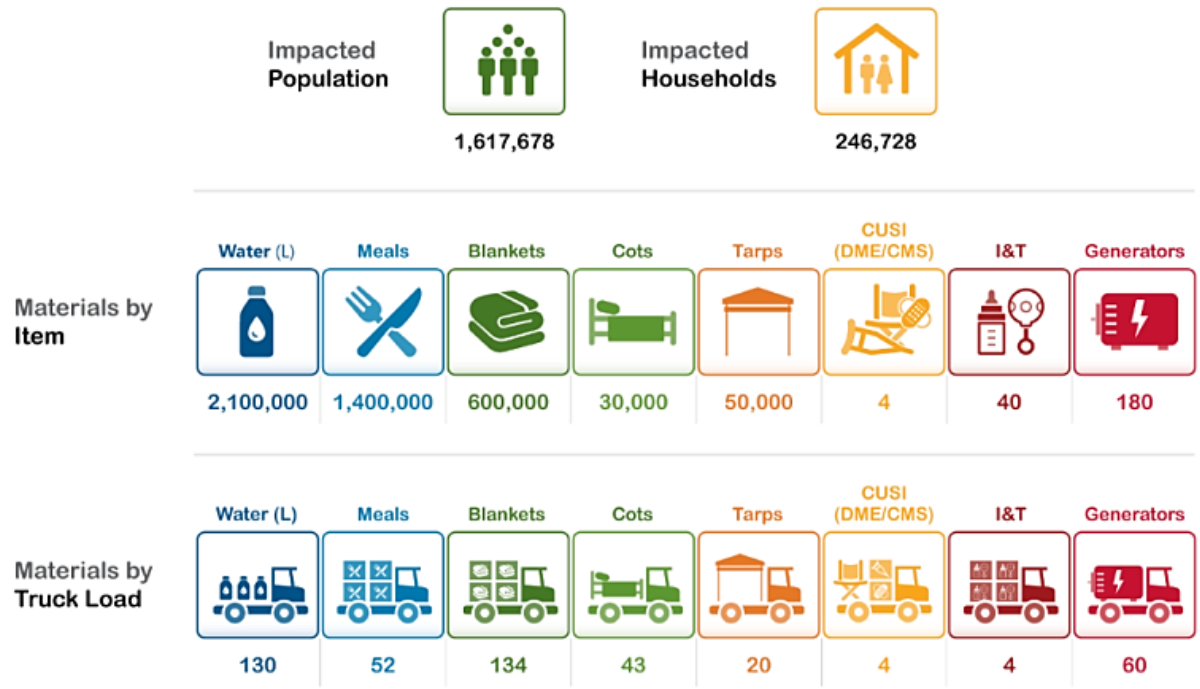


Figure 6: Federal Logistics Resource Support
Source: FEMA R4 Charleston Earthquake Annex

X. CONTINUITY OF GOVERNMENT (COG). See Section VII (Concept of Operations), Paragraph L (Continuity of Government) of the SCEOP.

XI. CONTINUITY OF OPERATIONS (COOP). See Section VII (Concept of Operations), Paragraph M (Continuity of Operations) of the SCEOP.

XII. PLAN DEVELOPMENT AND MAINTENANCE. SCEMD and designated stakeholders and partners identified in this plan will review this Appendix on a biennial basis and update/revise as necessary.

XIII. AUTHORITIES AND REFERENCES. See Attachment C (Authorities and References) to the SCEOP.

XIV. ACRONYMS AND GLOSSARY. See Attachment B (Acronyms and Glossary) to the SCEOP.