McChrystal Group

NORTH CAROLINA STATE EMERGENCY RESPONSE TEAM

Hurricane Helene After Action Review

Final Report

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1 Executive Summary

In September 2024, Hurricane Helene made landfall in North Carolina as a Category 4 storm, delivering unprecedented impact across the state. The storm's unusual track and intensity created extraordinary challenges, particularly in western regions that rarely face hurricane-force winds and flooding of this magnitude. Record-breaking rainfall, flash floods, widespread power outages, and total communications blackouts resulted in at least 107 fatalities and extensive infrastructure damage, testing North Carolina's emergency management capabilities beyond any previous experience.[1]

In response to this unprecedented disaster, North Carolina Emergency Management (NCEM) commissioned a third-party after-action review of the preparedness and response phases of Hurricane Helene, led by the McChrystal Group. From November 15 to December 13, the assessment team conducted 65 interviews and surveyed over 100 emergency responders across various agencies and jurisdictions, gathering crucial insights into the response effort's strengths and weaknesses.

The review revealed several notable successes in the response, including:

- **Local Alert Systems:** Effective local alert systems saved countless lives across the area of impact
- **SAR Operations:** Comprehensive and well-organized search and rescue (SAR) operations ran continuously in an extremely challenging operating environment
- **EMAC System:** Strong mutual aid support flowed into the state to support response efforts through the Emergency Management Assistance Compact (EMAC)
- **First Responder Support:** Successful rollout and adoption of the Responder Assistance Initiative provided crucial emergency responder mental health support

However, the assessment identified three “Critical Areas,” which refer to key aspects or components of the emergency response system essential for its success and requiring urgent corrective action or improvement to ensure the system’s effectiveness and resilience. These include:

- **SERT Organization and Staffing:** Severe staffing shortages of the State Emergency Response Team (SERT) at both state and field levels, combined with high turnover rates and limited cross-training, significantly impacted response capabilities. The current reliance on federal grant funding has created unsustainable staffing models that need restructuring.
- **Interoperability, Communications, and Data:** A complete communications blackout revealed significant vulnerabilities in backup systems and highlighted insufficient integration of satellite-based alternatives. System interoperability challenges and unprecedented levels of disinformation further complicated response efforts.

[1] According to North Carolina Department of Health and Human Services as of February 7, 2025. *Hurricane Helene Storm Related Fatalities | NCDHHS*

- **Logistics and Resource Allocation:** Fragmented tracking systems and technology failures hindered efficient resource management, while inadequate pre-positioning of supplies and limited vendor agreements impacted timely resource deployment, particularly in the western region.

In each of the Critical Areas, the assessment team has developed a comprehensive set of recommendations focused on strengthening core capabilities while building long-term resilience. Priority actions include implementing satellite-enabled communications, establishing permanent Emergency Support Function (ESF) liaison positions, creating unified database systems, and developing robust vendor management programs. The recommendations emphasize the need for enhanced training programs, improved technology integration, and strategic resource prepositioning throughout the state.

Success in implementing these improvements will require sustained commitment from leadership at all levels of North Carolina's emergency management system, adequate resource allocation, and regular assessment of progress. The goal is not simply to address the specific challenges faced during Hurricane Helene but to build an emergency management system capable of meeting future challenges while effectively serving current needs. Through quarterly progress assessments and ongoing stakeholder dialogue, North Carolina has the opportunity to emerge stronger and better prepared for future emergencies.

This after-action review represents a crucial opportunity to strengthen North Carolina's emergency management enterprise through systematic improvement of core capabilities. The lessons learned from Hurricane Helene, combined with the implementation of these recommendations, will be essential in building a more robust and resilient emergency management system for the future.

2 Hurricane Helene Timeline

Governor Roy Cooper declared a State of Emergency for North Carolina on September 25, 2024, in anticipation of Hurricane Helene. This declaration enabled the mobilization of resources to protect life and property across the state. The National Weather Service (NWS) forecast indicated the storm would bring significant rainfall, dangerous flooding, and strong winds across the state. On September 26, North Carolina Emergency Management (NCEM) activated its State Emergency Operations Center (SEOC) to "Monitoring" status, and preparations began to pre-position resources, including North Carolina National Guard units and emergency response teams. From September 26 to September 30, Hurricane Helene rapidly intensified into a Category 4 storm and began its devastating track inland. Warnings for coastal flooding, flash flooding, and severe wind gusts were issued across western and central North Carolina. By September 27, localities activated their Emergency Operations Centers (EOCs), with evacuation orders in place for flood-prone areas. During the first phase of the storm (September 27–29), Helene made landfall, producing record-breaking rainfall, flash floods, and strong winds across the state.

Rivers quickly rose to a major flood stage, resulting in damaged infrastructure, widespread power outages, a total communications blackout, and extensive property damage. Tornado watches were issued for central and western regions, further escalating the emergency response. As of September 29, at least three fatalities were reported. NCEM transitioned the SEOC to Red "Full Activation" status to coordinate statewide response operations. The second phase of the incident began on September 30, when prolonged rainfall led to historic flooding across western North Carolina, particularly in counties near Asheville and the Appalachian Mountains.

Water rescue operations intensified as communities became isolated due to landslides and washed-out roadways. NCEM deployed additional North Carolina National Guard units and Swift Water Rescue Teams to assist with emergency evacuations and resource distribution. By October 2, the storm system weakened, and water levels began receding. NCEM transitioned its SEOC to Yellow "Monitoring" status on October 4, as recovery operations began. Preliminary damage assessments revealed severe impacts on housing, transportation infrastructure, and utilities, with ongoing shelter needs for displaced residents. With Hurricane Helene's catastrophic impact on North Carolina, many opportunities to improve preparation and response operations have emerged, with priority areas of improvement discussed in subsequent sections of this after-action report.

HURRICANE HELENE TIMELINE

State Emergency Activation | Emergency & Disaster Declarations | Notification to the Public | Response & Recovery Efforts | Weather Events

SEPTEMBER 23

Tropical Storm Helene Forms in the Atlantic

SEPTEMBER 25

Activation of Emergency Operations, National Guard, & Swift Water Teams

- NCEM activated the State Emergency Operations Center (SEOC) to "Monitoring" status.
- Governor Cooper activates the National Guard and deployed swift-water rescue teams to assist with potential emergencies resulting from Hurricane Helene.

National Weather Service Issues Coastal Flood Advisories as Hurricane Helene strengthens into a Category 4.

State of Emergency Declared

- Governor Cooper declared a State of Emergency for North Carolina.
- The Federal Motor Carrier Safety Administration (FMCSA) issued a regional emergency declaration.

Resource Mobilization

- NCEM coordinated the pre-positioning of emergency response teams, including swift-water rescue units and the National Guard, to areas projected to be most affected.

SEPTEMBER 26

Federal Emergency Declaration

- President Biden approved an Emergency Declaration (EM-3617-NC) for North Carolina.

Major Disaster Declaration Requested

- Governor Cooper requested a Major Disaster Declaration from the federal government.

Landfall in Florida

- Hurricane Helene makes landfall in Florida's Big Bend area as a Category 4 storm, with maximum sustained winds of 140 mph.

Emergency Operations Center Activation

- NCEM fully activates the State Emergency Operations Center.

NCEM disseminates information to the public regarding evacuation orders, shelter locations, and safety precautions.

SEPTEMBER 27

Transition to Tropical Storm

- After landfall, Helene weakens to a tropical storm as it moves inland over Georgia, approaching western North Carolina.

Heavy rainfall forecasted & communicated for western North Carolina, with 12-15 inches projected in some areas.

Unprecedented Response Efforts

- More than 1,300 responders from 35 state and local agencies were deployed through the Emergency Management Assistance Compact (EMAC).

SEPTEMBER 28

National Weather Service issues flash flood warnings for counties near Asheville and the Appalachian Mountains.

Severe Flooding

- Western North Carolina experiences unprecedented flooding, with radar estimates indicating 12 to 20 inches of rainfall in some areas, and isolated spots receiving over 20 inches.

SEPTEMBER 29

Major Disaster Declaration

- President Biden granted Governor Cooper's request for a Federal Major Disaster Declaration (DR-4827-NC), providing immediate federal assistance for 25 North Carolina counties and the Eastern Band of Cherokee Indians.

Public Health Emergency

- U.S. Department of Health and Human Services Secretary Xavier Becerra declared a Public Health Emergency for North Carolina to address health impacts resulting from Hurricane Helene.

Rivers Overflow

- Major rivers in the southern Appalachians, including the French Broad and Catawba Rivers, overflowed their banks, leading to widespread inundation of towns and communities.

Tornado watches issued for central and western regions of North Carolina.

SEPTEMBER 30

Record-breaking rainfall reported; streams and rivers reach major flood stage.

Landslides & Infrastructure Damage

- Continuous heavy rainfall triggers landslides in mountainous regions, causing road blockages and structural damage.

OCTOBER 01

Search & Rescue and Recovery Efforts Continue

- As floodwaters begin to recede, emergency services continue search and rescue operations.

OCTOBER 09

More Counties Added to Disaster Declaration

- The declaration included 27 counties and the Eastern Band of Cherokee Indians.

OCTOBER 23

Governor Proposes $3.9 Billion in State Funding

- Less than a month after Hurricane Helene struck western North Carolina, Governor Cooper proposed a state budget recommendation to support rebuilding efforts and enhance resilience against future storms.

DECEMBER 12

Emergency Rule for Temporary Housing

- North Carolina's State Fire Marshal introduced an emergency rule to expedite temporary housing construction after Hurricane Helene.

RECOVERY EFFORTS CONTINUE

3 Methodology: Summary of Assessment Phase

Hurricane Helene presented a unique challenge to North Carolina's emergency management system, exposing vulnerabilities and testing the state's response capabilities beyond previous storms of record.[2] The storm's widespread impact and prolonged duration strained existing emergency management protocols, exposing pre-existing systemic gaps and highlighting untested areas of improvement. Given the scale of the disaster, NCEM leadership commissioned a comprehensive third-party After-Action Review (AAR) of the preparedness and response phases of Helene, led by the Virginia-based McChrystal Group.

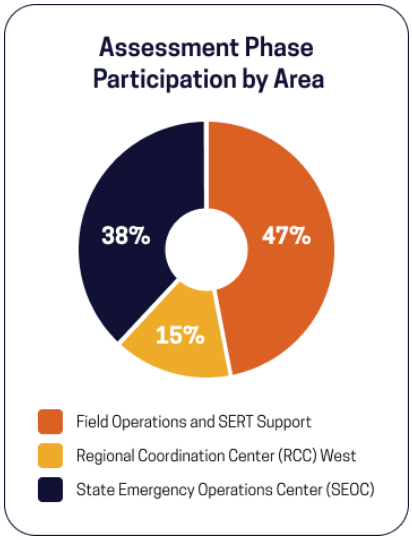


Figure 1: Assessment phase participation breakdown

The AAR process included a comprehensive assessment phase from November 15 to December 13, gathering insights through 65 interviews and an online survey distributed to 100 emergency responders from various agencies, as detailed in Figure 1.[3] The McChrystal Group team spoke with emergency managers at almost every level of the Hurricane Helene response effort, including city and county-level responders, state emergency management leadership, external partners at the state level and in the non-governmental sector, and representatives of additional partner organizations.

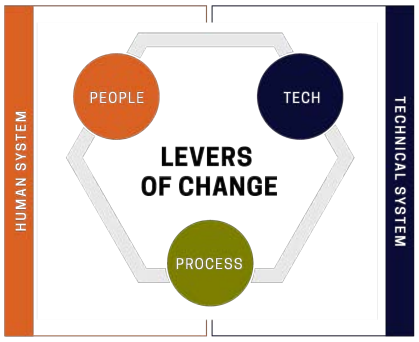


Figure 2: McChrystal Group Organizational Assessment Framework

To focus the scope of this after-action review, McChrystal Group designed survey and interview questions aligned with its People, Process, and Technology assessment framework to examine the interplay of human and technological systems in the Helene response. This framing aimed to glean insights and generate a report that allowed stakeholders to understand and align around their organization's current barriers and limitations, enable them to co-develop definitions of success, and generate buy-in and ownership of actions to improve operations and streamline processes. The McChrystal Group team also included a section of

[2] North Carolina Office of State Budget and Management. (n.d.). *Hurricane Helene DNA*. https://www.osbm.nc.gov/hurricane-helene-dna/open

[3] In the graph titled "Assessment Phase Participation by Area," graph segments represent the number of people interviewed and surveyed from each activation focus area. In the legend, "Field Operations and SERT Support" refers to both county and city emergency managers and on the ground SERT partners, while "Regional Coordination Center - West" refers to staff at the Regional Coordination Center (RCC) West, and "State Emergency Operation Center" refers to full-time staff in the State Emergency Operations Center (SEOC).

questions that assessed the impact of disinformation on the Helene response, as many stakeholders reported it as a central challenge in their response efforts.

Each interviewee and survey participant was asked the same question set—tailored to either interviews or surveys—to ensure consistency across all participants in the assessment phase. This also enabled objective comparisons across interviews and surveys (*see Appendix 2: Interview and Survey Questions for the complete list of interview and survey questions*). Participation was strong, with more than half of the interviews—initially scheduled for one hour—extending to two and an 85% response rate for the online survey.

This rigorous review captured not only the immediate challenges of the Helene response but also illuminated deeper, pre-existing underlying issues compounded by the storm's intensity and unusual impact.

Following the assessment phase, AAR participants' responses were compiled, analyzed, anonymized, and affirmed by NCEM leadership in a calibration workshop on February 3, 2025, before being finalized in this report.[4] The resulting document not only addresses the challenges and successes of the response but also provides tangible, actionable recommendations from AAR participants and the emergency management subject matter experts leading the AAR process. The goal is to initiate actions that will enhance resilience and enable better support for emergency managers to achieve their mission in future responses.

[4] All findings and recommendations detailed in this report have been generalized to ensure anonymity of AAR inputs. For clarity, brevity, and anonymity, specific feedback from surveys and interviews has been omitted. Anonymized raw data has been shared with North Carolina Emergency Management leadership for further action.

4 Findings and Recommendations

Before discussing obstacles impacting the state's response to the storm, it is important to note the critical strengths resulting from years of careful planning and relationship building that allowed for the many successes in the response.

1. Local alert systems saved many lives from flooding, landslides, and other hazards across the zone of impact
2. Robust and adaptable SAR operations were well-run and organized, resulting in the protection of many lives
3. Responsive, localized mass fatality management close to the epicenter of impact allowed expedited processing and release of disaster fatality victims back to their families and loved ones
4. Strong mutual aid and EMAC support were invaluable to the tireless efforts of county and regional emergency managers and the SEOC

The rollout and widespread adoption of the Responder Assistance Initiative (RAI) for emergency responder mental health support, providing vital mental health resources to first responders and enhancing their resilience and readiness. Alongside these successes, gaps and areas for improvement remain. The following sections detail a comprehensive summary of the findings and recommendations from the assessment phase across lines of inquiry on People, Process, and Technology. Given the scope of those findings, this AAR has condensed themes into three Critical Areas: **SERT Organization and Staffing**; **Interoperability, Communications, and Data;** and **Logistics and Resource Management**.

Critical Area #1: SERT Organization and Staffing

The pre-existing staffing shortages at NCEM severely compromised the state's response to Hurricane Helene. While all agencies faced personnel challenges during this catastrophic storm, NCEM's shortage at both state and field levels critically hampered the State Emergency Response Team's (SERT) ability to maintain 24-hour operations and provide effective local and county support. Additionally, limited cross-training between functional areas undermined advance coordination and partner integration, resulting in significant operational challenges throughout the response phase.

Key Challenges:

1. A lack of adequate staffing to sustain 24-hour operations in the SEOC, RCC West, and at the local and county levels.
2. The SEOC lacks robust and consistent support from state agencies.
3. There is insufficient coordination, cross-training, and focused exercises between functional areas.
4. There is an overreliance on federal grant funding, specifically the Emergency Management Performance Grant (EMPG), for positions at the state level.

Findings

Staffing and Experience Challenges

Staffing has been an ongoing challenge across all levels of North Carolina's emergency management system, even before the response to Hurricane Helene. Twenty-five percent of survey respondents identified staffing as a priority for improvement in future responses. State and local agencies struggled to maintain effective 24-hour operations during extended activation periods, particularly at the county level and in specialized roles such as first responder communications and critical administrative functions (e.g., logistics and procurement at the state level). This staffing crisis was exacerbated by high turnover rates before Hurricane Helene, especially at the state level, leading to significant losses of institutional knowledge and disruption of established coordination patterns.

Between the state and local levels, participants repeatedly noted a need for more personnel within the RCC West to support counties with their local response efforts, vetting and triaging requests, and liaising with the SEOC. Respondents noted a persistent lack of personnel depth at the RCCs. This indicates chronic under-resourcing that limits the RCCs' ability to effectively execute their mission during high-demand situations.

"We do not have sufficient depth at the RCCs to carry out the mission, which has been known for years, and the hyper-focus on complete, verified data has made this much worse," noted one respondent.

"For large-scale events like this, leadership must prioritize redundancy for functional lead positions. Functional leads should never feel unable to step away due to concerns about whether their teams can maintain progress without them […]"

Responders at all levels emphasized that more robust staffing across all functional areas at RCC West would have allowed area coordinators to directly support their assigned counties, reducing the demands on SEOC staff. The resulting staffing shortfall slowed SEOC staff's response to the unprecedented influx of resource and information requests during the incident. Staffing challenges at the local level, particularly in key roles such as fire marshals and emergency services directors, created knowledge gaps and response delays, further hindering effective collaboration and communication between emergency responders.

Beyond insufficient staffing levels for the disaster's scale and complexity, experience gaps among emergency management personnel affected multiple operational areas and extended beyond the SEOC. State-level staff highlighted these challenges, citing a lack of experience and cross-functional training among county staff who surged to support local emergency managers. For example, many county-level mass care coordinators lacked experience or comprehensive training in mass care coordination and sheltering for a disaster of this magnitude. This knowledge gap led to confusion and an over-reliance on state personnel and resources.

State Agency Roles and Coordination

Gaps in interagency coordination and role clarity hampered emergency operations and exposed a lack of integrated training and clear operational protocols. While individual agencies maintained strong internal

capabilities, the lack of integrated training created vulnerabilities across the state's emergency management system.

Coordination was hampered in critical areas like mass fatality management due to insufficient multi-jurisdictional training, leaving agencies struggling to integrate local, state, and federal resources effectively. The deployment of Incident Management Teams (IMTs) proved challenging as well; despite having teams rostered from various agencies across the state, the absence of standardized credentialing processes limited their effectiveness and situational awareness at the branch offices.

"There are many other SERT agencies, local, and federal partners who are not held accountable for inaction and routinely this work is dumped on others to make the best of it when they already do not have the resources for their own mission."

A pattern of inconsistent engagement from key state emergency response team (SERT) partners emerged throughout the response. Several SERT agencies had limited effectiveness because they were unclear about their specific duties and authority during the state's emergency response. This confusion led to delays in decision-making and poor resource coordination, forcing other overburdened agencies to take on additional responsibilities. Several agencies failed to track and close resource requests in WebEOC, a web-based crisis management and situational awareness platform emergency management agencies use to coordinate response efforts. This created an additional workload for an already overburdened SEOC staff. The public information function highlighted similar challenges, with many individuals stepping into the public information officer (PIO) roles without prior crisis communications or emergency response experience. A lack of advanced coordination between state agencies and local PIOs created confusion about roles and responsibilities, revealing gaps in the joint information system (JIS) and impacting the timely dissemination of information to the public. Previously unexposed deficiencies often left the Department of Public Safety (DPS) External Affairs and NCEM Communications Teams managing media inquiries, governmental affairs, and public information requests in support of the SEOC, field teams, and the Governor's office.

These challenges point to a critical need for enhanced interagency training, clear accountability measures, and established protocols for cross-agency coordination during large-scale response operations. Success in future responses will require a dedicated effort to build integrated capabilities for all state partners involved in emergency operations. In another example noted by respondents, Fatality SAR teams and traditional SAR teams need more cross-training to improve collaboration, allowing them to coordinate seamlessly in incidents involving numerous fatalities and missing persons.

Training and Exercise Framework

Despite the execution of regular and carefully planned training, personnel were insufficiently prepared for a complex, multi-agency response. This was evident in both interview and survey responses, with only

31% of respondents agreeing that NCEM provided the training necessary to adequately respond to this disaster. Reasons for this response varied, with some AAR participants noting that exercise scenarios lacked a realistic level of complexity and often failed to include all relevant emergency response partners. Several factors contributed to this, including the absence of mandatory training requirements for all response personnel, insufficient funding for partner participation, and limited awareness among partner agencies of their essential role in emergency operations. Regardless of origin, the gap between training and real-world operations left many personnel ill-prepared to operate and effectively collaborate to face the complex challenges that arose during Helene. This training gap was especially pronounced among partners in the SEOC and RCC West.

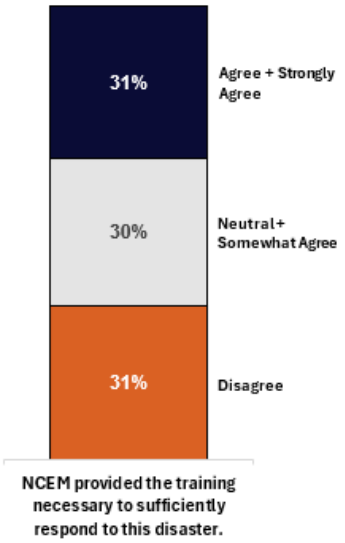


Figure 33: Assessment of Training Adequacy

"With the amount of turnover NCEM has seen in the past 5 years, I think having better exercises—in which we are challenged to use the tools as though it were a real activation—would have been helpful.

I think requiring training on different systems (WebEOC in particular) would be helpful. We sometimes struggle to get good feedback from other teams on the work we do until there is a problem during an activation."

Local emergency managers also emphasized training as a critical shortfall, with localities especially noting the need for consistent training and certification opportunities. They often cited the state's ability to fund and support these programs as crucial for maintaining high skill levels among emergency responders in the field.

Gaps in ICS and WebEOC proficiency were observed at state and county levels, indicating a need for more rigorous and standardized training requirements. Cross-training between agencies was notably lacking, limiting the flexibility and effectiveness of response operations during complex incidents. These operations draw on the expertise of subject matter experts (SMEs) outside the emergency management space, including critical infrastructure and health and human services specialists.

Current Funding Structure

North Carolina's current funding structure for emergency management creates significant operational constraints and inequities. The state's over-reliance on federal grants to fund basic operations creates a competitive dynamic between state and local jurisdictions seeking limited grant funding. The appropriations from the legislature do not allow for long-term investment in the NCEM's infrastructure or ongoing personnel costs. The agency must rely on federal grants—not state operational funding—for information systems, personnel, training, exercises, and other related needs. This limits NCEM's ability to allocate grant funding to counties in support of their emergency management programs. This funding scarcity has particularly impacted local emergency managers' ability to build and maintain local response capacity through robust and consistent staffing and training initiatives.

"EMPG funding is being overallocated to cover the state emergency management budget" rather than supporting local needs."

Critical Area #1: Recommendations

The challenges revealed require a multi-faceted approach focused on clarifying roles and responsibilities, building trust and depth of experience, improving retention, and ensuring rigorous knowledge transfer across NCEM and its partners. The recommendations summarized below emphasize both immediate operational improvements and building long-term capabilities.

The following priority recommendations and actions emerged from the assessment:

1. **Develop a comprehensive staffing strategy** to recruit and retain experienced emergency services staff.
2. **Review and revise the Emergency Operations Plan** (EOP) to update and expand the state agencies' roles and responsibilities.
3. **Expand cross-functional training programs**, just-in-time training resources and expand opportunities for relationship building at all levels.
4. **Identify and leverage more sustainable long-term funding** for state emergency operations outside of federal grant funding.

Recommendation Summary Statements

Recommendation #1: Develop a Comprehensive Staffing Strategy

To address the staffing and experience challenges, NCEM should implement a comprehensive staffing strategy that prioritizes recruitment and retention and is focused on building capacity in the RCCs. The development and implementation of a comprehensive staffing strategy requires a detailed approach and should include the components detailed below.

A formal mentorship program should be established to support retention and help address the gap between academic knowledge and real-world experience. This program should pair experienced emergency managers with newer staff to facilitate knowledge transfer and help build out and maintain resilient institutional memory. This program becomes particularly critical given that while many current staff are well-credentialed, they lack practical experience. The mentorship initiative should be supported by structured training pathways for new emergency managers, with specialized tracks developed for technical positions.

To further address surge staffing needs, NCEM should expand its standardized EMAC packages for specialized positions, particularly in critical areas such as first responder communications, logistics, and purchasing. These packages should be pre-configured and regularly updated to ensure rapid deployment during emergencies. NCEM could also examine the possibility of utilizing state agency employees to address skill and personnel gaps. Some agencies during SERT activation do not have assigned roles but are capable of augmenting staffing needs in areas such as sheltering, donations, logistics, and purchasing. Leveraging those individuals would require a program to recruit and train an adjunct emergency workforce that could be activated during a disaster. Review and Revise the Emergency Operations Plan

Recommendation #2: Review and revise the Emergency Operations Plan

A comprehensive and current Emergency Operations Plan (EOP) is fundamental to effective emergency management, requiring a clear delineation of responsibilities and active participation from all stakeholders. While the NCEM EOP underwent updates in 2023 and 2024, the lack of final approval from the Governor's Office created significant operational challenges, particularly regarding role clarity and responsibility assignment.

The current structure designates NCEM as the primary agency for all ESF functional areas, with various state agencies serving technical lead capacities. This arrangement has resulted in an unsustainable concentration of responsibilities on NCEM's limited staff. A strategic redistribution of ESF leadership responsibilities is essential to establish a more balanced and effective emergency response system. While NCEM should maintain oversight of many ESFs, certain functions would benefit from the leadership of agencies with specialized expertise.

Furthermore, the EOP's effectiveness depends on the active engagement of all supporting agencies listed under each ESF. Their participation is crucial for maintaining adequately staffed activations with both decision-makers and relief personnel across all ESFs, particularly during catastrophic incidents. A revised EOP should emphasize increased state agency involvement and provide explicit clarification of roles and responsibilities for state agencies, external partners, and volunteer organizations. These updates would address current SERT staffing challenges and minimize role ambiguity, strengthening North Carolina's emergency response capabilities.

Recommendation #3: Expand Cross-Functional Training Programs

North Carolina’s current training framework requires enhancement to better prepare personnel for complex emergency responses. Compulsory participation should be instituted for re-designed state exercises incorporating extended communications blackouts, widespread infrastructure collapse, prolonged power disruptions, and severely compromised transportation networks, thereby building organizational capacity to manage complex, interconnected disasters. State exercises should include detailed injects, drawing not only on the realities of the Helene response but on further ideation around competing worst-case scenario situations during a response.

Cross-training initiatives should be significantly expanded, establishing regular opportunities for interaction between different state agencies and counties. These programs should include joint training sessions between state, regional, and county personnel; integrated exercise programs with external partners when possible; and regular review and monitoring of position-specific training requirements. Furthermore, cross-functional training programs should be expanded across ESF areas, establishing cross-training requirements for all SEOC positions.

A rapid onboarding program with just-in-time training resources should be developed at both the SEOC and RCC levels to quickly integrate surge staff during major incidents. These resources should ensure that response personnel—whether from out-of-state via EMAC request, other state agencies, or other partners—are properly equipped with the knowledge and skills necessary to operate safely and effectively.

Beyond functional training exercises, leaders at all levels of emergency management need more opportunities for regular contact and relationship building to increase trust and enhance response

capabilities. This should include quarterly coordination meetings for all SEOC section leaders, with internal and external partners, and the expansion of regular forums to enable relationship building between local, county, and state agencies. One specific area of concentration would be to expand the cadence of interaction and coordination with local and county administrators and their emergency managers. It was identified that there were one or two briefing calls with Chief Administrative Officers (CAO) during Helene that proved valuable in conveying key information on resources and state actions.

Recommendation #4: Identify and leverage a Sustainable Funding Framework

A comprehensive review and restructuring of funding mechanisms are necessary to address the fundamental challenges facing North Carolina's emergency management system. This should begin with dedicated state funding for NCEM operations, reducing reliance on federal grant funding for basic operations. The development of an equitable EMPG distribution framework should follow, ensuring an appropriate balance between state and local emergency management needs.

The framework should establish clear funding priorities based on identified operational requirements and capability gaps. Regular funding needs assessments should be conducted to ensure resource allocation aligns with evolving emergency management challenges. This approach will help address resource and competition between state and local jurisdictions for limited grant funding.

Critical Area #2: Interoperability, Communications, and Data

21%

of survey respondents reported communications processes as a top priority to improve for future responses

As with many natural disasters, there were communication, coordination, and information-sharing failures across the region resulting from the storm's impact. However, Hurricane Helene revealed significant process vulnerabilities in mitigating and addressing these failures during response operations. Issues emerged regarding primary, alternate, and contingency (PACE) communications, handling of misinformation and public information sharing, interagency coordination, system interoperability, and data management and integration. This led to significant challenges with situational awareness in the SEOC, RCC, state-operated NCEM logistics warehouses, including the Logistics Support Center at Badin, State Regional Staging Areas (SRSA), County Receiving and Distribution Points (CRDP) or local Points of Distribution (PODs), and field response sites across the affected area.

Key Challenges:

1. Breakdown in the communication systems and PACE program, including the overload of the Voice Interoperability Plan for Emergency Responders (VIPER) system and insufficient satellite-based communication to meet operational demands.
2. Lack of system interoperability between different functions in the field, across state agencies, and non-state partners, which contributed to a loss of situational awareness.
3. Challenges with data handling, information intake, and visualizing and sharing relevant operational updates in a timely fashion to influence situational awareness and decision-making.

4. Disinformation and conflicting information were not effectively countered, leading to impacts on response efforts, reduced trust in official messaging, and increased stress and burnout among responders.

Findings

Technical Infrastructure Limitations

A complete communication blackout revealed significant weaknesses in the VIPER radio backup communication system and highlighted the insufficient integration of satellite-based communication alternatives. The storm cut off internet and cellular service, disabled many radio towers, and severed fiber optic networks. This left many responders in impacted areas with little to no communication capability to mobilize and coordinate response operations. First responders specialized in communications from the state pre-positioned to restore traditional communications infrastructure; however, it took multiple days for full restoration in many communities. In the absence of access to traditional communications systems, some responders found viable alternative communications systems. Low Earth Orbit (LEO) satellite communication services proved particularly effective, but only when local emergency responders had access to them. In some instances, LEOs were delivered to support response operations, but they arrived several days into the communication blackout.

"It took days to place [alternate] communications resources (Starlinks and satellite phones) into the impacted counties as requested by ESF2. These delays kept NCEM in the dark about ground truth for needs in these counties longer than needed."

"Starlink was a home run in providing reliable communication when other systems failed," one AAR participant noted.

Some counties also had legacy satellite phone technology that allowed for intermittent communication. Responders reported limited access to VIPER radios. In addition to shortages, responders or responder teams with a VIPER radio on hand could not consistently and effectively leverage the network due to user error and excessive traffic on the system. Many users of the system experienced repeated "bonking," which refers to the radio emitting an error tone (a "bonk" sound) when the user is unable to connect to the system or access a channel. This typically occurs when the system is overloaded with too many users transmitting simultaneously, the user is on the wrong channel or zone, incorrect radio operation or programming prevents access, or coverage gaps exist in certain areas. Several county emergency managers reported experiencing delays of over an hour when attempting to share or request information through the VIPER system.

Helene validated the effectiveness of satellite-based systems as another form of communication redundancy that could help alleviate strain on the current VIPER system. The success of these satellite systems provides clear direction for future communications infrastructure development and pre-staging for future responses.

Technical infrastructure problems significantly hampered communication across multiple systems. The State Emergency Operations Center (SEOC) faced bandwidth limitations, while state agencies encountered access and interoperability challenges with critical response tools. These issues affected several essential platforms: Microsoft Teams channels used by State Emergency Response Team (SERT)

partners, situation report templates, and access to the North Carolina State Preparedness and Resource Tracking Application (NCSPARTA).[5] Technical infrastructure in the SEOC and access issues significantly impacted external partners' ability to maintain effective communications, particularly those relying on guest WIFI rather than wired connections. These technical constraints and interoperability issues between critical systems created substantial obstacles to effective coordination in the SEOC and beyond.

Interagency and Intra-agency Coordination Challenges

The response revealed significant gaps in interagency coordination and communication that hampered effective emergency response. Approximately half of the survey participants cited communication processes with other agencies as "inefficient." In the SEOC, confusion about roles, responsibilities, and decision space between emergency managers and SMEs activated from partner agencies across most ESFs trickled down to the RCC and county levels. Trusted relationships between state, county, and local emergency management entities proved variable and often strained. County representatives often felt the state did not prioritize their needs. This sentiment was especially pronounced in the western regions where county personnel felt state officials focused much of their preparation for hurricane impacts in North Carolina's coastal regions. This perception of geographic bias has created lasting challenges in building effective collaborative relationships between state and local emergency management entities.

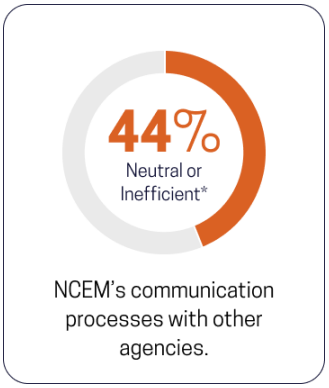


Figure 4: Assessment of Interagency Communication

Local coordination challenges were particularly evident in larger jurisdictions where multiple agencies needed to work in concert.

"Local politics and interpersonal dynamics…created bottlenecks in the resource request process," reported one field operator.

[5] NCSPARTA, which runs on WebEOC™ software, is commonly known as "WebEOC" among North Carolina emergency responders.

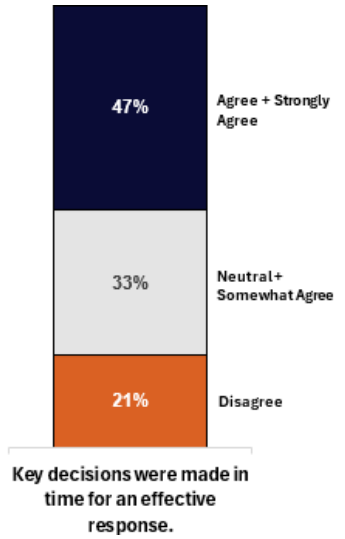


Figure 5: Assessment of Decision-Making Cadence

The response suffered from interpersonal and jurisdictional tensions in several counties, which created obstacles to effective response coordination.

The presence and engagement of external state SERT partner agencies were widely appreciated but reportedly inconsistent throughout the response. AAR interview participants reported that decision-makers from these agencies were not always present or their delegates in the EOC were not empowered to make critical and time-sensitive decisions. This breakdown in decision rights hindered the effective management of essential services such as water provision, wastewater treatment, and some aspects of mass care, amongst others. Survey responses reflected this sentiment, with 54% of respondents either neutral or in disagreement with the statement "key decisions were made in time for an effective response." This situation was further complicated by confusion over roles and responsibilities among various EOC stakeholders, leading to delays and inefficiencies in response efforts.

Information and Data Management Issues

Information and data management emerged as a critical vulnerability, with impacts spanning operations, resource allocation, and interagency coordination. Three key areas surfaced during our assessment:

- Search and rescue coordination
- Data validation and processing at the RCC
- System integration barriers, including legislative constraints and technical limitations

These interconnected challenges created cascading effects that significantly impacted operational effectiveness and resource deployment throughout the response.

Fragmented data systems and poor information flow significantly hampered SAR operations. Teams struggled to coordinate effectively using two disparate platforms to document searches—Search and Rescue Common Operating Platform (SARCOP), a state-level system for managing search and rescue operations, and SARTopo, a mapping tool for creating and sharing interactive field maps. Meanwhile, the lack of a unified missing persons tracking system created critical delays in search prioritization. Search and rescue crews reported instances of duplicated efforts, with well checks conducted at the same homes three to four times. Unnecessary or duplicative searches unnecessarily put rescue crews' safety at risk and diverted resources from other lifesaving missions. Communication issues between search and rescue teams and law enforcement led to difficulties in obtaining and validating missing person information necessary for targeted searches.

The volume and complexity of information flowing through the SEOC and RCC overwhelmed existing validation processes, creating cascading effects throughout the response system. Without sufficient

vetting capacity, SEOC and RCC staff struggled to validate and prioritize incoming requests impacting resource allocation decisions, response times, and operational effectiveness.

Operational challenges were further exacerbated by legislative constraints and privacy regulations, which limited information sharing between state agencies. Though innovative, the mid-response adaptation of the 211 system for tracking missing persons revealed the absence of pre-established protocols for emergency data management. These integration and data-sharing issues, compounded by regulatory restrictions, resulted in significant delays and complications in coordinating response efforts.

Due to the numerous meetings held in various rooms throughout the SEOC, many personnel found themselves struggling to keep up. With information changing on an hourly basis, they often felt overwhelmed. Inconsistent email addresses, multiple systems, and a lack of experience posed significant challenges for SEOC staff, making it difficult to compile the most current information and data necessary for effective decision-making.

Impact of Disinformation and Misinformation

Helene underscored the major difficulties in managing public information and addressing disinformation and misinformation during a communication breakdown. Misinformation, false or inaccurate information, and disinformation, false information which is deliberately intended to mislead, had marked impacts on emergency managers' ability to operate. "Disinformation and/or misinformation negatively impacted response efforts" for 43% of survey respondents. During critical periods of the response, a communication blackout created an information vacuum quickly filled with unverified sources and, in some cases, intentionally misleading information also known as "disinformation," including blatantly false or erroneous claims made on social media about resource availability and speed of response in certain areas A pre-existing sentiment of mistrust in government information in the affected area compounded the situation. This created significant challenges in establishing and sustaining a reliable source of truth and informing the public on trusted and verified channels during the disaster. Communication breakdowns, misinformation, and a lack of trust during the Helene response underscore the PIO's vital role in the emergency management system. The dynamic information environment experienced during Helene strained the handful of dedicated professional communicators in place to vet and provide reliable information to the public and quell inaccurate information.

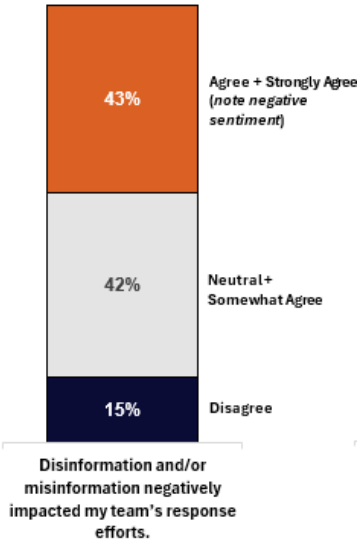


Figure 6: Assessment of Impact of Disinformation on Response

The NCEM and DPS External Affairs teams worked tirelessly to identify and respond to misinformation and disinformation by providing accurate facts. However, insufficient training and capacity of local PIOs in the areas most impacted created vulnerabilities in data and information management, resulting in miscommunication and dissemination of incomplete or inaccurate information. PIOs from other state agencies supporting DPS and NCEM had varying levels of experience, crisis communication education, and joint information systems training, which limited their effectiveness in supporting public information and external affairs functions. PIOs augmenting NCEM and DPS often faced scheduling conflicts with

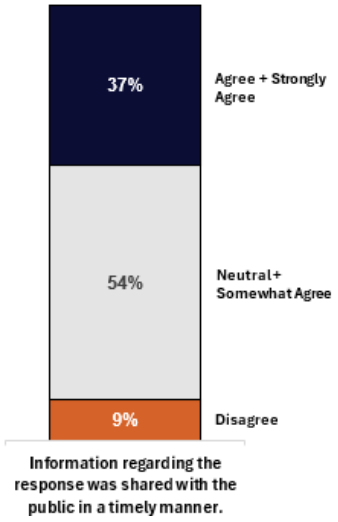


Figure 7: Assessment of Timeliness of Information Sharing to Public

their other non-emergency responsibilities, which made it difficult to involve them effectively in JIC operations. The shortage of trained crisis communicators, particularly at the local and state levels, created a significant gap in the ability to rapidly verify and share accurate information with affected communities and the public. This issue was further compounded by the communications blackout early in the response. Many survey respondents noted this concern, with 65% indicating they were neutral or disagreed that information about the response was shared with the public in a timely manner.

Misinformation during the response had several operational impacts. The spread of unverified information regarding specific incidents or needs resulted in the misallocation of limited response resources. Additionally, well-meaning individuals sharing incorrect information, coupled with coordinated disinformation efforts, undermined public confidence in official communication channels. The need to continuously address and correct misinformation redirected substantial staff time and resources away from other critical response activities.

Political interference made the situation more complex. It occasionally exaggerated specific narratives or distracted attention and resources from priority response areas. This interference occurred across the political spectrum and at nearly every level of government.

Critical Area #2: Recommendations

Interoperability, communications, and data require a series of interconnected priorities: strengthening technical infrastructure by expanding satellite-enabled communications and upgrading systems; enhancing interagency coordination through the establishment of formal frameworks and liaison positions; improving information management systems with unified databases and validation protocols; and building strong capacity to prepare for and counter disinformation. Together, these recommendations address both immediate operational gaps and long-term strategic needs to ensure NCEM can effectively manage future large-scale disasters. Success in implementing these improvements will require sustained commitment at all levels, dedicated resources for relationship building and training, and regular assessment through defined metrics to ensure continuous improvement in emergency operations.

The following priority recommendations and actions emerged from the assessment:

1. **Enhance technical infrastructure** by expanding and modernizing emergency communications infrastructure by upgrading the state VIPER network and deploying LEO satellite capabilities, ensuring improved system resilience, interoperability, and capacity for high-traffic scenarios.
2. **Enhanced interagency coordination** by implementing comprehensive training and exercise programs educating on cross-agency coordination and system interoperability, with an emphasis on ensuring local emergency managers are comfortable running all their functions without any communications for up to 72 hours.

3. **Improve the Information Management systems** by developing a centralized database system with dashboard capability to facilitate real-time information sharing and coordination that can be accessed by all SERT partners and integrates data from all mission-critical systems.
4. **Preparing for and countering disinformation** by strengthening PIO capacity by building a more robust and reliable PIO network across all levels of government and state agencies, with specialized training in crisis communication.

Recommendation Summary Statements

Recommendation #1: Enhance Technical Infrastructure

In light of the successful use of alternative communication systems during Hurricane Helene, NCEM should enhance its satellite-enabled communication capabilities by stationing LEO communication services at critical facilities year-round and in pre-staging scenarios. The traffic capacity of the VIPER radio network should be upgraded, and increased access and training on how to use the VIPER radio should be expanded to a wider range of users.

Redundant communication systems should be implemented across all critical facilities, with regular testing protocols established to ensure system reliability. The SEOC's bandwidth capacity should be upgraded to support increased information, processing, and data demand during major operations.

Given the critical importance of communications to response efforts, elevating the role of First Responder Communications is essential. To prepare those in this crucial ESF area, NCEM should expand statewide interoperability coordination at all response levels, increase their involvement in developing the emergency operations plan, and provide enhanced training and exercise planning and execution. Staff augmentation and additional funding would support the development of a reliable system for tracking First Responder Communications personnel and resources in the next three years. These resources would also empower local entities through additional training and establish interoperability mandates. An increased focus on first responder communications also invites innovation in the space, which could lead to infrastructure hardening and expanded federal funding and partnerships in this area.

Recommendation #2: Enhanced Interagency Coordination Framework

NCEM must implement a comprehensive framework that strengthens relationships, clarifies roles, and establishes clear protocols for multi-agency response operations to address coordination challenges revealed during the response. This framework should begin with structural improvements to the RCCs, including establishing permanent liaison officer positions at RCC West. The staffing model should ensure one-to-one parity between functional unit leads at RCC West and the SEOC. This structural alignment addresses communication and coordination breakdowns observed during Helene by providing intermediary contact closer to the field to help vet requests and ensure they are being routed to the correct locations within the EOC if escalation is required. It would also help lessen the burden of direct requests for information and resources on SEOC staff, which would allow field operators to get their questions answered sooner and allow SEOC staff to focus on state-wide coordination.

Inconsistent support and involvement from North Carolina SERT partner agencies revealed the need for a formal coordination mechanism for rapid decision-making and information sharing. SERT partner

agencies staffed to breakout rooms and other interagency coordination cells in the SEOC should deploy personnel who have decision-making authority and a clear understanding of their agency's capabilities and operational constraints.

Regular bi-quarterly coordination meetings should be standard practice for all section chiefs and their teams, including external partners. While some leaders have already adopted this schedule, it should be expanded across all sections. These meetings should focus on building relationships and developing a shared understanding of roles and capacity well before disasters occur. As demonstrated during Hurricane Helene, confusion about section assignments and corresponding responsibilities led to inefficiencies and delays. Bi-quarterly disaster coordination meetings could be a critical forum for identifying gaps, improving interoperability, and ensuring readiness before a crisis strikes.

North Carolina should implement a partner agency orientation program for agencies that play critical roles during major disasters but may not regularly operate within the emergency management framework. The program should cross-train employees assigned to SERT Sections, allowing them to serve in multiple roles during a response. The orientation should include a detailed review of the Emergency Operations Plan, WebEOC training, and incentivized participation in regular exercises.

The chain of command and decision-making authorities for North Carolina' emergency management framework must be clearly defined by developing detailed matrices that specify roles, responsibilities, and authorities across different types of incidents and operational phases. Clearly defining position requirements and matching them with people or agency roles that can fulfill those requirements is vital to ensuring the continuity of operations despite personnel changes.

NCEM should establish a formal regional engagement strategy to address the lagging trust between counties and the state, particularly in western regions. This strategy should include regular regional coordination meetings, joint training opportunities, and dedicated relationship-building sessions with state, county, and local stakeholders, including community organizations.

Standard operating procedures for multi-agency response should be developed with input from all partner agencies, with particular attention to:

- Cross-agency system interoperability
- Defined escalation pathways for decision-making
- Explicit roles and responsibilities during different phases of response
- Procedures for managing competing priorities across agencies when individuals are staffed to the SEOC

This enhanced coordination framework should be tested with regular exercises designed to validate and improve the procedures as the scope and complexity of disasters grow. These exercises should address stress points identified during Helene, like communication failures and competing resource demands. Conducting regular after-action reviews of these exercises will enhance the ongoing development of coordination protocols and strengthen the resilience of North Carolina's emergency management system.

Implementing these recommendations will require commitment and dedicated resources for relationship building and training. Regularly assessing coordination effectiveness through defined metrics will help ensure continuous improvement in interagency operations.

Recommendation #3: Information Management Systems

Effective emergency response increasingly relies on technology-enabled information management. However, North Carolina lacks the necessary system integration to support a unified response. This includes the absence of a centralized database that provides a common operating picture (COP) for all SERT partners, enabling real-time data and information sharing. Operation-critical information is currently managed across various systems, some of which are owned by NCEM or the SERT, while others are not. The first step in addressing this challenge is identifying key information management systems and developing an integration plan that improves the state's COP and supports response and recovery. Any system design or integration plan would require a representative or team in the SEOC to manage data coordination and analytics across all SERT partners. Given disparate ownership, The North Carolina Department of Information Technology (NCDIT) would be an ideal partner for this initiative, drawing on its expertise to streamline information management across systems and owners.

Outcomes from an overarching integration management plan should include a unified missing persons database, which incorporates standardized data entry protocols and automated synchronization between law enforcement agencies and SAR teams. A unified and single source of truth for missing persons enhances resource allocation, reduces risk to law enforcement and rescue teams, and aids family unification services. Additional benefits from an integrated data management plan would allow resource request information from WebEOC to be merged with data from Inventory Control and Asset Management (iCAM) into a single dashboard, providing real-time visibility, validation, and efficient tracking of resources during complex disaster response operations. Real-time data integration between these two applications would enhance decision-making, improve accuracy and accountability, and prioritize res

To enhance data quality and accuracy, a dedicated Validation Team should be established within the RCC. This team should operate with clearly defined information priority levels and utilize automated validation checks for common request types for consistency and accuracy. Surge capacity protocols must be in place to manage high-volume periods, ensuring consistent data quality during peak operations. Additionally, an integrated dashboard for cross-platform data visualization should be developed to provide decision-makers with real-time, validated information, improving resource allocation and operational planning.

The state must conduct a systematic review of data-sharing agreements between its agencies to remove unnecessary barriers to sharing lifesaving information that poses unnecessary risks to the public or first responders during a disaster. While maintaining information security and privacy, information and data sharing agreements facilitate secure, efficient information sharing during emergencies and include robust backup procedures against system failures. Success in implementing these recommendations should be measured against clear metrics, including target times for missing persons data validation and overall improvements in data processing efficiency.

Recommendation #4: Preparing For and Countering Disinformation

Given the proliferation of social media, 24-hour news cycles, and deliberate disinformation campaigns from hostile actors, all emergency management agencies should implement a comprehensive strategy to prevent, detect, monitor, and mitigate the damaging effects of disinformation during disaster operations. As part of this effort, NCEM must take a lead role in developing a strategy tailored to address threats posed by disinformation to North Carolina's emergency response capacity.

Preparedness is critical to preventing disinformation and enhancing an agency's ability to manage and counter it effectively. For NCEM, this begins with building a more robust and reliable PIO network across all levels of government and state agencies, with specialized training in crisis communication. Strengthening PIO capacity ensures the rapid and accurate dissemination of information during emergencies—particularly in areas where trust in government is limited or when demands on the state-level PIO team are high.

The establishment of a comprehensive crisis communications training program represents a critical component of this strategy. Emphasizing accessibility and offering low-barrier-to-entry training modules, this program should provide advanced training in disinformation identification and response, rumor control, and community engagement to counter false narratives. Regular exercises should test and build agencies' abilities for social media monitoring, identifying and correcting misinformation, and ensuring consistent messaging across agencies, which ensures PIOs maintain proficiency in these critical skills.

To grow public trust, NCEM should proactively build and foster community and private sector partnerships across North Carolina that can serve as effective and trusted sources for emergency information in crisis. Developing and maintaining these relationships must occur during non-emergency periods. Media embeds during training operations, agency open houses, meetings with senior officials, and online engagement are effective tactics to build relationships with community partners, network influencers, and journalists. In crisis, these stakeholders can serve as both trusted messengers who help dispel rumors or disinformation and trusted advisors providing valuable information on public sentiment, community needs, and access to other network influencers.

Technical infrastructure improvements must support these human-centered initiatives. NCEM should revisit and implement a dedicated social media monitoring system for early identification of misinformation trends, supported by rapid fact-checking protocols and pre-prepared message templates for common emergency scenarios. Clear procedures must be established for coordinating public messaging between political figures and emergency management PIOs, ensuring consistent and accurate information reaches affected communities.

These improvements should be incorporated into NCEM's Joint Information Center (JIC) Plan. Any updates should include resources, tools, and procedures for PIOs to continue public outreach in the face of disruptions to standard communication channels. This includes protocols for information verification during communications disruptions and mechanisms to communicate and coordinate messaging across state, local, and federal entities. Regular exercise schedules serve as an opportunity to evaluate and update communication strategies, ensuring North Carolina can counter the ongoing threat of disinformation.

Critical Area #3: Logistics and Resource Allocation

The response highlighted weaknesses in North Carolina's resource management system, ranging from the initial processing of requests to the final delivery of supplies. These challenges were exacerbated by technological limitations and vulnerabilities in the supply chain, which significantly affected the effectiveness of the response. The combination of an updated WebEOC resource request module, unprecedented request volumes, and poor system integration created a cascade of issues that strained both personnel and processes throughout the operation. In particular, western North Carolina faced greater difficulties due to geographic challenges and inadequate pre-positioning of resources, ultimately hindering the state's ability to deliver critical supplies efficiently to affected communities.

Key Challenges:

1. Inefficient resource management due to fragmented tracking systems, redundant data entry, inadequate WebEOC training, and overwhelming request volume.
2. Technology system failures stemming from poor system performance, limited integration, low user adoption, and insufficient technical support.
3. Supply chain deficiencies including inadequate pre-positioning, distribution bottlenecks, poor resource visibility, competing resource needs, and inefficient and overwhelmed emergency procurement processes.

Findings

Resource Request and Management Challenges

Resource requests and management presented a significant challenge during the response to Hurricane Helene at every stage, from initial requests to tracking deployed resources. This issue was consistently highlighted by participants in the After-Action Review (AAR), with 58% of survey respondents indicating that resources were not allocated effectively. Field operators felt the process of requesting resources in WebEOC was too arduous. NCEM uses WebEOC (NCSPARTA) to manage resource requests from (local and state) agencies responding to an incident. Once logged, status updates on resource requests were difficult to determine, including changes in the availability, delivery, and timeline for resource requests. Responders received false delivery or fulfillment alerts for resource requests in WebEOC; however, once a request appeared to be fulfilled, those resources were often delayed, never arrived, or were diverted to other locations. Meanwhile, the SEOC received requests that were not completed, lacked pertinent information, or were incorrectly routed. With limited communications field operators, the SEOC staff were left trying to fulfill requests the best they could with incomplete information. Logistics personnel at the state warehouse in Badin were staging and loading resources for distribution and did not have an integrated inventory tracking and management system that integrated or complimented WebEOC’s resource request and tracking mechanism. Warehouse personnel logged equipment and other materials as they were loaded into iCAM to manage the facility’s inventory. As supplies were dispatched, staff manually entered status updates about resource requests in WebEOC. Duplicative data entry across various systems created a significant administrative burden for warehouse staff, who were racing against time to stage, load, and fulfill an unprecedented number of resource requests, while managing dispatch for over 100 semi-trailers.

Participants identified the release of an updated resource request module within WebEOC, just months before the Hurricane Helene activation, as a key contributor to the resource management challenges.

Many localities lacked knowledge on how to effectively use this new feature, even though training was available. Users who were familiar with the interface still faced challenges, both at the local level when making requests and at the state level when receiving and fulfilling those requests. Additionally, users pointed out that the platform was missing essential features, such as effective search, filtering, tagging, and status change notifications. These limitations made it difficult for them to quickly identify and track the progress of logged resource requests. These features were especially critical, as the volume of requests was nearly ten times higher than in previous responses. The high request volume was attributed not only to the scale and severity of the disaster but also to a lack of local awareness about available resources and protocols for requesting them.

Beyond managing its own resources, the state's agencies struggled to handle the influx of volunteers and donations from non-governmental organizations. While volunteers and donations can be critical assets during response operations, failures in intake, inventory, and deployment led to significant delays. Emergency response personnel lacked adequate space, systems, and staffing to receive and redistribute donated items, leaving many supplies in suboptimal conditions. Securing a warehouse to manage donations was difficult, and once one was identified, there was no inventory system to track available supplies. This lack of communication and tracking prevented emergency personnel in the field from accessing needed resources. Staffing shortages at donation sites further hampered the flow of humanitarian assistance into North Carolina. Updates in the state's Emergency Operations Plan between 2023 and 2024 partially contributed to challenges in coordinating volunteers and managing donated items. Recent updates to the roles and responsibilities for the Human Services Functions at the state level created a lack of role clarity and decision space amongst responsible parties.

"There was a log jam of resource requests in logistics. I realize the scale was huge, but there were critical needs that sat or were lost in the shuffle, and there was no established way to track anything once it was ordered from the county. We had to rely on backdoor relationships to get things figured out."

Despite immense challenges, emergency managers and volunteers worked tirelessly, often relying on personal relationships and word-of-mouth networks to deliver aid to North Carolina's hardest-hit communities. Their dedication and ingenuity helped countless people in need, even as they faced overwhelming obstacles. But dedication alone is not enough. Without an effective system to manage and track resources, too many communities were left frustrated, exhausted, and empty-handed in their greatest time of need. Building robust systems for resource management is essential for ensuring more efficient and effective response efforts, so North Carolina can better support its communities when they need it most.

Technology Systems Issues

The scale and complexity of Hurricane Helene exposed significant limitations in the WebEOC platform and overall technology infrastructure supporting NCEM's response operations. While WebEOC is a useful tool for standard emergency activations, many participants found it ill-suited for managing a disaster of this magnitude and duration. Technology platforms and hardware across NCEM and its response partners were not adequately integrated. WebEOC struggled to handle the sheer volume of information it was tasked with processing and displaying daily to thousands of users, resulting in performance issues. The web-based crisis information management system requires significant computing resources, such as server capacity, bandwidth, and memory, to function properly. During the first two days of the Hurricane Helene response, the system was overwhelmed by the large number of users and high data input resulting in performance slowdowns, which impacted the speed and efficiency of response operations.

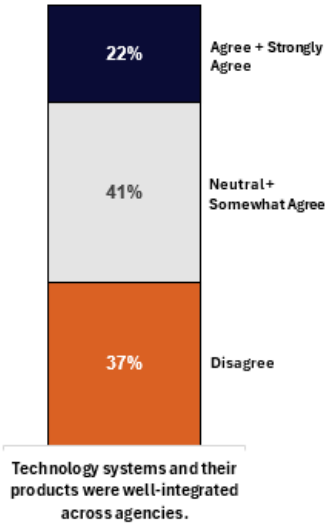


Figure 84: Assessment of Interagency Technology Integration

The integration between different technology systems was inadequate, especially between WebEOC and iCAM, which are used for inventory management and resource tracking. These technical limitations, along with a lack of training completion and insufficient support resources, created significant challenges for effective resource management during the response.

Supply Chain Vulnerabilities

Hurricane Helene's response exposed significant weaknesses in emergency supply chain management, particularly in resource pre-positioning and vendor coordination. The absence of pre-positioned resources in strategic locations and a lack of sufficient vendor agreements severely hampered the timely deployment of critical supplies. Logistics personnel stressed the importance of negotiating pre-positioning packages with vendors to stage essential equipment and resources before disasters. This proactive approach would

save time and money while ensuring resources are readily available rather than forcing North Carolina to compete with other states for limited supplies during a crisis.

"Have the West better prepared with localized assets equipped to handle the first 72 hours [on its own]."

The challenges were particularly pronounced in the western region of the state, where the mountainous terrain and limited access routes complicated the delivery of resources once flooding began. Local emergency managers reported significant delays in receiving essential supplies, such as generators, MREs (Meals Ready-to-Eat), and water, as both primary and alternate delivery routes became impassable. The lack of pre-established staging areas in key geographic locations meant that resources had to be dispatched from central warehouses, which created bottlenecks in distribution and extended delivery times.

Resource tracking presented another challenge during the response operation. The lack of integrated inventory management systems between state warehouses, vendor facilities, and deployed assets made it difficult to maintain accurate visibility of available resources. This resulted in duplicate resource requests and inefficient allocation of critical supplies. Survey respondents noted instances where resources were deployed to areas that had already received support, while other communities experienced extended delays.

Vendor management proved especially problematic during the response. Without comprehensive emergency procurement procedures and pre-negotiated contracts, procurement staff struggled to quickly secure necessary resources at reasonable costs. The situation was exacerbated by competition with neighboring states facing similar emergency needs, leading to price escalation and extended delivery times for critical items. Local emergency managers reported that this competition was particularly acute for specialized equipment like water rescue boats and satellite communication systems.

Critical Area #3: Recommendations

The Hurricane Helene response exposed critical vulnerabilities in North Carolina's resource management infrastructure, technology systems, and supply chain resilience. Our assessment revealed significant challenges in tracking deployed resources, managing staging areas, and maintaining visibility of critical supplies during extended operations. The WebEOC platform struggled to meet the demands of this complex, large-scale emergency, while gaps in system integration created additional burdens on logistics personnel. These challenges were further complicated by limited pre-positioning of resources in strategic locations and insufficient vendor agreements, particularly affecting western regions of the state.

Addressing these interconnected issues requires a comprehensive approach that leverages modern technology, streamlines processes, and builds robust supply chain capabilities.

The following priority recommendations and actions emerged from the assessment:

1. **Enhance resource management capabilities** to strengthen operational visibility and control through comprehensive accountability and efficient resource utilization throughout deployment cycles via technology-enabled resource request tracking, automated inventory tracking and reordering protocols for critical supplies.
2. **Integrate technological enablers of operations and logistics functions**, beginning with WebEOC's resource request capabilities and integration between WebEOC, iCAM, and related systems, supported by comprehensive staff training programs and dedicated technical support teams to ensure consistent system utilization during crisis response.
3. **Increase supply chain resilience** through expanded identification of strategic pre-positioning locations across western North Carolina and standardization of staging area procedures, creation of more pre-negotiated procurement agreements, and implementation of redundant communication protocols to maintain operations during network disruptions.

Recommendation Summary Statements

Recommendation #1: Resource Management Capabilities

A comprehensive overhaul of resource management systems and procedures is essential to address the tracking and coordination challenges experienced during Hurricane Helene. Prioritizing the implementation of technology-enabled solutions such as Global Positioning System (GPS) tracking for deployed resources is crucial, as operations staff reported they often lacked information about the location of assets. This tracking system should be integrated into a unified resource dashboard, providing real-time visibility of resource locations and status.

To close the critical gaps seen during the incident, standard operating procedures (SOPs) for resource tracking must be created and adopted across all agencies and jurisdictions. These SOPs should establish processes for deploying, tracking, and recovering resources while ensuring field teams are monitored for accountability and safety at every step.

Standardized procedures should be developed for all temporary logistics sites to enhance staging area management and address challenges encountered during Hurricane Helene. These procedures should outline clear steps for receiving, storing, and distributing resources. Building relationships with commercial warehouse providers in advance helps ensure additional storage can be secured quickly during emergencies. Regular training exercises should also be conducted to familiarize personnel with these procedures and improve response readiness.

Recommendation #2: Integrate Technological Enablers of Operations and Logistics Functions

The NCSPARTA platform powered by WebEOC requires significant upgrades to meet the demands of complex, large-scale emergency operations. Within the system's resource request module, search and filtering capabilities should be enhanced to improve user experience and platform effectiveness, and system performance for the platform overall should be optimized to handle peak operational loads. Furthermore, a comprehensive review and requirements gathering should be conducted to better understand user experiences during these activations, to help direct and determine priority areas for improvement and to ensure the system is as responsive as possible to user needs in future activations.

System integration efforts should focus on creating seamless data flow between WebEOC, iCAM, and other critical management systems, with prioritized development of dashboarding capabilities for all critical management systems. This integration should be supported by automated data-sharing protocols and system redundancy to ensure continuous operations during communication disruptions. A unified data platform should be developed to provide a single source of truth for resource status and location information.

A comprehensive technology training program should be implemented and incentivized or required to familiarize staff with existing processes and tools. This program should include user-friendly documentation, regular system testing protocols, and the establishment of a dedicated support team to assist users during emergency operations.

Recommendation #3: Increase Supply Chain Resilience

To strengthen supply chain resilience, NCEM should identify strategic prepositioning throughout western North Carolina to reduce the geographic challenges posed by Helene. Staging areas pre-positioning should include comprehensive vendor management programs. Part of these vendor management programs would negotiate pre-positioning packages with vendors to stage essential equipment and resources in advance of a disaster, which should include specific provisions for emergency resource acquisition and deployment.

A robust vendor management system should be implemented to maintain relationships with key suppliers and ensure rapid access to critical resources during emergencies. This system should include pre-incident vendor agreements with commercial brokers and the American Logistics Aid Network (ALAN), emergency procurement procedures, and vendor performance metrics. ALAN can provide logistics coordination support, including transportation, warehousing, and material handling, to ensure efficient delivery of essential supplies. They also help build cross-sector relationships and offer educational resources to enhance disaster response and recovery efforts. The development of these agreements should specifically address the challenge of competing with other states for resources during large-scale incidents impacting multiple states.

Real-time inventory tracking capabilities should be implemented across all emergency supply stockpiles and staging areas. This system should include automated reordering protocols triggered by predetermined inventory thresholds, ensuring consistent availability of critical supplies. Regular inventory reviews should be conducted to validate stock levels and condition of items in storage, with particular attention to items with limited shelf life or specific storage requirements.

5 Summary of Action Planning Workshop

On February 3, 2025, McChrystal Group facilitated a workshop for NCEM AAR to align on and validate the findings in a draft version of this report, identify the highest-priority recommendations, and begin action-planning around how to implement them. The workshop allowed 50 individuals who participated in interviews and surveys to not only reflect on their inputs but critically evaluate what realistic next steps are needed to begin effecting change to improve preparation and response operations going forward.

The workshop began with an ignition activity that allowed colleagues to self-identify how they view their roles on the team, which helped everyone get into the right mindset for action planning. After this large group reflection, teams split into three groups to discuss the three Critical Areas to ensure findings were accurately captured, fully represented, and further nuanced as needed. This provided an opportunity for discussion and reflection amongst peers in different functional areas of NCEM and across several SERT partners. Facilitators asked the group the following questions to ensure that findings were fully aligned and representative:

- What key findings stood out and why?
- Are any areas unclear or lacking detail?
- Are there aspects that are missing or not fully captured?
- Do the recommendations seem actionable?

Figure 9: Team notes from discussion of findings in action planning workshop

Following the validation of findings and the identification of the most actionable recommendations, the groups were led through more targeted discussions about the recommendations in the Critical Areas. This conversation focused on action planning for recommendations deemed the highest priority and most tangible. Facilitators encouraged participants to:

- Align around their top 3 recommendations
- Identify Action Steps by breaking the recommendation into specific, tangible actions
- Assign priority based on the "high," "medium," and "low" framework in NCEM's corrective action plan
- Set a timeline for implementing each action step
- Define metrics as a measurable indicator of success and progress

These action planning groups highlighted five recommendations as the highest priority for participants, which groups adapted and elaborated from the recommendations listed above in the report. These included:

1. "Develop team and process standardization to build a culture of preparedness"
2. "Review, enhance, and update logistical processes to support operations"
3. "Establish permanent ESF liaison positions at RCC West"
4. "Create a unified database for information sharing and coordination across all SERT partners"
5. "Identification of other funding sources"

The detailed notes from this action planning exercise for the five recommendations listed above can be found in *Appendix 3: Workshop Action Planning Notes for Top Recommendations.*

Participants returned to the larger group for a discussion of each breakout's conversation of their category. They highlighted insights related to both findings and recommendations. All participants expressed the desire to develop even more tangible actions related to the recommendations discussed.

The workshop ended with a weighted anonymous feedback exercise following a large-group discussion. Each participant was asked to write down their response to the following question anonymously on a notecard: **What's the single most important change that should happen to allow you to work cross-functionally more effectively?**

This question highlights a core theme heard across all groups: "the need for increased and improved communication and collaboration in non-emergency periods, to allow for better cross-functional coordination during emergencies."

The McChrystal Group team collected the responses and randomly redistributed them around the room. Participants were then asked to rate the potential impact of each idea on a scale from 1 to 5, with 1 being the least impactful and 5 being the most impactful. After several rounds of voting and exchanging notecards, the five ideas below emerged as the group's top-rated suggestions:

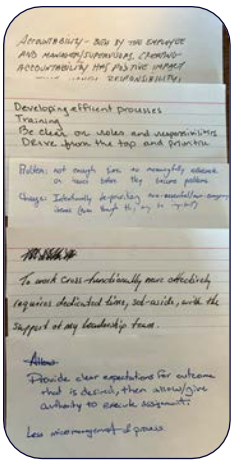


Figure 10: Examples of top weighted anonymous feedback from action

1. "Accountability – both by the employee and manager/supervisors. Creating accountability has a positive impact on time, money, responsibility, culture, etc. The change: Stop tolerating inertia, inefficiencies, and bad behavior."
2. "Developing efficient processes; training; be clear on roles and responsibilities; drive from the top and prioritize"
3. "Problem: Not enough time to meaningfully collaborate on issues before they become problems.
4. "Change: Intentionally de-prioritizing non-essential/non-emergency items (even though they may be important)"
5. "To work cross-functionally more effectively required dedicated time, set aside, with the support of my leadership team."
6. "Provide clear expectations for outcome that is desired, then allow/give authority to execute assignment (less micromanagement of process)"

The weighted anonymous feedback exercise at the end of the workshop not only provided further validation of findings and recommendations in this report, but surfaced three overarching themes:

- **Greater clarity on roles and responsibilities** within the SEOC and between the SEOC, RCC West, and local jurisdictions.
- **More non-emergency collaboration** across functions to improve preparedness for future emergencies.
- **Stronger leadership support and communication** emphasizing the importance of prioritization and empowered execution.

6 Conclusion

The response to Hurricane Helene was one of the most significant tests of North Carolina's emergency management capabilities in recent history. Emergency managers worked tirelessly to solve seemingly impossible problems, save hundreds of lives, and deliver vital aid to thousands of affected residents. However, Helene also exposed critical vulnerabilities in the state's SERT structure, communications and interoperability infrastructure, and logistical systems. These challenges present an opportunity to strengthen North Carolina's emergency management enterprise by systematically improving core capabilities and better supporting the brave men and women on the frontlines of disaster.

The recommendations outlined in this report, validated during the February 3 workshop, address three Critical Areas requiring immediate action. Critical Area #1 highlights the need to reinforce North Carolina's emergency management organizational structure with a stronger operational framework, expanded staffing, improved training, and increased funding. Emergency managers must continue to grow their practical experience and academic knowledge of crisis management. This evolution demands sustained investment in professional development and the creation of robust career pathways that attract, develop, and retain the best people our Nation has to offer.

Even amid a complete communications blackout, North Carolinians rose together, leveraging personal networks to help neighbors, friends, and colleagues. However, communication and collaboration during emergencies cannot be left to chance. Critical Area #2 focuses on harnessing this commitment to each other by enhancing the communications infrastructure and collaboration framework that supports emergency operations. Alternative communication systems used during Hurricane Helene offer promising solutions for future operations. However, stronger interagency coordination protocols and more efficient information management systems must accompany these technical advancements. Emergency managers, first responders, and affected communities need one credible, consistent, and timely source of truth to guide them in the face of disaster. Building this resilient communications framework and fostering seamless collaboration ensures that no community is left behind.

Logistics is often taken for granted, yet even minimal disruptions in supply chains and resource management can have cascading, sometimes irreparable, consequences in a response as complex as Hurricane Helene. Critical Area #3 calls for a comprehensive modernization of North Carolina's logistics and resource management capabilities. In an age where consumers can track packages in real-time, operations staff should never be left wondering where rescue teams or critical supplies are, an oversight that hinders resource management and creates dangerous conditions for first responders. Advanced tracking systems and improved supply chain management, supported by enhanced technology, must meet the complex demands of major emergency operations.

The people of North Carolina will undoubtedly rise from this catastrophic disaster stronger and more united than ever before. Resilience is in their DNA. The state's emergency management system has the same opportunity to emerge stronger, but it will require sustained dedication and leadership at every level. Progress will be driven by individual responsibility for change within functional areas and organizational determination measured against clear objectives. Most importantly, success will depend on the flexibility to adapt to evolving circumstances, ensuring that the implementation strategy creates a more resilient and prepared state.

The stakeholders who participated in this AAR have built great momentum for change; however, the recommendations in this document cannot be viewed as one-time adjustments. Rather, they are the beginning of a continuous process of improvement driven by exercises, training, and future response operations. The goal should not be to build an emergency management system capable of responding to Hurricane Helene but one that can respond to all threats and hazards – now and in the future.

The path forward requires balancing immediate operational needs with long-term strategic improvements. Priority should be given to addressing critical vulnerabilities while building a comprehensive system for lasting enhancement to manage future emergencies. The momentum generated by this after-action review must be sustained through regular progress assessments and continuous dialogue between all stakeholders. Just as North Carolinians stand with strength and integrity in times of adversity, so too must the state's emergency management system evolve with purpose, ensuring no community is left vulnerable and every citizen is supported in their time of need.

Appendix 1: Interview and Survey Questions

Interview Questions

People

1. **Personnel Preparedness and Training:** Were there any gaps in training or resources that affected your readiness?
2. **Cross-Agency Collaboration:** If you faced any collaboration barriers across county, state agencies and external partners, which were most impactful and why?
3. **Preparedness Resource Allocation:** In general, how could resources have been better allocated or staged to best support effective response?
4. **Organizational Trust:** How would you describe North Carolina's Emergency Management ecosystem as it relates to trust—do colleagues within NCEM and amongst its partners trust each other? Do they trust the standard processes that are in place?

Process

1. **Coordination and Communication:** How effective were state-led coordination and communication processes with other agencies, organizations, and local teams? What specific challenges did you encounter?
2. **Process Efficiency:** Where did you deviate from the emergency operations plan guidelines and protocols and why? Did the emergency response process follow the expected guidelines and protocols? What adjustments did you need to make retroactively?
3. **Logistics and Supply Chain Management:** What challenges or delays did you face in receiving or distributing supplies? How did state processes either support or hinder supply chain management?
4. **Prioritization Looking Back:** Think about the most critical piece of preparedness, response, and recovery that went poorly—what should have been done differently?
5. **Prioritization Looking Ahead:** Based on your experience, what's the most important change to be made to the state's emergency response strategy moving forward?
6. **Recovery and Support Systems:** How well are state-supported recovery systems (e.g., shelter, medical support) meeting the needs of impacted communities in your area? What improvements could enhance recovery efforts going forward?

Technology

1. **Technology Utilization:** Which technological tools or platforms were most critical to your role during the response, i.e. WebEOC or otherwise? Were there any specific issues or limitations with these tools? Were there any tools that were unexpectedly useful?
2. **Technology Integration:** How well did different technology systems (e.g., WebEOC, GIS mapping, communication platforms) integrate across agencies? Were there compatibility issues that impacted response effectiveness?
3. **Public Information Dissemination:** When the state shared information with the public, did you observe any challenges or setbacks? What would you change to reconcile those challenges?

Disinformation

1. **Disinformation Challenges:** Did you encounter any instances of disinformation that affected your team's ability to carry out their duties? If so, how did this impact your response or communication efforts?
2. **Preparedness for Disinformation:** In your opinion, was the state adequately prepared to identify and counter disinformation during the hurricane response? What could be done differently to combat disinformation in future activations?
3. **Coordination Against Disinformation:** Was there an established protocol or tool for identifying and responding to disinformation within your agency? How effective was it? Were there specific types of disinformation that were particularly challenging to counter?
4. **Disinformation in Recovery Efforts:** What instances of disinformation have affected response/recovery efforts and/or services? How did state-level leaders rectify disinformation to support your team?

Interview Conclusion

- **Interviewer:** Before we conclude, is there anything else you would like state-level leaders to know about preparedness, response, and recovery for this effort?

Survey Questions

Demographics

1. What function did you support during the response to Hurricane Helene?
    a. Command
    b. Emergency Services
    c. Human Services
    d. Infrastructure
    e. First Responder Communications

f. Administration
g. External Affairs
h. Planning
i. Logistics
j. NC National Guard
k. BEOC Other
l. (Open-end text box, if selected)

Open-ended Response Items

Short essay boxes

1. Knowing what you know now, if you could do only one thing differently in response to Hurricane Helene—*in your role*—what would it be?
2. Knowing what you know now, if you could change one thing about *state-wide preparedness and/or response* for this incident, what would it be?
3. Knowing what you know now and considering the function you supported in this incident, if you could change one thing about *preparedness and/or response* for this incident, what would it be?
4. Please explain 2-3 of the most important aspects of the state's response/operations to sustain for the future.
5. In your role and response to Helene, please briefly describe anything that happened which differed from your expectations.

7-point Agreement Scale Items—Presented as 3 Matrix Grids

1 Strongly Disagree; 2 Disagree; 3 Somewhat Disagree; 4 Neutral; 5 Somewhat Agree; 6 Agree; 7 Strongly Agree

Note: Each matrix grid was followed by an optional open-end asking participants to provide more details on their answers

1. Functional areas within NCEM collaborate in a way that contributes to the organization's overall success.
2. My team articulates how our actions impact other teams.
3. Other teams articulate how their actions impact my team.
4. My team has sufficient connections with the appropriate Senior Staff and/or SERT leaders.
5. My team has sufficient connections to the appropriate functional leads in other sections.
6. Members of my team admit if they made mistakes.
7. NCEM provided the training necessary to sufficiently respond to this disaster.
8. NCEM provided my team with the resources necessary to perform our role(s) in this disaster.

9. SERT leaders respect the decisions that my team make.
10. Key decisions were made in time for an effective response.
    a. [Mandatory response to open-ended if neutral or disagree] You do not agree that decisions were made in time for an effective response. If you have not done so already, please provide an example of how decision-making affected your team and/or role.
11. During the disaster, considerations of risk and reward were balanced effectively when making decisions.
12. Resources were effectively allocated in response to Hurricane Helene.
    a. [Mandatory response to open-ended if neutral or disagree] You do not agree that resources were effectively allocated during the response. If you have not done so already, please provide an example describing how and why ineffective resourcing impacted your team.
13. State-supported recovery systems are sufficiently meeting the needs of impacted communities.
14. Technology systems and their products were well-integrated across agencies.
    a. [Mandatory response to open-ended if neutral or disagree] You do not agree that technology systems were well-integrated across agencies. If you have not done so already, please provide an example of how poor technology integration negatively impacted your role.
15. Information regarding the response was shared with the public in a timely manner.
16. Disinformation/Misinformation negatively impacted my team's response efforts.
    a. [Mandatory response to open-ended if agree] You agree that disinformation negatively impacted your team's response efforts. If you have not done so already, please provide an example of how disinformation negatively impacted your role and/or how it can be prevented in future efforts.

5-point Rating Scale Items

☆ Very ineffective; ☆☆ Ineffective; ☆☆☆ Neutral; ☆☆☆☆ Effective; ☆☆☆☆☆ Very effective

Please rate the effectiveness of the following regarding Hurricane Helene:

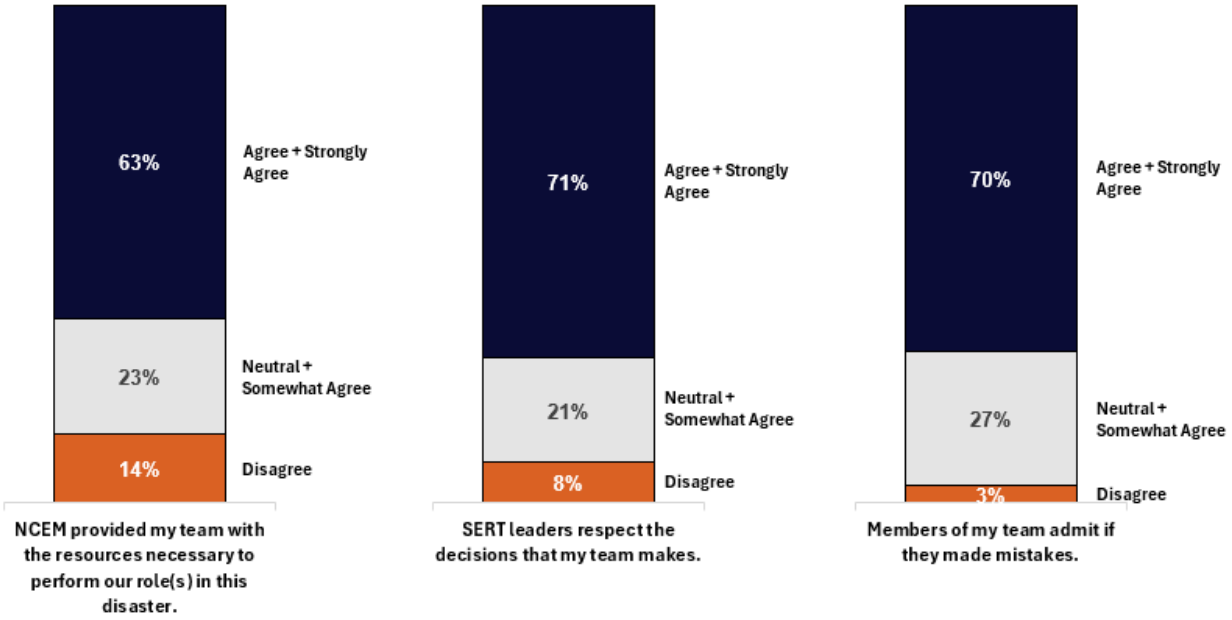
1. NCEM's established communication processes with staff.
2. NCEM's established communication processes with other agencies and organizations.
3. Turnover between shifts, i.e. transition between day shift and night shift.
4. Staffing support within your functional area
5. Decision making process within your functional area.

Multi-Checkbox Items

Participants can check as many options as they want

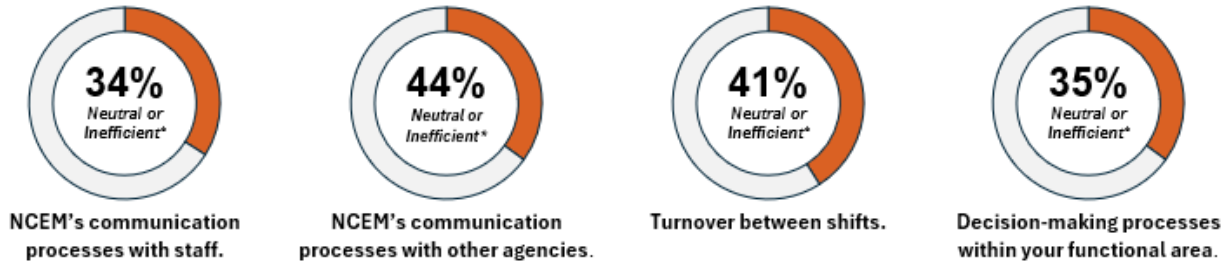
1. Which process(es) and technological tools/platforms do you find **most** valuable? (Select all that apply.)
    a. WebEOC
    b. GIS mapping
    c. Adobe Connect
    d. Microsoft Teams
    e. iCAM
    f. SharePoint
    g. Linktree
    h. Other
2. Which process(es) and technological tools/platforms **least** valuable? (Select all that apply.)
    a. WebEOC
    b. GIS mapping
    c. Adobe Connect
    d. Microsoft Teams
    e. iCAM
    f. SharePoint
    g. Linktree
    h. Other

Appendix 2: Overview of Survey Results

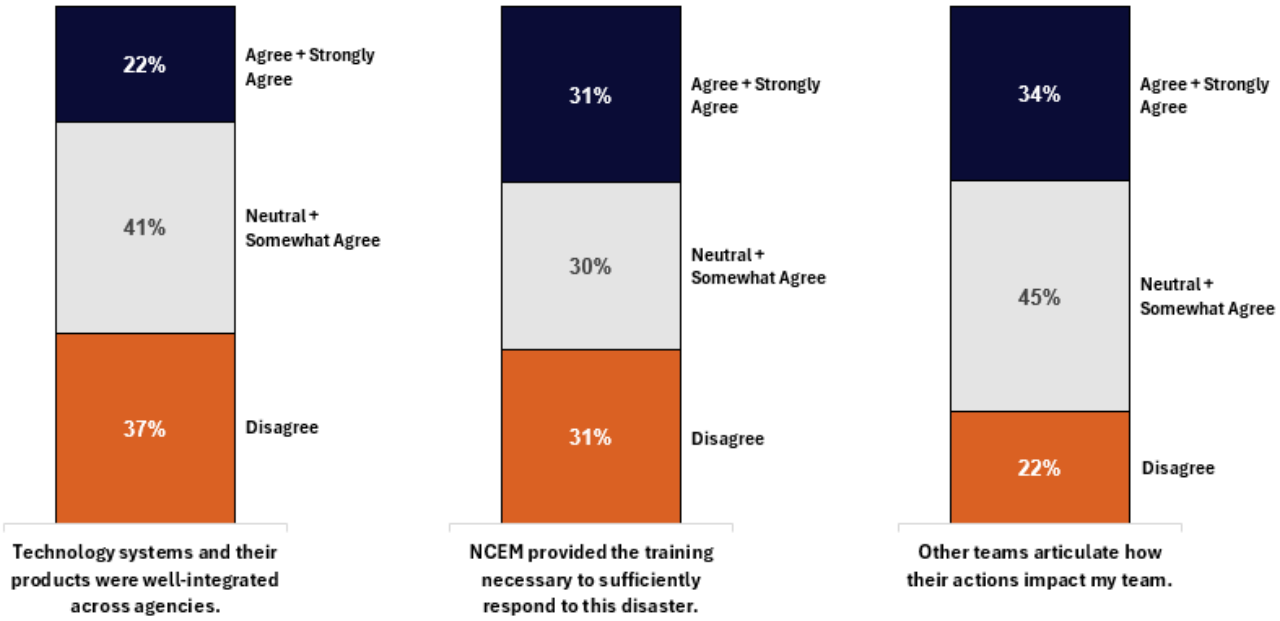


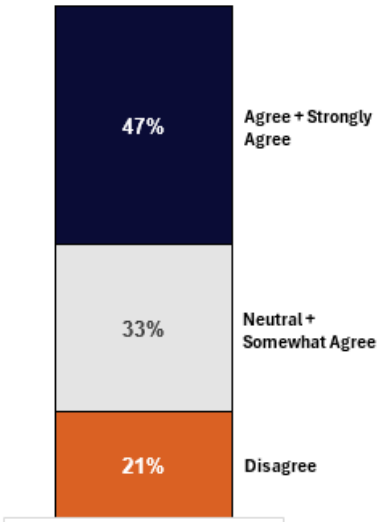
This appendix provides an aggregate snapshot of survey results across the 5-point rating scale and 7-point agreement scale questions in appendix 2 above. Circular charts represent questions that asked participants to rate a statement of process efficacy on a 5-point scale, with a score of 1 star signifying a participant perception of a "very ineffective" process and 5 representing "very effective". Stacked bar charts represent questions that asked participants to agree or disagree with a statement on a scale of 1 to 7, with 1 signifying that a participant "strongly disagrees" and 7 signifying "strongly agrees".

5-Point Rating Scale Survey Results

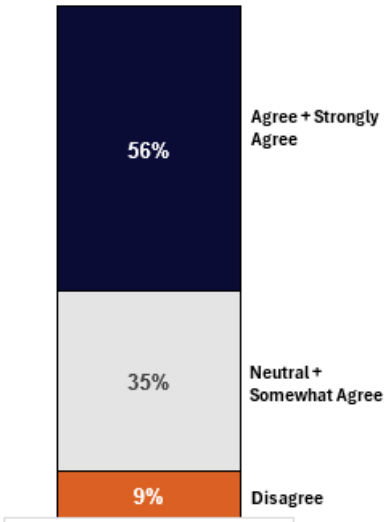


7-Point Agreement Scale Survey Results

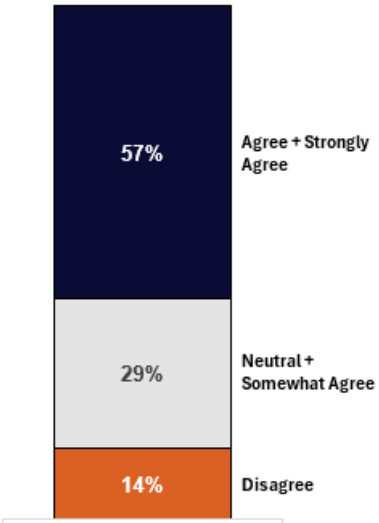




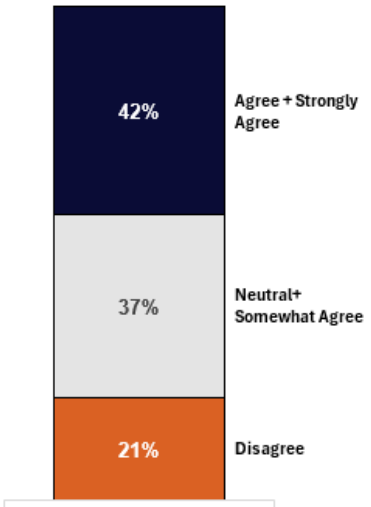
Key decisions were made in time for an effective response.



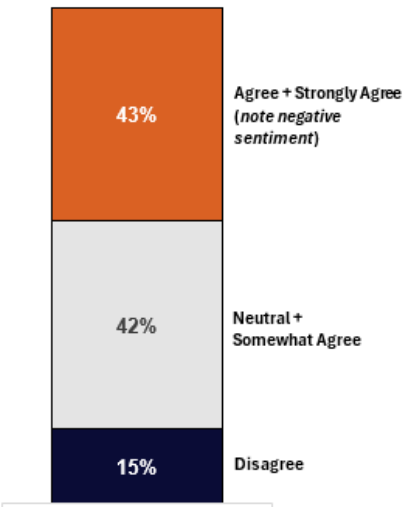
My team has sufficient connections to functional leads in other sections.



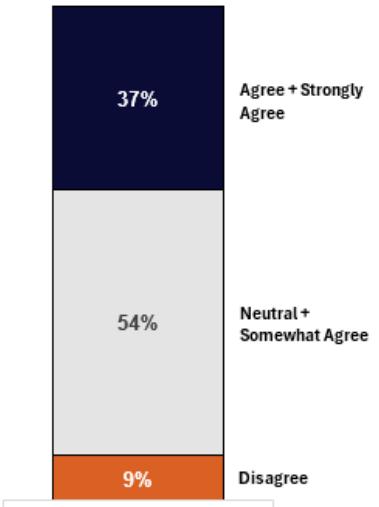
Functional areas within NCEM collaborate toward the organization's overall success.



Resources were effectively allocated in response to Hurricane Helene.



Disinformation and/or misinformation negatively impacted my team's response efforts.



Information regarding the response was shared with the public in a timely manner.

Appendix 3: Workshop Action Planning Notes for Top Recommendations

Recommendation:
Develop team and process standardization to build a culture of preparedness

Action Step	Priority			Timeline				Metrics
Review and clarify SERT team roles and responsibilities to understand authority and capabilities	Hi	Med	Low	Q1	Q2	Q3	Q4	
Identify best practices at all levels	Hi	Med	Low	Q1	Q2	Q3	Q4	
Meet with the NCEM Director to understand his intent and priorities	Hi	Med	Low	Q1	Q2	Q3	Q4	
Review and update EOP with SERT partners with all the above information	Hi	Med	Low	Q1	Q2	Q3	Q4 The current EOP update cycle	
Document key processes to standardize across the agency and SERT utilizing current lessons learned and best practices from partners and locals, i.e. resource requests	Hi	Med	Low	Q1	Q2	Q3	Q4	
ESF Training based on EOP to strengthen roles and responsibilities of SERT	Hi	Med	Low	Q1	Q2	Q3	Q4	
Develop a leadership playbook or Executive Brief for agency heads that support he SERT	Hi	Med	Low	Q1	Q2	Q3	Q4	

Recommendation:
Review, enhance, and update logistical processes to support operations

Action Step	Priority			Timeline				Metrics
Coordinate between Operations and Logistics functions to set expectations for responsibilities in process improvement	Hi	Med	Low	Q1	Q2	Q3	Q4	First meeting set and held by end of February 2025
				End of March				
Review and identify key processes that need to be updated with Ops and Logs cross-functional team	Hi	Med	Low	Q1	Q2	Q3	Q4	Have unified, prioritized list to be reviewed by stakeholders by end of March
				End of March				
Convene key stakeholders to action plan and develop improvement timelines and across Logs and Opps	Hi	Med	Low	Q1	Q2	Q3	Q4	Have 2 key process identified with the project plan to improve them outlined by end of April
				End of April				
Develop process revisions using smaller regularly occurring meetings to audit, implement, and workshop new process updates	Hi	Med	Low	Q1	Q2	Q3	Q4	
Identify training needs and expectation at all levels to develop comprehensive change management and training plan for new process confirmation and rollout	Hi	Med	Low	Q1	Q2	Q3	Q4	Hold 1 evaluation session before June of 2025 Deliver change management and training plan by end of June 2025
Implement training on new processes	Hi	Med	Low	Q1	Q2	Q3	Q4	Complete messaging campaign and all user group trainings by end of August/beginning of Hurricane season
Monitor and assess impact and user acceptance of new processes on a quarterly basis and adjust/update training accordingly	Hi	Med	Low	Q1	Q2	Q3	Q4	

Recommendation:

Establish permanent ESF liaison positions at RCC West

Action Step	Priority			Timeline				Metrics
Determine ESFs with most need of liaison support to prioritize staffing to those functions	Hi	Med	Low	Q1	Q2	Q3	Q4	Written confirmation of ESFs with highest need
				End of Q1				
Determine which current FTEs have generalist knowledge of not only their own but other ESF areas to staff as liaisons	Hi	Med	Low	Q1	Q2	Q3	Q4	Org-wide accessible roster of FTE backgrounds
Determine from existing base of expertise where more would need to be hired to provide liaison support	Hi	Med	Low	Q1	Q2	Q3	Q4	
For short term support, designate existing FTEs as official RCC liaisons in an event.	Hi	Med	Low	Q1	Q2	Q3	Q4	Roster of initial RCC liaisons
For mid-term support, assemble a "reserve corps" of retired NCEM staff/emergency managers from North Carolina across different ESF knowledge areas to come on as contract support staff to serve as RCC liaison during an event	Hi	Med	Low	Q1	Q2	Q3	Q4	Roster of reserve corps contractors and their associated areas of expertise
For long-term support, initiate a hiring process to fill any gaps in expertise or bandwidth across existing teams to be able to support responses as an RCC liaison	Hi	Med	Low	Q1	Q2	Q3	Q4	Position funding approval and job descriptions for new staff
Develop SOP and training procedures and protocols for the reserve corps on the roles and responsibilities of an RCC Liaison – w/ RCC, local, and functional lead input								SOP and training documentation, and 100% completion rate of training on regular cadence

Recommendation:

Create a unified database for information sharing and coordination across all SERT partners

Action Step	Priority			Timeline				Metrics
Review case studies for other states' interoperability and information sharing amongst SERT partners	Hi	Med	Low	Q1	Q2	Q3	Q4	
Identify what agencies should be part of a unified SERT database for information sharing	Hi	Med	Low	Q1	Q2	Q3	Q4	
Create data-sharing agreements for all required participants in external agencies – state and federal	Hi	Med	Low	Q1	Q2	Q3	Q4	
Build the platform, inclusive of dedicated information sharing forums and interactive dashboards to track data, events, assets, etc. in real time	Hi	Med	Low	Q1	Q2	Q3	Q4	
				And in to 2025				
Establish governance: Develop guidelines for information management and sharing best practices (rules on data-sharing, how and where documents can be posted, how information can be shared)	Hi	Med	Low	Q1	Q2	Q3	Q4	
Deploy and train on use of the new platform and accompanying governance of the database	Hi	Med	Low	Q1	Q2	Q3	Q4	
				Following full platform development and governance				
	Hi	Med	Low	Q1	Q2	Q3	Q4	

Recommendation:

Identification of other funding sources

Action Step	Priority			Timeline				Metrics
Attend county meetings to get to know elected officials with the goal of being seen and heard	Hi	Med	Low	Q1	Q2	Q3	Q4	
Research and understand additional available funding stream sources	Hi	Med	Low	Q1	Q2	Q3	Q4	
Build a coalition of multiple entities and agencies in SERT to maximize access to multiple funding sources not open single agencies based on focus area	Hi	Med	Low	Q1	Q2	Q3	Q4	
Share funding – i.e. if an agency has the funds remaining at years end, determine a system to help redistribute	Hi	Med	Low	Q1	Q2	Q3	Q4	
	Hi	Med	Low	Q1	Q2	Q3	Q4	
	Hi	Med	Low	Q1	Q2	Q3	Q4	
	Hi	Med	Low	Q1	Q2	Q3	Q4	
	Hi	Med	Low	Q1	Q2	Q3	Q4	

Appendix 4: Acronym Key

AAR	After-Action Review
ALAN	American Logistics Aid Network
BEOC	Business Emergency Operations Center
COG	Continuity of Government
COP	Common Operating Picture
DIT	Department of Information Technology (referenced as NCDIT - North Carolina Department of Information Technology)
DPS	Department of Public Safety
EMAC	Emergency Management Assistance Compact
EMPG	Emergency Management Performance Grant
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ESF	Emergency Support Functions
GIS	Geographic Information System
GPS	Global Positioning System
iCAM	Inventory Control and Asset Management (software developed and sold through Sydion)
IMT	Incident Management Team
JIC	Joint Information Center
JIS	Joint Information System
LEOs	Low Earth Orbit Satellite Communication Services
NCEM	North Carolina Emergency Management
NCSPARTA	North Carolina State Preparedness and Resource Tracking Application. Runs on WebEOC™ software, is known colloquially as "WebEOC"
PIO	Public Information Officer
RAI	Responder Assistance Initiative
RCC	Regional Coordination Center
SAR	Search and Rescue
SARCOP	Search and Rescue Common Operating Platform
SEOC	State Emergency Operations Center
SERT	State Emergency Response Team
SOP	Standard Operating Procedure
VIPER	Voice Interoperability Plan for Emergency Responders
WebEOC	“Web Emergency Operations Center” (software developed and sold through Juvare)

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