

# Lowcountry Boil

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## After-Action Report/Improvement Plan

June 14, 2023

The After-Action Report/Improvement Plan (AAR/IP) aligns exercise objectives with preparedness doctrine to include the National Preparedness Goal and related frameworks and guidance. Exercise information required for preparedness reporting and trend analysis is included.

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## EXERCISE OVERVIEW

<b>Exercise Name</b>	Lowcountry Boil
<b>Exercise Date</b>	March 14-15, 2023
<b>Scope</b>	This exercise is a tabletop exercise, planned over a 2-day period. Exercise play is limited to NOAA and invited Charleston city and county agencies with a stake/role in extreme heat events that impact the Charleston area (hereafter referred to collectively as “Charleston”).
<b>Mission Area</b>	Mitigation & Response
<b>Core Capabilities</b>	Threat/Hazard Identification; Community Resilience; Communication
<b>Objectives</b>	<ol style="list-style-type: none"> <li>1. Better understand heat, heat risk, and identify the existing roles, responsibilities, and resources of exercise participants that address heat and its impacts in the context of Charleston.</li> <li>2. Identify and strengthen pathways of communication across and within organizations and community groups related to high heat and heat risk to ensure that the health risks of high heat are being communicated to sectors, communities, and individuals.</li> <li>3. Identify critical gaps in our understanding of heat impacts and solutions in the Charleston area.</li> <li>4. Recommend solutions (action Plan for intervention, remediations) for both short (1-2 years) and longer-term (10-15 years) that can occur at various social levels (individual, community, municipality, etc.).</li> </ol>
<b>Threat/Hazard</b>	Extreme and prolonged heat event
<b>Scenarios</b>	<p><b>Weather Timescale:</b> An early season heat event in the Charleston area poses threats to residents, tourists, as well as those experiencing homelessness. This event causes many heat-related illnesses.</p> <p><b>Climate Timescale:</b> A prolonged heat event lasting 15 days has been predicted and projected for future summers. This poses threats to residents that are homeless, outdoor workers, and stresses critical infrastructure.</p>
<b>Participating Organizations</b>	<p><b>Academic:</b> University of South Carolina, Medical University of SC</p> <p><b>City:</b> City of Charleston</p> <p><b>Community Organizations &amp; Non-profits:</b> Climate Adaptation Partners; SC Sea Grant Consortium, The Citadel</p> <p><b>County:</b> County Emergency Management Office</p> <p><b>Federal:</b> Health and Human Services (HHS)/Occupational Health and Safety Administration (OSHA), National Oceanic and Atmospheric Administration</p> <p><b>State:</b> South Carolina State Climate Office</p>
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## ANALYSIS OF CORE CAPABILITIES & OBJECTIVES

Aligning exercise objectives and core capabilities provides a consistent taxonomy for evaluation that transcends individual exercises to support preparedness reporting and trend analysis. Table 1 (on page 3) includes the exercise objectives, aligned core capabilities, and performance ratings for each core capability as observed during the exercise and determined by the evaluation team.

Core Capability	Objective	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Threat/Hazard Identification	Better understand heat, heat risk, and identify the existing roles, responsibilities, and resources of exercise participants that address heat and its impacts in the context of Charleston		✓		
Communication	Identify and strengthen pathways of communication across and within organization and community groups related to high heat and heat risk to ensure that the health risks of high heat are being communicated to sectors, communities, and individuals.		✓		
Threat/Hazard Identification	Identify critical gaps in our understanding of heat impacts and solution in the Charleston area.		✓		
Community Resilience	Recommend solutions (action Plan for intervention, remediations) for both short (1-2 years) and longer-term (10-15 years) that can occur at various social levels (individual, community, municipality, etc.).		✓		

**Table 1. Summary of Core Capability Performance**

**Ratings Definitions:**

- Performed without Challenges: The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.
- Performed with Some Challenges: The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.
- Performed with Major Challenges: The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.
- Unable to be Performed: The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).

*Note: The following information provides an overview of the performance related to each objective of this exercise.*

## **Objective 1: Better understand heat, heat risk, and identify the existing roles, responsibilities, and resources of exercise participations that address heat and its impacts in the context of Charleston.**

The strengths and areas for improvement for each objective are described in this section.

### **Strengths**

The partial capability level can be attributed to the following strengths:

**Strength 1:** Beginning in 2022, the Charleston area developed and held their first Heat Awareness Week designed to remind people of the threat and impacts of heat as well as highlight the life-threatening illnesses caused by heat.

**Strength 2:** Through various organizations, research and data exists to demonstrate how heat will increase over the years and how it will impact the Charleston area. This information is available to help decision-makers to determine the smartest approach to planning. The data and models collected so far have been accurate up to this point, so experts are confident that the projections for the future will stand true.

**Strength 3:** NOAA's National Weather Service (NWS) and their Weather Ready Nation initiative provide critical weather-related information, including the 8-14 day Outlook, to the Charleston area stakeholders, decision-makers, residents, and tourists to ensure everyone is aware of any hazardous weather that could impact the area.

**Strength 4:** Through local community resources such as the Hope Center, those most at-risk and impacted by heat (and other hazards) in the Charleston and surrounding areas have access to resources designed to help.

### **Areas for Improvement**

The following areas require improvement to achieve the full capability level:

**Area for Improvement 1:** Although Heat Awareness Week will continue annually, those involved in planning in the Charleston area are looking for additional ways to increase participation and engagement from agencies and organizations that have a role in heat, as well as ways to increase and spread the vital heat-related information through this awareness week event.

**Area for Improvement 2:** Despite the evidence and data from experts related to the increase of heat-related issues in the Charleston area, it seems as if local stakeholders, leaders, etc. lack a sense of salience when making decisions about long-term heat-related decisions for the area. This includes, but is not limited to, impacts such as loss of tourism and related revenue, closing rooftop restaurants, etc.

**Area for Improvement 3:** During the exercise, it was noted that the criteria for Heat Advisories and Heat Warnings may not be at a reasonable range and the impacts of heat are evident with temperatures lower than those called out for the Advisory and Warnings. (*Note: in the*

*Charleston area, the criteria for a Heat Advisory (as of this document's date) are a heat index of 105-114° F prior to July 1; 110-114° F July 1 or later. The Heat Warning criteria is a heat index of 115° or higher.)*

**Area for Improvement 4:** Although there are local community resources in the area such as the Hope Center, overall, there is a lack of resources, funding, policies, and plans in-place and available currently to create additional resources for the most at-risk populations. The most at-risk populations identified during the exercise include the homeless, seniors, Hispanic population, prisoners, children, outdoor workers, those with pre-existing health conditions, energy insecure, and the boating community, to name a few.

## **Objective 2: Identify and strengthen pathways of communication across and within organizations and community groups related to high heat and heat risk to ensure that the health risks of high heat are being communicated to sectors, communities, and individuals.**

The strengths and areas for improvement for each objective are described in this section.

### **Strengths**

The partial capability level can be attributed to the following strengths:

**Strength 1:** Organizations and other who have a stake in heat activities work diligently to reach area populations (especially vulnerable ones) to bring awareness to heat, early season heat, and the effects it can have on people in various situations.

**Strength 2:** Many organizations and agencies in the area provide heat-related information to those populations most at-risk in an effort to inform as well as protect, as much as possible.

**Strength 3:** Throughout the Charleston area, there is a plan in-place to disseminate critical information (through Intergov), which utilizes resources such as reverse 911 calls and the Public Information Officer.

### **Areas for Improvement**

The following areas require improvement to achieve the full capability level:

**Area for Improvement 1:** Through exercise discussion, it was highlighted that in the Charleston area, there is a lack of overall awareness about heat and heat-related impacts. It was noted that heat is a “silent” hazard (compared to more visible ones such as hurricanes, etc.). There was significant discussion to improve general heat literacy.

**Area for Improvement 2:** Exercise participants identified the lack of consistent heat-related messages throughout Charleston and the surrounding areas. Those responsible for messaging requested consistent and attention catching messaging.

**Area for Improvement 3:** Heat-related information is not reaching those who are most at-risk, and policies are missing that would protect residents working outside, and those serving the visiting public.



## **Objective 3: Identify critical gaps in our understanding of heat impacts and solutions in the Charleston area.**

The strengths and areas for improvement for each objective are described in this section.

### **Strengths**

The partial capability level can be attributed to the following strengths:

**Strength 1:** As a mitigation effort to reduce the impacts of heat, Charleston and surrounding areas have implemented the use of tree canopies as well as on-staff experts (arborists) who ensure those tree's continued growth and health.

**Strength 2:** As heat continues to become more prevalent and impacts increase, other "hot" cities are documenting and sharing their research and data in an effort to increase knowledge about heat and help those make informed decisions.

**Strength 3:** Throughout the exercise, it was noted that in cold temperatures/weather, Charleston and surrounding areas utilize various locations as warming centers to ensure those most at-risk are able to be protected from the cold.

**Strength 4:** There are policies in place in the city and in the county of Charleston for new construction/infrastructure and even animals (horse-drawn carriages) when facing extreme heat.

### **Areas for Improvement**

The following areas require improvement to achieve the full capability level:

**Area for Improvement 1:** There are tree canopies in the area, however, they are located in the wrong areas to best combat and mitigate the effects of heat. In addition, three arborists are not enough to ensure the health of all the trees in Charleston.

**Area for Improvement 2:** Although other cities are actively sharing their heat data, there is still much to learn and it was highlighted during this exercise that there is a big gap in data related to people and medical/health impacts as well as those related to economics. Additional data is needed to compare impacts and changes to the baseline information.

**Area for Improvement 3:** Despite the development and utilization of warming centers in the winter, Charleston does not use these same locations as cooling centers in the warmer months. It was brought up that Charleston currently does not have any formal cooling centers, besides public facilities such as libraries and community centers, which are closed at night. Issues related to establishing cooling centers centered around staffing the centers and adjusting the hours to be most beneficial to those in need.

**Area for Improvement 4:** Despite new development regulations, and policies to protect outdoor animals from extreme heat, those same policies are not in place for outdoor workers or residents that live and/or work in the hottest areas of the city and county (e.g., rooftops).

## **Objective 4: Recommend solutions (action Plan for intervention, remediation) for both short (1-2 years) and longer-term (10-15 years) that can occur at various social levels (individual, community, municipality, etc.).**

The strengths and areas for improvement for each objective are described in this section.

### **Strengths**

The partial capability level can be attributed to the following strengths:

**Strength 1:** Stakeholders in the area are already working together to outline heat-related mitigation activities that will help to reduce the impacts of heat throughout Charleston and the surrounding areas.

**Strength 2:** Charleston and the surrounding areas have created a network of stakeholders who work well together on many efforts to reduce the impacts of extreme heat.

**Strength 3:** Some local stakeholders are already involved in future building efforts to help educate and promote mitigation activities that will both satisfy the builders/investors as well as help to keep the natural cooling resources available.

**Strength 4:** Prior to and as part of this exercise, Charleston officials and organizations recognized the “saliency” of heat as a hazard to those in the area.

### **Areas for Improvement**

The following areas require improvement to achieve the full capability level:

**Area for Improvement 1:** In this exercise, it was addressed that Charleston and the surrounding areas do not have a comprehensive heat management plan. The completion of this plan will help the affected areas identify, plan, and execute both short- and long-term intervention actions that address heat impacts.

**Area for Improvement 2:** The continued improvement of relationships with area organizations that provide heat-related mitigation services to the community is vital to ensure the information, resources, and any other critical messaging is shared widely. Additionally, including other local community organizations in the planning is critical.

**Area for Improvement 3:** Through the larger project with which this exercise is associated, some Charleston area communities were selected for more in-depth analysis related to heat and its impacts. Of particular note, as Charleston continues to grow (structurally), the tall buildings block the wind coming off of the river, which leads to higher temperatures throughout certain areas of the city.

**Area for Improvement 4:** Based on the recognition of heat being a hazard to those in the Charleston area, officials and organizations are considering additional engagements with City Council on heat hazard awareness and policies.

## APPENDIX A: IMPROVEMENT PLAN

This Improvement Plan (IP) has been developed specifically for those who participated in The Lowcountry Boil exercise conducted March 14-15, 2023. These documented recommendations are based on the participant’s discussions that occurred during the exercise.

Objective	Issue/Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Better understand heat, heat risk, and identify the existing roles, responsibilities, and resources of exercise participants that address heat and its impacts in the context of Charleston.	1. Need to increase heat awareness with engagements and attendance from agencies and organizations that have a role in heat, as well as ways to increase and spread the vital heat-related information.	a. Continue to research new partners in the area who have a role/stake in heat-related mitigations and activities.				
		b. As identified, schedule times to meet and share common links and future planning possibilities.				
		c. Explore additional avenues to promote and share the annual Heat Awareness Week as well as associated information.				
		d. With the early season heat threats, continue to schedule the Heat Awareness Week earlier than June 1 (beginning of Heat Season) each year.				
		e. Brainstorm (or research info from other cities) for ideas to grow the Heat Awareness Week and associated activities.				

	<p>2. Despite the evidence and data from experts related to the increase of heat-related issues in the Charleston area, it seems as if local stakeholders, leaders, etc. lack a sense of salience when making decisions about long-term heat-related decisions for the area.</p>	<p>a. Continue through the process to officially add heat to the Hazard Mitigation Plan and Emergency Operations Plan no later than the next revision date.</p>				
		<p>b. Identify key stakeholders, leaders, and/or City Council members and schedule meetings to begin a heat-focused discussion and share information and data.</p>				
	<p>3. During the exercise, it was noted that the criteria for Heat Advisories and Heat Warnings are not at a reasonable range and the impacts of heat are evident with temperatures lower than those called out for the Advisory and Warnings.</p>	<p>a. For those in the community with a role in heat mitigation, activities, etc., be sure to contact the Warning Coordination Meteorologist (WCM) at the NWS to be added to the heat (and other severe weather) briefing list.</p>				
		<p>b. Explore/research other locations that might have changed the degree in which heat advisories and warnings are issued. Determine if lowering the degree and increasing the messaging correlates negatively and leads to complacency.</p>				
		<p>c. Improve heat literacy including the symptoms of heat exhaustion and heat stroke.</p>				

		d. Improve messaging by being visually appealing and understandable to all.				
		e. Continue to explore the benefit of incorporating Wet Bulb Globe Temperatures into NWS products and information.				
	4. Although there are resources in the area such as the Hope Center, overall, there is a lack of resources, funding, and plans in-place and available currently to create additional resources for the most at-risk populations.	a. Continue to build a relationship with local, regional, and federal FEMA representatives and discuss the impacts of heat on individuals, infrastructure, and the economy to determine the process forward that would allow more federal resources to assist.				
		b. Consider adding an icon on the Charleston Office of Resilience homepage that identifies heat as a Featured Initiative and provide links to valuable information.				
		c. For those agencies that have a role/stake in heat-related activities and mitigation efforts, consider researching potential heat-focused grant opportunities that could benefit Charleston and the surrounding areas by supplementing the current resources and funding available.				

Objective	Issue/Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
<p>Identify and strengthen pathways of communication across and within organizations and community groups related to high heat and heat risk to ensure that the health risks of high heat are being communicated to sectors, communities, and individuals.</p>	<p>1. Through exercise discussion, it was highlighted that in the Charleston area, there is a lack of overall awareness about heat and heat-related impacts. It was noted that heat is a “silent” hazard (compared to more visible ones such as hurricanes, etc.).</p>	<p>a. Work to “humanize” heat by creating short films, podcasts, etc. where real community members share their stories of how heat impacted them (similar to how hurricanes or tornadoes impact people).</p>				
		<p>b. Work within the community to identify civic and community groups that can become champions to help share heat-related information to a wider audience.</p>				
		<p>c. Partner with trusted people/groups in the area to help spread the word about the real risks and impacts of heat.</p>				
		<p>d. Continue community engagement by creating more opportunities to meet the people where they are and share heat information.</p>				
		<p>e. Explore the feasibility of heat-related community service options for school-aged youth.</p>				
		<p>f. While expanding the network of heat-related champions, determine if there is a connection/link with STEM education.</p>				

	2. Exercise participants identified the lack of consistent heat-related messages throughout Charleston and the surrounding areas.	a. Coordinate agencies and organizations in the area who normally share heat-related messaging and work together prior to and during heat events to ensure the message is as consistent as possible. <i>E.g., create messages and share virtually/electronically with key communications staff before sharing with public.</i>				
		b. Ensure vital heat messages and communications are properly translated from English to Spanish and other prominent languages in the area.				
		c. Share heat information through the governor's presentation.				
	3. Heat-related information is not reaching those who are most at-risk, and policies are missing that would protect residents working outside, and those serving the visiting public.	a. Regularly review lists of trusted partners within the community to ensure critical heat-related information is being shared with the correct messengers that will get it to the vulnerable populations.				
		b. As noted above, continue to translate messages and communications into the predominate languages spoken in the area. If needed, check census and other records/resources to help determine new trends.				

Objective	Issue/Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Identify critical gaps in our understanding of heat impacts and solutions in the Charleston area.	1. Through exercise discussion, it was noted that although there are in fact tree canopies in the area, they unfortunately are located in the wrong areas to best combat and mitigate the effects of heat. In addition, three arborists are not enough to ensure the health of all the trees in Charleston.	a. If not already done, assess the Charleston and surrounding areas to determine the most important/critical areas where tree canopies are needed.				
		b. Once determined (and when funding is available), work with city and county leaders to prioritize trees in those areas, as appropriate.				
		c. Share science-based information with residents of those areas to help them understand the benefits of planting trees.				
		d. Explore ways to help homeowners/landlords pay for any damages related to those trees from other hazards/disasters (e.g., supplemental funds, compensation, etc.) as an effort to encourage them to embrace additional trees being planted.				
	2. Although other cities are actively sharing their heat data, there is still much to learn and it was highlighted during this exercise	a. Work with local hospitals, emergency rooms, doctor's offices, walk-in clinics, etc. to determine the feasibility of adding heat-related health impact questions to the intake process. Note:				



	<p>that there is a big gap in data related to people and medical/health impacts as well as those related to economics. Additional data is needed to compare impacts and changes to the baseline information.</p>	<p>this would require a certain level of care as not to violate HIPAA protections.</p>				
		<p>b. Explore the option of working with local morgues and medical examiners to add criteria and/or note taking options when deaths have any heat-related components.</p>				
		<p>c. If not already available, work to complete a medical study looking at how heat impacts and changes compare to baselines.</p>				
		<p>d. If not already available, work to complete an economic study looking at how heat impacts and changes compare to baselines.</p>				
	<p>3. It was brought up that Charleston currently does not have any formal cooling centers, besides public facilities such as libraries and community centers, which are closed at night.</p>	<p>a. Explore the reasons why locations utilized as warming centers are not or can't be used as cooling centers.</p>				
		<p>b. Coordinate with community partners and champions to brainstorm and identify additional and non-traditional locations that could be used as cooling centers.</p>				

Objective	Issue/Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Recommend solutions (action Plan for intervention, remediation) for both short (1-2 years) and longer-term (10-15 years) that can occur at various social levels (individual, community, municipality, etc.).	1. In this exercise, it was addressed that Charleston and the surrounding areas do not have a comprehensive heat management plan. The completion of this plan will help the affected areas identify, plan, and execute both short- and long-term intervention actions that address heat impacts.	a. Identify key representatives needed to create a comprehensive Heat Management Plan.				
		b. Explore and research other heat plans from cities that experience similar extreme heat events (e.g., Miami, FL).				
		c. Continue through the process to create a comprehensive Heat Management Plan specifically dedicated to the Charleston and surrounding areas.				
	2. The continued improvement of relationships with area organizations that provide heat-related services to the community is vital to ensure the information, resources, and any other critical messaging is shared throughout.	a. On a regular basis, research any potentially new organizations in the Charleston and surrounding areas that have a mission, stake, role, etc. in heat-related events.				
	2. The continued improvement of relationships with area organizations that provide heat-related services to the community is vital to ensure the information, resources, and any other critical messaging is shared throughout.	b. Identify additional forums where area heat-related stakeholders, organizations, etc. can regularly come together to build relationships and work on ways to improve the heat situation in the Charleston area.				
	3. Through the larger project with which this exercise is associated, some Charleston area communities were selected for more in-	a. Research groups, committees, etc. associated with these building projects and determine a priority to be able to effectively use current, limited resources.				

	<p>depth analysis related to heat and its impacts. Of particular note, as Charleston continues to grow (structurally), the tall buildings block the wind coming off of the river, which leads to higher temperatures throughout certain areas of the city.</p>	<p>b. Reach out to the identified groups, committees, etc. related to these building projects and begin to build relationships with the end goal of being part of the decision-making process for each.</p>				
		<p>c. Reach out to subject matter experts (SMEs), as necessary, to share reliable information related to best building practices that meet both the builder/project's needs and help to reduce impacts that increase heat issues in the Charleston and surrounding areas.</p>				
	<p>4. Based on the recognition of heat being a hazard to those in the Charleston area, officials and organizations are considering additional engagements with City Council on heat hazard awareness and policies.</p>	<p>a. Continue to engage City Council on heat hazard awareness and policies aimed to create a safer Charleston for citizens and tourists.</p>				

Objective	Issue/Area for Improvement	Corrective Action	Primary Responsible Organization	Organization POC	Start Date	Completion Date
Misc. Findings	1. Heat Literacy	a. Continue working together to share heat illness information with area populations, including those most at-risk.				

## APPENDIX B: EXERCISE PARTICIPANTS

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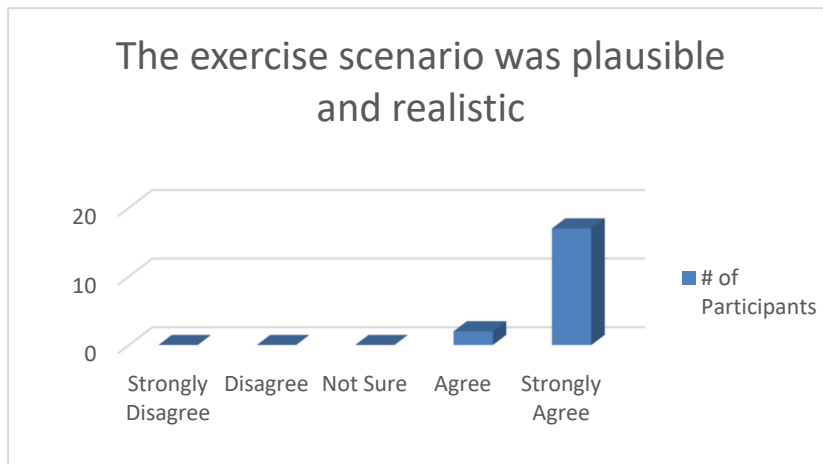
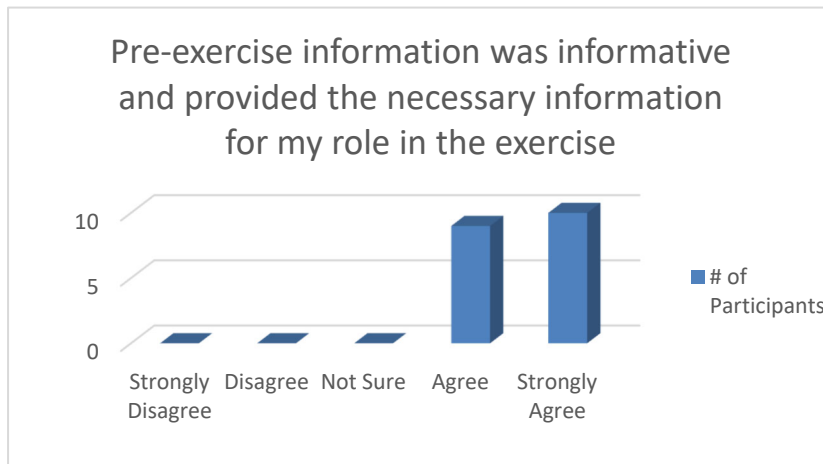
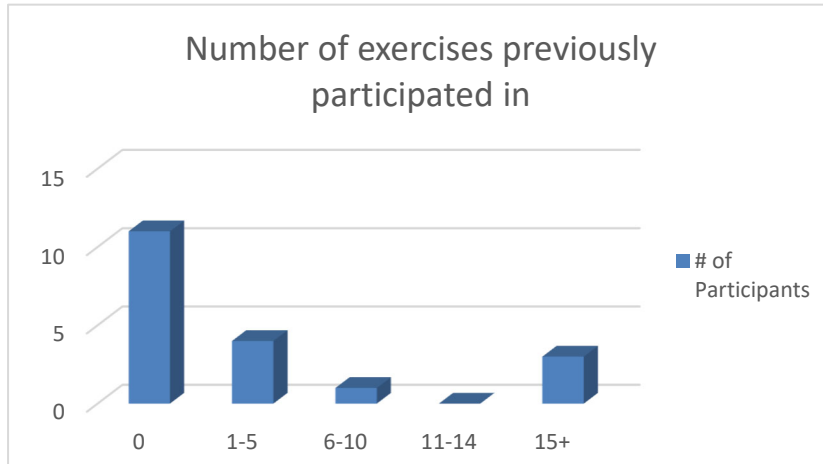
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*\*Denotes Exercise Design Team members.*

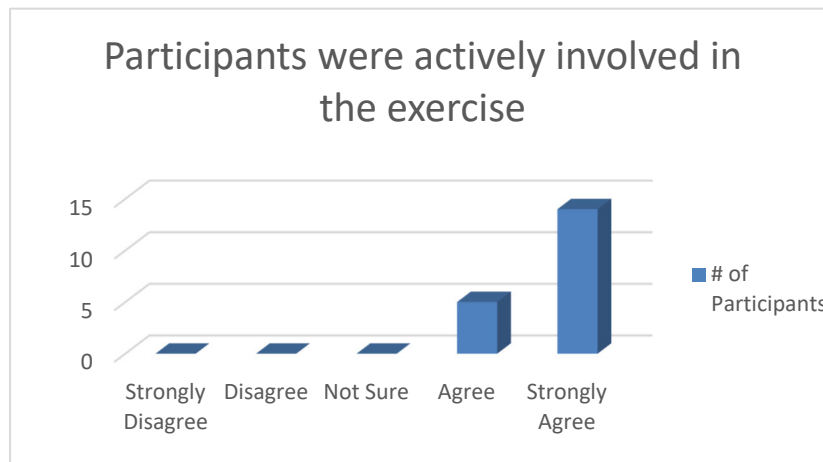
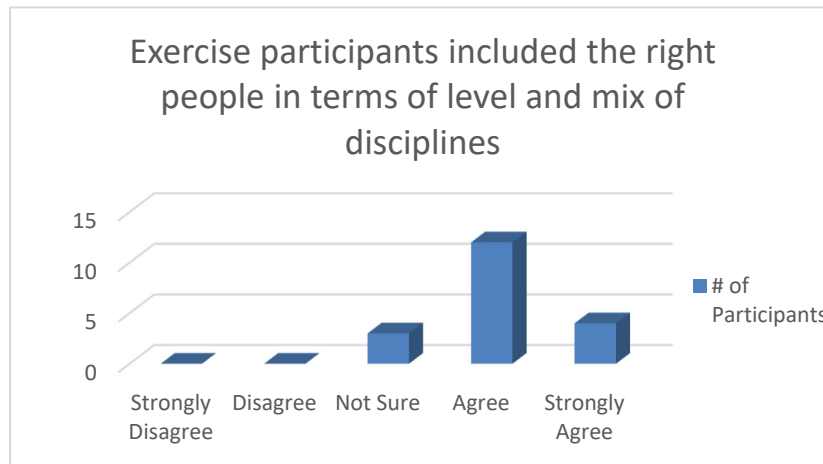
## APPENDIX C: ACRONYMS

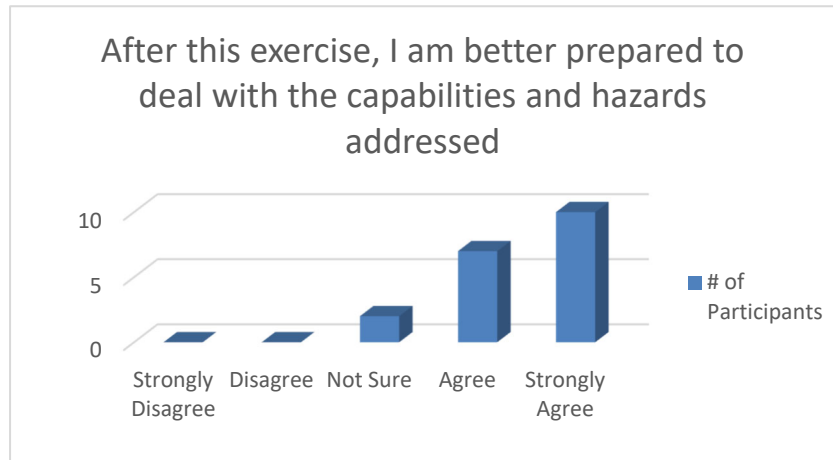
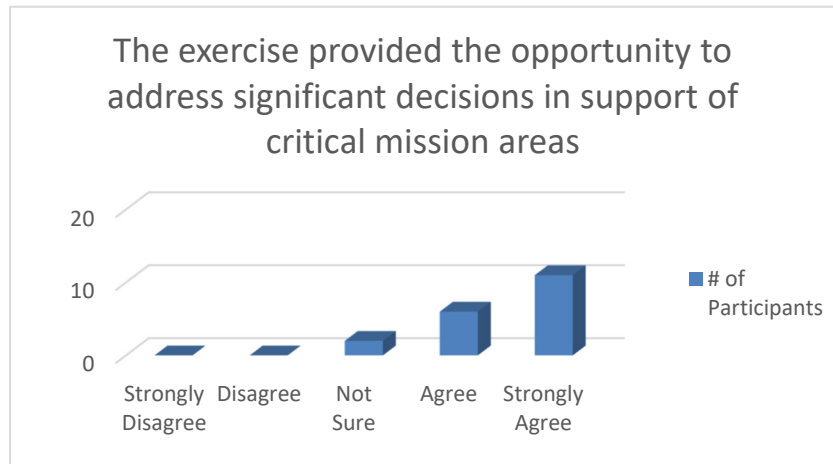
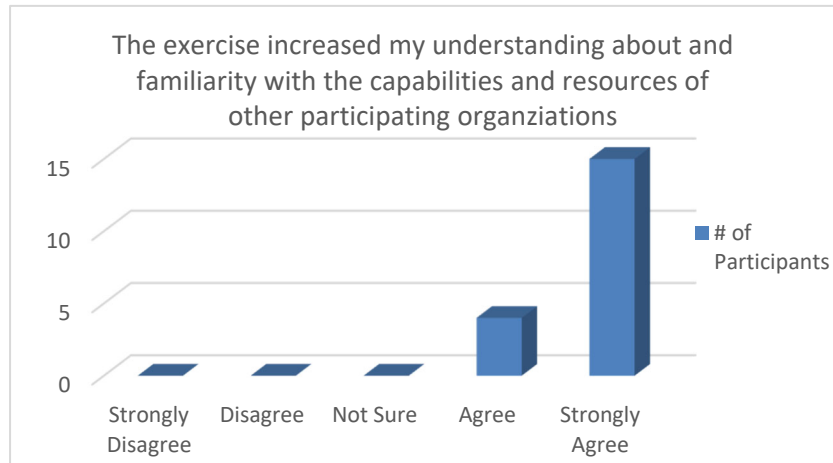
Acronym	Term
AAR	After Action Report
FEMA	Federal Emergency Management Agency
FL	Florida
HHS	Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act
IP	Improvement Plan
NIHHIS	National Integrated Heat Health Information System
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NWS	National Weather Service
OSHA	Occupational Safety and Health Administration
SC	South Carolina
SECART	Southeast and Caribbean Regional Collaboration Team
SME	Subject Matter Expert
STEM	Science, Technology, Engineering, and Math

## APPENDIX D: PARTICIPANT FEEDBACK









*Note: The following views, thoughts, and opinions expressed in the text below belongs solely to the author, and not necessarily to the organization, committee, or other exercise participants.*

**I observed the following strengths during this exercise:**

- Plausible, well-formulated event to be considered
- Great collaboration among different organizations working towards similar goals
- People connecting and talking across organizations and disciplines
- Great interaction among the participants and the exercise strived to come up with actionable items for everyone to work on. This is really important, since it wasn't just "talk", it was about "action" too.
- Expertise and enthusiasm
- Brilliant people in the room
- Facilitation was excellent. Instructions and expectation were clearly communicated, and time was well managed. I also think the simulated scenario briefings were well done and set the appropriate context for the exercise. I think the Charleston cohort came to the event with an open and inclusive attitude, which contributed to productive sessions.
- It was very helpful to have experts presenting information at the beginning so that participants were as informed as possible going into discussions.
- Interagency Coordination, Open and engaging dialogue between participants, Networking and relationship building
- Awareness that collective public and citizen understanding of extreme heat impacts is low and needs to be increased / addressed.
- Understanding the roles of other stakeholders
- The ability to move ideas into a plan
- There was great discussion and feedback given when the issue was presented in a relatable way.
- Good exchange and development of actionable items
- There are far more resources readily available and useful to the heat work than I previously understood. Also, there are more colleagues to draw into the Heat Team, with generous and thoughtful feedback about ways to help.
- Sharing of knowledge
- Collaboration between organizations

**I observed the following areas for improvement during this exercise:**

- Would have been helpful to see more community member input from those that are not involved in local/state governance.
- Day 2 was a little long and people seemed more distracted and tired. Could make sections shorter and therefore snappier
- should be open to more staff across the City, especially those who work with vulnerable populations (rec, Mayor's office for aging, children youth and families)
- More attendees and from a wider range of disciplines would have been helpful. Example: it would have been potentially very helpful to have someone from the media in attendance. The lower attendance may have been due to a relatively short amount of time between the invitation and the exercise itself.
- It would have been nice to have a PR or marketing representative present.

- Need more brilliant people in the room, I think the topic has not hit crucial mode for most
- I observed no critical deficiencies in the event. The only (very minor) suggestion for improvement that comes to mind is the layout of the meeting room. A seminar space might be less conducive to a "roundtable" discussion in breakouts. Having said that, I think the Citadel was gracious in lending their space for the event and the seminar space itself did not undermine the overall experience.
- We had some great discussions, and people provided a lot of context. I feel like it would be useful to steer conversations to actionable items earlier in the process. I felt like the more specific you could get the better, because that would make issues feel more approachable.
- More representation from private sector stakeholders would have been beneficial. The presentations at the beginning were very informative, but they took up a lot of valuable time for exercise decision.
- Awareness, setting forth a pathway for better planning and coordination on heat risk mitigation.
- Some topics that were focused seemed to be duplicative and other topics could've been explored
- Location logistics
- A little more instruction could be provided for the breakout groups.
- It would have been nice to have people from the energy sector and NGOs there.
- Engagement with community groups; more city department and county department participation; direct opportunity to engage more with SCDHEC, Charleston schools, and healthcare service providers.
- Empty seats for relevant participants who were not in attendance

**What specific training opportunities helped you (or could have helped you) prepare for this exercise? Please provide specific course names if possible.**

- None. I think the packet was a good overview. If possible, please send the presentations presented during the two days. There was a lot of great resources.
- Prior research opportunities
- I think the information that was presented the first half of day one could have been presented as a virtual webinar prior to exercise day to leave more time exercise discussion and activities.
- Additional background
- Steps to Resilience Training by CRF/Fernleaf was helpful as were the many activities that NIHHS hosts. Also, it is tremendously helpful to speak with other cities that are farther along on their heat journeys.
- Meetings with Janice and the rest of the heat team

**Which exercise materials were most useful? Please identify any additional materials or resources that would have been useful**

- Discussions on second day focusing on topics from day 1 were well done with lots of engagement.

- Next steps. I think it was really great to make the connections and outline for how we help tackle heat. I really hope the collaboration continues and look forward to seeing what other areas of the nation are doing.
- Statistics
- Scenario
- The briefing document was very helpful.
- I appreciated all of the introductory PowerPoints, as well as the briefing packet.
- Tiger Teams
- All exercise materials were useful. I wish more info was available from public health experts on heat health impacts.
- Data, maps
- Scenario
- Slides and notes from the breakout sessions
- Not sure. I feel like we were not responding to a specific scenario, but to heat concerns in general.
- Climate projections and historical data to localize/contextualize the changes. It would be helpful to overlay flooding and extreme heat areas alongside SVI/EJ to look at cumulative impact. It would also help to have local health experts involved to speak to the work that could be further leveraged.
- Breakout group "results". A finalized document of these would be helpful

**Please provide any recommendations on how this exercise or future exercises could be improved or enhanced.**

- Continue to invite a wide range of backgrounds to the table. It became obvious that a lot of us didn't know what the others were already working on. So, this meeting was extremely helpful in bringing us together to help each other. If possible, please send out a list of attendees with their name, organization, and email.
- A little more directed facilitation. I realize there was a lot of people, but we heard from a few people over and over. Sometimes it helps to specifically invite less vocal people to speak up
- More morale boosting... the subject is a bummer.
- I think if we get an invitation out at least one month in advance that would help increase attendance. Also, the particular room we had for this exercise looked like it could have help about 100 people, so allowing more to attend would also increase the chances that we would get a more diverse set of attendees.
- In the final exercise it would have been good to have better timekeeping...the first group was allowed to take too much time.
- Starting sooner with the invitation so that we have the best and brightest in the room
- I know that time constraints limit the extent to which break out summaries can be shared... and I assume that the after-action report is the vehicle for summarizing information, but a more extensive review / wrap session with a summary review and more extensive discussion of the various proposed actions would be great. In the current

format I feel that the opportunity to get feedback from the broader group is limited. I also think a more robust review session might create opportunities for "next-step" discussions. Again, this is not a criticism of the current format, but I wonder if there is an opportunity to rebalance the time over the two days to leave more time for debriefing of the breakouts. THANK YOU for conducting such an amazing and informative workshop!

- Include participants from local school systems and media outlets if possible. Also, somehow including younger members in something like this would be very useful. I was one of the younger participants, and I felt like I learned a whole lot about the resources that exist and organizations involved in and doing work about the issue of extreme heat.
- This was a great start. More to do! Any examples of how other municipalities started a heat planning process would be great.
- Have an idea of topics filtered out before hand- to condense even further with the group
- It may be interesting to have someone role play a scenario of a heat-related event or fatality.
- More time for small groups and sharing ideas. Much of that happened at the end when everyone was tired.
- It would be helpful to have the folks who will fund interventions to be a part of the planning exercises.
- Participation from energy/utility providers, possibly City Council members, and EJ community leaders.