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# Heat Tabletop Exercises:

## Lessons Learned & Best Practices

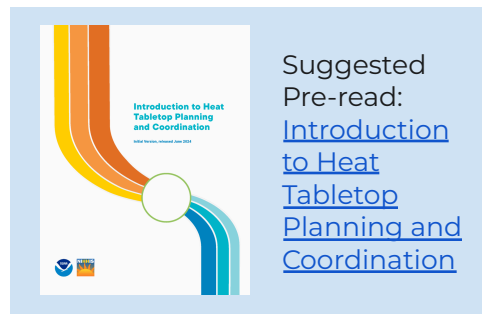
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# Introduction

From 2022-2025, the National Integrated Heat Health Information System (NIHHIS) provided direct technical support for heat tabletop exercises in seven communities (Phoenix, AZ; Charleston, SC; Miami, FL; Las Vegas, NV; Oklahoma City, OK; Philadelphia, PA; and Seattle, WA) and funded [10 additional U.S. communities](#) in the form of a [challenge competition](#). Each exercise brought together a variety of organizations and institutions involved in heat preparedness and resilience in order to test current emergency response strategies, identify strengths, and discuss areas for improvement.

Historically, heat has rarely been the main focus of tabletop exercises. However, it is now increasingly recognized as a primary threat, with its own cascading and compounding risks. Tabletop exercises allow communities to specifically focus on heat as a primary hazard, and they invite a broad range of expertise beyond emergency managers and those immediately adjacent to them, allowing for community voices to be heard directly by decision-makers. Although heat tabletop exercises focus on a distinct and realistic event, participants can also understand how risk will change over time and think about mitigating risk decades in advance.



This report summarizes the outcomes, themes, and lessons learned from the initial seven tabletop exercises and the additional 10 funded exercises that occurred during the summer of 2025. It focuses on the strengths and gaps identified, as well as best practices for hosting future tabletop exercises.

The findings of this report are meant to complement the existing [Introduction to Heat Tabletop Planning and Coordination](#), which explains how to develop these exercises. The information provided can serve as a valuable resource for other communities interested in using a tabletop exercise to enhance their local heat resilience efforts. Additional information can be found in the [After Action Reports](#) for each location.

## Major Strengths and Assets

During each exercise, participants discussed strategies and initiatives currently in place that work well to address heat. These strategies support communities in effectively responding to heat events, and they establish a foundation for future mitigation and resilience efforts. Common strengths include the following:

- **Active Collaboration:** In many communities, robust networks of people and organizations are already collaborating on heat efforts. This reflects a recognition that heat requires cross-sectoral solutions and strong partnerships, as well as a focus on learning from other cities that are documenting and sharing their heat research and data. In cities such as Miami and Phoenix, where heat is already a well-known hazard, many heat advocates have established working groups and communities of practice around heat (e.g., Miami's Urban Heat Research Group). These collaborations are conducive to successful tabletop exercises, as well as other heat risk reduction measures.
- **Scientific Foundation of Heat Efforts:** Participants noted several examples of current research and ongoing projects that have set a strong foundation for future heat work. For example, most communities conducting a heat tabletop exercise have also participated in an [urban heat island mapping campaign](#), allowing them to gather data on heat distribution across neighborhoods and focus future resilience strategies in the most affected areas.
- **Urban Forestry:** Most communities indicated that they have existing urban forestry projects in place and work frequently with arborists in their heat efforts. While there are opportunities to strengthen these projects and expand the tree canopy to more areas within each city, the projects set a strong foundation for efforts to cool cities and provide shade.
- **Cooling Centers:** During discussions, participants frequently mentioned that their communities have designated cooling centers in place. While public awareness and accessibility of the centers could be further improved (e.g., ensuring that cooling centers are accessible via public transportation and increasing the operating hours), the cooling centers are a positive step toward heat preparedness and collaboration with community-focused organizations.
- **Use of NOAA Resources:** Communities felt well-equipped to use NOAA products to understand heat forecasts in their area, including heat advisories from the National Weather Service, [HeatRisk](#), and long-range outlooks. Using these NOAA tools and resources allows communities to take forecasts into account when developing locally-focused mitigation and resilience strategies.

## Key Gaps and Areas for Improvement

Throughout discussions, participants also identified critical gaps in their current heat work. Participants noted that overcoming these key barriers is important to heat mitigation and resilience efforts. Common gaps include the following:

- **Lack of Heat-Specific Offices and Management Plans:** Most cities do not currently have a dedicated heat management plan or a dedicated position or office to coordinate heat efforts. In areas where these do exist, such as Phoenix's Office of Heat Response and Mitigation or Miami-Dade County's Chief Heat Officer, continuous improvement is still needed to ensure that heat resilience efforts are comprehensive and evolve over time. In some communities, heat is mentioned in broader hazard mitigation or emergency operations plans, but there are no identified heat-specific solutions. A central office or plan can help to sustain interagency collaboration, clearly define agency roles and responsibilities, and address the cross-sectoral risks of extreme heat.
- **Utility Disruptions:** Utility disruptions during extreme heat can abruptly cut off access to air conditioning, placing individuals at high risk, such as those who rely on electronic medical devices, in serious danger of heat-related illness or death. Exercise participants noted that the large scale of the energy grid makes it challenging to quickly restore power to people's homes. These factors underscore the need for close coordination between emergency managers and utility companies to provide timely information and available resources regarding potential shut-offs.
- **Data Deficiencies:** Decision-makers need more detailed data on local heat impacts to more comprehensively understand the full range of heat risks and identify effective solutions. Participants specifically mentioned data gaps related to emerging, compounding, and cascading impacts (e.g., economic risks or wildfires). Other frequently-mentioned data deficiencies included a lack of standardized tracking systems for outdoor events and a lack of comprehensive information about populations experiencing homelessness. There may also be opportunities for local medical facilities to provide more detailed data on heat-related illness statistics and demographics to better understand who is most at risk.
- **Communication Challenges:** Many cities have strategies to share heat safety information and updates during heat events. However, participants frequently cited gaps in reaching at-risk populations with timely and accessible information, especially in multiple languages, as well as the need for

consistent messaging across organizations. During discussions, participants also emphasized the importance of

- pairing timely heat warnings and information with immediate aid and relief,
  - partnering with hyperlocal and trusted messengers in the community for outreach,
  - developing communication materials accessible to members of the community without reliable internet access,
  - working with utility providers to communicate information and resources related to potential utility lapses, and
  - enhancing communication initiatives to city leadership.
- **Resource and Capacity Limitations:** Participants frequently mentioned insufficient funding, staffing, and other resources as critical gaps in their heat efforts. In some cases, healthcare systems and infrastructure are already at or close to capacity, and heat events further strain them. While many communities noted that they wanted to make cooling centers more accessible, the centers are limited in number and hours of operation due to resource constraints. Other communities noted that there is also fragmented information on available resources. Due to the wide range of organizations involved in emergency response efforts, it may be challenging to track available resources and services during extreme heat events.

## Best Practices for Hosting a Tabletop Exercise

At the conclusion of each exercise, participants provided feedback on how to improve the effectiveness of future tabletop exercises. Common recommendations included the following:

- **Choose a Meaningful Time and Place:** The timing of a tabletop exercise can help influence the outcomes of the discussion and should be specific to each community's needs. For example, when an area has recently dealt with a heat event, participants may be able to more easily recall what went well and what didn't in the heat response. Other communities may prefer to host a tabletop exercise ahead of heat season in order to maximize opportunities to incorporate ideas from the exercise into preparedness strategies. Some participants noted that limiting the exercise to a one-day event would allow more people to attend, while others noted that a two-day exercise provided more time for thoughtful discussions without causing people to feel rushed.

The location of the exercise can also help influence who shows up for the discussions and how collaborative the exercise is. For example, a central location may be more accessible to a wide variety of participants than one on the outskirts of the city. Similarly, a setting with circular tables may be more conducive to engaged discussions compared to rows of tables that are all facing the front of the room.

- **Recognize the Value in Building Connections:** Although organizers invited a variety of organizations to the exercises, most participants came from backgrounds in emergency management and public health. In some cases, utility groups, private sector organizations, transit agencies, schools, hospitals and clinics were absent from the exercises, and there was a lack of community members who are most likely to be impacted by heat. Participants also noted that it would be helpful to invite policy-makers, city leadership, and elected officials. Even departments within a local government can feel disconnected, so it's essential to build lasting connections and relationships.

In some cases, participants had never met in person before. One recommendation is to spend time getting to know each participant, the organization they work for, and their roles and involvement in heat response before the exercise begins, either through distributing written biographies or providing verbal introductions. Some participants also noted the value of engaged discussions, and they recommended training facilitators to find creative ways of eliciting information and encouraging collaboration with everyone in the room. Encouraging meaningful interactions can build trust

and allow people to familiarize themselves with the heat response plans used by other organizations in the community.

- **Focus on Scenario-based Discussions:** Each exercise centered around a fictional but realistic heat emergency scenario. This allowed participants to focus on applied solutions and actual impacts to address the most severe challenges of extreme heat. However, participants noted that discussions often went on tangents when some breakout groups discussed strategies unrelated to the scenario. While these conversations can be helpful, facilitators should help participants stay on topic by reminding them to apply their ideas to the context of the given scenario.
- **Build Capacity and Authority for Resilience:** Heat governance (or the lack thereof) can vary greatly from location to location. During discussions, participants should focus on the heat forecasts, resources, and relevant emergency response strategies specific to their location. Doing so can help them find localized, tailored solutions to build capacity and determine authority ahead of heat events.

Participants should also remember that during real-world heat events, they will need to focus on multiple hazards at once and use investments efficiently. When considering how to make their community more resilient to heat, they may want to carefully consider how a heat solution can also help the community become more resilient to other hazards, making it a sustainable, long-term investment that provides multiple benefits.

- **Encourage Opportunities for Further Training and Collaboration:** Participants could take training courses related to extreme heat, emergency management, local planning, or other topics leading up to the tabletop exercise. These courses can help them improve understanding of how certain systems and processes work so that they can more meaningfully engage in discussions.

Many participants also noted that while a standalone tabletop exercise can be helpful, it would be most effective to conduct these exercises annually and develop channels and/or convening spaces for continued discussion afterwards. These strategies can promote accountability and continued partnerships, while also providing an opportunity to highlight successes and overall progress each year.