EXTREME TEMPERATURE RESPONSE AND RESILIENCE:

A Guidebook for Maine Communities

Department of Health and Human Services

DIRIGO

MAINE

2026 EDITION

PURPOSE OF THE GUIDEBOOK

The purpose of the Extreme Temperature Response and Resilience: A Guidebook for Maine Communities (the Guidebook) is to aid Maine municipalities and community-based organizations (CBOs) seeking to increase the resilience of their communities by improving their capacity to plan for, prepare for, and respond to extreme heat and extreme cold events.

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Acronyms

Acronym	Definition
ADA	Americans with Disabilities Act
AED	Automated External Defibrillator
BRACE	Building Resilience Against Climate Effects
CBO	Community-Based Organization
CPR	Cardiopulmonary Resuscitation
EMA	Emergency Management Agency
EMS	Emergency Medical Services
FEMA	Federal Emergency Management Agency
HVAC	Heating, Ventilation, Air Conditioning
Maine CDC	Maine Center for Disease Control and Prevention
MEMA	Maine Emergency Management Agency
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
PIO	Public Information Officer
U.S. CDC	United States Centers for Disease Control and Prevention
WBGT	Wet Bulb Globe Temperature
WFO	Weather Forecast Office
WSSI	Winter Storm Severity Index

WHERE TO FIND...

- Background information on extreme temperatures and health: pg. 6-15
- Populations at higher risk and specific factors to consider: pg. 16-18
- Preparedness and in-event response options: pg. 19-26
- Long-term community resilience and planning strategies: pg. 27-35
- Appendices with resources: pg. 36-53

OPENING A COOLING OR WARMING CENTER RIGHT NOW?

- Check out guidance and checklists: pg. 21-23, 32-38, and 52-53

THE GUIDEBOOK DESCRIBES:

- The significance and health impacts of extreme heat and cold events and the challenges Maine communities face in managing them
- Compounding factors that may require adapted responses and potential strategies for meeting the needs of different populations
- Options for preparing for and responding to extreme heat and cold events, including considerations for opening cooling and warming centers
- Strategies for strengthening long-term community resilience to extreme temperature events
- Resources available for municipalities, CBOs, and other organizations to use when preparing for and responding to extreme temperature events in Maine

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This Guidebook was developed based on Federal Emergency Management Agency (FEMA) Comprehensive Preparedness Guides 101 and 201, extreme heat and cold guidance from neighboring states, and other resources developed or compiled by the Maine CDC. Most importantly, it was greatly improved by expert reviewers, including those listed at right to whom the Maine CDC is grateful.

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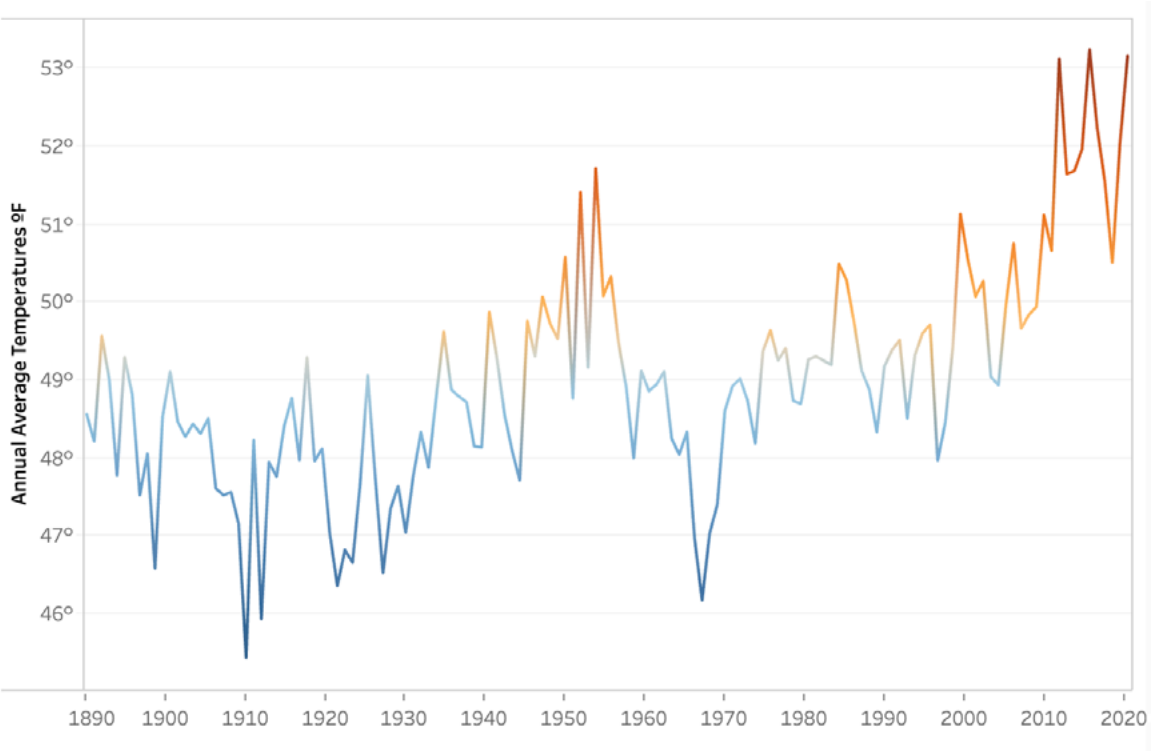
1. Extreme Temperatures in Maine

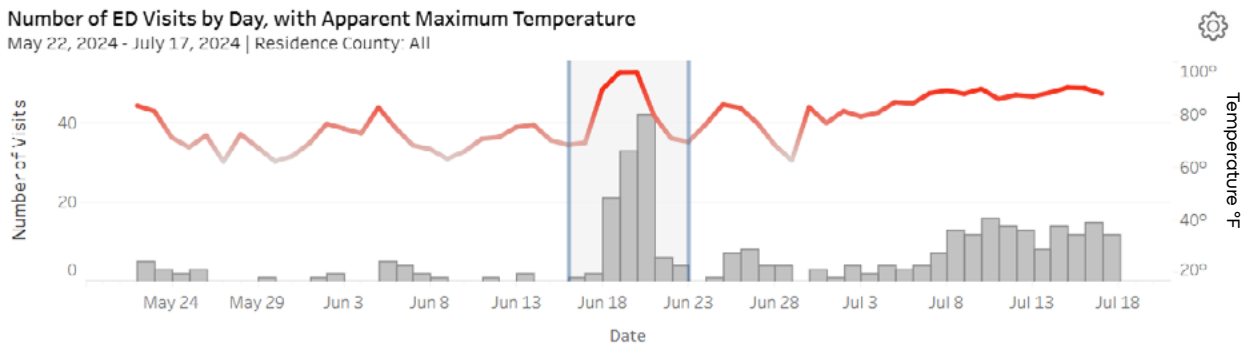
An extreme temperature event is characterized by temperatures - hot or cold - that differ from the norm for a region and have the potential for impacts on humans and their surroundings, including incidences of illness and death. Maine's climate is somewhat unique in that we experience both extreme heat events and extreme cold events regularly – and both types of event may become more frequent as the climate changes.

Figure 1: Average annual land temperatures in Maine from 1890 to 2020. This temperature value is calculated by averaging measured temperatures across the whole state for the entire year. Source: Maine Climate Impact Dashboard.



Average temperatures in Maine, as elsewhere, have already risen and will likely continue to rise. Maine's overall climate is becoming warmer and wetter, and weather extremes will become more likely (MCC STS, 2024). Figure 1 highlights the change over time in annual average temperature, showing generally increasing temperatures, especially from 1990 to Maine's present. In Maine, it is rare for the temperature to exceed 90° F in the summer. Research conducted by the Maine CDC and partner agencies in New Hampshire and Rhode Island (Wellenius et al., 2017) found that emergency department visits for heat-related illnesses, as well as all visits for any cause, increased significantly on days when the heat index (a combination of temperature and humidity) exceeded 95° F, when compared to days with more moderate head index values. Figure 2 shows the relationship between daily maximum temperature and counts of emergency department visits for heat-related illnesses like heat exhaustion and heat stroke during a heat event in June 2024.

Figure 2: Number of daily emergency department visits for heat-related illness (gray bars) and maximum apparent temperature (red line) statewide during a period in summer 2024. Apparent temperature is a measure of felt temperature, incorporating air temperature and humidity, and is comparable to the heat index. Source: MaineTracking Network, Heat-related Illness.



Research conducted by climate scientists at the University of Maine's Climate Change Institute suggests that hot days in Maine will become more common by mid-century, with the number of days with a heat index of 95° F or more predicted to increase by 2- to 4-fold between approximately 2000 and 2050 (Figure 3).

Warming temperatures, however, do not mean Mainers can ignore the potential for extreme cold events. Warming in the Arctic can allow polar air masses to extend further into sub-Arctic regions, increasing the frequency and intensity of cold events in places like Maine (Cohen et al., 2021), even as average temperatures continue to rise over time. And, while many Mainers may feel more accustomed to cold (when compared to heat), the impacts of extreme cold events continue to be felt across the state. Subzero temperatures are common in Maine, especially in the northern half of the state, and periods of extremely cold weather are common and can persist for days in the winter. These periods of extreme cold are often accompanied by an increase in emergency department visits for cold-related illnesses and injuries such as frostbite and hypothermia, as illustrated in Figure 4.

Figure 3: The average number of days when the heat index is greater than or equal to 95° F at selected sites for 2000-2004 and 2050-2054. Source: Maine's Climate Future.

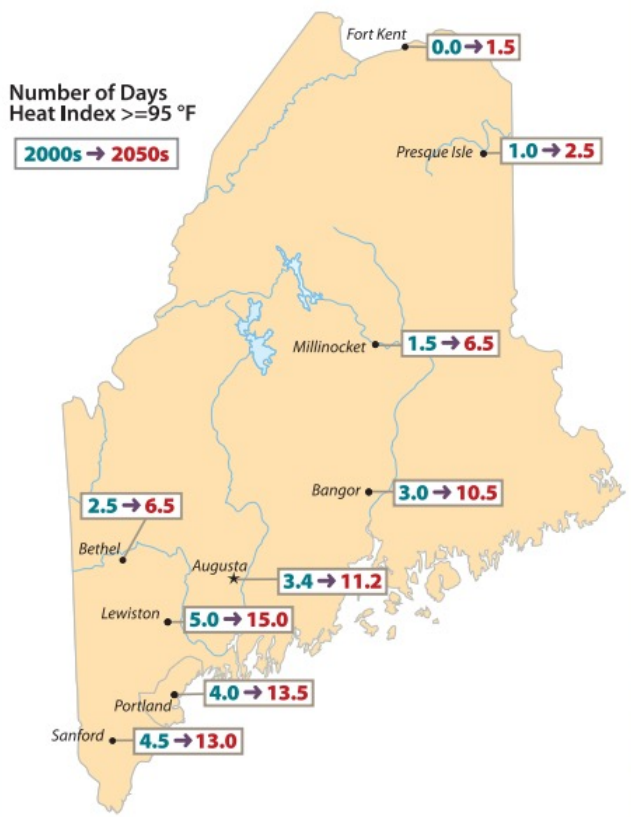
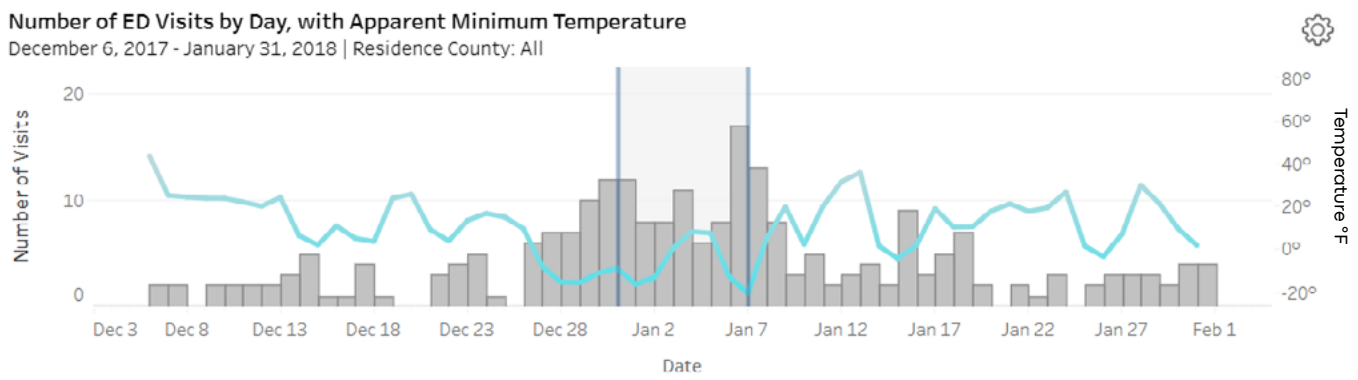


Figure 4: Number of daily emergency department visits for cold-related illness (gray bars) and minimum apparent temperature (blue line) statewide during a period in winter 2018. Apparent temperature is a measure of felt temperature, incorporating air temperature and humidity, similar to measures like the wind chill. Source: MaineTracking Network, Cold-related Illness.

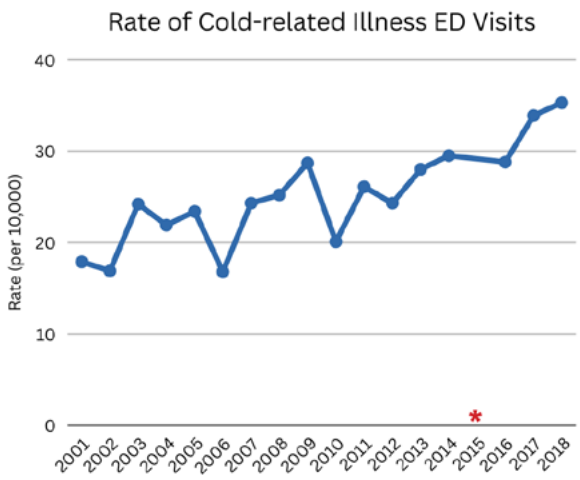


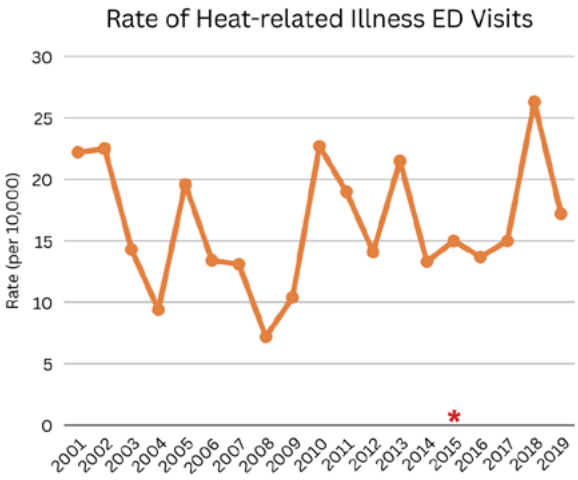
Between 2001 and 2018, an average of more than 330 people per year visited Maine emergency rooms for a cold-related illness. During this same period, an average of 216 people per year visited Maine emergency rooms for a heat-related illness (see Figure 5).

MEASURING HEAT AND COLD

In 2024, the NWS simplified its extreme cold indices to base advisory, watch, and warning criteria on both wind chill and actual temperature. See Appendix C for more detail on heat and cold indices and definitions.

Figure 5: Comparison of emergency department visits in Maine for cold-related (left) and heat-related (right) illnesses from 2001 to 2018. The case definition for cold-related illness was changed in 2015, resulting in missing data indicated by the red asterisk. Source: MaineTracking Network, 2024





2. Defining Extreme Heat and Cold

The National Weather Service (NWS) measures and communicates both potential and active extreme heat and extreme cold events using two different sets of warning criteria. See the NWS extreme heat and extreme cold alert criteria in the tables below:

2.1 EXTREME HEAT WARNING CRITERIA

Table 1: Heat thresholds established by the NWS (NWS, 2020)		
NWS Heat Event Warning Criteria[1]		
Type	**Definition**	**Threshold**
Heat Advisory	Issued for dangerous heat conditions that are not expected to reach warning criteria.	Forecasted heat index values of 95 -104°F for 2+ hours or 100-104°F for any amount of time.
Extreme Heat Watch	Issued when conditions are favorable for an extreme heat event, but its occurrence and timing are still uncertain.	Forecasted heat index values ≥ 105°F for 2+ hours.
Extreme Heat Warning	Issued when extremely dangerous heat conditions are expected or occurring.	

2.2 EXTREME COLD WARNING CRITERIA

Table 2: Cold thresholds established by the NWS (NWS, 2024)		
NWS Cold Event Warning Criteria[2]		
Type	**Definition**	**Threshold**
Cold Weather Advisory	Issued for dangerously cold conditions that are not expected to reach warning criteria.	Forecasted apparent temperature from < -15°F to - 25°F, depending on Forecast Region. See Figure 6.
Extreme Cold Watch	Issued when extremely dangerous cold conditions or wind chill conditions are possible, but the occurrence, location, and/or timing are still uncertain.	Forecasted apparent temperature from < - 25°F to - 35°F, depending on Forecast Region. See Figure 6.
Extreme Cold Warning	Issued when extremely dangerous cold conditions or wind chill values are expected or occurring.	

1. Heat Index is used by the NWS and the Maine CDC when issuing heat watches, advisories, or warnings because it reflects high temperatures but also incorporates humidity to better approximate how the heat feels (see Appendix C for more information on Heat Index).

2. In 2024, the NWS simplified its extreme cold indices to base advisory, watch, and warning criteria on both wind chill and actual temperature.

2.3 WEATHER FORECAST OFFICES

The NWS operates two Weather Forecast Offices (WFOs) in Maine to provide the public with local weather expertise. Gray/Portland serves the Southern and Western regions of Maine, and Caribou serves the Northern and Western regions of Maine (Figure 6). Both WFOs utilize the cold event definitions shown in Table 2, but the threshold criteria for each event differs by WFO. The figure below details the temperature thresholds used by each WFO.

NWS OFFICES

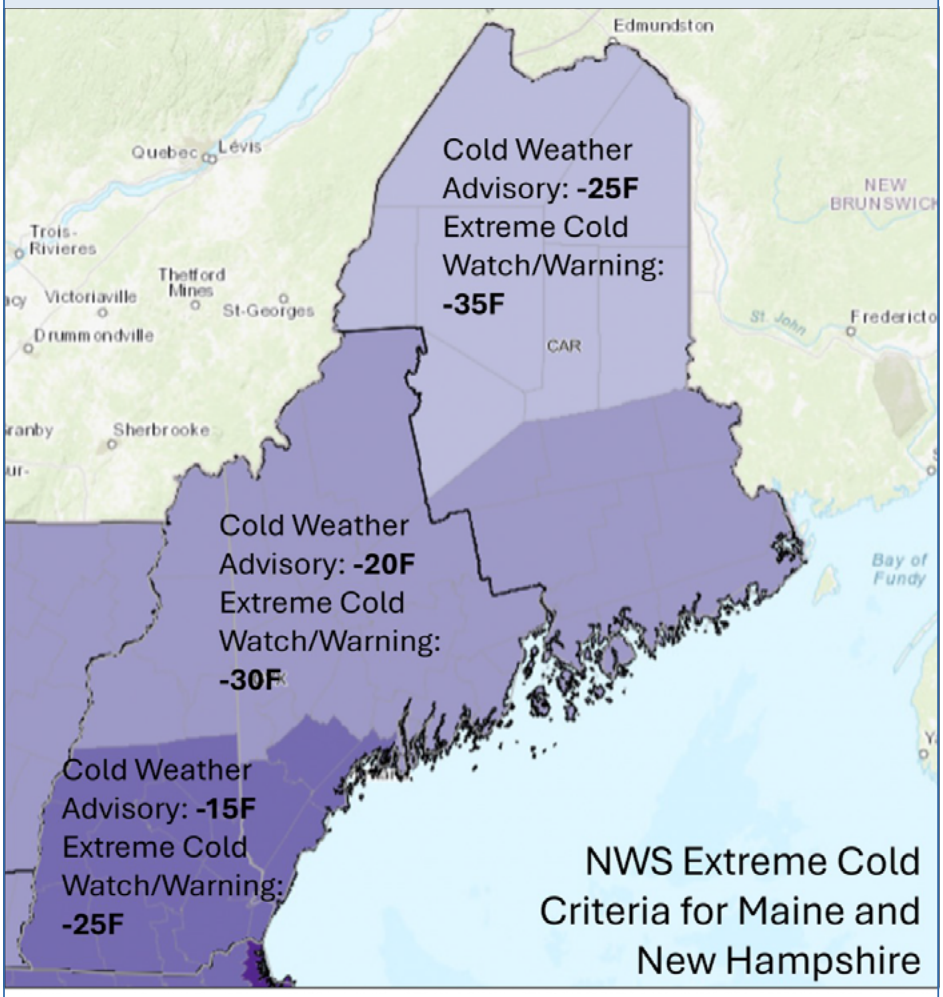
Caribou Office

https://www.weather.gov/car

Gray Office

https://www.weather.gov/gyx

Figure 6: Geographic zones of the two NWS Weather Forecast Offices (WFOs) and associated regions in Maine. Source: NWS Geographic Zones (NWS, 2025e)



- Caribou WFO northern region
- Caribou WFO southern region
- Portland WFO northern region
- Portland southern region

3. Health Impacts of Extreme Heat and Cold

3.1 EXPOSURE TO EXTREME HEAT

Extreme heat causes the highest number of weather-related fatalities annually in the United States, surpassing other hazards such as hurricanes and floods. Exposure to extreme heat can also cause a range of less severe health impacts, such as heatstroke, heat exhaustion, dehydration, and heat rash. These heat-related illnesses occur when the body is exposed to excessive or prolonged heat and can no longer successfully regulate its internal temperature. Early signs of heat-related illness include muscle cramps, dizziness, nausea, fatigue, and heavy sweating – all indicative of heat exhaustion. If left untreated, heat exhaustion can lead to heat stroke, characterized by symptoms like hot, dry skin; headache, confusion, or loss of consciousness; and nausea or vomiting. Heat stroke can become deadly, especially if treatment is delayed (U.S. CDC, 2024; Maine CDC, 2024). Figure 7 and Table 3 below outline the symptoms of each of these heat-related illnesses.

Figure 7: Comparison of symptoms and first aid response steps for heat exhaustion and heat stroke. Additional information can be found at: https://www.weather.gov/safety/heat-illness. (National Weather Service, 2024).

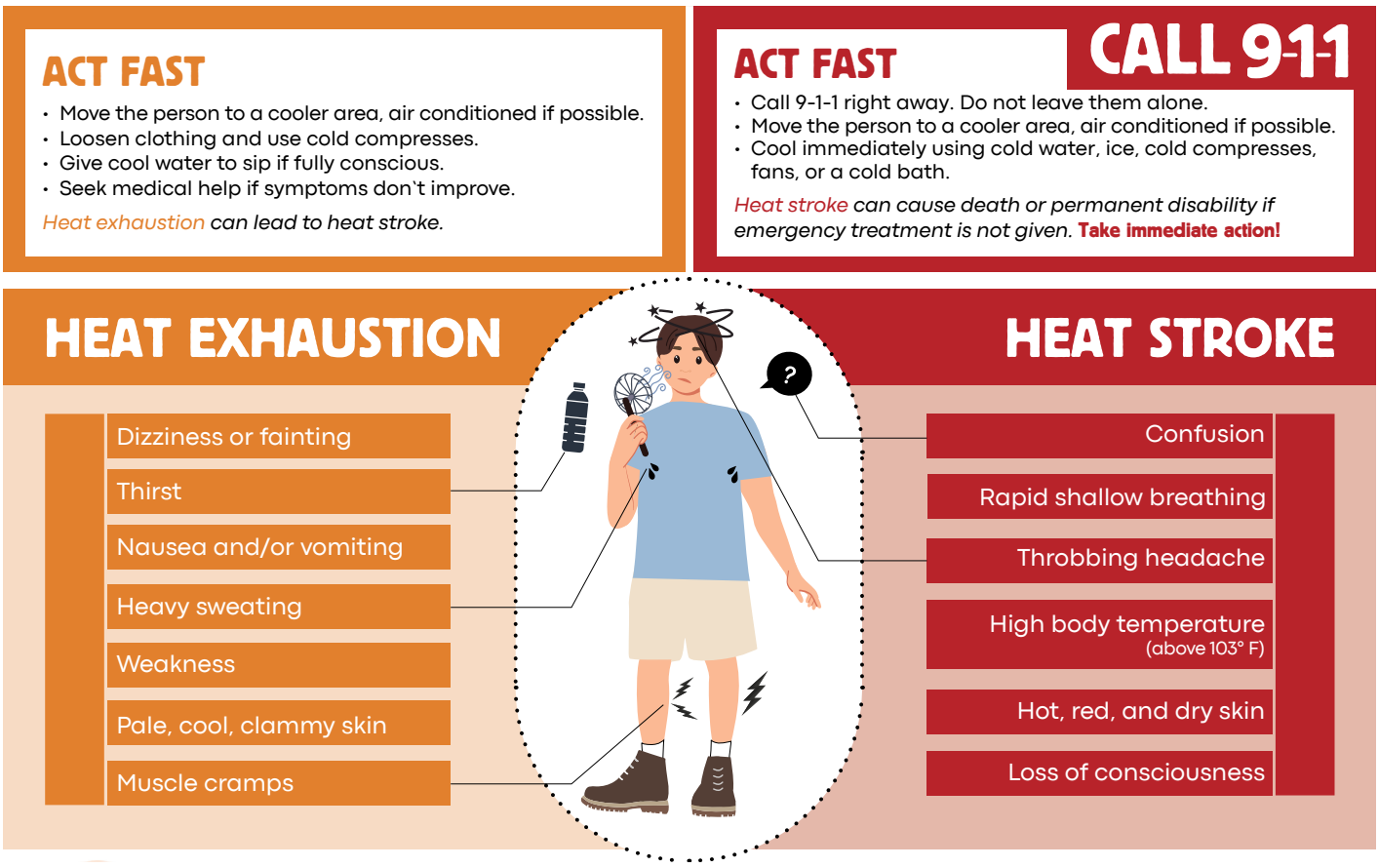


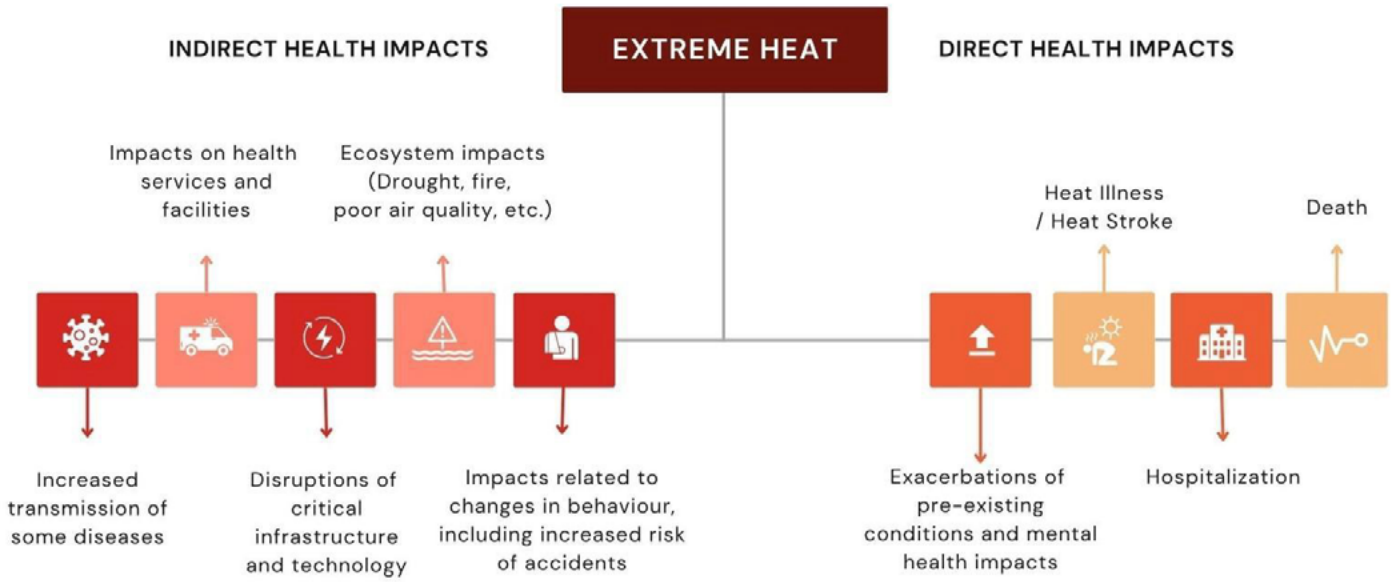
Table 3. Heat-related illness symptoms and recommended treatment

ILLNESS	SYMPTOMS	WHAT TO DO
Heat Rash	• Red cluster of small pimples or blisters *Often shows up on neck, shoulders, chest, in skin creases, and/or where clothing is tight against the skin*	• Get to a cooler location • Loosen or remove clothing • Keep the skin cool and dry • Avoid using creams, lotions, or ointments unless directed by a medical professional • Use dusting powder or cornstarch to make babies and children more comfortable
Sunburn	• Skin that is red, painful, and warm after being out in the sun	• Get out of the sun • Put cool, wet cloths on skin or soak burned areas in cool water • Put aloe vera or other moisturizing lotion on the burn. Do not use salves, ointments, or butter • For infants younger than 1 year old: take to see a medical provider • Talk to a medical provider if you have a fever, fluid-filled blisters, or severe pain from sunburn
Heat Cramps	• Brief, painful muscle spasms or cramps in the stomach area or in the arms or legs • Heavy sweating • Mild Nausea • Often occur while exercising or working in a hot environment, or shortly after	• Move to a cooler location • Carefully stretch and massage cramping muscle • Drink cool fluids like water, juice, or a sports drink. Avoid alcohol or caffeine • Take a break from exercise or heavy work for a few hours • Get medical help if cramps do not get better after 1 hour, or if other medical problems occur
Dehydration	• Thirst • Dry or sticky mouth • Dry skin • Tiredness • Headache • Few or no tears when crying • Less need to urinate	• Drink cool fluids like water, juice, or a sports drink. Avoid alcohol or caffeine • Move to a cooler location • Lie down and rest • For infants, give a replacement fluid like Pedialyte, in addition to breast milk or formula • If symptoms worsen or do not improve in 24 hours, get medical help
Severe Dehydration	• Extreme thirst • Very dry skin and mouth • Extreme tiredness • Fast heartbeat • Fast breathing • Dizziness • Confusion • Little or no urination for 12 or more hours	• **Call 911 if a person has signs of severe dehydration**
Heat Exhaustion	• Heavy sweating • Fainting • Vomiting • Cold, pale, and clammy skin • Dizziness • Headache • Nausea • Weakness	• Move to a cooler location • Lie down, loosen or remove clothing, and rest • Cool off with water or wet cloths. If possible, take a cool shower or bath • Sip cool water or non-alcoholic and non-caffeinated fluids • Monitor symptoms carefully. If symptoms worsen or do not improve within 30-minutes, get medical help • If the person has vomited, and continues to vomit after you have taken the above steps, get medical help immediately
Heat Stroke	• Hot, dry, red skin • Lack of sweating • Rapid pulse • High body temperature (103°F or higher) • Headache • Rapid and shallow breathing • Loss of alertness • Confusion • Unconsciousness or coma	• **Call 911 Immediately** • Heat stroke is a life-threatening condition. Someone with heat stroke needs emergency care right away. While waiting for medical help: ➔ Move person to a cooler location ➔ Remove any unnecessary clothing ➔ Do everything you can to cool the person as quickly as possible, such as: » Get the person in a shower or tub of cool water, or an ice bath. » Spray the person with cool water from a hose. » Wet the person's skin with water or wet cloths. » Wrap the person in a wet sheet. » Once the person is wet, direct air onto them with a fan or anything that will move air like a newspaper or magazine. » Put ice on the person's head, neck, armpits, and groin area. » If the person is awake, alert, and able to swallow, give them cool fluids. Don't give them drinks with alcohol or caffeine.

Source: Maine CDC. (2025). Recognize Heat Illness. Division of Environmental and Community Health.

In addition to direct health impacts like heat exhaustion and heat stroke, extreme heat can also cause a wide range of indirect health impacts, such as disruption of health services and facilities and increased risk of accidents (see Figure 8).

Figure 8: Direct and indirect health impacts of exposure to extreme heat. Source: World Health Organization, 2024 https://www.who.int/multi-media/details/scale-and-nature-of-the-health-impacts-of-heat



HEALTHCARE PROVIDERS

Explore U.S. CDC's Guidance for Clinicians webpages for information on extreme heat and patient health. Access the guidance.

Americares created a toolkit for providers in helping patients establish a heat action plan. Check out the toolkit.

3.2 EXPOSURE TO EXTREME COLD

Cold-related illnesses occur when heat is lost from the body faster than the body can compensate for, or when the body is exposed to cold temperatures over a prolonged period of time. The most common types of cold-related illness include frostbite and hypothermia. Frostbite occurs when cold temperatures reduce blood flow to the skin. In severe cases, it can result in the formation of ice crystals in tissue which can cause permanent damage. Extremities like hands, feet, nose, and ears are most susceptible to frostbite, and severe cases may require amputation. Hypothermia occurs when the body is exposed to very cold temperatures for extended periods of time and loses heat faster than it is produced. In response, the body attempts to conserve its heat by restricting blood flow, including to the brain. Like heatstroke, hypothermia can be deadly if not treated quickly (U.S. CDC, 2005). Table 4 below outlines the symptoms of frostbite and hypothermia.

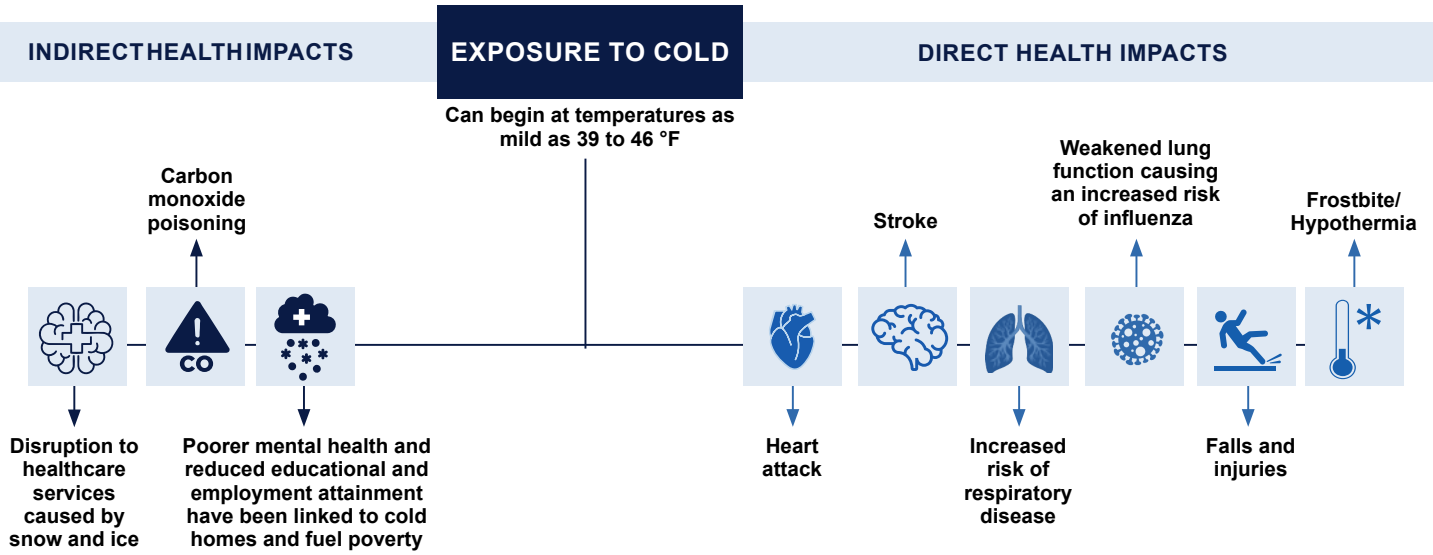
Table 4. Cold-related illness symptoms and recommended treatment

FROSTBITE		HYPOTHERMIA	
Symptoms	**What to do**	**Symptoms**	**What to do**
• Numbness • Change in skin color (white or grayish-yellow) • Unusually firm or waxy skin • Muscle stiffness	• Move into a warmer space and remove wet clothing. • Warm the affected area slowly by gently using warm water, warm cloths, or body heat. • Do not rub the affected area or apply direct heat. *Seek medical attention if symptoms do not resolve.*	**For Infants** • Cold, red skin • Very low energy **For Adults** • Confusion • Memory loss • Uncontrolled shivering • Exhaustion • Drowsiness • Slurred speech • Fumbling hands	• Use a thermometer to record the person's temperature. If it is less than 95 degrees, take the person to the nearest hospital. • Move the person into a warm room, shelter, or warming center. • Remove any wet clothes on the individual. • Warm the center of the body: chest, neck, head, using an electric blanket, if available. • Use skin-to-skin contact under loose and dry layers of blankets, clothing, towels, or sheets. • Have the person drink warm beverages. *Seek medical attention as soon as possible.*

1. **Source: Maine CDC. (2025).** Cold Weather Safety Tips. MaineTracking Network.

In addition to direct health impacts like frostbite and hypothermia, cold weather may lead to additional indirect health impacts, such as disruption of health care services and poorer mental health (see Figure 9).

Figure 9: Direct and indirect health impacts of exposure to extreme cold (Adapted from UK Health Security Agency, 2023).



4. People Who May be at Higher Risk from Extreme Temperatures

Certain populations face higher risks from extreme temperatures. In general, risk is highest for people highly exposed to extreme temperatures based on where they live, work, or play; those with physiological sensitivity to extreme temperature exposure; and those with limited access to resources or a limited ability to mitigate the impacts of extreme temperature events (NIHHIS, 2023). People who fit in two or more of these categories (i.e., unhoused individuals) are even more vulnerable to extreme temperatures.

Maine includes significant numbers of residents at risk from extreme temperatures. Maine's population is the oldest in the nation, with high rates of older residents living alone; high rates of poverty; and high rates of chronic diseases, especially respiratory diseases. Maine homes are generally old, have relatively low rates of air conditioning, and are often poorly insulated.

4.1 CATEGORIES OF PEOPLE AT HIGHER RISK

People highly exposed to extreme temperatures based on where they live, work, or play, including those who:

- Are unhoused or housing insecure
- Are outdoor workers or workers in hot indoor environments
- Recreate or exercise outdoors
- Are residents of homes that cannot be kept at a safe temperature because of insufficient heating systems, cooling systems, or insulation
- Are emergency responders

People with the highest sensitivity to extreme temperatures, including those who are:

- Older adults, especially those who live alone
- Infants and young children
- Pregnant
- Living with chronic or underlying health conditions
- Taking certain medications that inhibit the body's ability to regulate its temperature, such as diuretics, some antipsychotics, some types of blood pressure medications, and some antidepressants
- Using drugs or alcohol

People with limited access to resources or a limited ability to mitigate the impacts of extreme temperature events, including those who are:

- Financially insecure and/or low income (i.e., those unable to keep warm or cool at home due to the cost of heating or cooling)
- Unable to keep warm or cool at work
- Disabled (physically, mentally, cognitively)
- Lacking access to information due to language or technology barriers
- Limited in mobility and/or transportation access
- Socially isolated
- Residents in institutional settings (i.e., correctional facilities such as jails or prisons, mental health institutions, long-term care facilities)

5. Compounding Factors

Extreme temperature events alone can affect population health and well-being. Other factors, however, can exacerbate the impacts of extreme heat or cold on individuals and communities, affect a community's ability to respond (i.e., diverting the time and attention of first responders), or add layers of additional challenges for individuals, families, and communities to face (see Table 5). For example, a sustained power outage during the winter could make it difficult for people to stay warm in their homes - even if temperatures are not unusually cold. Similarly, a global pandemic during a heat wave could add complexity to the operation of cooling centers.

Table 5: Potential compounding factors and how they may worsen impacts, challenge response, or pose additional challenges during an extreme temperature event.

	Potential Impacts on Residents and Infrastructure	Considerations for Extreme Temperature Response
Storms (rain, snow, wind)	• Weather-caused power outages (see row below) • School or work closures (loss of warm daytime shelter and food access, impact on parents' ability to work) • Accumulation of snow and ice on buildings • Road hazards and closures • Increased injury risks	• Response times may be impacted • Residents may not be able to travel to cooling/warming centers • May need to relocate cooling/warming centers to safer area • Cooling/warming centers may need to use generator or other backup power source
Power outages	• Residents may not be able to stay warm/cool in homes and buildings • Decreased access to resources due to business closures (e.g. grocery stores, pharmacies, gas stations) • Food or medication spoilage • Freezing pipes • Inability to use electricity-powered home medical equipment • Private well water systems may become depressurized	• Cooling/warming centers may need to use generator or other backup power source • Backup power source operation may limit availability of services at cooling or warming centers • Reduced access to communications • Reduced access to water (for drinking or cooling) if the source is a private well that becomes depressurized
Wildfire/ smoke event (more likely to only occur in summer and impact heat event response)	• Smoke from distant wildfires could cause poor air quality and keep people indoors with windows closed; this would prevent cooling in buildings with no AC • Local wildfires could force relocation of residents from homes or businesses to shelter spaces without adequate cooling	• Road hazards and closures • May need to relocate cooling centers to safer areas • Residents with respiratory conditions may need extra support • Evacuations for wildfire response could place additional pressure on cooling centers • Shelter in place orders could prevent residents from accessing cooling centers
Flooding (coastal or inland)	• Power outages (see row above) • Damage to buildings, roads, and utilities • Flooding could force relocation of residents from homes or businesses to shelter spaces without adequate cooling/warming	• Road hazards and closures • May need to relocate cooling/warming centers to safer areas • Residents may not be able to travel to cooling/warming centers • Reduced access to water (for drinking or cooling) if the source is a private well that floods and is potentially contaminated

Infectious disease outbreak	• Concerns about spread of illness at cooling/warming centers may limit communities' ability to open them or residents' willingness to use them	• Virtual coordination and operations and/or improved strategies for staying warm/cool at home may be needed • Additional need for masks, gloves, or other infection prevention supplies at cooling/warming centers • Efforts to prevent disease transmission may limit capacity of cooling/warming centers to serve everyone who needs or wants access
Drought	• Water usage limits may impact operation of cooling/warming centers and other response strategies	• Availability of water at cooling/warming centers may be impacted • Use of water for water-based responses such as splash pads, pools, and misting stations may be limited or prohibited

6. Preparedness Options for Extreme Temperature Events

This section outlines options for preparing for extreme temperatures in Maine. The right strategies will vary by community and event. As these events become more frequent and severe, Mainers will gain experience and better understand the best approaches for their communities. The guidance below focuses on building public awareness and expanding capacity to respond at home and in the community.

6.1 STRATEGIES FOR IMPROVING PREPAREDNESS

Preparedness options discussed here are considered in two general categories:

1. **Public Preparedness:** Build awareness of and preparedness for extreme temperature events through public education and information campaigns
2. **Organizational Preparedness:** Encourage municipal partners such as Community-Based Organizations (CBOs), local businesses, faith-based organizations and schools to develop and adopt extreme temperature response plans and procedures, particularly those that serve or interact with people who may be at higher risk

6.1.1 Public Preparedness: Build public awareness through education and information campaigns

Communities can raise awareness seasonally and in preparation for extreme temperature alerts, or when other events occur that could worsen temperature risks, such as flooding or power outages. Communities should develop or repost messages using reliable sources like FEMA, MEMA, NWS, Maine CDC, or U.S. CDC that include information about the location of warming or cooling centers, safety tips, high-risk populations, how to recognize cold- or heat-related illness, and where to get help. Example messaging templates from reputable sources are included in Appendix B.

DEVELOP A PLAN

The purpose of developing a plan ahead of time is to be able to respond quickly and effectively during an extreme temperature event. Time and work spent preparing means a smoother response later on. Users of this Guidebook should create and exercise plans for responding to an extreme temperature event.

6.1.2 Organizational Preparedness: Develop and adopt extreme temperature response plans and procedures

As with any emergency preparedness activities, extreme temperature response plans and procedures should be developed before the extreme heat or cold event occurs. These plans and procedures should be regularly evaluated, tested, and updated. For guidance on developing and updating these plans, refer to Section 9. Examples of plans and procedures could include:

- ➔ **Municipal leaders: Plans may include locations of cooling or warming centers, criteria or triggers for when they will be opened, how they will be staffed, and how other short- or long-term strategies for protecting residents will be impacted.**

- **Schools, daycares, camps, and youth organizations:** Plans may include thresholds, such as the NWS heat and cold event criteria, levels at which to close buildings if they cannot be kept at safe temperatures or levels at which to modify activities (i.e., rescheduling or canceling sports events) if conditions are unsafe.
- **Employers with outdoor or hot/cold indoor job sites:** Develop plans for shorter work rotations, more breaks, weather-appropriate gear, increased hydration (heat only), changes to timing of shifts, and possible work stoppage if conditions become unsafe.
- **Healthcare or public health organizations:** Plans may include outreach to those identified as being at higher risk from the impacts of extreme temperatures.
- **Police departments, fire departments, or other organizations that conduct wellness checks:** Plans may alert residents on wellness check lists of expected extreme temperature events and determine if they require specific support (i.e., transportation to a cooling/warming center).
- **Communities and residential complexes:** Plans could include formal or informal neighbor-to-neighbor check-ins and outreach networks.

Other organizations that work with a particular population or group of populations that may be vulnerable to extreme temperature events (such as older adults, unhoused, new Mainers, and non-English-speaking populations), should also consider developing specific procedures to guide their response efforts (i.e., procedures for amplifying messaging on forecasts and conducting wellness checks or outreach to those populations).

Potential Communications Materials:

- Brochures or tip sheets mailed or distributed at town offices, libraries, churches, health centers, transfer stations, schools, coffee shops, etc.
- Magnets
- Utility bill mailers
- Flyers/posters
- Social media graphics

*These outlets are also helpful for issuing time-sensitive information (i.e., alerts for an expected extreme temperature event). Alerts should include any relevant information about the opening of cooling/warming centers or other responses being provided locally.

Potential Communications Channels:

- Local press releases*
- Websites for a municipality or Community Based Organization*
- Maine Emergency Management Agency website
- Facebook or other social media*
- Radio broadcasts*
- Public event/information sessions
- Portable electronic message signs (like those used for construction notices)
- Email distribution via town, school department, organization membership, neighborhood associations, etc.*

7. Response Options for Extreme Temperature Events

Extreme temperature response involves a multidisciplinary effort to provide direct services that meet the safety and health needs of the community, while also prioritizing efforts for the highest risk populations. The options listed here may be scaled up or down and will vary depending on context. They may be tailored and designed to serve specific populations, or more generally focused on assisting the entire community. Response actions should be implemented and executed at the most local level possible given implementers` capabilities and any relevant capacity constraints. If the response overwhelms local capabilities, additional support can be requested through the appropriate agencies (i.e., the County Emergency Management Agency). See examples of response actions below.

COMMUNICATION IS KEY

Remember to communicate clearly with the public and key partners about any response actions taken. Implement the communication strategies, materials, and channels established in the Preparedness phase of your response. See Section 6.1.1 on page 20 for more information.

7.1 OPEN AND OPERATE LOCAL COOLING/WARMING CENTERS AND SPACES

7.1.1. Types of centers and spaces

Cooling and warming centers established at the local level can be categorized into formal spaces controlled and operated by the municipality, or more informal spaces operated by businesses, nonprofits, or faith-based organizations in collaboration with the municipality.

Formal:

Invite people to public buildings offering safe, comfortable spaces for warming up or cooling off (buildings must be adequately heated/cooled and should have access to backup power). Note that the decision to open formal cooling and warming centers is at the sole discretion of local emergency management and municipal officials, in collaboration with county emergency management officials.

Examples include:

- Libraries
- Town Halls
- Schools
- Municipally-run senior centers
- Recreation or community centers
- Public safety buildings
- Fire stations

Informal:

Partner with local businesses or organizations to invite people to spend time in their spaces to warm up or cool off (buildings must be adequately heated/cooled). Local jurisdictions should consider whether there is a need to increase the presence of public safety and emergency medical personnel in proximity to these businesses or organizations. Coordination between local emergency management and the businesses or organizations offering these services is critical, so that public expectations of each type of space can be managed.

Examples include:

- Coffee shops/restaurants
- Movie theaters
- Grocery stores
- Big box stores
- Nonprofit, standalone senior centers
- YMCAs
- Bookstores
- Existing shelters or social service organizations
- Places of worship

REPORT CENTERS TO MEMA:

All formal and informal cooling and warming center openings should be reported to MEMA at: CenterShelter.OpenNotification@maine.gov and to your County EMA Director.

Information on available cooling or warming centers can be found at https://www.maine.gov/mema/response-recovery/mass-care or by calling 211.

7.1.2 Temperature thresholds for opening cooling or warming centers

In Maine, there are no specific, statewide temperature thresholds mandated for opening cooling or warming centers. Local decision-makers determine whether and when to open formal centers, while nonprofits, businesses, and other groups can choose to open informal centers. Guidance generally suggests opening centers when temperatures are expected to become dangerous, but whether a certain temperature level is dangerous can vary by place, population, and type of weather. Health impacts can occur at levels before NWS' extreme heat or cold alert criteria are reached. Counties and municipalities should consider additional temperature threshold guidance when deciding when to open cooling/warming centers.

View Table 6 and other resources online

Warming Centers

There is no general consensus on when to open warming centers or shelters based on temperatures. Health risks from cold exposure can start at moderate temperatures and may appear days or weeks later, making it hard to set one temperature threshold. Some populations, like people without housing or those in poorly heated homes, may need warming centers earlier than others. Demand can also increase with snow, ice, or power outages. Additionally, the coldest temperatures happen overnight, which limits the ability of non-municipal partners to meet community needs with informal warming center options, as the hours of most need will not overlap with normal business hours. Refer to Table 6 below for possible temperature thresholds to consider and adopt or modify given specific contextual factors.

Table 6: Potential temperature (including wind chill) thresholds for opening warming centers or shelters.

Temperature (including wind chill)	Justification	Considerations	References
32°F	New York State issues a 'Code Blue' alert at this level. Local social services districts in NY are legally required to take steps to extend shelter hours and ensure those experiencing homelessness have access to shelter, especially overnight.	Although more likely in colder temperatures, hypothermia can occur at temperatures above 40°F, if a person becomes wet from rain or sweat. Frostbite can occur anytime someone is exposed to freezing temperatures (32°F and below). MEMA's Warming Center Tips states that "Warming Centers are often opened during extreme temperature drops or extended period of below freezing temperatures."	Winter Weather Safety | NY Division of Homeland Security and Emergency Services Preventing Hypothermia | Winter Weather | CDC Warming_Center_Tips.pdf | MEMA
15°F	Threshold set by the City of Portland, Maine for opening of winter warming centers	Risk of cold-related illnesses increases with prolonged exposure to cold (e.g., overnight). The 15°F threshold may be too low for anyone exposed to prolonged cold, such as those who are unhoused or those who live in homes with inadequate heating.	City of Portland Winter Warming Plan Winter 2024-2025

Table 6: Potential temperature (including wind chill) thresholds for opening warming centers or shelters.			
-15° F	NWS Cold Weather Advisory threshold for the southern Gray forecast area	As the first stage in the NWS` cold weather warning system, -15°F is recognized by NWS as the threshold for dangerously cold conditions in southern Maine.	Understanding Cold Weather Alerts | NWS
-20° F	NWS Cold Weather Advisory Threshold for northern Gray and southern Caribou forecast areas	-20° F is recognized by NWS as the threshold for dangerously cold conditions in Central Maine. A temperature or wind chill of -20° F can cause frostbite in just 30 minutes.	Stay Safe in the Extreme Cold | NWS
-25° F	NWS Cold Weather Advisory for northern Caribou forecast area; Extreme Cold Warning/Watch for southern Gray forecast area	This temperature is recognized by NWS as the threshold for dangerously cold conditions in Northern Maine, and will likely not be protective for Southern regions. At this level, frostbite can occur in just 15 minutes.	Wind Chill Safety | NWS

View Table 7 and other resources online

Cooling Centers

There is more general agreement about appropriate hot-weather thresholds for opening cooling centers. In Maine, heat-related illnesses occur more frequently when temperatures reach or exceed the mid-to-upper 80s (MEMA, 2023). Generally, cooling centers should be open when the heat index (temperature plus humidity) is predicted to be 85-95° F. Heat-related illness can occur at lower temperatures when compounding factors such as prolonged exposure to heat, outdoor work or exercise, and heavy lifting are present. The need for cooling centers may also be increased by other circumstances such as power outages. In addition, certain people, such as those who are unhoused or those who live in homes with inadequate air conditioning, may need cooling centers sooner than others. Potential hot-weather thresholds are described in Table 7, with options to consider and adopt or modify as appropriate, based on their resource limits, population needs, and regional weather patterns.

Table 7: Potential heat index thresholds for opening cooling centers or shelters.			
Heat Index (Temperature + Humidity)	**Justification**	**Considerations**	**References**
85° F	Potential starting threshold for response; balances increasing health impacts with frequency of days that meet the threshold	In Maine, heat-related illnesses occur more frequently when temperatures reach the mid-to-upper 80s and hotter.	Community Cooling Center Guidance | MEMA
90° F	The NWS classifies a heat index of 90° F under "Extreme Caution", due to risk of heat stroke, heat cramps, or heat exhaustion with prolonged exposure and/or physical activity	This threshold captures an elevated risk of heat-related illness, but is slightly more protective than NWS` Heat Advisory threshold, offering greater protection for people who may be at higher risk. A heat wave is sometimes also defined as a period when temperatures reach 90.	Heat Index | NWS
95° F	NWS Heat Advisory (Issued when forecasted heat index values of 95-104° F for 2+ hours)	As the first stage in the NWS hot weather warning system, 95°F is recognized by NWS as dangerously hot conditions in Maine.	Understanding Heat Alerts | NWS

7.2 CREATE ACCESSIBLE OUTDOOR SPACES AND AMENITIES

In addition to cooling/warming centers, outdoor spaces and amenities can be used for cooling and warming during extreme temperature event response. These strategies can help expand access to cool or warmth and reach populations that may not be willing or able to visit an indoor cooling/warming center. These strategies are most relevant for extreme heat events but can be an important aspect of cold weather response as well.

Examples include:

- Splash pads or fountains (heat only)
- Sprinklers or misters in public areas (heat only)
- Awnings or tents in public places to provide shade (heat only)
- Extended operating hours or free access to pools and beaches (heat only)
- Outdoor heaters in public places like bus stops, park gazebos, or attached to municipal buildings or shelters (cold only)
- Bottled water or hot beverage distribution sites

7.3 OVERCOMING IMPLEMENTATION BARRIERS

When planning responses to extreme temperature events and developing approaches to strengthen community resilience, it is important to consider potential barriers that municipalities and communities may face when implementing plans. These challenges include limited local buy-in or capacity to carry out plans, lack of funding, residents` lack of transportation or ability to travel, difficulty meeting the needs of diverse populations, and communication barriers. See below for potential implementation barriers and strategies to consider.

LIMITED LOCAL BUY-IN OR CAPACITY TO CARRY OUT STRATEGIES

Barrier: Lack of buy-in from municipal or elected officials, competing needs, and limited capacity to carry out response strategies can keep plans from being effectively implemented.

POTENTIAL STRATEGIES:

- ➔ Communicate and coordinate with elected officials ahead of an event to understand their priorities, capacity, and needs.
- ➔ Lean on existing local infrastructure and volunteer groups to expand capacity, such as recreation or community centers, libraries, and churches or other places of worship.
- ➔ Utilize pre-made tip sheets, flyers, and other informational materials that can be sent and distributed on a large scale. These can be displayed in public spaces such as libraries, schools, and churches or other places of worship and posted on websites and social media.

Additional resources:

- ➔ NWS Pre-Made Heat and Cold Safety Resources:
  - » Heat Safety Content: https://www.weather.gov/safety/heat-hazards
  - » Cold Safety Content: https://www.weather.gov/safety/cold-hazards

LACK OF FUNDING

Barrier: Insufficient funding can limit the operation and capacity of cooling or warming centers as well as communities' ability to carry out other response strategies.

POTENTIAL STRATEGIES:

- Explore grant opportunities to support the operation of response actions.
  - See Section 8.2 "Grant and Funding Opportunities" for potential sources of funding.
- Integrate extreme temperature response actions into existing processes, infrastructure, and volunteer-based coordination whenever possible. For example:
  - Direct community members to call 211 for information and connection to services.
  - Partner with local businesses or organizations to run informal cooling/warming centers.
  - Encourage volunteer-run efforts such as peer-to-peer checks or bottled water/warm beverage distribution sites.

LACK OF TRANSPORTATION OR ABILITY TO TRAVEL

Barrier: Lack of individual transportation or access to public transportation as well as dangerous travel conditions due to simultaneous weather events can make it hard or impossible for people to access cooling and warming centers even if centers are open.

POTENTIAL STRATEGIES:

- Support community members' ability to shelter in place:
  - Provide education and resources on ways to safely stay warm or cool at home.
- Encourage community members to stay with family or friends close by who have AC, heat, or other resources that their residence lacks.
- Establish community-based networks where neighbors can check on each other during extreme temperature events, support cooling or warming efforts at home, and assist with transportation to a cooling or warming center if necessary.
- Encourage local communities to pre-identify cooling and warming centers, and to open centers at the most local level possible.

Additional resources

- See Appendix B: Tip Sheet - How to Stay Cool at Home without AC
  View translated tip sheets.

MEETING THE NEEDS OF DIVERSE POPULATIONS

Barrier: Meeting the specific needs of many different populations can be challenging and may require additional adapted responses or resources such as having skilled professionals to staff cooling/warming centers. These populations can include those who are experiencing homelessness, drug use, or mental health crises. Additionally, groups such as older adults, children, community members with pets, and tourists can all have specific needs that make effective response more challenging.

POTENTIAL STRATEGIES:

- Conduct workshops and provide educational opportunities for staff and volunteers to train on meeting the needs of specific populations.
- Consider increasing the presence of public safety or emergency medical personnel at municipal cooling or warming centers, and in proximity to businesses or organizations that open as informal cooling or warming centers.
- Provide separate designated spaces and resources (ex. crates, water bowls) for pets at cooling or warming centers, or partner with local animal shelters or humane societies to assist with providing shelter for residents with pets during extreme temperature events.
- Communicate with tourist organizations and hotels to coordinate response efforts for visitors.

COMMUNICATION BARRIERS

Barrier: During extreme temperature events, language and cultural barriers can prevent effective communication of emergencies, response efforts, and resources. Reaching residents of unincorporated communities and areas with limited internet access can present additional challenges.

POTENTIAL STRATEGIES:

- Language and culture:
  - Understand language and cultural needs in your communities before an extreme temperature event occurs, so plans can be made ahead of time.
  - Engage with existing community-based organizations that serve residents who are not fluent in English.
  - Develop and provide translated materials when possible.
- Hard-to-reach populations:
  - Use multiple communication channels to post or distribute information, such as in-person methods (i.e., Town Halls, meals on wheels, municipal or local partners, churches), online methods (i.e., websites, social media) and methods that don't require being in-person or having internet access (i.e., 211, television, radio).
  - Coordinate with local doctors' offices, emergency departments, and emergency responders to provide information and resources when community members visit or call.

Additional resources:

- NWS Pre-Made Heat and Cold Safety Resources in Spanish:
  - Spanish Heat Safety Content: https://www.weather.gov/wrn/heat-espanol-sm
  - Spanish Cold Safety Content: https://www.weather.gov/wrn/winter-graphics-SP

8. Strengthening Resilience to Extreme Temperature Events

Building long-term resilience to extreme temperatures may involve updates to building codes, energy systems, land use, and outdoor infrastructure. In contrast to the options identified in Section 7, which focus on short-term response actions, the options below may require more time (i.e., to enact policy changes) and/or may have larger budget implications. As with the shorter-term response options, the feasibility will depend on local resources, conditions, and the needs of specific populations. Some options could also naturally link to other plans and initiatives (i.e., climate change adaptation or resilience plans and objectives, hazard mitigation plans), potentially expanding funding opportunities and resources for implementation.

ADDED BENEFITS

Improving the resilience of buildings to extreme temperature impacts can provide additional benefits beyond health and safety, such as reducing energy costs. For example, installing heat pumps can improve indoor cooling and increase the energy efficiency of the building.

See Table 8 for a list of programs that can support efforts to improve the resilience of Maine's indoor spaces.

8.1 RESILIENCE-BUILDING CATEGORIES

The longer-term resilience options identified below are organized according to whether they focus on indoor spaces or outdoor spaces. Several of these options, such as splashpads and misters, may also be implemented during an extreme temperature event response, but planning, procurement, and/or installation may need to be completed before an event occurs.

Improve the resilience of indoor spaces

- Promote/install energy-efficient building upgrades, including weatherization, cooling, and building code updates in:
  - Residences
  - Businesses/organizations
  - Town/municipal public buildings
- Promote or develop programs to improve energy affordability and reduce energy insecurity (i.e., firewood banks, heating fuel subsidies, utility bill assistance, or low-cost access to community solar projects)
- Ensure that back-up power sources (i.e., generators or solar power with battery back-up) exist for cooling/warming centers and other public facilities such as schools
- Organize donation drives or lending opportunities for new/used window air conditioners and space heaters that are in safe and working condition
  - Swap sheds
  - Social media sale/trade sites
  - Library lending programs

Improve the resilience of outdoor spaces

- Increase trees, shrubs, and vegetative cover, and shade structures in public areas lacking shade or green cover (heat only)
- Reduce paved surfaces to keep urban areas cooler, or reduce parking spaces associated with new construction to avoid paved "heat islands" (heat only)
- If not already available, add splash pads, fountains, misters, drinking water fountains, and seasonal awnings to public areas (heat only)
- Add heat lamps and/or heated shelters to parks, public buildings, or other public spaces (cold only)

View Table 7 and other resources online

8.2 GRANT AND FUNDING PROGRAMS

Table 8: Grant and other funding programs that may support resilience efforts related to extreme temperature events.

Program	Purpose	Link to Website/Contact
Weatherization Assistance Program: Office of State and Community Energy Programs (*federal program*)	For States to design/increase energy efficiency in dwellings owned by low income, elderly, and handicapped residents.	Weatherization Assistance Program | Department of Energy (energy.gov)
Low Income Home Energy Assistance Program (LIHEAP): Office of Administration for Children & Families (*federal program*)	Federal funding to assist families with costs of home energy bills, weatherization efforts, and minor home repairs.	Low Income Home Energy Assistance Program (LIHEAP) | The Administration for Children and Families (hhs.gov)
Low Income Assistance Program: Maine State Housing Authority	To assist low-income residents with electricity costs.	HEAP Agency Contacts (mainehousing.org)
City/Town General Assistance Offices	To assist families with meeting basic fuel and food needs.	General Assistance | Department of Health and Human Services (maine.gov)
MaineHousing Central Heating Improvement Program	Provides central heating system repair and replacement to low-income households.	Central Heating Improvement Program Contact your Local Community Action Agency
Efficiency Maine Heat Pump Rebate Program	Provides rebates to qualifying households to purchase a heat pump.	Efficiency Maine | Saving energy, reducing energy costs, and improving energy conservation
MaineHousing Overnight Warming Shelter Funding	MaineHousing offers an annual funding opportunity for the opening and operation of overnight winter warming centers – usually in late summer or fall.	MaineHousing Requests for Proposal (RFPs) | Search for 'Warming Shelter'

9. Extreme Temperature Preparedness and Response Planning

This section describes a step-by-step process intended to assist Maine's municipal and community leaders in developing broader extreme temperature preparedness and response plans and may not be directly applicable to non-municipal organizations that provide limited aid or assistance to populations during extreme temperature events. Section 9.1 provides a set of initial questions that should be asked before getting started with plan development. The steps that follow in Section 9.2 provide a more in-depth description of the plan development process, which can be modified based on community context, partners, and population. Appendix D includes additional information to help planning teams with implementation of each of the steps defined below.

9.1 SCOPING QUESTIONS FOR PLANNING PROCESS

Start planning by answering some basic questions:

WHO? Determine who is needed to develop a preparedness and response plan and/or provide input when implementing the steps described below.

WHAT? Determine the type of plan you'd like to develop and where it will reside.

WHERE? Determine the plan's scope, including the focus area and target audience.

WHEN? Determine a reasonable timeline for plan development.

WHY? Determine the purpose of the plan and the plan's objectives.

9.2 PLANNING PROCESS FOR MUNICIPAL AND COMMUNITY LEADERS

This section describes a step-by-step municipal extreme temperature planning process based on FEMA's Comprehensive Preparedness Guides 101 and 201 (FEMA, 2021) and other emergency planning and preparedness resources. These steps may be scaled up or down depending on the context, need, and resources available. The steps include:

Step 1: Form a planning team

Step 2: Identify people who may be at higher risk

Step 3: Identify important infrastructure and resources

Step 4: Assess resource capabilities

Step 5: Identify communication methods

Step 6: Develop the plan

Step 7: Implement, evaluate, and maintain the plan

USE EXISTING RESOURCES

Subject matter experts and other key stakeholders (i.e., individuals, departments, and organizations that provide direct aid and services to people who may be at higher risk) may already provide services during extreme temperature events and are often essential sources of information for response plan development. Planning teams should coordinate with and utilize these existing connections and mechanisms as much as possible.

EXTREME TEMPERATURE PREPAREDNESS AND RESPONSE PLANNING PROCESS

Step 1	**FORM A PLANNING TEAM** Planning teams should be formed and remain engaged through the duration of plan development. The team should regularly schedule time to coordinate efforts and may meet regularly for plan updates or immediately following major extreme temperature events. Teams typically include local public health and emergency management experts as well as a steering committee (a group that provides guidance to make sure the planning process stays on track and achieves its goals), ideally representative of the whole community. This committee could include representatives from housing and social services, Public Works, Parks and Recreation, and the local community, for example. Teams should also be scaled accordingly - a city with a complex risk landscape and dedicated planning capacity may require a larger and more diverse planning team, while a small town may have a planning team with a few members.
Step 2	**IDENTIFY PEOPLE WHO MAY BE AT HIGHER RISK** While all Mainers can expect to feel the impacts of extreme heat and cold, some individuals are at higher risk of heat-related or cold-related illness. As discussed in Section 4 ("People Who May be at Higher Risk from Extreme Temperatures"), these can include people highly exposed to extreme temperatures based on where they live, work, or play; those with physiological sensitivity to extreme temperatures; and those with limited access to resources (NIHHOS, 2023). Planning teams should identify these groups, consider their specific needs during plan development, and prioritize efforts to address impacts to them during an extreme temperature event. See Section 4 for a detailed list of populations to consider.
Step 3	**IDENTIFY IMPORTANT RESOURCES** Planning teams should begin by identifying resources that provide essential needs and services during normal days and during emergencies. These resources can include: • Structural resources such as shelters, schools, residential housing complexes, community centers, and places of worship • Transportation resources such as roads and public transportation options • Organizational resources such as volunteer organizations and community action networks • Medical response resources such as hospitals, first responder services, and medical clinics
Step 4	**ASSESS RESOURCE CAPABILITIES** Once important resources are identified, planning teams should determine the ability and willingness of these resources to assist in an extreme temperature response. Planners should evaluate what each resource is capable of providing (i.e., people, equipment, supplies, time, funds, information) and the factors that may impact the availability of each resource (i.e., operating hours, staffing restrictions, budget restrictions).

Step 5	**IDENTIFY COMMUNICATION METHODS** The fifth step is identifying communications pathways and methods to ensure plans can be communicated efficiently and effectively. This step involves efforts to: • Identify which existing communications channels are preferred and whether additional channels need to be established, and identify who will oversee delivering the information. • Determine what information is essential to communicate so that individuals know how to stay safe before, during, and after an extreme temperature event. • Determine what communication barriers may exist for your community and what can be done to reduce them. For example, providing translations for non-English speakers when possible and using multiple communication channels to distribute information. • Identify or create customizable templates for extreme temperature messaging that can be quickly edited and distributed, such as social media posts, infographics and flyers (see examples in Appendix B). • Determine how you will choose the appropriate methods for distributing information and determine when to distribute these messages. Potential communication channels include in-person (i.e., town halls, municipal or local partners), online (i.e., websites, social media) and other methods (i.e., television, radio).
Step 6	**DEVELOP THE PLAN** Step 6 involves the final development of an extreme temperature response plan. This section includes a collection of practical and actionable response options and best practices to consider when engaging in plan development. These lists were compiled through a literature review of available resources, references, and guidance documents. *Tables 9 and 10 below show potential extreme temperature preparedness and response actions for each NWS extreme heat and extreme cold threshold, as well as the party(s) responsible for carrying out the action.*
Step 7	**IMPLEMENT, EVALUATE, AND MAINTAIN THE PLAN** Plan implementation, evaluation, and maintenance efforts should begin and end with the planning team. These individuals are most familiar with the contents of the plan and will be best suited to complete any reviews, updates, or revisions. If appropriate, the plan evaluation and updating process could also involve a steering committee to guide the process and represent impacted groups. Ultimately, the success of each plan will depend on several factors, including the extent to which plan owners work to ensure it continues to meet the evolving needs of the communities it serves. This involves ensuring the plan is up-to-date and evolving as conditions change, and that it is regularly tested, evaluated, and updated as needed. These efforts should occur (at a minimum) in the following instances: • On a periodic basis (for general updates and revisions) • In the aftermath of an extreme temperature event (to capture best practices and lessons learned) • When significant changes in available resources and capabilities, or changes in the risk and vulnerability landscape, have an impact on the ability to execute the plan

Table 9: Potential extreme heat preparedness and response actions, and which party or parties may be tasked with either deciding to initiate an action or implementing it on the ground. Note that municipal leaders are associated with every action, in part because this Guidebook is designed with municipal leaders as a key audience. Local capacity and needs will vary, but assigning a single person to be responsible for directing each action may help streamline the response.

Preparedness and Response Actions for Extreme Heat Thresholds	Potential Lead(s)				
	Municipal Leaders	Cooling Center Operators	First Responders	Business Owners	Community-Based Organizations
WEATHER IS HOT BUT DOES NOT REACH NWS ALERT CRITERIA					
Forecasted Heat Index: 85 – Preparedness | Time Frame for Action: Long (Up to 7 days)					
Identify potential cooling center locations	X	X		X	X
Identify potential outdoor cooling options (pools/beaches, splash pads, etc.)	X	X		X	X
Engage key response partners (cooling center location operators, emergency management/response staff, healthcare partners, etc.) for potential activation	X		X		
Assess any internal risks, e.g. to municipal staff working outdoors, municipal summer camps, municipal outdoor events, impacts to businesses and staffing, impacts to healthcare facilities, etc.	X	X	X	X	X
Forecasted Heat Index: 90 – Limited Response | Time Frame for Action: Long (Up to 7 days)					
Consider opening/promoting formal/informal cooling locations or resource hubs	X	X		X	X
Consider opening/promoting outdoor cooling options (pools/beaches, splash pads,)	X	X		X	X
Identify vulnerable groups in need of support (i.e. older adults, unhoused, those who are homebound or medically fragile) and consider outreach to partners or organizations that serve them	X		X		X
Communicate regularly with key response partners to identify areas of need and available resources	X	X	X		X
Assess any local outdoor events (parades, sporting events, concerts, etc.) and ensure organizers have sufficient water, shade, and medical support	X		X	X	
Assess any internal risks, e.g. to municipal staff working outdoors, municipal summer camps, municipal outdoor events, etc.	X	X	X	X	X
NWS HEAT ADVISORY					
Forecasted Heat Index: 95 – Full response | Time Frame for Action: Short (Usually 12-48 hours)					
Open formal cooling centers (e.g. town halls, schools, public libraries)	X	X		X	X
Promote informal cooling locations or resource hubs (e.g., local businesses, movie theaters, existing shelters)	X	X		X	X
Consider enhancing outdoor locations (install pop-up tents, run misters, fans, and splashpads, distribute bottled water, etc.)	X	X		X	X
Consider formal and informal support networks (e.g. peer-to-peer checks) to check in on and assist at-risk or vulnerable residents	X				
Communicate regularly with key response partners to identify areas of need and available resources	X	X	X		X
Prepare public outreach materials, gather coordination and communication partners, and discuss ways to assess needs and prioritize information-sharing efforts with highest-risk populations	X				
Consider adjusting timing/location of local outdoor events (parades, sporting events, concerts, etc.)	X			X	
Begin implementing mitigation steps for internal risks such as adjusting outdoor workers' schedules, modifying summer camp activities, etc.	X	X	X	X	X
Consider relocating visitors, residents, occupants, and staff to cooler locations if needed	X	X		X	X
Direct community members to a call 211 or a municipal information line for questions	X		X		

Preparedness and Response Actions for Extreme Heat Thresholds	Municipal Leaders	Cooling Center Operators	First Responders	Business Owners	Community-Based Organizations
NWS EXTREME HEAT WATCH					
Forecasted Heat Index: 105+ possible - Emergency Preparedness |Time Frame for Action: Long (Usually 2-4 days)					
Open formal cooling centers or resource hubs (e.g. town halls, schools, libraries) and assess ability to open for extended hours	X	X		X	X
Promote informal cooling locations or resource hubs (e.g., coffee shops, movie theaters, existing shelters)	X	X		X	X
Assess ability to enhance outdoor locations where possible and gather/stage resources and supplies (procure/prepare pop-up tents, misters, bottled water, etc.)	X	X		X	X
Communicate with partners or organizations that serve vulnerable groups to identify needs and resources for serving their constituents	X	X			X
Organize network to perform peer-to-peer checks on at-risk or vulnerable residents	X				X
Prepare and distribute public outreach materials and discuss ways to assess needs and prioritize information-sharing efforts with people at highest risk	X				
Communicate with the public to amplify key messages, communicate actions to take to stay safe, and encourage use of cooling centers and other resources	X	X	X	X	X
Assess planned outdoor events and consider cancellation or modification options	X			X	X
Assess internal at-risk groups and events, such as outdoor workers, summer camps, municipal activities, etc. and consider implementing mitigation options	X				
Modify/cancel outdoor activities	X			X	
Consider increasing emergency/first responder staffing levels	X		X		
Direct community members to 211 or a municipal information line for questions	X		X		
Consider relocating visitors, residents, occupants, and staff to cooler locations	X	X		X	X
NWS EXTREME HEAT WARNING					
Forecasted Heat Index: 105+ happening - Emergency Response | Time Frame for Action: Short (Usually 12-48 hours)					
Open formal cooling centers or resource hubs (e.g. town halls, schools, libraries) and consider extended hours	X	X		X	X
Promote informal cooling locations or resource hubs (e.g., coffee shops, movie theaters, existing shelters)	X	X		X	X
Enhance outdoor locations where possible (install pop-up tents, run misters, distribute bottled water, etc.)	X	X		X	X
Communicate with partners or organizations that serve vulnerable groups to identify emergent needs from their constituents	X				X
Implement peer-to-peer checks on at-risk or vulnerable residents where possible	X				X
Share prepared public outreach materials through identified channels	X				
Communicate frequently with key response partners to identify areas of critical need and deploy response as needed	X		X		
Communicate with the public to amplify key messages, communicate actions to take to stay safe, and encourage use of cooling centers and other resources	X	X	X	X	X
Modify/cancel outdoor activities	X			X	
Implement mitigation options for internal risks such as adjusting outdoor workers' schedules, modifying summer camp locations and activities, etc.	X				
Relocate residents, staff, and occupants to cooler locations if needed	X	X	X	X	
Coordinate with utilities to ensure continuous service and/or to service those with greatest need	X				
Open a county or municipal Emergency or Department Operations Center (if warranted) and assign a staff member to field questions and media inquiries (for severe events and large, complex responses)	X				
Mobilize extra emergency response and medical personnel (as needed)	X	X	X	X	X
Direct community members to 211 or a municipal information line for questions	X		X		

* Heat index forecasts and current heat index conditions can be found on any weather site or app - look for measures such as `Feels Like`
** To receive notifications about NWS Advisories, Watches, and Warnings, sign up for NWS alerts at Interactive NWS (https://inws.ncep.noaa.gov/) or request notification from your Local Emergency Management Director, County Emergency Management Agency Director, or Maine CDC Public Health District Liaison.

Table 10: Potential extreme cold preparedness and response actions, and which party or parties may be tasked with either deciding to initiate an action or implementing it on the ground. Note that municipal leaders are associated with every action, in part because this Guidebook is designed with municipal leaders as a key audience. Local capacity and needs will vary, but assigning a single person to be responsible for directing each action may help streamline the response.

Preparedness and Response Actions for Extreme Cold Thresholds	Potential Lead(s)				
	Municipal Leaders	Warming Center Operators	First Responders	Business Owners	Other CBOs
WEATHER IS COLD, BUT DOES NOT REACH NWS WARNING CRITERIA					
Apparent Temperature: 32 to 0°F - Preparedness | Time Frame for Action: Long (up to 7 days)					
Identify potential warming center locations	X	X		X	X
Identify potential outdoor warming options (e.g., outdoor heaters, hot beverage distribution, etc.)	X	X		X	X
Engage key response partners (e.g., warming center location operators, emergency management/response staff, healthcare partners, etc.) for potential activation	X		X		
Assess any internal risks, e.g. to municipal staff working outdoors, municipal outdoor events, impacts to businesses and staffing, impacts to healthcare facilities, etc.	X	X	X	X	X
Apparent Temperature: 0 to -15°F - Limited Response | Time Frame for Action: Long (up to 7 days)					
Consider opening/promoting formal/informal warming center locations or resource hubs	X	X		X	X
Consider opening/promoting outdoor warming options (e.g., outdoor heaters, hot beverage distribution, etc.)	X	X		X	X
Identify vulnerable groups in need of support (e.g., older adults, unhoused, those who are homebound or medically fragile) and consider outreach to partners or organizations that serve them	X		X		X
Communicate regularly with key response partners to identify areas of need and available resources	X	X	X		X
Assess any local large gatherings or events and ensure organizers have sufficient response plans, backup power, and medical support	X		X	X	
Assess any internal risks, e.g. to municipal staff working outdoors, municipal outdoor events, impacts to businesses and staffing, impacts to healthcare facilities, etc.	X	X	X	X	X
NWS COLD WEATHER ADVISORY					
Apparent Temperature: -15°F to - 25°F – Full Response | Time Frame for Action: Short (usually 12-48 hours)					
Open formal warming centers and extend operations of public facilities with ample heating capabilities (i.e., town halls, schools, public libraries)	X	X		X	X
Promote informal warming locations (e.g., local businesses, movie theaters, existing shelters) and outdoor warming options (e.g., outdoor heaters, hot beverage distribution, etc.)	X	X		X	X
Consider formal and informal support networks (e.g. peer-to-peer checks) to check in on and assist at-risk or vulnerable residents	X	X	X	X	X
Communicate regularly with key response partners to identify areas of need and available resources	X	X	X		X
Consider adjusting timing/location of local outdoor events (parades, sporting events, concerts, etc.)	X			X	
Direct community members to a call 211 or a municipal information line for questions	X		X		
Direct community members to check, fuel, and safely operate generators if a snowstorm is anticipated in addition to extreme cold	X				
Consider relocating visitors, residents, occupants, and staff to warmer locations if needed	X	X		X	X

Preparedness and Response Actions for Extreme Cold Thresholds	Municipal Leaders	Warming Center Operators	First Responders	Business Owners	Other CBOs
NWS EXTREME COLD WATCH					
Apparent Temperature: < - 25°F to - 35°F possible – Emergency Preparedness Time Frame for Action: Short (24-48 days)					
Activate relief stations/networks (space heaters, coats, blankets, etc.) and resource hubs	X	X		X	X
Communicate with partners or organizations that serve vulnerable groups to identify needs and resources for serving their constituents	X	X			X
Organize network to perform peer-to-peer checks on at-risk or vulnerable residents where possible	X				X
Prepare and distribute public outreach materials and discuss ways to assess needs and prioritize information-sharing efforts with people at highest risk	X				
Communicate with the public to amplify key messages, communicate actions to take to stay safe, and encourage use of warming centers and other resources	X	X	X	X	X
Assess internal at-risk groups and events, such as outdoor workers, municipal activities, etc. and consider implementing mitigation options	X				
Modify/cancel outdoor activities	X			X	
Direct community members to a call 211 or a municipal information line for questions	X		X		
Direct community members to check, fuel, and safely operate generators if a snowstorm is anticipated in addition to extreme cold	X				
Consider relocating visitors, residents, occupants, and staff to warmer locations if needed	X	X		X	X
Consider increasing emergency/first responder staffing levels	X		X		
NWS EXTREME COLD WARNING					
Apparent Temperature: < - 25°F to - 35°F expected – Emergency Response Time Frame for Action: Short (usually 12-48 hours)					
Open formal warming centers and extend operations of public facilities with ample heating capabilities (i.e., town halls, schools, public libraries)	X	X		X	X
Promote informal warming locations (e.g., local businesses, movie theaters, existing shelters) and outdoor warming options (e.g., outdoor heaters, hot beverage distribution, etc.)	X	X		X	X
Activate relief stations/networks (space heaters, coats, blankets, etc.) and resource hubs	X	X		X	X
Communicate with partners or organizations that serve vulnerable groups to identify emergent needs from their constituents	X	X			X
Communicate with the public to amplify key messages, communicate actions to take to stay safe, and encourage use of warming centers and other resources	X	X	X	X	X
Share prepared public outreach materials through identified channels	X				
Communicate frequently with key response partners to identify areas of critical need and deploy response as needed	X		X		
Coordinate with utilities to ensure continuous service and/or to service those with greatest need	X				
Implement peer-to-peer checks on at-risk or vulnerable residents where possible	X				X
Modify/cancel outdoor activities	X			X	
Relocate residents, staff, and occupants to warmer locations if needed	X	X	X	X	
Open a county or municipal Emergency or Department Operations Center (if warranted) and assign a staff member to field questions and media inquiries (for severe events and large, complex responses)	X				
Mobilize extra emergency response and medical personnel (as needed)	X	X	X	X	X
Direct community members to a call 211 or a municipal information line for questions	X		X		

Appendix A: Cooling and Warming Center Guidance

Appendix A provides templates, checklists, and other information to assist with cooling/warming center opening and operation. All information in this appendix can and should be tailored to the needs and resources of each unique community.

View Appendix A and other resources online

MEMA COOLING CENTER GUIDANCE

Maine Emergency Management Agency (MEMA) has developed guidance to assist communities with opening cooling centers and preventing heat-related illness during extreme heat events (MEMA, 2023). The first page of this guidance provides information about and common characteristics of community cooling centers (see below).

Community Cooling Center Guidance

June 2023

This resource provides guidance for communities to operate cooling centers and take other actions to help prevent health impacts caused by hot weather.

What is a community cooling center?

In Maine, heat-related illnesses occur more frequently when temperatures reach the mid-to-upper 80s and hotter. Community cooling centers help provide temporary relief and are especially helpful when the National Weather Service issues a Heat Advisory or Excessive Heat Warning.

Cooling centers can be established in any air conditioned building that can be opened to the public, such as a library, town hall, or senior center. Private buildings including movie theaters and retail facilities can also be used as cooling centers. Charging Stations for electronic devices such as Cell Phones, Laptops, and Tablets are encouraged. The following are common characteristics for community cooling centers:

Recommended	Encouraged
Air-conditioned	Back-up generator available
Accessible to the public	Activities available for guests
American Disabilities Act compliant	Separate room for families and children
Access to restrooms	Public transit / other transportation assistance available
Access to water	Provisions for pets
Seating available for all guests	Extended hours as needed
Widely advertised throughout community	On site health and social services

If you plan to open a cooling center in your community, please coordinate with your Local and County Emergency Management Director for further guidance.

Please notify your County Emergency Management Agency when a Cooling Center is opened. The County Emergency Management Agency will notify the Maine Emergency Management Agency who will then notify the MEMA Duty Officer, I/A Officer, Mass Care Coordinator, PIO, and 211 Maine.

The County Emergency Management Agency will use the following email to for notifications of Cooling Center Openings at the following:
CenterShelter.OpenNotification@maine.gov

Maine Emergency Management Agency, 72 Statehouse Station, 45 Commerce Drive Augusta, Maine 04330 207-624-4400

The second page of the MEMA Cooling Center Guidance provides information on preventing heat-related illness as well as long-term strategies for increasing community resilience to extreme heat (see below).

What else can be done to prevent heat illnesses?

Follow this link to the Maine CDC for additional information: Preparing for Very Hot Weather - Environmental & Occupational Health - Maine CDC: DHHS Maine. Communities can take additional steps, including:

- Communicate heat safety tips to community residents, including guidance for staying safe in homes without air conditioning.
- Mobilize local care networks to check on people at high risk for heat illness.
- Encourage use of public parks, pools, water bodies, or other outdoor assets that can provide relief during hot weather. Consider reducing or removing entry fees for anyone that needs assistance.
- Set up shade structures, hose/misting stations, and provide bottled water in parts of the community without convenient access to cooling resources.
- For outdoor work, recreational activities, or other local events, ensure that organizers are prepared with water, cooling strategies, and event modification or cancellation plans.

Long-term, communities can support the following strategies:

- Adopt hot weather emergency preparedness and response plans.
- Increase trees, shrubs, and other vegetative cover while reducing paved surfaces to keep urbanized areas cooler.
- Promote energy-efficient building retrofits and design, including weatherization, installation of efficient cooling devices like heat pumps, and use of cool roof and paving materials.

Questions?

Contact the Maine Emergency Management Agency Mass Care Coordinator at william.guindon@maine.gov or 207-458-2867 with questions about cooling centers or other heat illness prevention strategies.

OTHER COOLING/WARMING CENTER GUIDANCE

Below is a table of cooling and warming center resources, including guidance from the U.S. Centers for Disease Control (CDC), Federal Emergency Management Agency, National Oceanic and Atmospheric Administration (NOAA), and nearby states.

Tool	Link
Extreme Heat	
U.S. Centers for Disease Control and Prevention: The Use of Cooling Centers to Prevent Heat-Related Illness	Climate and Health Technical Report Series: Technical Documentation on Exposure-Response
National Oceanographic and Atmospheric Administration Community Heat Action Checklist	Heat Action Checklist
Vermont Department of Health Community Cooling Center Guidance	Community Cooling Center Guidance
Massachusetts Executive Office of Health and Human Services Cooling Center Guidance	Cooling Centers Guidance | Mass.gov
Extreme Cold	
Ready.gov "Prepare for Winter Storms"	Be Prepared for A Winter Storm
Waldo County, Maine: Considerations for Operating an Emergency Warming Shelter	Considerations and Guidance for Operating a Warming Shelter
Massachusetts Executive Office of Health and Human Services Warming Center Guidance	Warming Centers Guidance | Mass.gov

Appendix B: Communications Materials and Guidance

This section includes a list of resources from trusted federal and state agencies like the Federal Emergency Management Agency (FEMA), Maine Emergency Management Agency (MEMA), National Weather Service (NWS), US Centers for Disease Control and Prevention (U.S. CDC), Maine Center for Disease Control and Prevention (Maine CDC), and governmental agencies in nearby states to assist with developing and coordinating communications plans before, during, and after extreme heat and extreme cold events, followed by examples of NWS infographics to share with communities when preparing for and responding to an extreme temperature event. When sharing messages from external entities, it is important that planners only use trusted, reputable sources, such as those listed above, when providing guidance and resources to the public.

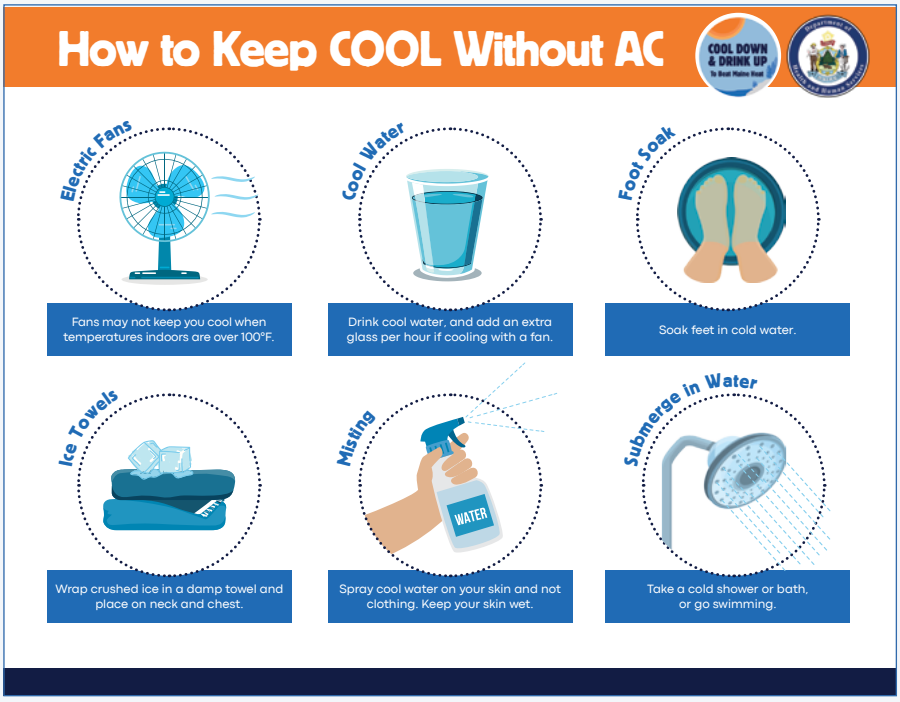
View Appendix B and other resources online

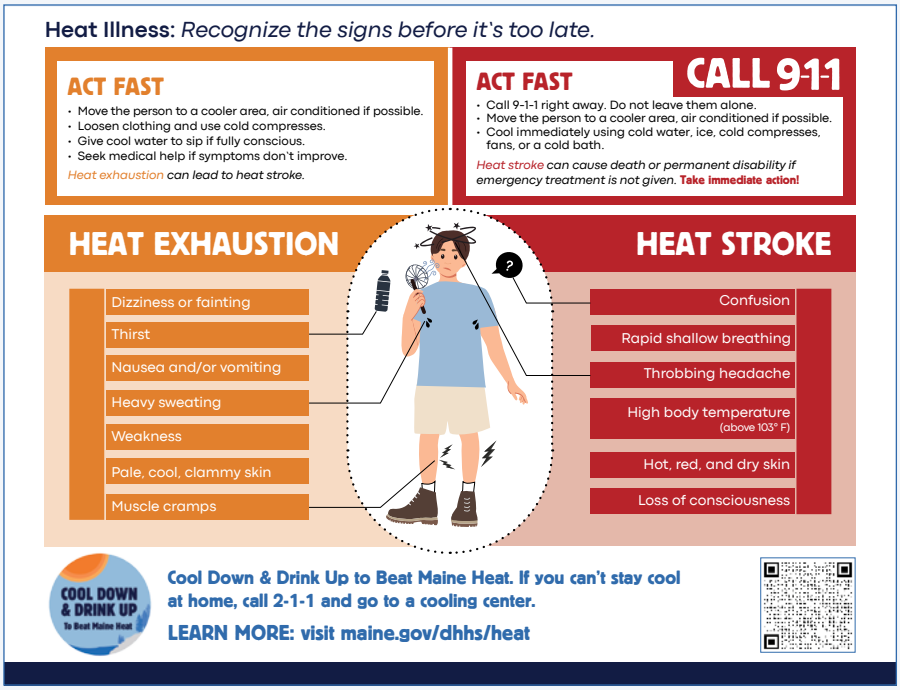
Local and municipal leaders can use their own preferred communication channels to disseminate these messages. Mass communication platforms and channels that are non-IPAWS or for non-dire emergencies can also be used.

Tool	Description	Link
Extreme Heat		
FEMA Ready.gov Extreme Heat Safety Social Media Toolkit	Safety and preparedness message templates, resources, and graphics for social media channels	Extreme Heat Safety Social Media Toolkit | Ready.gov
NWS Extreme Heat Safety Infographics (see examples below)	Downloadable infographics to inform the public of risks and preparedness actions	Heat Infographics
Vermont Department of Health "Hot Weather & Health" Media Toolkit	Outreach templates for use by VT DOH to provide consistent messaging on heat-related illness risks, prevention, and adaptation strategies	Hot Weather Media Toolkit
Maine CDC "Keeping Kids Safe in Heat" 1-Pager	Tips to help kids stay safe during extreme heat	Keeping Kids Safe
Maine CDC "Tips to Beat the Heat" 1-Pager	Checklist of general tips and preparedness actions to stay safe during extreme heat	Tips To Beat The Heat
Maine CDC "Recognize Heat Illness"	List of potential extreme heat symptoms and preparedness/response actions	Recognize Heat Illness - Environmental & Occupational Health - Maine CDC - DHHS Maine
Extreme Cold		
FEMA Ready.gov Winter Safety Social Media Toolkit	Safety and preparedness message templates, resources, and graphics for social media channels	Winter Social Media Toolkit
NWS Winter Safety Infographics (see examples below)	Downloadable infographics to inform the public of risks and preparedness actions	Winter Infographics

Heat Resource for How to Keep Cool Without AC

Download the tip sheet and translated versions.

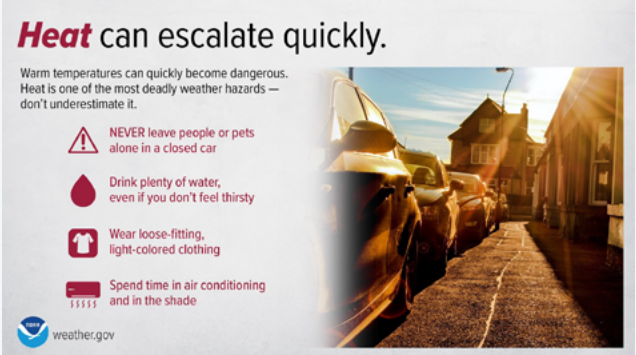


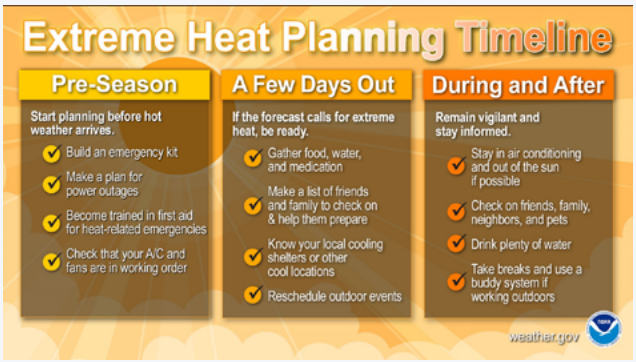


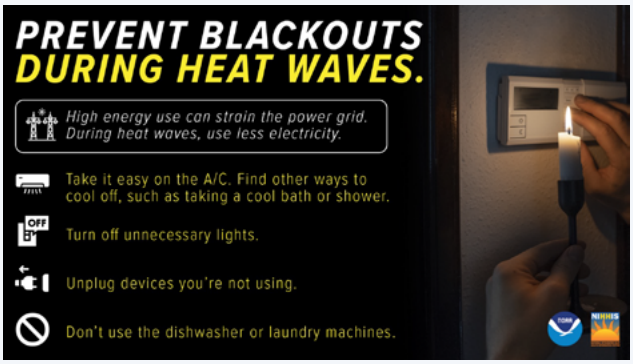
Extreme Heat Infographics

Below is a selection of extreme heat infographics that can be used to communicate safety and preparedness information before and during heat events. Additional heat infographic resources can be found on Weather.gov's Heat Hazards webpage under "Social Media and Infographics."

Extreme Heat Infographics



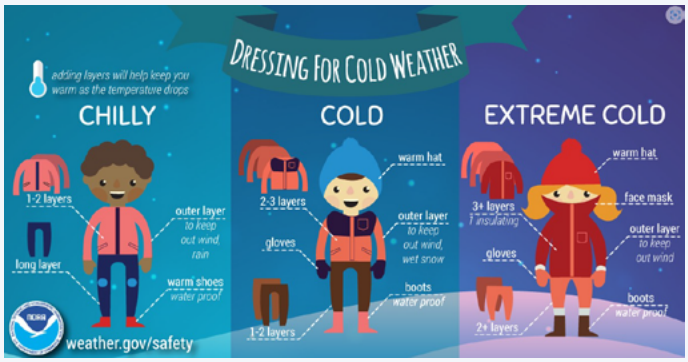


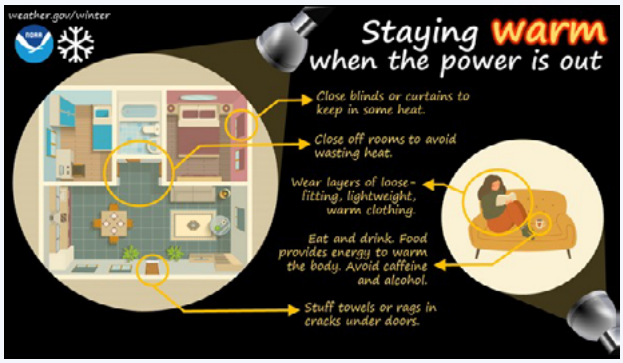


Extreme Cold Infographics

Below is a sample of extreme cold infographics that can be used to communicate safety and preparedness information during cold events. Additional resources can be found on Weather.gov's Cold Hazards webpage under "Social Media and Infographics."

Extreme Cold Infographics





Heat Index

Heat is often measured through monitoring the interaction between air temperature and relative humidity (i.e., the amount of moisture in the air relative to the total amount of moisture the air can hold). The combination of these two factors and what they feel like to the human body is known as the Heat Index, or apparent temperature (NWS, 2023). For example, an air temperature of 85°F combined with a relative humidity of 80% or higher can produce an apparent temperature in the mid-90s or even over 100 °F. NWS criteria for heat advisories, extreme heat watches, and extreme heat warnings are based on Heat Index values. Figure C-1 shows the NWS Heat Index Chart, which uses air temperature and relative humidity levels to determine what the temperature "feels like" (NWS, 2023).

NWS Heat Index

Relative Humidity (%) \ Temperature (°F)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Wet Bulb Globe Temperature

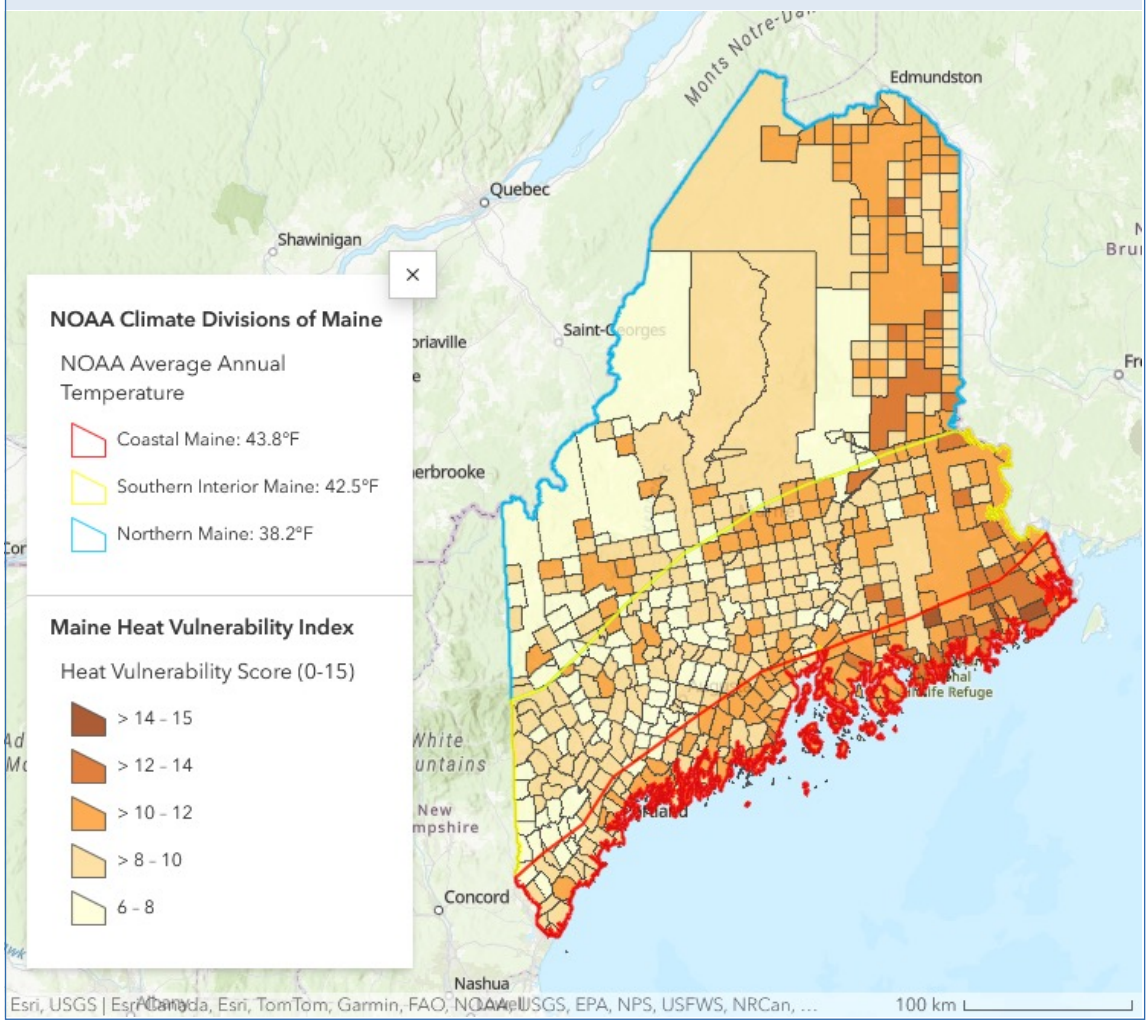
The Wet Bulb Globe Temperature (WBGT) is an experimental tool by NWS that uses metrics for temperature, humidity, wind, solar radiation, and other weather parameters to indicate the potential for heat stress in direct sunlight. It is particularly useful for assessing risk to active populations such as outdoor workers and athletes (NWS, 2019). The WBGT is different from the Heat Index in that the Heat Index is calculated for shady areas. WBGT is often used to inform activity modifications during exercise or outdoor work. For instance, The American College of Sports Medicine and many school districts base their guidelines for sport practices and events on WBGT. Current and forecasted WBGT values for your area can be found on NWS's Graphical Forecasts page (https://digital.weather.gov/).

Heat Vulnerability Index

Extreme heat events can result in various and widespread health impacts. Those effects may be especially prominent in regions that have not historically experienced high temperatures, such as Maine. Figure C-3 displays Maine's heat vulnerability index for all areas across the state. This index estimates each town's vulnerability to intense heat (but not the likelihood or severity of these events) by factoring in various community demographic factors, including the proportion of residents over 65 living alone, proportion of residents aged 5 or younger, proportion of residents without access to air conditioning at home, and overall population density.

	Wet Bulb Globe Temperature	Heat Index
Measured in the sun	✓	X
Measured in the shade	X	✓
Uses temperature	✓	✓
Uses Relative Humidity	✓	✓
Uses wind	✓	X
Uses cloud cover	✓	X
Uses sun angle	✓	X

Figure C-3: Town-level heat vulnerability index values in Maine. Source: Maine Climate Impact Dashboard, https://www.maine.gov/future/climate/climate-impact-dashboard.



HeatRisk Tool

The NWS HeatRisk Tool is an experimental color-and-numeric-based index that provides a forecasted risk of heat-related health impacts that may occur over a 24-hour period (NWS, 2025f). HeatRisk takes into consideration how unusual the heat is for the time of the year, the duration of the heat event (including daytime and nighttime temperatures), and whether those temperatures pose an elevated risk of heat-related impacts. This index is supplementary to official NWS heat products and is meant to provide risk-specific guidance for decision makers and heat-sensitive populations who need to take actions during heat events (including forecasted events that may be below current NWS heat action, advisory, and warning thresholds). Explore the HeatRisk Tool.

Figure C-4: HeatRisk Categories (NWS, 2024)

Category	Risk of Heat-Related Impacts
Green 0	Little to no risk from expected heat.
Yellow 1	Minor - This level of heat affects primarily those individuals extremely sensitive to heat, especially when outdoors without effective cooling and/or adequate hydration.
Orange 2	Moderate - This level of heat affects most individuals sensitive to heat, especially those without effective cooling and/or adequate hydration. Impacts possible in some health systems and in heat-sensitive industries.
Red 3	Major - This level of heat affects anyone without effective cooling and/or adequate hydration. Impacts likely in some health systems, heat-sensitive industries and infrastructure.
Magenta 4	Extreme - This level of rare and/or long-duration extreme heat with little to no overnight relief affects anyone without effective cooling and/or adequate hydration. Impacts likely in most health systems, heat-sensitive industries and infrastructure.

Figure C-5: Example HeatRisk Map for June 20, 2025

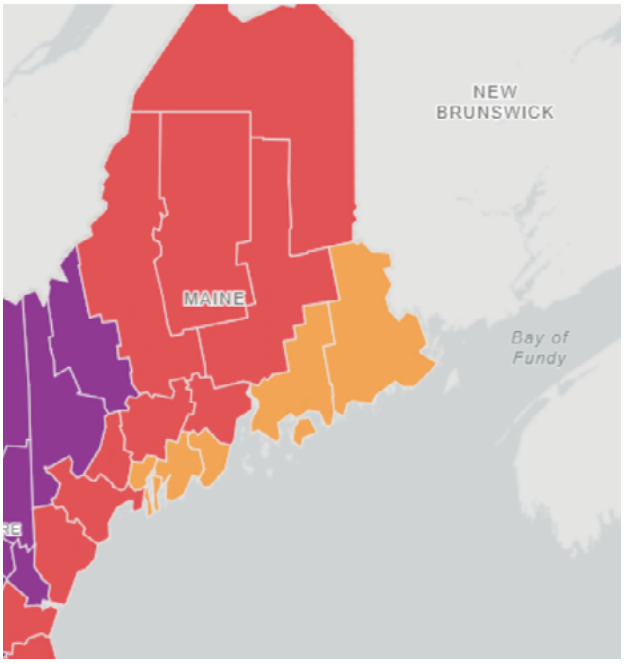


Figure C-6: Example HeatRisk Projection for Kennebec County for June 18-June 23, 2025

***HeatRisk* Forecast**

Kennebec County, ME

Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
June 18	June 19	June 20	June 21	June 22	June 23
Moderate	Major	Major	Major	Minor	Minor

EXTREME COLD

Wind Chill

Similar to the Heat Index, the Wind Chill combines actual air temperature and wind speed in miles per hour (mph) to assess the hazards posed by extreme cold and/or wind events. The color scale in Figure C-5 below shows wind chill temperatures that will cause frostbite in a specific amount of time. For example, a temperature of -5°F with a wind speed of 10mph produces a wind chill of -22°F, which can cause frostbite within 30 minutes.

Figure C-7: Wind Chill Chart produced by the National Weather Service (NWS, 2025h)

Wind Chill Chart

Wind (mph)	Temperature (°F)																	
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

Winter Storm Severity Index

The NWS Winter Storm Severity Index (WSSI) is a scale of anticipated impacts of a forecasted winter weather event, created through combining NWS winter weather forecast data with non-weather-related data, such as whether the land is urban or not (NWS, 2025g). The WSSI provides a general classification of how severe the winter weather event is expected to be. This tool uses the same color-based index as the NWS HeatRisk tool, combined with risk categories ranging from minor to extreme. The WSSI can be found on NWS`s Winter Storm Severity Index page. Note that the WSSI does not depict official warnings and should always be used in context with official NWS forecasts and warnings.

Potential Winter Storm Impacts	
	Winter Weather Area **Expect Winter Weather.** • Winter driving conditions. **Drive carefully.**
	Minor Impacts **Expect a few inconveniences to daily life.** • Winter driving conditions. **Use caution while driving.**
	Moderate Impacts **Expect disruptions to daily life.** • Hazardous driving conditions. **Use extra caution while driving.** • Closures and disruptions to infrastructure may occur.
	Major Impacts **Expect considerable disruptions to daily life.** • Dangerous or impossible driving conditions. **Avoid travel if possible.** • Widespread closures and disruptions to infrastructure may occur.
	Extreme Impacts **Expect substantial disruptions to daily life.** • Extremely dangerous or impossible driving conditions. **Travel is not advised.** • Extensive and widespread closures and disruptions to infrastructure may occur. • Life-saving actions may be needed.

Appendix D: Plan Development Questions and Guidance

The questions and examples below are intended to guide extreme temperature response planning teams through many of the steps outlined in Section 9, "Extreme Temperature Preparedness and Response Planning."

STEP 1: FORM A PLANNING TEAM

Who?	**Determine who is needed to develop a preparedness and response plan and/or provide input when implementing the steps described below.**
• Who has already been involved (either formally or informally) in extreme temperature preparedness, response, and resilience efforts? • Who already works with or serves people in your community who may be at higher risk? • Who should be consulted or informed during plan development and initiation?	
What?	**Determine the type of plan you'd like to develop and where it will reside.**
• Are you developing an extreme temperature response plan that will be incorporated into a municipal emergency response plan or other source document? • Will you include information in the plan that might fall outside the traditional scope of a response plan and should also be captured in other documents or municipal planning efforts (i.e., long-term planning, climate resilience planning)? • Are other actions being undertaken locally that should be considered in plan development, with or without formal integration into municipal structures and/or the plan itself?	
Where?	**Determine the plan's scope, including the focus area and target audience**
• What community or communities (i.e., town, municipality, organization, group of individuals) are you focused on? • Is there reason to collaborate with another community because you either share opportunities (i.e., infrastructure/services) or challenges (i.e., people who may be at higher risk)?	
When?	**Determine a reasonable timeline for plan development.**
• What is the timeline for plan development? • Are there any internal or external risks that may impact the timeline? • Are there any required - or desired - process steps such as public reviews or formal plan review and adoption processes?	
Why?	**Determine the purpose of the plan and the plan's objectives.**
• What are the known impacts of extreme temperature events on the community(ies)? • Have there been recent events that should inform or impact plan goals, objectives, or content? • How does forecast data indicating increasing intensity or frequency of events impact plan goals, objectives, or content?	

STEP 2: IDENTIFY PEOPLE WHO MAY BE AT HIGHER RISK

Questions to Ask When Identifying People Who May Be at Higher Risk

- Which groups of people may be at higher risk exist within the community?
- Where do these populations live?
- How does extreme heat/cold affect these individuals?
- To what extent does direct access to assistance and/or aid to mitigate the impacts of extreme temperature events already exist?
- How effective are these existing efforts?
- How do we reach this population in non-emergency situations?

STEP 3: IDENTIFY IMPORTANT RESOURCES

Examples of Resources

- Community Action Networks and Volunteer Organizations
- First Responder Agencies (fire, police, emergency medical services (EMS)
- FEMA Community Lifelines
- Councils on Aging
- In-Home Support and Service Providers
- Visiting Nurses Associations
- Shelter (or Community Lifeline Center) Providers
- Senior Centers & Community Centers
- Hospitals
- Behavioral/Mental Health Specialists
- Utility Providers and Servicers
- Low Income Housing Organizations
- Tourism Organizations
- Translation Services
- Long Term Care and Nursing Facilities
- Jails, Prisons, and Other Residential Institutions
- Daycares, Preschools & K-12 Education
- Faith-based Organizations
- Transportation Systems and Services (buses, van services, etc.)

STEP 4: ASSESS RESOURCE CAPABILITIES

Questions to Ask When Assessing the Capabilities of Available Resources

- What is your overall willingness to support efforts before, during, and after extreme temperature events?
- What aid/services do you (or could you) provide during extreme temperature events? Are these efforts generally successful? Why/why not?
- Are the resources needed to carry out these services readily available? Or do they need to be notified/acquired and deployed/staged?
- Do you have adequate space and staffing to carry out these services?
- Do you have plans to provide additional accommodations beyond the services described above? (i.e., transportation assistance to/from facility)
- How long would it take to coordinate additional accommodations and who would be involved? How much advance notice is needed?
- How accessible are the facilities and other response, health, and safety resources you make available? (i.e., Are these resources accessible for individuals with transportation or mobility issues? What accommodations are available?)
- What is the status and/or ability of your organization to withstand extreme temperature events (i.e., overall health of infrastructure/facilities, air conditioning, weatherization, back-up power, etc.) and to maintain critical services to the populations you serve?
- Do you have a business continuity plan or other associated plans to implement succession policies, back-up processes, and/or work-around procedures in the event of critical failures?
- Are buildings and facilities located near, or anticipated to be impacted by any other known hazards, such as low-lying coastal zone areas, or floodplains?
- What are the additional gaps that prevent you from maximizing the scope and effectiveness of your efforts?
- Do you have any suggestions for additional resources or organizations to be included in future extreme temperature response efforts?

STEP 5: IDENTIFY COMMUNICATIONS PATHWAYS AND METHODS

The tables below list considerations for developing and coordinating communications plans/procedures, options to consider when building a list of communications actions, and the party(s) who could potentially be responsible for carrying out the action.

Table D-4: Communications Planning Considerations
Communications Planning Considerations
Identify and describe the actions that will be taken to manage communications between responders and to establish and maintain a common operating picture.
Identify and describe the actions that will be taken to identify and overcome communication deficiencies and misinformation.
Identify and describe the actions that will be taken to ensure that information that is provided is authentic and valid.
Identify and describe the actions that will be taken to inform individuals with communication disabilities, sensory, intellectual, or cognitive disabilities, individuals with limited English proficiency, and those with access and functional needs in the workplace, public venues, and in their homes.
Describe how responders and local officials will use and work with the media during an emergency.

Table D-5: Communications Actions and Potential Responsible Party(s)				
Communications Actions and Potential Responsible Parties for Extreme Heat and Cold Events	Responsible Party(s)			
	Planning Team	Municipal Leaders	Business Owners	Other CBOs
Identify and continuously update lists and maps of cooling/warming centers and other publicly available relief/resources	X	X		
Engage with a network of communications and response partners through regularly scheduled meetings	X	X	X	
Issue public service announcements and information on preventing extreme temperature-related illness and injury on traditional media outlets (i.e., TV, radio, etc.)		X	X	X
Provide preparedness and prevention information on social media (i.e., Twitter/X, Facebook, etc.)		X	X	X
Provide helpful tips and information through direct mail (i.e., utility bills, tax bill mailings, etc.)		X	X	X
Send extreme temperature notification and preparedness tips to schools, businesses, and other CBOs		X		
Post information at hospitals, medical offices, grocery stores, town halls, libraries, community/senior centers, councils on aging		X		X
Provide information to outdoor workers, sports leagues/events, parks and recreations departments, and outdoor facilities		X	X	X

STEP 6: DEVELOP THE PLAN

Table D-6: Questions to Ask When Developing the Plan
Questions to Ask When Developing the Plan
How should any information gathered through the steps above be organized and presented (i.e., in a formal plan, as a change or update to a process or procedure, or as an appendix to an existing plan)?
What is going to be done? (i.e., which response actions will be used)?
When will these actions be implemented (i.e., at which NWS threshold) and when will they be stopped?
What additional information is needed to coordinate each action (i.e., who is involved in carrying out the action, what resources and capabilities do they have/need, what communication and information sharing should occur before, during, and after)?
Is there information gathered from the previous steps that doesn't fit into this document, but may fit better into other plans? (i.e., will this plan incorporate long-term resilience-building options, or do those fit best in a Hazard Mitigation Plan)?
How will this plan be tested and evaluated (i.e., will the review and update of the plan be part of a larger multi-year improvement plan, or will the plan be reviewed and updated immediately following any extreme temperature event)?

Appendix E: Extreme Temperature Response Plan Components

This section provides a rough outline of the potential components of an extreme temperature response plan. This outline has been utilized - to varying degrees - in the recent development of several county extreme temperature response plans and can be a reference for structuring and formatting plans. Each plan should ultimately be tailored to the specific priorities and needs of its users.

POTENTIAL PLAN OBJECTIVES

- **To evaluate local risks and vulnerabilities to extreme temperatures**
- **To establish a comprehensive menu of response and resilience-building options**
- **To incorporate local priorities and needs**
- **To incorporate information and best practices from similar plans and resources**

POTENTIAL PLAN COMPONENTS

- **Situation overview**
  - » Background on known and anticipated extreme temperature impacts
  - » Local context: how extreme temperatures are felt from the perspective of a resident or plan user
- **Hazard profile**
  - » Overview of the signs and symptoms of heat- and cold-related illnesses
  - » Overview of any other risks associated with extreme heat/cold
  - » Overview of local vulnerabilities and people who may be at higher risk
- **Thresholds for action**
  - » Summary of the various NWS heat and cold thresholds
  - » Summary of the preparedness and response actions that may accompany each advisory threshold (examples provided in Section 9)
- **Planning and preparedness**
  - » Overview of actions taken to establish and maintain a state of preparedness before an extreme temperature event
- **Response**
  - » Overview of actions taken to keep people safe and healthy during and immediately following an extreme temperature event
- **Roles and responsibilities**
  - » Delegation of roles and responsibilities as they relate to actions outlined in the planning, preparedness, and response sections
- **Communications and coordination**
  - » Outlines the processes, structures, and networks necessary to establish and maintain communications and coordination before, during, and after an extreme temperature event

Appendix F: Checklist for Operating Cooling/Warming Centers

This section includes a fillable checklist to assist owners/operators through the process of opening and operating cooling and warming centers during extreme temperature events.

Table F-1: Steps to assess expected conditions and impacts.

COMPLETE?	CONDUCTING AN INITIAL ASSESSMENT:
	Consult NWS, MEMA, County Emergency Management Agencies (EMAs), and other leaders for information.
	Identify temperatures to be expected.
	Identify whether expected temperatures meet center opening criteria.
	Identify expected duration of the extreme temperature event.
	Estimate number of anticipated calls from the public.
	Estimate number of people to expect at the center.
	Define demographics for center (i.e., for those with functional needs, pets)?
	Define services to offer at the center (see Table F-5).

Table F-2: Policies and procedures to determine when opening and operating cooling/warming centers.

COMPLETE?	DETERMINE OPENING AND OPERATING POLICIES AND PROCEDURES:
	Who will authorize the opening and operation of the center?
	Will outside assistance be required to operate the center?
	How will the center be financed?
	Does the facility and/or operator of the center have appropriate insurance?
	Will personnel be paid, volunteer, or both?
	How will personnel be vetted and credentialed? Are specific skills needed? (i.e., medical professionals)
	What will the hours of operation be?
	Will registration be required?
	What populations will the center serve? (i.e., seniors only)?
	What is the policy for unaccompanied minors?
	Will food, snacks, and beverages be served?
	How will media requests and public information efforts be handled?
	Will pets be permitted and accommodated? If so, how?
	Will emotional support animals be permitted?

Table F-3: Steps to prepare for opening of cooling/warming centers.

COMPLETE?	OPENING STEPS:
	Receive authorization to open centers from your municipal/organizational leadership, county EMA, and/or any other appropriate decision-makers.
	Activate paid staff and volunteers.
	Move equipment and supplies to facility if not already staged there.
	Notify MEMA of the center opening by emailing: CenterShelter.OpenNotification@maine.gov

Table F-4: Steps for operating cooling/warming centers.

COMPLETE?	OPERATION STEPS:
	Monitor and reduce health and safety hazards.
	Document all staff/volunteer hours and expenses.
	Set shift and break schedules.
	Maintain an activity and issue log (i.e., document all issues and incidents on a designated form).
	Ensure that guests check in and out whenever they enter or leave the premises.
	Ensure sanitary conditions in all areas.
	Report daily census to County EMA (if necessary).
	Monitor the need for scaling up, scaling down, or closing.

Table F-5: Personnel typically needed to operate warming/cooling centers.	
COMPLETE?	IDENTIFY AND RECRUIT PERSONNEL. DEPENDING ON THE SIZE OF THE CENTER AND THE DURATION OF THE EVENT, THE FOLLOWING POSITIONS MAY BE NEEDED:
	Site or Operations Managers (if necessary)
	Registration Workers
	Custodians
	Building/Fire Inspector
	Security
	Volunteer Manager (if necessary)
	Interpreters
	First Aid, Cardiopulmonary Resuscitation (CPR), Automated External Defibrillators (AED) Providers
	Licensed Food Servers (if necessary)
	Parking Lot Attendants (if necessary)
	Disaster Animal Response Team (if necessary)
	Health Authorities
	Information Officers/Media Liaisons
	Social Workers

Table F-6: Services and amenities typically offered at cooling/warming centers.	
COMPLETE?	IDENTIFY SERVICES AND AMENITIES TO OFFER AT CENTER:
	Close to public transportation
	Adequate capacity
	Easy to find
	Ample, free parking
	Americans with Disabilities Act (ADA)-compliant
	Intact heating, ventilation, air-conditioning (HVAC)
	Generator or other backup power source
	Sufficient number/spacing of electrical outlets for patron use
	Restrooms
	Large common area
	Rooms for specialized purposes (i.e., first aid, playroom, pet area, quiet room)
	Accommodations for pets (if necessary)
	Health-authority-approved food preparation area (if necessary)

Table F-7: Transportation and access considerations	
COMPLETE?	CONSIDER TRANSPORTATION AND ACCESS OFFERINGS:
	For people with disabilities and/or mobility restrictions
	For people who do not have access to personal or public transportation

Table F-8: List of equipment and supplies that may be useful to have at cooling/warming centers.	
COMPLETE?	PREPARE EQUIPMENT AND SUPPLIES:
	Tables and chairs
	Cleaning supplies
	Handheld radios for communications with workers/volunteers
	Refrigeration for medications, food, etc.
	Fire extinguisher
	First Aid Kit/Automated External Defibrillator (AED)
	Personal protective equipment (gloves, masks, eye protection)
	Signage
	Staff identification (vests, shirts, badges)
	Cots and blankets

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Check out the Maine CDC's extreme heat campaign for employees and employers

- Workplace posters
- Handouts
- Reminder stickers to "Cool Down & Drink Up"
- Social media videos and images
- Employee and employer guidance

Visit: Maine.gov/cooldown
Request materials:
climatehealth.cdc@maine.gov

View the Entire
Guidebook Online