

An Extreme Heat Toolkit for Connecticut Municipalities



Yale SCHOOL OF PUBLIC HEALTH
Center on Climate Change and Health

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More information about Resilient Connecticut can be found at resilientconnecticut.uconn.edu

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I. Introduction

Introduction

Purpose

[At conclusion of municipal heat planning study, add discussion of study's findings

- Will establish purpose of toolkit
- Explanation of at what level(s) heat response happens in CT
 - Identify gaps found through interview data]

Goals of Toolkit

1. To provide resources that help Connecticut's municipal leaders fill gaps in local extreme heat planning
 - a. To provide tools that municipal leaders can easily adapt to their local contexts
 - i. These tools include the following:
 1. Communication templates
 2. Cooling center best practices
 3. A diverse collection of policy and planning actions
 4. Advice on creating a heat response plan
2. To provide Connecticut-specific information on how extreme heat impacts the health of residents, especially vulnerable people.
3. To provide extreme heat safety tips for Connecticut's residents

Definitions

Below is a list of definitions for words and phrases found in the Extreme Heat Toolkit for Connecticut Municipalities. Some of these words and phrases have a different meaning outside of the context of this toolkit.

At-risk

People in a municipality who are more likely to experience heat-related illnesses and other complications from extreme heat due to factors that make them more vulnerable to heat, such as being an older adult or having a pre-existing medical condition.

Extreme Heat Event

A period of excessive heat and/or humidity that can cause heat-related illnesses and even death. In Connecticut, extreme heat events occur on days with a maximum temperature over 90 °F¹

Extreme Heat Response Plan

A plan that Connecticut towns, municipalities, and local, regional, or state agencies/departments create to establish emergency response actions for an extreme heat event. Typically, heat response plans outline the expected local impacts of extreme heat, assign roles and responsibilities, identify local vulnerable populations, establish preparedness, response, and recovery actions, and outline an evaluation and revision process.²

Ground-Level Ozone

Ground-level ozone, or “smog,” forms in the troposphere when heat and sunlight cause nitrogen oxides (NOx) and volatile organic compounds (VOCs) to photochemically react.³

Heat-Related Illness

A group of physical symptoms caused when the human body cannot properly cool due to high temperatures and/or humidity levels.

Heat Index

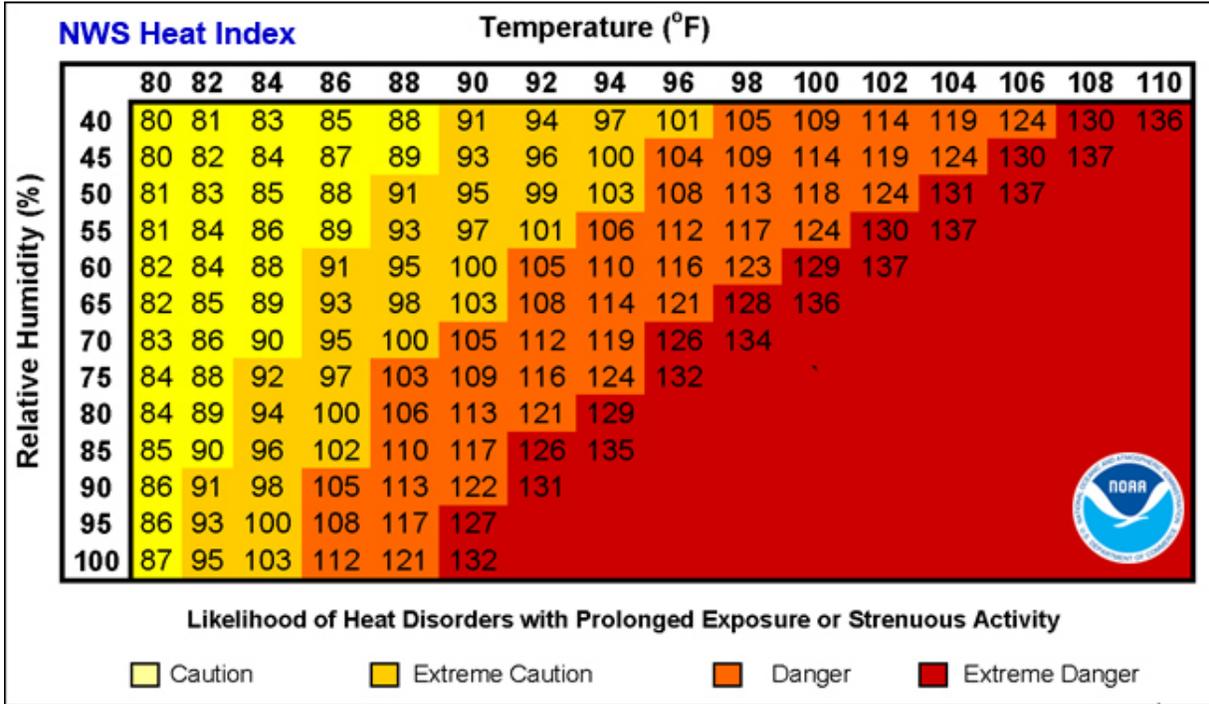
The following chart from the National Weather Service (NWS) illustrates the heat index, a measure of how hot it feels when relative humidity is factored with air temperature.

¹ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 22.

² Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 17.

³ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 76.

Figure 1⁴ National Weather Service Heat Index



Heat Wave

A type of extreme heat event that typically lasts two or more days.

Risk Factor

Characteristics statistically associated with increasing a person’s risk of experiencing a heat-related illness or dying from exposure to extreme heat. Age is an example of a risk factor for heat-related illnesses.

Urban Heat Island Effect

The materials and features of cities’ infrastructure—like concrete, asphalt, and dense buildings—make urban areas hotter than suburban and rural areas⁵ These materials trap the sun’s energy and emit it back as heat.⁶ Green space and other cooling features make suburban and rural areas markedly cooler than urban spaces.

Vulnerable Populations

Subpopulations with risk factors that make it more likely they will experience complications from extreme heat, such as a heat-related illness.

⁴ National Weather Service Binghamton, NY Weather Forecast Office, “Heat.”

⁵ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 6.

⁶ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 22.

This toolkit will focus on the following vulnerable populations in Connecticut:

- Older Adults (65+)
- Infants and Young People
- People with Physical and Mental Health Conditions and Disabilities
- Low-Income People
- Outdoor Workers
- Athletes
- Pets

II. Extreme Heat and Public Health

Extreme Heat and Public Health

Extreme Heat's Impact on Connecticut Residents

As extreme heat events become more frequent⁷, they increasingly pose a serious threat to the health of Connecticut residents. By 2050, Connecticut can expect:

- The number of tropical nights (annual number of days when the daily minimum is above 68°F) to rise from 10 to 40 per year.
- The number of Heat Wave Days (6 or more consecutive days with daily maximum temperature above the 90th percentile) to rise from 4 to 48 per year.
- The number of Summer Days (annual number of days when the daily maximum temperature is above 77°F) to rise from 81 to 118.
- The number of days above 90°F (annual number of days with maximum temperatures above the threshold value) to rise from 5 to 25 per year.⁸

These heat trends affect rural and urban residents in different ways.

How Extreme Heat Impacts Urban Connecticut Residents

An increase in the number of tropical nights is particularly dangerous for people in cities and people without air-conditioning, since nights usually offer respite from extreme heat events and an opportunity for people's bodies to cool down.⁹ The urban heat island effect—a phenomenon where cities are hotter than surrounding, more rural areas—fuels hot nights in cities because the heat-absorbing materials that cities are composed of trap and store daytime heat and retain this heat during the night.¹⁰

The trend of more extreme heat days is also dangerous to city dwellers because of the urban heat island effect. Cities' heat-trapping features—like concrete, asphalt, dense

⁷ Seth, Wang, Kirchhof, Lombardo, Stephenson, Anyah, Wu, "CIRCA Temperature and Precipitation Fact Sheet."

⁸ Ibid.

⁹ Bozzi and Dubrow, "Climate Change and Health in Connecticut: 2020 Report," 6.

¹⁰ Ramamurthy and Bou-Zeid, "Heatwaves and Urban Heat Islands: A Comparative Analysis of Multiple Cities," 173.

buildings, and minimal greenspace—make urban areas much hotter than suburban and rural areas during heat events¹¹

In its 2022 *State of the Air Report*, the American Lung Association gave five of Connecticut’s eight counties an F grade, two counties a C grade, and two counties a D grade for ground-level ozone pollution.¹² Ground-level ozone, or “smog,” forms in the troposphere (the lower atmosphere that humans live in) when heat and sunlight cause nitrogen oxides (NOx) and volatile organic compounds (VOCs) to photochemically react.¹³ Burning fossil fuels produces NOx, and VOCs come from gasoline, industrial solvents, paints, and sometimes vegetation.¹⁴ Since sunlight and heat create ground-level ozone, higher temperatures and more frequent extreme heat days will increase ground-level ozone concentrations.¹⁵ This pollutant may contribute to the development of asthma, can exacerbate asthma and other respiratory diseases, and lead to premature death.¹⁶ There is a decreasing trend for ground-level ozone in Connecticut thanks to environmental regulations, but rising extreme heat trends will provide an environment conducive to ground-level ozone formation.¹⁷

Extreme heat and poor urban air quality are particularly dangerous for vulnerable groups, such as low-income residents, people with preexisting conditions like asthma, older adults, young people, outdoor workers, and unhoused people.¹⁸ Due to the legacy of redlining and other racist policies, communities of color often bear the burden of the negative health impacts of extreme heat and poor air quality.¹⁹ Black and Brown people are more likely to live near power plants, major roads, and industrial facilities—all sources of the precursors of ground-level pollution and other pollutants like PM_{2.5}.²⁰ These factors exacerbate the urban heat island effect’s health impacts on communities of color, positioning extreme heat as an issue of environmental justice.

¹¹ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 6.

¹² American Lung Association, “Report Card: Connecticut.”

¹³ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 76.

¹⁴ *Ibid.*

¹⁵ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 78.

¹⁶ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 9.

¹⁷ *Ibid.*

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ *Ibid.*

How Extreme Heat Impacts Rural Connecticut Residents

The increasing frequency of hot days also means that Connecticut will experience “fewer frost days, an earlier winter-spring transition, and a later fall-winter transition.”²¹ This shift will create an environment favorable to disease vectors like ticks and mosquitos, a longer pollen season, and plant pests that threaten agriculture and forests.²²

Connecticut has experienced droughts in recent years, including a 46-week drought from 2016-2017.²³ Even moderate drought can cause more wildfires, lower lake and reservoir levels, and damage to trees, landscaping, and crops.²⁴ Decreasing water levels may be of particular concern to rural Connecticut residents who use private wells and people near the coast whose water comes from freshwater aquifers that can experience saltwater intrusion during drought conditions.²⁵

On average, there were 422 emergency department visits and 45 hospitalizations per year for heat stress in Connecticut from 2007 to 2016.²⁶ However, the real number of hospitalizations and emergency visits for heat-related illnesses are likely underreported, as people in the medical field “often mistakenly fail to attribute the cause of illness to extreme heat.”²⁷ This inaccurate reporting is especially true in Connecticut, where heat-related illnesses are not as common as in other regions of America.²⁸ People experience heat-related illnesses when their bodies cannot cool properly.²⁹ Heat stroke is especially dangerous, as it can cause organ damage and death.³⁰ The following page details eight heat-related medical conditions, including their symptoms and causes.

²¹ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 6.

²² Ibid.

²³ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 7.

²⁴ Ibid.

²⁵ Ibid.

²⁶ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 6.

²⁷ Ibid.

²⁸ Ibid.

²⁹ Ibid.

³⁰ Ibid.

Table 2: Heat Illnesses and their Symptoms^{1,2,3}

Medical Condition	Symptom(s)	Causes	First Aid Tips
Sunburn	<ul style="list-style-type: none">• Skin redness and pain• Possible swelling, blisters, fever, and/or headaches	<ul style="list-style-type: none">• Prolonged skin exposure to the sun without regular reapplication of sunscreen	<ul style="list-style-type: none">• Take a shower using soap to remove oils that may block pores, preventing the body from cooling naturally.• Apply dry, sterile dressings to any blisters, and get medical attention
Heat Rash	<ul style="list-style-type: none">• Red cluster of pimples• Blisters• Itching• Red rash on the skin that usually occurs on the neck, chest, breast, and/or groin	<ul style="list-style-type: none">• Blockage of sweat ducts	<ul style="list-style-type: none">• Relocate affected person to a cool location.• Minimize exposure of skin to sun.• Keep the affected area dry.• Seek medical attention if rash does not improve.
Heat Edema	<ul style="list-style-type: none">• Swelling in the ankles, feet, and hands• Body temperature normal or elevated core temperature up to 104° F	<ul style="list-style-type: none">• Increased blood flow to skin of limbs	<ul style="list-style-type: none">• Elevate and apply compressive stockings to the affected limbs.

Heat Tetany	<ul style="list-style-type: none"> • Respiratory problems, such as breathing difficulty • Muscular problems, including spasms, numbness, or tingling of muscles • Body temperature normal or elevated core temperature up to 104° F 	<ul style="list-style-type: none"> • Hyperventilation • Respiratory alkalosis 	<ul style="list-style-type: none"> • Relocate affected person to a cool location. • Advise the person to breathe slowly.
Heat Cramps	<ul style="list-style-type: none"> • Painful muscle spasms, usually in leg, abdominal, and shoulder muscles • Heavy sweating • Body temperature normal or elevated core temperature up to 104° F 	<ul style="list-style-type: none"> • Drinking liquid without electrolytes • Dehydration 	<ul style="list-style-type: none"> • Stop all activities, relocate affected person to a cool location, and give them fluids containing electrolytes. • Give sips of up to a half glass of cool water every 15 minutes (do not give liquids with caffeine or alcohol). • Lightly stretch and gently massage affected
			<ul style="list-style-type: none"> • muscles to relieve spasms. • Seek medical attention if symptoms persist.
Heat Syncope	<ul style="list-style-type: none"> • Dizziness • Fainting • Body temperature normal or elevated core temperature up to 104° F 	<ul style="list-style-type: none"> • Increased blood flow to the skin, resulting in decreased blood flow to the central nervous system 	<ul style="list-style-type: none"> • Lay affected person gently on the floor in a cool place and provide lots of fluids. • Seek medical attention.
Heat Exhaustion	<ul style="list-style-type: none"> • Heavy sweating • Skin may be cool, pale, or flushed • Weak pulse • Rapid breathing • Dizziness or fainting • Nausea/vomiting • Headaches • Muscle cramps • Body temperature normal or elevated core temperature up to 104° F 	<ul style="list-style-type: none"> • Drinking liquid without electrolytes • Dehydration 	<ul style="list-style-type: none"> • Stop all activities, relocate affected person to a cool location, and give them fluids containing electrolytes. • Give half glass of cool water every 15 minutes. • Lay affected person gently on the floor in a cool place. • Loosen or remove clothing. • Apply cool, wet cloths. • It can be difficult to determine if someone has heat exhaustion or heat stroke • If symptoms do not improve quickly, or if the affected person cannot be orally rehydrated and/or vomits, seek medical attention.

<p>Heat Stroke</p> <p><i>This is a life threatening, adverse effect of exposure to extreme heat, usually occurring when the body temperature is greater than 104 °F.</i></p>	<ul style="list-style-type: none"> • Oral body temperature of 104° F and above • Often sudden onset of symptoms • Confusion or loss of consciousness • Dizziness • Rapid, weak pulse • Rapid, shallow breathing • Hot, red, and dry skin • Nausea/vomiting • Usually no sweating unless affected person was sweating from recent strenuous activity 	<ul style="list-style-type: none"> • Profound dehydration • Profound electrolyte deficiency • Body is unable to maintain heat diffusion through the skin • Normal regulation of body temperature is no longer intact • Mortality can be as high as 50% 	<ul style="list-style-type: none"> • Call 911 immediately if you see anyone with these symptoms. • While waiting for first responders, move the affected person to a cool environment. • Remove the person's clothing. • Cool the person by immersing them in cool water, spraying them with cool water while fanning vigorously, or placing ice packs on their neck, armpits, and groin. • The person is unlikely to
			<p>be able to tolerate oral fluids.</p> <ul style="list-style-type: none"> • Watch for breathing problems.
<p>¹ Centers for Disease Control and Prevention. (2006). Frequently Asked Questions (FAQ) About Extreme Heat. Retrieved April 17, 2012, from http://www.bt.cdc.gov/disasters/extremeheat/faq.asp.</p> <p>² Platt, M. and Vicario, S. (2010). Heat Illness. In Rosen's Emergency Medicine: Concepts and Clinical Practice, 7th Ed. p1882-3.</p> <p>³ Zimmerman JL, Hanania NA. (2005). Chapter 111. Hyperthermia. In: Hall JB, Schmidt GA, Wood LD, eds. Principles of Critical Care. 3rd ed. New York: McGraw-Hill.</p>			

ENFERMEDADES RELACIONADAS CON EL CALOR

EN QUÉ SE DEBE FIJAR

QUÉ HACER

GOLPE DE CALOR

- Alta temperatura corporal (103 °F o más)
- Piel caliente, enrojecida, seca o húmeda
- Pulso acelerado y fuerte
- Dolor de cabeza
- Mareos
- Náuseas
- Confusión
- Pérdida del conocimiento (desmayos)

- Llame al 911 de inmediato, el golpe de calor es una emergencia médica
- Lleve a la persona a un sitio más fresco.
- Ayude a bajar la temperatura de la persona con paños fríos o dándole un baño con agua fría.
- No le dé a la persona nada para beber

AGOTAMIENTO POR CALOR

- Sudor abundante
- Piel fría, pálida, húmeda y pegajosa
- Pulso rápido y débil
- Náuseas o vómitos
- Calambres musculares
- Cansancio o debilidad
- Mareos
- Dolor de cabeza
- Desmayos

- Vaya a un sitio fresco
- Aflójese la ropa
- Aplíquese paños húmedos en el cuerpo o dese un baño con agua fría
- Tome sorbos de agua

Busque atención médica de inmediato si:

- Tiene vómitos
- Sus síntomas empeoran
- Sus síntomas duran más de 1 hora

CALAMBRES POR CALOR

- Sudor abundante durante ejercicios físicos intensos
- Dolor o espasmos musculares

- Suspnda todo tipo de actividad física y vaya a un lugar fresco.
- Beba agua o una bebida deportiva
- Espere que los calambres desaparezcan antes de realizar más actividades físicas

Busque atención médica de inmediato si:

- Los calambres duran más de 1 hora
- Usted sigue una dieta baja en sodio
- Usted tiene problemas cardíacos

QUEMADURAS SOLARES

- Piel dolorida, enrojecida y tibia
- Ampollas en la piel

- Evite el sol hasta que se le cure la quemadura
- Aplíquese paños fríos en las áreas quemadas por el sol o dese un baño con agua fría
- Aplique loción humectante a las áreas quemadas
- No rompa las ampollas

SARPULLIDO POR CALOR

- Grupos de pequeñas ampollas rojas que parecen granitos en la piel (generalmente en el cuello, el pecho, la ingle o en los pliegues de los codos)

- Quédese en un lugar fresco y seco
- Mantenga el sarpullido seco
- Use talco (como talco para bebés) para calmar el sarpullido



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Demographic Characteristics that Increase Vulnerability to Extreme Heat³¹

Age (Older adults): Adults 65 years old or older are more vulnerable to negative health outcomes from extreme heat events than younger adults.³² The older a person is, the greater their risk for a heat-related illness; a person who is 75 years old has a greater risk for heat-related illnesses than someone who is 65 years old. Certain physiological changes associated with aging, especially the body's decreased ability to thermoregulate, increase older adults' risk of experiencing heat-related illnesses.³³ Chronic disease conditions and the use of certain medications may also increase older adults' susceptibility to adverse health outcomes from heat.³⁴ Older adults who live alone, are socially or linguistically isolated, and/or are at or below the poverty line are particularly vulnerable to negative health outcomes from extreme heat due to a combination of factors associated with aging, isolation, and economic constraints. Older adults are a growing segment of the Connecticut population. The Principal Analyst of Connecticut's Office of Legislative Research (OLR) predicted that the number of people 65 years old and older will grow from 470,183 (13.8% of the total state population) in 2000 to 794,405 in 2030, making up 21.5% of the projected total state population.³⁵

Age (Children): Research identifies children, especially children who are five years and younger (including infants), as being at a greater risk for mortality during hot weather.³⁶ Children may be at increased risk due to dependency on other people for their care and/or physiological differences, including a smaller body mass to surface area ratio than adults, blunted thirst response, production of more metabolic heat per pound of body weight, and lower cardiac output.³⁷ In the US between 1998 and 2011, an average of 38 children (five days old to 14 years old) died per year from being left in a motor vehicle during warm weather. More than half of the deaths were children under two years of age.³⁸ Temperatures in parked cars can increase quickly even on relatively

³¹ This text and Table 2 were adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

³² Knowlton, Rotkin-Ellman, King, Margolis, Smith, Solomon, Trent, and English, "The 2006 California Heat Wave: Impacts on Hospitalizations and Emergency Department Visits," 66.

³³ Foster, Ellis, Dore, Exton-Smith, and Weiner, "Sweat Responses in the Aged," 91.

³⁴ Schifano, Cappai, De Sario, Michelozzi, Marino, Bargagli, and Perucci, "Susceptibility to Heat Wave-Related Mortality: A Follow-Up Study of a Cohort of Elderly in Rome," 2.

³⁵ Niesz, "Connecticut's Elderly Population Growth Since 1980 and Future Projections," para. 3.

³⁶ Basu and Ostro, "A Multicounty Analysis Identifying the Populations Vulnerable to Mortality Associated with High Ambient Temperature in California," 634.

³⁷ Bytomski, Jeffrey R. and Squire, Deborah L, "Heat Illness in Children," 320.

³⁸ Null, Jan, "Hyperthermia Death of Children in Vehicles."

mild days (i.e., ~ 70°F), especially if the car is parked in the sun.³⁹ Leaving vehicle windows slightly open does not significantly decrease the heating rate.⁴⁰ Please open the following link to view a short video demonstrating how quickly temperatures can increase in a parked car: [How Fast Can the Sun Heat a Car? - YouTube](#). **Never leave children, infants, or pets unattended in a parked vehicle.**

Table 2: Characteristics that increase the risk of heat-related illness
Demographic characteristics, social/behavioral factors, and geography/location may affect the ability of an individual to maintain normal body temperature and stay hydrated.
Demographic characteristics
<ul style="list-style-type: none"> • Age (Older adults): people 65 years old or older • Age (Children): ages five years and younger (including infants) • Economic constraints: people living at or below the poverty line • People with pre-existing physical and/or mental health conditions • People on certain medications
Social/Behavioral factors
<ul style="list-style-type: none"> • Social isolation: people living alone, especially older adults • Prolonged exposure to the sun • Use of alcohol
Geographic/location factors
<ul style="list-style-type: none"> • Living in urban areas • Lack of air conditioners • Living in top floor apartments • Living in nursing homes/bedridden

³⁹ McLaren, Null, and Quinn, “Heat Stress from Enclosed Vehicles: Moderate Ambient Temperatures Cause Significant Temperature Rise in Enclosed Vehicles,” 109.

⁴⁰ Ibid.

Economic constraints: Several studies have demonstrated increased risk of mortality among people with low socioeconomic factors.⁴¹ People living at or below the poverty line are less likely to have air conditioners in their homes,⁴² more likely to live in deteriorating and substandard homes,⁴³ and may have difficulty paying for higher electricity bills from increased electricity usage during an extreme heat event. People living at or below the poverty line may be more concerned about safety and unwilling or unable to seek cooling centers or open doors and windows to increase circulation.⁴⁴ Unhoused people are at increased risk for illnesses and death during extreme heat due to factors such as limited access to air-conditioned places and underlying medical conditions. They may also be reluctant to go to cooling centers because it could mean abandoning their belongings.⁴⁵

People with pre-existing physical or mental health conditions: Heat can exacerbate existing conditions, putting certain people at increased risk for heat-related illnesses and death. Any condition that affects the body's ability to cool itself or puts additional stress on already weakened systems will make a person more susceptible to negative health impacts from heat. Pre-existing conditions that make a person more vulnerable to extreme heat include cardiovascular diseases (e.g., congestive heart failure, myocardial infarction);⁴⁶ respiratory diseases (e.g., COPD, bronchitis);⁴⁷ neurological diseases;⁴⁸ endocrine disorders (e.g., diabetes mellitus);⁴⁹ renal failure; and liver diseases (e.g., liver cirrhosis). Additionally, people with mental health conditions or disabilities are at increased risk for negative health outcomes due to extreme heat.⁵⁰ They may be less able to recognize symptoms of heat-related illnesses or limit their exposure to extreme heat.

People on certain medications: People on certain medications are vulnerable to negative health consequences from extreme heat events. Drugs—such as diuretics,

⁴¹ O'Neill, Zanobetti, Schwartz, "Modifiers of the Temperature and Mortality Association in Seven US Cities," 1081.

⁴² Hajat, Kovats, and Lachowycz, "Heat-Related and Cold-Related Deaths in England and Wales: Who is at Risk?," 93.

⁴³ Semenza, Rubin, Falter, Selanikio, Flanders, Howe, and Wilhelm, "Heat-Related Deaths During the July 1995 Heat Wave in Chicago," 86.

⁴⁴ Blum, Bresolin, and Williams, "From the Council on Scientific Affairs: Heat-Related Illness During Extreme Weather Emergencies," 1514.

⁴⁵ Ryan, "The Deadliest Heat Wave: Lessons from the NW's Extreme Heat," para. 28.

⁴⁶ Green, Gilbert, James, and Byard, "An Analysis of Factors Contributing to a Series of Deaths Caused by Exposure to High Environmental Temperatures," 198.

⁴⁷ Ibid.

⁴⁸ Vandentorren, Bretin, Zeghnoun, Mandereau-Bruno, Croisier, Cochet, Ribéron, Siberan, Declercq, and Ledrans, "August 2003 Heat Wave in France: Risk Factors for Death of Elderly People Living at Home," 586.

⁴⁹ Swartz, "Who is Sensitive to Extremes of Temperature?: A Case-Only Analysis," 71.

⁵⁰ Hansen, Bi, Ryan, Nitschke, Pisaniello, and Tucker, "The Effect of Heat Waves on Mental Health in a Temperate Australian City," 1369 and 1373.

anticholinergics, beta blockers, calcium channel blockers, and antipsychotic drugs—make it difficult for the body to dissipate excess heat by interfering with normal thermoregulatory systems.⁵¹ For a complete list of the categories of medicines that may increase a person’s risk of heat-related illness, see pages 38-39 of this toolkit.

Social/Behavioral Factors that Increase Vulnerability to Extreme Heat⁵²

Social isolation: People living alone—especially older adults—are more vulnerable to extreme heat events.⁵³ Socially isolated people may be less likely to recognize the symptoms of extreme heat exposure, less likely to leave their homes if they are hot, and/or less willing or able to reach out to others for help. People who do not speak the language that is dominant in their community⁵⁴ and people living in rural areas⁵⁵ are also more likely to experience social isolation and therefore are at increased risk during extreme heat events.⁵⁶

Prolonged exposure to sun: People who participate in sports or work in outdoor occupations—like farming, landscaping, roofing, and construction—are at increased risk for heat-related illnesses.⁵⁷ These people may be exposed to the sun and extreme heat for longer periods of time and need to take extra precautions to stay cool and hydrated.

Use of alcohol: The consumption of alcoholic beverages during extreme heat events increases the risk of heat-related illnesses. Alcoholic beverages can cause dehydration and depress the thermoregulatory system.⁵⁸ Alcohol also impairs judgment, negatively influencing a person’s ability to recognize symptoms of heat-related illnesses and limit their exposure to extreme heat.

⁵¹ Ibid.

⁵² This text was adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

⁵³ Semenza, Rubin, Falter, Selanikio, Flanders, Howe, and Wilhelm, “Heat-Related Deaths During the July 1995 Heat Wave in Chicago,” 88.

⁵⁴ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 10.

⁵⁵ Health Canada Water, Air and Climate Change Bureau Healthy Environments and Consumer Safety Branch, “Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials,” 21.

⁵⁶ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 10.

⁵⁷ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 11.

⁵⁸ Blum, Bresolin, and Williams, “From the Council on Scientific Affairs: Heat-Related Illness During Extreme Weather Emergencies,” 1514.

Geographic/Location Factors that Increase Vulnerability to Extreme Heat⁵⁹

Living in urban areas: The urban heat island effect is a measurable increase in ambient urban air temperature that results primarily from the replacement of vegetated land with buildings, roads, and other heat-absorbing and reflecting infrastructure.⁶⁰ Residents of urban areas are more at-risk for heat-related illnesses than rural dwellers because of the urban heat island effect. Urban areas are usually hotter and cool off less at night than rural areas. The annual mean air temperature of a city with one million people or more can be 1.8–5.4°F warmer than its surroundings. In the evening, the difference can be as high as 22°F.⁶¹ The urban heat island effect is proportional to the size of the city, but all cities—large and small—experience the effect.⁶² Urban heat islands can increase health risks from extreme heat by increasing the potential maximum temperatures residents are exposed to and the length of time that they are exposed to elevated temperatures.⁶³ According to the 2010 census, 88% of Connecticut residents live in urban areas.⁶⁴

Lack of air conditioners: Living in housing without air conditioning and/or not having access to air-conditioned spaces increases the risk of experiencing heat-related illnesses.⁶⁵ During periods of extreme heat, air conditioners regulate and cool indoor air temperatures, putting less strain on the body’s thermoregulatory system.

Living in top floor apartments: People living in top floor apartments are at increased risk of experiencing heat-related illnesses.⁶⁶ The roof traps hot air as it rises, so people who live on the top floors of a building are exposed to higher temperatures.

Living in nursing homes/bedridden: People living in long-term care facilities (e.g., nursing homes, assisted living, group homes) and/or are bedridden are at increased risk

⁵⁹ This text was adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

⁶⁰ Bozzi and Dubrow, “Climate Change and Health in Connecticut: 2020 Report,” 22.

⁶¹ Zielinski, “Why the City Is (Usually) Hotter than the Countryside,” para. 1.

⁶² Ramamurthy and Bou-Zeid, “Heatwaves and Urban Heat Islands: A Comparative Analysis of Multiple Cities,” 177.

⁶³ Environmental Protection Agency, “Excessive Heat Events Guidebook,” 18.

⁶⁴ Iowa State University of Science and Technology, “Urban Percentage of the Population for States, Historical.”

⁶⁵ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 13.

⁶⁶ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 14.

of suffering from heat-related illnesses.⁶⁷ They are more likely to have conditions such as dementia that hamper their ability to recognize and seek treatment for heat-related illnesses. They are also more dependent on others for care and frequently have underlying medical conditions and take medications that affect their ability to regulate their body temperature.

Trainings

The following training resources help prepare local leaders and staff of organizations and agencies involved in the heat response process for their roles. Through these trainings, they will specifically become more familiar with the impacts of extreme heat and the signs of heat-related illness. WE ACT for Environmental Justice released a 2021 report on results from its audit of NYC cooling centers. One finding was that only 28% of cooling centers had heat trained staff.⁶⁸ It is essential that cooling center staff and other personnel who interact with the public during extreme heat events be able to recognize signs of heat-related illness. The following trainings provide an avenue for local officials to close these knowledge gaps and to refresh or update their knowledge about extreme heat.

1. [Minnesota Department of Health Climate Change & Health Training Module Series](#) (See Extreme Heat Events PowerPoint Training)
2. Training from CDC on "[Recognizing, Preventing and Treating Heat-Related Illness](#)"

⁶⁷ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, "Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation," 8.

⁶⁸ WE ACT for Environmental Justice, "A Call for NYC Cooling Center Improvements," 3.

III. Extreme Heat Resources for the Public

Extreme Heat Resources for the Public

An important step in preparing for extreme heat is ensuring that community members are aware of steps they can take to protect themselves and their friends, families, and pets from extreme heat. Communicating this information on a regular basis before and during the extreme heat season helps reinforce these safety recommendations to the public.⁶⁹

Part three of the toolkit, “Extreme Heat Resources for the Public,” begins with heat health safety tips for all members of a community. It then transitions to recommendations for seven vulnerable groups, as these community members and their friends/families need to take extra precautions during extreme heat events.⁷⁰ Municipal leaders can disseminate these fact sheets and resources through local networks as part of extreme heat education for community members (see page 106 for a collection of communications and outreach materials).

⁶⁹ Health Canada Water, Air and Climate Change Bureau Healthy Environments and Consumer Safety Branch, “Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials,” 13.

⁷⁰ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 43.

Resources for All Community Members

How Can You Stay Safe in Extreme Heat?⁷¹

1. Keep Cool

- Use air-conditioning to cool down. If you don't have air-conditioning in your home, go to an air-conditioned building such as a store, a library, or a cooling center. To cool off your living space, you can open windows and shades on the shady side of your home and close them on the sunny side.
- An electric fan can be beneficial, but it is not reliable for cooling once the temperature is above about 95° F (near or above body temperature of 98.6° F).
- Take a cool shower or bath. You can also cool off your body with wet towels.
- Wear loose, lightweight, and light-colored clothing.
- Stay out of the sun as much as possible.
- Never leave children, pets, or other vulnerable family members or friends in a parked car, even briefly. Temperatures in a car can become dangerous within a few minutes. Even with the windows rolled down two inches, it only takes 10 minutes for the inside of a vehicle to reach deadly temperatures on a hot summer day.

⁷¹ This guide was adapted with permission from the State of New Hampshire Department of Health and Human Services Environmental Public Health Tracking.

- To remind yourself that a child is in the car, keep a stuffed animal in the car seat. When the child is buckled in, place the stuffed animal up front with the driver.
- When leaving your car, check to ensure that everyone is out of the car. Do not overlook any children who may have fallen asleep.
- Try not to use your stove or oven to cook during extreme heat events, as these appliances will make your living space hotter.
- Avoid hot and heavy meals, as they add heat to your body.
- Keep pets cool too!

2. Drink Fluids

- Drink more fluids, regardless of your activity level.
- Do not wait until you are thirsty to drink.
- Ensure adequate fluid intake, and avoid drinks that contain caffeine, alcohol, or large amounts of sugar, as these can increase the loss of body fluids. Also avoid very cold drinks because they can cause stomach cramps.
- If you have fluid restrictions or are on diuretics, ask your doctor how much you should drink.
- Heavy sweating removes salt and minerals from the body that need to be replaced. A sports drink can help replace the salt and minerals you lose in sweat. If you are on a low-salt diet, have diabetes, high blood pressure, or other chronic conditions, talk with your doctor before drinking a sports beverage or taking salt tablets.
- Provide plenty of fresh water for your pets, and leave the water in a shady or air-conditioned area.

3. Rest Frequently

- Take regular breaks from physical activity at least every hour.
- Avoid strenuous activity during the hottest part of the day (between 11 a.m. and 4 p.m.).

4. If you must be out in the heat:

- Wear and reapply sunscreen as indicated on the package.

- Look for sunscreens that say “broad spectrum” or “UVA/UVB protection” on their labels—these products work best.
- Wear a ventilated wide-brimmed hat (e.g., straw or mesh), sunglasses, and loose, lightweight, and light-colored clothing.
- Try to limit your outdoor activity to morning and evening hours. The hottest period of the day is between 11 a.m. and 4 p.m.
- Cut down on exercise during extreme heat. If you’re not accustomed to working or exercising in a hot environment, start slowly and pick up the pace gradually. If exertion in the heat makes your heart pound and leaves you gasping for breath, STOP all activity. Get into an air-conditioned or shady area and rest, especially if you become lightheaded, confused, weak, or faint.
- If you must exercise, drink two to four glasses of cool, nonalcoholic fluids each hour. A sports beverage can help replace the salt and minerals you lose in sweat. If you are on a low-salt diet, talk with your doctor before drinking a sports beverage.
- Rest often in shady or air-conditioned areas, at least every hour.

5. Stay informed

- Check your local news for extreme heat alerts, safety tips, and to learn about any cooling shelters in your area.
- Learn the signs and symptoms of heat-related illnesses and how to treat them
- Although anyone at any time can suffer from heat-related illness, some people are at greater risk than others:
 - Infants and children
 - People 65 years of age or older
 - Outdoor workers
 - People who do strenuous exercise
 - People with physical and/or mental health conditions (especially heart disease and high blood pressure) or who take certain medications, such as for depression/anxiety, insomnia, or poor circulation.

- Visit at-risk adults at least twice a day and closely watch them for signs of heat exhaustion or heat stroke. Infants and young children need much more frequent monitoring.

Videos on How to Stay Safe in Extreme Heat

FEMA American Sign Language (ASL) video with safety tips for extreme heat:

1. [FEMA Accessible: CDC Coping with Extreme Heat - YouTube](#)

Polk County Iowa “Summer Safety Tips” video series:

1. ["Beating the Heat" Summer Safety Tips \(1\)](#)
2. ["Beating the Heat" Summer Safety Tips \(2\)](#)
3. ["Beating the Heat" Summer Safety Tips \(3\)](#)

Heat safety video from the CDC:

1. ["How to Stay Cool in Extreme Heat"](#)

Heat Safety Comic

The following resource is a [comic from King County, Washington](#) that illustrates advice on how to stay safe in extreme heat. This comic is also available to download in eleven other languages on King County’s website, linked here: [Hot weather: How to stay cool and safe - King County](#)

STAY SAFE in the HEAT

Stay Safe in the Heat—English

On hot days in King County, many more people have serious health problems.



EMERGENCY ROOM



HEAT ILLNESSES
 If someone can't cool down quickly enough, they can get **heat exhaustion**. They might feel:

- Muscle cramps
- Dizziness or weakness
- Headache
- Nausea and vomiting



If you have symptoms, move to a cooler place, put your feet up, and drink water.



Heat stroke is very serious and can be deadly unless treated immediately. Watch for:

- Extremely high temperature
- Red, hot, and dry skin
- Rapid, strong heartbeat
- Mental confusion and unconsciousness



If someone has the symptoms of heat stroke, call 9-1-1! Move the person to a cooler place immediately.



Some people are at greater risk for heart problems, stroke, and kidney failure when it's hot. These are the most common health problems on hot days!

It's harder to adjust to heat once you're over 65.

Working outside puts me at risk.



Some health conditions make it more difficult for your body to cool down.

I have diabetes, so I track my blood sugar levels closely on hot days.



Certain medications can make you more sensitive to heat.

Medications for:

- Heart/blood pressure
- Nausea
- Bladder/bowel control
- Parkinson's disease
- Seizures
- Allergies, colds & coughs
- Depression and psychosis
- Thyroid
- Weight loss



Talk to your doctor or clinician about whether your medications or health conditions put you at greater risk in the heat.

This medication can make it harder for your body to stay hydrated and at a healthy temperature.

OK, I'll try to stay cool and drink more water.



STAY SAFE IN THE HEAT
Check on family and neighbors who may be more vulnerable to heat.



Children can also have heat exhaustion because they are so active and forget to drink water.



On hot days, keep children out of the direct sun during the hottest part of the day.



NEVER leave babies, young children, or pets in a parked car, even with the window rolled down. Not even for a minute! Cars can get dangerously hot in seconds!



People who work outside should take frequent breaks to cool off.



WHAT TO DO TO COOL DOWN
Drinking water and other fluids often is important. Don't wait until you're thirsty.



Eat foods with a lot of water in them.



Play in fountains and sprinklers, go to the swimming pool, and stay in the shade.



Try to go somewhere with air conditioning on a hot day.



www.kingcounty.gov/health/BeatTheHeat



DEPARTMENT OF ENVIRONMENTAL & OCCUPATIONAL HEALTH SCIENCES
UNIVERSITY OF WASHINGTON
School of Public Health

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Public Health
Seattle & King County

Resources for Vulnerable People

Trends of rising temperatures threaten the health of all people, but vulnerable community members are most at risk. Vulnerable groups include older adults, young people, outdoor workers, athletes, people with physical and/or mental health conditions, socially/linguistically isolated people, and people unable to access/afford air conditioning.⁷² Race and ethnicity, income, and housing affordability and quality are also factors that determine a person's heat risk.⁷³ Black and Brown people, low-income residents, unhoused people, and community members living in older housing with poor weatherization are all at increased risk during extreme heat events.⁷⁴ This section of the toolkit provides heat safety tips and resources for each of the seven following groups:

- Older Adults (65+)
- Infants and Young People
- People with Physical and Mental Health Conditions and Disabilities
- Low-Income People
- Outdoor Workers
- Athletes
- Pets

⁷² Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, "Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation," 43.

⁷³ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, "Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation," 12-14.

⁷⁴ Ibid.

Keeping Older Adults (65+) Safe in Extreme Heat⁷⁵

Studies from heat waves show that the greatest risk factors for death and hospitalization are older age, living alone, lack of access to an air conditioner, and underlying medical conditions.⁷⁶ Factors contributing to increased risk for older adults include the following:

- Due to their physiology, older adults do not adjust as well as young people to sudden changes in temperature. They tend to have a decreased thirst sensation and may have physical conditions that make it difficult to drink.
- Older adults are more likely to have a chronic medical condition that interferes with their body's ability to thermoregulate.
- Older adults are more likely to take prescription medicines—such as diuretics and anti-cholinergic medications—that impair the body's ability to regulate its temperature or that inhibit perspiration.

Caregivers, friends, and neighbors of older adults should consider the following:

- Check the local news for health and safety updates.
- Visit or have contact with at-risk older adults at least twice a day. Seek medical care immediately if they show signs of heat-related illness, such as muscle cramps, headache, nausea, or vomiting.
- Provide access to an air conditioner, and if one is not available, transport the person to an air-conditioned store, public library, restaurant, senior center, or cooling center.
- Although it should not be relied upon as a primary cooling device, access to an electric fan can be beneficial.
- Ensure adequate fluid intake, and avoid drinks that contain caffeine, alcohol, or large amounts of sugar, as these can increase the loss of body fluids.
- Ensure that the person is drinking more water than usual. They **should not** wait until they are thirsty to drink.
- Ensure that the person has loose, lightweight, and light-colored clothing.

⁷⁵ This guide was adapted with permission from the State of New Hampshire Department of Health and Human Services Environmental Public Health Tracking.

⁷⁶ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 10.

- If they go outside, ensure that the person wears and reapplies sunscreen as indicated on the package.
 - Look for sunscreens that say “broad spectrum” or “UVA/UVB protection” on their labels—these products work best.
- Assure access to cool water (bath, shower, wet towels).
- Encourage the person to not use their stove or oven to cook during extreme heat events, as these appliances will make their living space hotter.

Keeping Infants and Young People Safe in Extreme Heat⁷⁷

Children are more sensitive to heat and dehydration than adults. Factors contributing to increased risk for infants and young people include the following:

- Children produce more heat because they have a greater surface area-to-body mass ratio than adults.
- Children sweat less than adults.
- Children are less likely to drink adequate fluids during exercise and heat.
- Children who rarely exercise, have excess weight, have had a previous heat-related illness, drink caffeinated beverages, or have physical or mental health conditions (such as disabilities and diabetes) are at higher risk.

Parents and caregivers of infants and young children should follow these safety steps:

- Ensure that infants and young children have access to air conditioning, lightweight and light-colored clothing, adequate fluids, and cool water. Infants and children up to 4 years of age are especially sensitive to the effects of high temperatures and rely on others to regulate their environments and provide adequate liquids.
- Monitor for and recognize the signs and symptoms of heat-related illnesses and dehydration in children. Early signs of dehydration in young children can present as decreased urine output, dry or sticky mouth, irritability, and fatigue. Seek medical care immediately if there are any signs of heat-related illness.
- Never leave children in a parked car, even briefly. Temperatures in the car can become dangerous within a few minutes. Even with the windows rolled down two inches, it only takes 10 minutes for the inside of a vehicle to reach deadly temperatures on a hot summer day.
 - To remind yourself that a child is in the car, keep a stuffed animal in the car seat. When the child is buckled in, place the stuffed animal up front with the driver.
 - When leaving your car, check to ensure that everyone is out of the car. Do not overlook any children who may have fallen asleep.

⁷⁷ This guide was adapted with permission from the State of New Hampshire Department of Health and Human Services Environmental Public Health Tracking.

Coaches, parents, and teachers should implement the following steps to keep young people safe during physical activities:

- Reduce the intensity of physical activity lasting more than 15 minutes, especially if heat and humidity are both high.
- Realize that conditioned athletes may be more susceptible to heat stroke because they have a larger body mass.
- Require young athletes to take fluid breaks before practice and every 15–60 minutes during practice, even if they are not thirsty.
- Require young athletes to take regular shade and rest breaks, and encourage them to take additional rest and fluid breaks anytime they feel the need to do so.
- Recognize signs of heat-related illness and dehydration in children. Early signs of dehydration can present as dry or sticky mouth, thirst, headache, dizziness, cramps, and excessive fatigue.

Keeping People with Physical and Mental Health Conditions and Disabilities Safe in Extreme Heat⁷⁸

People with physical and/or mental health conditions and disabilities are less likely to sense and respond to changes in temperature, and certain medications can worsen the health impacts of extreme heat. Please see the bottom of this guide for a list of medications that increase the risk of heat-related illnesses.

Practice the following steps to stay safe during extreme heat:

- Drink more water than usual, and don't wait until you are thirsty to drink.
- Check on a friend or neighbor, and have someone do the same for you.
- Check the local news for health and safety updates regularly.
- Try not to use the stove or oven to cook during extreme heat events, as these appliances will make your living space hotter.
- Wear loose, lightweight, and light-colored clothing.
- Take cool showers or baths to cool down.
- Seek medical care immediately if you or someone you know experiences symptoms of heat-related illness, such as muscle cramps, headache, nausea, or vomiting.

Factors contributing to increased extreme heat risk for people with mental health conditions include the following:

- Some medications used to treat mental health conditions, such as antipsychotics, inhibit the body's ability to regulate its temperature, leaving it more susceptible to heat stroke.
- People with mental health conditions are more likely to have a low income and lack access to reliable air-conditioning, further increasing their risk of heat-related illness.

Caregivers, friends, and neighbors of people with physical and/or mental health conditions and disabilities should do the following:

⁷⁸ This guide was adapted with permission from the State of New Hampshire Department of Health and Human Services Environmental Public Health Tracking.

- Visit or have daily contact with people you know who have physical and/or mental health conditions and disabilities, especially those who are taking medications. Seek medical care immediately if they show signs of heat-related illness, such as muscle cramps, headache, nausea, or vomiting.
- Provide access to an air conditioner, and if one is not available, transport the person to an air-conditioned store, public library, restaurant, senior center, or cooling center.
- If they go outside, ensure that the person wears and reapplies sunscreen as indicated on the package.
 - Look for sunscreens that say “broad spectrum” or “UVA/UVB protection” on their labels—these products work best.
- Ensure adequate fluid intake, and avoid drinks that contain caffeine, alcohol, or large amounts of sugar, as these can increase the loss of body fluids.
- Ensure that the person is drinking more water than usual. They **should not** wait until they are thirsty to drink.
- Ensure that the person is wearing loose, lightweight, and light-colored clothing.
- Although it should not be relied upon as a primary cooling device, access to an electric fan can be beneficial.
- Ensure access to cool water (bath, shower, wet towels).
- Encourage the person to not use their stove or oven to cook during extreme heat events, as these appliances will make their living space hotter.

Categories of Medicines that May Increase the Risk of Heat-Related Illnesses⁷⁹

- Alpha blockers⁸⁰
- Amphetamines⁸¹ (e.g., diet pills)
- Anticholinergics^{82 83} (e.g., cough and cold medications, interfere with sweating)

⁷⁹ This guide was adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

⁸⁰ Glazer, “Management of Heatstroke and Heat Exhaustion,” 2135.

⁸¹ Ibid.

⁸² Ibid.

⁸³ Kovats and Hajat, “Heat Stress and Public Health: A Critical Review,” 47.

- Anticonvulsants⁸⁴ (e.g., seizure medications)
- Antidepressants^{85 86} (interfere with the body’s cooling functions or water/salt retention)
- Antihistamines^{87 88}
- Antihypertensives⁸⁹ (interfere with the body’s cooling functions/decrease the body’s ability to thermoregulate)
- Anti-Parkinsonian⁹⁰
- Antipsychotics/Neuroleptics^{91 92 93} (interfere with the body’s cooling functions or water/salt retention)
- Benzodiazepines⁹⁴
- Beta blockers^{95 96}(profoundly impact thermoregulation by decreasing the body’s ability to shunt large volumes of hyperthermic blood away from the core and to the skin)
- Calcium channel blockers⁹⁷
- Cocaine/illicit drugs^{98 99} (decrease the body’s ability to thermoregulate)

⁸⁴ FamilyDoctor.org, “Heat Exhaustion and Heatstroke.”

⁸⁵ Glazer, “Management of Heatstroke and Heat Exhaustion,” 2135.

⁸⁶ FamilyDoctor.org, “Heat Exhaustion and Heatstroke.”

⁸⁷ Glazer, “Management of Heatstroke and Heat Exhaustion,” 2135.

⁸⁸ FamilyDoctor.org, “Heat Exhaustion and Heatstroke.”

⁸⁹ Glazer, “Management of Heatstroke and Heat Exhaustion,” 2137.

⁹⁰ Health Canada, “Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials,” 5.

⁹¹ Glazer, “Management of Heatstroke and Heat Exhaustion,” 2135.

⁹² FamilyDoctor.org, “Heat Exhaustion and Heatstroke.”

⁹³ Health Canada, “Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials,” 4.

⁹⁴ Glazer, “Management of Heatstroke and Heat Exhaustion,” 2135.

⁹⁵ Ibid.

⁹⁶ FamilyDoctor.org, “Heat Exhaustion and Heatstroke.”

⁹⁷ Glazer, “Management of Heatstroke and Heat Exhaustion,” 2135.

⁹⁸ Ibid.

⁹⁹ FamilyDoctor.org, “Heat Exhaustion and Heatstroke.”

Keep Your Medications Away from Summer Heat!¹

Heat and humidity can hurt medication. Take care of yourself and your medication when it is hot. Keep your medication out of the sun, hot weather, and hot cars.

At what temperature should I store my medications?

Most medications need to be stored at room temperature or in the refrigerator. Room temperature medications should be kept between 59° and 86° Fahrenheit. Refrigerated medications should be kept between 0° and 59° Fahrenheit.

What happens if medications get too hot or humid?

Heat can make drugs go bad, and the medication will no longer be effective. Capsules and gels can melt and stick together. Liquids will dry up and cause you to take the wrong amount or dose. Injectable medications or shots can dry up or break down and will no longer work correctly.

Does heat affect all medications the same way?

All medications can be affected by heat. Some medications can have serious effects on the body when it gets too hot. These medications include:

- | | | |
|----------------|--------------------------|-----------------------------|
| ▪ Insulin | ▪ Transplant medications | ▪ Arthritis medications |
| ▪ EpiPens | ▪ Blood thinners | ▪ Nitroglycerin |
| ▪ Chemotherapy | ▪ Thyroid medications | ▪ Some diabetes medications |

What can I do to keep my medications cool?

Travel Tips

1. Do not leave your medications in the car, even for a few minutes.
2. Take your medications straight home after picking them up.
3. If you cannot go home immediately, keep your medicines with you. Do not leave them in the car.
4. When flying, put your medications in your carry-on bag. Do not check medications with your luggage.
5. If you need to travel with a refrigerated drug, use a cool pack to keep it at the right temperature.
6. Only travel with as much medication as you need for your trip to avoid exposing all the medication you have to temperature changes.



Home Tips

1. Keep your medications in a cool, dry place like a kitchen cupboard or drawer of a bedroom nightstand.
2. Do not keep your medications in the bathroom. Bathrooms get too hot and humid.
3. If you have children or pets, keep your medications up high and out of reach.
4. Keep your home at an appropriate temperature. Use air conditioning on extremely hot days. If you do not have access to air conditioning, go to an air-conditioned cooling center in your area or another air-conditioned space in your community.
5. For refrigerated medications, put them back in the fridge immediately after using them.
6. Do not refrigerate medications that are not supposed to be refrigerated.

¹ Adapted from Polk County, Iowa Extreme Heat Toolkit

Medications, Heat and You

Some medication may make you more sensitive to summer heat!

When it gets really hot, it can be dangerous for our health. Extreme heat can cause heat-related illness, injury, and even death, especially in young children and older adults. People with chronic health conditions are also at risk during hot weather. Some medications we take to help manage chronic health conditions can sometimes affect how well our bodies can tolerate extreme heat.

If you take medications for the following conditions, you may be at risk for injury due to heat:

- Bladder issues such as overactive bladder
- Medications for nausea, motion sickness, or irritable bowel syndrome
- Cognitive and psychiatric conditions
- Parkinson's disease
- Alzheimer's disease
- Blood pressure, heart attack, heart failure, or other cardiovascular diseases
- Colds or allergies
- Mental health conditions
- Pain, seizures, or trouble sleeping
- Diabetes
- Kidney, liver, or lung disease

What can I do to make sure my medications are safe for me when it is hot?

1. Talk to your doctor or pharmacist. They know exactly what medications you are taking and can talk to you about how summer heat might affect you. Ask about hot summer weather and your medicine.
2. Drink plenty of water to stay hydrated, especially if you are taking diuretics.
3. Use air conditioning while inside. If you do not have access to air conditioning, go to an air-conditioned cooling center in your area or another air-conditioned space in your community.

Keeping Low-Income Community Members Safe in Extreme Heat¹⁰⁰

Low-income families may not be able to afford air conditioning, access cooling shelters, or have adequate access to health care.

- If you have air conditioning, use it to keep your home cool.
- If you can't afford to use your air conditioning:
 - Go to an air-conditioned cooling center in your area or another air-conditioned space in your community.
 - Look through the resources listed on the next page to find energy assistance programs that fit your needs.
- Drink more water than usual and don't wait until you are thirsty to drink. Avoid drinks that contain caffeine, alcohol, or large amounts of sugar, as these can increase the loss of body fluids.
- Check the local news for health and safety updates.
- Check on a friend or neighbor and have someone do the same for you.
- Seek medical care immediately if you or someone you know has symptoms of heat-related illness, such as muscle cramps, headache, nausea, or vomiting.
- Wear loose, lightweight, and light-colored clothing.
- If you go outside, wear and reapply sunscreen as indicated on the package.
 - Look for sunscreens that say “broad spectrum” or “UVA/UVB protection” on their labels—these products work best.
- Take cool baths or showers. You can also apply wet towels to different areas of your body to cool off.
- Try not to use a stove or oven to cook during extreme heat events, as these appliances will make your living space hotter.

¹⁰⁰ This guide was adapted with permission from the State of New Hampshire Department of Health and Human Services Environmental Public Health Tracking.

Connecticut Energy Assistance Programs:

- Connecticut's **Weather Assistance Program (CTWAP)** retrofit funding helps low-income residents minimize energy-related costs and fuel usage in their homes through retrofits and home improvement measures.
 - Eligibility is set at 60% of State Median Income. Priority is given to households that are particularly vulnerable, such as families with older adults (65+), people with disabilities, and children. For multi-family dwellings, at least two-thirds of the tenants must be income-eligible.
 - People who fill out a Connecticut Energy Assistance Program (CEAP) application will automatically be considered for CTWAP. [Learn more about the program here.](#)
- The **Connecticut Energy Assistance Program (CEAP)** helps low-income households with their home energy bills.
 - CEAP includes assistance for electricity costs associated with cooling. A person who participates or has family members who participate in certain other benefit programs, such as SNAP, SSI, or TANF, automatically meets the eligibility requirement. [Learn more on the website linked here.](#)
- Find directions [on Energize CT's website](#) for how to get a **home energy assessment and about \$1,000 in on-the-spot energy fixes** through Home Energy Solutions.
 - Participants will receive custom recommendations and access to rebates and incentives to make their home more efficient.
- **Energy Conservation Loans** finance energy conservation improvements for low- and moderate-income single-family (1-4 units) homeowners.
 - This program is funded by the Connecticut Department of Housing (DOH) and is administered by Capital for Change, Inc (C4C). This loan may be used to finance energy efficient home improvements up to \$25,000 at below-market interest rates. [Find more information here.](#)
- The **CT HES Payment Plan (Micro) Loan Financing Program** offers zero-interest loans (\$500 to \$3,000), funding that is used for conducting qualified improvements/equipment replacements. [Learn more about the program and who is eligible here.](#)
- The Connecticut Green Bank—in partnership with Energize CT and select local lenders and contractors—offers **long-term, low-interest financing** to CT residents for upgrading their home's energy performance with no money down. [Learn more here.](#)

- [Follow this link to Energize CT's website](#) to learn about loan options for multifamily properties.
- Connecticut has a network of **fuel banks** that may be able to help with utility and energy bills for low-income households.
 - Each fuel bank has its own eligibility and benefits rules.
 - Operation Fuel raises funds and designs programs for local fuel banks. **Their website has a fuel bank finder.** To find information on available assistance go to [Infoline's website](#). Call 2-1-1 for information on where to apply for assistance.
- **CT municipal programs:** Some towns offer grants or loans for home improvements, including energy conservation improvements. These programs are usually offered through local building or development offices.
- Eversource, Yankee Gas (YG), United Illuminating (UI), Southern CT Gas (SCG), and CT Natural Gas (CNG) offer programs to help customers who need help paying their utility bills. These programs include **matching payment programs** (in which the utility matches a payment through an energy assistance program) as well as **new start programs** (which forgive a portion of past-due bills). [Eversource information here](#), [United Illuminating information here](#), [Yankee Gas information here](#), [Southern CT Gas information here](#), and [CNG information here](#).
- Capital for Change, Inc. (C4C) administers **energy conservation low interest loan programs** for single and multi-family homeowners. [Find information here](#).
- **Honorably discharged veterans** (who served during specified periods) and their families may be eligible for emergency assistance that may cover utility or energy bills. For more information go to [Soldiers', Sailors', and Marines' Fund](#) or call 844-454-8900.
- Additional information on CT utility assistance programs is [available on the page linked here](#).

Keeping Outdoor Workers Safe in Extreme Heat¹⁰¹

Outdoor workers are more likely to become dehydrated and suffer heat-related illness during extreme heat events. Practice the following steps to stay safe during extreme heat:

- Prevent heat illness through acclimatization by gradually increasing the time spent working in hot environments.
- Drink two to four cups of water every hour while working. **Don't wait** until you are thirsty to drink.
- Avoid drinks that contain caffeine, alcohol, or large amounts of sugar, as these can increase the loss of body fluids.
- Heavy sweating removes salt and minerals from the body that need to be replaced. A sports drink can help replace the salt and minerals you lose in sweat. If you are on a low-salt diet, have diabetes, high blood pressure, or other chronic conditions, talk with your doctor before drinking a sports beverage or taking salt tablets.
- Wear and reapply sunscreen as indicated on the package.
 - Look for sunscreens that say “broad spectrum” or “UVA/UVB protection” on their labels—these products work best.
- See if some tasks can be scheduled for earlier in the day to avoid the hottest period of the day (between 11 a.m. and 4 p.m.).
- Wear a ventilated wide-brimmed hat (e.g., straw or mesh) and loose, lightweight, light-colored clothing.
- Spend time in air-conditioned buildings during breaks and after work.
- Encourage coworkers to take breaks to cool off and drink water.
- Seek medical care immediately if you or a co-worker has symptoms of heat-related illness, such as muscle cramps, headache, nausea, or vomiting.

How Employers Can Protect their Employees

¹⁰¹ This guide was adapted with permission from the State of New Hampshire Department of Health and Human Services Environmental Public Health Tracking.

The power differential between employer and employee means that employees often do not have the ability to make significant changes in their work environment that could better protect them from extreme heat. Therefore, employers should take the initiative to implement actions that will help protect workers from extreme heat. The following OSHA fact sheet provides advice on steps that employers can take to keep their employees safe in extreme heat.

Protecting Workers from the Effects of Heat

At times, workers may be required to work in hot environments for long periods. When the human body is unable to maintain a normal temperature, heat illnesses can occur and may result in death. It is also important to consider that hot work environments may exist indoors. This fact sheet provides information to employers on measures they should take to prevent worker illnesses and death caused by heat stress.

What is Heat Illness?

The following are illnesses that may result from exposure to heat in the workplace.

Heat Stroke is the most serious heat-related health problem. Heat stroke occurs when the body's temperature regulating system fails and body temperature rises to critical levels (greater than 104°F). **This is a medical emergency that may result in death!** The signs of heat stroke are confusion, loss of consciousness, and seizures. Workers experiencing heat stroke have a very high body temperature and may stop sweating. If a worker shows

Occupational Factors that May Contribute to Heat Illness

High temperature and humidity
Low fluid consumption
Direct sun exposure (with no shade) or extreme heat
Limited air movement (no breeze or wind)
Physical exertion
Use of bulky protective clothing and equipment

signs of possible heat stroke, **get medical help immediately**, and call 911. Until medical help arrives, move the worker to a shady, cool area and remove as much clothing as possible. Wet the worker with cool water and circulate the air to speed cooling. Place cold wet cloths, wet towels or ice all over the body or soak the worker's clothing with cold water.

Heat Exhaustion is the next most serious heat-related health problem. The signs and symptoms of heat exhaustion are headache, nausea, dizziness, weakness, irritability, confusion, thirst, heavy sweating and a body temperature greater than 100.4°F. Workers with heat exhaustion should be removed from the hot area and given liquids to drink.

Cool the worker with cold compresses to the head, neck, and face or have the worker wash his or her head, face and neck with cold water. Encourage frequent sips of cool water. Workers with signs or symptoms of heat exhaustion should be taken to a clinic or emergency room for medical evaluation and treatment. Make sure that someone stays with the worker until help arrives. If symptoms worsen, call 911 and get help immediately.

Heat Cramps are muscle pains usually caused by the loss of body salts and fluid during sweating. Workers with heat cramps should replace fluid loss by drinking water and/or carbohydrate-electrolyte replacement liquids (e.g., sports drinks) every 15 to 20 minutes.

Heat Rash is the most common problem in hot work environments. Heat rash is caused by sweating and looks like a red cluster of pimples or small blisters. Heat rash may appear on the neck, upper chest, groin, under the breasts and elbow creases. The best treatment for heat rash is to provide a cooler, less humid work environment. The rash area should be kept dry. Powder may be applied to increase comfort. Ointments and creams should **not** be used on a heat rash. Anything that makes the skin warm or moist may make the rash worse.

Prevention Made Simple: Program Elements

Heat Illness Prevention Program key elements include:

- A Person Designated to Oversee the Heat Illness Prevention Program
- Hazard Identification
- Water. Rest. Shade Message
- Acclimatization
- Modified Work Schedules
- Training
- Monitoring for Signs and Symptoms
- Emergency Planning and Response

Designate a Person to Oversee the Heat Stress Program

Identify someone trained in the hazards, physiological responses to heat, and controls. This person can develop, implement and manage the program.

Hazard Identification

Hazard identification involves recognizing heat hazards and the risk of heat illness due to high temperature, humidity, sun and other thermal exposures, work demands, clothing or PPE and personal risk factors.

Identification tools include: OSHA's Heat [Smartphone App](#); a Wet Bulb Globe Thermometer (WBGT) which is a measure of heat stress in direct sunlight that takes into account temperature, humidity, wind speed, sun and cloud cover; and the National Weather Service [Heat Index](#). Exposure to full sun can increase heat index values up to 15°F.

Water, Rest, Shade

Ensure that cool drinking water is available and easily accessible. (Note: Certain beverages, such as caffeine and alcohol can lead to dehydration.)

Encourage workers to drink a liter of water over one hour, which is about one cup every fifteen minutes.

Provide or ensure that fully shaded or air-conditioned areas are available for resting and cooling down.

Acclimatization

Acclimatization is a physical change that allows the body to build tolerance to working in the heat. It occurs by gradually increasing workloads and exposure and taking frequent breaks for water and rest in the shade. Full acclimatization may take up to 14 days or longer depending on factors relating to the individual, such as increased risk of heat illness due to certain medications or medical conditions, or the environment.

New workers and those returning from a prolonged absence should begin with 20% of the workload on the first day, increasing incrementally by no more than 20% each subsequent day.

During a rapid change leading to excessively hot weather or conditions such as a heat wave, even experienced workers should begin on the first day of work in excessive heat with 50% of the normal workload and time spent in the hot environment, 60% on the second day, 80% on day three, and 100% on the fourth day.

Modified Work Schedules

Altering work schedules may reduce workers' exposure to heat. For instance:

- Reschedule all non-essential outdoor work for days with a reduced heat index.
- Schedule the more physically demanding work during the cooler times of day;
- Schedule less physically demanding work during warmer times of the day;
- Rotate workers and split shifts, and/or add extra workers.
- Work/Rest cycles, using established industry guidelines.
- Stop work if essential control methods are inadequate or unavailable when the risk of heat illness is very high.

Keep in mind that very early starting times may result in increased fatigue. Also, early morning hours tend to have higher humidity levels.

Training

Provide training in a language and manner workers understand, including information on health effects of heat, the symptoms of heat illness, how and when to respond to symptoms, and how to prevent heat illness.

Monitoring for Heat Illness Symptoms

Establish a system to monitor and report the signs and symptoms listed on the previous page to improve early detection and action. Using a buddy system will assist supervisors when watching for signs of heat illness.

Emergency Planning and Response

Have an emergency plan in place and communicate it to supervisors and workers. Emergency plan considerations include:

- What to do when someone is showing signs of heat illness. This can make the difference between life and death.
- How to contact emergency help.
- How long it will take for emergency help to arrive and training workers on appropriate first-aid measures until help arrives.
- Consider seeking advice from a healthcare professional in preparing a plan.

Engineering Controls Specific to Indoor Workplaces

Indoor workplaces may be cooled by using air conditioning or increased ventilation, assuming that cooler air is available from the outside. Other methods to reduce indoor temperature include: providing reflective shields to redirect radiant heat, insulating hot surfaces, and decreasing water vapor pressure, e.g., by sealing steam leaks and keeping floors dry. The use of fans to increase the air speed over the worker will improve heat exchange between the skin surface and the air, unless the air temperature is higher than the skin temperature. However, increasing air speeds above 300 ft. per min. may actually have a warming effect. Industrial hygiene personnel can assess the degree of heat stress caused by the work environment and make recommendations for reducing heat exposure.

Additional information

For more information on this and other issues affecting workers or heat stress, visit: www.osha.gov/heat; www.cdc.gov/niosh/topics/heatstress; and www.noaa.gov/features/earthobs_0508/heat.html.

Workers have the right to working conditions that do not pose a risk of serious harm, to receive information and training about workplace hazards and how to prevent them, and to file a complaint with OSHA to inspect their workplace without fear of retaliation.

For more information about workers' rights, see OSHA's workers page at www.osha.gov/workers.html.

Keeping Athletes Safe in Extreme Heat¹⁰²

Athletes are more likely to become dehydrated and suffer heat-related illness during extreme heat events. Practice the following steps to stay safe during extreme heat:

- Limit outdoor activity, especially during the hottest part of the day (between 11 a.m. and 4 p.m.).
- Wear and reapply sunscreen as indicated on the package.
 - Look for sunscreens that say “broad spectrum” or “UVA/UVB protection” on their labels—these products work best.
- Schedule workouts and practices earlier or later in the day when the temperature is cooler.
- Pace activity. Start activities slowly and pick up the pace gradually.
- Drink more water than usual and **don’t wait** until you are thirsty to drink.
- Avoid drinks that contain caffeine, alcohol, or large amounts of sugar, as these can increase the loss of body fluids.
- Heavy sweating removes salt and minerals from the body that need to be replaced. A sports drink can help replace the salt and minerals you lose in sweat. If you are on a low-salt diet, have diabetes, high blood pressure, or other chronic conditions, talk with your doctor before drinking a sports beverage or taking salt tablets.
- Encourage teammates to take breaks and drink water.
- Monitor a teammate’s condition, and have someone do the same for you.
- Wear loose, lightweight, light-colored clothing.
- Spend time in air-conditioned buildings during breaks and after exercise.
- Seek medical care immediately if you or a teammate has symptoms of heat-related illness, such as muscle cramps, headache, nausea, or vomiting.

Additional resources on extreme heat and school sports are linked in the Appendix.

¹⁰² This guide was adapted with permission from the State of New Hampshire Department of Health and Human Services Environmental Public Health Tracking.

Keeping Pets Safe in Extreme Heat¹⁰³

We love spending time outdoors during the summer, and so do our pets! During the extremely hot and humid days of summer, it's important to keep your pet's health in mind too.

Use the following tips to ensure that your pet has a safe and healthy summer:

- NEVER leave your pet in a parked car. On a warm day, the temperature in a car can exceed 120 degrees in a matter of minutes, even if the windows are partially open. Your pet can quickly suffer brain damage or die from heatstroke or suffocation.
- Exercise your pet during the morning or evening. These are typically the cooler times of the day. On extremely hot and humid days, decrease the intensity and duration of exercise. Asphalt can get very hot and burn pets' paws, so walk your pet on the grass if possible. Always bring water so they don't become dehydrated.
- Keep your pet indoors during extreme heat events.
- If your pet is outside, provide an ample amount of water and shade. During extreme heat, add ice to water when possible. Trees and tents are ideal for shade because they provide air flow. Doghouses do not provide adequate relief from the heat.
- Keep your pet hydrated. Dogs and cats' bodies are 70-80% water. However, if they lose even 10%, it can cause serious illness. Keep your pet as hydrated as

possible by placing fresh water where they spend most of their time. If they are exercising, take frequent breaks and offer them the chance to drink water. You can pre-hydrate your pet by feeding them fresh, moist food instead of dry food.



¹⁰³ This guide was adapted with permission from the Polk County Iowa Health Department

- Watch for signs of dehydration. Dogs and cats can't sweat, so they cool off by panting. If a dog is overheated, they will drool excessively. Signs of dehydration include lethargy (being very tired and having no energy), bloodshot eyes, and possibly paleness. If you gently pinch and lift your pet's skin and it takes longer than normal for the skin to fall back into place, then your pet is likely dehydrated.
- Watch for signs of heat stroke. If your pet has rapid heartbeat, difficulty breathing, fever, dizziness, seizure, lethargy, excessive thirst, or profuse drooling or salivation, move your pet into the shade or air conditioning. Apply ice packs or cold towels to their head, neck, and chest, or run cool water over your pet. Have them drink small amounts of water. Take them directly to a veterinarian to seek medical care.

IV. Extreme Heat Resources for Municipal Leaders

Extreme Heat Resources for Municipal Leaders

Extreme heat is a major public health concern in the United States. Climate change means that temperatures will continue to increase, with more frequent and severe heat waves in many regions. According to UConn’s Connecticut Institute for Resilience & Climate Adaptation (CIRCA), by mid-century, Connecticut residents can expect:

- The number of Heat Wave Days (6 or more consecutive days with daily maximum temperature above the 90th percentile) to rise from 4 to 48 per year.
- The number of Tropical Nights (annual number of days when the daily minimum is above 68°F) to rise from 10 to 40 per year.
- The number of Summer Days (annual number of days when the daily maximum temperature is above 77°F) to rise from 81 to 118.
- The number of Days above 90°F (annual number of days with maximum temperatures above the threshold value) to rise from 5 to 25 per year.¹⁰⁴

These trends threaten the health of all people, but vulnerable community members are most at risk. Vulnerable groups include adults 65 and older, children, people living in nursing homes or assisted living facilities, outdoor workers, athletes, people with medical conditions and/or disabilities that reduce their ability to adapt to heat, socially/linguistically isolated people, and people unable to access/afford air conditioning.¹⁰⁵ Race and ethnicity, income, air conditioning access, and housing affordability and quality are also factors that determine a person’s heat risk.¹⁰⁶ Black and Brown people, low-income residents, unhoused people, and community members living in older housing with poor weatherization are all at increased risk during extreme heat events.¹⁰⁷ This section of the Resilient Connecticut Toolkit includes resources to help municipal leaders lead an effective heat response in their communities.

¹⁰⁴ Seth, Wang, Kirchhof, Lombardo, Stephenson, Anyah, Wu, “CIRCA Temperature and Precipitation Fact Sheet.”

¹⁰⁵ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 43.

¹⁰⁶ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 12-14.

¹⁰⁷ Ibid.

Developing a Municipal Extreme Heat Response Plan

Heat response plans “describe and organize activities to prevent heat-related morbidity and mortality in a community.”¹⁰⁸ The CDC has determined that these plans—already developed by states like Kansas, Minnesota, and New Hampshire—are effective at preventing illness and death from extreme heat.¹⁰⁹

Connecticut’s Division of Emergency Management and Homeland Security (DEMHS) has an Extreme Heat Emergency Management Procedure (updated July 2022).¹¹⁰ The procedure consists of the following steps (make note of communication to local and regional leaders):

¹⁰⁸ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, “Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation,” 1.

¹⁰⁹ Ibid.

¹¹⁰ Connecticut Division of Emergency Management and Homeland Security, “DEMHS Extreme Heat Emergency Management Procedure.”

DEMHS follows the State Response Framework and also follows the basic structure of the Severe Cold Weather Protocol, although some of the services that become available with the Cold Weather Protocol are not activated for heat.

The DEMHS planner with weather background routinely monitors the NWS forecasts and weather models each day. Whenever the forecasts show the potential for a heat wave (three consecutive days with highs above 90 F), he prepares an internal update for DEMHS. If the heat wave looks significant and Heat Advisories are issued by the NWS, he also prepares an external update that goes to most state agencies, the Governor's office as well as most towns. Once the planner sends out a forecast, DEMHS reviews for additional actions, which may include:

- Governor's office notified of DEMHS recommendation to follow Extreme Heat Protocol;
 - Governor's office does press release;
- DEMHS sends email to towns;
- DEMHS requests that towns submit their cooling center information into the WebEOC Daily Operations Incident;
- PIO sends out social media alerts and also disseminates information to the ESF 15 Diverse Communities group to share with their contact lists;
- DEMHS contacts 211 to be ready to respond to calls re cooling centers;
- DEMHS Regional Coordinators and duty officer monitor WebEOC in order to respond to any requests from municipalities for assistance;
- DEMHS receives reports and updates from the energy utilities.

Municipal leaders have the opportunity to make their community members safer during extreme heat events by creating local heat response plans tailored to the needs of residents. Through local networks of government agencies, nonprofits, private businesses, schools, neighborhoods, and community groups, municipal leaders can create heat response actions that rely on hyper-local connections. Through these networks, residents are more likely to get information from people they know and trust. This connectivity is particularly important for vulnerable people, who are more likely to lack resources and support during emergencies. A municipal heat response plan should also incorporate feedback from diverse groups of residents so that it addresses the needs of as many community members as possible. Municipal heat response plans are useful tools for preparing residents for heat emergencies before they occur, responding appropriately and efficiently during extreme heat events, and strengthening community and social cohesion.

The CT Department of Public Health's Office of Climate & Public Health and the Yale Center on Climate Change and Health have prepared a template extreme heat response plan that will be available in Fall of 2022. Typically, heat response plans outline the expected local impacts of extreme heat, establish preparedness, response, and recovery

actions, assign roles and responsibilities, identify local vulnerable populations, and outline an evaluation and revision process.¹¹¹

Effectiveness

Heat response plans can be powerful tools in municipalities' efforts to protect community members from extreme heat, but leaders should be mindful that individual components of a heat response plan may not be effective on their own. Through a literature review, the CDC found "mixed evidence on the effectiveness of individual components of a heat response plan and the degree of overall health protection."¹¹² The studies the CDC reviewed also found that after a heat response plan has been implemented, "morbidity, mortality, and other indicators" decrease in subsequent extreme heat events, and planning and early response strategies reduce heat-related health impacts.¹¹³ In short, effective heat response plans implement actions before extreme heat events occur and are grounded in a multitude of actions and strategies that reinforce one another.

It is also essential to evaluate heat response plans in order to identify areas for improvement and determine the effectiveness of heat response and planning actions. Evaluation and revision of heat plans is important because factors such as demographics and the frequency of extreme heat events shift frequently; local leaders must be able to adapt response plans accordingly. Agencies should set regular intervals when important information—such as available funds—will be updated, and they should forward these updates and any related heat plan revisions to stakeholders who use the plan.

Find an example of heat plan maintenance on page 12 of the [Arizona Department of Health Services Heat Emergency Response Plan](#).

The CDC's Building Resilience Against Climate Effects (BRACE) program also recommends that health departments use the following questions to help evaluate the implementation of heat response actions:¹¹⁴

- a) Does the public health agency have a reasonable estimate of the health impacts of extreme heat in its jurisdiction?

¹¹¹ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, "Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation," 17.

¹¹² Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, "Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation," 16.

¹¹³ Abbinett, Schramm, Widerynski, Saha, Beavers, Eaglin, Lei, Nayak, Roach, Wolff, Conlon, Thie, "Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation," 17.

¹¹⁴ Marinucci, Luber, Uejio, Saha, and Hess, "Building Resilience against Climate Effects—A Novel Framework to Facilitate Climate Readiness in Public Health Agencies," 6449.

- b) Has the process allowed the public health agency to prioritize health impacts of greatest concern and the most suitable interventions?
- c) Has the public health agency prepared an adaptation plan for the public health sector within the jurisdiction?
- d) Are extreme heat considerations accommodated in public health planning and implementation activities?
- e) Are indicators in place that will evaluate the interventions implemented as a result of utilizing the heat response plan?
- f) How can the process be improved in the next iteration?
- g) What are the agency's top learning priorities when it implements revised versions of the heat response plan?

Guides for Creating an Extreme Heat Response Plan

Key Steps for Planning for and Responding to an Extreme Heat Event¹¹⁵

Figure 2 also summarizes the key steps for planning for and responding to an extreme heat event.

Step 1: Create a heat response plan

The first step in preparing to respond to an extreme heat event is to develop a heat response plan. A heat response plan is essential for describing and coordinating activities to prevent heat-related morbidity and mortality. The next section, “Developing a Heat Response Plan,” describes the minimum elements of an effective response plan. The response plan should define the lead agency responsible for the plan, criteria for activating the plan, and the roles of agencies

¹¹⁵ This guide was adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

and organizations involved with the plan. The plan should also contain a communications plan, identify high-risk and vulnerable people, describe strategies to prevent heat-related illnesses and deaths, and establish an evaluation process.

Step 2: Predict extreme heat event and transfer information to lead agency

For successful notification of an upcoming extreme heat event, it is critical that the lead agency of the response plan (see the next section for a description of the lead agency) develop partnerships with the NWS to ensure early weather forecasts capable of predicting extreme heat conditions a few days in advance of an extreme heat event.

All Connecticut municipalities involved in planning and implementing heat response plans should develop relationships with at least one source of consistent weather information, such as their local NWS station. Establishing these relationships will facilitate early detection and transfer of information regarding the characteristics of extreme heat events to the lead agency of the response plan.

Step 3: Assess risk and determine activation of response plan

Once the lead agency is informed of a possible extreme heat event, the agency, in collaboration with its partners, needs to determine if the characteristics are indicative of an extreme heat event that could trigger activation of the heat response plan. Generally, the lead agency reviews the NWS forecast data and health-impact information to determine whether location-specific criteria for an extreme heat event are satisfied, and then, if the conditions are met, the agency activates the plan. Activation of the heat response plan should happen before the extreme heat event occurs to ensure that preventive measures and strategies are implemented at the most opportune time for preventing illnesses and deaths from extreme heat.

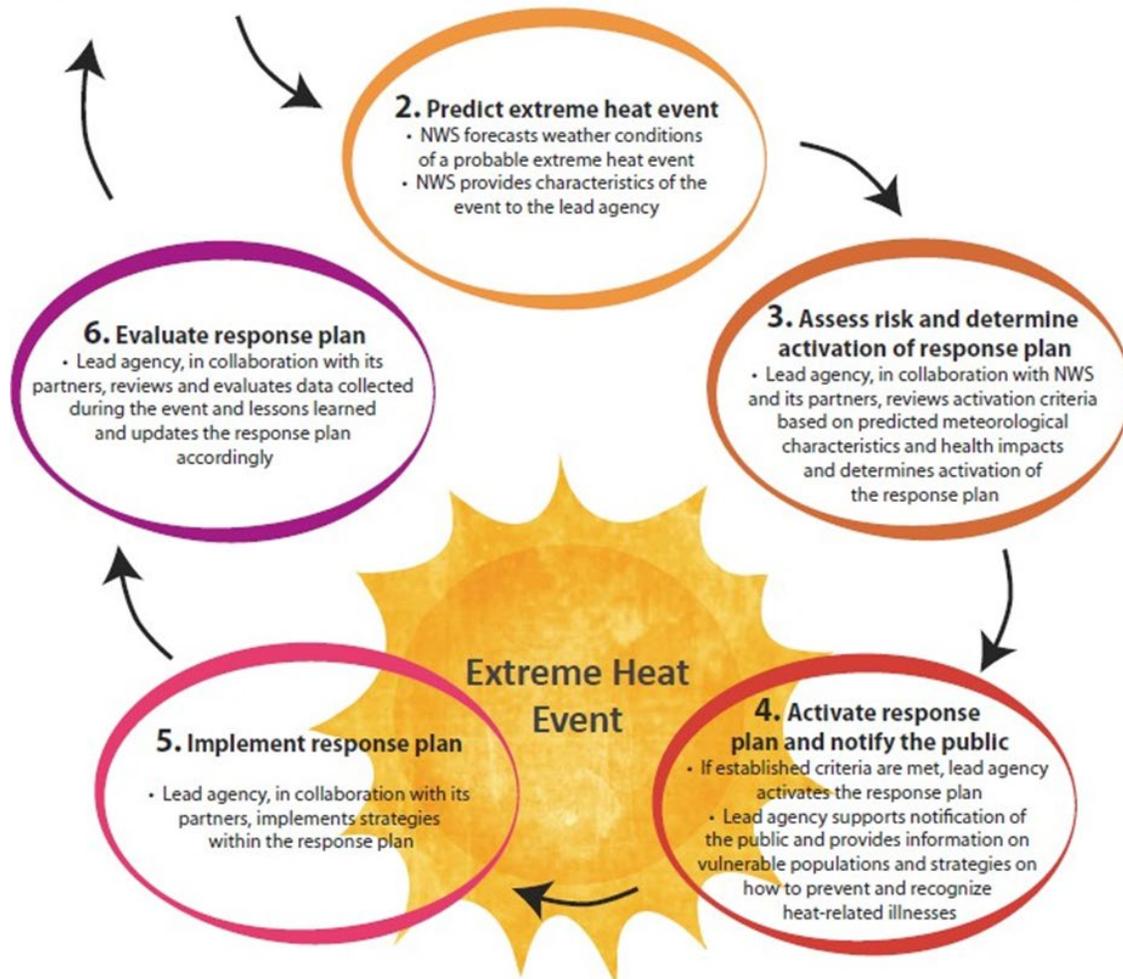
Figure 2¹¹⁶ Key Steps Responding to an Extreme Heat Event*

¹¹⁶ This figure was reproduced with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health.

1. A heat response plan should be developed before an extreme heat event. Below are the critical elements of a successful response plan.

Response Plan Elements:

- Identification of a lead agency responsible for the response plan
- Defined criteria for activating and deactivating the plan
- Defined roles and activities of agencies and organization involved with the plan
- A communications plan for communicating heat-related information to partners and the public before and during an extreme heat event
- Identification of vulnerable persons
- Strategies for preventing morbidity and mortality from extreme heat
- Evaluation of the response plan



* Although this diagram presents key steps in responding to an extreme heat event as discrete steps, actual details and timing of each step will vary locally. For example, determining the activation of the response plan may happen simultaneously with notifying the public of an impending extreme heat event. The response plan should reflect local conditions and resources and should clearly articulate each step in responding to an extreme heat event, along with the agencies and organizations that are responsible for implementing each step of the process.

Step 4: Activate response plan and notify the public

Assuming the impending heat event meets location-specific criteria for an extreme heat event, the lead agency activates the response plan. Immediately after a decision

has been made to activate the extreme heat response plan, the public needs to be informed of the timing, severity, and duration of the forecasted extreme heat event. Effective public notification of an upcoming extreme heat event helps eliminate the risk of the heat event taking a population by surprise.

Notifying the public of anticipated conditions, strategies to stay cool and hydrated, and places to go to cool off will allow residents to prepare themselves and will enable the organizations involved in the response to concentrate on known high-risk individuals and locations. Advance public notification about cooling centers (if used as a strategy) will increase the likelihood that at-risk individuals can take advantage of these services. All messages regarding an upcoming extreme heat event should be coordinated with media outlets to ensure the public receives consistent and accurate information. The communications strategy should be described in detail within the heat response plan.

Refer to page 106 for this toolkit's Public Communications Packet.

Step 5: Implement response plan

The fifth step of responding to an extreme heat event is to implement the strategies in the response plan. The strategies should reflect the demographics and vulnerabilities of the community. The response plan should clearly delineate which participating agencies and organizations are responsible for implementing each strategy.

Step 6: Evaluate response plan

Each step of responding to an extreme heat event should be reviewed and evaluated after an extreme heat event. Evaluation is critical for improving the plan and making it more effective at preventing heat-related illnesses and deaths in the future.

Developing a Heat Response Plan¹¹⁷

Each city or municipality in Connecticut should have a heat response plan. The level of detail and the number of strategies in the plan will vary based on available

¹¹⁷ This guide was adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

resources, geographic location, agencies, and organizations involved in planning and response, and the types and distribution of vulnerable populations.

All Response Plans Should Contain the following Elements:¹¹⁸

Lead agency: A lead agency for implementing the extreme heat response plan should be identified. Typically, a health department or emergency management is the lead agency in charge of responding to extreme heat events, but this can vary at the local level. The lead agency will activate the plan and help coordinate the efforts of organizations involved in the response.

Criteria for activating and deactivating the plan: Criteria for activating and deactivating an extreme heat response plan vary and should be based on location-specific factors that affect the relationship between weather and mortality. These factors may include air temperatures, dew point temperatures, wind, daytime highs and overnight lows, and how long the hot weather is expected to last. Some public health departments may have their own thresholds and calculations that include health-related criteria for extreme heat events. Others may use the DEMHS or NWS criteria for activation.

Roles and activities of agencies and organization involved with the plan: Implementation of a heat response plan requires close collaboration between government agencies (e.g., local public health department, city/county emergency management, NWS, tribal health departments) and non-governmental organizations, especially organizations that serve the community and vulnerable populations (e.g., the American Red Cross and Meals on Wheels).

Engaging local organizations that work with vulnerable populations in planning and implementing the response plan will make it easier to identify appropriate strategies for vulnerable community members. Additionally, these organizations are more likely to perform successful outreach and use strategies targeted to specific populations. The plan must clearly articulate the roles and responsibilities of all the organizations involved in the plan.

Communications plan: The communications plan needs to articulate communication strategies both between partners involved in the response plan and with the public. There should be frequent communication between the NWS, the lead

¹¹⁸ Bernard and McGeehin, “Municipal Heat Wave Response Plans,” 1520.

agency in charge of the response plan, and other collaborating agencies and organizations. Additionally, the plan should identify communication strategies for communicating heat-related information before and during an extreme heat event. For example, the lead response agency, in coordination with other partner organizations, should carry out extreme heat awareness campaigns in the spring to help residents prepare for and learn about the dangers of extreme heat. In addition to messages for the public, information should be provided to organizations/companies that have at-risk populations (e.g., young children, people with health care needs or disabilities, outdoor workers, older adults), such as schools, daycares, landscape/construction businesses, sports teams/camps, and senior living facilities. Messages should include information on what to do (e.g., how to prevent illnesses from extreme heat), symptoms of heat-related illnesses, characteristics of people more vulnerable to extreme heat, and where to go for more information. Messages may be transmitted through a variety of media outlets, including television, radio, internet, and distribution of fliers and posters. Messages should be tailored, translated and sensitive to the demographics and population of the area. The communications plan should be developed before the heat event and updated after the event using lessons learned from implementing the plan.

Refer to page 106 for this toolkit's Public Communications Packet.

Identification of vulnerable people: Quantifying and mapping vulnerable populations provides important information for planning and implementing appropriate strategies that reach the most vulnerable members of a community. The lead response agency or another entity should create data summaries and/or maps to identify the most vulnerable populations in the community and where the populations reside so that appropriate preventative actions and strategies for these community members can be determined before an extreme heat event.

The Connecticut Institute for Resilience and Climate Adaptation created a [Climate Change Vulnerability Index \(CCVI\)](#) that includes a "[Heat Viewer](#)" map. The CCVI combines built, social, and ecological factors to identify areas that are vulnerable to flooding and extreme heat. These mapping tools can be used to view vulnerability at both a regional scale and at specific sites. A [CCVI Viewer Story Map](#) demonstrates how to navigate and print maps.

Evaluation: Response plans should be reviewed and evaluated after an extreme heat event. Modifications to the plan should address lessons learned and changes in local conditions. This ensures continuous quality improvement and rectifies any challenges or mistakes observed from implementing the plan during previous events. The agencies and organizations involved in responding to the extreme heat events

should partake in the evaluation process. Records on heat-related morbidity and mortality that occurred during the extreme heat event also should be collected, analyzed, and used to adjust strategies and/or criteria for activating the heat response plan.

The two following sample checklists provide examples of the steps involved in creating and implementing a heat response plan. Directions for downloading and editing the checklists are below each checklist

Table 3: Checklist of response plan elements and strategies

Strategies	Completed?
Response Plan Elements⁴	
Lead agency responsible for the response plan	
Criteria for activating and deactivating the plan	
Assigned roles and activities of agencies and organizations involved with the plan	
Communications plan for communicating heat-related information to partners and the public before and during an extreme heat event	
Identification of vulnerable persons	
Strategies for preventing morbidity and mortality from extreme heat	
Evaluation of the response plan	
Response Plan Strategies	
Prediction	
Establish partnership with local National Weather Service (NWS) station to ensure access to weather forecasts capable of predicting extreme heat conditions a few days in advance of an event	
Ensure timely transfer of weather forecasts to lead agency	
Assessment, Activation and Notification	
Review activation criteria based on predicted meteorological characteristics and health impacts and determine activation of the response plan	
Coordinate distribution of information about the anticipated timing, severity, and duration of extreme heat event; heat exposure symptoms; and tips on how to stay cool during an extreme heat event for public broadcasts	
Implementation	
Disseminate information related to preventing heat-related illnesses to community organizations and facilities with concentrations of high-risk individuals	
Activate a heat line	
Identify and designate buildings with air conditioning as public cooling centers and extend hours of operation	
Work with the public and private sector to allow public gathering at buildings with air conditioning and extend hours of operation	
Outreach to vulnerable populations	
Arrange for extra staffing of emergency support services	

Response Plan Strategies (cont.)	
Suspend utility shutoffs and provide transportation and financial assistance	
Provide water at public places	
Reschedule outdoor public events when possible	
Provide information to pet owners on protecting their pets from extreme heat	
Prepare strategies for a power outage	
Evaluation	
Evaluate heat response plan after implementation	
Mitigation	
Support and promote programs and policies to reduce effects of urban heat islands	

This table was adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

To open the above checklist in Microsoft Word and preserve the document’s format, follow these steps:

1. Open this google drive link:
<https://drive.google.com/drive/folders/1KZXZjQpdb-CCppd2BGHlbFkezo3ObGql?usp=sharing>
2. Right click on the “Response Plan Checklist” document.
3. Click on the top option, “Preview.”
4. Click on the three vertical dots in the top right corner.
5. Click on “Download.”

CHECKLISTS FOR EXTREME HEAT¹

Long-term, Imminent, and Response to Extreme Heat Events

LONG-TERM PREPARATION CHECKLIST

- Identify extreme heat event partners and define their roles and responsibilities.
- Involve community organizations and other stakeholders in the response planning process (include medical examiner/coroner in this process).
- Develop a response plan, including but not limited to the following:
 - Develop a cooling center plan that identifies and maps air-conditioned locations for cooling centers. Ensure that cooling centers are evenly distributed throughout jurisdiction.
 - Consider transportation options to cooling centers (e.g., free buses). Consider the accessibility of cooling centers (e.g., for walkers and wheelchairs).
 - Develop strategies that can be used if there is a power outage.
- Understand local and state roles in the reporting process for heat-related fatalities.
- Develop a database/list of facilities and organizations that serve vulnerable populations (e.g., social service agencies, senior living centers, daycare centers, long-term care facilities, organized sports, construction companies, etc.) so that they can be immediately contacted of an impending extreme heat event.
- Monitor weather reports for summer months.
- Develop maps of vulnerable populations, if feasible.
- Ensure that heat fact sheets are current.

¹ This checklist was adapted with permission from the Wisconsin Climate and Health Program at the Wisconsin Department of Health Services.

ANTICIPATION OF IMMINENT HEAT EVENT CHECKLIST

- Notify local extreme heat partners.
- Alert contacts in database/list of facilities and organizations that serve vulnerable populations.
- Work with media to alert public of the extreme heat event and advise people on recognizing and preventing heat-related illnesses.
- Activate transportation assistance program.
- Provide maps of locations of cooling centers and other cool places.
- Consider extension of hours at public pools and public air-conditioned places.
- Consider suspending outdoor public events.
- Coordinate with relevant organizations to provide water and other resources to unhoused people.

EXTREME HEAT EVENT RESPONSE CHECKLIST

- Notify local extreme heat event partners.
- Coordinate with medical examiner/coroner if heat fatality occurs.
- Continue to monitor weather and make appropriate media release(s) with safety tips.
- Activate cooling center plans.
- Continue promotion of cooling centers hours and locations.
- Ensure outreach to vulnerable populations (e.g., e-mail to contacts in facilities database).
- Consider canceling, rescheduling or heightening mitigation protections for outdoor public events.

To open the above checklist in Microsoft Word and preserve the document's format, follow these steps:

1. Open this google drive link:
<https://drive.google.com/drive/folders/1KZXZjQpdb-CCppd2BGHlbFkezo3ObGql?usp=sharing>
2. Right click on the "Checklists for Extreme Heat" document.
3. Click on the top option, "Preview."
4. Click on the three vertical dots in the top right corner.
5. Click on "Download."

Mitigation of Extreme Heat Impacts¹¹⁹

It is important to support and promote programs and policies that help reduce the effects of urban heat islands. Although strategies to reduce the urban heat island effect typically are not included within a response plan, they are important to help reduce the severity and duration of urban residents' exposure to high-heat conditions.¹²⁰ Programs and policies that increase urban vegetation, especially shade trees, and encourage the use of cool building materials can help reduce the urban heat island effect. Some strategies that help reduce the urban heat island effect can provide multiple health benefits. For example, green roofs can help reduce the urban heat island effect, help capture and clean storm water, and provide a green space for community members. The next section of the toolkit outlines a multitude of policy and planning options that help reduce extreme heat.

Municipal Policy & Planning Option Overview

The elements described in the previous section are the foundational components of a heat response plan. The following guide suggests a wide variety of policy and planning actions that municipalities can take to address extreme heat impacts in their communities. These actions—divided by the categories of “Planning and Zoning,” “Community Resilience and Engagement,” and “Municipal Adaptations”—will not be feasible or appropriate for every location. The goal of this resource is to suggest diverse options that municipal leaders can choose from according to their local needs. The best strategies for any municipality utilize local resources and are tailored to the at-risk populations within the community.

¹¹⁹ This guide was adapted with permission from the Minnesota Climate and Health Program at the Minnesota Department of Health

¹²⁰ Luber and McGeehin, “Climate Change and Extreme Heat Events,” 431.

Umbrella Categories	Action Items	Best Practices	Where Have These Polices Been Implemented?	Short or Long-Term Action?
<p>Planning and Zoning – Infrastructure and greening actions embed public cooling resources in residents’ surroundings. These actions will require long-term planning and implementation, as they are investments in the future health and resiliency of municipalities. As such, planning and zoning for extreme heat should encourage and incorporate regular community input and feedback.</p>	<p>Improve access to tree plantings and education about tree care and maintenance.</p>	<p>Add new tree plantings in a municipality's hottest communities.</p>	<p>► New Haven's Urban Resources Initiative (URI) partners with the City's Parks, Recreation and Trees Department to provide free street trees to New Haven residents, businesses, and schools on request. The program focuses on increasing the urban tree canopy in historically marginalized and redlined communities. For municipalities interested in starting a similar program, In Our Back Yard (IOBY) is a good potential funding source. IOBY crowd-funds for community-based projects. They have supported several environmental initiatives, including the Sustainable CT Community Match Fund. Learn more about IOBY here. Learn more about URI on the website linked here.</p>	<p>Long-Term</p>
		<p>Add street trees and perimeter plantings around hot areas such as industrial sites and housing complexes built using impervious materials (i.e. cement, asphalt, brick, and steel).</p>	<p>► The CT Urban Forestry Climate Change Grant Program (linked here) supports projects based in urban forestry. The grants awarded are for a maximum of \$37,000. Municipalities and 501(c)3 non-profits are eligible.</p> <p>► Cincinnati, Ohio funds its urban tree program through a tree tax applicable to each foot of private property adjacent to the public right-of-way. Learn more here.</p> <p>► Phoenix, AZ implemented a "cool corridors" initiative that aims to plant shade trees in 100 zones with high pedestrian traffic and low tree canopy by 2030. Phoenix used the following 4 criteria to determine what areas need cool corridors: neighborhood vulnerability, transit dependency, pedestrian use, and shade coverage & temperature. One tool the city used to find shade coverage is the national Tree Equity tool linked here. Phoenix is considering using money from 2021 federal pandemic relief funding to increase plantings going forward. Read more about the city's early planning strategies in the powerpoint linked here. There are more recent updates in the April 2022 article linked here.</p>	<p>Long-Term</p>
		<p>Establish a community tree planting program that would encourage residents to request free street tree plantings.</p>	<p>► New Haven's Urban Resources Initiative (URI) has a Tree Ambassadors program that recruits community members to share information about URI's free tree planting program with their neighbors through canvassing, social media, and conversations. On the webpage linked here, you can find all of URI's resources for this program, including a training video, fact sheets, step-by-step instructions for ambassadors, and social media resources.</p>	<p>Long-Term</p>
		<p>Recruit community groups, leaders, and residents to distribute information about tree care and local tree planting programs.</p>	<p>► New Haven's Urban Resources Initiative (URI) has a Tree Ambassadors program that recruits community members to share information about URI's free tree planting program with their neighbors through canvassing, social media, and conversations. On the webpage linked here, you can find all of URI's resources for this program, including a training video, fact sheets, step-by-step instructions for ambassadors, and social media resources.</p>	<p>Long-Term</p>

<p>Provide multilingual outreach about tree planting programs and tree care.</p>	<ul style="list-style-type: none"> ▶ For its community webinars, Boston Heat Strategies collaborated with the City's Office of Language and Communications Access, which provided funding and support for finding translation and interpretation services through a professional vendor directory. Zoë Davis, Boston's Climate Resilience Project Manager, outlined the following best practices: work with interpreters who are familiar with the communities your team is working with, have a third party review translated material to ensure the intended meaning has been captured, keep a dictionary of translated terms and phrases (especially for topic-specific technical terms and phrases), develop imagery or iconography to condense information (especially for flyers, door knockers, and social media posts), budget a 2-3 week period of time for translation services, and for multilingual public meetings sharing a post-event recording, a voiceover provides a higher quality product rather than a recording from the interpreter's computer, so confirm that interpreters will provide voice over of the recording as part of the services being requested. ▶ New Haven's Urban Resources Initiative translates their flyers into Spanish and has team members who can conduct bilingual outreach. ▶ Some regions have a network of translators/interpreters who volunteer to translate for nonprofits and local governments, such as the Yale Interpretation Network. 	<p>Long-Term</p>
<p>Create a shade tree ordinance to protect and maintain existing trees. Mature trees provide more shade with their larger canopies, so they are a valuable public resource.</p>	<ul style="list-style-type: none"> ▶ Houston, TX has a tree and shrub ordinance that preserves trees that are in the public right-of-way. It requires residents to obtain written permission from the Parks Department before removing certain tree species that are 11/2 inches or greater in diameter on the city's street tree list and 20-inch caliper for all other species. Additionally, the tree ordinance establishes "tree credits" that encourage tree preservation, and applicants can earn credits by preserving existing on-site trees, planting trees with a caliper/diameter greater than four inches, and depositing money into a tree fund. Developers can use credits to satisfy the tree-planting requirement for all new and expanding developments. Applicants must incorporate a tree preservation plan into their proposed landscape plan to receive tree credits. The ordinance requires tree planting for all new commercial and multi-family developments, new family residential homes, new parking lots or expanded portions of old lots, and building additions to non-SF residential that exceed 1000 square feet. Enforcement actions include a \$500 per day fine and prosecution. Private property owners who remove or destroy a protected tree can incur a fine of \$90 per diameter inch. Read more about the ordinance here. ▶ Portland, Oregon's tree ordinance establishes requirements for the removal and replacement of private trees and trees on the City's land, both in development and non-development contexts. A City Forester or the Bureau of Development Services reviews permits. The ordinance also establishes a "Tree Planting and Preservation Fund" to help protect and maintain Portland's urban forest. It is funded by in-lieu fees (payments for replacement trees when properties or streets are not suitable for tree replacement, or payment in lieu of the tree planting to meet tree density requirements) and donations and payments from enforcement actions for trees on private land. 	<p>Long-Term</p>

		<p>Another city fund, the "Urban Forestry Fund," provides money for replacing and planting new trees on city land and educating the public about tree care and the why their city needs an urban forest. It is funded with donations and enforcement fees from city or street trees that are illegally removed or damaged. Read the full text of the tree ordinance here.</p> <p>► St. Louis, MO's tree ordinance establishes the following goals: St. Louis will not suffer a net loss of trees that are under its jurisdiction, it will preserve trees whenever possible during development and replace them when trees must be removed, and the City will increase and expand the population of its urban forest by planting new trees. When someone has received approval to remove a city tree, they must pay a reforestation fee for each tree. Anyone who damages a city tree, shrub, or plant during construction, demolition, renovation, improvement, or erection of any structure is subject to a fine of \$250 for each tree, shrub, or plant. A maximum fine for tree violations is \$500. Residents who damage or remove trees on their private land without permission are also subject to a \$250 fee. Learn more in the document linked here.</p>	
Increase green infrastructure and open space.	Create gardens and parks on vacant lots near residential blocks.	<p>► In New Haven CT, the Urban Resources Initiative (URI)'s Community Greenspace Program provides supplies, technical advice, and training to support resident-driven community greening projects initiated by neighborhood groups or organizations. Read more about the program here.</p> <p>► Newark, NJ has developed a plan to reuse and develop its brownfields/vacant and abandoned lots. Please find details of the City's plan, including strategies and actions, on page 9 of the report linked here.</p>	Long-Term
	Establish green stormwater infrastructure projects—such as bioswales, rain gardens, and tree trenches—in the hottest areas of a municipality, including industrial sites, commercial sites, and schoolyards.	<p>► New Haven's Urban Resources Initiative (URI) has a green infrastructure program. Follow this link to read about the program and see videos, pictures, and step by step instructions on how to create and maintain green infrastructure such as bioswales.</p> <p>► Newark, NJ plans to increase its green infrastructure with the primary goal of reducing the strain on its wastewater system. Please find details of the City's plan, including strategies and actions, on pages 6-8 of the report linked here.</p>	Long-Term
	Zone in green walls.	<p>► In 2021, North Charleston, SC, added an ordinance to incorporate a new overlay district. The ordinance includes the rule that for structured parking, unbroken facades in excess of 15 feet must be adorned with vegetative growth and that these green walls must remain green throughout the year. The ordinance also includes green walls as an option for side and rear buffers for new developments. Finally, the ordinance mandates that no blank walls can face public streets, sidewalks, or other public spaces. Green</p>	Short-Term

			walls are an option for filling blank walls. See the ordinance's full text here. ▶ Mercer Island, Washington includes green walls as part of its city code's landscaping development and design standards. The city code also includes green walls as an option for minor facade modulations. See the code's full text here.	
	Vary building heights & orientation.	Adjust land use planning to allow for varied roof heights and slanted roofs for improved ventilation.	▶ Mercer Island, Washington's city code requires that buildings have a variety of roof types and configurations. It also encourages sloping roofs. See the code's full text here.	Short-Term
Community Resilience and Engagement — These actions encourage community building to facilitate heat response and educate residents about extreme heat. Forging connections among local organizations, businesses, and residents can accelerate heat response and help ensure that vulnerable people are included in heat emergency plans through targeted outreach based on interpersonal	Organize and activate a network of businesses, places of worship, and community organizations that can contribute to municipal heat response.	Organize a steering committee of heat relief network partners.	▶ Philadelphia's Hunting Park neighborhood created a community heat response team by "researching which community development corporations, registered community organizations, block captains, colleges, university or schools, hospitals or health institutions, faith-based organizations," and city agencies could contribute to the development and implementation of its heat plan. Page 4, " Community Engagement Task List ," of the pdf linked here , is an example of the outreach steps Hunting Park took to build its heat relief network.	Short-Term
		Create an organizational assessment system, tool, or network that potential heat relief partners can use to identify, locate, and connect their cooling resources.	▶ In Philadelphia, the Hunting Park neighborhood holds bi-weekly meetings with its heat relief network partners. They map existing cooling resources that each partner could contribute and that the neighborhood could add to its heat relief network. In its Heat Toolkit, Hunting Park gives the example that "one church may have an air-conditioned basement, while another partner may have a screen and projector or board games to provide entertainment, while a restaurant may offer up free snacks." Additional information can be found starting on page 23 of Hunting Park's Heat Plan linked here and in its Heat Toolkit linked here . An example community heat asset map is linked here . ▶ Baltimore, MD uses its Community Resilience Hub Program to partner with community-based organizations. The City has already used several hubs in this network as cooling centers, and they can also be used to facilitate other heat initiatives, such as neighborhood outreach. Baltimore's Office of Sustainability within the Department of Planning leads the Hub Program. Read more about it here.	Long-Term
		Train heat relief network partners on cooling strategies and best practices for inviting and hosting community members.	▶ The Minnesota Department of Health created several training modules (linked here) on the subjects of extreme heat and public health for local government staff and public health practitioners. ▶ The CDC also has a training module on "Recognizing, Preventing and Treating Heat-Related Illness." It is linked here. ▶ On pages 26-36 of the document linked here , the North Carolina Climate and Health Program provides an example of how to implement an education and information campaign. NC provides many resources that it used when communicating with local stakeholders about how its Heat Health Alert System is designed and how it should be	Short-Term

relationships. These actions should include regular community input and feedback.		implemented. These resources include tables with action items and timelines, directions on evaluation, and the project's funding source (a CDC grant supporting NC BRACE staff).	
	Host engaging and informative programs and events at heat relief partner sites.	<ul style="list-style-type: none"> ▶ Under "Task F" of its "Community Engagement Task List" linked here, Philadelphia's Hunting Park neighborhood outlines engagement activities it has organized for community members. In its Heat Toolkit (linked here), the neighborhood also recommends to "hold a few events that include music, dancing, art activities, cooling resources, and ice water throughout the summer to get folks to take the [heat] survey and talk about available cooling resources." Additional resources are under step 5 of the aforementioned toolkit, a sample flyer is linked here, and instructions on how to make a hand fan are linked here. 	Short-Term
	Develop multilingual outreach and communication strategies—including a map, logo, and wayfinding—to help residents access the community heat relief network.	<ul style="list-style-type: none"> ▶ For its community webinars, Boston Heat Strategies collaborated with the City's Office of Language and Communications Access, which provided funding and support for finding translation and interpretation services through a professional vendor directory. Zoë Davis, Boston's Climate Resilience Project Manager, outlined the following best practices: work with interpreters who are familiar with the communities your team is working with, have a third party review translated material to ensure the intended meaning has been captured, keep a dictionary of translated terms and phrases (especially for topic-specific technical terms and phrases), develop imagery or iconography to condense information (especially for flyers, door knockers, and social media posts), budget a 2-3 week period of time for translation services, and for multilingual public meetings sharing a post-event recording, a voiceover provides a higher quality product rather than a recording from the interpreter's computer, so confirm that interpreters will provide voice over of the recording as part of the services being requested. ▶ New Haven's Urban Resources Initiative translates their flyers into Spanish and has team members who can conduct bilingual outreach. ▶ Some regions have a network of translators/interpreters who volunteer to translate for nonprofits and local governments, such as the Yale Interpretation Network. 	Long-Term
Emphasize strategic and inclusive outreach.	Improve access to information about how to stay cool during extreme heat events, including information about cooling centers and heat health tips.	<ul style="list-style-type: none"> ▶ University of Texas at El Paso and University of Arizona researchers helped prepare residents of the Del Norte (El Paso–Juarez–Las Cruces) US–Mexico border region for the public health risks of extreme heat. By partnering with local healthcare providers called promotoras who residents trust, the researchers targeted extreme heat education to outdoor workers and parents (there was a focus on maternal health). The 2018 project produced a free curriculum linked here that is available in English and Spanish as well as a hydration urine color chart. ▶ Philadelphia's Hunting Park neighborhood trains and provides stipends to "Beat the Heat Ambassadors" who disseminate information about keeping cool to their fellow community members. A sample training presentation is linked here. Hunting Park also aims to advertise extreme heat resources on public transportation, partner with OEM Communications to create "ReadyCommunity Neighborhood Preparedness Workshops" 	Short-Term

	<p>for heat emergencies, promote local utility outreach programs, and create community-based events to distribute extreme heat resources and information. Additional examples can be found under "Task B" of Hunting Park's Sample Heat Team Work Plan linked here (page 3).</p>	
<p>Establish a system for alerting and checking-in on vulnerable residents during extreme heat events.</p>	<p>► NYC's "Be A Buddy" program creates a network of volunteers who check in on vulnerable community members during extreme heat and cold emergencies. Learn more about the program here and find a factsheet from this program on how to keep vulnerable people safe during extreme heat linked here.</p>	<p>Short-Term</p>
<p>Create a database of communication materials about extreme heat to facilitate community outreach, especially online messaging. If there is funding to do so, a centralized municipal heat website would be an ideal place to collect these materials for public access. Creating a schedule of social media posts to send to community-based partners for posting is also a good way to spread news and education about extreme heat through local online networks.</p>	<p>► See page 106 of "An Extreme Heat Toolkit for Connecticut Municipalities" to view a communications packet with editable outreach templates.</p> <p>► New Hampshire's Heat Toolkit linked here includes sample Facebook and Twitter posts (page 5) to alert and provide resources for residents during extreme heat events. On page 8, it also has a sample senior center newsletter message about extreme heat. Lastly, the toolkit features a sample heat flyer for seniors.</p> <p>► On pages 10-12 of Wisconsin's Extreme Heat Toolkit linked here, you can find sample talking points and a template message map+chart about extreme heat.</p> <p>► Polk County, Iowa's Extreme Heat Toolkit linked here has flyers and sample communication materials about extreme heat translated into many languages.</p> <p>► Kansas's Extreme Heat Toolkit linked here features a plethora of sample communication tools. Pages 36-45 of the pdf have sample media releases for announcing heat advisories, warnings, and watches. These sample media releases also include information on symptoms and treatments for heat rash, sunburn, heat cramps, heat exhaustion, and heat stroke.</p> <p>► NYC has a website called "Beat the Heat" (linked here) that acts as a user-friendly database for everything residents need to know about extreme heat. NYC also has a useful factsheet called "Keep Cool" linked here that focuses on heat-related illnesses and a list of talking points on extreme heat linked here.</p> <p>► Philadelphia's City Heat Team is working on a single landing page for heat-related information on the City's website to better connect residents with resources and organizations. The Team is also working to establish a community-based social media account to keep Hunting Park residents updated through existing networks. Sample steps to take for social media outreach are outlined under "Task D" of Hunting Park's "Education + Communications Task List" of the Sample Heat Team Work Plan linked here (page 3)</p>	<p>Short-Term</p>

	<p>Target outreach to the hottest and most vulnerable neighborhoods, and conduct outreach in more than one language.</p>	<ul style="list-style-type: none"> ▶ The Connecticut Institute for Resilience and Climate Adaptation (CIRCA) created a Climate Change Vulnerability Index (CCVI) that includes a "Heat Viewer" map. The CCVI combines built, social, and ecological factors to identify areas that are vulnerable to flooding and extreme heat. These mapping tools can be used to view vulnerability at both a regional scale and at specific sites. A CCVI Viewer Story Map even helps guide users through each viewer's content and how to navigate and print maps. ▶ Philadelphia and NYC have developed heat vulnerability indexes for their cities using GIS, facilitating targeted and localized heat outreach. Philadelphia's index is linked here and NYC's here. To make these maps, they used criteria such as tree canopy, surface temperature, % of low income residents, % of air conditioning use, access to green space, and neighborhood demographics, ▶ The EPA's environmental justice tool linked here has useful data, including socioeconomic indicators and health disparities. ▶ The national Tree Equity tool linked here would also help target outreach to hot neighborhoods based on tree canopy. ▶ In the implementation of its Heat Health Alert System, the North Carolina Climate and Health Program targets outreach to 4 main vulnerable populations: agricultural workers, low-income people, community members living in mobile homes, older adults, and young people. Read more about this program on page 9 of the document linked here. ▶ As part of Phoenix AZ's "We're Cool" initiative, volunteers distributed heat safety information, water, and cooling center maps to vulnerable people. Learn more about this initiative on the website linked here. ▶ Las Cruces, New Mexico partnered with NASA DEVELOP to create an urban heat island map using satellite land surface temperatures. The city combined this data with census data of where minority and low-income residents live to determine where to establish "Cool Corridors," streets targeted for heat mitigation strategies. Las Cruces funded its \$250,000 Cool Corridors initiative through the city's sustainability office, stormwater management department, and a community development block grant. Read more about the program here. 	<p>Short-Term</p>
<p>Create a local job training program for young adults and other residents who need job skills to engage them in leadership development, community organizing, and</p>	<p>Projects include tree planting and care, green space enhancement and maintenance, outreach about extreme heat as part of a local heat relief network, and neighborhood clean-ups.</p>	<ul style="list-style-type: none"> ▶ New Haven's Urban Resources Initiative (URI) has a Greenskills Program that employs high school students and formerly incarcerated people to plant trees and learn job skills. URI partners with EMERGE CT to employ formerly incarcerated people. You can learn more about Greenskills here. ▶ Groundwork USA and its affiliates have youth job training programs that focus on green spaces and the environment. Groundwork Bridgeport's programs are linked here. Additional examples include Groundwork in Rhode Island (https://groundworkri.org/programs/), Mobile County, Alabama (https://www.groundworkmobile.org/what-we-do), and Milwaukee, WI (https://www.groundworkmke.org/green-jobs-and-education), 	<p>Long-Term</p>

	environmental resilience projects.			
<p>Municipal Adaptations — These actions encourage municipalities to make adjustments to existing systems, policies, and infrastructure. “Municipal Adaptations” actions also overlap with those of “Community Resilience and Engagement,” as community networks facilitate the process of implementing local changes. These actions should include regular community input and feedback.</p>	<p>Improve access to cool, safe, and accessible routes for walking, biking, and using public transportation in extreme heat.</p>	<p>Add bus shelters along popular routes.</p>	<p>► The City of Los Angeles piloted several types of bus stops to test their effectiveness in providing shelter and shade. The City will implement successful bus shelters through its Sidewalk and Transit Amenities Program (STAP). Led by the Bureau of Street Services (StreetsLA), STAP will install and upgrade transit shelters and associated amenities to provide pedestrians and people using public transportation with shelter, shade, safety, and comfort. LA plans to contract with a commercial partner to provide operations and maintenance of the transit shelters for at least 10 years. STAP will be a self-sustaining program through reinvestment of advertising revenues. Finally, LA is proposing changes to its Municipal Code (LAMC) to modify the type of advertising structures allowed in the public right-of-way. Find additional information here.</p>	<p>Long-Term</p>
		<p>Offer free transportation to cooling centers and other locations with cooling resources (such as parks and pools) during periods of extreme heat.</p>	<p>► During heat waves, Texas's VIA Metropolitan Transit provides fare-free service to San Antonio cooling centers. To take advantage of the free service, passengers are required to inform the driver of the vehicle they board that they are traveling to a cooling center. Find more information on this program in the article linked here.</p> <p>► The Des Moines Area Regional Transit Authority (DART) also provides free rides to cooling centers during extreme heat. Learn more in the press release linked here.</p>	<p>Short-Term</p>
		<p>Create safer routes and traffic crossings to public green spaces.</p>	<p>► Las Cruces, New Mexico partnered with NASA DEVELOP to create an urban heat island map using satellite land surface temperatures. The city combined this data with census data of where minority and low-income residents live to determine where to establish "Cool Corridors," streets targeted for heat mitigation strategies. Las Cruces funded its \$250,000 Cool Corridors initiative through the city’s sustainability office, stormwater management department, and a community development block grant. Read more about the program here.</p>	<p>Long-Term</p>
		<p>Eliminate parking requirements</p>	<p>► Minneapolis, Minnesota ended its rule that new developments must accommodate minimum parking requirements and voted to incrementally lower maximum parking allowances. The city also increased bicycle parking requirements. These actions will reduce the urban heat island effect by limiting heat-absorbing surfaces such as parking lots. For more information, see page 4 of the document linked here.</p>	<p>Long-Term</p>
	<p>Improve access to resources that will help residents stay cool while outdoors.</p>	<p>Review recreational sites for respite areas, access to drinking water, and opportunities for</p>	<p>► UConn's Korey Stringer Institute provides recommendations linked here on the training coaches should receive to prepare for health emergencies, including heat-related illnesses.</p> <p>► See the guide linked here for directions on how to ensure that people exercising are properly hydrated.</p> <p>► The guide linked here provides advice on how to monitor wet bulb temperature</p>	<p>Short-Term</p>

	events outside of high heat times (e.g., offer infrastructure and facilities for evening use)	during exercise.	
	Provide outdoor cooling resources such as cold water, awnings, tents, splashpads, and misting structures/fans	<ul style="list-style-type: none"> ▶ The City of Boston, acting through Climate Ready Boston (CRB), granted 30 Pop-up Cooling Kits (“cooling kits”) to community based organizations (CBOs). The cooling kits are mobile water misting tents designed for short-term use to easily set up and disassemble and provide immediate cooling. The kits include a hose, misters, and a tent to set up at public outdoor events throughout the summer. The kits expand options for cooling in high heat neighborhoods during extreme heat events. Through the program, the City also seeks to partner with CBOs who are able to set up cooling kits for public use during extreme heat events. This program is funded through the City’s operating budget. Further information and pictures are on page 207 of Boston's Heat Plan linked here. ▶ Philadelphia's Hunting Park neighborhood has a heat plan that recommends engaging community heat networks to find local organizations and businesses willing to host and contribute resources to heat events. ▶ Tucson, AZ's Infill Incentive District (IID) requires heat mitigation and shade in building and streetscape design. In downtown Tucson, the IID requires shade on at least 50 percent of all sidewalks and pedestrian paths (at 2pm, June 21, sun 82° above the horizon (32°N latitude)). Options for creating this shade include buildings, shade structures, canopies, arcades, and/or trees. The city also requires that new buildings have a maximum of 50 percent glass on east and west exposures and minimum shade of 50 percent (10 a.m. - 3 p.m. between May and October). 	Short-Term
	Extend open hours for public pools and green spaces.	<ul style="list-style-type: none"> ▶ During an extreme heat event in summer 2022, Columbus, Ohio extended its public pool and splashpad hours until 8pm. The city required residents to register for one of two time blocks in order to avoid overcrowding at the pools. You can read more about this action here and contact Kevin Kilbane, Columbus's Director of Communications, at 614.645.6456 and kmkilbane@columbus.gov for more information. ▶ Bowling Green, KY hopes to extend its summer 2022 pool hours past noon-6pm by hiring more lifeguards. Many cities are having trouble hiring lifeguards, so some local governments are raising hourly wages and offering training fee waivers. 	Short-Term
Make heat adaptation and weatherization resources for homes more accessible.	Improve access to efficient air conditioning units and appliances.	<ul style="list-style-type: none"> ▶ Connecticut's Weather Assistance Program (CTWAP) retrofit funding helps low-income residents minimize energy-related costs and fuel usage in their homes through retrofits and home improvement measures. Eligibility is set at 60% of State Median Income. Priority is given to households that are particularly vulnerable, such as families with older adults (65+), people with disabilities, and children. For multi-family dwellings, at least two-thirds of the tenants must be income-eligible. People who fill out a Connecticut Energy Assistance Program (CEAP) application will automatically be 	Long-Term

Improve access to home energy repairs and weatherization.

considered for CTWAP. [Learn more about the program here.](#)

▶ The Connecticut Energy Assistance Program (CEAP) helps low-income households with their home energy bills. CEAP includes assistance for electricity costs associated with cooling. A person who participates or has family members who participate in certain other benefit programs, such as SNAP, SSI, or TANF, automatically meets the eligibility requirement. Learn [more on the website linked here.](#)

▶ Find directions [on Energize CT's website](#) for how to get a home energy assessment and about \$1,000 in on-the-spot energy fixes through Home Energy Solutions. Participants will receive custom recommendations and access to rebates and incentives to make their home more efficient.

▶ Energy Conservation Loans finance energy conservation improvements for low- and moderate-income single-family (1-4 units) home owners. This program is funded by the Connecticut Department of Housing (DOH) and is administered by Capital for Change, Inc (C4C). This loan may be used to finance energy efficient home improvements up to \$25,000 at below-market interest rates. [Find more information here.](#)

▶ The CT HES Payment Plan (Micro) Loan Financing Program offers zero-interest loans (\$500 to \$3,000), funding that is used for conducting qualified improvements/equipment replacements. [Learn more about the program and who is eligible here.](#)

▶ The Connecticut Green Bank – in partnership with Energize CT and select local lenders and contractors – offers long-term, low-interest financing to CT residents for upgrading their home's energy performance with no money down. [Learn more here.](#)

▶ [Follow this link to Energize CT's website](#) to learn about loan options for multifamily properties.

▶ Connecticut has a network of fuel banks that may be able to help with utility and energy bills for low-income households. Each fuel bank has its own eligibility and benefits rules. Operation Fuel raises funds and designs programs for local fuel banks. [Their website has a fuel bank finder.](#) To find information on available assistance go to [Infoline's website.](#) Call 2-1-1 for information on where to apply for assistance.

▶ CT municipal programs: Some towns offer grants or loans for home improvements, including energy conservation improvements. These programs are usually offered through the building or development offices.

▶ Eversource, Yankee Gas (YG), United Illuminating (UI), Southern CT Gas (SCG), and CT Natural Gas (CNG) offer programs to help customers who need help paying their utility bills. These programs include matching payment programs (in which the utility matches a payment through an energy assistance program) as well as new start programs (which forgive a portion of past-due bills). [Eversource information here,](#) [United Illuminating information here,](#) [Yankee Gas information here,](#) [Southern CT Gas information here,](#) and [CNG information here.](#)

▶ Capital for Change, Inc. (C4C) administers energy conservation low interest loan programs for single and multi-family homeowners. [Find information here.](#)

▶ Honorably discharged veterans (who served during specified periods) and their families may be eligible for emergency assistance that may cover utility or energy bills.

Long-Term

	<p>For more information go to Soldiers', Sailors', and Marines' Fund or call 844-454-8900.</p> <ul style="list-style-type: none"> ▶ Additional information on CT utility assistance programs is available on the page linked here. ▶ In 2021, the Arizona Corporation Commission implemented a policy change to prevent power shutoffs for customers who are behind on their utility bills. Utility companies must choose between a shutoff moratorium from June 1st-October 15 or prohibiting shutoffs when temperatures reach 95°F (35°C). ▶ Phoenix, AZ (page 2 of City Ordinance G-6008) and Tucson, AZ (Tucson City Code Section 16-11(b)(2)) mandate that all rental units have air conditioning that cools to 82°F (27.8°C) or evaporative coolers that cool to 86°F (30°C). ▶ The Greater Cincinnati Energy Alliance (GCEA) gathers funding to increase energy efficiency in Cincinnati homes and businesses. The Energy Alliance is mainly funded through a grant from the U.S. Department of Energy Better Buildings Neighborhood Program. GCEA increasingly relies on funding from other grants and contracts. Find additional information on GCEA here and how the organization is funded here. ▶ Philadelphia's Hunting Park Neighborhood Heat Plan recommends that Philadelphia work with its main utility company to promote appliance swaps, home rebates, energy assessments, free home energy check-ups, and a low-income energy efficiency program. The plan also recommends that the City engage the following programs from Philadelphia's Housing Development Corporation: Basic Systems Repair Program (BSRP), Adaptive Modifications Program (AMP), and Weatherization Assistance Program (WAP). 	
<p>Offer cool roof coatings and insulation to residents of the most heat vulnerable communities.</p>	<ul style="list-style-type: none"> ▶ Washington, D.C.'s Housing Authority (DCHA) "has worked since 2004 to improve the energy efficiency of their 8,000 residential units, which includes retrofitting roofs with green infrastructure (green roofing), renewable energy, and efficient water heaters and cisterns. The Department of General Services (DGS) runs the SmartRoof Program, which is working to install both cool and green roofs on structures within its municipal portfolio, including schools, fire stations, parks and recreation centers, and city-owned office buildings. The District has also implemented a construction code for commercial buildings and parking garages that require certain structures to install roofing that has a specific level of solar reflective index—essentially mandating that cool roofing technology is used." Learn more about these programs on page 37 of the document linked here. ▶ Houston TX's Mayor's Office of Sustainability ran a "Houston Green Office Challenge," an energy-efficiency incentive program that helped finance energy-saving retrofits. Projects that saved 15% or more of a building's energy could receive \$20,000 - \$500,000 in incentives. Projects included cool and green roofs. Read more about the Challenge here. ▶ Louisville, KY has a Cool Roof Incentive Program for residents and businesses. The City's Office of Advanced Planning and Sustainability "provides incentives to property owners of \$1 per square foot of cool roof installed, with a goal of incentivizing at least 100,000 square feet of cool roof. (...) The program will continue until funds are 	<p>Long-Term</p>

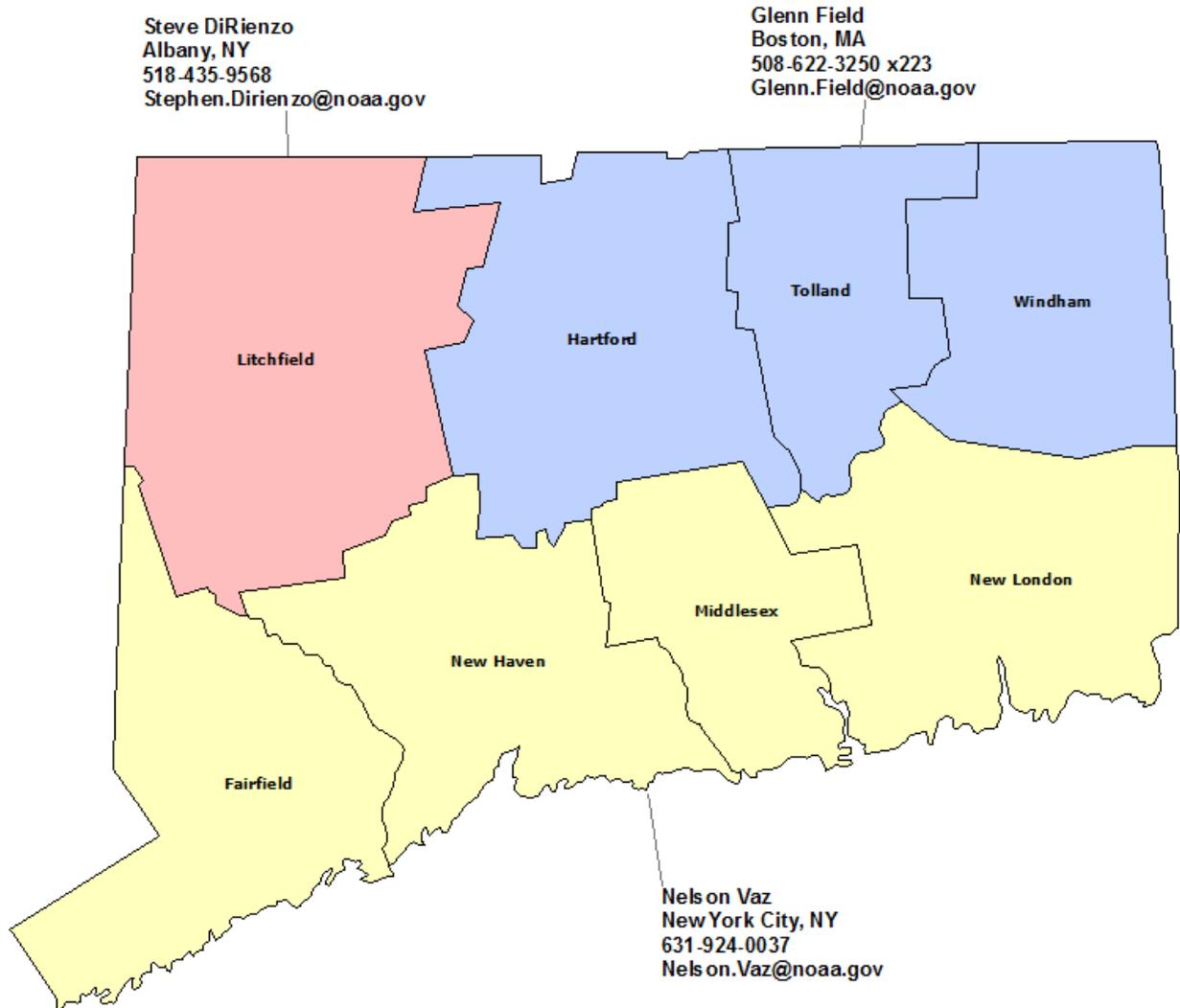
		<p>depleted. Incentives are limited to a maximum of three properties per property owner per fiscal year." Learn more about the program here.</p> <ul style="list-style-type: none"> ▶ Tucson, AZ's Accessory Dwelling Unit (ADU) Ordinance requires cool roofs to help offset increases in the urban heat island effect due to increases in density. Read more about the Ordinance here. ▶ The Global Cool Cities Alliance created a "Practical Guide to Cool Roofs and Cool Pavements." It is linked here. 	
<p>Identify "micro hotspots" within communities that can be targeted for cool infrastructure.</p>	<p>Use land surface temperature data to identify hot spots in neighborhoods. Then cool these hot spots with resources such as awnings, street trees, and water misters.</p>	<ul style="list-style-type: none"> ▶ As part of Climate Ready Boston's Heat Resilience Study, researchers mapped "micro hotspots" (small, hot areas at the local level) in 5 heat-vulnerable neighborhoods so that they could recommend placement of cooling infrastructure. Residents also provided input on where they feel hottest in their neighborhoods. See the Heat Study's full report linked here for more information. ▶ NYC collected granular data on neighborhood heat levels through a community science project led by Dr. Liv Yoon of Columbia University. The project partnered with a community group (South Bronx Unite), chose an area of concern by consulting with local environmental justice groups and community boards, and conducted data collection on an extreme heat day. 40 paid citizen scientists recorded 42,386 data points by collecting data on 12 routes 3 times a day. Type T Thermocouple sensors were attached to car windows and bikes. You can read more about the study here. ▶ Pages 39-43 of the pdf linked here include policy tools to increase the use of cool pavements. This document also includes multiple examples of small and medium-sized cities and towns that have implemented cool pavements. ▶ On an extreme heat day in 2019, Washington, D.C. residents volunteered to measure air temperature on specific routes as part of a NOAA program. Researchers at Portland State University then created a color-coded map showing which areas of the city were hottest at different times of the day. Read more about this project on NOAA's website linked here. ▶ In 2017, a team of citizen scientists used hand-made devices to record surface temperature during a heat wave in Richmond, VA. Read more about the project on the website linked here. ▶ The National Integrated Heat Health Information System (NIHHIS) Urban Heat Island Mapping Campaign provides technical and financial support to urban areas to help them identify neighborhoods at greatest risk from heat stress. Find more information on the website linked here. 	<p>Long-Term</p>

<p>Create inclusive and effective cooling centers</p>	<p>Best management practices for cooling centers</p>	<ul style="list-style-type: none"> ▶ Page 7 of the Connecticut Institute for Resilience and Climate Adaptation (CIRCA)'s Emergency Sheltering and Cooling Center Practices (linked here) features common amenities and types of advertisement/communication used by CT cooling centers. These amenities include air-conditioning, seating areas, bathrooms, cold clean drinking water, and electrical outlets. Greater access to amenities at cooling centers will attract more people and increase community and social cohesion. These social networks help protect vulnerable people, who are less likely to have a source of support during extreme heat events. Additional amenities include back-up power sources, pet-friendly policies, minor medical supplies (e.g., first aid kits or oxygen), bottled water, food/snacks, ADA access, established transportation routes, translation/interpretation services, wayfinding and signs indicating where a cooling center is, overnight stay (and beds), and staff trained to recognize signs of heat stress and heat-related illnesses. Lastly, before and during the extreme heat season, there should be coordination between emergency managers and health departments about organizing consistent communication and education for the public on heat risks and shelter options. For example, pre-season coordination can facilitate connecting air conditioning at hospitals and long-term care facilities to generators. ▶ The nonprofit WE ACT for Environmental Justice conducted an audit of 32 NYC cooling centers in 2021. In its report, WE ACT highlights a lack of signage to help residents find and identify cooling centers. The audit also found that cooling centers have very few staff who are trained to identify the signs of heat-related illnesses. A list of WE ACT's recommendations for improving cooling centers is on page 7 of the pdf report linked here. ▶ When shelters are at capacity, the Denver Department of Human Services (DHS) offers a Cold Weather Motel Voucher program to provide unhoused families with a temporary place to stay. Additional details about this program are linked here. ▶ Baltimore, MD uses its Community Resilience Hub Program to partner with community-based organizations. The city has already used several hubs in this network as cooling centers. Baltimore's Office of Sustainability within the Department of Planning leads the Hub Program. Read more about it here. ▶ See page 87 of "An Extreme Heat Toolkit for Connecticut Municipalities" to view a Cooling Center Best Management Practices Guide for Connecticut municipalities. 	<p>Short-Term</p>
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National Weather Service Communications

Three weather forecast offices serve Connecticut. The map below illustrates which office serves each county.

Figure 3¹²¹ NWS Offices and Contacts for Connecticut



¹²¹ National Weather Service, "Connecticut NWS Contacts."

The toolkit author communicated with the Norton/Boston, MA Office and the Upton, NY Office about their outreach and response methods for Connecticut. Nelson Vaz, Warning Coordination Meteorologist at the Upton, NY Office, stated that all three offices conduct communication through very similar methods, and that “we [the three Forecast Offices] strive for a well collaborated forecast and forecast messaging between our offices to better serve CT.”¹²²

Alerting Municipalities and Other Stakeholders about Extreme Heat

The Upton, NY Forecast Office’s primary means of communication include:¹²³

- Issuing watches, warnings, and advisories.
- Issuing weather support briefings (hazard and impact messaging) to public safety and media partners, who amplify the NWS’s messaging.
- Many of the Office’s public safety partners have heat emergency plans that become active when the NWS issues a heat advisory. The emergency plan activations trigger “a cascade of preparation and mitigation actions.”¹²⁴
- The Office also uses its social media channels (Twitter and Facebook) to amplify messaging around extreme heat events.

Mr. Vaz concluded that the end result is “a collective effort to provide the widest possible distribution of health hazard, impact, and safety messaging to the public.”¹²⁵

The Norton/Boston Forecast Office uses the following communication and outreach strategies:¹²⁶

- Posting information to the Forecast Office website and sending forecast information via satellite to media customers.
- In the event of an advisory or warning, the Office issues email briefings to its Emergency Managers listing (federal, state, and several local Emergency Management Departments (for big cities such as Hartford)) and tv meteorologists.
- In the case of more severe weather events, the Office may do a virtual briefing in addition to email communications.

¹²² Nelson Vaz, email communication to author, July 22, 2021.

¹²³ Ibid.

¹²⁴ Ibid.

¹²⁵ Ibid.

¹²⁶ Glenn Field, email communication to author, July 21, 2021.

- Emergency management officials send their own briefings to the local town EMDs.
- The Office holds virtual Monday briefings with a smaller group of Emergency Managers.
- During and/or in the days leading up to a heat event, the Office sometimes issues Public Information Statements that provide heat-related safety rules. The Office also sends these Statements through Facebook and Twitter (@NWS Boston) and refers people to its NWS national heat safety page:
<https://www.weather.gov/safety/heat>

Heat Response Trainings

The Upton, NY Forecast Office's heat training materials and programs include:

- In April 2021, the Office held a “spring preparedness webinar,” with one hour focused on extreme heat and products/services. The webinar also featured research on heat climatology for NYC, a study led by one of the Office's forecasters.
- Around National Heat Awareness Day (the last Friday in May), the Office participates in a two-day media campaign that consists of a collaboration between its social media, the [NWS NY website](#), and partner email outreach.
- The Office promotes the [NWS national heat page](#) and provides heat safety messaging on social media.
- They also use the following social media graphics: [Weather Ready Nation \(WRN\) social media infographics](#).

Cooling Center Best Management Practices

Cooling centers (or “cooling shelters”) are designated sites with air-conditioning and/or other cooling resources that provide residents with a safe place to shelter during extreme heat. They are an essential resource for protecting residents during heat waves, especially vulnerable community members and people who lack access to air conditioning and other cooling resources at home. Unfortunately, in its 2022 report on Emergency Sheltering & Cooling Center Practices in Connecticut, the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) found that “of the 89 towns that responded, almost a third reported that they did not offer cooling centers in 2019” and that towns with cooling centers often only had one in operation.¹²⁷

Connecticut municipalities can learn lessons on how to expand and improve their cooling centers from other regions of the United States. In June 2021, the Pacific Northwest experienced intense extreme heat, resulting in 125 deaths in Washington and 115 in Oregon.¹²⁸ A KUOW article titled “Lessons from the NW's Extreme Heat” states that few counties had heat response plans, and “in Pierce County [Washington], just 63 people visited the 21 cooling centers on the hottest day – about three people per cooling center – despite outreach efforts and free bus rides.”¹²⁹ Local officials attributed this low turnout to residents’ concerns about COVID-19 and congregating indoors. Officials also learned that it is harder for unhoused people to go to cooling centers because it could mean abandoning their possessions.¹³⁰ In the KUOW article, University of Washington climate and health researcher Kristie Ebi outlined important considerations for future planning, including how people will get to cooling centers, whether cooling centers are in high-risk neighborhoods, and how long cooling centers are open. The June 17, 2022 CDC Morbidity and Mortality Weekly Report (MMWR) on cooling centers ([linked here](#)) validates these considerations, as it states that older adults encounter several barriers to accessing cooling centers, including transportation and lack of awareness of cooling center locations.¹³¹ Changes that Washington’s emergency officials are already

¹²⁷ Elton, Hayes, and Wozniak-Brown, “Preliminary Results: Emergency Shelter and Cooling Center Practices in Connecticut,” 5.

¹²⁸ Ryan, “The Deadliest Heat Wave: Lessons from the NW's Extreme Heat,” para. 1.

¹²⁹ Ryan, “The Deadliest Heat Wave: Lessons from the NW's Extreme Heat,” para. 26.

¹³⁰ Ryan, “The Deadliest Heat Wave: Lessons from the NW's Extreme Heat,” para. 28.

¹³¹ Mallen, Roach, Fox, Gillespie, Watkins, Hondula, Vaidyanathan, Manangan, Perkins, and Schramm, “Extreme Heat Exposure: Access and Barriers to Cooling Centers — Maricopa and Yuma Counties, Arizona, 2010–2020,” 782.

implementing include temperature thresholds for heat response, improving and expanding cooling center options, and improving outreach to vulnerable people. Extreme heat events will increase in severity, and cooling centers are tools essential to protecting human health. Extreme heat can aggravate diabetes-related conditions as well as cardiovascular, respiratory, and cerebrovascular diseases. Heat-related health impacts also include heat cramps, heat exhaustion, heatstroke, and hyperthermia.¹³² Finally, it is important to note the trend that “prolonged exposure to high temperatures is associated with increased hospital admissions for cardiovascular, kidney, and respiratory disorders.”¹³³

According to UConn’s Connecticut Institute for Resilience & Climate Adaptation (CIRCA), by 2050, Connecticut residents can expect:

- The number of Heat Wave Days (6 or more consecutive days with daily maximum temperature above the 90th percentile) to rise from 4 to 48 per year.
- The number of Tropical Nights (annual number of days when the daily minimum is above 68°F) to rise from 10 to 40 per year.
- The number of Summer Days (annual number of days when the daily maximum temperature is above 77°F) to rise from 81 to 118.
- The number of days above 90°F (annual number of days with maximum temperatures above the threshold value) to rise from 5 to 25 per year.¹³⁴

Municipalities should reach out to different vulnerable groups in their communities to understand what barriers local populations may have to using cooling centers and implement projects that will address these challenges. The following guide provides Connecticut municipalities with best management practices to make cooling centers more effective and efficient, depending on local needs.

Getting People to Cooling Centers — Accessible and affordable transportation is a major barrier for residents who wish to use cooling centers.¹³⁵ The following recommendations can help alleviate this problem:

- Establish dedicated transportation routes to cooling centers.
- During extreme heat events, provide fare-free public transportation services to cooling centers.
- Establish a hotline that connects residents with transportation to cooling centers.
- Ensure that public transportation options are handicap accessible.

¹³² Sarofim, Shubhayu, Hawkins, Mills, Hess, Horton, Kinney, Schwartz, and Juliana, “Temperature-Related Death and Illness,” 46.

¹³³ Ibid.

¹³⁴ Seth, Wang, Kirchhoff, Lombardo, Stephenson, Anyah, Wu, “Rising Temperatures & Precipitation in Connecticut Information from the Governor’s Council on Climate Change”

¹³⁵ Nayaka, Shresthab, Sheridan, Hsu, Muscatielloa, Pantea, Ross, Kinney, Zdeb, Hwang, Lin, “Accessibility of cooling centers to heat-vulnerable populations in New York State,” 1.

- Provide free parking options for residents commuting to cooling centers by car.
- Provide bike racks outside cooling centers.

Situating Cooling Centers – Ensuring that cooling centers are near residents who need them most will make them more accessible and useful to the community.

- Establish cooling centers in high-risk areas with the greatest concentration of vulnerable populations, such as unhoused people, low-income residents, senior citizens, and people with underlying health conditions and/or disabilities.
- Municipalities can use CIRCA’s [Climate Change Vulnerability Index \(CCVI\)](#) that includes a ["Heat Viewer" map](#) to help locate areas most vulnerable to extreme heat. The CCVI combines built, social, and ecological factors to identify areas that are vulnerable to flooding and extreme heat. These mapping tools can be used to view vulnerability at both a regional scale and at specific sites. A [CCVI Viewer Story Map](#) guides users through each viewer's content and how to navigate and print maps.

Amenities – Many of the Connecticut towns surveyed as part of CIRCA’s Emergency Sheltering & Cooling Center Practices report offered limited amenities at their cooling centers.¹³⁶ Cooling centers that offer a wide variety of amenities are likely to appeal to more residents.¹³⁷ The following list outlines recommended amenities for cooling centers:

- Provide air conditioning and have back-up power sources available.
- Provide seating areas.
- Provide accessible bathrooms. Ideally, bathrooms should have changing stations and menstrual products.
- Provide cold, clean drinking water and bottled water.
- Provide food/snacks.
- Provide electrical outlets.
- Ensure that cooling centers comply with ADA standards. Cooling centers should be accessible to all residents with disabilities (including, but not limited to, individuals who are blind, low-vision, hearing impaired, and people who use a wheelchair or other mobility aid).
 - Information on providing full access to a cooling center is in Chapter 7 of the *ADA Best Practices Tool Kit for State and Local Governments*, linked here: <http://www.ada.gov/pcatoolkit/toolkitmain.htm>
- Establish methods to communicate with visitors in more than one language (examples: hiring one or more multilingual staff member(s), using a free

¹³⁶ Elton, Hayes, and Wozniak-Brown, “Preliminary Results: Emergency Shelter and Cooling Center Practices in Connecticut,” 5.

¹³⁷ Elton, Hayes, and Wozniak-Brown, “Preliminary Results: Emergency Shelter and Cooling Center Practices in Connecticut,” 7.

interpretation/translation service like [Yale's Interpretation Network](#), or using online translation tools.)

- Have signs and educational information on extreme heat available in more than one language.
- Create a welcoming atmosphere through programming for multiple age groups.
- Establish pet-friendly policies.
- Have minor medical supplies available (e.g., first aid kits or oxygen).
- Offer the option for overnight stays (including beds).
- Provide supplies that limit the spread of diseases in cooling centers, as outlined in the “COVID safety” section at the end of this guide.

Communication/Advertisement – Municipalities should engage in consistent outreach to residents before and during the extreme heat season to ensure that they are aware of where local cooling centers are. Additionally, there should be clearly visible wayfinding materials and signage on and around cooling centers to make locating them easier. The following recommendations aim to facilitate communication about and advertising of cooling centers:

- Ensure that communication and wayfinding materials are available in more than one language.
- Use the following platforms (more than one) to disseminate advertisement for and communication about cooling centers:
 - Local websites and online networks
 - Local social media
 - News/media/press releases
 - Newsletters (senior centers, places of worship)
 - Advice on outreach and editable communication templates are in the communications packet on page 106 of this toolkit.
- Post signage on streets nearby cooling centers and on cooling center buildings.
- Establish a cooling center map that can be printed, accessed on municipal websites, and/or viewable in a mobile app. Online interactive maps can make it easier for residents and visitors alike to locate the cooling center nearest them. These maps may also advertise the locations of other places with free cooling resources, such as spray parks, places of worship, public pools, libraries, and recreation centers.
- Establish a service that residents can call or text if they do not have consistent internet access to locate their nearest cooling center. At the state level, if a city/town has opened a designated cooling center, [United Way-211](#) lists the site location and hours on its website.
- Municipalities and towns should ensure that their emergency notifications system sends out alerts about extreme heat events. Encourage residents to sign up for updates through email, text, and/or phone.

Hours of Operation – Cooling centers should consider extending their hours of operation to better protect residents during extreme heat events.

- During heat waves, extreme heat can last beyond the hottest part of the day, and residents may not have access to electricity outside of cooling centers. Therefore, providing extended hours helps protect cooling center visitors throughout a heat wave.
- Ideally, cooling centers should provide the option for overnight stays and be open on weekends during periods of extreme heat.

Organizational support and staffing – To operate efficiently, a cooling center needs well-trained staff and close coordination with external agencies and stakeholders.

- Key partners for cooling centers may include the following:
 - Local emergency management directors
 - First selectman/mayor
 - Fire department
 - National Weather Service
 - Non-Profits (e.g., Red Cross)
 - Meals on Wheels or similar programs
 - Department of Transportation/local transit districts
 - Local older adult organizations
 - School systems
 - Energy/utility companies
 - Community organizations
 - Local businesses
- Cooling center staff should be trained to recognize signs of heat stress and heat-related illnesses.
- Before and during the extreme heat season, there should be coordination between emergency managers and health departments for ongoing public communication and education on heat risks and shelter options. For example, pre-season coordination can facilitate connecting air conditioning at hospitals and long-term care facilities to generators.

Potential Funding Sources - Municipalities may need financial support for operations, capital expenditures, or service expansion.¹³⁸ Several funding mechanisms are available for these purposes.

- At the state level, Energy Storage Solutions (ESS) may be a good option for lowering energy costs associated with operating cooling centers. ESS helps

¹³⁸ Marx and Morales-Burnett, “Centering Equity to Address Extreme Heat: Preparing Communities for Hotter Days,” 5.

Eversource Energy and United Illuminating (UI) customers install energy storage at homes, small businesses, and critical infrastructure facilities. [Learn more here.](#)

- There are several potential avenues for federal financial assistance in establishing and maintaining cooling centers. Please refer to the [document linked here](#) (“Selected Federal Financial Assistance for Emergency Response to Extreme Heat”) to find more information on the programs listed below:
 - Department of Homeland Security—FEMA
 - Page 6: **Public Assistance Program** includes funding for emergency protective measures such as “sheltering.”
 - Page 6: **Hazard Mitigation Grant Program (HMGP)** funding can be used for eligible extreme heat mitigation measures.
 - Page 7: **Building Resilient Infrastructure and Communities (BRIC)** provides funding for risk mitigation activities aiming to reduce the threat of future disaster-related losses of life and property.
 - Page 7: **Emergency Management Performance Grant (EMPG)** funds preparations for hazards in accordance with the National Preparedness System.
 - Department of Health and Human Services
 - Page 8: **Climate-Ready States & Cities Initiative** funds may be used for climate-related emergency preparedness and response activities.
 - Page 9: **Preventive Health and Health Services (PHHS) Block Grant** provides funding for unique and emerging public health needs of communities, which could include extreme heat-related issues.
 - Administration for Children and Families
 - Page 9: **Community Services Block Grant (CSBG)** funds may be used for emergency assistance, potentially including cooling center operations.
 - Page 9: For the **Low Income Home Energy Assistance Program (LIHEAP)**, an HHS memorandum states that grantees may use funds to establish and operate cooling centers and provide air-conditioning units to eligible households.
 - Department of Housing and Urban Development
 - Page 10: **Community Development Block Grant Program (CDBG)** funding could be targeted or reprogrammed to prepare for or respond to extreme heat events.
 - Page 10: **CDBG—Disaster Recovery (CDBG-DR)** funds may be applicable to extreme heat emergencies.

- Page 10: **Indian Community Development Block Grant (ICDBG)** funding could be used for extreme heat mitigation and responding to extreme heat incidents or their aftermath.
- Department of Agriculture
 - Page 12: For certain kinds of projects in qualifying rural areas, **USDA Rural Development** is a potential resource for assistance. **USDA Community Facilities Programs** (such as Community Facilities Direct Loans and Grants) assist with developing or improving essential public services and facilities; these funds might be used for efforts related to community emergency shelters and cooling centers.

COVID safety – municipalities can take the following actions to reduce the spread of COVID-19 and other diseases in cooling centers:

- Offer COVID-19 prevention supplies, including N95 or KN95 masks, soap, alcohol-based hand sanitizers that contain at least 60% alcohol, tissues, and trash baskets. Visitors should be offered a clean N95 or KN95 mask, even if they are not showing any symptoms. Place [posters](#) that encourage hand hygiene at the entrance to the facility and at sinks in restrooms. If water bottles are distributed at the cooling center, encourage visitors to not share bottles or glasses.
- Implement or expand programs that provide utility assistance and other programs that provide financial assistance for home air conditioner use. A temporary ban on utility shut offs during heat waves would allow people to continue using home air conditioning. These actions could reduce crowding at cooling centers.
- Establish flexible attendance and sick-leave policies for cooling center staff.
- Consider providing alternate cooling sites for people showing COVID-19 symptoms.
- Maintain social (physical) distancing within cooling centers. Space apart furniture and create areas for individual family units, whose members do not have to distance from one another.
- Small cooling centers should limit their capacity. Therefore, municipalities may have to set up additional cooling centers to host residents who could not enter an at-capacity center. If there are not enough cooling centers, emergency options could include parked air-conditioned buses and partnerships with private businesses willing to welcome community members at a free or reduced rate, such as movie theaters.
- It may not be possible to locate cooling centers in buildings with high ventilation capacity similar to healthcare facilities. If possible, cooling centers should have [air exchange systems](#) and be in buildings with tall ceilings. Utilize the highest efficiency filters that are compatible with the cooling center's existing HVAC

system, and adopt “clean-to-dirty” directional airflows. If resources allow, ceiling fans with upward airflow rotation combined with upper-air ultraviolet germicidal irradiation (UVGI) disinfection systems can be utilized. When conditions allow (low humidity), shaded outdoor spaces with cross-draft airflow augmented by evaporative coolers may provide a safer alternative.

- Enhance communication about COVID-19 onsite. Use health messages and materials developed by credible public health sources, such as your local and state public health departments or the CDC. Read more about [everyday preventive actions](#). Share or post [COVID-19 posters and CDC Fact Sheets](#) and keep visitors informed about public health recommendations to prevent disease spread. Messaging may include:
 - Posting signs at entrances and in strategic places providing instruction on hand hygiene, respiratory hygiene, cough etiquette, and cloth face coverings.
 - Providing educational materials about COVID-19 for non-English speakers, as needed.
 - Encouraging ill staff and volunteers to stay home (or be sent home if they develop symptoms while at the facility), to prevent transmitting the infection to others.
 - Identifying and addressing potential language, cultural, and disability barriers associated with communicating COVID-19 information to workers, volunteers, and those visiting cooling centers. Learn more about [reaching people of diverse languages and cultures](#).

Above recommendations adapted from the following sources:

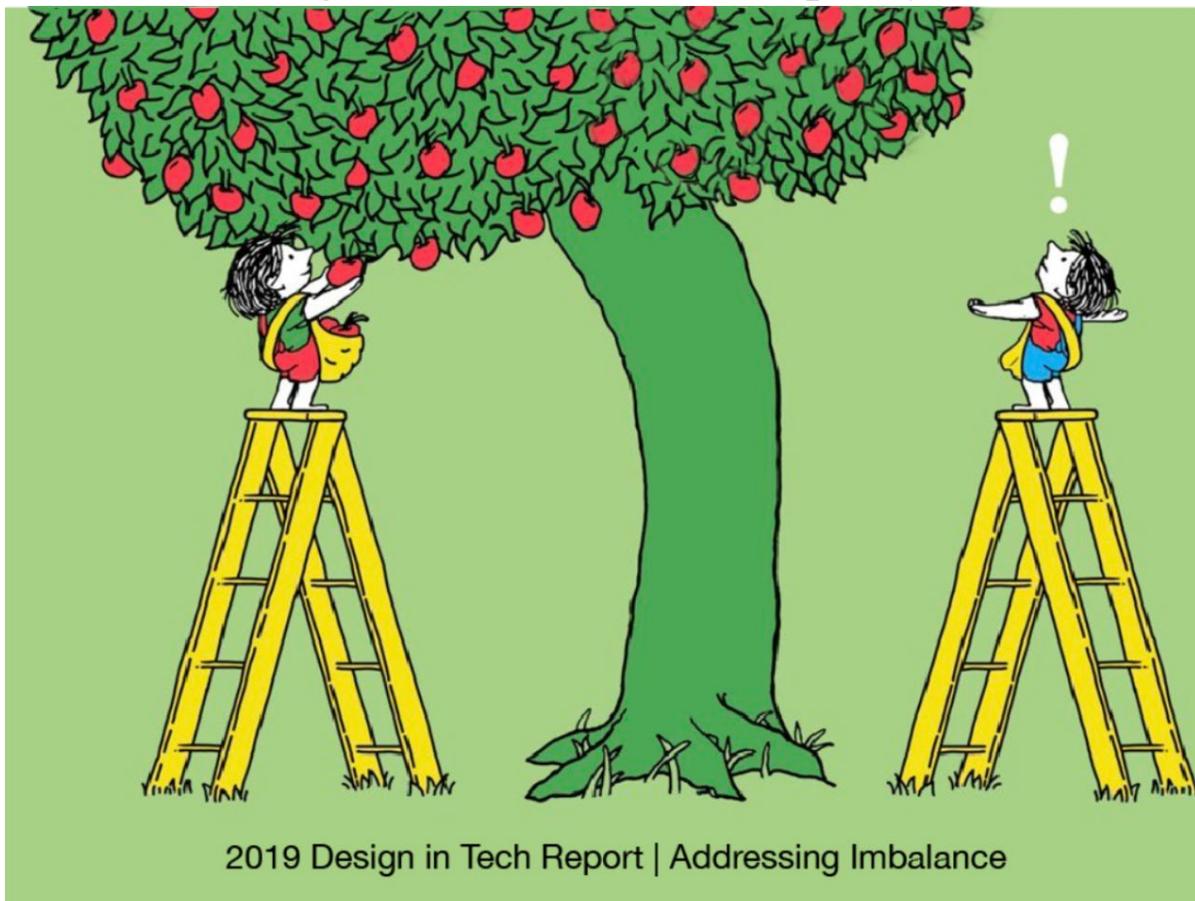
- [WE ACT 2021 Cooling Center Report](#)
- [CDC COVID-19 and Cooling Centers](#)
- [CIRCA Emergency Sheltering & Cooling Center Practices in Connecticut](#)
- [CDC The Use of Cooling Centers to Prevent Heat-Related Illness: Summary of Evidence and Strategies for Implementation](#)
- [Congressional Research Service: Selected Federal Financial Assistance for Emergency Response to Extreme Heat](#)
- [Accessibility of cooling centers to heat-vulnerable populations in New York State - ScienceDirect](#)

Equity

The World Health Organization (WHO) defines equity as “the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically or geographically.”¹³⁹

Equity is easy to confuse with equality. When there is equality, everyone is given the same resources and opportunities, like the two children in Figure 4 who both have the same size ladder. However, equality does not mean that everyone is able to use these resources in the same way. Some people may have an advantage, like the child on the left whose ladder happens to be closer to the tree’s apples. Other people, like the child on the right, cannot use these resources in the same way. Once the second child has a taller ladder (Figure 5), they experience greater equity in their ability to pick apples.

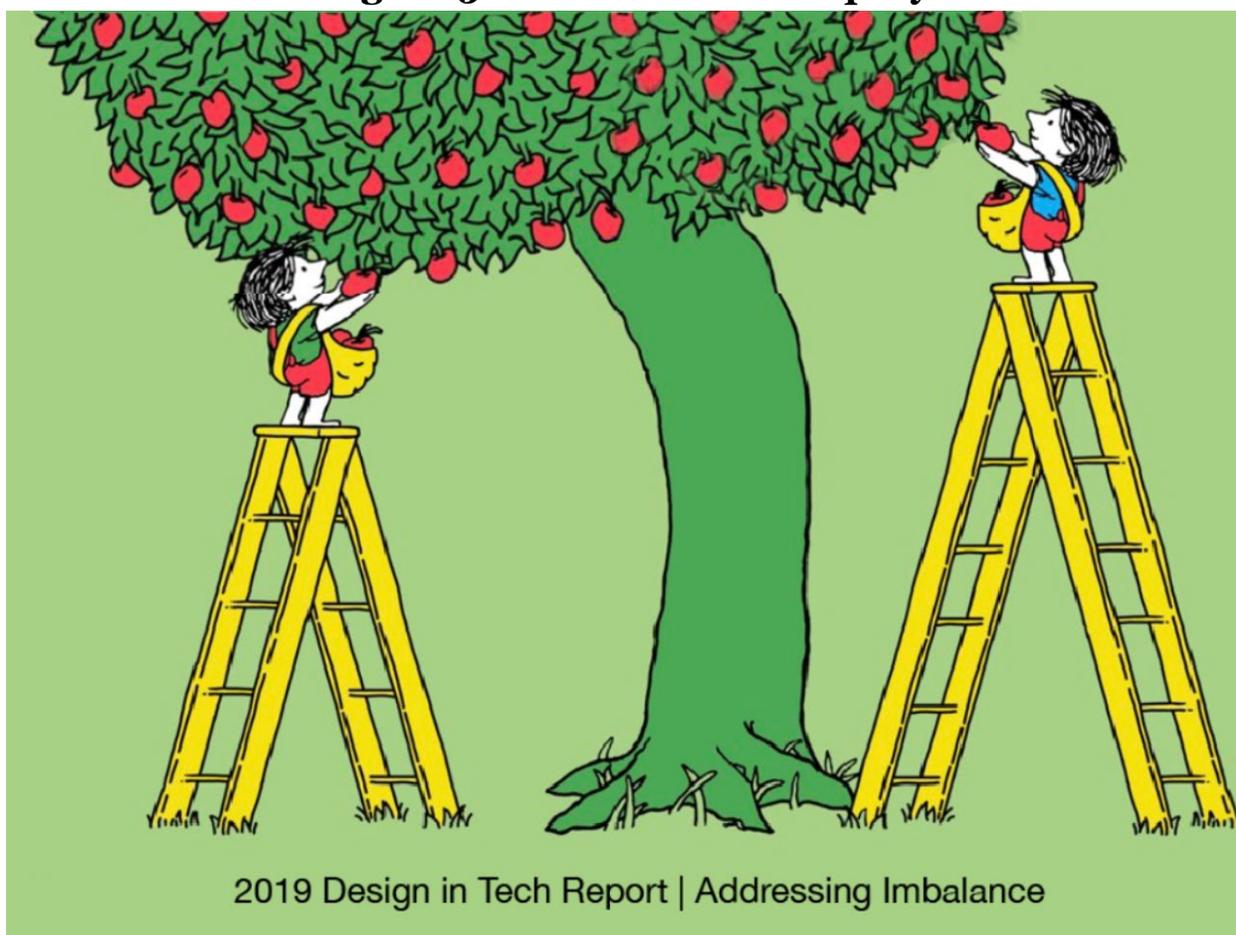
Figure 4¹⁴⁰ An illustration of **equality**



¹³⁹ World Health Organization, “Health Equity,” para. 1.

¹⁴⁰ Maeda, “Design in Tech Report 2019,” 3.

Figure 5¹⁴¹ An illustration of equity

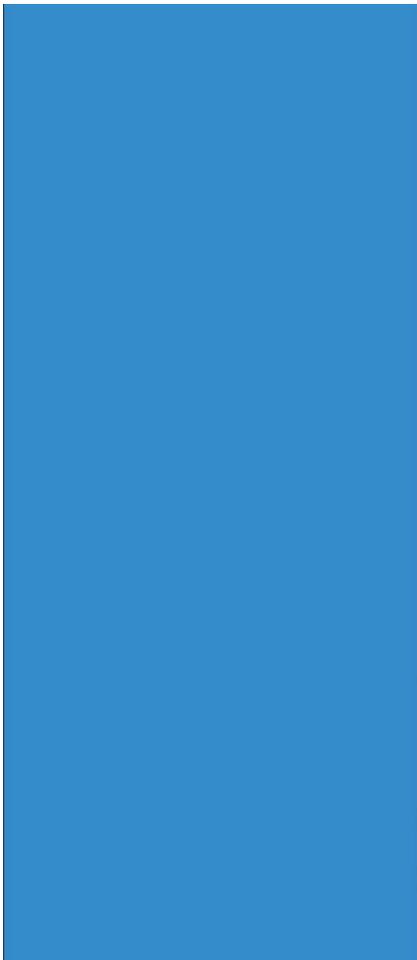


Ensuring equity when planning for extreme heat is essential because extreme heat impacts all community members in different ways. To account for and address these differences, leaders should seek out community members' diverse experiences and center them in the extreme heat planning processes.

Sustainable CT created an Equity Toolkit, [available in full here](#). The following pages (reproduced with the permission of Sustainable CT) feature the toolkit's steps for creating a community planning process that is equitable.

Learn more about "Building Equitable Communities with the Sustainable CT Framework" on Sustainable CT's equity webpage linked here: [Equity Support \(sustainablect.org\)](https://sustainablect.org)

¹⁴¹ Maeda, "Design in Tech Report 2019," 4.



ACTION 1.1 OPTIMIZE FOR EQUITY

Equity Toolkit



Apply the Equity Toolkit to
1 other Sustainable CT action
for Bronze Certification



Apply the Equity Toolkit to
3 other Sustainable CT actions
for Silver Certification

1.....2.....3.....4.....5

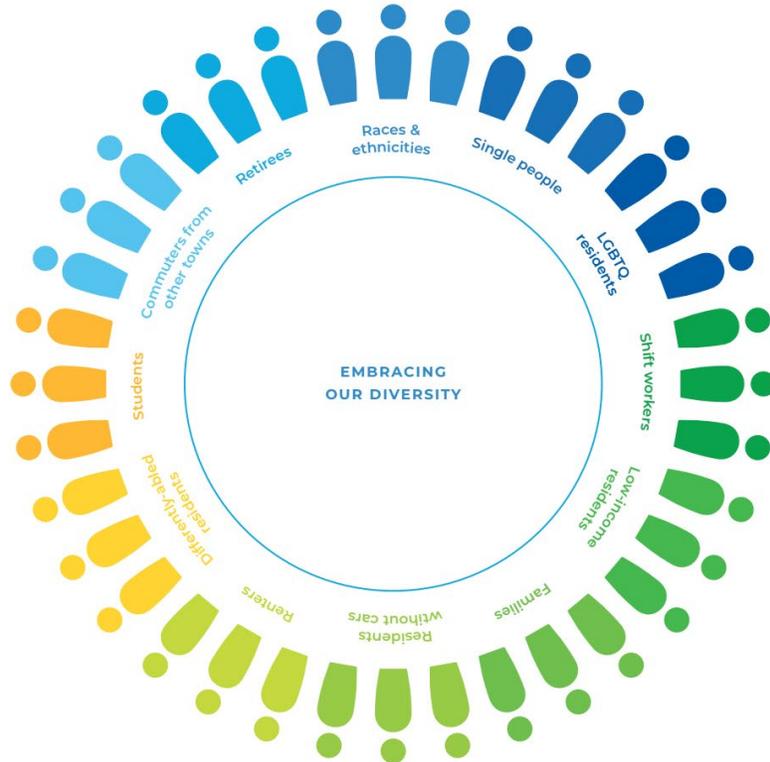
Who Lives and Works in Our Community?

The first step to building an inclusive process is to identify who lives in your community. Demographic information generally includes data on race, ethnicity, age, gender, and income. Think broadly to identify additional characteristics of those in your community; for example, those who are differently-abled, retired or working, single or living with dependents, homeowner or renter, etc. By first identifying who lives in your municipality, you can begin to learn how different people experience the community.



HELPFUL TIP

Find community-level data online: CT Economic Resource Center Town Profiles, Partnership for Strong Communities Housing Data Profiles, DataHaven, Kids Count, The National Equity Atlas, US Census Bureau.



1.....2.....3.....4.....5

How Can We Connect with Each Other?

Once you have identified who lives and works in your community, begin to think about how you might connect with all community members. Are there active non-profits or interest groups? What are some of the pressing issues your community is facing? What organizations are working on those issues? For groups that are not typically represented in community decision making, are there organizations that might help you connect with them?



HELPFUL TIP

If you're not sure how to find non-profits and local service groups, try asking your school system, Department of Social Services, senior center, etc. If you don't know where to begin to identify issues in your community, read the local paper, attend a town council meeting, talk to leaders of non-profits and faith communities.





Create Opportunities for Dialogue

You might set up individual meetings or choose to have larger events with the community groups you have identified. Regardless, be sure to make space for open and honest dialogue. Recognize that building trust takes time, and that building an inclusive process is, in itself, a process. As you proceed, you will likely continue to make new connections within your community.

As you hold your meetings, look at the list of Sustainable CT actions and identify some that might help address the needs, pressing issues, and values of your community. Work together to select a Sustainable CT action to complete and to determine a strategy for inclusive implementation.

For example, if you find that members of your community do not own cars (due to income, physical challenges, age, preference), how might *Action 6.1 Implement Complete Streets* or *Action 6.5 Promote Public Transit and Other Mobility Strategies* be implemented to open up mobility options for all members of your community?

HOW TO HOLD AN INCLUSIVE MEETING

Hold meetings at varied locations, on different days, and at different times of day.

Ensure that neighborhoods that might be impacted by your discussion topic have access and can get to the meeting easily.

Include interpreters/translators for key languages represented in the local community.

Provide snacks and child care services.

Hold meetings at venues that are accessible by public transportation.

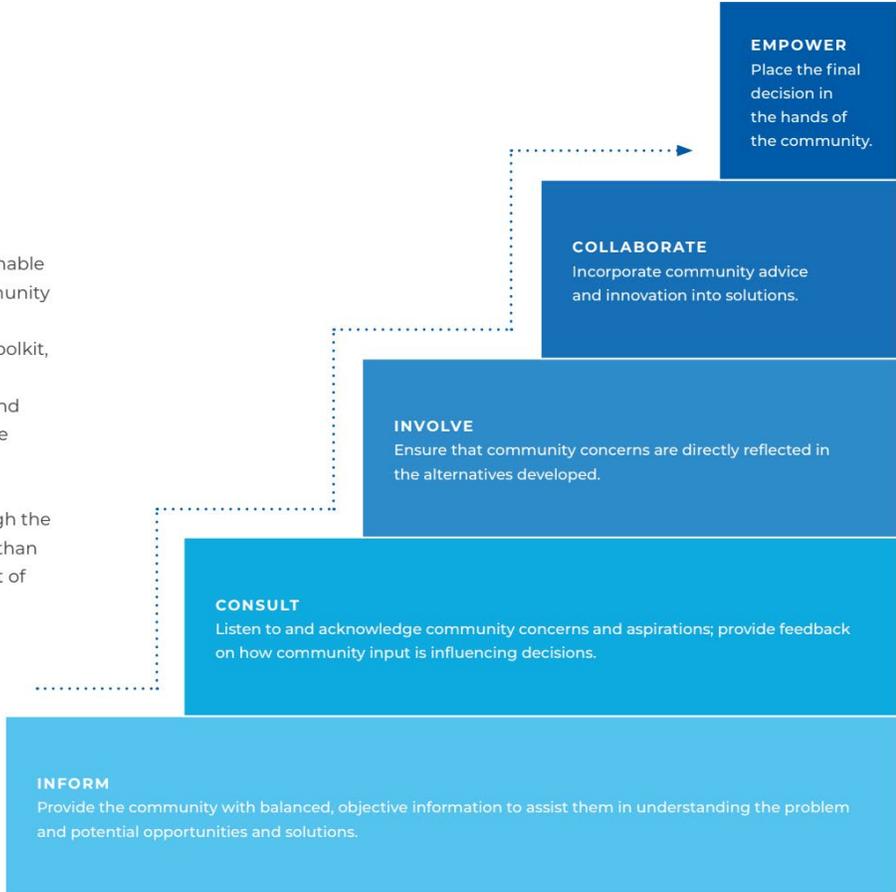
Ensure that all residents are able to obtain meeting information.



Collaborate and Co-Create

It's time to start work on the Sustainable CT action you identified with community members. Using the strategies you develop as you work through this Toolkit, carry out the action in an inclusive manner. It is important to involve and update community members as the action implementation evolves.

Remember, you are working through the action *with* the community, rather than *for* the community. Maintain a spirit of collaboration and co-creation.

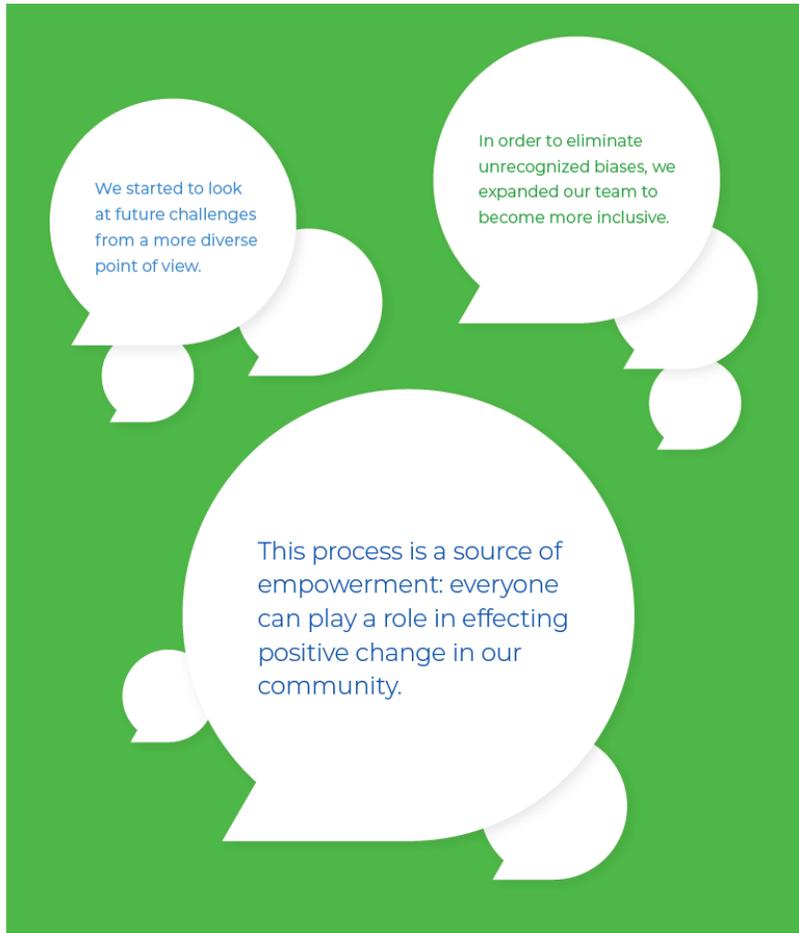


①.....②.....③.....④.....⑤

Refine, Revisit, Improve

As you worked through this Toolkit, you probably found the process both challenging and rewarding. Hopefully you have broadened your perspective and begun to grow towards a more inclusive community. Take a moment to reflect on the process. Did you achieve the goals for optimizing for equity? What lessons did you learn? What surprised you?

Making real progress towards equity and inclusion takes time and trust: remember that this Equity Toolkit is just the beginning of a process. Continue to refine, revisit, and continuously improve your strategies and perspectives as you co-create an inclusive and sustainable community for current and future residents.



The following resource from Philadelphia’s Hunting Park Neighborhood “Beat the Heat” Plan outlines equity-focused questions to consider when planning for extreme heat:

Inclusive Climate Planning¹

Equity can be embodied in community climate planning through inclusive practices that value, uplift, and amplify the voices and experiences of marginalized communities. Marginalized communities are groups of people who face systemic barriers to opportunities, resources, and power based on their identities—such as people of color, immigrants, and low-income communities. Practicing inclusion requires regular self and group reflection regarding engagement across differences.



Voicing Needs: How are you creating space for all participants to express their needs? How are different communication and learning styles acknowledged and encouraged?



Acknowledging Community History & Identity: In the process of understanding the changes that community members would like to see, how are you also respecting the existing local history, identity, and strengths?



Shifting Power: How are you acknowledging your own power as an individual—based on your organizational position as well as your social identities—and working to shift this power so that community members and people with marginalized identities have the opportunity to lead? How are those with marginalized identities within the community already showing up and how are you backing their leadership?



Storytelling as Data: Are there places and opportunities for people to share their stories and experiences? Are these stories valued as data?



Relationship Building: How does the planning process strengthen connections, relationships, and trust? This is especially important in community climate planning. During climate emergencies, relationships between community members are essential and will determine how quickly communities can organize and respond.

¹ This text was adapted with permission from the City of Philadelphia’s Office of Sustainability

HEAT EQUITY PILOT SUMMER WORK PLAN

Goals + Key Tasks	Task Lead	Team Members	Month	Progress	Outcomes
1. EQUITY ANALYSIS					
Increase understanding of municipal systems, practices, and policies that contribute to urban heat inequity in Hunting Park and other communities of color and low-income communities in Philadelphia					
Task A: Conduct analysis of Hunting Park Neighborhood					Report/Presentation
Task B: Research history of Hunting Park					Report/Presentation to inform policy scan
Task C: Review and evaluate municipal policies and practices in Hunting Park					Policy evaluation tool, report with policy recommendations, GSI Analysis, Urban Forestry Equity Analysis
2. EDUCATION + COMMUNICATIONS					
Increase access to info about potential health impacts of extreme heat, what to do in case of heat emergency, and existing resources to help residents cope with heat in Hunting Park and citywide					
Task A: Announce the Pilot					Press release, social media blast, blog post
Task B: Compile heat outreach materials and giveaways					All materials translated, ordered and gathered in one place phila.gov/heat
Task C: Create a Comprehensive "Beat the Heat" website with page for Hunting Park pilot					
Task D: Coordinating a communications and social media strategy for Hunting Park pilot					Heat toolkit for social media; inventory of community outreach partners, social media influencers, and accounts in Hunting Park
Task E: Identify resources, programs, and trainings available to help residents cope with heat					Inventory of resources/trainings/programs available in Philadelphia and Hunting Park
Task G: Create heat buddy system or phone tree					Phone tree and/or buddy system setup and used this summer
3. COMMUNITY ENGAGEMENT					
Collaborate with Hunting Park residents to understand how they currently cope w. heat and develop context-sensitive heat adaptation and mitigation strategies. Build capacity of City of Philadelphia staff members and residents to share decision-making power.					
Task A: Review peer city heat interventions					Inventory/report of peer city heat interventions and strategies for engagement
Task B: Identify key stakeholders					Stakeholder map and analysis
Task C: Develop project one-pager and slide deck					One-pager/slide deck
Task D: Create schedule for resident & stakeholder engagement					Schedule with all engagement events this summer, activities to facilitate, and roles
Task G: Design and administer community heat survey & focus groups					Survey tool, focus group questions, survey distribution strategy, focus groups identified and held; preferred heat interventions identified
Task E: Identify, develop, and implement engagement activities--integrate resources, programs, and trainings into summer engagement in Hunting Park					Trainings/activities/community meetings identified and facilitated; preferred heat interventions identified
Task F: Develop network of cooling centers in Hunting Park					Potential cooling centers identified; cooling center training held; resources for cooling centers identified, gathered, and distributed; communication strategy for cooling center network created (social media, outreach team, phone tree/buddy system?)

EQUITY ANALYSIS TASK LIST			
Tasks & Activities	Lead	Team Members	Complete?
Task A: Conduct analysis of Hunting Park Neighborhood			
What are the geographical boundaries			
What is the age, type and characteristics of housing stock			
Health information in Hunting Park			
What city assets or programs/projects exist?			
Inventory City departments with relationships or programs in area			
What schools are in the neighborhood?			
What organizations exists, such as churches, RCOs, CDCs, BIDs?			
What is the litter index for the areas?			
What issues are reported to 311 from the community?			
Map of community assets & projects			
Map of community resources for seniors			
Map of community heat resources—cooling centers, potential cooling centers, pool, senior centers, etc			
Task B: Coordinate Research on History of Hunting Park			
What is the history of land use and development (including presence of industry, railroad tracks/infrastructure) in Hunting Park?			
What is the history of population movements in Hunting Park?			
What is the history of City policies (e.g. redlining, etc) that may have shaped the development of Hunting park?			
Have there been any major events that have taken place in the neighborhood that have shaped the culture or identity?			
Speak to residents about the polices + practices that have shaped their environment. Understand how their neighborhoods have changed			
Task C: Review and evaluate municipal policies and practices in Hunting Park			
Ask residents and community partners about policy barriers/problems they have experienced			
Develop a policy evaluation tool/checklist			
GSI Analysis in Urban Heat Island Priority areas			
Complete TreePhilly Urban Forestry Equity Analysis			
Develop policy recommendations to reduce barriers			

Sample Extreme Heat Response Plan

[New Hampshire's Excessive Heat Emergency Response Plan](#) is a good example of a thorough heat response plan. It establishes different phases of extreme heat response with steps for each phase. The plan also identifies vulnerable populations and provides sample communication resources.

Extreme Heat Public Communications Packet

Before and during extreme heat events, it is essential that municipalities communicate with community members to equip them with knowledge on how to stay cool and avoid health complications from extreme heat.¹⁴² Improving communications about the risks of extreme heat is of particular importance for the protection of vulnerable people who may not be aware of or have access to established communication networks.¹⁴³ It is also important to conduct community outreach about extreme heat before the heat season begins, not only during or shortly before extreme heat events.¹⁴⁴ This communications packet includes communication templates that municipalities can tailor to their local contexts, advice on multilingual outreach, and sample extreme heat communication toolkits.

The templates are organized by the following four methods of communication:

Talking points: Succinct information for the general public or specific populations about staying safe in extreme heat, local cooling resources, etc. Municipalities can communicate talking points through live formats such as radio and local tv or through the following three communication methods:

Newsletters: Communicate important information about extreme heat to residents within a community group, such as a senior center or place of worship.

Social media: This format has the potential to reach a wide audience, including young community members. Posts should be eye-catching, short, and to-the-point to compete with other engaging, brief posts. Municipalities may decide to use targeted ads to reach certain demographics. Potential platforms include Twitter, Facebook, and Instagram.

Press releases: A formal release of information to the public from local agencies or organizations. Information from press releases can be used as talking points in newsletters and social media posts.

¹⁴² Lane, Wheeler, Charles-Guzman, Ahmed, Blum, Gregory, Graber, Clark, and Matte, “Extreme Heat Awareness and Protective Behaviors in New York City,” 1.

¹⁴³ Ibid.

¹⁴⁴ Water, Air and Climate Change Bureau, “Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials,” 13.

Best Practices for Multilingual Translation and Interpretation

For its 2021 Heat Resilience Study webinars, Climate Ready Boston collaborated with the City’s Office of Language and Communications Access, which provided funding and support for finding translation and interpretation services through a professional vendor directory. Zoë Davis, Boston’s Climate Resilience Project Manager, outlined the following best practices¹⁴⁵:

- Work with interpreters who are familiar with the communities your team is working with.
- Have a third party review translated material to ensure the intended meaning has been captured.
- Keep a dictionary of translated terms and phrases (especially for topic-specific technical terms and phrases).
- Develop imagery or iconography to condense information (especially for flyers, door knockers, and social media posts).
- Budget a 2-3 week period for translation services.
- For multilingual public meetings sharing a post-event recording, a voiceover provides a higher quality product rather than a recording from the interpreter's computer, so confirm that interpreters will provide voice over of the recording as part of the services being requested.

Newsletters

Word Doc. of sample senior center newsletter message (based on original from New Hampshire Heat Toolkit):

To open in Microsoft Word and preserve the document’s format, follow these steps:

6. Open this link: [Extreme Heat Public Communications Packet - Google Drive](#)
7. Right click on the “Sample Senior Center Newsletter Message” document.
8. Click on the top option, “Preview.”
9. Click on the three vertical dots in the top right corner.
10. Click on “Download.”

¹⁴⁵ Zoë Davis, email message to author, July 8, 2022.

Social Media

The following links lead to social media posts on protecting children during extreme heat. These resources are from the American Public Health Association's Summer Social Media Toolkit¹⁴⁶:

- Part 1 [Images: Download here](#)
- Part 2 [Images: Download here](#)

The National Weather Service has many social media posts and graphics about extreme heat. Find and download these resources here: <https://www.weather.gov/wrn/summer-heat-sm>

Word Doc. of sample social media posts (based on original from New Hampshire Heat Toolkit):

To open in Microsoft Word and preserve the document's format, follow these steps:

1. Open this link: [Extreme Heat Public Communications Packet - Google Drive](#)
2. Right click on the "Sample Social Media + PSA Communication" document.
3. Click on the top option, "Preview."
4. Click on the three vertical dots in the top right corner.
5. Click on "Download."

¹⁴⁶ APHA Children's Environmental Health Committee, "Summer Social Media Toolkit."

Social Media Graphics from the CDC:

[Link to Google Drive folder with posts](#)



Press Releases

Word Doc. of template press release for outdoor workers (based on original from CT DPH¹⁴⁷):

To open in Microsoft Word and preserve the document's format, follow these steps:

1. Open this link: [Press Release Templates - Google Drive](#)
2. Right click on the "Outdoor Workers" document.
3. Click on the top option, "Preview."
4. Click on the three vertical dots in the top right corner.
5. Click on "Download."

Word Doc. of template press release for schools (based on original from Sherman School¹⁴⁸):

To open in Microsoft Word and preserve the document's format, follow these steps:

¹⁴⁷ Trabal, "Connecticut DPH Reminds Workers to Take Necessary Precautions During Current August Heat Wave."

¹⁴⁸ Melendez, "Tuesday, June 8th - IMPORTANT UPDATES."

1. Open this link: [Press Release Templates - Google Drive](#)
2. Right click on the “Schools” document.
3. Click on the top option, “Preview.”
4. Click on the three vertical dots in the top right corner.
5. Click on “Download.”

Word Doc. of template press release for all residents (based on original from CT DPH¹⁴⁹):

To open in Microsoft Word and preserve the document’s format, follow these steps:

1. Open this link: [Press Release Templates - Google Drive](#)
2. Right click on the “All Residents” document.
3. Click on the top option, “Preview.”
4. Click on the three vertical dots in the top right corner.
5. Click on “Download.”

Word Doc. of template press release for all residents (based on original from DEMHS¹⁵⁰):

To open in Microsoft Word and preserve the document’s format, follow these steps:

1. Open this link: [Press Release Templates - Google Drive](#)
2. Right click on the “All Residents 2” document.
3. Click on the top option, “Preview.”
4. Click on the three vertical dots in the top right corner.
5. Click on “Download.”

Talking Points

Word Doc. of talking points and message map about extreme heat (based on original from Wisconsin Extreme Heat Toolkit):

To open in Microsoft Word and preserve the document’s format, follow these steps:

1. Open this link: [Extreme Heat Public Communications Packet - Google Drive](#)
2. Right click on the “Message Map and Talking Points” document.
3. Click on the top option, “Preview.”
4. Click on the three vertical dots in the top right corner.
5. Click on “Download.”

¹⁴⁹ Connecticut Department of Public Health, “DPH Commissioner Dr. Manisha Juthani Reminds Residents to Take Necessary Precautions During May Summer Heat Event.”

¹⁵⁰ “Sample Press Release: Governor Lamont Advises Connecticut Residents to Prepare for Extreme Heat Over Next Several Days,” Connecticut Division of Emergency Management and Homeland Security.

Word Doc. of information about heat-related illnesses (based on original from Kansas Extreme Heat Toolkit):

To open in Microsoft Word and preserve the document's format, follow these steps:

1. Open this link: [Extreme Heat Public Communications Packet - Google Drive](#)
2. Right click on the "Health Talking Points" document.
3. Click on the top option, "Preview."
4. Click on the three vertical dots in the top right corner.
5. Click on "Download."

National Athletic Trainers' Association handout about extreme heat and outdoor sports: [hydration heat illness handout.pdf](#)

Word Doc. of extreme heat talking points (based on original from NYC Health Department):

To open in Microsoft Word and preserve the document's format, follow these steps:

1. Open this link: [Extreme Heat Public Communications Packet - Google Drive](#)
2. Right click on the "Extreme Heat Talking Points from NYC" document.
3. Click on the top option, "Preview."
4. Click on the three vertical dots in the top right corner.
5. Click on "Download."

Sample Messaging Toolkits

- a. [Communicating the Health Risks of Extreme Heat Events - Canada.ca](#)
- b. [NYC Emergency Management Beat the Heat Messaging Toolkit](#)
- c. [Hot Weather Media Toolkit - Vermont Dept. of Health](#)
- d. [Lincoln County, Wisconsin's Extreme Heat Communications Plan](#)

References

- Abbinett, Jessica; Schramm, Paul J.; Widerynski, Stasia; Saha, Shubhayu; Beavers, Suzanne; Eaglin, Margaret; Lei, Uei; Nayak, Seema G.; Roach, Matthew; Wolff, Matt; Conlon, Kathryn C.; Thie, Lauren. "Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation." Center for Disease Control and Prevention. 2020.
https://www.cdc.gov/climateandhealth/docs/HeatResponsePlans_508.pdf
- American Lung Association. "Report Card: Connecticut." 2022.
<https://www.lung.org/research/sota/city-rankings/states/connecticut>.
- APHA Children's Environmental Health Committee. "Summer Social Media Toolkit." American Public Health Association. 2022. <https://sites.google.com/view/apha-ceh-committee/home>.
- Basu, Rupa and Ostro, Bart D. "A Multicounty Analysis Identifying the Populations Vulnerable to Mortality Associated with High Ambient Temperature in California." *American Journal of Epidemiology* 168, no. 6 (2008): 632-637. doi: 10.1093/aje/kwn170.
- Bernard, Susan M. and McGeehin, Michael A. "Municipal Heat Wave Response Plans." *American Journal of Public Health* 94, no. 9 (2004): 1520-1522. doi: 10.2105/ajph.94.9.1520.
- Blum, L. N.; Bresolin, L. B.; and Williams, M. A. "From the Council on Scientific Affairs: Heat-Related Illness During Extreme Weather Emergencies." *JAMA*. 279, no. 19 (1998): 1514. doi:10.1001/jama.279.19.1514.
- Bozzi, Laura and Dubrow, Robert. "Climate Change and Health in Connecticut: 2020 Report." Yale Center on Climate Change and Health. 2020.
https://ysph.yale.edu/yale-center-on-climate-change-and-health/ycch_cchc2020report_395366_5_v1.pdf.
- Bytomski, Jeffrey R. and Squire, Deborah L. "Heat Illness in Children." *Current Sports Medicine Reports* 2, no. 6 (2003): 320-324. doi: 10.1249/00149619-200312000-00007.

City of Philadelphia Office of Sustainability. "Beat the Heat Hunting Park: A Community Heat Relief Plan." City of Philadelphia. 2019. https://www.phila.gov/media/20190719092954/HP_R8print-1.pdf.

Congressional Research Service. "Selected Federal Financial Assistance for Emergency Response to Extreme Heat." CRS Report. June 17, 2022. <https://sgp.fas.org/crs/misc/R46873.pdf>.

Connecticut Department of Public Health. "DPH Commissioner Dr. Manisha Juthani Reminds Residents to Take Necessary Precautions During May Summer Heat Event." May 20, 2022. <https://portal.ct.gov/DPH/Press-Room/Press-Releases---2022/May-20-Heat-Alert>.

Connecticut Division of Emergency Management and Homeland Security. "DEMHS Extreme Heat Emergency Management Procedure." DEMHS. July 2022. https://portal.ct.gov/-/media/DEMHS/_docs/EHSP0101_Extreme-Heat-Emergency-Management-Procedure-July-2022-Final.pdf

Elton, Nicholas; Hayes, Laura E.; and Wozniak-Brown, Joanna. "Preliminary Results: Emergency Shelter and Cooling Center Practices in Connecticut." Connecticut Department of Public Health and UConn Connecticut Institute for Resilience and Climate Adaptation. May 2022. <https://resilientconnecticut.uconn.edu/wp-content/uploads/sites/2761/2022/05/CIRCA-DPH-Sheltering-White-Paper-FINAL.pdf>.

Environmental Protection Agency. "Excessive Heat Events Guidebook." EPA Office of Atmospheric Programs. March 2016. https://www.epa.gov/sites/default/files/2016-03/documents/ehguide_final.pdf.

FamilyDoctor.org. "Heat Exhaustion and Heatstroke." March 27, 2019. <https://familydoctor.org/condition/heat-exhaustion-heatstroke/#:~:text=Heat%20exhaustion%20happens%20when%20your,more%20serious%20than%20heat%20exhaustion.>

Field, Glenn. Email communication to author. July 21, 2021.

Foster, K. G.; Ellis, F. P.; Dore, C.; Exton-Smith, A. N.; and Weiner, J. S. "Sweat Responses in the Aged." *Age and Ageing* 5 (1976): 91-101. doi: 10.1093/ageing/5.2.91.

Glazer, James L. "Management of Heatstroke and Heat Exhaustion." *American Family Physician* 71, no. 11 (2005): 2133-2140. <https://www.aafp.org/pubs/afp/issues/2005/0601/p2133.html>.

Green, Helen; Gilbert, John; James, Ross; and Byard, Roger W. "An Analysis of Factors Contributing to a Series of Deaths Caused by Exposure to High Environmental Temperatures." *The American Journal of Forensic Medicine and Pathology* 22, no. 2 (2001): 196-199. doi: 10.1097/00000433-200106000-00018.

Hajat, S.; Kovats, R. S.; and Lachowycz, K. "Heat-Related and Cold-Related Deaths in England and Wales: Who is at Risk?" *Occupational and Environmental Medicine* 64, no. 2 (2007): 93-100. doi: 10.1136/oem.2006.029017.

Hansen, Alana; Bi, Peng; Ryan, Philip; Nitschke, Monika; Pisaniello, Dino; and Tucker, Graeme. "The Effect of Heat Waves on Mental Health in a Temperate Australian City." *Environmental Health Perspectives* 116, no. 1 (2008): 1369-1375. doi: 10.1289/ehp.11339.

Health Canada. "Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials." Minister of Health. 2011. https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/climat/heat-chaleur/heat-chaleur-eng.pdf.

Health Canada Water, Air and Climate Change Bureau Healthy Environments and Consumer Safety Branch. "Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials." Minister of Health. 2011. https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/climat/heat-chaleur/heat-chaleur-eng.pdf.

Iowa State University of Science and Technology. "Urban Percentage of the Population for States, Historical." Accessed August 5, 2022. <https://www.icip.iastate.edu/tables/population/urban-pct-states>.

Kansas Extreme Weather Workgroup. Kansas Extreme Heat Toolkit. Kansas Department of Health and Environment. September 2019. https://keap.kdhe.ks.gov/Ephtm/EphtContent/documents/Extreme%20Heat%20Toolkit_Final%20combined.pdf.

Knowlton, Kim; Rotkin-Ellman, Miriam; King, Galatea; Margolis, Helene G.; Smith, Daniel; Solomon, Gina; Trent, Roger; and English, Paul. "The 2006 California Heat Wave: Impacts on Hospitalizations and Emergency Department Visits." *Environmental Health Perspectives* 117 (2009): 61-67. doi: 10.1289/ehp.11594.

Kovats, R. S. and Hajat, S. "Heat Stress and Public Health: A Critical Review." *Annual Review of Public Health* 29 (2008): 41-55. doi: 10.1146/annurev.publhealth.29.020907.090843.

Lane, Kathryn; Wheeler, Katherine; Charles-Guzman, Kizzy; Ahmed, Munerah;

Blum, Micheline; Gregory, Katherine; Graber, Nathan; Clark, Nancy; and Matte, Thomas. "Extreme Heat Awareness and Protective Behaviors in New York City." *Urban Health* 91 (2014): 403–414. doi: <https://doi.org/10.1007/s11524-013-9850-7>.

Luber, George and McGeehin, Michael. "Climate Change and Extreme Heat Events." *American Journal of Preventive Medicine* 35, no. 5 (2008): 429–435. <https://doi.org/10.1016/j.amepre.2008.08.021>

Maeda, John. "Design in Tech Report 2019." Design in Tech. 2019. https://designintech.report/wp-content/uploads/2019/03/dit2019_v00.pdf.

Mallen, Evan; Roach, Matthew; Fox, Laura; Gillespie, Elizabeth; Watkins, Lance; Hondula, David M.; Vaidyanathan, Ambarish; Manangan, Arie; Perkins, Ayana N.; and Schramm, Paul J. "Extreme Heat Exposure: Access and Barriers to Cooling Centers — Maricopa and Yuma Counties, Arizona, 2010–2020." *MMWR Morbidity and Mortality Weekly Report* 71 (2022): 781–785. doi: <http://dx.doi.org/10.15585/mmwr.mm7124a1>.

Marinucci, Gino D.; Luber, George; Uejio, Christopher K.; Saha, Shubhayu; and Hess, Jeremy J. "Building Resilience against Climate Effects—A Novel Framework to Facilitate Climate Readiness in Public Health Agencies" *International Journal of Environmental Research and Public Health* 11, no. 6 (2014): 6433–6458. <https://doi.org/10.3390/ijerph110606433>.

Marx, Rebecca and Morales-Burnett, Jorge. "Centering Equity to Address Extreme Heat: Preparing Communities for Hotter Days." Urban Institute. February 2022. https://www.urban.org/sites/default/files/2022-02/centering-equity-to-address-extreme-heat_1.pdf.

McCormick, Katherine; Ganthier, Tiffany; Zyla, Kate; Kruger, Joseph; Raffle, Pete; Bennett, Annie; Fitzgerald, Caren; Benz, Shelby; Gignoux, Noelle; and Flibbert, Caroline. "Community-Informed Heat Relief: Policy Options for Addressing Urban Extreme Heat in High-Risk Communities." Georgetown Climate Center. 2021. <https://www.georgetownclimate.org/files/report/Community-Informed-Heat-Relief-2021.pdf>.

McLaren, Catherine; Null, Jan; and Quinn James. "Heat Stress from Enclosed Vehicles: Moderate Ambient Temperatures Cause Significant Temperature Rise in Enclosed Vehicles." *Pediatrics* 116, no. 1 (2005): 109–112. doi: [10.1542/peds.2004-2368](https://doi.org/10.1542/peds.2004-2368).

Melendez, Jeff. "Tuesday, June 8th - IMPORTANT UPDATES." Sherman School, email, June 7, 2021.

Minnesota Climate and Health Program. “Minnesota Extreme Heat Toolkit.” Minnesota Department of Health. June 6, 2012. <https://www.health.state.mn.us/communities/environment/climate/docs/mnextrremeheattoolkit.pdf>.

National Center for Environmental Health. “Frequently Asked Questions (FAQ) About Extreme Heat.” Centers for Disease Control and Prevention. June 1, 2012. <https://www.cdc.gov/disasters/extremeheat/faq.html>.

National Center for Immunization and Respiratory Diseases (NCIRD) Division of Viral Diseases. “COVID-19 and Cooling Centers.” Center for Disease Control (CDC). April 11, 2020. <https://www.cdc.gov/coronavirus/2019-ncov/php/cooling-center.html>

National Weather Service. “Connecticut NWS Contacts.” Accessed July 2021. <https://www.weather.gov/stormready/ct-cwa>.

National Weather Service Binghamton, NY Weather Forecast Office. “Heat.” Accessed August 1, 2022. <https://www.weather.gov/bgm/heat>.

Nayaka, Seema G.; Shresthab, Srishti; Sheridan, Scott C.; Hsu, Wan-Hsiang; Muscatello, Neil A.; Pantea, Cristian I.; Ross, Zev; Kinney, Patrick L.; Zdeb, Michael; Hwang, Syni-An A.; Lin, Shao. “Accessibility of cooling centers to heat-vulnerable populations in New York State.” *Transport & Health*. 14 (2019): 1-10. Doi: <https://doi.org/10.1016/j.jth.2019.05.002>

Niesz, Helga. “Connecticut’s Elderly Population Growth Since 1980 and Future Projections.” Office of Legislative Research. September 25, 2006. <https://www.cga.ct.gov/2006/rpt/2006-R-0590.htm>.

Null, Jan. “Hyperthermia Death of Children in Vehicles.” Department of Geosciences, SFSU (2012). <http://ggweather.com/heat/index.htm>.

NYC Health. “Talking Points: Staying Safe and Healthy During Heat Waves.” City of New York. June 2014. <https://www1.nyc.gov/assets/doh/downloads/pdf/em/extreme-heat-talking-points.pdf>

Occupational Safety and Health Administration. “Protecting Workers from the Effects of Heat.” U.S. Department of Labor. Accessed July 2021. https://www.osha.gov/sites/default/files/publications/heat_stress.pdf.

O’Neill, Marie S.; Zanobetti, Antonella; Schwartz, Joel. “Modifiers of the Temperature and Mortality Association in Seven US Cities.” *American Journal of Epidemiology* 157, no. 12 (2003): 1074-1082. doi: 10.1093/aje/kwg096.

Platt, M. and Vicario, S. “Heat Illness.” In Rosen’s *Emergency Medicine: Concepts and Clinical Practice*, 1882-3. Amsterdam: Elsevier, 2010.

Polk County Health Department. “Extreme Heat Toolkit.” Polk County Iowa. Accessed June 2021. <https://www.polkcountyiowa.gov/health-department/extreme-heat/extreme-heat-toolkit/>.

Ramamurthy, P. and Bou-Zeid, E. “Heatwaves and Urban Heat Islands: A Comparative Analysis of Multiple Cities.” *Journal of Geophysical Research: Atmospheres* 122 (2017): 168–178. doi:10.1002/2016JDO25357.

Ryan, John. “The Deadliest Heat Wave: Lessons from the NW’s Extreme Heat.” *KUOW*. July 26, 2021. <https://www.kuow.org/stories/local-officials-say-they-ll-do-better-in-the-next-heat-wave>

“Sample Press Release: Governor Lamont Advises Connecticut Residents to Prepare for Extreme Heat Over Next Several Days.” Connecticut Division of Emergency Management and Homeland Security. July 2022. https://portal.ct.gov/-/media/DEMHS/_docs/Plans-and-Publications/EHSP0091--Hot-Weather-Protocol.pdf#:~:text=DEMHS%20Extreme%20Heat%20Emergency%20Management%20Procedure%20July%202021,Cold%20Weather%20Protocol%20are%20not%20activated%20for%20heat.

Sarofim, Marcus C.; Shubhayu, Saha; Hawkins, Michelle D.; Mills, David M.; Hess, Jeremy; Horton, Radley; Kinney, Patrick; Schwartz, Joel; and Juliana, Alexis. “Temperature-Related Death and Illness.” In *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*, 43–68. Washington: U.S. Global Change Research Program, 2016, <http://dx.doi.org/10.7930/JoMG7MDX>.

Schifano, Patrizia; Cappai, Giovanna; De Sario, Manuela; Michelozzi, Paola; Marino, Claudia; Bargagli, Anna M.; and Perucci, Carlo A. “Susceptibility to Heat Wave-Related Mortality: A Follow-Up Study of a Cohort of Elderly in Rome.” *Environmental Health* 8 (2009): 1-14. doi: 10.1186/1476-069X-8-50.

Seattle and King County Public Health. “Stay Safe in the Heat.” King County. Accessed August 1, 2022. <https://kingcounty.gov/depts/health/emergency-preparedness/preparing-yourself/~media/depts/health/emergency-preparedness/documents/stay-safe-in-the-heat-EN.ashx>.

Semenza, J. C.; Rubin, C. H.; Falter, K. H.; Selanikio, J. D.; Flanders, W. D.; Howe, H. L.; and Wilhelm, J. L. “Heat-Related Deaths During the July 1995 Heat Wave in Chicago.” *New England Journal of Medicine* 335, no. 2 (1996): 84-90. doi: 10.1056/NEJM199607113350203.

Seth, Anji; Wang, Guiling; Kirchhof, Christine; Lombardo, Kelly; Stephenson, Scott; Anyah, Richard; Wu, Junya. "CIRCA Temperature and Precipitation Fact Sheet." Connecticut Institute for Resilience and Climate Adaptation. 2019. <https://circa.uconn.edu/wp-content/uploads/sites/1618/2020/10/CIRCA-Temperature-and-Precipitation-fact-sheet.pdf>.

State of New Hampshire Environmental Public Health Tracking. "Heat Toolkit for New Hampshire Communities." Department of Health and Human Services. June 2017. <https://www.nh.gov/epht/documents/heat-community-toolkit-final.pdf>.

Sustainable CT. "Equity Toolkit." January 2021. https://sustainablect.org/fileadmin/Random_PDF_Files/Files_and_Resources/SCT_Equity_Toolkit_2021.pdf.

Swartz, Joel. "Who is Sensitive to Extremes of Temperature?: A Case-Only Analysis." *Epidemiology* 16, no. 1 (2005): 67-72. doi: 10.1097/01.ede.0000147114.25957.71.

Trabal, Heather. "Connecticut DPH Reminds Workers to Take Necessary Precautions During Current August Heat Wave." Connecticut Department of Public Health. August 11, 2021. <https://portal.ct.gov/DPH/Press-Room/Press-Releases---2021/Connecticut-DPH-Reminds-Workers-To-Take-Necessary-Precautions-During-Current-August-Heat-Wave>.

Vandentorren, S.; Bretin, P.; Zeghnoun, A.; Mandereau-Bruno, L.; Croisier, A.; Cochet, C.; Ribéron, J.; Siberan, I.; Declercq, B.; and Ledrans, M. "August 2003 Heat Wave in France: Risk Factors for Death of Elderly People Living at Home." *European Journal of Public Health* 16, no. 6 (2006): 583-591. doi:10.1093/eurpub/ckl063

Vaz, Nelson. Email communication to author. July 22, 2021.

Water, Air and Climate Change Bureau Healthy Environments and Consumer Safety Branch. "Communicating the Health Risks of Extreme Heat Events: Toolkit for Public Health and Emergency Management Officials." Canadian Minister of Health. 2011. https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/climat/heat-chaleur/heat-chaleur-eng.pdf.

WE ACT for Environmental Justice. "A Call for NYC Cooling Center Improvements." 2021. <https://www.weact.org/wp-content/uploads/2022/06/WE-ACT-2021-Cooling-Center-Report.pdf>.

Widerynski, Stasia; Schramm, Paul; Conlon, Kathryn; Noe, Rebecca; Grossman, Elena; Hawkins, Michelle; Nayak, Seema; Roach, Matthew; Hilts, Asante S. "The Use of Cooling Centers to Prevent Heat-Related Illness: Summary of Evidence

and Strategies for Implementation.” Climate and Health Program, Division of Environmental Hazards and Health Effects (DEHHE) and National Center for Environmental Health (NCEH). 2017.

<https://www.cdc.gov/climateandhealth/docs/UseOfCoolingCenters.pdf>.

Wisconsin Climate and Health Program. “Extreme Heat Toolkit: A Planning Guide for Public Health and Emergency Response Professionals.” Bureau of Environmental and Occupational Health. April 2019.

<https://www.dhs.wisconsin.gov/publications/p0/p00632.pdf>.

World Health Organization. “Health Equity.” Accessed August 9, 2022.

<https://www.who.int/westernpacific/health-topics/equity>.

Zielinski, Sarah. “Why the City Is (Usually) Hotter than the Countryside.”

Science. *Smithsonian Magazine*, July 9, 2014.

[https://www.smithsonianmag.com/science-nature/city-hotter-countryside-urban-heat-island-science-](https://www.smithsonianmag.com/science-nature/city-hotter-countryside-urban-heat-island-science-180951985/#:~:text=Because%20of%20the%20%E2%80%9Curban%20heat,the%20U.S.%20Environmental%20Protection%20Agency.)

[180951985/#:~:text=Because%20of%20the%20%E2%80%9Curban%20heat,the%20U.S.%20Environmental%20Protection%20Agency.](https://www.smithsonianmag.com/science-nature/city-hotter-countryside-urban-heat-island-science-180951985/#:~:text=Because%20of%20the%20%E2%80%9Curban%20heat,the%20U.S.%20Environmental%20Protection%20Agency.)

Zimmerman, J. L. and Hanania, N. A. “Chapter 111. Hyperthermia.” In *Principles of Critical Care*, edited by Jesse B. Hall, Gregory A. Schmidt, and Lawrence D. H. Wood. New York: McGraw-Hill, 2005.

**VI. List of
Additional
Reputable
Resources on
Extreme Heat**

List of Additional Reputable Resources on Extreme Heat

Extreme heat and health

CDC Heat-Related Illness Fact Sheet:

https://www.cdc.gov/pictureofamerica/pdfs/Picture_of_America_Heat-Related_Illness.pdf

CDC Extreme Heat Guide:

<https://www.cdc.gov/nceh/features/extremeheat/index.html>

National Integrated Heat Health Information System (NIHHIS):

<https://nihhis.cpo.noaa.gov/>

CDC's Climate and Health Program: <https://www.cdc.gov/climateandhealth/>

Information for the public on how to stay safe during extreme heat

National Weather Service Heat Wave Guide: <https://www.weather.gov/safety/heat-during>

FEMA/Ready.gov Preparing for Extreme Heat: <https://www.ready.gov/heat>

Keeping vulnerable groups safe during extreme heat

CDC/NIOSH Protecting Workers in Heat Events:

<http://www.cdc.gov/niosh/topics/heatstress/>

CDC Heat and Older Adults: <https://www.cdc.gov/disasters/extremeheat/older-adults-heat.html>

NAMI (National Alliance on Mental Illness) on Heat and Mental Illness:

<https://www.nami.org/Press-Media/Press-Releases/2006/HEAT-STROKE>

AAP (American Academy of Pediatrics) Recommendations on Children and Extreme Heat:

<https://www.healthychildren.org/English/safety-prevention/at-home/Pages/Protecting-Children-from-Extreme-Heat-Information-for-Parents.aspx>

NATA (National Athletic Trainers Association) Position Statement: Exertional Heat Illnesses:

<https://www.nata.org/sites/default/files/externalheatillnesses.pdf>

Heat Safety Tips for Athletes and Coaches:

<https://publichealth.nc.gov/chronicdiseaseandinjury/doc/HeatSafetyTipsforAthletesandCoaches.pdf>

Humane Society of the United States, advice for pet owners during heat waves:

http://www.humanesociety.org/animals/resources/tips/pets_safe_heat_wave.html

Extreme heat tools for municipal leaders

CDC Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation:

https://www.cdc.gov/climateandhealth/docs/HeatResponsePlans_508.pdf

Adapting to Urban Heat: A Tool Kit for Local Government:

https://www.georgetownclimate.org/files/report/Urban%20Heat%20Toolkit_9.6.pdf

Georgetown Climate Center Policy Options for Addressing Urban Extreme Heat in High-Risk Communities:

<https://www.georgetownclimate.org/files/report/Community-Informed-Heat-Relief-2021.pdf>

Georgetown Climate Center Adaptation Clearinghouse:

https://www.adaptationclearinghouse.org/search/?type_a=t&type%5B%5D=&i_a=t&%5B%5D=10635&jf_a=&ri_a=&rc_a=&s_a=&sid_a=&sid%5B%5D=&keyword_a=t&q=&page=2#data-list-results

Excessive Heat Events Guidebook: <https://www.epa.gov/heatislands/excessive-heat-events-guidebook>

CDC/ATSDR Extreme Heat Adaptation:

https://www.atsdr.cdc.gov/placeandhealth/share/onemap_heat-crsci/extreme_heat_home.html

Preparing California for Extreme Heat: Guidance and Recommendations:

https://abag.ca.gov/sites/default/files/2013_cph_preparing_california_for_extreme_heat.pdf

Extreme Heat Resource Sheet from San Francisco Department of Health:

https://sfclimatehealth.org/wp-content/uploads/2019/05/ExtremeHeatResourceSheet_05.01.2019.pdf

American Planning Association Planning for Urban Heat Resilience: https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/PAS-Report-600-r1.pdf

Yale Center on Climate Change and Health (YCCCCH) Extreme Heat in Connecticut Issue Brief: [https://ysph.yale.edu/yale-center-on-climate-change-and-health/policy-and-public-health-](https://ysph.yale.edu/yale-center-on-climate-change-and-health/policy-and-public-health-practice/ycccch%20extreme%20heat%20issue%20brief_407652_48542_v2.pdf)

[practice/ycccch%20extreme%20heat%20issue%20brief_407652_48542_v2.pdf](https://ysph.yale.edu/yale-center-on-climate-change-and-health/policy-and-public-health-practice/ycccch%20extreme%20heat%20issue%20brief_407652_48542_v2.pdf)

National Integrated Heat Health Information System Urban Heat Island Mapping

Campaign: <https://www.adaptationclearinghouse.org/resources/national-integrated-heat-health-information-system-urban-heat-island-mapping-campaign.html>

KUOW “The deadliest heat wave: Lessons from the NW's extreme heat”:

<https://www.kuow.org/stories/local-officials-say-they-ll-do-better-in-the-next-heat-wave>

Congressional Research Service Selected Federal Financial Assistance for Emergency Response to Extreme Heat: <https://sgp.fas.org/crs/misc/R46873.pdf>

Arizona’s Climate and Health Adaptation Plan:

<https://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/extreme-weather/pubs/arizona-climate-health-adaptation-plan.pdf>

North Carolina BRACE Evaluation Plan:

<https://epi.dph.ncdhhs.gov/oeec/climate/NCBRACEEvaluationPlan2021.pdf>

Climate of Opportunity: A Climate Action Plan for the District of Columbia:

https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/ClimateOfOpportunity_web.pdf

North Carolina Climate and Health Implementation and Monitoring Strategy (IMS) for Heat-Related Illness:

<https://epi.dph.ncdhhs.gov/oeec/climate/HeatIMSNorthCarolina.pdf>

Cool Policies for Cool Cities: Best Practices for Mitigating Urban Heat Islands in North American Cities:

<https://www.aceee.org/sites/default/files/publications/researchreports/u1405.pdf>

American Planning Association New Jersey Chapter South Ironbound Resiliency Action Plan: <https://njplanning.org/cp-assistance-program/south-ironbound-resiliency-action-plan-newark/>

Cleveland Tree Plan:

https://www.clevelandohio.gov/sites/default/files/forms_publications/ClevelandTreePlan.pdf

Supplemental Tools for Developing Extreme Heat Response Plans

Sample Stakeholder Interview Questions:

<https://www.phila.gov/media/20190719091939/06-Potential-stakeholder-interview-questions.pdf>

Sample Heat Survey in English: <https://www.phila.gov/media/20190719091742/07-Hunting-Park-heat-survey-English.pdf>

Sample Heat Survey in Spanish: <https://www.phila.gov/media/20190719091808/08-Hunting-Park-heat-survey-Spanish.pdf>

Sample Communication to Neighborhood Heat Outreach Leaders:

<https://www.phila.gov/media/20190719092128/09-Sample-outreach-letter-to-Block-Captains.pdf>

Sample Heat Design Workshop Guide:

<https://www.phila.gov/media/20190719092517/14-Facilitation-guide-for-a-Heat-Design-Workshop.pdf>

How to Make a Heat Activity Station:

<https://admin.phila.gov/media/20190719092237/13-How-to-make-an-activity-station.pdf>

Resources for stakeholders

NYC Heat Wave Guidance for Service Providers:

<https://www1.nyc.gov/assets/doh/downloads/pdf/ehs/provider-heat-checklists.pdf>

Cambridge, MA Extreme Heat and Businesses Resources:

<https://www.cambridgema.gov/-/media/Files/CDD/Climate/resilientcambridge/readyforheatbusinesses.pdf>

Cooling centers

CIRCA Emergency Sheltering & Cooling Center Practices in Connecticut:

<https://resilientconnecticut.uconn.edu/wp-content/uploads/sites/2761/2022/05/CIRCA-DPH-Sheltering-White-Paper-FINAL.pdf>

WE ACT 2021 Cooling Center Report: <https://www.weact.org/wp-content/uploads/2022/06/WE-ACT-2021-Cooling-Center-Report.pdf>

CDC COVID-19 and Cooling Centers: <https://www.cdc.gov/coronavirus/2019-ncov/php/cooling-center.html>

CDC The Use of Cooling Centers to Prevent Heat-Related Illness: Summary of Evidence and Strategies for Implementation:

<https://www.cdc.gov/climateandhealth/docs/UseOfCoolingCenters.pdf>

Heat data

National Weather Service forecast for heat index can be found at:

<https://www.weather.gov/bgm/heatindexforecasts>

National Weather Service Heat Index Chart: <https://www.weather.gov/safety/heat-index>

National Weather Service Weather Fatalities:

<http://www.nws.noaa.gov/om/hazstats.shtml>

Trainings

Additional Minnesota Department of Health Climate Change & Health Resources:

<https://www.health.state.mn.us/communities/environment/climate/resources.html>