



# EXTREME HEAT PLAYBOOK



**U.S. DEPARTMENT OF HOUSING  
AND URBAN DEVELOPMENT**

# CONTENTS

Executive Summary .....	3
Overview of the Playbook .....	3

## INTRODUCTION 5

Understanding Extreme Heat .....	6
Goals of the HUD Extreme Heat Playbook .....	9
Acronyms .....	10
Key Terms .....	11

## ACTION TRACKS 13

Overview of the Action Tracks .....	14
How to Read This Playbook .....	15

Action Track 1: Partnership, Planning, & Preparedness .....	17
Strategy 1.1: Needs Assessments .....	18
Strategy 1.2: Emergency Heat Response Plans and Tabletop Planning .....	20
Strategy 1.3: Public Awareness and Education Campaigns .....	22
Strategy 1.4: Community Heat Alert Systems .....	24
Action Track 2: The Heat-Resilient Building .....	26
Strategy 2.1: Energy Efficiency Audits and Retrofits .....	27
Strategy 2.2: Heat-Resilient Building Practices .....	29
Strategy 2.3: Cool Surfaces: Roofs, Walls, and Pavement .....	31
Strategy 2.4: Cooling Technologies .....	33
Action Track 3: The Heat-Resilient Community .....	35
Strategy 3.1: Public Cooling Centers .....	36
Strategy 3.2: Blue-Green Infrastructure Implementation .....	38
Strategy 3.3: Blue-Green Infrastructure Maintenance .....	40
Strategy 3.4: Urban Tree Canopy Cover .....	42
Action Track 4: Policy & Programs .....	44
Strategy 4.1: Policy Measures for Heat Resilience .....	45
Strategy 4.2: Energy Bill Assistance Programs .....	47
Strategy 4.3: Cooling System Distribution Programs .....	49
Strategy 4.4: Policy Measures for Heat Resilience .....	51

## RESOURCES 53

Additional Project Highlights .....	54
Additional Resources & Funding Sources .....	71
Table 1: HUD Funding Sources .....	72
Table 2: Other Federal Funding Sources .....	74
Table 3: Additional Resources .....	76

# EXECUTIVE SUMMARY

## Introduction

The U.S. Department of Housing and Urban Development (HUD) has developed this Extreme Heat Playbook to address the growing threat of extreme heat events exacerbated by climate change. Building on the foundation of the [HUD Extreme Heat Quick Guide](#), this Playbook aims to equip communities, particularly the most vulnerable residents, with the tools and strategies needed to mitigate the impacts of extreme heat, ensuring safety, health, and resilience, particularly for the most vulnerable residents.

HUD's commitment to the [National Heat Strategy](#), introduced by the Biden-Harris Administration in an effort to coordinate the federal response to extreme heat from 2024 through 2030, is underscored by the development of this guidance. This Playbook has been developed in alignment with the Strategy's principles and goals (communications, science, solutions, and support) and is aimed at being a resource to help communities address the risk of extreme heat and its impacts.

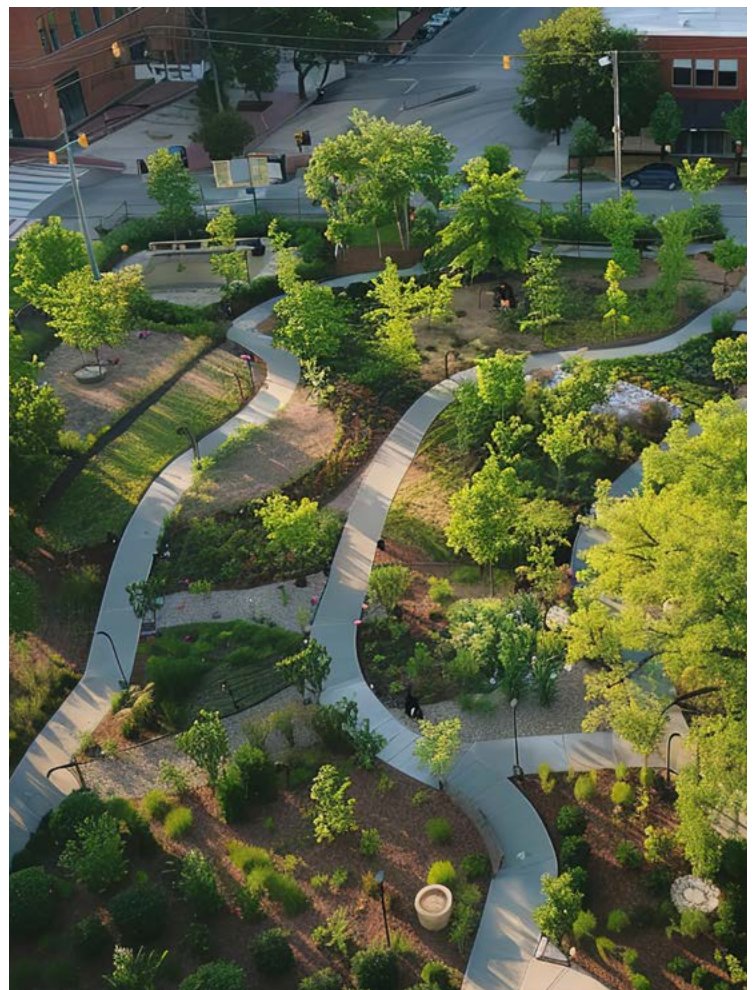
## Overview of the Playbook

This Extreme Heat Playbook supports HUD grantees and partners in mitigating extreme heat impacts and building more resilient communities. It offers actionable guidance for planning and implementing measures within constraints like time and funding, while prioritizing equity. This Playbook emphasizes the importance of evaluating existing community strengths, weaknesses, and capabilities; updating policies and protocols to address current and future conditions; and highlighting the critical importance of resilience amid climate change and increasingly frequent and severe extreme heat events. Starting with even one strategy can lead to improvements in outcomes and move towards a safer, cooler future.

### How is the HUD Extreme Heat Playbook Different from Other Extreme Heat Guides?

This Playbook stands out because it is not specific to one city or region; rather it is designed to present strategies that can be paired with local knowledge to be implemented in communities across the country. In order to be actionable, it also includes information about potential funding sources for extreme heat mitigation and several project highlights that show current examples of communities utilizing federal funding to take action. No matter where a community is in their extreme heat mitigation efforts, this guidance will help clarify what is possible and provide best practices to prepare readers create a more resilient

community. Although the information included in this Playbook can provide guidance for any community, it has specifically been designed to best support HUD-funded communities.



## Action Track Summaries

### ACTION TRACK 01

#### Partnership, Planning, & Preparedness



Effective collaboration and thorough planning are essential for successful extreme heat mitigation. Action Track 1 emphasizes identifying vulnerable populations and areas to ensure resources are allocated where they are needed most. It covers approaches for developing response plans, raising public awareness, and implementing alert systems to enhance community preparedness and resilience.

### ACTION TRACK 02

#### The Heat-Resilient Building



The condition and features of a building can define how resilient its occupants are to extreme heat events. Action Track 2 focuses on improving building practices to reduce heat absorption and maintain cooler indoor environments. It includes strategies for enhancing energy efficiency, using reflective materials, and implementing advanced cooling technologies to increase safety and comfort for occupants.

### ACTION TRACK 03

#### The Heat-Resilient Community



Creating a heat-resilient community involves a holistic approach that includes public spaces and infrastructure. Action Track 3 highlights the importance of establishing cooling centers, integrating natural cooling solutions, and increasing urban tree cover. These measures collectively enhance the overall resilience and comfort of the community and can have additional benefits for quality of life beyond extreme heat mitigation.

### ACTION TRACK 04

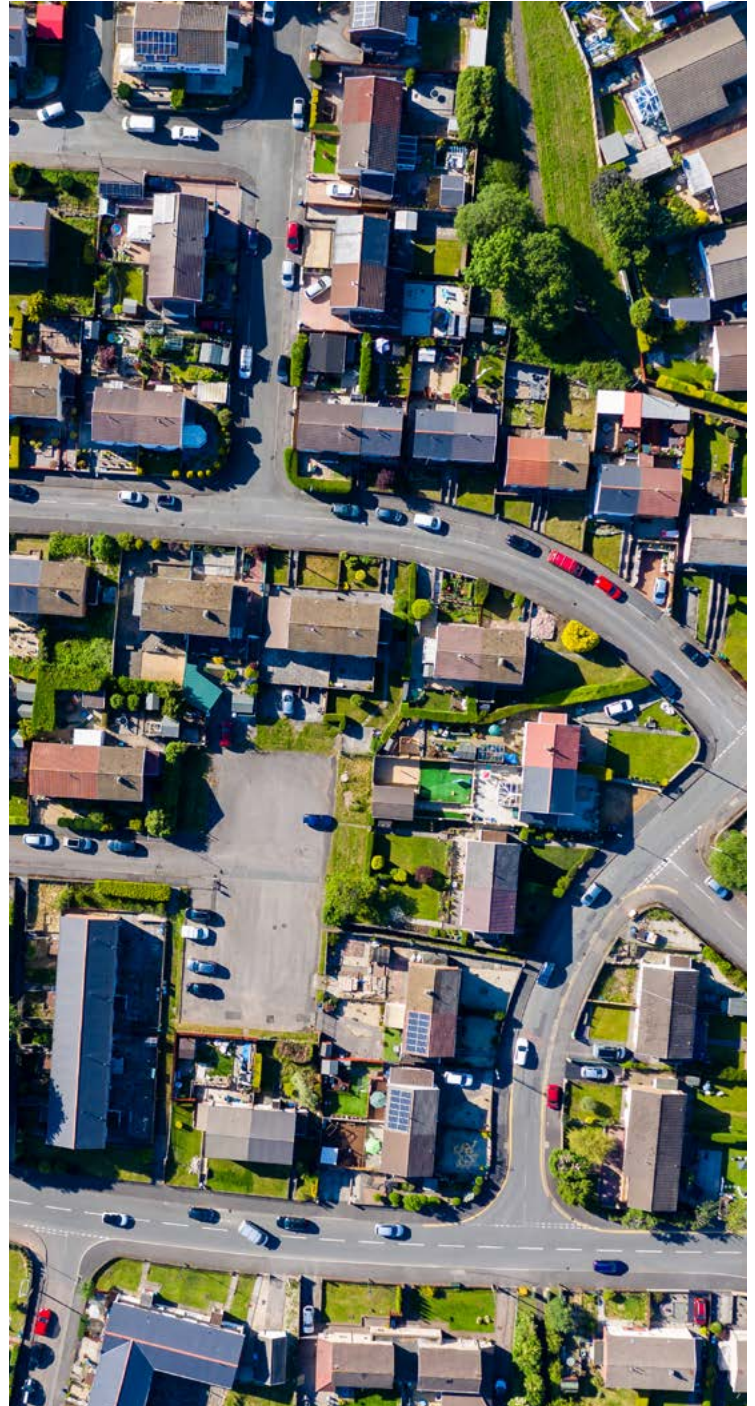
#### Policy & Programs

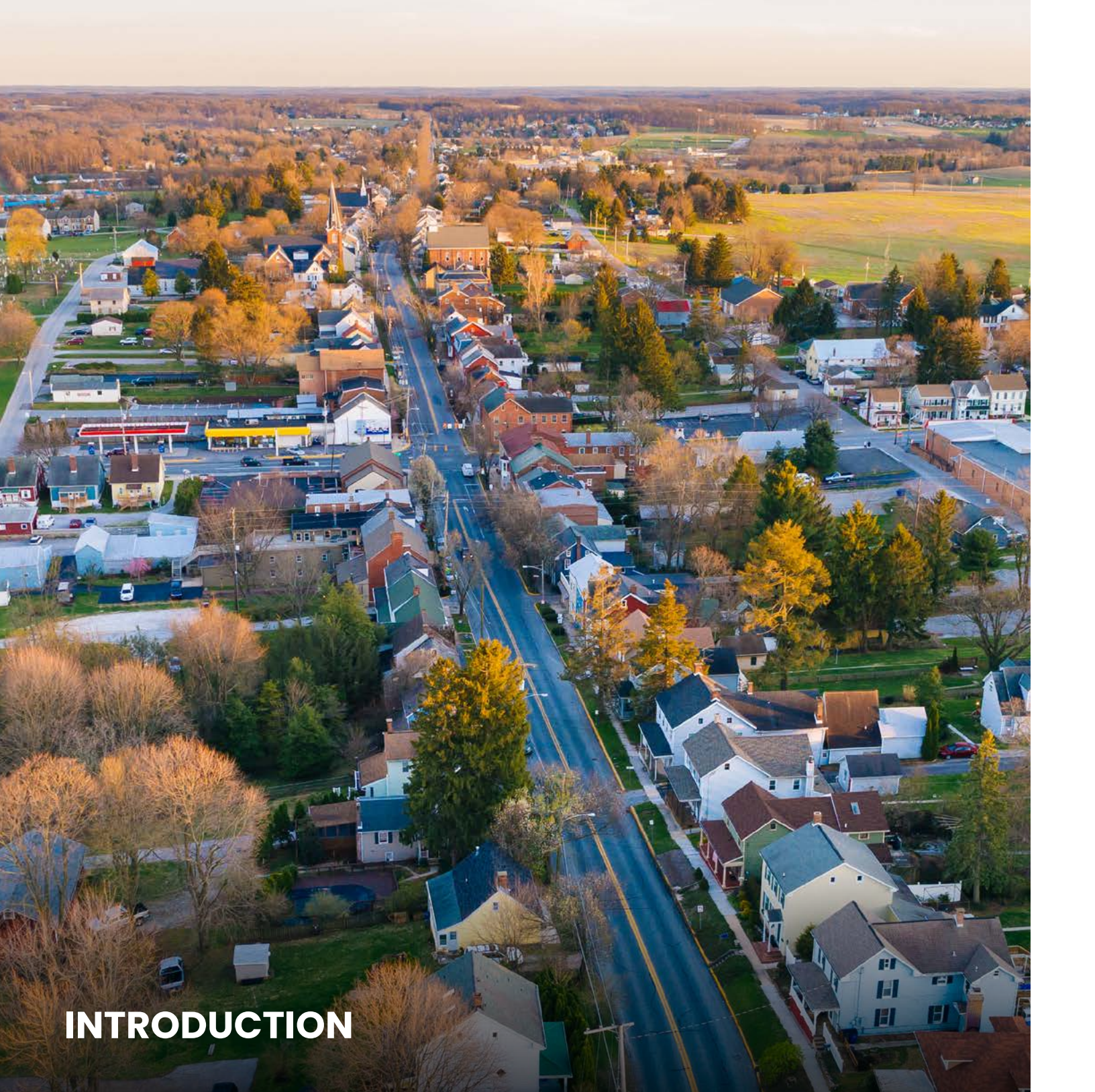


Long-term resilience to extreme heat is built on effective policies and programs. Action Track 4 focuses on how community leaders and others can advocate for strategies such as updating regulations, providing financial assistance to access cooling measures, and ensuring worker safety. Implementing these policies can provide real-time relief from extreme heat events and long-term benefits for the community.

## ADDITIONAL RESOURCES

In addition to the Action Tracks and their specific strategies, this Playbook includes additional resources to provide more support to readers looking to mitigate extreme heat in their communities. This additional information includes project highlights that provide examples of communities actively addressing extreme heat impacts, an easily accessible table of funding sources from HUD, and a list of other federal agencies that may help support heat mitigation efforts.





# INTRODUCTION

Understanding Extreme Heat

Goals of the HUD Extreme Heat Playbook



# UNDERSTANDING EXTREME HEAT

## What is Extreme Heat?

Extreme heat poses both chronic (long-term) and acute (short-term) risks. Chronic risks arise from rising average temperatures, making extreme events more common, while acute risks occur when these events actively impact communities. These conditions are defined relative to local climate norms, meaning they can vary significantly from one region to another. Regardless of where they occur, extreme heat poses serious health risks and can cause significant disruptions to daily life.

## EXTREME HEAT

A period of high heat and humidity with temperatures above 90°F for at least two to three days.

Extreme heat events occur during prolonged periods of excessively high local temperatures, including elevated nighttime temperatures that reduce the body's opportunity to cool down and get relief from the daytime heat. High temperatures are often accompanied by high humidity, which can elevate "feels like" temperatures and make it difficult to cool the body through perspiration. In addition to local climate, other factors such as land use decisions, infrastructure resilience, and community preparedness play significant roles. For instance, urban areas may experience more severe

impacts due to the urban heat island effect, while rural areas might struggle with more limited access to public cooling centers or medical facilities to address heat-related health concerns.

## What Causes Extreme Heat?

Several factors, including both long- and short-term conditions, can contribute to extreme heat impacts to a community. These factors include:

### Climate Change:

Rising global temperatures due to increased greenhouse gas emissions intensify heat waves and lead to overall higher average temperatures than in the past.

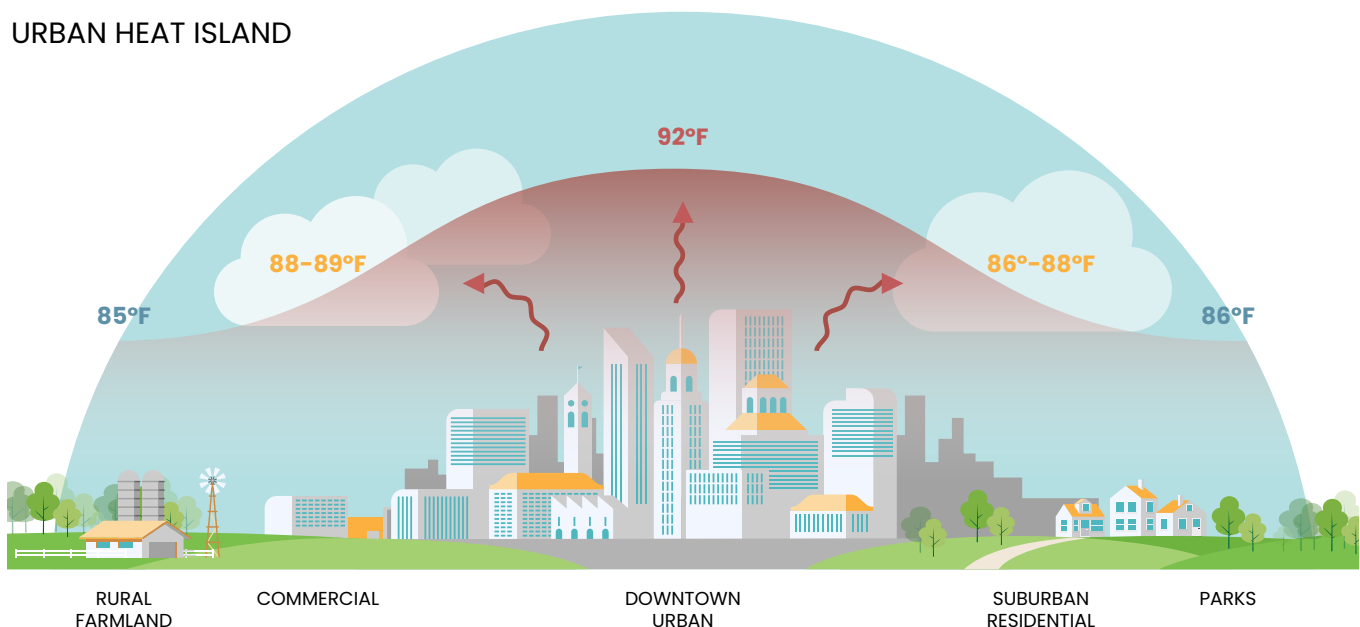
### Weather Patterns:

Short-term weather patterns, such as high-pressure systems known as 'heat domes', can trap heat in a localized area for extended periods and may lead to additional hazards such as drought or wildfires.

### Urban Heat Island Effect:

Urban areas tend to be hotter than their rural counterparts due to human activities, such as heat emitted from vehicles, buildings, and industrial processes; dense infrastructure; and limited vegetation.

## URBAN HEAT ISLAND



## Who is at Risk?

Everyone is at some level of risk when experiencing an extreme heat event, regardless of where they occur. This means that individuals in all settings, from those in large cities and suburbs to residents of small towns and tribal communities, from coastal and mountain environments to the plains and arid landscapes, stand to benefit from taking action to improve resilience to extreme heat events in their communities.

People at elevated health risk from extreme heat exposure according to [NIHHIS](#) include those who:

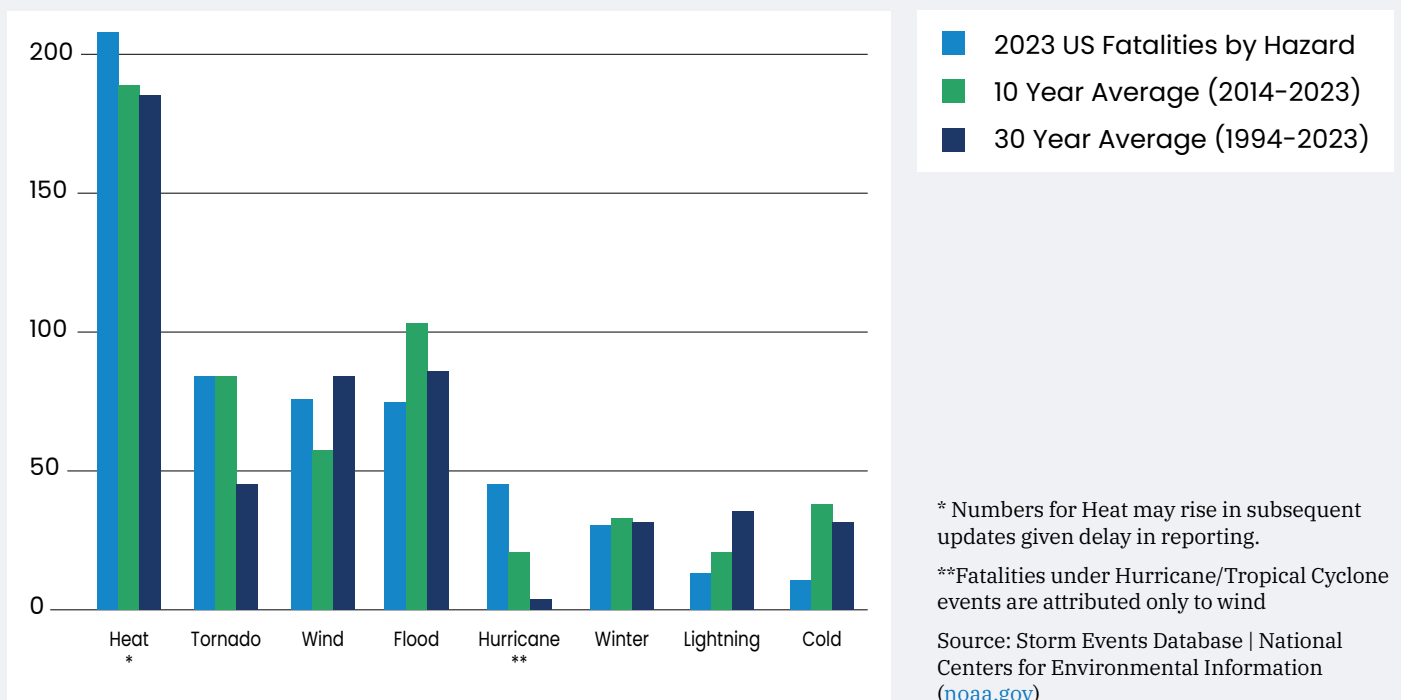
- Have increased exposure (e.g., are experiencing homelessness, are emergency responders, are athletes, and/or work outdoors, or indoors with insufficient cooling);
- Have increased biologic sensitivity (e.g., are under age 5; are age 65 or over; are pregnant; and/or have chronic health conditions such as a mental health condition, diabetes, or cardiovascular condition); and/or
- Face high socioeconomic burden and/or additional barriers to accessing cooling or healthcare (e.g., are low income, live in a low resource community, and/or have one or more disabilities).

## What Health Risks Are Increased?

Warmer temperatures increase the risk for a diverse range of health impacts. For example:

- An increased risk of **hospitalization for heart disease**.
- **Heat exhaustion**, which can lead to **heat stroke** if not treated, can cause critical illness, brain injury, and even death.
- Worsening **asthma** and **chronic obstructive pulmonary disease (COPD)** as heat increases the production of ground-level ozone.
- Dehydration, which can lead to **kidney injury** and blood pressure problems. Some kidney damage can become irreversible with repeated or untreated injury.
- Mental health and substance use risks, including **loss of sleep** and **slowing of brain cognition**, and heightened risk of **increased acute psychiatric and substance use symptoms** among people with chronic behavioral health conditions.
- Some **medications** increase the risk of heat-related illness. These include diuretic medicines or “water pills”, antihistamines including many allergy medicines, and many antipsychotic medicines. Additional Tips [for coping with hot weather for people who take medications](#).

US Weather Fatalities, 1994–2023





## THE NATIONAL HEAT STRATEGY AND HUD

Following the planet's warmest year on record and in anticipation of increasingly warming years ahead, Federal agencies developed the first ever [National Heat Strategy](#) for 2024-2030, with the aim to facilitate coordination towards **the vision for a thriving, heat-resilient nation**. The National Heat Strategy underscores the federal government's commitment to addressing the growing dangers of extreme heat. It outlines four key goals: enhancing communication and education, advancing scientific understanding, implementing protective solutions, and strengthening the National Integrated Heat Health Information System (NIHHIS) as the primary integrated federal source for heat-related health information and solutions.

HUD plays a crucial role in this effort, particularly in supporting low- and moderate-income communities that are disproportionately affected by extreme heat. Through its [Climate Action Plan](#) and Consolidated Planning regulations like [24 CFR Part 91](#), **HUD provides financial assistance, guidance, and other resources for HUD-assisted properties and communities to invest in strategies to reduce energy costs and improve the thermal comfort and heat resilience of buildings and neighborhoods.**

HUD grantees are encouraged to plan for and fund activities in their 3-5 year Consolidated Plans to address extreme heat. For grantees that receive disaster recovery appropriations, they may incorporate extreme heat resilience planning into their annual Action Plans. Activities to combat the impacts of extreme heat may include planning and program design, and rehabilitation of housing and public facilities with a focus on long term recovery.

This Extreme Heat Playbook forms an additional part of HUD's efforts to support the National Heat Strategy.



### Why Are Extreme Heat Adaptation Strategies Needed Now?

Extreme heat is increasingly the **deadliest climate hazard in the United States** (see [US Weather Fatalities](#) on page 7). Over the past twenty years, unusually hot summer days and nights have become more frequent across the country. Record-setting daily high temperatures now occur, on average, twice as often as record lows. Climate models referenced in the [Fifth National Climate Assessment](#) predict that the frequency, severity, and duration of heat waves will continue to increase in the coming decades.

Nonetheless, the sustained impact of extreme heat is often overshadowed by visible, discrete disasters like hurricanes and floods. Despite both its death toll and concerning climate model predictions, **extreme heat lacks the recognition and federal funding received by other natural disasters and hazards**. This gap hinders effective community response and preparedness during extreme heat events. Thus, there is a pressing need to formally recognize extreme heat at all levels of government and to unlock the necessary resources to urgently address the escalating crisis of heat.

Extreme heat adaptation strategies, such as those found in the Action Tracks within this Playbook, are essential to mitigate the adverse effects of extreme heat on human health, infrastructure, public services, and the economy. Without such strategies, communities are vulnerable to increased mortality rates, economic losses, and strain on public services today and into the future.

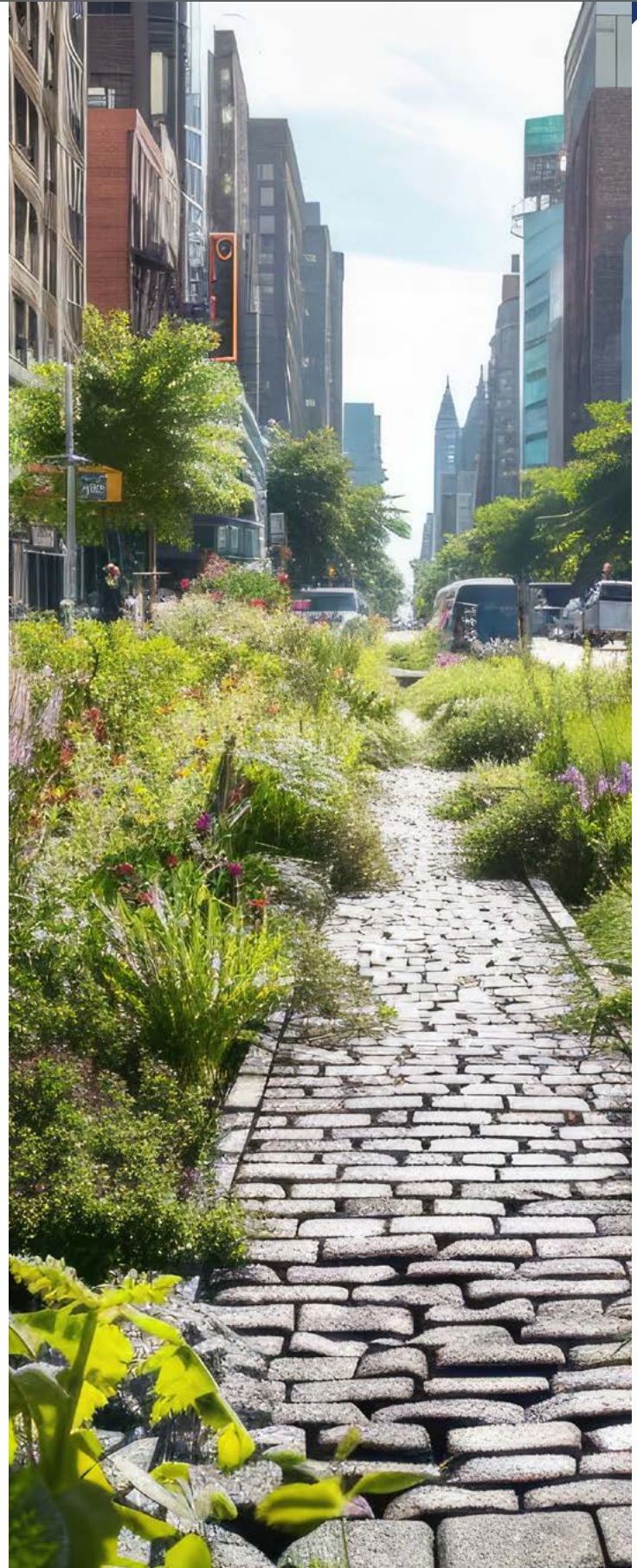


# GOALS OF THE HUD EXTREME HEAT PLAYBOOK

This Extreme Heat Playbook was developed to support HUD grantees and other stakeholders in mitigating extreme heat impacts in their communities. The Playbook offers methods for assessing community strengths, vulnerabilities, and capabilities, using frameworks like the NOAA and NIHHS Maturity Model for Heat Governance. It provides actionable guidance for planning and implementing mitigation strategies, while considering common constraints such as limited time and funding. The Playbook also emphasizes continuous re-evaluation of community needs and resources to adapt to changing conditions, and centers equity in all approaches to build long-term resilience.

The goals of this Playbook are to:

- **Highlight the urgency** of building extreme heat resilience as climate change increases the frequency and severity of such events.
- **Empower users** to assess their community's strengths, vulnerabilities, and capabilities in addressing extreme heat hazards.
- **Provide actionable steps** for planning and implementing mitigation measures to enhance community resilience.
- **Support continuous re-evaluation** of community needs and resources to adapt to evolving extreme heat risks.
- **Prioritize equity** to systematically mitigate the risk of a community's most vulnerable populations to ensure inclusive and sustainable resilience.



# ACRONYMS

**ACEEE:** American Council for an Energy-Efficient Economy

**AIA:** American Institute of Architects

**BGI:** Blue and Green Infrastructure

**BPI:** Building Performance Institute

**CBO:** Community-Based Organization

**CDC:** Centers for Disease Control

**CHO:** Chief Heat Officer

**CRRC:** Cool Roof Rating Council

**DOE:** U.S. Department of Energy

**EJCS:** Environmental Justice Collaborative Problem-Solving

**EJG2G:** Environmental Justice Government-to-Government

**EPA:** U.S. Environmental Protection Agency

**ESG:** HUD Emergency Solutions Grants

**IRS:** Internal Revenue Service

**FEMA:** Federal Emergency Management Agency

**HACLA:** Housing Authority of the City of Los Angeles

**HHS:** Department of Health and Human Services

**HUD:** U.S. Department of Housing and Urban Development

**HVAC:** Heating, Ventilation, and Air Conditioning

**LEED:** Leadership in Energy and Environmental Design

**LIHEAP:** Low-Income Home Energy Assistance Program

**NCHH:** National Center for Healthy Housing

**NIH:** National Institutes of Health

**NIHHIS:** National Integrated Heat Health Information System

**NATE:** North American Technical Excellence

**NGO:** Non-Governmental Organization

**NIOSH:** National Institute for Occupational Safety and Health

**NJDEP:** New Jersey Department of Environmental Protection

**NOAA:** National Oceanic and Atmospheric Administration

**NREL:** National Renewable Energy Laboratory

**NWS:** National Weather Service

**NYSERDA:** New York State Energy Research and Development Authority

**O&M:** Operations and Maintenance

**OBC:** Overburdened Community

**OSHA:** Occupational Safety and Health Administration

**PHIUS:** Passive House Institute US

**PIRS:** Plan Integration for Resilience Scorecard for Heat™

**PPE:** Personal Protective Equipment

**RESNET:** Residential Energy Services Network

**TNC:** The Nature Conservancy

**TTX:** Tabletop Exercise

**UNEP:** United Nations Environment Programme

**USDA:** U.S. Department of Agriculture

**USDN:** Urban Sustainability Directors Network

**WAP:** Weatherization Assistance Program

## KEY TERMS

**Acute Risks:** Immediate, severe threats posed by sudden or intense events, such as extreme heat waves, which can lead to rapid health emergencies, infrastructure failure, or ecological disruption.

**Albedo:** A measure of how much light or radiation is reflected by a surface, with higher albedo surfaces reflecting more and absorbing less heat, making them important in controlling a building's heat gain.

**Blue-Green Infrastructure:** Infrastructure that combines elements of both blue (water-based) and green (plant-based) systems to manage water resources in a sustainable way while providing cooling benefits and enhancing urban resilience. This approach includes features like rain gardens, bioswales, permeable pavements, and green roofs that help manage stormwater, reduce urban heat, improve air quality, and increase biodiversity in urban settings.

**Chronic Risks:** Ongoing threats that occur due to prolonged exposure to certain conditions, such as consistently high temperatures, leading to long-term health, environmental, and structural issues.

**Climate Change:** Rising global temperatures due to increased greenhouse gas emissions intensify heat waves and lead to overall higher average temperatures than in the past.

**Community:** A group of people living in the same area who share common interests and concerns. In the context of heat and health, it refers to residents of a neighborhood, city, or region who may be impacted by heat together.

**Cooling Centers:** Public spaces like libraries, malls, or community centers designated to provide relief from extreme heat, especially for vulnerable populations.

**Cool Pavements:** Pavement technologies that reflect more solar energy and absorb less heat, contributing to lower surface and ambient temperatures in urban environments.

**Environmental Justice:** The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. In the context of heat, it ensures all communities have the resources and support to cope with heat impacts.

**Extreme Heat:** Significantly above-average temperatures that can occur during heat waves or as a result of an exacerbated urban heat island effect. Extreme heat can impact public health, energy resources, and ecosystems.

**Extreme Heat Event:** A period of high heat and humidity with temperatures above 90°F for at least two to three days with both elevated daytime and nighttime temperatures.

**Heat:** The form of energy transferred between systems or objects with different temperatures (flowing from the higher to lower temperature system). In weather terms, it often refers to the perceptible increase in air temperature felt by humans.

**Heat Action Plans:** City- or community-level strategies designed to mitigate the impacts of extreme heat through preparedness, public education, and infrastructure improvements.

**Heat Domes:** High-pressure systems that can trap heat in a localized area for extended periods of time.

**Heat Equity:** Addressing disproportionate exposure to extreme heat among vulnerable populations, particularly in low-income housing or marginalized communities lacking access to cooling resources.

**Heat Exhaustion:** A condition caused by prolonged exposure to high temperatures, often accompanied by dehydration. Symptoms include heavy sweating, weakness, dizziness, nausea, and a rapid pulse. It is a precursor to heat stroke and requires immediate cooling and hydration to prevent escalation.

**Heat Index:** A measure that combines air temperature, wind speed, and relative humidity to determine an apparent temperature—how hot it feels. Also referred to as “feels like” temperature.

**Heat-Related Illnesses:** Medical conditions, including burns and, in order of severity, heat cramps, heat exhaustion, and heat stroke caused by the body's inability to regulate core temperature during extreme heat events or withstand contact with extremely hot surfaces.

**Heat Resilience:** The capacity of individuals, communities, organizations, and natural systems to survive, adapt, and grow in the face of prolonged periods of intense heat.

## KEY TERMS

**Heat Stress:** The strain on human health caused by prolonged exposure to high temperatures, particularly in poorly ventilated or non-climate-controlled housing.

**Heat Stroke:** A severe and potentially life-threatening condition resulting from prolonged exposure to extreme heat, causing the body's temperature regulation system to fail. Symptoms include a body temperature above 104°F (40°C), confusion, unconsciousness, lack of sweating, and a rapid or strong pulse. Immediate medical attention is required to prevent serious complications or death.

**Heatwave:** A prolonged period of excessively hot weather, often accompanied by high humidity, that lasts for several days or more; can lead to serious health risks, especially for vulnerable populations, and can exacerbate existing conditions like air pollution, drought, and energy demand. They are typically defined relative to the usual climate of a location and can vary in severity based on temperature thresholds.

**Humidity:** The amount of moisture in the air, which can intensify the feeling of heat during a heatwave and increase the risk of heat-related illnesses.

**Mechanical Cooling:** Indoor cooling using technology such as air conditioners, heat pumps, and evaporative coolers.

**Nature-Based Solutions:** Actions that utilize nature to address social challenges. Examples include planting trees for shade, creating green roofs to cool buildings, or restoring wetlands to manage water flow, which can all help mitigate heat impacts.

**Passive Cooling:** Techniques such as smart ventilation, shading devices, and cool roofs that reduce the overall cooling load on buildings and enhance energy efficiency by reducing the need for mechanical cooling.

**Public-Private Partnership:** Generally, a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance.

**Reflective Materials:** Materials that have high reflectivity, used on building exteriors, streets, and walkways to reduce heat absorption and lower surrounding air temperatures.

**Resilience Hub:** Community-serving, locally managed facilities that provide tailored, essential services and shelter during emergencies and foster long-term resilience with coordinated communication, resource distribution, and carbon reduction while improving quality of life across five foundational areas: services and programs, communications, building and landscape, power, and facility operations. Also known as resilience centers.

**Temperature:** A measure of the warmth or coldness of an object or environment, typically expressed in degrees (Celsius, Fahrenheit, etc.). In the context of weather, it is one of the primary metrics used to describe the state of the atmosphere at a given time and place.

**Thermal Comfort:** The measurement of a person's satisfaction with their thermal environment - how hot or cold they feel. An individual's thermal comfort is influenced by weather and environmental factors as well as personal factors like metabolic rate, clothing worn, age, and more.

**Thermal Mass:** The ability of a material to absorb, store, and release heat energy. High thermal mass materials can help regulate indoor temperatures by absorbing heat during the day and releasing it at night, thus reducing temperature fluctuations.

**Tree Canopy:** The layer of leaves, branches, and stems of trees that provide coverage and shade over the ground.

**Urban Heat Island (UHI)** - An urban area that is significantly warmer than its surrounding areas due to human activities, such as the extensive use of concrete and asphalt which absorb and retain heat, as well as limited vegetation.

**Vulnerable Populations:** Groups of individuals with a greater risk of heat-related illness or death due to health factors (chronic illness, medication that limits sweating, disability), socioeconomic factors (living in an urban heat island, living alone, low-income), or greater exposure to heat (working outdoors or without air conditioning, experiencing homelessness, exercising strenuously).

**Weatherization:** The process of sealing homes against heat entry through improved insulation, windows, and doors.



# ACTION TRACKS

How to Read the Strategies

Action Track 01: Partnership, Planning, & Preparedness



Action Track 02: The Heat-Resilient Building



Action Track 03: The Heat-Resilient Community



Action Track 04: Policy & Programs



# OVERVIEW OF ACTION TRACKS



## ACTION TRACK 01: PARTNERSHIP, PLANNING, & PREPAREDNESS

17

1.1: Needs Assessments .....	18
1.2: Emergency Heat Response Plans and Tabletop Planning .....	20
1.3: Public Awareness and Education Campaigns .....	22
1.4: Community Heat Alert Systems .....	24



## ACTION TRACK 02: THE HEAT-RESILIENT BUILDING

26

2.1: Energy Efficiency Audits and Retrofits .....	27
2.2: Heat-Resilient Building Practices .....	29
2.3: Cool Surfaces: Roofs, Walls, and Pavement .....	31
2.4: Cooling Technologies .....	33



## ACTION TRACK 03: THE HEAT-RESILIENT COMMUNITY

35

3.1: Public Cooling Centers .....	36
3.2: Blue-Green Infrastructure Implementation .....	38
3.3: Blue-Green Infrastructure Maintenance .....	40
3.4: Urban and Community Forest Plan .....	42



## ACTION TRACK 04: POLICY & PROGRAMS

44

4.1: Policy Measures for Heat Resilience .....	45
4.2: Energy Bill Assistance Programs .....	47
4.3: Cooling System Distribution Programs .....	49
4.4: Local Labor Practices for Heat Safety .....	51

# HOW TO READ THE STRATEGIES

This section contains four **Action Tracks** and their related strategies for mitigating extreme heat in urban environments and communities more broadly. The **Strategies** described within each Action Track provide different scales and timeframes for addressing extreme heat. Some may be ready to be implemented right away, with the potential to deliver immediate benefits to communities, while others will require deep commitments from multiple players.

## STRATEGY PAGE 1

### ACTION TRACK CROSS REFERENCE

Within the Playbook, many Strategies complement each other. These are provided as links at the beginning of each Strategy. Click the tile to go to the corresponding strategy.



### STRATEGY COMPONENTS

Each **Strategy** contains five recurring components that are clearly labeled to help readers to quickly find the information they need.

There are five components to each Strategy:

#### Background

Describes the strategy, its role in addressing extreme heat, and its importance as a mitigation tool.

#### Key Actions

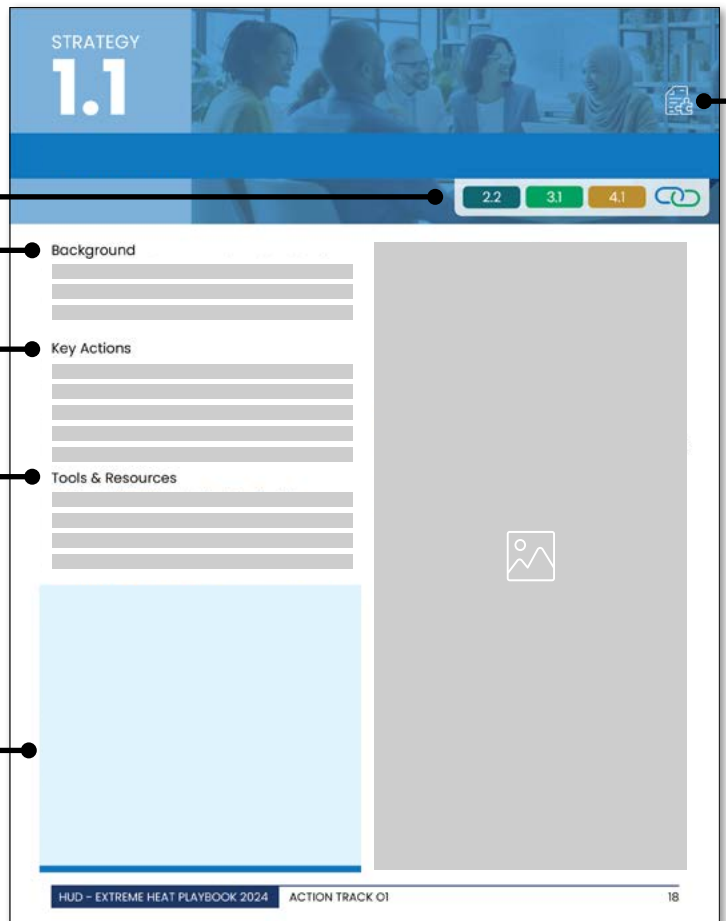
Explains key actions required for planning and implementing the strategy.

#### Tools & Resources

Offers links to additional information supporting the strategy.

### CALLOUT BOXES

Call out boxes with additional information related to aspects of the specific Strategy and its implementation.



### ACTION TRACK ICON IDENTIFIERS

Each Action Track has an associated icon for easy reference throughout the document.

# STRATEGY PAGE 2

**STRATEGY 1.1**

**In Action**

Actors	Actions	Roles

**PROJECT HIGHLIGHT:**

Project Lead: \_\_\_\_\_ Project Description: \_\_\_\_\_

Total Project Cost: \_\_\_\_\_ Project Timeline: \_\_\_\_\_

Funding Source: \_\_\_\_\_

HUD - EXTREME HEAT PLAYBOOK 2024 ACTION TRACK 01 19

## STRATEGY COMPONENTS

### In Action

Outlines roles and responsibilities for executing the strategy. Note that there are some actions that may be taken by multiple actors. This section suggests a starting point.

### Project Highlight

Details examples of the strategy's implementation, funding, and guidance for those following this approach.

## ACTORS

The **In Action** component highlights important roles that various Actors can take in Key Actions. These Actors are represented by Icons described below:



### Government

Shapes and manages policies, laws, services, and codes at various levels (Federal, Tribal, State, and local) to support nationwide and community-specific extreme heat resilience and mitigation.



### Private Sector

Incorporates heat mitigation in operations to protect employees and clients, contributing to broader community resilience.



### Community Based Organizations

Address local needs through outreach and organizing efforts focused on extreme heat awareness and preparedness.



### Public and Private Housing Owners, Managers and Tenants

Retrofit buildings with cooling technologies to protect residents and reduce heat-related risks.



### Educational & Training Institutions

Educate and develop skills on extreme heat solutions and preparedness.



### Technical & Research Partners

Offer expertise, innovation, and solutions to help communities and businesses address extreme heat challenges.



### Public Health

Addresses the physical impacts of extreme heat through treatment, education, and community outreach.



### Utilities

Provide assistance with heat resilience by ensuring reliable access to water, electricity, and cooling resources.



### News Media

Disseminates timely information on extreme heat conditions and available resources to the public.





## INTRODUCTION

Extreme heat is a significant and growing threat that requires a whole-of-society approach. Action Track 1 serves as the essential starting point for building resilience against extreme heat by focusing on identifying vulnerabilities, fostering partnerships, and developing comprehensive plans for preparedness.

This section lays the groundwork by emphasizing the importance of **Needs Assessments** to identify and engage with populations at risk and pinpoint local hot spots. Effective assessments guide the strategic placement of cooling centers and other interventions. **Emergency Heat Response Plans and Tabletop Planning** are crucial for ensuring that local governments, schools, hospitals, and community centers can coordinate rapid responses during heat events. These plans should incorporate cooling and resilience centers, transportation strategies, and alignment with other planning requirements.

Public awareness is another key element, as highlighted in **Public Awareness and Education Campaigns**. Educating communities on the dangers of extreme heat, identifying high-risk populations, and promoting actionable guidance can significantly reduce the impact of heat events. Strengthening the capacity of community-based organizations (CBOs) and building neighborhood networks further enhances local resilience.

**Community Heat Alert Systems** are vital for translating complex weather data into clear, actionable guidance for the public. Integrating tools like [NOAA's HeatRisk](#) and ensuring the alerts are widely disseminated can help communities take timely protective actions.

This foundational work supports and feeds into the broader strategies and action tracks that follow, ensuring a cohesive and comprehensive approach to tackling extreme heat.

## STRATEGIES

1.1: Needs Assessments .....	18
1.2: Emergency Heat Response Plans and Tabletop Planning .....	20
1.3: Public Awareness and Education Campaigns .....	22
1.4: Community Heat Alert Systems .....	24



## NEEDS ASSESSMENTS

2.2

3.1

4.1



### Background

A comprehensive needs assessment is a process in which a group identifies the needs of a community, evaluates and prioritizes those needs, and uses that information to make decisions on allocating resources and implementing interventions to enhance resilience. When conducting a needs assessment a community should consider its vulnerable populations, existing resources, and local hot spots.

### Key Actions

A Needs Assessment is the first step in addressing extreme heat. It requires continuous improvement, feedback loops, and a focus on equity. Community engagement is key, involving diverse stakeholders, fostering cross-sector collaboration, and addressing fragmented decision-making as needs evolve over time.

### Tools & Resources

[NOAA and NIHHS Maturity Model for Heat Governance](#)

[Plan Integration for Resilience Scorecard \(PIRS™\)](#)

[Heat.gov Compilation of Tools](#)

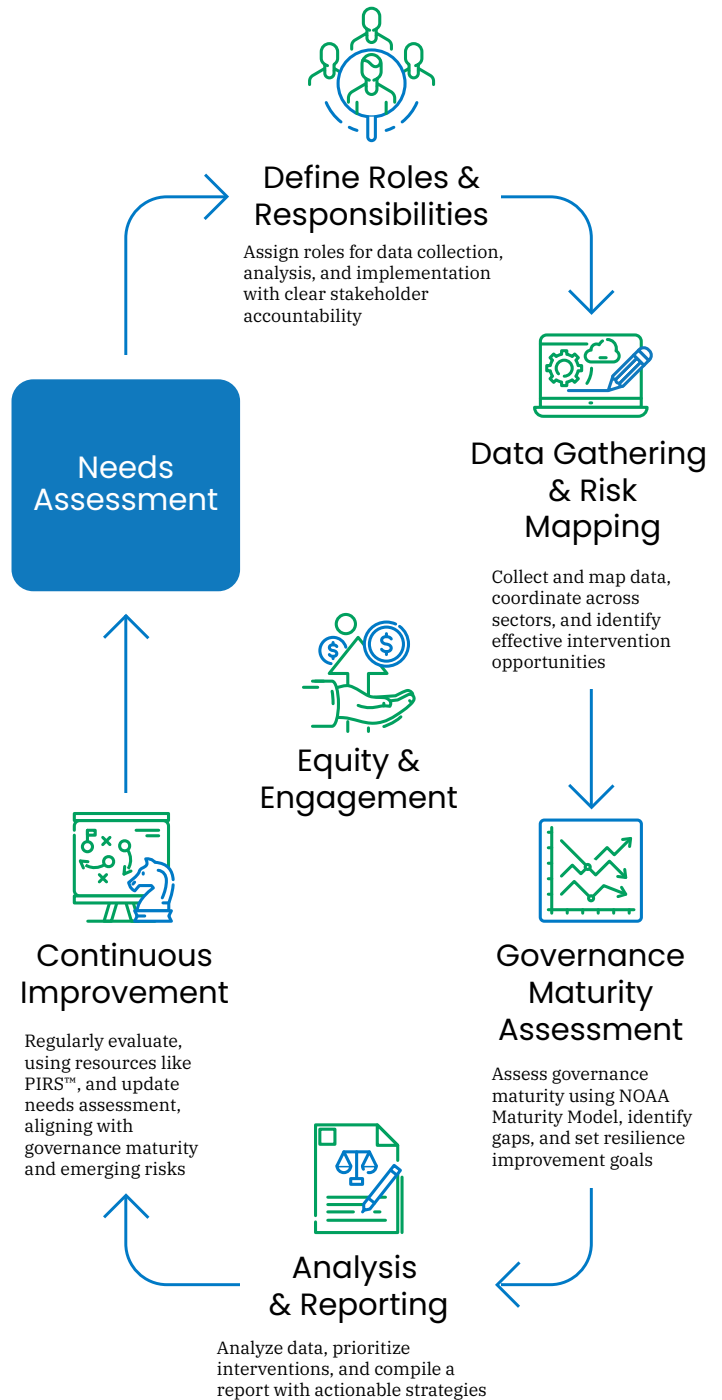
[NOAA and NIHHS Urban Heat Island Mapping](#)

### CHIEF HEAT OFFICER


A Chief Heat Officer (CHO) is a designated official within a city or region whose primary role is to coordinate and oversee all aspects of heat management and mitigation.

First piloted by Arsht-Rock, a growing number of mayors and other leaders are appointing CHOs to accelerate existing heat protection efforts and initiate work to reduce the risks and impacts of extreme heat for residents and constituents.

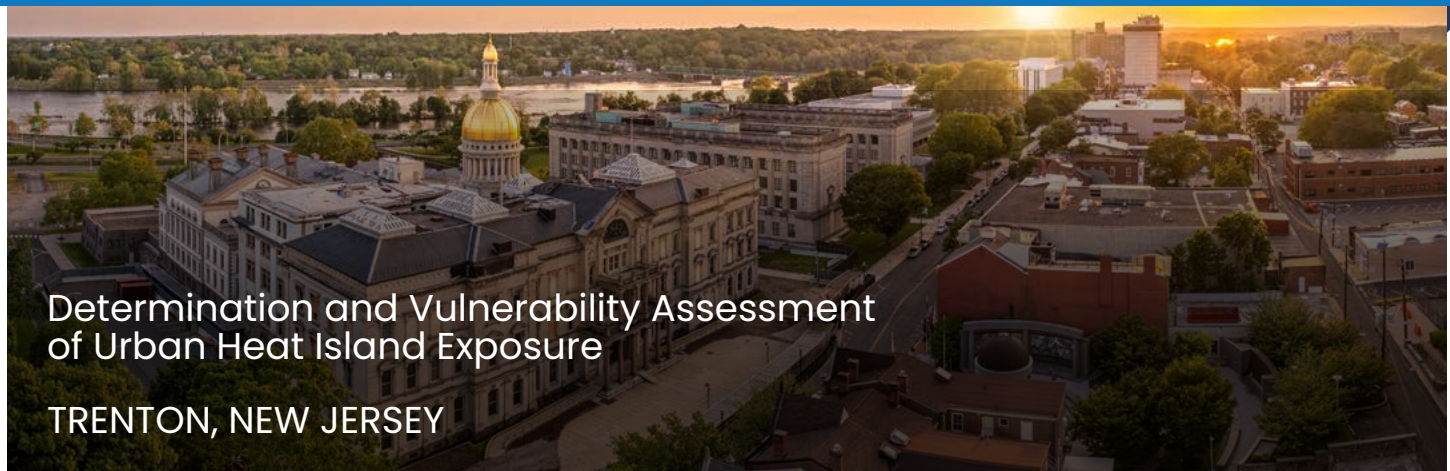
See [Chief Heat Officers - Arsht-Rock](#) for guidance.



In Action

Actors	Actions	Roles
	Facilitate community-driven data collection to create detailed urban heat island maps and actively involve vulnerable populations in identifying local heat risks.	Extreme Heat Response Coordinator, Vulnerability Assessment Specialist
	Review and assess local emergency response plans for heat resilience, recommending enhancements to ensure equitable access to cooling centers and resources.	Heat Resilience Planner, Resilience Curriculum Developer
	Develop standardized protocols for extreme heat assessments, enhance inter-agency communication, and allocate funds for the deployment of advanced weather monitoring equipment.	Heat Policy Analyst, Inter-Agency Coordination Director
	Perform comprehensive Needs and Governance Maturity Assessments; establish a dedicated taskforce to synchronize stakeholder efforts in extreme heat mitigation.	Policy Advisors within State Climate Office or Emergency Services Departments

PROJECT HIGHLIGHT: URBAN HEAT ISLAND ASSESSMENT



Determination and Vulnerability Assessment of Urban Heat Island Exposure

TRENTON, NEW JERSEY

Project Lead

[New Jersey Department of Environmental Protection](#) (NJDEP)

Total Project Cost

\$1,000,000

Project Timeline

2024 - 2027

Funding Source

[EPA EJ Government-to-Government Program](#)

Project Description

NJDEP will conduct heat vulnerability assessments for [Overburdened Communities](#) (OBCs). Initial areas will be identified utilizing the state’s [Environmental Justice Mapping Tool](#) and the specific communities will be extracted from these areas in collaboration with local community groups. Once the assessments are complete, NJDEP will communicate the findings to the OBCs and work to develop heat mitigation strategies with community partners.



## EMERGENCY HEAT RESPONSE PLANS AND TABLETOP PLANNING

3.1

4.4



### Background

Extreme heat events are happening every year, and they are getting hotter and lasting longer. Individuals and institutions need to plan for extreme heat and stress test these plans to ensure that an efficient and coordinated response occurs when the heat comes.

### Key Actions

#### Develop Emergency Heat Response Plans

Develop heat-specific response plans for local governments, schools, hospitals, and community centers. Incorporate the Strategies and resources within this Playbook, adjusted to regional needs. Plans may enhance federal funding competitiveness by showcasing climate adaptation preparedness.

#### Conduct Tabletop Exercises

Engage communities and stakeholders in Tabletop Exercises (TTXs) for heat ([NOAA and NIHHS TTX Guide](#)) to test and refine Emergency Heat Response Plans, and to strengthen partnerships and coordination across agencies and organizations. Include scenarios that assess access and effectiveness of cooling centers and transportation logistics. Utilize the NOAA and NIHHS Introduction to Heat Tabletop Planning and Coordination to get started.

### TABLETOP EXERCISES

A tabletop exercise (TTX) is a simulation tool where participants engage in structured discussions on emergency scenarios within a conference room setting, to improve preparedness. These exercises typically take six to nine months to complete and allow communities to assess responses, identify gaps, and strategize long-term risk management for scenarios like extreme heat events. A best practice guide for Heat TTX is provided in the resources section.



Image Source

### Tools & Resources

#### Emergency Heat Response Plan Examples:

[HHS Extreme Heat Response Plan Template](#)

[North Carolina Heat Action Plan Toolkit](#)

[Phoenix Heat Response Plan](#)

[San Diego Excessive Heat Response Plan](#)




#### Tabletop Planning Best Practices & Funding:

[NOAA and NIHHS Heat Tabletop Planning and Coordination](#)

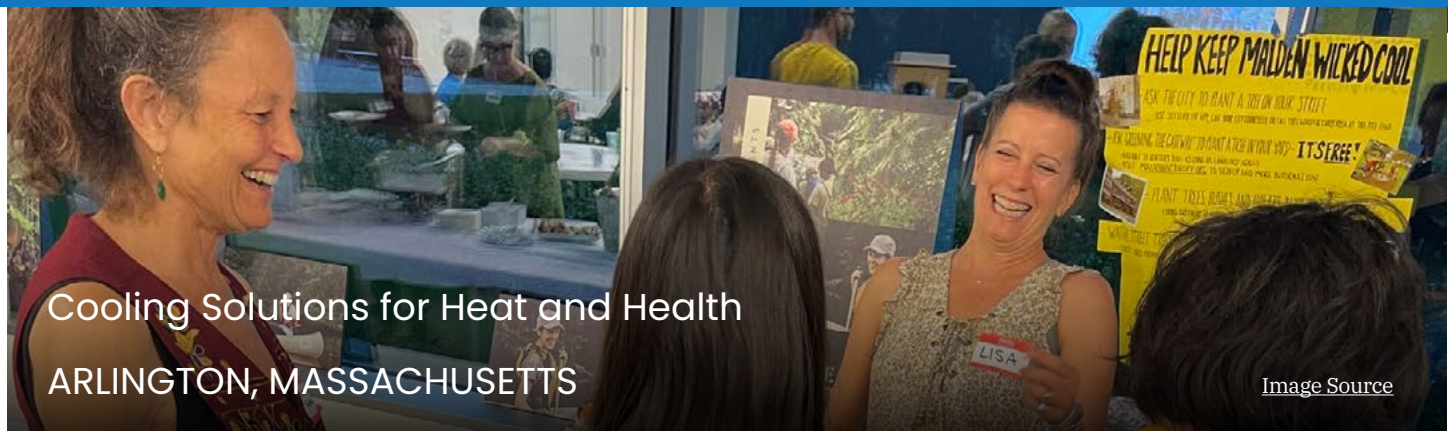
[Resilient Cities Network Paris at 50°C \(122°F\): Heat Dome Exercise Webinar](#)

[NIHHS Heat TTX Planning Challenge](#)

In Action

Actors	Actions	Roles
	Mobilize community resources and volunteers to participate in crafting and executing localized Emergency Heat Response Plans for vulnerable groups. Facilitate and support TTXs.	Extreme Heat Response Coordinator, Volunteer Manager
	Lead TTXs, providing data insights and academic expertise to refine emergency plans. Offer specialized training and support.	TTX Facilitator, Emergency Planning Trainer
 Local, Tribal	Lead development and implementation of comprehensive Heat Response Plans, ensuring inclusivity and effectiveness through TTXs.	Chief Heat Officer, Tribal Climate Resilience Liaison
	Integrate medical protocols and healthcare strategies into local Emergency Heat Response Plans, emphasizing high-risk groups.	Public Health Coordinator, Emergency Response Planner

PROJECT HIGHLIGHT: CONNECTING COMMUNITIES



Cooling Solutions for Heat and Health  
ARLINGTON, MASSACHUSETTS

[Image Source](#)

Project Lead

[Mystic River Watershed Association](#)

Total Project Cost

\$500,000

Project Timeline

2024 – 2027

Key Collaborators/Stakeholders

[Green Roots](#)

[Everett Community Growers](#)

[Chinese Culture Connection](#)

[Cambridge Health Alliance](#)

Funding Source

[EPA EJ Collaborative Problem-Solving Program](#)

Project Description

The project aims to empower three urban communities disproportionately affected by heat and poor air quality. It convenes residents, community organizations, local government, and health groups to develop localized cooling interventions for a toolkit. Outreach efforts include community workshops, direct resident engagement, and regional online webinars, all designed to build these communities’ capacity to adapt to extreme heat.



## PUBLIC AWARENESS AND EDUCATION CAMPAIGNS

2.1

2.2

2.3

3.1

4.4



### Background

Public awareness and education campaigns are essential for equipping individuals with the knowledge to recognize heat risks and take appropriate actions. By increasing awareness, these campaigns empower communities to protect themselves and others, reducing vulnerability to the dangers of extreme heat events.

### Key Actions

#### Expand Public Awareness

Using traditionally trusted messengers, educate communities on extreme heat risks, high-risk populations, and appropriate responses. Encourage individuals to recognize their vulnerabilities, understand the dangers of extreme heat, and take specific, informed actions. Where relevant, address perceptions of heat as “normal” and the need for heightened precautions during extreme events.

#### Teach Effective Adaptations

Acknowledge existing individual adaptations to heat (e.g., gathering at a family member’s air-conditioned home, running fans and using wet towels, going outside in the morning or at night, opening windows for ventilation, or closing blinds to keep out the sun) while

raising awareness of adaptations that can be ineffective or dangerous during extreme heat events.

#### Train Frontline Workers

Equip those most exposed to extreme heat or who interact with vulnerable populations to recognize and respond to heat-related illnesses.

#### Strengthen CBO Capacity

Identify gaps in community-based organizations’ ability to respond to extreme heat and enhance their programs, volunteer networks, and funding.

#### Build Neighborhood Networks

Create local support systems to identify and assist vulnerable community members during extreme heat events, such as by knocking on doors to check on vulnerable neighbors.



### USE CAUTION WITH FANS

Fans can cool the body up to 95°F by aiding sweat evaporation, but are ineffective above 95°F, especially for older adults or those with impaired sweating. Awareness campaigns should discourage fan use beyond this temperature and focus on improving access to more effective cooling methods like air conditioning.



### Tools & Resources




[EPA Excessive Heat Events Guidebook](#)

[Climate Central Extreme Heat Toolkit](#)

[EPA Let’s Talk About Heat Challenge](#)

[Los Angeles Regional Collaborative Extreme Heat Campaign](#)

In Action

Actors	Actions	Roles
 Local, Tribal	Initiate and lead public awareness campaigns on extreme heat risks and prevention, in collaboration with local media and community groups.	Chief Heat Officer, Public Health Officials, Communications Directors
	Leverage popular social media influencers to drive engagement in extreme heat awareness and preparedness campaigns, use various platforms to reach a diverse audience effectively.	Public Safety Broadcaster, Heat Campaign Manager
	Create and optimize digital platforms to extend the impact and accessibility of extreme heat public awareness campaigns.	Digital Platform Developer, Outreach Specialist

PROJECT HIGHLIGHT: CAPACITY BUILDING AND YOUTH EDUCATION



Building Rural Community Capacity and Youth Education on Air Quality and Climate Resilience  
 AMHERST, MASSACHUSETTS

Project Lead

[Hitchcock Center for the Environment](#)

Total Project Cost  
**\$500,000**

Project Timeline  
**2024 – 2027**

Key Collaborators/Stakeholders

[Healthy Air Network Partners](#)

Funding Source

[EPA EJ Collaborative Problem-Solving Program](#)

Project Description

Existing community-based efforts will be expanded integrating extreme heat as a key climate risk to the Healthy Air Network. This project will expand the Network’s monitoring, training, and education initiatives, with a focus on empowering youth teams to develop environmental action projects that address the intersection of climate change, air quality, extreme heat, and health. The project aims to develop an “interconnected airshed” approach, fostering collaboration among neighboring communities to tackle air quality and extreme heat together. The public awareness campaign will directly involve the community in data collection, ensuring that the information shared is both relevant and impactful.

## COMMUNITY HEAT ALERT SYSTEMS

3.1



### Background

Community heat alerts translate complex weather data into actionable guidance. Leveraging tools like NOAA's HeatRisk, these systems initiate local responses during extreme heat events, empowering communities with clear, understandable information.

### Key Actions

#### Use the HeatRisk Tool

Integrate NOAA's HeatRisk tool to align community alerts with NWS advisories, tailoring responses based on localized risk levels.

#### Simplify Messaging

Use designated color codes, familiar terms, and clear numerical benchmarks instead of technical jargon to ensure that the public easily understands the information and the steps needed to respond.

#### Establish Local Triggers

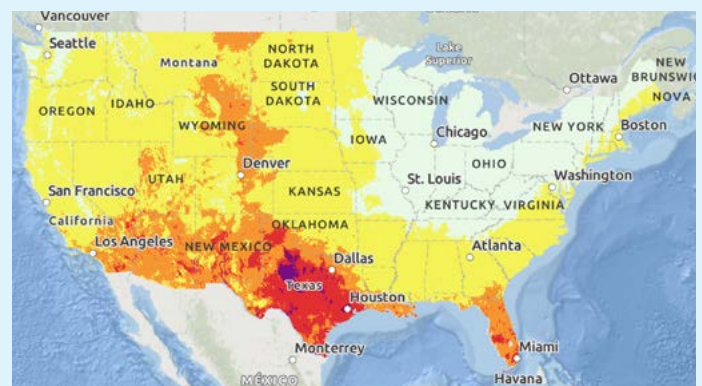
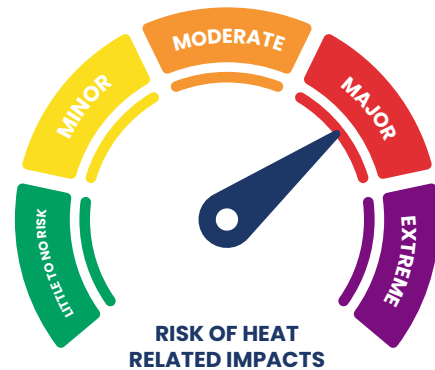
Establish locally relevant thresholds, informed by HeatRisk data, to trigger alerts and emergency responses. The temperature reaching a certain number, such as 95°F, is a common trigger for when to send alerts.

#### Leverage Multiple Channels

Distribute alerts through text messages, social media, outdoor signage, and local news media to reach diverse community members. Provide alerts in multiple languages spoken in the community.

#### Provide Actionable Guidance

Clearly outline specific steps individuals should take in response to heat alerts, avoiding vague or unclear instructions.



The National Weather Service integrated health-based temperature thresholds that were provided by CDC with local temperature parameters to devise HeatRisk, an experimental color-numeric-based index that provides a forecast risk of heat-related impacts to occur over a 24-hour period across the US.

### Tools & Resources

[FEMA Integrated Public Alert & Warning System](#)

[North Carolina Heat Action Plan Toolkit](#)


[NOAA/CDC HeatRisk Tool](#)

[NWS Heat Watch vs. Warning](#)

[Canadian Heat Alert and Response Systems to Protect Health: Best Practices Guidebook](#)



In Action

Actors	Actions	Roles
	Coordinate targeted outreach to ensure heat alerts are comprehensible to vulnerable populations, using traditional and digital methods.	Heat Health Outreach Coordinator, Homeless Shelter Coordinators
 Local, Tribal	Develop a Community Heat Alert System incorporating HeatRisk data, ensuring alerts are in plain language and widely distributed.	Chief Heat Officer, Heat Emergency Coordinator
	Broadcast timely heat alerts using traditional sources as well as social media channels, providing clear and actionable guidance to enhance public understanding and response.	Heat Alert Broadcaster, Public Guidance Specialist
	Integrate HeatRisk data into customer communications, focusing on energy management and proactive measures during extreme heat.	Customer Communication Specialist, Energy Management Advisor

PROJECT HIGHLIGHT: REGIONAL RESIDENT AWARENESS



**Project Lead**  
[North Carolina Department of Health and Human Services](#)

**Effort Needed:** 40 hours pre-heat season prep; 5 hours each week to prepare and send alert messages

**Year Completed**  
**CONTINUOUS**

**Key Collaborators/Stakeholders**  
[North Carolina Climate and Health Program](#)  
[North Carolina Disease Event Tracking and Epidemiologic Collection Tool \(NCDETECT\)](#)  
[Duke Heat Policy Innovation Hub](#)

**Funding Source**  
[CDC BRACE Cooperative Agreement](#)

**Project Description**  
 The Heat Health Alert System allows for residents to receive heat alerts via email when the daily maximum heat index is forecasted to meet or exceed the heat index threshold in the region. Alerts are available in English and Spanish.





## INTRODUCTION

As extreme heat events become more frequent and severe, the built environment must be adapted to protect communities and reduce energy demand. Action Track 2 focuses on enhancing building resilience to heat, ensuring that indoor environments remain comfortable and energy efficient.

The first strategy involves the identification and addressing of energy waste in buildings through **Energy Efficiency Audits and Retrofits**. By targeting inefficiencies and implementing retrofits, buildings can reduce energy consumption, lower cooling costs, and enhance their resilience to rising temperatures.

**Heat-resilient Building Practices** such as reflective materials, enhanced insulation, and passive cooling techniques provide opportunities for heat-resilience at multiple scales. These practices help minimize heat absorption and reduce reliance on mechanical cooling, making buildings more comfortable and energy-efficient during extreme heat.

**Cool Surfaces**—reflective roofs, walls, and pavements—mitigates the urban heat island effect by reflecting sunlight and absorbing less heat. This strategy is essential for creating cooler urban environments and providing relief during extreme heat events.

Finally, **Advanced Cooling Technologies** integrate energy-efficient heating, ventilation, and air conditioning (HVAC) systems, passive cooling methods, and renewable energy sources to reduce heat-related health risks, particularly in urban areas. These technologies are vital for protecting residents and community members, particularly those most at risk, and improving overall energy efficiency.

Together, these strategies create a strategic approach to heat-resilient building, ensuring that communities are better prepared to withstand rising temperatures. Public-private partnerships, community involvement, and government incentives are key to driving widespread adoption and successful implementation of these practices, leading to improved building resilience across diverse environments.

## STRATEGIES

2.1: Energy Efficiency Audits and Retrofits .....	27
2.2: Heat-Resilient Building Practices .....	29
2.3: Cool Surfaces: Roofs, Walls, and Pavement .....	31
2.4: Cooling Technologies .....	33



## ENERGY EFFICIENCY AUDITS AND RETROFITS

1.3

4.1

4.2



### Background

Energy efficiency audits identify energy waste in buildings. Energy retrofits reduce consumption and enhance comfort during extreme heat. By addressing inefficiencies, these practices help maintain cooler indoor environments and lower energy costs, making buildings more resilient to extreme heat events.

### Key Actions

#### Comprehensive Energy Audits

Perform detailed energy audits to identify areas where buildings are losing energy. This includes evaluating insulation, HVAC systems, windows, doors, lighting, and other energy-consuming elements. Comprehensive audits can be conducted by professional energy auditors or certified contractors. Homeowners can also conduct do-it-yourself energy audits using guides from the DOE.

#### Implement Targeted Retrofits

Upgrade building systems and components based on audit findings. Focus on enhancing insulation, sealing air leaks, improving HVAC efficiency, and installing energy-efficient windows and doors. These retrofits help maintain cooler indoor environments and reduce reliance on mechanical cooling which is energy- and cost-intensive.

### Tools & Resources

[HUD Energy Efficiency Resources](#)

[DOE Do-It-Yourself Home Energy Assessments](#)

[Urban Land Institute Resilient Retrofits: Climate Upgrades for Existing Buildings](#)

[BPI Certifications for Auditors and Contractors](#)

[RESNET Training and Certifications](#)

[DOE Energy Saver Energy Efficiency Recommendations](#)

### Incentivize Energy Retrofits and Upgrades

Develop incentive programs to encourage property owners and businesses to undertake energy efficiency retrofits and upgrade HVAC systems. Offer tax credits, rebates, or low-interest loans to make these upgrades more accessible and appealing.

### Renewable Energy Integration

Where feasible, integrate renewable energy sources like solar panels to generate electricity on-site, in order to reduce reliance on grid power and lower overall energy costs.

### Behavioral Adjustments

Educate building occupants on energy-saving practices such as adjusting thermostats, using energy-efficient appliances, and reducing unnecessary energy use.







### ENERGY AUDIT OVERVIEW

An energy audit is a comprehensive review of your home or building's energy use. It helps identify efficient ways to reduce energy consumption, particularly crucial in combating extreme heat.

#### Types of Audits

- **Walk-Through:** Offers quick identification of savings with minimal cost.
- **Standard:** Provides a thorough examination of energy bills and equipment for efficiency improvement.
- **Detailed:** Employs advanced techniques to precisely identify energy losses and opportunities.

In Action

Actors	Actions	Roles
	Facilitate community engagement and education on the benefits of energy audits and retrofits, with a focus on accessibility in low-income areas.	Heat Health Outreach Coordinator, Energy Education Specialist
 State, Local, Tribal	Conduct energy audits and oversee retrofits in public facilities; promote and incentivize energy-efficient practices among private building owners.	Local Energy Auditor, Public Incentives Administrator
	Collaborate with local governments to integrate energy-efficient technologies and practices into new and existing commercial and residential structures.	Energy Solutions Developer, Corporate-Government Liaison
	Offer incentives and rebates for energy-efficient upgrades identified through audits, promoting long-term reductions in energy consumption.	Customer Rebate Planner, Energy Efficiency Advisor

PROJECT HIGHLIGHT: ENERGY EFFICIENT HOMES



Green Housing Rehabilitation Program

SCOTTSDALE, ARIZONA

Project Lead

[City of Scottsdale](#)

Total Project Cost

**\$400,000**  
ANNUALLY

Year Completed

**ONGOING**

Key Collaborators/Stakeholders

[City of Scottsdale Human Services](#)

Funding Source

[HUD Community Development Block Grant \(CDBG\)](#)

Project Description

This program provides assistance to homeowners by completing cost-effective improvements to minimize environmental impact and reduce the energy consumption of homes while contributing to the health of its occupants. A home performance audit is conducted, and homeowners are interviewed to determine and address home inefficiencies that will be corrected by a licensed contractor. A post construction audit is also completed to ensure all issues were resolved.



## HEAT-RESILIENT BUILDING PRACTICES

1.3

3.1

4.1



## Background

Implementing heat-resilient building practices is crucial for coping with extreme heat, maintaining indoor comfort, and improving energy efficiency. Using region-specific materials, like adobe in the arid Southwest or thatched roofs in tropical areas, combined with better insulation and passive cooling techniques, can help buildings stay cool while reducing dependence on mechanical cooling.

## Key Actions

There are multiple active and passive approaches to achieving a heat-resilient building. It is important to consider the surrounding area and potential to work together with neighbors, both in rural and urban settings. The following image of a dwelling highlights key aspects of Key Actions:

## Tools &amp; Resources

[HUD Designing for Natural Hazards Guidelines](#)

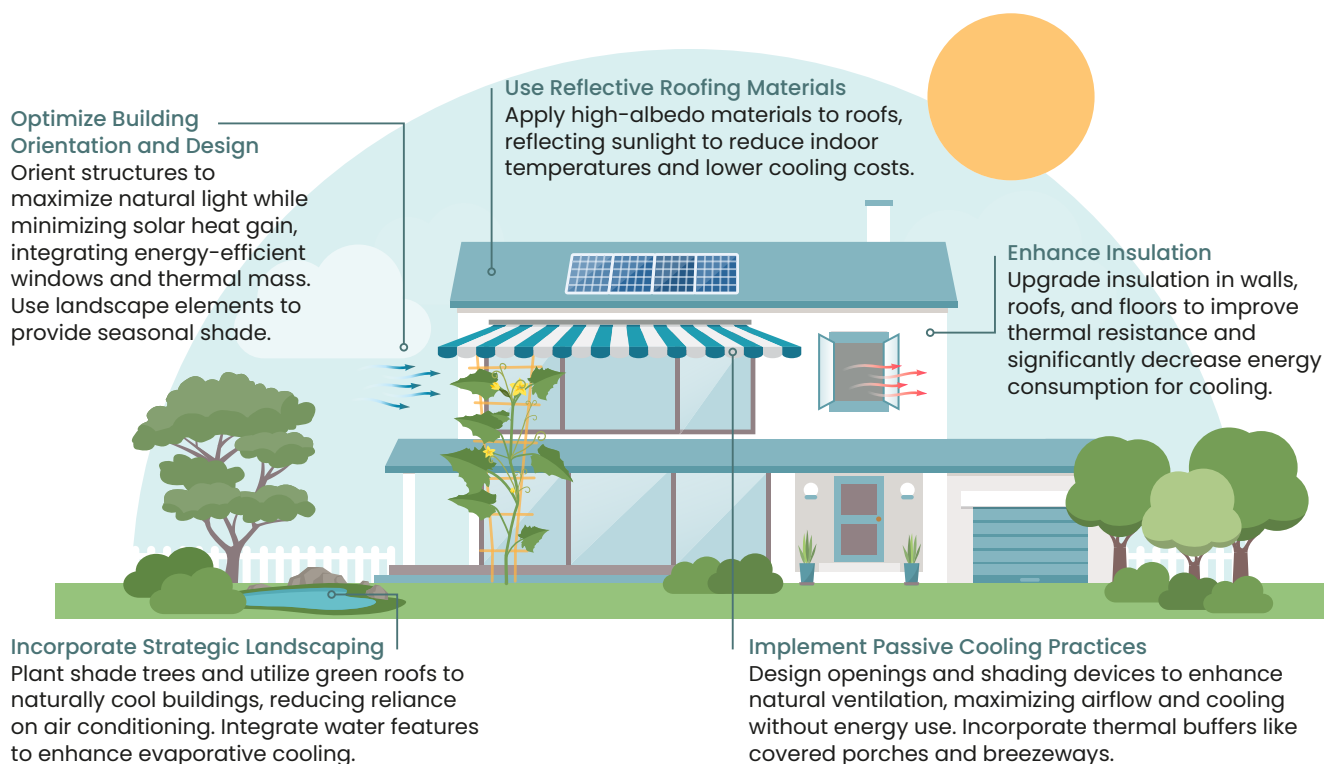
[UNEP Practical Guide to Climate-Resilient Buildings and Communities](#)

[PHIUS Passive Building Resources](#)





[Ten Questions Concerning Thermal Resilience of Buildings and Occupants for Climate Adaptation](#)

[Cooling Schools: Experiences from C40's Cool Cities Network](#)

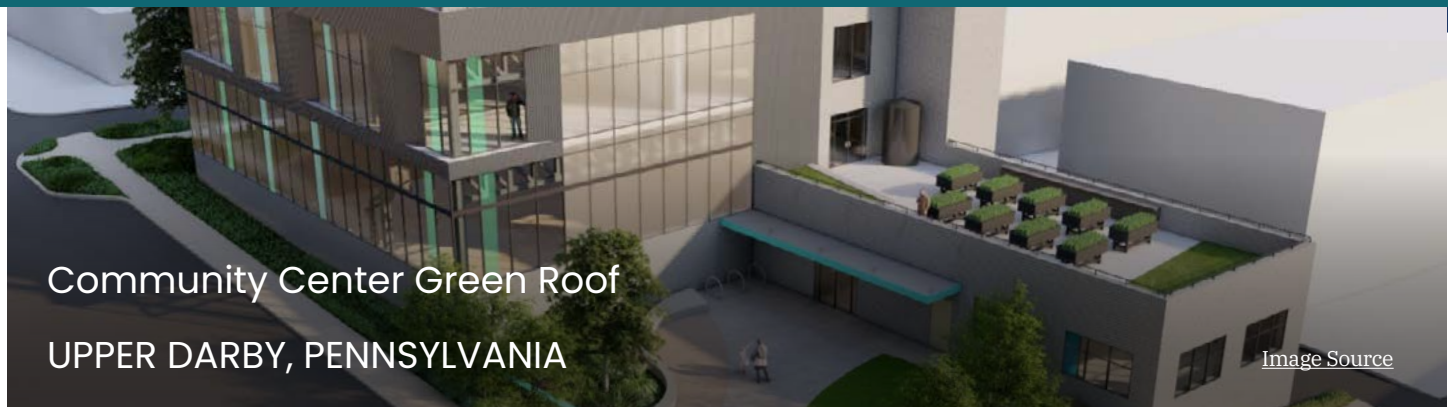
[NCHH Healthy Homes Checklist for Thermal Control](#)



In Action

Actors	Actions	Roles
	Conduct comprehensive research on innovative heat-resilient materials and techniques; develop and offer specialized training for architects and builders.	Research Coordinator, Training Program Director
 State, Local, Tribal	Develop and implement tailored heat-resilient building practices suited to regional and cultural specifics.	Chief Heat Officer, Tribal Climate Resilience Liaison
	Retrofit properties with advanced heat-resilient features to enhance energy efficiency and occupant comfort.	Property Retrofit Coordinator, Energy Efficiency Manager
	Support energy demand reduction projects by collaborating on heat-resilient building practices and offering incentives for energy-efficient retrofits.	Energy Efficiency Program Manager, Client Incentives Coordinator

PROJECT HIGHLIGHT: RESILIENT COMMUNITY CENTER



Community Center Green Roof  
UPPER DARBY, PENNSYLVANIA

Image Source

Project Lead

[Upper Darby Township](#)

Total Project Cost  
**\$11,000,000**

Year Completed  
**IN PROGRESS**

Key Collaborators/Stakeholders

[JMT Architecture](#)

Funding Source

[HUD Community Project Funding](#)  
[Pennsylvania's Redevelopment Assistance Capital Program](#)  
[American Rescue Plan Act](#)

Project Description

This Community Center will be the first LEED-certified building in Upper Darby and will include a green roof that will provide a much-needed natural space to a densely populated and traditionally underserved suburban area. The green roof will be multi-level and will serve as the focal point of the community center and be utilized as an educational tool, community event space, and climate resiliency project all-in-one. The town's administration also ensured that community feedback was considered when finalizing the design of the building by sharing a public survey available in 5 languages and giving a community-wide presentation on the initial design plans.



## COOL SURFACES: ROOFS, WALLS, AND PAVEMENT

3.4

4.1



### Background

Cool surfaces, such as reflective roofs, walls, and pavements reduce surface temperatures and lower indoor heat. By reflecting sunlight and absorbing less heat, these materials help mitigate the urban heat island effect, providing relief during extreme heat events.

### Key Actions

#### Adopt Cool Roofing Material

Utilizing roofing materials that have high solar reflectance and thermal emittance properties. Cool roofs can be made from materials such as reflective coatings, tiles, or shingles. These roofs reflect a larger percentage of sunlight and emit absorbed heat more effectively, reducing the amount of heat transferred into the building.

#### Apply Cool Walls

Similar to cool roofs, cool walls use materials with high solar reflectance and thermal emittance. These walls help reduce the heat absorbed by the building, particularly on sun-exposed facades. Materials include reflective paints, coatings, and insulated cladding systems.

#### Cool Pavements

Applying reflective coatings or using permeable materials for pavements to reduce surface temperatures. Cool pavements can help lower ambient temperatures in urban areas and improve storm water management. Examples include reflective concrete, permeable asphalt, and interlocking pavers.

#### Green Roofs and Walls

Incorporating vegetation into roofs and walls to provide additional cooling through evapotranspiration. Green roofs and living walls not only reduce heat absorption but also enhance biodiversity and improve air quality.

### Tools & Resources

#### Federal Programs:

[DOE Cool Roofs Program](#)

[EPA Heat Island Reduction Program](#)

#### Certification and Standards Organizations:

[CRRC Ratings and Resources](#)

[LEED Certification](#)





#### Educational Resources and Training Programs

[AIA Continuing Education Courses](#)

[Green Building Council Trainings and Resources](#)



In Action

Actors	Actions	Roles
	Allocate funding, provide technical guidance, and offer tax incentives for the development and adoption of cool surface technologies through EERE programs.	Federal Funding Coordinator, Technical Advisor
	Promote the benefits of cool surfaces and related local initiatives through dedicated media campaigns, enhancing public and stakeholder engagement.	Heat Campaign Manager, Environmental Reporter
	Invest in the development and implementation of cool surface technologies for commercial and residential properties; engage in collaborative public-private initiatives.	Sustainability Strategist, Public-Private Partnership Manager
	Retrofit existing properties with cool surface technologies to enhance energy efficiency and occupant comfort.	Retrofit Project Manager, Energy Efficiency Coordinator

PROJECT HIGHLIGHT: COOL ROOF



Hickory Way Apartments Phase I and II  
WASHTENAW COUNTY, MICHIGAN

[Image Source](#)

Project Lead

[Washtenaw County](#)

Year Completed

2019–2021

Key Collaborators/Stakeholders

[Avalon Housing](#)

Funding Source

[HUD HOME](#)

Project Description

The apartments constructed under this project included the use of Energy Star-rated roofing material for the buildings. The color of the roofing is white, which helps to reduce the urban heat island effect by reflecting the heat from sunlight, rather than absorbing it. The apartments include 70 HOME-assisted housing units, all one bedroom that are affordable housing units with supportive services.





## COOLING TECHNOLOGIES

4.1

4.2

4.3



### Background

Cooling technologies are vital for reducing heat-related health risks. They enhance comfort, protect vulnerable populations from heat stress, and improve energy efficiency, making them essential for managing extreme heat and safeguarding public health.

### Key Actions

#### Adopt Advanced Cooling Technologies

Implement advanced solutions like evaporative coolers, heat pumps, and thermal storage systems, which offer effective cooling with lower environmental impact. Determining the best technology may require an energy audit to first identify areas of improvement, ensuring the most appropriate solution is selected for both new buildings and retrofits.

#### Support Passive Cooling Solutions

Complement mechanical cooling with passive technologies like smart ventilation, shading structures, and cool roofs to reduce cooling loads and boost energy efficiency. Exterior features like overhangs, awnings, and shutters are more effective at blocking heat than interior curtains. Support education for developers, contractors, and HVAC technicians by using state Departments of Labor and Industry to share training resources.

#### Incentivize the Use of Clean Energy for Cooling

Encourage the integration of cooling technologies with renewable energy sources like solar power to further reduce the environmental impact of cooling. Support the installation of battery systems to store excess energy for when demand on the grid is high to help avoid brownout conditions. Offer incentives for systems that combine energy efficiency with clean energy generation.



**Central:** Conventional, most common system, a ducted air pipes system that can spread to any room in house or apartment.



**Stand-Alone:** Portable and window units always require an air vent to move hot air out of the building. Easy to install and move.



**Ductless, Mini-Split:** Wall-mounted, zoned cooling without duct system. Expensive compared to other retrofits but easy to install.



**Heat Pump:** Energy-efficient alternative to air conditioners and gas furnaces. Moves hot air out of the building for cooling and can be reversed to extract warmth from outdoor air from heating in cooler months. Can be central, stand-alone, or mini-split.



**Evaporative Coolers:** Also known as swamp coolers, cools through the evaporation of water. Cost-effective but only suitable in dry climates, requires frequent maintenance.



**Smart Thermostats and Advanced AC Settings:** Optimize cooling based on real-time data and predictive analytics.

### Tools & Resources

#### Federal Programs:

[DOE Energy Efficient Home Design Resources](#)






[ENERGY STAR Energy Efficient Guidelines and Certifications](#)

[IRS Tax Credits for Energy-Efficient Home Improvements](#)

#### Industry Certifications and Training:

[NATE Certifications for HVAC Technicians](#)

In Action

Actors	Actions	Roles
	Create certification programs for technicians in installation and maintenance of new cooling technologies.	HVAC Training Program Coordinator
	Pioneer the development and commercialization of advanced, energy-efficient cooling systems.	Energy Solutions Developer
	Conduct research on passive cooling technologies and evaluate their effectiveness in various climates.	Passive Cooling Research Specialist
	Implement incentives for adopting renewable energy-powered cooling solutions in homes and businesses.	Renewable Energy Incentive Manager
	Develop guidelines for safe cooling practices and oversee their dissemination during heatwave alerts.	Public Health Advisor

PROJECT HIGHLIGHT: EFFICIENT COOLING SYSTEMS



Community Heat Pump System Projects  
VARIOUS COUNTIES IN NEW YORK STATE

Project Lead

[New York State Energy Research and Development Authority](#)

Total Project Costs

\$500,000 – \$4,000,000

Year Completed

VARIOUS

Funding Source

[NYSERDA Large-Scale Thermal Program](#)

Project Description

NYSERDA provides funding under the Community Heat Pump Systems Program to projects that explore a wide range of innovative technical solutions for more efficient heating and cooling systems. The program funded projects at over 50 sites that showcase a wide range of building types, both residential and commercial. The project webpage provides an overview of each of these projects detailed in individual project information fact sheets.

# The Heat-Resilient Community

ACTION TRACK

# 03



## INTRODUCTION

Extreme heat affects every aspect of daily life, making it essential to build resilient communities. Action Track 3 focuses on ensuring that spaces where people live, work, play, and move can withstand and mitigate rising temperatures.

**Public Cooling Centers** serve as critical hubs during heat waves, offering safe, accessible spaces for vulnerable populations. Transforming these centers into multi-functional resilience hubs promotes usage and preparedness for other hazards.

**Blue-Green Infrastructure Implementation** integrates natural elements like parks, green roofs, and water features into urban, suburban, and rural landscapes. This strategy cools the environment and contributes to the community’s overall health and well-being.

Maintaining these natural systems is essential. **Blue-Green Infrastructure Maintenance** establishes robust protocols and community involvement to ensure these elements continue to provide cooling, storm water management, and biodiversity benefits.

Expanding the **Urban Tree Canopy Cover** reduces the urban heat island effect, lowers energy consumption, and improves air quality. A well-planned and equitable urban forest enhances public health and creates cooler, more livable neighborhoods.

Partnerships are key to this Action Track. Engaging local communities in planning and maintenance ensures long-term success. Collaborations between developers, businesses, and CBOs fund and sustain initiatives. Government incentives, such as tax credits and grants, encourage widespread adoption of heat-resilient practices.

Together, these strategies form the foundation of a heat-resilient community.

## STRATEGIES

3.1: Public Cooling Centers .....	36
3.2: Blue-Green Infrastructure Implementation .....	38
3.3: Blue-Green Infrastructure Maintenance .....	40
3.4: Urban and Community Forest Plan .....	42



## PUBLIC COOLING CENTERS

1.1

1.2

1.3

1.4



## Background

Public cooling centers provide safe, accessible spaces for escaping extreme heat, especially for vulnerable populations including those without adequate home cooling, offering protection from heat-related illnesses and enhancing community resilience during heat events.

## Key Actions

**Implement Mobile Cooling Centers**

Deploy trailers or retrofitted buses as mobile cooling centers to serve rural and under served areas.

**Map Cooling Center Locations**

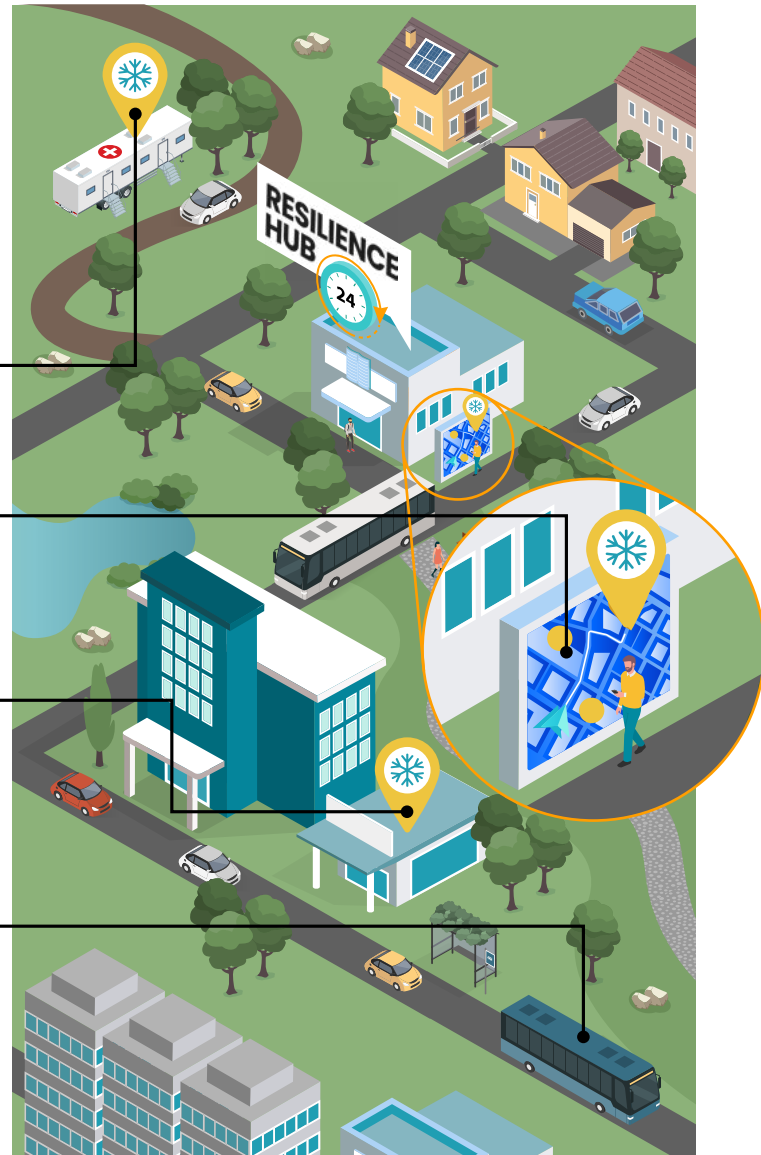
Use accessible interactive maps to provide real-time information on the locations and amenities of cooling centers.

**Expand Access to Cooling Centers**

Increase cooling centers in public spaces, ensuring 24/7 availability. Stock with water, first aid, and information in multiple languages. Work with non-profits and businesses for alternatives when public centers close.

**Enhance Transportation Services**

Offer free or subsidized transportation to cooling centers via public transit and rideshares, targeting those with low mobility in rural areas.

**RESILIENCE HUBS**

Resilience hubs are community centers offering shelter during climate emergencies and year-round services to strengthen resilience. Locally managed, they provide tailored programs, multilingual support, and clean energy, bridging gaps in emergency management and boosting climate preparedness for communities.

## Tools &amp; Resources




[Cooling Centers by State](#)

[Heat Relief Network Map](#)

[CDC Technical Documentation on Cooling Centers](#)

[USDN Resilience Hub Initiative](#)

In Action

Actors	Actions	Roles
	Develop a mobile-friendly digital platform for accessing cooling center information.	Technology Development Lead
	Collaborate with local governments to enhance the capacity of cooling centers; sponsor and support transportation to these centers.	Community Partnership Manager, Sponsorship Coordinator
	Equip cooling centers to effectively manage medical emergencies arising from heat exposure, with provisions for essential medical supplies and trained staff.	Emergency Medical Coordinator, Health Safety Specialist

PROJECT HIGHLIGHT: COMMUNITY COOLING CENTER



Image Source

Project Lead

[City of Las Cruces](#)

Total Project Cost  
**\$12,000,000**

Year Completed  
**VARIOUS**

Key Collaborators/Stakeholders

- [Mesilla Valley Community of Hope](#)
- [Casa De Peregrinos](#)
- [Amador Health Center](#)
- [Jardin de Los Ninos](#)

Funding Source

[HUD Community Development Block Grant \(CDBG\)](#), [HUD HOME](#), [HUD Community Project Funding](#), Las Cruces General Funds

Project Description

The campus serves as a resilience center for the most vulnerable and hosts a public cooling center during the hottest months of the year. The needs for the campus have evolved since its first building was completed in 1994, supporting organizations that serve the homeless and low-income individuals. The \$12 million funded the campus’ newest building, which provides multiple services to the community, such as a drive through for food pantry pick-ups.



## BLUE-GREEN INFRASTRUCTURE IMPLEMENTATION

2.3

3.3



### Background

Integrating blue-green infrastructure (BGI) in urban and rural areas manages extreme heat and provides co-benefits like improved air and water quality, flood risk reduction, and enhanced community resilience. Adapting to local climates maximizes effectiveness, boosting environmental health and community well-being.

### Key Actions

#### Non-Tree Shade Structures

In arid areas and where increased trees are not feasible, build shade structures to create cooler public spaces without increased tree canopies.

#### Permeable Pavement

Install permeable paving materials to allow water to infiltrate the ground, reducing runoff and cooling surfaces.

#### Stormwater Management

Develop BGI such as rain gardens and bioswales to manage stormwater, reduce runoff, and enhance urban cooling.

#### Accessible Parks and Green Spaces

Enhance urban landscapes by increasing the number and quality of parks and green spaces, making them easily accessible for all community members.

### Tools & Resources

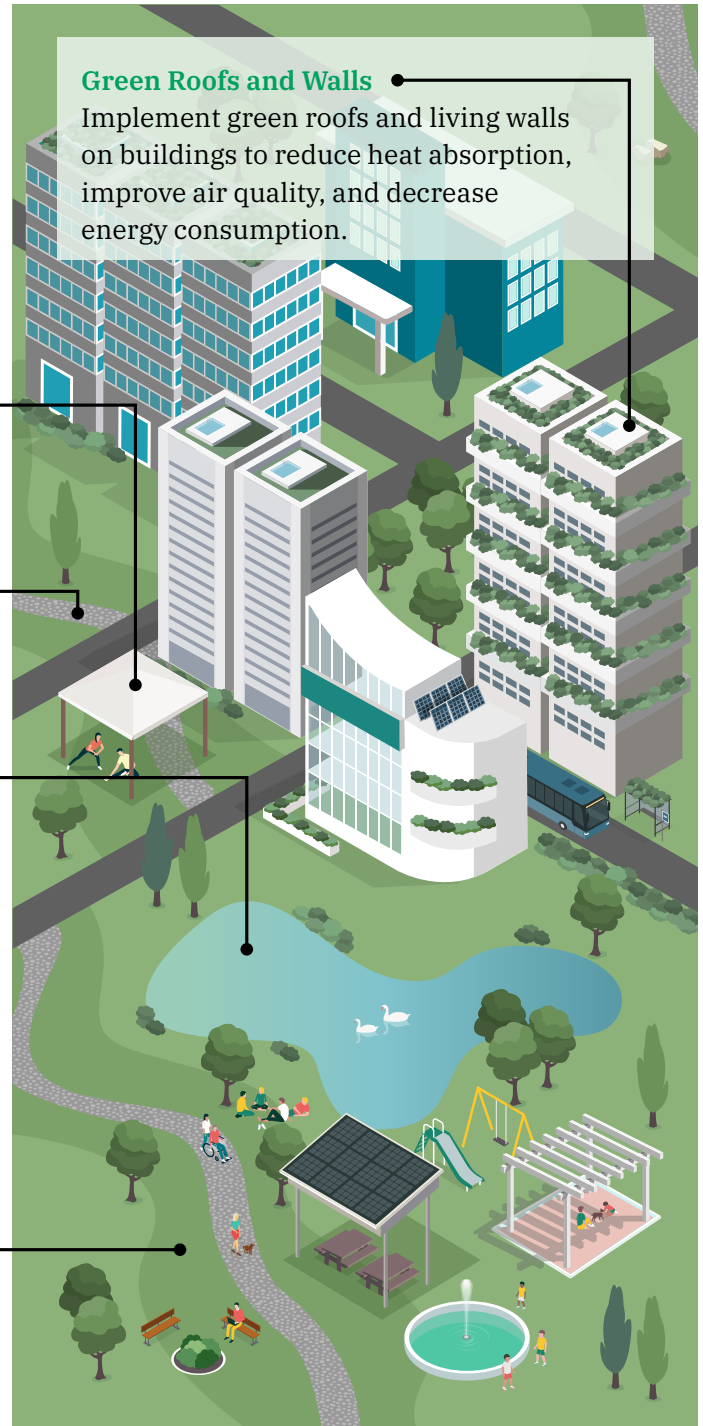
[HUD Green Infrastructure and Sustainable Communities](#)

[UK Institution of Civil Engineers Manual of BGI](#)

[EPA Green Infrastructure Toolkit](#)

[APA Green Infrastructure Guidelines](#)

[NYC Green Infrastructure Resources](#)



In Action

Actors	Actions	Roles
	Facilitate community involvement in BGI maintenance; coordinate volunteer efforts to support ongoing care and education about BGI benefits.	Volunteer Coordinator, Outreach Specialist
	Investigate and disseminate best practices for BGI maintenance; develop educational materials and training programs for proper BGI care.	Research Director, Resilience Curriculum Developer
 Local, Tribal	Oversee the implementation and maintenance of BGI projects; conduct routine inspections and engage the community in sustaining these initiatives.	BGI Project Manager, Community Liaison
	Apply training in BGI best practices to manage and maintain infrastructure effectively; educate contractors and landscapers on these practices.	BGI Maintenance Trainer, Property Management Educator
	Partner in BGI projects that impact energy and water management; focus on integrating BGI into utility conservation strategies.	Environmental Strategy Coordinator, Utility Partnership Manager

PROJECT HIGHLIGHT: COMMUNITY GREEN SPACE



Amphitheater and Riverfront Park Project  
YOUNGSTOWN, OHIO

Project Lead  
[City of Youngstown](#)

Total Loan Amount  
**\$4,000,000**

Year Completed  
**2019**

Key Collaborators/Stakeholders  
[Premier Bank Foundation](#)  
[The Raymond John Wean Foundation](#)

Funding Source  
[HUD Section 108 Loan Guarantee Program](#)

Project Description  
The city utilized funds to redevelop a 20-acre riverfront site into a public park and amphitheater. The park includes a children’s play area, pedestrian walking trails, lawn areas that will incorporate green infrastructure for storm water retention, community event spaces, water features, and basketball athletic areas. The park provides new green space for the community that will have multiple benefits, including cooling spaces for residents.



## BLUE-GREEN INFRASTRUCTURE MAINTENANCE

3.2



### Background

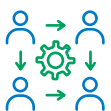
Proper maintenance of blue-green infrastructure (BGI) is crucial for sustaining its benefits, including temperature reduction, storm water management, and enhanced biodiversity. Regular upkeep ensures these systems remain effective, resilient, and capable of providing long-term environmental and community health improvements.

### Tools & Resources

[EPA Guidance for Green Infrastructure O&M](#)

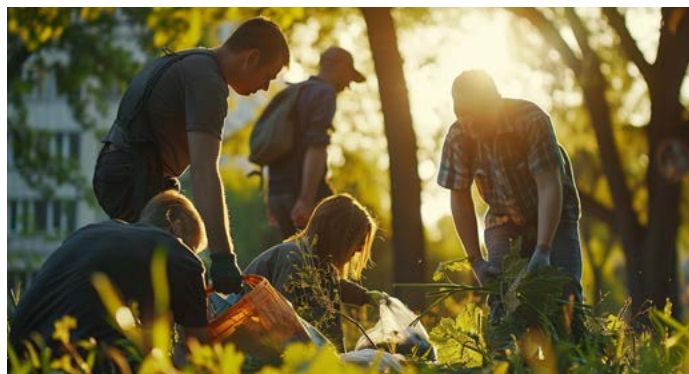
[EPA Best Practices for Green Infrastructure O&M Recorded Webcast](#)

[University of New Hampshire Storm water Center Maintenance Guidelines and Checklists](#)



### COMMUNITY INVOLVEMENT

Engage local communities in the planning, design, and maintenance of BGI. This involvement ensures that projects meet local needs and preferences and helps build a sense of ownership and stewardship among residents.



### Key Actions

#### Train Maintenance Personnel

Provide specialized training for maintenance personnel to ensure they are equipped with the knowledge and skills necessary to care for BGI systems. Training should cover best practices for plant care, water management, and the use of sustainable materials and techniques.

#### Delineate Responsibilities on Private Property

When BGI on private property is funded or incentivized through government programs, outline roles and responsibilities for maintenance to be shared between the funding agency and the property owner.

#### Plan for Maintenance

Integrate BGI maintenance considerations into master plans, municipal staffing and contracting decisions, and BGI standards and ordinances. Identify if hiring a contractor is necessary for specialized maintenance or non-routine maintenance such as tree or plant replacement.

#### Allocate Sufficient Resources





Secure funding and resources for ongoing BGI maintenance. This includes budgeting for skilled labor, materials, and equipment needed to perform routine and emergency upkeep. Consider public-private partnerships and grants to support these efforts.

#### Monitor and Adapt

Continuously monitor the performance of BGI systems and adapt maintenance strategies as needed. Use data from inspections and community feedback to refine protocols, address emerging challenges, and enhance the resilience of BGI over time.



In Action

Actors	Actions	Roles
	Engage local communities in maintaining and expanding urban tree canopy; coordinate volunteer efforts for planting and care.	Gardening clubs, Master Gardeners, Volunteer coordinators, Arborists
	Develop specialized curriculums that integrate urban forestry management with climate resilience; provide workshops on tree care and urban green space management.	Urban Forestry Educator, Climate Resilience Workshop Leader
	Launch a “Green Canopy Grant” program that provides funding and support for local initiatives aimed at expanding urban tree coverage, particularly in underserved areas.	Chief Heat Officer, Community Greening Coordinator
	Sponsor urban tree planting programs to create buffer zones that reduce heat impact on utility operations and improve community resilience to heat.	Climate Resilience Coordinator, Utility Partnership Manager

PROJECT HIGHLIGHT: MAINTAINING URBAN FORESTS



Newark Tree Canopy Initiative: Growing & Proud of It  
NEWARK, NEW JERSEY

[Image Source](#)

Project Lead

[The Nature Conservancy \(TNC\)](#)

Total Project Cost

\$8,000,000

Project Timeline

2024 – 2029

Key Collaborators/Stakeholders

[TNC Partners](#)

Funding Source

[USDA Urban and Community Forestry Program](#)

Project Description

This project enhances shade, air quality, and storm water absorption in Newark by developing a long-term maintenance program through green workforce development. TNC will partner with city officials and community organizations to build the program, with the goal of transitioning leadership to local leaders. The program will educate residents on the benefits of expanding tree canopy for urban heat reduction and ensure the sustainability of Newark’s urban forest.



## URBAN AND COMMUNITY FOREST PLAN

2.3



### Background

Expanding the tree canopy, the extent of leafy cover provided by an urban or community forest, is crucial for reducing temperatures and improving air quality. Planning for a robust canopy mitigates the urban heat island effect, lowers energy consumption, supports habitat connectivity and diversity, and strengthens public health, creating cooler, more resilient communities ready to face extreme heat.



Several cities have adopted goals for urban tree canopy coverage and equity across neighborhoods. For example:

**30%** New York City  
canopy coverage target by 2035

**35%** Boston  
canopy coverage target by 2035

### Tools & Resources

[Community Forest Corps and Urban Forestry Fellowships](#)

[USDA Urban Tree Canopy Assessment](#)

[American Forests Tree Equity Score](#)

[USDA Sustainable Urban Forest Guide](#)

[C40 Cities How to Expand Your City's Tree Canopy](#)

[City of Boston Urban Forest Plan and Resource Hub](#)

[San Francisco Urban Forest Plan](#)

[Atlanta City Design: Nature Plan](#)

[US Forest Service Urban and Community Forestry Program](#)

[EPA Reducing Urban Heat Islands Strategies](#)

### Key Actions

#### Develop an Urban Forest Plan

Develop a master plan to establish measurable goals and actions for increasing urban tree canopy coverage. Consider supplementing this plan with an ordinance to facilitate or incentivize tree planting on both public and private property.

#### Emphasize Equity

Include criteria for siting of new trees that consider where the urban tree canopy – and its benefits for urban heat island mitigation, physical and mental health, beauty and biodiversity, and increased recreational space – can be used to address historic inequalities and disinvestment across neighborhoods.

#### Consider Local Conditions





In these plans or ordinances, include practical criteria for siting new trees such as minimum soil quality and quantity, along with guidance for which tree species to use in various urban settings based on wind, light, and climate. Facilitate or incentivize the use of heat-tolerant, native, or low-water-usage tree species that are more likely to thrive in the local environment.

#### Make It Last

Plans should be accompanied by detailed guidance for seasonal maintenance activities, costs, and funding sources using a mix of municipal (parks staff, contractors, etc.) and community-based resources (gardening clubs, master gardeners, property owners, etc.).



In Action

Actors	Actions	Roles
	Engage local communities in maintaining and expanding urban tree canopy; coordinate volunteer efforts for planting and care.	Gardening clubs, Master Gardeners, Volunteer coordinators, Arborists
	Conduct research on effective BGI maintenance strategies; provide training and educational materials for community and professional use.	BGI Maintenance Research Lead, Resilience Curriculum Developer
 State, Tribal, Local	Implement training programs based on best practices for BGI maintenance; ensure all contractors and landscapers are adequately trained.	Chief Heat Officer, Tribal Climate Resilience Liaison
	Collaborate on utility-sensitive BGI projects, focusing on energy and water efficiency; integrate tree and plant management into utility operations.	Environmental Impact Specialist, Utility BGI Liaison

PROJECT HIGHLIGHT: CANOPY COVER



Watts Greening Public Housing for the Future  
LOS ANGELES, CALIFORNIA

[Image Source](#)

Project Lead

[Watts Rising](#)

Total Project Cost

\$500,000,000

Year Completed

IN PROGRESS

Key Collaborators/Stakeholders

[TreePeople](#)

[North East Trees](#)

[Housing Authority of the City of Los Angeles](#)

[\(HACLA\)](#)

Funding Source

[HUD Choice Neighborhoods](#) & more

Project Description

Watts Rising used various funding sources to plant over 4,000 trees and create three parks to reduce extreme heat in the Watts neighborhood. The project also included housing retrofits and achieving LEED-ND status for the entire neighborhood. Recognizing that tree maintenance is a long-term commitment, HACLA also developed an adopt-a-tree program to encourage community stewardship of their new tree canopy.



## INTRODUCTION

Effective policies and programs are essential for addressing the challenges of extreme heat and ensuring long-term community resilience. Action Track 4 focuses on developing and updating regulations that protect vulnerable populations, enhance building resilience, and ensure worker safety.

**Building Codes Updates for Heat Resilience** aim to incorporate heat-resilient practices into local and national codes, ensuring that new constructions and retrofits are equipped to withstand rising temperatures. These updates are crucial for safeguarding public health and reducing energy consumption and strain on the grid during times of peak consumption.

**Energy Bill Assistance Programs** provide financial support to help low-income households manage increased energy costs during extreme heat events. These programs are vital for preventing heat-related illnesses and ensuring equitable access to cooling.

**Cooling System Distribution Programs** focus on distributing cooling system units to vulnerable populations, particularly those at high risk of heat-related illnesses. These programs are essential for reducing heat stress and protecting public health during extreme heat events.

**Labor Standards Updates for Heat Safety** are critical for protecting workers in high-risk industries. By mandating heat safety standards, including rest breaks, hydration, and temperature thresholds, these updates ensure that workers are safeguarded from the dangers of extreme heat. Utilize technology, such as wearable sensors, when possible, to track heat safety among workers.

Together, these strategies form a comprehensive approach to policy and program development, ensuring that communities are better prepared to withstand the impacts of extreme heat. Public-private partnerships, community involvement, and strong government leadership are essential for the successful implementation of these strategies, driving meaningful change and enhancing resilience.

## STRATEGIES

4.1: Policy Measures for Heat Resilience .....	45
4.2: Energy Bill Assistance Programs .....	47
4.3: Cooling System Distribution Programs .....	49
4.4: Local Labor Practices for Heat Safety .....	51



## POLICY MEASURES FOR HEAT RESILIENCE

1.1

2.1

2.2

2.3

2.4



### Background

Policy measures like energy codes, zoning ordinances, and design standards are crucial for urban and community heat resilience. These tools enforce sustainable building practices and land use, mitigate urban heat effects, and enhance environmental sustainability to protect public health and support climate resilience.

### Key Actions

#### Updated Energy Codes

Implement updated energy codes that emphasize energy efficiency and thermal performance. These codes should promote the use of materials and designs that reduce heat gain and improve insulation, along with best practices for both low-tech and high-tech solutions.

#### Zoning Ordinances

Develop zoning ordinances that include requirements for tree canopy coverage, green spaces, and shaded areas particularly for increasing comfort for active and public transportation. This can help reduce the urban heat island effect and provide passive cooling.

#### Design Standards for Shade and Awnings

Facilitate design standards that include shade structures, awnings, and other architectural and natural elements that block direct sunlight and reduce indoor temperatures.

### Tools & Resources

#### Federal Resources

[HUD Minimum Energy Standards](#)

[DOE Building Energy Codes Program](#)

[DOE Technical Assistance for the Adoption of Building Energy Codes](#)

[EPA Sustainable Design and Green Building Toolkit for Local Governments](#)

#### Other Resources

[New Buildings Institute Extreme Heat and Urban Heat Island Code Overlay](#)





[ACEEE National Energy Codes Collaborative](#)

[DC Green Area Ratio Zoning Regulations](#)

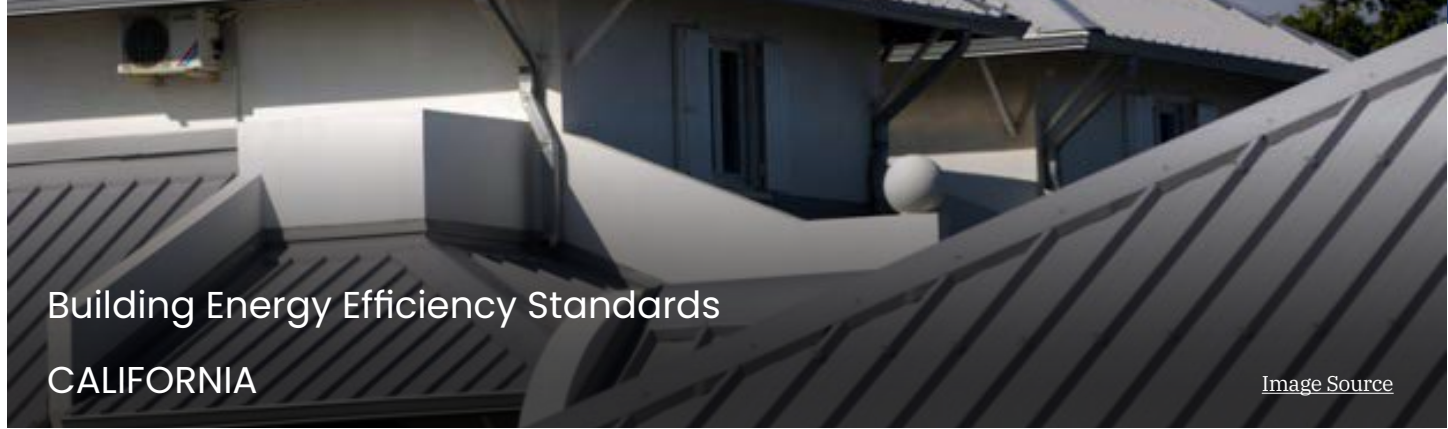
[Congressional Research Service Green Building Overview and Issues](#)



In Action

Actors	Actions	Roles
	Advocate for the adoption of heat-resilient building practices; engage communities and raise awareness about the benefits and methods.	Extreme Heat Response Coordinator, Heat Health Outreach Coordinator
	Develop and offer training programs for professionals on the latest building codes and heat resilience practices.	Research Director, Resilience Curriculum Developer
 Federal, State, Tribal, Local	Develop and enforce local building codes and zoning ordinances for tree canopy coverage, green spaces, and shaded areas to mitigate the urban heat island effect.	Chief Heat Officer, Tribal Climate Resilience Liaison
	Provide certification programs and guidelines to ensure compliance with updated energy codes and heat-resilient building standards.	Certification Program Manager, Compliance Advisor

PROJECT HIGHLIGHT: CODE UPDATES



Building Energy Efficiency Standards

CALIFORNIA

[Image Source](#)

Project Lead  
[California Energy Commission](#)

Effective Date  
**JANUARY 1, 2020**

Key Collaborators/Stakeholders  
[Cool Roof Rating Council](#)

Project Description  
California’s [Building Energy Efficiency Standards](#) require the use of certain roofing materials used in new construction and re-roofing projects to improve cooling efficiency of buildings. The codes focus on roof materials’ solar reflectance – a material’s ability to reflect the sun’s solar energy back into the atmosphere – and thermal emittance – which refers to how much of the absorbed heat is released. The requirements vary based on building type (residential vs. nonresidential) and slope of the roof.



## ENERGY BILL ASSISTANCE PROGRAMS

2.1

2.4



### Background

Energy bill assistance programs play a crucial role in helping vulnerable households manage the increased energy costs caused by cooling needs during extreme heat events. By providing financial support, these programs ensure that families can afford necessary cooling, reducing the risk of heat-related illnesses and promoting equity in access to safe, comfortable living conditions.



### Key Actions

#### **Distribute Direct Financial Aid**

Deploy the Low-Income Home Energy Assistance Program (LIHEAP) to provide immediate financial support to households struggling with high energy bills during peak heat periods.

#### **Implement Energy Efficiency Projects**

Utilize the Weatherization Assistance Program (WAP) to finance and implement energy-saving upgrades in homes, significantly reducing long-term energy consumption and costs.

#### **Establish Utility Support Programs**

Collaborate with utility companies to create assistance programs that offer structured payment plans and provide practical energy-saving tips to customers.

#### **Conduct Targeted Outreach and Education**

Launch initiatives to actively promote the availability of these assistance programs and facilitate the application process for households needing support.





### Tools & Resources

[HHS Low-Income Home Energy Assistance Program \(LIHEAP\)](#)

[DOE Weatherization Assistance Program \(WAP\)](#)

[HHS LIHEAP Clearinghouse](#)

In Action

Actors	Actions	Roles
	Advocate for energy bill assistance programs; assist households in applying and navigating the support services available.	Advocacy Leader, Support Services Coordinator
 Federal, State, Tribal, Local	Administer energy bill assistance programs, ensuring funds are distributed equitably; collaborate with utilities for integrated services.	Program Administrator, Utility Liaison
 Federal	Continue to fund and support energy bill assistance programs like LIHEAP and WAP, adapting to increased demands during extreme heat events.	Program Director, Funding Coordinator
	Provide budget billing, payment plans, and direct financial assistance; collaborate to identify and support households in need.	Customer Support Manager, Financial Assistance Advisor

PROJECT HIGHLIGHT: REDUCING ENERGY BILLS



Building Frederick County Together  
FREDERICK COUNTY, MARYLAND

Project Lead

[Frederick County Energy & Environment](#)

Total Project Cost  
**\$997,000**

Project Timeline  
**2024 – 2027**

Key Collaborators/Stakeholders

[Asian American Center of Frederick](#)  
[Habitat for Humanity of Frederick County Maryland](#)  
[Mobilize Frederick](#)

Funding Source

[EPA EJ Collaborative Problem-Solving Program](#)

Project Description

Nearly 50% of the EPA grant will fund a gap-filling HVAC replacement program in Frederick County to reduce energy burdens. The project also helps residents navigate programs like the County’s [Power Saver Retrofits Program](#), which assesses home energy use and suggests improvements to lower bills at no cost. Additionally, the County partners with community organizations, such as Habitat for Humanity, to expand access to these resources.





## COOLING SYSTEM DISTRIBUTION PROGRAMS

2.4



### Background

Cooling system distribution programs provide relief to vulnerable populations during extreme heat by ensuring access to cooling. These programs prevent heat-related illnesses, reduce health disparities, and strengthen community resilience to rising temperatures.

### Key Actions

#### Identification of Vulnerable Populations

Identify the most vulnerable populations, including low-income households, the elderly, individuals with pre-existing health conditions, and residents of mobile homes or older housing stock, which are often under-air conditioned and overlap with other risk factors, especially in areas with high heat risk.

#### Procurement and Distribution of Units

Secure funding to purchase cooling system units and coordinating the logistics of distributing them to eligible households.

#### Education on Usage and Maintenance

Provide recipients with instructions on the proper use and maintenance of cooling system units to ensure they operate efficiently and effectively.

#### Partner with Community Organizations

Collaborate with local non-profits, community groups, and healthcare providers to identify eligible recipients and facilitate distribution efforts.

### Tools & Resources

[HHS Low-Income Home Energy Assistance Program \(LIHEAP\)](#)





[DOE Home Energy Rebates](#)

[NIH Air Conditioning Distribution Program](#)

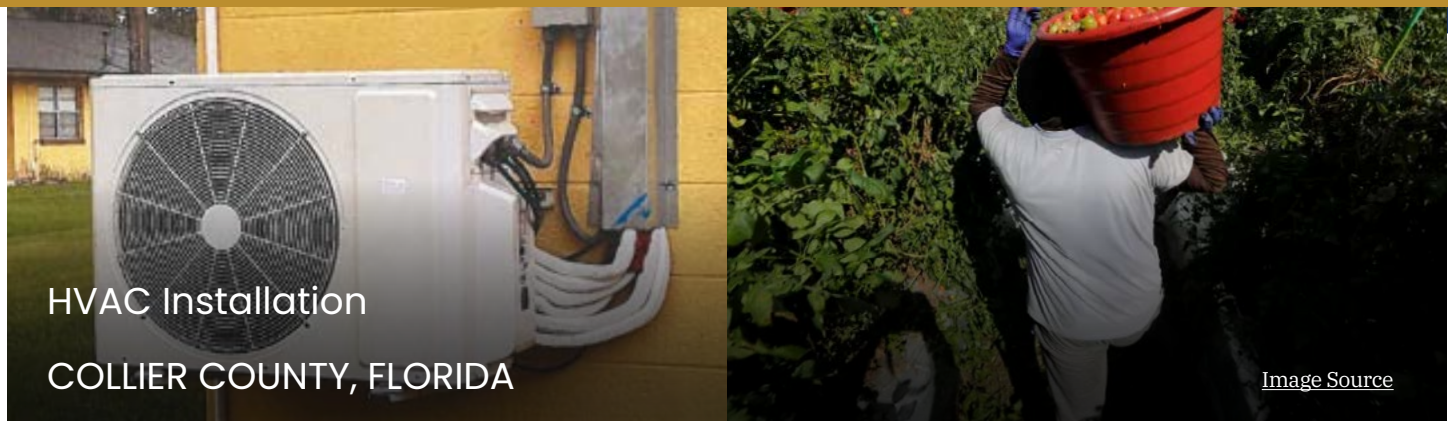
[Virginia Division for Aging Services Senior Cool Care](#)



In Action

Actors	Actions	Roles
	Conduct outreach to identify vulnerable populations for cooling system distribution; assist with applications and logistics.	Extreme Heat Response Coordinator, Logistics Manager
 State, Tribal	Manage the application, eligibility determination, and distribution logistics for cooling systems programs.	Chief Heat Officer, Program Director
	Identify high-risk individuals and facilitate their access to cooling systems distribution programs.	Health Coordinator, Vulnerable Populations Specialist
	Offer rebates or discounts on energy bills for households receiving cooling systems, helping manage increased energy costs.	Rebate Program Manager, Customer Relations Specialist

PROJECT HIGHLIGHT: HVAC DISTRIBUTION PROGRAM



HVAC Installation  
COLLIER COUNTY, FLORIDA

[Image Source](#)

**Project Lead**  
[Collier County, Community & Human Services Division](#)

**Total Project Cost**  
\$1,665,000

**Project Timeline**  
ONGOING

**Key Collaborators/Stakeholders**  
[Collier County Housing Authority](#)

**Funding Source**  
[HUD Community Development Block Grant \(CDBG\)](#)

**Project Description**  
In 2021, Collier County began addressing the heat-related issues of the rural agricultural community by installing HVAC units in low-moderate housing, including buildings used by farm workers. These projects are having a significant impact for the workers who are exposed to extreme heat for long periods of time each day, while performing harvesting and packing tasks. The first two projects have completed 85 HVAC unit installations, with an additional 35 units in process.



## LOCAL LABOR PRACTICES FOR HEAT SAFETY

1.2

1.3



### Background

Heat exposure in workplaces presents significant health risks, particularly in outdoor environments and non-air-conditioned indoor settings. Establishing local labor practices for heat safety is crucial to safeguard workers from the dangers of heat stress and heat-related illnesses. These practices aim to enforce protective measures, ensuring that all workers have the necessary tools and environment to manage and mitigate risks associated with extreme heat.

### Key Actions

#### Implement Mandatory Heat Safety Training

Require all employers to provide comprehensive heat safety training for employees, emphasizing the recognition of heat-related symptoms and the importance of timely intervention.

#### Establish Heat Safety Protocols

Develop and enforce clear guidelines for hydration breaks, access to shade, and cool-down periods, particularly during peak heat hours. Mandate the use of protective gear such as cooling vests and light fabrics.

#### Monitor and Adapt Work Schedules

Adjust work hours to cooler times of the day and introduce flexible scheduling during heatwaves to minimize heat exposure.

#### Enhance Onsite Cooling Measures

Obligate employers to install cooling stations equipped with misting fans, portable air conditioners, and ample supplies of drinking water.

#### Strengthen Compliance and Enforcement

Intensify inspections and penalties to ensure strict adherence to heat safety regulations, protecting worker health and well-being during extreme heat events.

## PROTECTING OUTDOOR WORKERS DURING EXTREME HEAT



### Develop an Acclimatization Plan:

Allow workers to incrementally adjust to heat conditions, then gradually increase exposure over several days. Continuously monitor workers' well-being and adapt work conditions as needed.



### Take Frequent Rest Breaks:

Ensure workers take regular breaks, ideally in shaded or air-conditioned areas, to cool down and recover.



### Emphasize Appropriate Clothing:

Wear light-colored, loose-fitting, breathable clothing to stay cool and reduce heat absorption. Adhere to or modify PPE requirements to enhance comfort without compromising safety.



### Prevent Dehydration:

Encourage regular water intake, with at least 8 fl oz every 15-20 minutes.

### Tool & Resources





#### Federal Programs:

[OSHA Heat Illness Prevention Campaign](#)

[OSHA-NIOSH Heat Safety Tool App](#)

[OSHA Heat-Illness Prevention Plan Template](#)

In Action

Actors	Actions	Roles
	Advocate for enhanced labor standards related to heat safety; provide training and legal assistance to workers on heat-related issues.	Extreme Heat Response Coordinator, Worker Rights Advocate
 State, Tribal, Local	Customize and enforce local heat safety standards based on federal guidelines, addressing specific local needs and industries.	Chief Heat Officer, Tribal Climate Resilience Liaison
	Implement comprehensive heat safety plans, including mandatory rest breaks, hydration stations, and training on heat-related illness.	Safety Manager, Human Resources Specialist
	Collaborate with employers to ensure effective response to heat-related emergencies and maintain worker health and safety.	Occupational Health Specialist, Emergency Response Coordinator



PROJECT HIGHLIGHT: LABOR STANDARD UPDATES



Be Heat Smart! Outdoor Heat Safety Program

WASHINGTON STATE

[Image Source](#)

Project Lead

[Washington State Department of Labor & Industries](#)

Effort Needed

**25 STAFF TEAM  
ACROSS STATE  
OFFICES**

Year Completed

**2020-2023**

Key Collaborators/Stakeholders

[SHARP](#)  
[United Farm Workers](#)  
[University of Washington](#)

Funding Source

State Budget

Project Description

The Washington State L&I updated the state’s rules to protect outdoor workers from excessive heat. The rules include mandatory preventive cool-down periods once the temperature reaches 90°F, as well as access to adequate shade and water for employees on site. Employers are also required to monitor workers for two weeks when employees are newly assigned, return from a leave of absence, and are working during heat waves.



## RESOURCES

[Additional Project Highlights](#)

[Additional Resources & Funding Sources](#)

# ADDITIONAL PROJECT HIGHLIGHTS

Included below are additional project highlights that feature extreme heat strategy actions implemented in various communities across the United States. These projects, as well as the ones featured earlier in the Playbook, can assist communities in their own extreme heat planning efforts by showcasing examples that were successful in receiving federal funding. The projects demonstrate how communities can leverage various funding opportunities, as well their stakeholder networks, to create comprehensive strategies for addressing extreme heat.

ACTION TRACK

01



Partnership, Planning, & Preparedness



## PROJECT HIGHLIGHT: COMMUNITY HEAT PLANNING



Que Calor! Community Conversations and Solutions to Urban Heat  
SOUTH SCOTTSDALE, ARIZONA

### Project Lead

[City of Scottsdale](#)

### Total Project Cost

**\$22,009**

### Year Completed

**2024**

### Key Collaborators/Stakeholders

[Paiute Neighborhood Center](#)

[Vista del Camino Community Center](#)

[Unlimited Potential Community Health Workers](#)

### Funding Source

[HUD Community Development Block Grant \(CDBG\)](#)

### Project Description

To better understand community members' experience with heat, Scottsdale hosted a community conversation series for residents. The conversations focused on strategies for managing resources and mobility in the upcoming summer and envisioning solutions for a cooler future. Participants noted that the lack of tree canopy along routes to public spaces is both a transportation barrier and a safety issue and that they would like safe walking connections to parks and pathways. These and other insights will be reflected in the Shade and Tree Plan currently being developed.



PROJECT HIGHLIGHT: ENERGY EFFICIENT HOMES



Green & Healthy Homes  
BALTIMORE, MARYLAND

Image Source

Project Lead

[Green & Healthy Homes Initiative](#)

Funding Source

[HUD Healthy Homes Grant Program](#)

Total Project Cost  
**\$2,000,000**

Year Completed  
**IN PROGRESS**

Key Collaborators/Stakeholders

Extensive, see

[Green & Healthy Homes Initiative Partners](#)

Project Description

Green & Healthy Homes Initiative aims to increase the energy efficiency of 300 homes in East Baltimore with a household income at or below 80% of area median. It will also address lead poisoning and indoor air quality issues and includes the development of a blueprint to highlight the multiple benefits of addressing housing, energy, and health impacts all in a single initiative.



## PROJECT HIGHLIGHT: HEAT RESISTANT APARTMENTS



Armand Michael Hyatt Apartments  
LAWRENCE, MASSACHUSETTS

## Project Lead

[Lawrence CommunityWorks](#)

## Total Project Cost

\$21,993,981

## Year Completed

2023

## Key Collaborators/Stakeholders

[MA Executive Office of Housing and Livable Communities](#)

[City of Lawrence](#)

## Funding Source

Multiple, including [HUD HOME](#) and Federal and State [LIHTC](#)

## Project Description

Project partners were committed to creating the most sustainable, resilient, and healthy community possible through the construction of these apartments. The buildings include high performance windows, high efficiency mechanical equipment, all-electric HVAC systems, and cool roofs outfitted with a 69kw solar array. The project has also added large amount of permeable and green spaces to greatly increase the tree canopy in the area.





PROJECT HIGHLIGHT: APARTMENT RETROFITS



LULAC Oak Hill Apartments  
COLLEGE STATION, TEXAS

Project Lead  
[City of College Station](#)

Total Loan Amount      Year Completed  
**\$2,808,000**              **ONGOING**

Key Collaborators/Stakeholders  
[LULAC Oak Hill Apartments](#)  
[First Financial Bank](#)  
[Brazos Valley Community Development Corporation](#)

Funding Source  
[HUD Section 108 Loan Guarantee Program](#)

Project Description  
The project will use Section 108 guaranteed loan proceeds to substantially rehabilitate the LULAC Oak Hill Apartments. The scope of work for 49-units will include complete interior and exterior renovations that include extensive energy efficiency improvements, such as efficient attic ventilation, energy-efficient HVAC systems, Energy Star-rated appliances, and energy-efficient vinyl windows.



## PROJECT HIGHLIGHT: COOL PAVEMENT



Community Cooling Boyle Heights

LOS ANGELES, CALIFORNIA

Image Source

## Project Lead

[City of Los Angeles](#)Total Project Cost  
**\$1,000,000**Year Completed  
**IN PROGRESS**

## Key Collaborators/Stakeholders

[City of Los Angeles Streets LA](#)

## Funding Source

[HUD Community Project Funding](#)

## Project Description

The project will install cooling elements - such as cool pavement coating and planting shade trees - to local streets in the Boyle Heights community, providing the opportunity for urban cooling, urban greening, pedestrian, and public health improvements. The funding will support the installment of cool pavement coating in 25 neighborhood blocks where shade trees will also be planted along those streets.

The project is a part of Los Angeles' greater [Cool Neighborhoods Project](#).



## PROJECT HIGHLIGHT: COMMUNITY GREEN ROOF



Chicago Cultural Center  
CHICAGO, ILLINOIS

*Image Source*

## Project Lead

[City of Chicago](#)

## Total Project Cost

**\$2,000,000**

## Year Completed

**2006**

## Funding Source

[HUD Community Development Block Grant \(CDBG\)](#)

## Project Description

The Cultural Center's existing roof was replaced with the installation of a green roof and solar collector panel canopies to be placed over the equipment and planted with sustainable vegetation. The solar collector panels incorporated provide hot water to the building. The green roof covers nearly half of the building's 45,600 square foot roof and includes approximately 950 shrubs and 12,000 plants. Chicago Honey Co-op also maintains beehives on the roof that produce honey, which they sell at local farmers' markets.



PROJECT HIGHLIGHT: RESILIENT BUILDING RETROFITS



Repair, Reconstruction and Relocation Program (R3)

PUERTO RICO

Project Lead

[Puerto Rico Department of Housing](#)

Total Program Cost  
**\$2,923,000,000**

Year Completed  
**ONGOING**

Funding Source

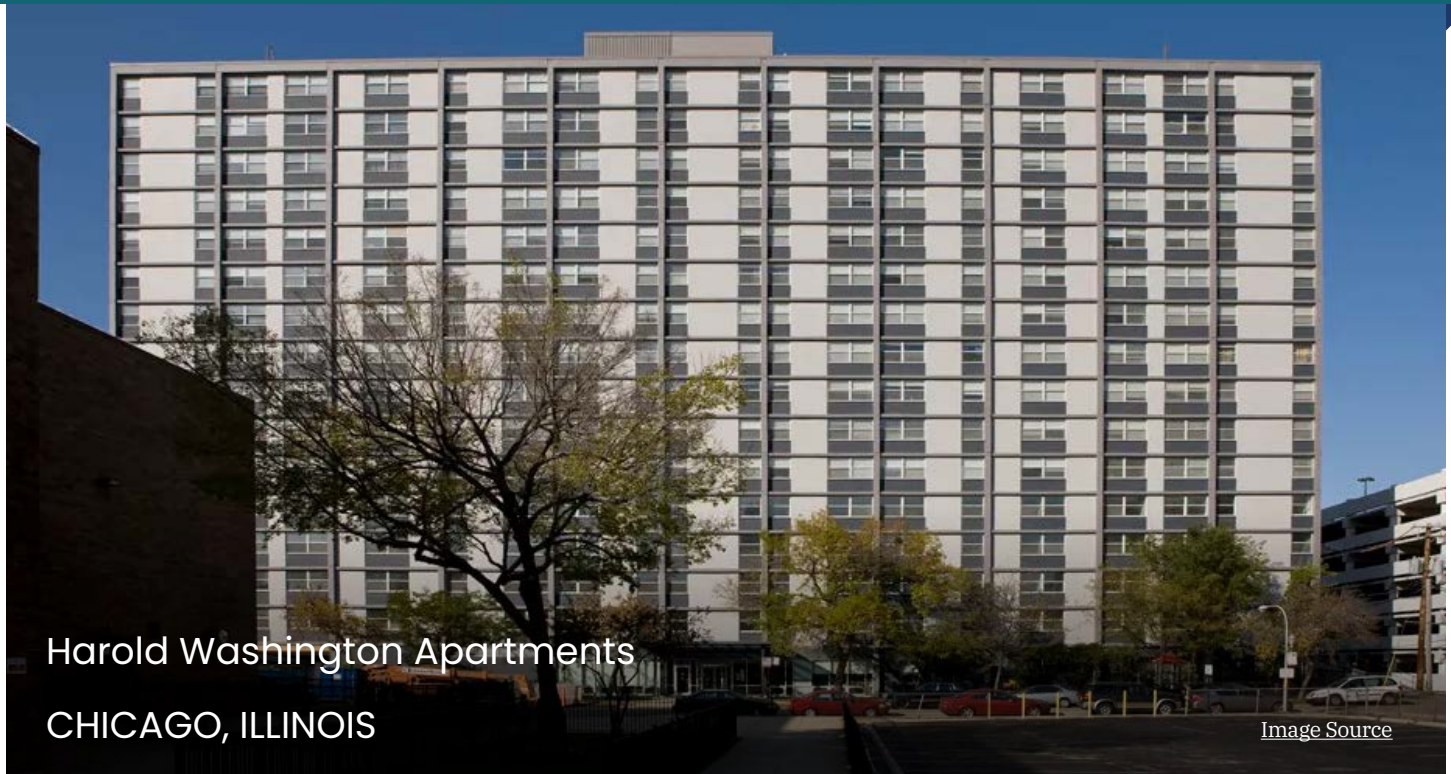
[HUD Community Development Block Grant-Disaster Recovery](#)

Project Description

The Government of Puerto Rico, through the Department of Housing, administers the R3 Program financed with funds assigned by the Department of Housing and Urban Development of the United States, which will provide assistance for the repair or reconstruction of single-family homes damaged by hurricanes Irma and/or Maria. These homes are repaired utilizing various resilient building methods including heat resistant materials and cooling features, such as awnings.



## PROJECT HIGHLIGHT: ENERGY EFFICIENCY APARTMENT RETROFITS



Harold Washington Apartments

CHICAGO, ILLINOIS

Image Source

## Project Lead

[Harold Washington Apartments](#)

## Total Project Cost

**\$68,000,000**

## Year Completed

**2012**

## Funding Source

[HUD Green and Resilient Retrofit Program \(GRRP\)](#)

## Project Description

This project included the acquisition and rehabilitation of two apartment buildings that contain a total of 300 units combined. Both buildings had several green and energy efficient features included in their rehabilitation, including Energy Star ductless split air conditioning systems, Energy Star appliances, new installation, and high efficiency boilers for heating. GRRP funding was only utilized for one of the buildings, which comprised of a \$40,000 grant and a \$2.27 million loan.



PROJECT HIGHLIGHT: POP-UP COOLING CENTERS AND RESILIENCE HUBS



The Gentilly Beehive Microgrid Community Resilience Project  
NEW ORLEANS, LOUISIANA

Project Lead

[Groundwork New Orleans](#)

Total Project Cost

**\$500,000**

Year Completed

**IN PROGRESS**

Key Collaborators/Stakeholders

[The Footprint Project](#)

[Healthy Community Services](#)

[Solar Alternatives](#)

[Educators for Quality Alternatives](#)

Funding Source

[EPA EJ Collaborative Problem-Solving Program](#)

Project Description

This project pilots mobile solar trailers as community resilience hubs during electrical grid outages. The trailers will serve as cooling centers and hubs for first responders. When not in use during outages, partners will use the trailers for education and workforce development. The initiative’s goal is to develop outreach programs on clean energy for disaster resilience and share best practices with neighboring communities.



PROJECT HIGHLIGHT: COMMUNITY COOLING SPACE



Interactive Children’s Splash Park  
GRESHAM, OREGON

Project Lead  
[City of Gresham](#)

Funding Source  
[HUD Section 108 Loan Guarantee Program](#)

Total Loan Amount  
**\$1,462,000**

Year Completed  
**2012**

Key Collaborators/Stakeholders  
[Gresham’s Center for the Arts Foundation](#)  
[Historic Downtown Gresham Association](#)

Project Description  
The City of Gresham constructed an interactive children’s splash park located at The Center for the Arts Plaza. This municipal project is located within the Downtown Storefront Improvement Program area, which is a declared a blighted area as defined under Oregon state law. The city owns the Center for the Arts Plaza and will maintain the fountain.



## PROJECT HIGHLIGHT: LIBRARY COOLING SPACE



Mount Vernon Library Commons Project  
MOUNT VERNON, WASHINGTON

## Project Lead

[City of Mount Vernon](#)

## Total Project Cost

**\$1,700,000**

## Year Completed

**2024**

## Key Collaborators/Stakeholders

[State of Washington](#)

[Skagit County, WA](#)

[Mount Vernon Library Foundation](#)

## Funding Source

[HUD Section 108 Loan Guarantee Program](#),  
and more

## Project Description

The Library Commons Project is a multi-use municipal facility that is located within an economically distressed census tract and will serve the residents of an area that has a high concentration of low- and moderate income users by providing them with access to a new library, a community center, three floors of parking, a significant number of electric vehicle and bicycle parking infrastructure, as well as park-and-ride capacity.





## PROJECT HIGHLIGHT: COMMUNITY CENTER REHABILITATION



Jefferson Barns Community Center  
WESTLAND, MICHIGAN

## Project Lead

[City of Westland](#)

## Total Loan Amount

**\$575,000**

## Year Completed

**2015**

## Key Collaborators/Stakeholders

[Wayne Westland Community Schools](#)

[Wayne Metropolitan Community Action Agency](#)

[ESCOT Youth Development](#)

[Norwayne Community Citizens Council](#)

[Nankin Transit Commission](#)

## Funding Source

[HUD Section 108 Loan Guarantee Program](#)

## Project Description

The City of Westland will use Section 108 guaranteed loan proceeds for permanently financing the rehabilitation of the Jefferson Barns Community Center. The project includes the renovation and repurposing of the vacant Jefferson Elementary School into an expanded community center serving the Norwayne neighborhood, which is primarily residential and has a poverty rate of 67%. The community center will serve multiple purposes, including a public cooling center.



PROJECT HIGHLIGHT: WATER COOLING FEATURE



Splash Pad Installation  
DORRIS, CALIFORNIA

Project Lead

[City of Dorris](#)

Total Project Cost

**\$235,000**

Year Completed

**2024**

Key Collaborators/Stakeholders

City of Dorris

Funding Source

[HUD Community Development Block Grant \(CDBG\)](#)

Project Description

The new splash pad constructed under this project will be the only of its kind in the county, providing an enriching experience for the community for a fraction of the cost of installing and maintaining a pool. The pad will be located in Westside Park and will be a safe and free way for families to cool down during hot weather in the high desert of northeastern Siskiyou County. This is critical, as the next closest splash pad or pool is over 20 miles away.



PROJECT HIGHLIGHT: EMERGENCY COOLING CENTER



Project Lead

[Imperial County](#)

Total Project Cost

**\$6,147,487**

Year Completed

**IN PROGRESS**

Funding Source

[HUD Community Development Block Grant \(CDBG\)](#)

Project Description

This project includes the construction of a new fire station in Seeley. The new facility is to include accommodations for two fire trucks, sleeping quarters, and other fire station facilities. The new facility is also to include a Cooling Center. The center is to be used in the case of emergencies and serve as a refuge for Seeley area residents during power outages or natural disasters.



PROJECT HIGHLIGHT: GREEN SPACE



Improving Access to Green Space and Promoting Waterfront Resilience  
BRONX, NEW YORK

Project Lead

[Riverbay Fund](#)

Total Project Cost

**\$500,000**

Year Completed

**IN PROGRESS**

Key Collaborators/Stakeholders

[Co-op City Community Leaders](#)

Funding Source

[HUD Community Project Funding](#)

Project Description

The project aims to revitalize an unused strip of waterfront land in Co-Op City, in America’s largest affordable housing development in the Bronx, which will provide new green space for public parks and promote environmental resilience in the process. The desired outcome is to enhance health and well-being in the community and beyond.



## PROJECT HIGHLIGHT: EXPANDING TREE CANOPY



Neighborhood Tree Planting  
CEDAR FALLS, IOWA

## Project Lead

[City of Cedar Falls](#)

## Total Project Cost

**\$20,000**

## Year Completed

**2023**

## Key Collaborators/Stakeholders

City Community Development, Parks, and Public Works Departments

## Funding Source

[HUD Community Development Block Grant \(CDBG\)](#)

and City Funds

## Project Description

Like many cities, Cedar Falls was hit hard by the Emerald Ash Borer. The ash tree was a common street tree in the community, so the City used funds to purchase 85 street trees and plant them along streets in low-moderate income neighborhoods. The project not only replaced some of the trees lost to the Emerald Ash Borer infestation, but as the trees mature and provide shade, they will help reduce utility bills for homeowners, reduce urban heat island effects, and create more walkable neighborhoods.



PROJECT HIGHLIGHT: COMMUNITY-LED RESPONSE



Climate Resilience and Empowerment Project  
PHILADELPHIA, PENNSYLVANIA

Image Source

Project Lead

[Nueva Esperanza, Inc.](#)

Total Project Cost

\$500,000

Project Timeline

2024 – 2027

Key Collaborators/Stakeholders

[Hunting Park Green](#)

[As I Plant the Seed](#)

[Hunting Park Neighborhood Advisory Committee](#)

[Hunting Park Community Solar Initiative](#)

[Pennsylvania Horticultural Society](#)

Funding Source

[EPA EJ Collaborative Problem-Solving Program](#)

Project Description

This project addresses extreme heat at the neighborhood block scale in Hunting Park, Pennsylvania by distributing cooling kits and AC units, providing heat mitigation training to residents, maintaining neighborhood trees, and assessing the impact of extreme heat on health. It aims to implement a comprehensive, community-led response to improve residents' health and well-being.

# ADDITIONAL RESOURCES & FUNDING SOURCES

Identifying what actions your community can take to address extreme heat is the first step in becoming more resilient. The next step is outlining an implementation plan for these actions and securing funding to initiate it.

**Table 1** details various HUD funding sources that support projects in Action Tracks included in the Playbook.

**Table 2** details other federal funding sources that also support projects in Action Tracks. Please note that the funding resources outlined below may have modified their eligibility requirements or funding priorities since the publication of this resource, so those interested in applying for these resources should utilize the hyperlinks listed in the tables to access the most up to date information.

Also included in this section are additional resources that will aid communities in executing their extreme heat action strategies (**Table 3**).

## HUD Exchange Resources

- [Build for the Future](#): Provides critical access to funding opportunities, offering guidance materials, and fostering peer-to-peer knowledge sharing for local communities. It includes:
  - [Funding Navigator](#): A crosscutting listing of funding opportunities under the Inflation Reduction Act of 2022 (IRA), Bipartisan Infrastructure Law of 2021 (BIL), and others across federal agencies to support efforts to enhance climate resiliency and other efforts in HUD-supported communities, programs, and properties.
- [HUDx Extreme Heat](#): A hub site for HUD grantees to locate existing and new technical assistance related to extreme heat including guidance, resources, and tools. It includes a link to the:
  - [Community Resilience Toolkit](#): Designed to assist communities in enhancing their resilience to climate-related natural hazard risks, including information on HUD funding streams available that can support many of the strategies described in the playbook.

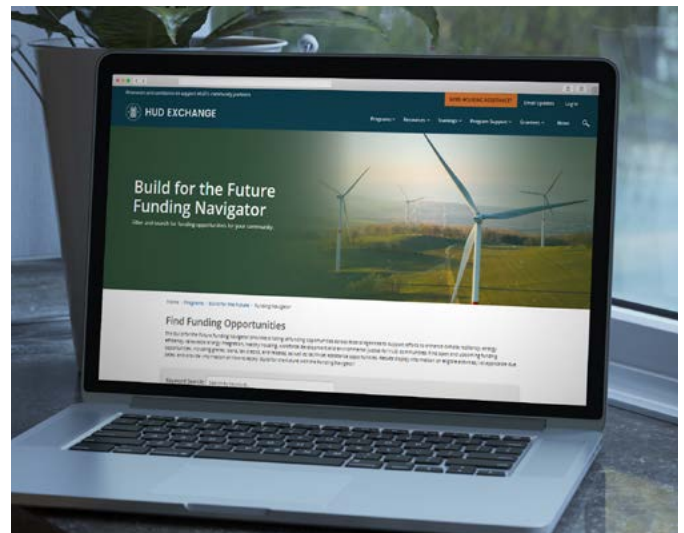


Table 1: HUD Funding Sources

HUD Program	Funding Range	Funding Type	Eligible Applicants	Program Description
<a href="#">Choice Neighborhoods Grants</a>	Minimum: None  Maximum: \$500,000	Grants	Local governments, federally recognized Tribes, public housing authorities, and non-profits	Provides support for locally driven strategies that address struggling neighborhoods with distressed HUD housing through a comprehensive approach.
<a href="#">Community Development Block Grants</a>	Varies by program	Grants	Varies by program	Supports community development activities, such as community centers, housing rehabilitation, public services, code enforcement, and homeowner assistance, to build stronger and more resilient communities.
<a href="#">Community Development Block Grant – Disaster Recovery</a>	Varies	Grants	Local and state governments and federally recognized Tribes	Supports communities to recover from Presidentially declared disasters, especially in low- and moderate-income areas. Eligible activities include acquisition, rehabilitation, reconstruction, housing counseling, and more.
<a href="#">Community Development Block Grant - Mitigation</a>	Varies	Grants	Local and state governments and federally recognized Tribes	Funds are provided to areas impacted by recent disasters to carry out strategic and high-impact activities to mitigate disaster risks and reduce future losses.
<a href="#">Green and Resilient Retrofit Program</a>	Up to \$80,000 per unit or \$20,000,000 per property	Grants and Loans	Eligible HUD-assisted multifamily properties	Supports projects of eligible HUD-assisted multifamily properties that improve energy efficiency, enhance indoor air quality or sustainability, energy storage, building electrification strategies, and those that address climate resilience.
<a href="#">Healthy Homes Program Grants</a>	Varies	Grants	States and local governments, federally recognized Tribes, non-profits, academic institutions, and for-profit firms	Funds projects focused on researching and demonstrating low-cost, effective home hazard assessment and intervention methods, as well as on public education that stresses ways in which communities can mitigate housing-related hazards.
<a href="#">HOME Investment Partnerships Program</a>	States: Formula allocation or \$3,000,000, whichever is higher  Local Gov't: At least \$500,000	Grants	State and local governments	Provides formula grants to grantees, often in partnership with local nonprofit groups, for a wide range of activities, including building, buying, and/or rehabilitating affordable housing.



Table 1: HUD Funding Sources

HUD Program	Funding Range	Funding Type	Eligible Applicants	Program Description
<a href="#">Indian Community Development Block Grant</a>	Varies by region	Grants	Federally recognized Tribes, Alaska Native villages, and some tribal organizations	Provides support for developing viable Indian and Alaska Native Communities, including housing rehabilitation, construction of community facilities, and economic development projects.
<a href="#">Section 108 Loan Guarantee Program</a>	Varies	Loans	State and local governments	Provides loans for a wide range of activities, including housing rehabilitation, rehabilitation of publicly owned property, and construction of public facilities. The program is typically used to fill a gap in the financing for larger development projects.

Table 2: Other Federal Funding Sources

Funding Program	Funding Range	Funding Type	Eligible Applicants	Program Description
<a href="#">DOE Energy Efficiency and Conservation Block Grants (EECBG)</a>	Funding allocation limits dependent upon location	Grants	Local and state and governments and federally-recognized Tribes	Supports the implementation of strategies to reduce energy use and fossil fuel emissions, as well as projects that improve energy efficiency.
<a href="#">DOE Weatherization Assistance Program (WAP) Enhancement &amp; Innovation Grants</a>	Minimum: \$500,000 Maximum: \$2,00,000	Grants	Current WAP Grantees (local, state, or Tribal governments) and non-profit organizations	Funds projects focused on the deployment of energy efficiency retrofits and clean energy technologies, particularly those that benefit low-income households by improving indoor air quality and reducing utility bills.
<a href="#">DOT Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Program</a>	Varies	Grants	Local and state governments; special purpose districts and public authorities with a transportation function	Provides funding to help make surface transportation more resilient to natural hazards, including climate change and extreme weather events. Eligible activities fall into four groups: planning, resilience improvement, community resilience and evacuation routes, and at-risk coastal infrastructure.
<a href="#">EPA Brownfields Program</a>	Varies, up to \$2,000,000	Grants and Technical Assistance	Local and state governments and federally recognized Tribes	Provides support to safely clean up and sustainably reuse contaminated properties. These areas can be turned into public parks, restored wetlands, and other blue-green infrastructure.
<a href="#">EPA Community Change Grants</a>	Minimum: (See example on Table 1 Choice Neighborhoods Grants) None Maximum: \$20,000,000	Grants	Partnership between two CBOs or Partnership between a CBO and a federally-recognized Tribes, local government, or institution of higher education	Supports projects that increase community climate resilience and building community capacity to address environmental and climate justice challenges for disadvantaged communities.
<a href="#">EPA The Environmental Justice Collaborative Problem-Solving (EJCPS) Cooperative Agreement Program</a>	Maximum: \$500,000	Grants	Community-based organizations	Provides financial assistance for projects that address local environmental or public health issues in a collaborative manner with various stakeholders.

Table 2: Other Federal Funding Sources

Funding Program	Funding Range	Funding Type	Eligible Applicants	Program Description
<a href="#">EPA The Environmental Justice Government-to-Government (EJG2G) Program</a>	Maximum: \$1,000,000	Grants	Local, state, and tribal governments partnership with a community-based organization	Supports activities that lead to measurable environmental or public health impacts in communities disproportionately burned by environmental harms.
<a href="#">FEMA Building Resilient Infrastructure and Communities (BRIC)</a>	Dependent upon applicant and project type	Grants and Technical Assistance	Eligible states, territories, and federally recognized Tribes can submit applications on behalf of subapplicants	Focuses on proactive investment in community resilience and funds capability and capacity building activities, mitigation projects, and project management costs.
<a href="#">FEMA Safeguarding Tomorrow Revolving Loan Fund Program</a>	Loan Maximum: \$5,000,000	Loans	State governments and federally recognized Tribes may establish revolving loan fund programs for local governments	Provides state governments or federally recognized Tribes with capitalization grants to establish revolving loan funds that provide hazard mitigation assistance for local governments to reduce risks from natural hazards, such as extreme heat.
<a href="#">HHS Low Income Home Energy Assistance Program (LIHEAP)</a>	Varies	Financial Assistance to Individual Households	Low-income households	Provides funding to households to stay safe in extreme heat by providing assistance with home cooling bills, preventing energy shutoffs, reconnecting services, making homes more energy efficient, and repairing or replacing cooling equipment. Funds are available through local Departments of Social Services.
<a href="#">NOAA Urban Heat Island Mapping Campaign</a>	Technical Assistance Only	Technical Assistance	Local governments, universities, and non-profits	Supports communities to plan and executive a volunteer-based community science field campaign that engages residents in understanding how heat is distributed across their community and results in a data set of high-resolution heat information that can be used for community planning purposes.
<a href="#">USDA Urban and Community Forestry Program</a>	Minimum: \$100,000 Maximum: \$50,000,000	Grants	Local and state governments, federally recognized Tribes, non-profits, public academic institutions, community-based organizations	Supports projects that apply nature-based solutions to chronic and emergent economic, social, and environmental challenges.

Table 3: Additional Resources

Resource	Owner/Creator	Description
<a href="#">Resource Library</a>	HUD	Training videos and resource documents on extreme heat
<a href="#">Consolidated Plan</a>	HUD	Information and resources to help states and local jurisdictions to assess their affordable housing and community development needs. Incorporating resilience strategies for planning for and addressing extreme heat can be a part of this process.
<a href="#">Heat.gov</a>	NIHHIS	Repository for heat and health information and federal funding opportunities for communities and organizations to reduce impacts of extreme heat
<a href="#">National Heat Strategy 2024-2030</a>	NIHHIS	Outlines goals and guiding principles for approaching extreme heat challenges across government agencies nationwide, focusing on communications, science, solutions, and support
<a href="#">Planning Tools for Combatting Extreme Heat</a>	The White House	Compiled list of both government and private sector resources to help communities address extreme heat
<a href="#">Programs and Actions to Address Extreme Heat</a>	EPA	Outlines resources, programs, and funding opportunities for addressing extreme heat within the EPA
<a href="#">Fact Sheet: Mitigating the Risk of Extreme Temperatures with Hazard Mitigation Assistance Funds</a>	FEMA	Details eligible extreme heat mitigation measures that could be supported by FEMA's Hazard Mitigation Assistance grant programs
<a href="#">Green Infrastructure Toolkit</a>	Georgetown Climate Center	Outlines federal, state, and local funding avenues for green infrastructure project implementation
<a href="#">Planning for Urban Heat Resilience</a>	American Planning Association	Report that provides guidance on increasing urban heat resilience in communities and outlines a framework for mitigating and managing heat through various strategies
<a href="#">Heat Resource Library</a>	Global Heat Health Information Network	Library of publications, research, case studies, action plans, presentations, and outreach projects related to heat
<a href="#">Heat Action Platform Policy Tool</a>	Atlantic Council	Online tool that presents potential policy solutions for heat based on unique community filters



This material is based upon work supported, in whole or in part, by Federal award number C-21-TA-MD-0009 awarded to Enterprise Community Partners, Inc. by the US Dept of HUD. The substance and findings of the work are dedicated to the public. Neither the United States Government, nor any of its employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately-owned rights. Reference herein to any individuals, agencies, companies, products, process, services, service by trade name, trademark, manufacturer, or otherwise does not constitute or imply an endorsement, recommendation, or favoring by the author(s), contributor(s), the U.S. Government or any agency thereof. Opinions contained herein are those of the author(s) and do not necessarily reflect the official position of, or a position that is endorsed by, HUD or any Federal agency.