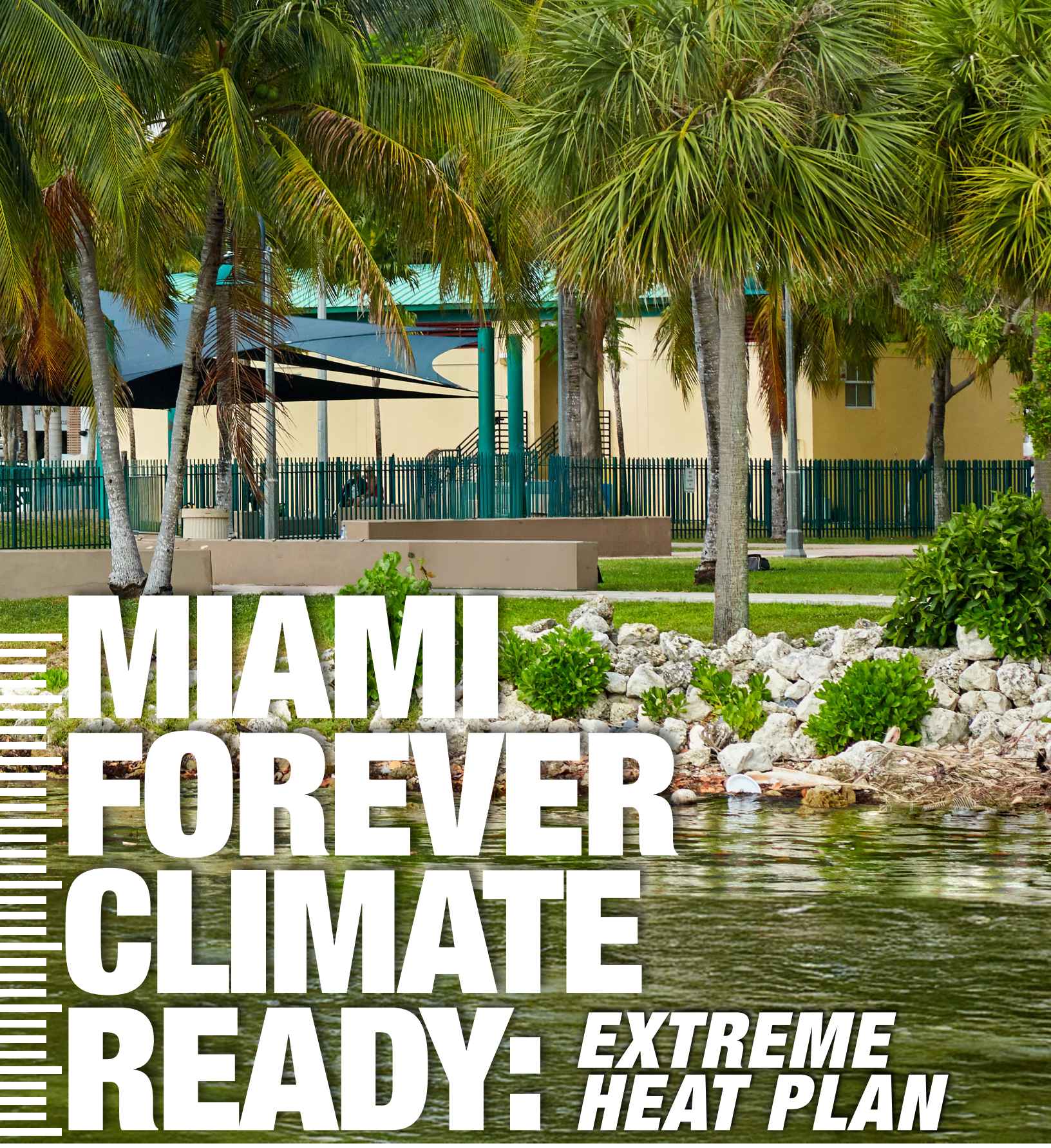

MIAMI FOREVER CLIMATE READY: EXTREME HEAT PLAN

CITY OF MIAMI FLORIDA

MIAMI FOREVER CLIMATE READY

ACKNOWLEDGEMENTS

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The development of the Miami Forever Climate Ready: Extreme Heat Plan was led by the Office of Resilience and Sustainability and the Office of the City Manager, in collaboration with City of Miami departments and their staff that provided input and considerations to inform this plan:

Department of Building
Office of Capital Improvements
Department of Code Compliance
Office of Communications
General Services Administration
Office of Film and Entertainment
Department of Fire-Rescue
Department of Housing and Community Development
Department of Human Services
Department of Innovation and Technology
Department of Planning
Department of Parks and Recreation
Department of Real Estate and Asset Management
Department of Resilience and Public Works
Department of Risk Management
Department of Solid Waste
Office of Zoning

We also express gratitude for the contributions received from public stakeholders, local organizations, and universities during the preparation of this report.

Allapattah CDC
Catalyst Miami
City of Miami Climate Resilience Committee
City of Miami Residents
Coconut Grove Sailing Club
Earthlink
Florida Clinicians for Climate Action
Florida Immigrant Coalition
Florida International University
Florida Sea Grant Extension Agent
Massachusetts Institute of Technology
Miami Climate Alliance
Miami Parking Authority
Miami Waterkeeper
P.E.E.R. Group
Sunrise Miami
The CLEO Institute
The Underline
University of Miami
Urban Paradise Guild
Volunteer Cleanup
WeCount
Youth Environment Alliance

MIAMI FOREVER
CLIMATE READY

MIAMI FOREVER
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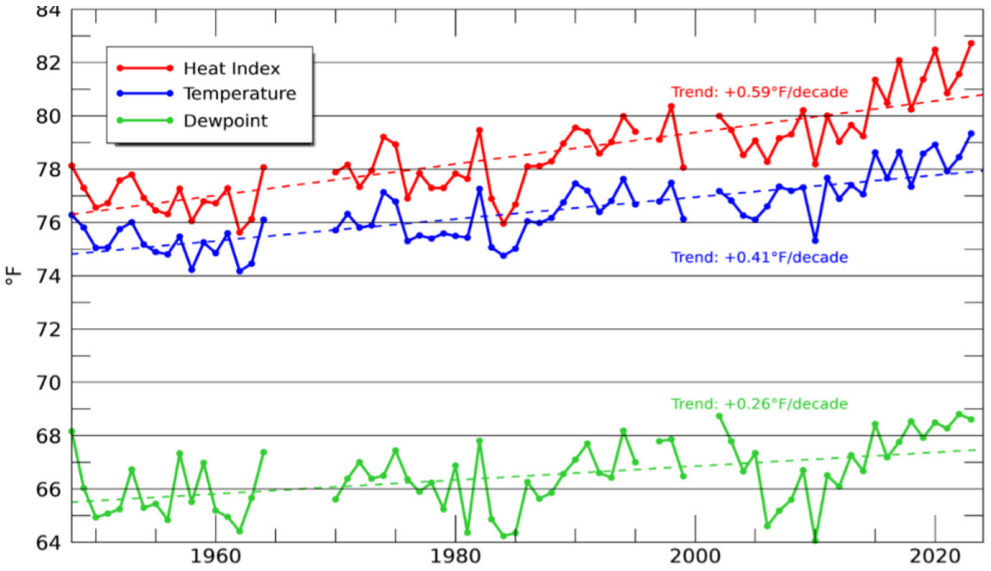
BACKGROUND ON EXTREME HEAT IN MIAMI

In 2023, Miami experienced 42 days reaching a heat index of 105°F or more, compared to an average of 6 days/year over the previous 14 years. In 2024, two days in May reached record breaking heat indices of 112°F.[1] Projections suggest that by mid-century, Miami could face 88 days annually with a heat index of 105°F or greater, equivalent to roughly three months of extreme heat.[2] Research from the University of Miami indicates that the annual average heat index in Miami has increased by 0.59°F per decade since the 1950s, emphasizing the need for a local extreme heat plan (Figure 1).

Figure 1. Annual Average Heat Index, Temperature, Dewpoint in Miami, Florida

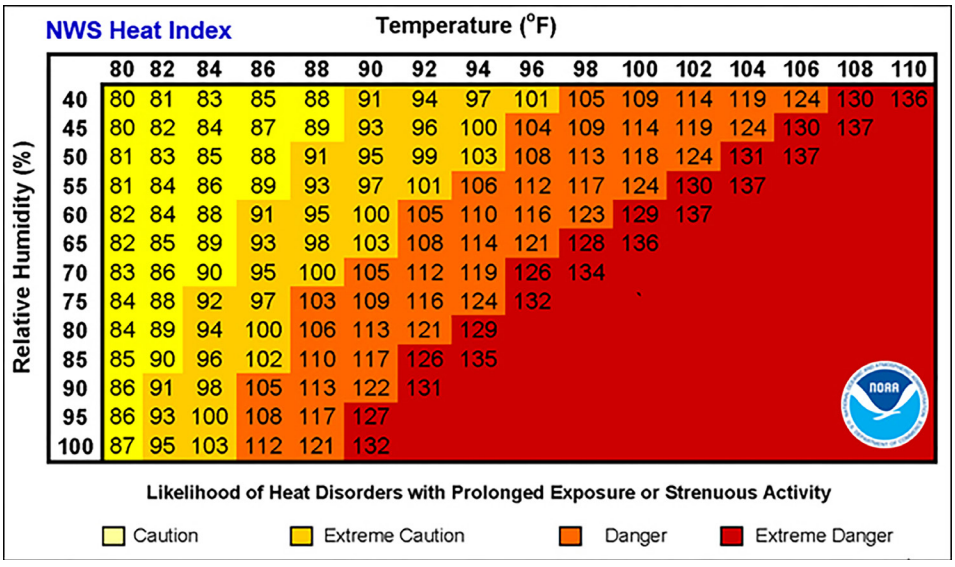


Source: McNoldy, Brian. Annual Average High Temperature and Dew Point in Miami. [3]

In response to the growing number of high heat days, Miami-Dade County has officially recognized a "Heat Season" spanning from May 1 to October 31 every year. In addition, in May 2023, the National Weather Service Miami - South Florida Weather Forecast Office began an experimental pilot program for Miami-Dade County to reduce the Heat Index threshold for Heat Advisories and Heat Warnings, so community members receive alerts before heat indices reach highly dangerous levels. National Weather Service began this pilot in Miami-Dade County in 2023 and extended it to Broward County in 2024.[4]

- Heat Advisory - heat index reduced from 108°F for 2 hours, to 105°F for 2 hours.
- Heat Warning - heat index reduced from 113°F for 2 hours, to 110°F for 2 hours.

Figure 2. NOAA National Weather Service (NWS) Heat Index



Source: National Oceanic and Atmospheric Administration (NOAA)

Text "**ALERTMIAMI** to 888777 to receive emergency updates including declared extreme heat advisories and warnings.

CAUSES OF EXTREME HEAT AND GLOBAL TRENDS

Greenhouse gas emissions, driven by human activities such as energy production, transportation, industry, agriculture, and deforestation, are the main contributors to global climate change. With cities responsible for 70 percent of global carbon dioxide emissions (the primary human-driven greenhouse gas), it is crucial for local governments to lead the way in committing and implementing ambitious measures that drastically reduce emissions to avoid the worst impacts of climate change like extreme heat.

According to the National Oceanic and Atmospheric Administration (NOAA), the 2022 global average land and ocean surface temperature was 1.55°F warmer than the 20th-century average of 57°F and 1.9°F warmer than the pre-industrial period (1880 - 1900).[5a] This increase in global average temperature disrupts historic climate patterns leading to extreme changes in weather and natural disasters. In Miami, these impacts are experienced as increased flooding due to sea level rise, intensified hurricanes and storms, and growing periods of extreme heat.

The City of Miami has set a long-term target of net-zero greenhouse gas emissions by 2050 in alignment with the Paris Climate Agreement, which stipulates that global average temperature rise should be kept to well below 3.6°F (2°C) above preindustrial levels, and ideally be limited to 2.7°F (1.5°C).

EXTREME HEAT DATA AND RESEARCH IN MIAMI

The City has participated in several studies and initiatives to get a better understanding of the City's heat profile and areas in most need of cooling interventions. For many years the City only had land surface temperature maps, which are helpful in showing variations in heat throughout the City but they misrepresent ambient temperatures as surface temperatures are known to be higher.[5b] Due to this, the City of Miami participated in a project supported by NOAA and CAPA Strategies in summer 2020 called Heat Watch which engages local communities in a heat mapping campaign to gather data and create high-resolution maps of ambient heat at the human level. Teams of citizen scientists drove designated routes throughout the City in the morning, afternoon, and evening with sensors that tracked temperature, humidity, and GPS coordinates to create a Citywide heat model.

Additionally, Florida International University, University of Miami, and Catalyst Miami teamed up for another heat-related citizen science initiative called Shading Dade which placed small iButton sensors throughout the County, for 3 months at a time, to measure the impact of shade interventions. Temperature readings can vary significantly by location and these measurements have demonstrated that many sites in the City and County often record a heat index above the local threshold value for a heat advisory even when no advisory has been issued. The data does require processing and analysis so findings from sensor deployments are not immediate. Most recently, the City worked with Google Environmental Insights Explorer and was selected as a pilot city for their Tree Canopy Lab which uses aerial imagery and machine learning to provide estimates of tree canopy density at the Census Tract level.

HEALTH RISKS AND VULNERABLE POPULATIONS

According to the National Weather Service, extreme heat conditions are typically defined as when the heat index exceeds 105°F to 110°F for at least two consecutive days.[6] Climate change impacts health both directly (e.g., through extreme weather events) and indirectly (e.g., through alterations in environmental systems affecting diseases and resources). When expriencing extreme heat, one's body works harder to maintain a normal temperature, increasing the risk of heart attack and strokes, which can be fatal. According to the National Oceanic and Atmospheric Administration (NOAA), heat is the leading cause of weather-related deaths in the United States.[7]

City of Miami's Department of Fire-Rescue, Division of Emergency Management is working with the 911 call center and the Florida Department of Health to track emergency calls related to heat. From May to August 2024 the City received nearly 150 heat-related emergency calls. Additionally, a hotter, wetter climate will continue to increase the length of mosquito season, which can make residents more susceptible to vector-borne diseases like Zika virus.

Extended periods of high heat can affect Miamians in the following ways:

- Increasing risk of heat exhaustion and heat stroke
- Increasing the risk of dehydration due to significant fluid loss from prolonged exposure to high temperatures
- Exacerbating risks from chronic health conditions, including asthma and some heart conditions
- Exacerbating poor air quality
- Impairing cognitive function and physical coordination, raising the risk of accidents
- Declining mental health including mental fatigue and increased aggression and violence

HEALTH RISKS AND VULNERABLE POPULATIONS (cont'd.)

Extreme heat and humidity are particularly dangerous for infants and young children, elderly adults, low-income individuals, pregnant people, and outdoor workers. According to 2022 Census data, 5.5 percent of City residents are under the age of 5 years and 16.5 percent are aged 65 years and older. The City of Miami also faces a high poverty rate of 20 percent.[8]

In Miami- Dade County, over 300,000 outdoor workers represent about a quarter of the County's total workforce. The County also faces socioeconomic challenges, with a poverty rate of 14.7 percent - meaning 1 in 6 residents live in poverty. Moreover, 34 percent of the County's population, or 488,180 residents, fall below the Asset-Limited, Income- Constrained and Employed (ALICE) threshold, higher than state average.[9]

Historically marginalized communities in Miami, shaped by discriminatory redlining practices, are disproportionately affected by urban heat islands. Redlining, a 20th century practice that designated certain neighborhoods as "hazardous" for mortgage lending based largely on race, has resulted in lower home values, less homeownership, and fewer resources for these communities. Consequently, historic Black neighborhoods, like Overtown and Liberty City, typically have less tree cover and more heat-absorbing surfaces like concrete and asphalt, making them significantly hotter than more affluent areas.[10]

Additionally, research by the American Council for an Energy-Efficient Economy (ACEEE) reveals that Miami households face significant energy burdens. The median energy burden (percentage of income used to pay for energy) in Miami is 3 percent, while the median low-income energy burden is 6.9 percent. A quarter of low-income households in Miami have an energy burden above 11 percent, which is more than 3.5 times higher than the median energy burden. Black and Hispanic households in Miami experience higher energy burdens, with 29 percent of Black households and 24 percent of Hispanic households facing high energy burdens.[11]

Statewide, in response to the risks posed by extreme heat, Florida passed the Zachary Martin Act in 2020, aimed at protecting student athletes from heat-related illnesses, including heat strokes. The legislation mandates that schools provided water-filled tubs at games and practices to rapidly cool the body.[12] The law also requires schools to train personnel on how to recognize signs of heat-related ailments, including potentially deadly heat strokes, and to take life-saving actions.

LEVERAGING CITY OF MIAMI STRATEGIES

RESILIENT305 STRATEGY identifies extreme heat as a chronic stressor for Miami-Dade County and integrates heat as a consideration for actions related to community resilience building and infrastructure improvements. These initiatives prioritize equity and support for vulnerable populations to enhance Miami's resilience to climate change.

MIAMI FOREVER CLIMATE READY PLAN set forward a plan to help the City prepare for, adapt to, and mitigate current and future climate risks. This includes efforts to manage flooding, heat, and storm impacts, which are crucial for protecting residents' health and safety.

MIAMI FOREVER CARBON NEUTRAL PLAN establishes an ambitious interim 2035 target of 60 percent greenhouse gas emissions reduction below 2018 levels and outlines actions the City and its stakeholders can take to reach that target.

REIMAGINE PARKS MASTER PLAN outlines strategies to develop and maintain green spaces, which help reduce urban heat islands through shade and cooling areas. In addition, to expanding access to water for cooling and hydration, the plan also aims to ensure that all residents are within a 15-minute walk to a park, enhancing accessibility, and promoting active lifestyles.

SOUTHWEST STREETSCAPE MASTER PLAN focuses on enhancing the urban tree canopy and streetscape, providing shade, reducing surface temperatures, and improving air quality.

By leveraging these strategies, the City of Miami can create a cooler and more resilient urban environment.

MIAMI FOREVER CLIMATE READY: EXTREME HEAT PLAN

Pursuant to City Commission Resolution R-23-0354, the City of Miami has developed an Extreme Heat Plan to identify actions that can be taken to address extreme heat in the City.

A RESOLUTION OF THE MIAMI CITY COMMISSION DIRECTING THE CITY MANAGER TO EXPLORE OPTIONS AND SOLUTIONS FOR THE CITY OF MIAMI ("CITY"), INCLUDING BUT NOT LIMITED TO CITY PARKS, TO ADDRESS THE EXTREME HEAT IN THE CITY.

This Extreme Heat Plan is organized into three Cooling Solutions and a Heat Season Protocol detailing actions departments will take prior to and during Heat Season.

COOLING SOLUTIONS

Cooling Solutions are organized into objectives with corresponding actions and implementation steps. The implementation steps have associated timelines for completion:

- **Short-term** = completed within **2-3 years** (by the 2027 Heat Season)
- **Medium-term** = completed within **5 years** (by the 2029 Heat Season)

Actions and implementation steps that reference time frames are subject to change based on current needs.

The Office of Resilience and Sustainability will track progress on the Cooling Solutions in alignment with existing monitoring protocols.

THE THREE COOLING SOLUTIONS FOR THE CITY OF MIAMI EXTREME HEAT PLAN ARE:

1. SHADE

Includes actions to help people stay cool in shaded environments.

2. WATER

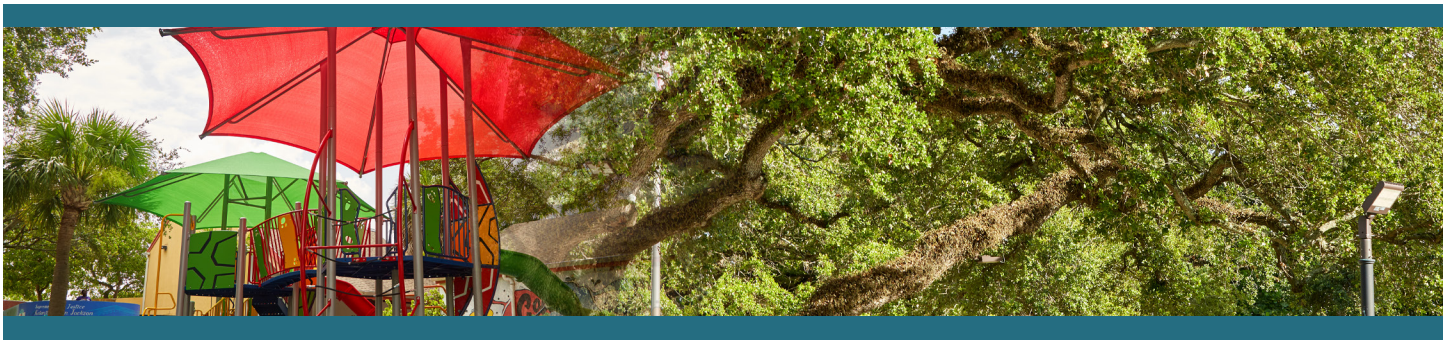
Includes actions to help people stay cool and hydrated by increasing access to water resources.

3. DESIGN

Includes actions to help people stay cool in their homes, work, and community.

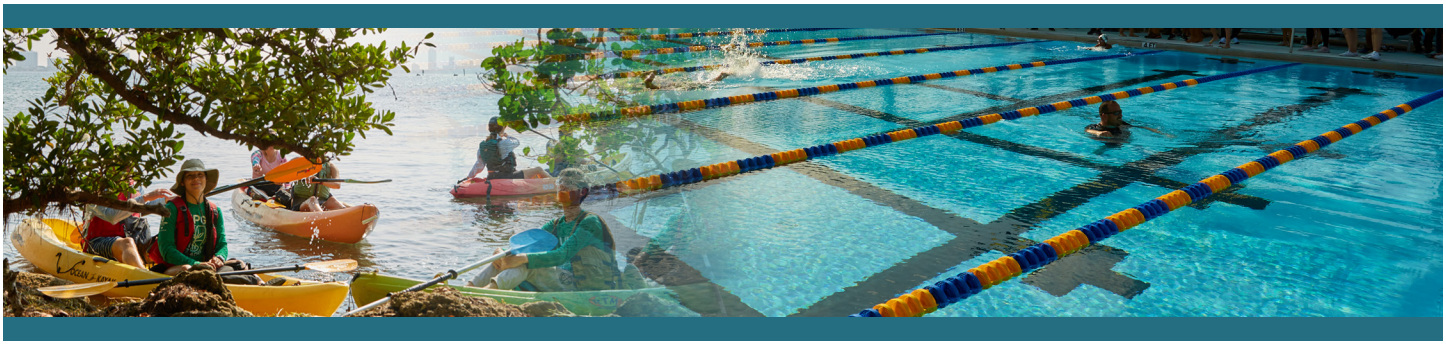
SHADE

S1. Ensure Shaded Shelters and Structures on City-Owned Land
S2. Increase Tree Canopy on City-Owned Land
S3. Increase Tree Canopy Communitywide



WATER

W1. Increase Recreational and Waterfront Access to Biscayne Bay, Miami River, and Little River
W2. Provide Additional Drinking Water Fountains with Reusable Bottle Fillers
W3. Increase Access to Pools, Splash Pads, and Misting Stations



DESIGN

D1. Protect Residents During Heat Season and Events
D2. Implement Heat Safety Measures for Outdoor Workers
D3. Expand City's Climate Ready Residential Programs
D4. Provide Public Data to Better Inform Heat Response Efforts
D5. Ensure City of Miami Buildings Provide Adequate Cooling and Operate Efficiently
D6. Utilize Site Design Strategies that Reduce Urban Heat Islands

NEW INITIATIVE CURRENT INITIATIVE, CONTAINS A NEW ACTIVITY REDUCES GREENHOUSE GASES

SHADE

Shaded areas provide refuge from direct sunlight and reduce land surface temperatures, creating a more comfortable environment while addressing thermal radiation that drives the urban heat island effect. Shade can be created through both green and gray infrastructure, with different interventions yielding different thermal cooling effects. Across all actions, the City will focus efforts on areas with relatively less shade, less tree canopy, and higher amounts of hardscaping.

City of Miami Authority: As the custodian of the public right-of-way, the City of Miami Department of Resilience and Public Works is responsible for its maintenance and has the authority to plant trees and install shade structures in public spaces. The City has a Tree Ordinance within Chapter 17 of the City Code, aimed at protecting existing trees and regulating the planting of new trees on both public and private properties. Additionally, the City maintains a Tree Trust Fund as a mitigation resource. The Department of Building and Office of Zoning oversee the regulation of shade structures on both public and private properties, ensuring compliance of all structures with Miami21 and Florida Building Code requirements. The Department of Parks and Recreation currently ensures that all new playgrounds at City operated parks are equipped with shade structures.

Action	Description	Implementing Departments
S1. Ensure Shaded Shelters and Structures on City-Owned Land		
S1.1. Provide Additional Shading at Bus and Trolley Stops	Shaded areas are valued by those waiting for buses and trolleys. Trees and awnings can assist in shading bus and trolley stops.	**Lead:** **Resilience & Public Works**
TIMELINE: **Short-term**	*Implementation Step S1.1a: Inventory bus and trolley stops, including existing bus shelters, and cross-reference this data and information on heat, shade, and transit routes to evaluate shading needs.* Analysis of expenses to be undertaken.	Data Innovation & Technology
TIMELINE: **Short-term**	*Implementation Step S1.1b: Develop a prioritized needs list for shade at bus and trolley stops that evaluates where additional protection and accommodation is needed. Recommended interventions will be compliant with ADA sidewalk requirements.* Analysis of expenses to be undertaken.	
TIMELINE: **Medium-term**	*Implementation Step S1.1c: Implement prioritized needs list and install additional shade solutions at bus and trolley stops.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
S1.2. Identify Shade Structure Options for Parks	Many Parks across the City utilize a variety of shade structures to provide access to more comfortable temperatures.	**Lead:** **Parks & Recreation**
TIMELINE: **Short-term**	*Implementation Step S1.2a: Develop a list of the types and costs of shade structures being used at Parks, the types of additional structures that can be used in Parks, and community preferences. This can be used to guide future investments.* Additional expenses not anticipated.	Capital Improvements
TIMELINE: **Medium-term**	*Implementation Step S1.2b: For existing unshaded playgrounds, explore steps to shade the playgrounds, including cost estimates, potential funding sources, and technical requirements.* Analysis of expenses to be undertaken	
S1.3. Utilize Solar Canopies	Solar canopies can be utilized in public spaces and parking lots to mitigate the heat island effect by reducing heat absorption from asphalt, generate renewable energy to power City infrastructure, and can integrate electric vehicle (EV) charging stations to support electric vehicle adoption. Notably, Miami21 has recently been updated to allow for encroachments broadening the potential for canopies and shade structures. The City currently has solar canopies at Bayfront Park, Margaret Pace Park, and West End Park.	**Lead:** **Parks & Recreation** Capital Improvements
TIMELINE: **Short-term**	*Implementation Step S1.3a: Conduct a feasibility study to assess potential sites for solar canopies at City properties and parking lots and garages The study will evaluate the structural integrity of existing parking lots and garages, as well as identify locations where electric vehicle (EV) charging stations can be integrated within the solar canopies, utilizing GIS mapping.* Analysis of expenses to be undertaken.	
TIMELINE: **Medium-term**	*Implementation Step S1.3b: Install a solar canopy at a parking lot within the City.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step S1.3c: For specific sites, develop an analysis including cost estimates, potential funding, and technical needs to facilitate installation of additional solar canopies at public properties.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
S1.4. Investigate Vegetative Awnings and Shade Sails	Alternative shading methods, such as vegetated awnings or green awnings can provide natural shade. This can significantly lower cooling costs for buildings and make outdoor spaces more comfortable.	**Lead:** **Building** General Services Administration Parks & Recreation Planning Zoning
TIMELINE: **Medium-term**	*Implementation Step S1.4a: Conduct research to assess the potential benefits, costs, suitable locations, and permitting requirements for vegetated awnings. Additionally, consider integrating these with Art in Public Spaces (AIPP) and Site Approval Permits (SAPs) as avenues for implementation. Identify private opportunities, such as street closures, which could facilitate the installation of vegetated awnings.* Analysis of expenses to be undertaken.	
S2. Increase Tree Canopy on City-Owned Land		
S2.1. Advocate for increase in Stormwater Utility Fee and rebrand to Include Green Infrastructure	The City's stormwater infrastructure is being expanded to address sea level rise, king tides, and flooding from storms. Public engagement reflects the desire to incorporate green infrastructure into these upcoming projects. Stormwater Utility Fees could be used to fund green infrastructure in the public right-of-way which promotes better drainage and cooler neighborhoods.	**Lead:** **Resilience & Public Works**
TIMELINE: **Short-term**	*Implementation Step S2.1a: Increase the Stormwater Utility Fee to include funding for green infrastructure. Continue to explore and advocate for additional funding mechanisms that support nature-based initiatives, ensuring compliance with Florida State Statute, Section 403.0893(1).* [13] Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step S2.1.b: Rebrand name of fee to include green infrastructure, publicly launch the initiative (example rebranding includes 'Storm to Shade' or 'Showers to Shade'), and provide information on its impact.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
S2.2. Implement the Southwest Streetscape and Street Tree Master Plan	City Commission passed Resolution R-23-0338 to accept and approve the Southwest Streetscape Master Plan. This plan outlines a street tree right-of-way planting program focusing on native and naturalized canopy trees to alleviate hardscaped areas in the City. This plan currently includes the neighborhoods of Little Havana, Parkdale, Douglas Park, Shenandoah, and Silver Bluff. The project is being expanded Citywide to include additional hardscaped areas within the City.	**Lead:** **Resilience & Public Works** Communications Planning Resilience & Sustainability Zoning
TIMELINE: **Short-term**	Implementation Step S2.2a: Consider integrating recommendations from the Streetscape Master Plan into ongoing Sea Level Rise and Flood Prevention projects, including soil treatments and landscaping improvements. Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	Implementation Step S2.2b: Determine budget for implementation of demonstration project(s). Explore additional funding mechanisms. Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	Implementation Step S2.2c: Develop guidance and an updated process to incorporate relevant recommendations from the Southwest Streetscape Master Plan into ongoing Sea Level Rise and Flood Prevention projects to enhance green infrastructure and improve community resilience. Analysis of expenses to be undertaken.	
TIMELINE: **Medium-term**	Implementation Step S2.2d: Construct a Southwest Streetscape demonstration project. Explore collaboration with local stakeholders to promote the initiative, while considering the reclamation of parking areas for swales and additional tree planting. Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
S2.3. Increase Trees and Greenery in City Parks	Parks, natural areas, and areas designated as City of Miami Natural Forest Communities are managed by Parks & Recreation. Information on tree and greenery coverage is available in the Reimagine Parks Master Plan, updated July 2023.	**Lead:** **Parks & Recreation** Building Resilience & Public Works
TIMELINE: **Short-term**	*Implementation Step S2.3a: Identify Parks with shade needs where additional trees can be planted and plant trees where feasible. This will be informed by urban heat and shade data and typical use of Park space.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step S2.3b: Identify Dog Parks with needs for shaded areas for pets and plant trees where feasible.* Additional expenses not anticipated.	
TIMELINE: **Short-term**	*Implementation Step S2.3c: Identify Parks that need additional ADA considerations for shaded walkways and plant trees where feasible.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step S2.3d: Establish a dedicated tree planting capital account for Parks & Recreation. This initiative will create a structured plan for utilizing funds from the Tree Trust Fund.* Analysis of expenses to be undertaken.	

S3. Increase Tree Canopy Communitywide

S3.1. Improve Access to Information about the City's Tree Initiatives	Members of the public have indicated high interest in learning about tree plantings and maintenance throughout the City.	**Lead:** **Resilience & Public Works** Building Communications Data Innovation & Technology Planning Resilience & Sustainability
TIMELINE: **Short-term**	*Implementation Step S3.1a: Create a webpage on City website to educate and inform the public about tree initiatives. This webpage will provide information on the benefits of trees, Tree Ordinance language per the City Code, and, planting requests.* Additional expenses not anticipated.	
TIMELINE: **Short-term**	*Implementation Step S3.1b: Launch Urban Tree Dashboard including right-of-way tree inventory and quantitative tree benefits utilizing i-Tree methodologies.* Additional expenses not anticipated.	

Action	Description	Implementing Departments
S3.2. Increase Fruit Tree & Small Shrub Giveaways to City Residents 	Currently the City holds Fruit Tree & Small Shrubs Giveaways throughout April to celebrate Arbor Day. The City participates in the Tree City USA program and meets the four standards: 1) a tree committee, 2) a tree ordinance, 3) a community forestry program of an annual budget of at least $2 per capita (Tree Trust Fund), and 4) annual Arbor Day observance. The City's tree ordinance requires for a tree to be preserved either on or off site, with a last resort of mitigation (replacement cost of the tree canopy lost). Funds for mitigation are currently used to fund the street tree program.	**Lead:** **Building**
TIMELINE: **Short-term**	*Implementation Step S3.2a: Increase the number of giveaway events from annually to biannually or quarterly each year.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step S3.2b: Provide education and training on post-planting care and maintenance at tree and shrub giveaways. Expand training requirements to include residents as well as employees. This will ensure participants receive proper guidance on tree planting techniques and care. Identify optimal local partners for collaboration.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step S3.2c: Develop a tree giveaway monitoring methodology that allows the City to estimate planting and survival rates.* Analysis of expenses to be undertaken.	

NEW INITIATIVE CURRENT INITIATIVE, CONTAINS A NEW ACTIVITY REDUCES GREENHOUSE GASES

WATER

Water can help thermoregulate the body and prevent heat related illnesses. Proximity to water can create a cooling effect and help mitigate urban heat island effects. In addition, consuming water is vital on hot days and the City can increase access to safe drinking water in the public spaces it stewards.

City of Miami Authority: The City of Miami operates over 150 parks including 12 swimming pool facilities and the Grapeland Water Park. The City also provides public access to waterbodies at its multiple waterfront parks and the Historic Virginia Key Beach Park. The City has established plans and secured funding to construct additional swimming pools and splash pads within the park system.

Action	Description	Implementing Departments
W1. Increase Recreational and Waterfront Access to Biscayne Bay, Miami River, and Little River		
W1.1. Provide Information on Public and Private Recreational Opportunities TIMELINE: **Short-term**	Many recreational activities, both public and private, are available on the Biscayne Bay, Miami River, and Little River. These activities are posted on park webpages. *Implementation Step W1.1a: Expand outreach on these opportunities by regularly including in newsletters, social media, flyers, and other public outreach.* Additional expenses not anticipated.	**Lead:** **Parks & Recreation** Communications
W2. Provide Additional Drinking Water Fountains with Reusable Bottle Fillers		
W2.1. Provide Additional Drinking Water Fountains with Reusable Bottle Fillers in City Parks TIMELINE: **Short-term**	All new buildings in City parks include drinking water fountains with reusable bottle fillers and dog bowl fillers to reduce plastic waste. Parks & Recreation maintains an inventory of all their water fountains and specifies if they have water bottle refills and dog bowl fillers. Parks & Recreation is currently developing water fountain standards for all parks to ensure consistency and accessibility. *Implementation Step W2.1a: Update existing water fountain inventory and develop a process to ensure data remains current. Use inventory and park usage information to determine high-traffic parks where additional touchless or sensor-activated bottle filling stations/water fountains are needed.* Analysis of expenses to be undertaken.	**Lead:** **Capital Improvements** Data Innovation & Technology Parks & Recreation
TIMELINE: **Short-term**	*Implementation Step W2.1b: Develop a map-based data set of water fountains and add to the City's Heat Data set.* Analysis of expenses to be undertaken.	
TIMELINE: **Medium-term**	*Implementation Step W2.1c: Plan and install new water fountains with chiller systems in identified high-traffic parks to improve accessibility and convenience for park visitors.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
W2.2. Encourage Large Events held at City Properties to provide Tap Water to Attendees	The City of Miami is home to many large-scale events like street fairs, music festivals, concerts, and more. The City permits these events and holds agreements with event coordinators.	**Lead:** **Resilience & Sustainability** Emergency Management Film & Entertainment Parks & Recreation Real Estate & Management
TIMELINE: **Short-term**	*Implementation Step W2.2a: Develop boilerplate language to include the provision of tap water into future event agreements held during the Heat Season, to hydrate participants free of charge and reduce plastic waste at events on City properties.* Analysis of expenses to be undertaken.	

W3. Increase Access to Pools, Splash Pads, and Misting Stations

W3.1. Increase Availability and Installation of Pools, Splash Pads, and Misting Stations in City Parks	Public engagement shows that pools, splash pads, and misting stations are desired components of City parks. Map of City parks with pools and a map of City parks with splash pads are available in the Reimagine Parks Master Plan. Pools and splash pads are also included on the City park webpages. Ongoing planned projects aim to enhance park amenities and infrastructure, further supporting the development of these water features.	**Lead:** **Parks & Recreation** Capital Improvements
TIMELINE: **Short-term**	*Implementation Step W3.1a: Extend pool and splash pad operating hours during the Heat Season (May 1 - October 31) to include additional days of the week and longer hours, aligned with the school year.* Analysis of expenses to be undertaken, noting that early assessments indicate minimal additional costs, as staff schedules can be adjusted to accommodate later closing times.	
TIMELINE: **Medium-term**	*Implementation Step W3.1b: Develop a comprehensive list of City parks with existing misting stations and identify suitable locations for installing additional misting stations. This will include determining the operational requirements and feasibility of installing and maintaining the new misting stations.* Analysis of expenses to be undertaken.	

NEW INITIATIVE CURRENT INITIATIVE, CONTAINS A NEW ACTIVITY REDUCES GREENHOUSE GASES

DESIGN

Beyond public spaces, the City can help residents stay cool in their homes, workspaces, and communities. The City can help residents cool their homes by providing funding and resources to improve building envelopes and install cooling solutions. It is important for the City to proactively plan for and attempt to mitigate situations wherein residents are unable to cool off in their homes.

The City is committed to proactively planning for and implementing initiatives to help residents maintain comfortable temperatures in their homes. In response to rising average temperatures, population growth, and increasing reliance on electric powered technology, the City will work closely with our electricity utility, Florida Power & Light, to ensure the energy grid can adequately support this growing demand. Insufficient planning and preparation can lead to blackouts which could be extremely dangerous and even deadly during a heat event.

City of Miami Authority: The City of Miami's Department of Housing and Community Development coordinates programs to ensure fair, safe, and affordable housing for residents. The Department of Housing and Community Development has the ability to provide loans and grants to improve living conditions. Since 2021, the Department of Building has conducted yearly inspections of Assisted Living Facilities and Nursing Homes to ensure compliance with emergency power requirements, resulting in over 90 percent compliance. These inspections ensure facilities have sufficient backup power to maintain a temperature below 81 degrees Fahrenheit for 96 hours. The City also has its own emergency management team, the Department of Fire-Rescue, Division of Emergency Management that coordinates the City's preparation, response, and recovery for emergency events. The Division of Emergency Management oversees the City's implementation of the Heat Response Protocol. In cases of declared disasters, the Division of Emergency Management will coordinate response with Miami-Dade County's Office of Emergency Management. In the 2024 State of Florida Legislative Session, the legislature passed HB433 preempting local governments from awarding contracts based on the employment benefits of the applying entities. However, the City has the ability to provide optional initiatives for those that work in the City and set up programs that benefit City of Miami employees.

Action	Description	Implementing Departments
D1. Protect Residents During Heat Season and Events		
D1.1. Implement Coordinated Heat Response Protocol	Miami-Dade County has designated May 1 - October 31 as "Heat Season." Within Heat Season, there are episodic heat events wherein the heat index reaches levels that pose a risk to human health.	**Lead:** **Emergency Management** Communications Resilience & Sustainability
TIMELINE: **Short-term**	*Implementation Step D1.1a: Refine and operationalize the Citywide Heat Response Protocol that outlines City operational adjustments as well as public safety measures departments will take. Include identifying specific operational changes before the Heat Season begins. This approach will parallel the Continuity of Operations Plan (COOP) and ensure that all teams are prepared with clear guidelines.* Additional expenses not anticipated.	
TIMELINE: **Short-term**	*Implementation Step D1.1b: Develop an extensive strategic communications campaign of personal preparedness for extreme heat through signage, visual banners throughout the City, social media platforms, key media outlets (TV and radio broadcasts), and videos on the importance of staying hydrated for vulnerable groups such as young, aging, and pregnant persons, and signs of heat stress. Develop "Free Ways to Cool Off" campaign directing people to Cooling Centers, pools, and parks, via the City trolley. Identify external partners and stakeholders for collaboration in communication strategy, to expand outreach.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
D1.2. Define Cooling Centers & Identify Cooling Centers within the City	Cooling Centers provide places for people to go to stay cool during heat events. The City began to pilot operationalizing Cooling Centers in 2024.	**Lead: Parks & Recreation**
TIMELINE: **Short-term**	*Implementation Step D1.2a: Define criteria and standard operating procedures (SOPs) for Cooling Centers, focusing on accessibility, capacity, and available resources. Designate facilities to serve as Cooling Centers within the City.* Analysis of expenses to be undertaken.	Communications Emergency Management General Services Administration
TIMELINE: **Short-term**	*Implementation Step D1.2b: Launch Cooling Center network with supporting public outreach campaign targeting populations in the City that are most at risk for heat-related health impacts.*	Resilience & Sustainability
D1.3. Request No FPL Shut-Offs During Heat Advisories	Heat Advisories are issued within 12 hours of the onset of extremely dangerous heat conditions - when the maximum heat index reaches 105°F or higher for 2 hours. Being without AC or a fan during heat events, especially overnight, is a life safety issue.	**Lead: City Manager** Housing & Community Development
TIMELINE: **Short-term**	*Implementation Step D1.3a: Advocate for FPL to suspend utility shut-offs during declared Heat Advisories issued by the National Weather Service.* Additional expenses not anticipated.	Resilience & Sustainability
D1.4. Accelerate Development of Resilience Hubs	The City is developing a network of neighborhood Resilience Hubs that will assist with post-disaster response and access to social services, information, and City resources; they will also serve as Cooling Centers. Grant funding has been received to enhance the Carrie P. Meek Center at Charles Hadley Park to be a Resilience Hub and identified City park buildings are currently being designed with Resilience Hub criteria. Suggested Resilience Hubs are included in the Reimagine Parks Master Plan updated July 2023.	**Lead: Capital Improvements** Emergency Management Parks & Recreation Resilience & Sustainability
TIMELINE: **Short-term**	*Implementation Step D1.4a: Conduct needs assessments and feasibility studies of existing park sites to determine needed improvements, cost estimates, and timeline to operationalize new Resilience Hubs.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step D1.4b: Ensure that new park buildings in these identified locations are designed with Resilience Hub criteria and capabilities to rapidly grow the Citywide network.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step D1.4c: Formalize the City's Resilience Hub program with established standard criteria and operations protocols. Train staff on how to operate the Resilience Hubs, incorporating integration with the Emergency Management's point-of-distribution (POD) plan and operations, to ensure cohesive response during emergencies.* Additional expenses not anticipated.	

Action	Description	Implementing Departments
D2. Implement Heat Safety Measures for Outdoor Workers		
D2.1. Promote Construction Hours Waiver Program TIMELINE: **Short-term**	Currently, the City Code limits construction hours to 8:00AM-6:00PM, Monday through Saturday. No work is permitted on Sundays and holidays. *Implementation Step D2.1a: Allow construction sites to apply for a Noise Waiver to extend construction hours from 6:00AM-8:00PM during Heat Season (May 1 - October 31) to allow for construction workers to work outside of peak heat hours. While the City does not currently have a standardized method for ensuring compliance with worker break requirements, the City will explore its ability to allow heat as a consideration to apply for a Noise Waiver. Waiver requests will be evaluated on a case-by-case basis, with all waivers requiring approval from the City Manager.* Additional expenses not anticipated	**Lead:** **Building** Capital Improvements Code Enforcement Resilience & Public Works
D2.2. Implement Heat Operations Plan for City Employees who Work Outdoors TIMELINE: **Short-term** TIMELINE: **Short-term**	City employees who work outdoors face increased exposure and risk from extreme heat. To prevent heat-related injuries or heat stress and ensure the safety of our workforce, it is essential to establish and enforce comprehensive heat safety measures. *Implementation Step D2.2a: Purchase modified uniforms made from breathable fabrics (designed for high-heat environments) and provide additional water and ice for employees who work outdoors during the Heat Season (May 1 - October 31) to mitigate heat stress risks.* Analysis of expenses to be undertaken. *Implementation Step D2.2b: Develop and administer a comprehensive heat safety training for supervisors of outdoor workers. Focus on recognizing heat stress symptoms, safe working practices in extreme heat, and emergency response measures. The training will incorporate existing safety protocols and resources, emphasizing the importance of monitoring worker wellbeing, ensuring proper hydration, and include guidelines for proper use of personal protective equipment (PPE) to mitigate heat-related risks.* Analysis of expenses to be undertaken.	**Lead:** **Human Resources** Capital Improvements General Services Administration Parks & Recreation Resilience & Public Works Risk Management Solid Waste

Action	Description	Implementing Departments
D3.1. Provide Incentives to Multifamily Buildings (renters)	Programs are needed to equip affordable housing owners and operators with tools to assess their buildings' resilience to climate change and natural disasters, and provide them with actionable strategies and guidance on financing to address these vulnerabilities. The Keep Safe Miami program aimed to achieve these goals but faced challenges in implementation. The program was opt-in and would provide forgivable loans, approximately $100,000, if a building maintains affordable rents for at least 10 years.	**Lead:** **Housing & Community Development** Building Resilience & Sustainability
TIMELINE: **Short-term**	*Implementation Step D3.1a: Identify incentives to successfully implement a resilient multifamily building program. Examples of incentives could include providing technical assistance on investment plans to implement the assessments, subsidies for relocation costs (if needed), and increasing the overall loan amount to include subsidized partial rent-boost payments to the property owners. By emphasizing the importance of building affordable housing, these measures can help ensure that property owners are supported in maintaining affordable rents while improving their properties.* Analysis of expenses to be undertaken.	
D3.2. Continue the Homeownership Preservation Program (homeowners)	The Homeownership Preservation Program (HPP), currently funded through the Miami Forever Bond, provides up to $70,000 in rehabilitation assistance to qualified City of Miami homeowners to fund exterior repairs consisting of repair or replacement of roofs, replacement of windows or doors, and/or installation of hurricane shutters, necessary to bring the home to decent, safe, and sanitary conditions, and to reinforce the property's exterior to better withstand natural weather occurrences while maximizing the home's energy efficiency. This program can assist households up to 140 percent of Area Median Income (AMI), based on household size and currently is closed to new applicants. Experience with the program shows that in some areas the demand exceeds the supply of funding. It also shows that some properties were not able to be selected due to extensive termite damage that needed funding above what the program allocated per home.	**Lead:** **Housing & Community Development**
TIMELINE: **Short-term**	*Implementation Step D3.2a: Advocate for additional and/or recurring funding to support the operation of the Homeownership Preservation Program (HPP), aiming to increase the number of residents served and affordable housing stock. This includes advocating for an increase in funding per household to cover truss replacements and insulation repairs as an option.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
D3.3. Re-initiate and Expand Miami Cools Program (renters)	In 2019, the City launched the Miami Cools program wherein free window AC units were distributed to senior and special needs residents to address health concerns associated with heat.	**Lead: Housing & Community Development** Human Services
TIMELINE: **Medium-term**	*Implementation Step D3.3a: Develop program outline for Miami Cools including typical costs, application process, and funding solutions. The program will prioritize portable AC units, along with tower fans and dehumidifier giveaways for renters for rapid relief and explore including heat pumps and split units. The program will focus on solutions that can be easily installed and maintained, recognizing that many low-income households lack access to effective cooling systems. Explore funding options to ensure sustainability and assess whether alternative solutions, such as heat pumps, can be included. The program will aim to provide rapid relief to those in need, addressing this critical health concern.* Analysis of expenses to be undertaken	
TIMELINE: **Medium-term**	*Implementation Step D3.3b: Reinitiate this program, focusing on advertising to residents that are low-income, senior, and/or have disabilities. Fund contractors to assist with installation of the cooling solutions (if needed).* Analysis of expenses to be undertaken.	
D4. Provide Public Data to Better Inform Heat Response Efforts		
D4.1. Publish a Citywide Heat Data Set	To support future urban planning and reducing urban heat islands in both public and private spaces, the City will provide public data to better inform heat response efforts.	**Lead: Resilience & Sustainability** Building Emergency Management Innovation & Technology Parks & Recreation Resilience & Public Works Zoning
TIMELINE: **Short-term**	*Implementation Step D4.1a: Compile and publish a Citywide data set with information related to land temperatures, ambient temperatures, and shade coverage. The City will identify and address any data gaps as necessary.* Analysis of expenses to be undertaken.	
TIMELINE: **Medium-term**	*Implementation Step D4.1b: Develop an Interactive Heat Map that displays real-time heat index levels across various neighborhoods.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
D4.2. Develop a 'Cool Routes' Tool	For those walking, biking, or otherwise commuting through the elements, a shaded route is desirable and often the safest path to take (heat-wise).	**Lead:** **Resilience & Sustainability**
TIMELINE: **Medium-term**	*Implementation Step D4.2a: Develop a web-based tool where people can see the coolest route they can take to their destination. These maps will include cooling amenities such as Cooling Centers, pools, and water fountains. Collaborate with Miami-Dade County on tool development and local organizations to reach individuals through both digital and non-digital format.* Analysis of expenses to be undertaken.	Communications Innovation & Technology Parks & Recreation Resilience & Public Works
TIMELINE: **Medium-term**	*Implementation Step D4.2b: Create and install maps at bus stops and digital kiosks to highlight green corridors and best walking paths. Incorporate educational signage about heat.* Analysis of expenses to be undertaken.	

D5. Ensure City of Miami Buildings Provide Adequate Cooling and Operate Efficiently

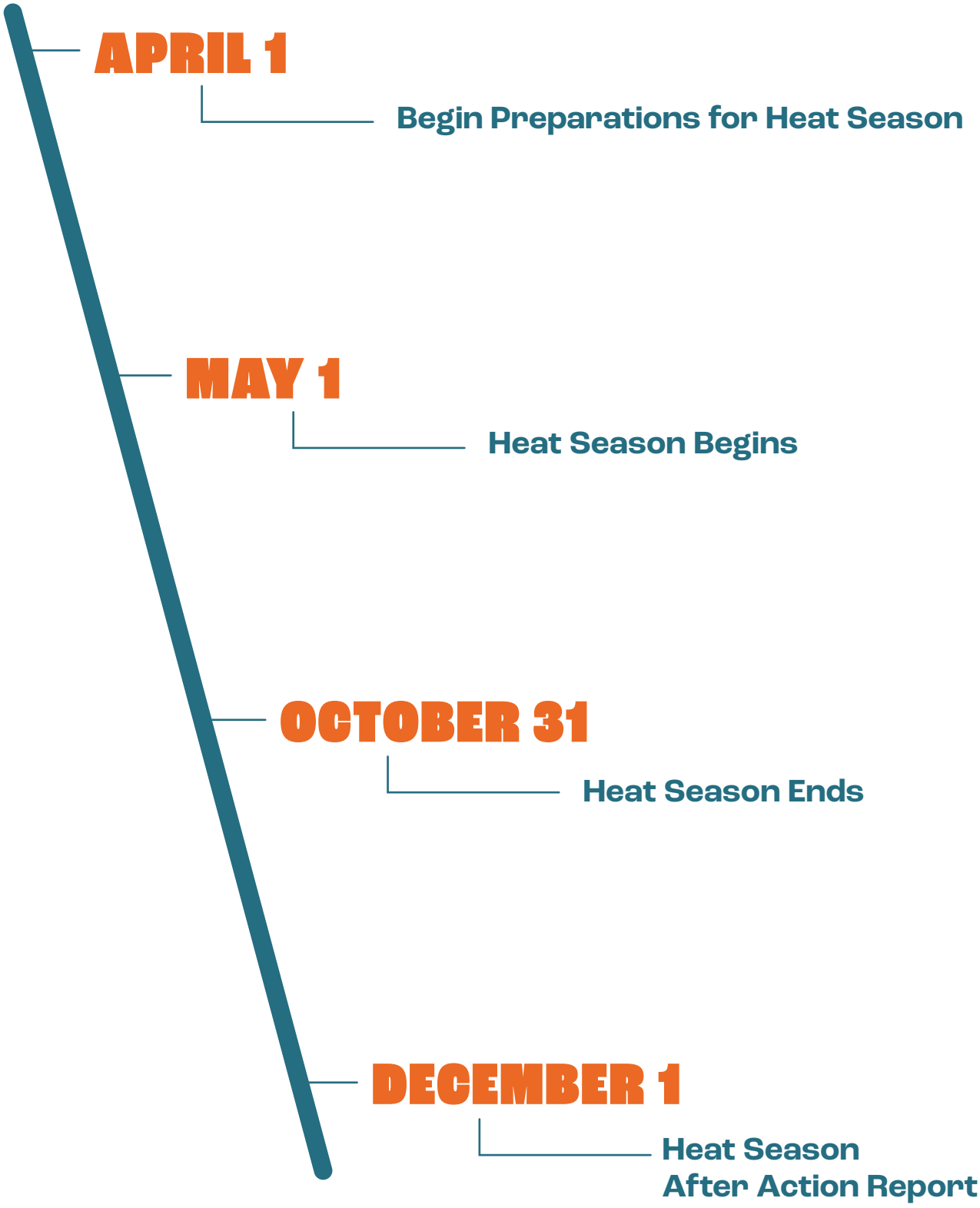
D5.1. Perform Assessment of AC Units Citywide	Assessing AC Units in each City-owned building will identify opportunities to replace AC Units at or before their end of life can reduce operational costs and enhance energy efficiency in City facilities.	**Lead:** **General Services Administration**
TIMELINE: **Short-term**	*Implementation Step D5.1a: Assess AC Units in municipal buildings Citywide to evaluate effectiveness and efficiency to determine cost savings that can be seen for AC Units that are replaced with more energy efficient models.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step D5.1b: Prepare a preventative maintenance plan for AC Units across municipal buildings to ensure their durability, efficiency, and optimal performance.* Analysis of expenses to be undertaken.	
TIMELINE: **Short-term**	*Implementation Step D5.1c: Develop protocols for when AC Units cease operations such as having ready access to portable AC Units to provide immediate relief.* Analysis of expenses to be undertaken.	

Action	Description	Implementing Departments
D5.2. Utilize Low-Energy Methods to Reduce Heat in City-Owned Facilities	Inexpensive and low-energy heat reducing measures can be installed in City-owned facilities to reduce thermal heat and therefore lower cooling needs which can save money on utility bills.	**Lead:** **Capital Improvements** General Services Administration Parks & Recreation Real Estate & Asset Management
TIMELINE: **Short-term**	*Implementation Step D5.2a: Evaluate facilities where installation of window film, curtains and/or blinds on windows, air curtains at entries, and dehumidifiers could be utilized to enhance energy efficiency.* Analysis of expenses to be undertaken.	
TIMELINE: **Medium-term**	*Implementation Step D5.2b: Identify where smart thermostat technology can be incorporated in City-owned buildings, to optimize energy use and potentially lower costs.* Analysis of expenses to be undertaken.	
D5.3. Accept DOE's Invitation to Join the Better Climate Challenge	The U.S. Department of Energy's voluntary, non-binding Better Climate Challenge provides technical assistance to cities to set an energy reduction goal for municipal buildings.	**Lead:** **City Manager** General Services Administration Parks & Recreation Resilience & Sustainability
TIMELINE: **Short-term**	*Implementation Step D5.3a: Join the U.S. Department of Energy's Better Climate Challenge to access resources and technical assistance aimed at reducing greenhouse gas emissions from energy use, while also providing increased cooling solutions for the public.* Additional expenses not anticipated.	

Action	Description	Implementing Departments
D6. Utilize Site Design Strategies to Reduce Urban Heat Islands		
D6.1. Simplify and Encourage Cool Surfaces and Other Heat Reduction Strategies in Miami21	Miami21 is the Zoning Code for the City of Miami, designed to guide urban development and land use in a sustainable and organized manner. Notably, for zoning districts T5 and T6, the requirement for onsite trees has increased from 25 percent to 40 percent allowing for a greater emphasis on greenery in urban settings. Additionally, green roofs are permitted to increase lot coverage from 80 percent to 90 percent if they include a habitable rooftop, which typically incorporates cooling features to mitigate heat. Multiple groups have reviewed Miami21 in recent years and made recommendations on how the Zoning Code can better integrate climate resilience and sustainability goals. There are opportunities for cool roofs, cool and porous pavements, passive cooling, and more to be integrated or enhanced in Miami21. Through definitions, updated policies, and the public benefits program, the City can engage the private sector in cooling the City.	**Lead:** **Planning** Building Resilience & Sustainability Zoning
TIMELINE: **Short-term**	*Implementation Step D6.1a: Determine pathways forward for heat-related recommendations from the Miami21 Task Force report and the Urban Land Institute Miami21 to 2100 report.* Additional expenses not anticipated.	
TIMELINE: **Short-term**	*Implementation Step D6.1b: Identify additional ways cooling initiatives and heat reducing design can be integrated into Miami21, including incorporating Section 9.8 on Landscaping in Parking Lots. This could involve proposing improvements to landscaping requirements that promote cooling, as well as incorporating incentives for solar installations in parking areas.* Additional expenses not anticipated.	
TIMELINE: **Short-term**	*Implementation Step D6.1c: Create a webpage on the City's website with information about allowances for cool surfaces in the Miami21 and local material guidelines.* Additional expenses not anticipated.	
D6.2. Increase use of Vegetated Living Shorelines	Areas near waterbodies can be noticeably cooler than surrounding areas and green areas can reduce the severity of urban heat island effects.	**Lead:** **Parks & Recreation**
TIMELINE: **Short-term**	*Implementation Step D6.2a: Incorporate elements from the Resilient Waterfront Enhancement Plan developed in June 2023 into City-owned waterfront redevelopments. This involves exploring innovative design features such as vegetated living shorelines and other approaches that incorporate natural habitat with protective structures, tailored to the specific conditions of each site.* Analysis of expenses to be undertaken.	Capital Improvements Real Estate & Asset Management Resilience & Public Works Resilience & Sustainability

HEAT SEASON PROTOCOL

ANNUAL TIMELINE



HEAT SEASON PROTOCOL

DEPARTMENT ACTIVATION TASK LIST

As the protocol is implemented, the City will determine alignment with Hurricane Season activities and combine where possible.

Department	Task	Timeline
PREPARATION FOR HEAT SEASON (APRIL 1 - APRIL 31)		
Building	**ORDER SUPPLIES** Order Heat Season supplies and apparel, so department is able to distribute at the beginning of the season. Purchase different types of uniforms and/or accessories for staff working in extreme heat conditions. Explore different types of materials (moisture-wicking fabrics, lightweight cotton, and UV-protective materials) and styles of shirts (ventilation panels and mesh inserts for better airflow). Explore adjusting uniform requirements (e.g., instead of long pants, staff can wear shorts and lighter-colored clothing to reflect sunlight), and purchase cooling accessories such as cooling towels, rash guards, sun hats, and sunglasses.	**April 1**
	ASSISTED LIVING FACILITIES (ALF) Ensure compliance with ALF ordinance requiring that an alternate source of power (generator) is available for when the temperature is > 81 F. The deadline for compliance is June 1.	**April 1**
Capital Improvements	**ORDER SUPPLIES** Order Heat Season supplies and apparel, so department is able to distribute at the beginning of the season. Purchase different types of uniforms and/or accessories for staff working in extreme heat conditions. Explore different types of materials (moisture-wicking fabrics, lightweight cotton, and UV-protective materials) and styles of shirts (ventilation panels and mesh inserts for better airflow). Explore adjusting uniform requirements (e.g., instead of long pants, staff can wear shorts and lighter-colored clothing to reflect sunlight), and purchase cooling accessories such as cooling towels, rash guards, sun hats, and sunglasses.	**April 1**

HEAT SEASON PROTOCOL

DEPARTMENT ACTIVATION TASK LIST (CONT'D.)

Department	Task	Timeline
PREPARATION FOR HEAT SEASON (APRIL 1 - APRIL 31)		
Communications	**PSA CAMPAIGN** Review and update Heat Season outreach materials. Topics to include: the importance of staying cool and hydrated, practical tips for residents to manage heat effectively, and places to go to stay cool.	**April 1**
	EXTERNAL PARTNERS AND ORGANIZATIONS Work with local organizations and stakeholders to support in the dissemination of information to the public, including digital and traditional (newspaper, radio, and television) communication outlets.	**April 15**
Fire-Rescue, Emergency Management	**NOTIFY DEPARTMENTS** Contact Departments notifying them of the upcoming start of Heat Season and responsibilities per the Heat Season Protocol.	**April 1**
General Services Administration	**ORDER SUPPLIES** Order Heat Season supplies and apparel, so department is able to distribute at the beginning of the season. Purchase different types of uniforms and/or accessories for staff working in extreme heat conditions. Explore different types of materials (moisture-wicking fabrics, lightweight cotton, and UV-protective materials) and styles of shirts (ventilation panels and mesh inserts for better airflow). Explore adjusting uniform requirements (e.g., instead of long pants, staff can wear shorts and lighter-colored clothing to reflect sunlight), and purchase cooling accessories such as cooling towels, rash guards, sun hats, and sunglasses.	**April 1**
Human Resources	**OUTDOOR WORKERS - CITY EMPLOYEES** Train supervisors of outdoor workers on signs of heat stress and how to ensure worker safety.	**April 15**

HEAT SEASON PROTOCOL

DEPARTMENT ACTIVATION TASK LIST (CONT'D.)

Department	Task	Timeline
PREPARATION FOR HEAT SEASON (APRIL 1 - APRIL 31)		
Human Services	**ORDER SUPPLIES** Order Heat Season supplies and apparel, so department is able to distribute at the beginning of the season. Purchase different types of uniforms and/or accessories for staff working in extreme heat conditions. Explore different types of materials (moisture-wicking fabrics, lightweight cotton, and UV-protective materials) and styles of shirts (ventilation panels and mesh inserts for better airflow). Explore adjusting uniform requirements (e.g., instead of long pants, staff can wear shorts and lighter-colored clothing to reflect sunlight), and purchase cooling accessories such as cooling towels, rash guards, sun hats, and sunglasses.	**April 1**
Parks & Recreation	**ORDER SUPPLIES** Order Heat Season supplies and apparel, so department is able to distribute at the beginning of the season. Purchase different types of uniforms and/or accessories for staff working in extreme heat conditions. Explore different types of materials (moisture-wicking fabrics, lightweight cotton, and UV-protective materials) and styles of shirts (ventilation panels and mesh inserts for better airflow). Explore adjusting uniform requirements (e.g., instead of long pants, staff can wear shorts and lighter-colored clothing to reflect sunlight), and purchase cooling accessories such as cooling towels, rash guards, sun hats, and sunglasses.	**April 1**
	FACILITIES Inspect all water fountains to ensure fountains with coolers and water bottle refill access are working properly. Regularly replace filters in water fountains and refill stations.	**April 1**
	FACILITIES Purchase/ensure working condition of wet bulb globe thermometers. Analysis of expenses to be undertaken	**April 1**

HEAT SEASON PROTOCOL

DEPARTMENT ACTIVATION TASK LIST (CONT'D.)

Department	Task	Timeline
PREPARATION FOR HEAT SEASON (APRIL 1 - APRIL 31)		
Resilience & Public Works	**ORDER SUPPLIES** Order Heat Season supplies and apparel, so department is able to distribute at the beginning of the season. Purchase different types of uniforms and/or accessories for staff working in extreme heat conditions. Explore different types of materials (moisture-wicking fabrics, lightweight cotton, and UV-protective materials) and styles of shirts (ventilation panels and mesh inserts for better airflow). Explore adjusting uniform requirements (e.g., instead of long pants, staff can wear shorts and lighter-colored clothing to reflect sunlight), and purchase cooling accessories such as cooling towels, rash guards, sun hats, and sunglasses.	**April 1**
Resilience & Sustainability	**PSA CAMPAIGN** Review and update Heat Season outreach materials. Topics to include: the importance of staying cool and hydrated, practical tips for residents to manage heat effectively, and places to go to stay cool.	**April 1**
	EXTERNAL PARTNERS AND ORGANIZATIONS Work with local organizations and stakeholders to support in the dissemination of information to the public, including digital and traditional (newspaper, radio, and television) communication outlets.	**April 15**
Solid Waste	**ORDER SUPPLIES** Order Heat Season supplies and apparel, so department is able to distribute at the beginning of the season. Purchase different types of uniforms and/or accessories for staff working in extreme heat conditions. Explore different types of materials (moisture-wicking fabrics, lightweight cotton, and UV-protective materials) and styles of shirts (ventilation panels and mesh inserts for better airflow). Explore adjusting uniform requirements (e.g., instead of long pants, staff can wear shorts and lighter-colored clothing to reflect sunlight), and purchase cooling accessories such as cooling towels, rash guards, sun hats, and sunglasses.	**April 1**

HEAT SEASON PROTOCOL

DEPARTMENT ACTIVATION TASK LIST (CONT'D.)

Department	Task	Timeline
DURING HEAT SEASON (MAY 1 - OCTOBER 31)		
Building	**OUTDOOR WORKERS - PERMITTEES** Send Advisory to contractors on occupational safety for excessive heat. Notify permittees of ability to apply for a Noise Waiver for an expanded work schedule (begin work at 6:00AM, end at 8:00PM) during Heat Season.	**May 1**
Communications	**SOCIAL MEDIA** Post PSAs, videos, notices to social media for educational purposes, including information on personal protective measures and Cooling Centers. Additional messaging may be beneficial July through September (peak season).	**Weekly**
Capital Improvements	**OUTDOOR WORKERS - CONTRACTORS** Send Advisory to contractors on occupational safety for excessive heat.	**May 1, then monthly**
Film & Entertainment	**TEMPORARY USE AND EVENT PERMITS** Encourage large festivals and events to provide **free** drinking water stations from May to October (during Heat Season period) as part of their temporary use/event permits.	**May 1 - October 31**
Fire-Rescue, Division of Emergency Management	**EMERGENCY CALLS** Collaborate with responders to maintain accurate records of all heat-related 911 calls, providing daily logs of heat-related 911 calls to the National Weather Service.	**Daily**
	ALERT MIAMI Send Heat Advisory and Heat Warnings directly to Department Directors (Building; City Manager's Office; Capital Improvements; Code Compliance; Commission Offices; Fire-Rescue, Division of Emergency Management; Human Services; Parks & Recreation; Police; Resilience & Public Works; Resilience & Sustainability; Solid Waste) that oversee outdoor workers. This will ensure timely communication and enable departments to take necessary precautions for their team.	**As Needed**

HEAT SEASON PROTOCOL

DEPARTMENT ACTIVATION TASK LIST (CONT'D.)

Department	Task	Timeline
DURING HEAT SEASON (MAY 1 - OCTOBER 31)		
Human Services	**UNSHELTERED PERSONS ASSISTANCE** Outreach Teams to provide transportation to homeless shelters when there are Heat Warnings. Homeless shelters act as Cooling Centers.	**As Needed**
	UNSHELTERED PERSONS ASSISTANCE Outreach Teams to provide drinking water to unsheltered persons (currently donated by the Homeless Trust). Analysis of expenses to be undertaken	**As Needed**
	UNSHELTERED PERSONS ASSISTANCE Outreach Teams to provide cooling supplies (cooling gaiters, electrolytes, cooling towels, and ice packs) to unsheltered persons (currently donated by the County). Analysis of expenses to be undertaken	**As Needed**
	CHILD LEARNING CENTERS Utilize mist cooling fans for outdoor activities and provide children with electrolyte hydration drinks. Analysis of expenses to be undertaken (early estimates of startup costs are $6,500 and $5,000 annually).	**Daily**
Parks & Recreation	**OUTDOOR WORKERS - CITY EMPLOYEES** Distribute Heat Season apparel and supplies including large hats, reusable water bottles, fans, cooling towels, and moisture-wicking clothing.	**May 1**
	COOLING CENTERS Launch Cooling Centers. Ensure relief area has signage, appropriate seating, and supplies.	**May 1 - October 31**
	AQUATICS Extend operations for seasonal pools and evening operations, to include additional days of the week and longer hours, aligned with the school year.	**Daily**
	OUTDOOR WORKERS - CITY EMPLOYEES Ensure regular access to ice and drinking water and encourage frequent hydration. Integrate breaks in shaded or air-conditioned areas to prevent heat-related illnesses.	**Daily**

HEAT SEASON PROTOCOL

DEPARTMENT ACTIVATION TASK LIST (CONT'D.)

Department	Task	Timeline
DURING HEAT SEASON (MAY 1 - OCTOBER 31)		
Parks & Recreation (cont'd.)	**YOUTH SUMMER PROGRAMS** Adjust youth summer programs to avoid peak heat hours and/or reduce extensive outdoor time (e.g., activities that occur in late morning or afternoon).	**As needed**
	OUTDOOR WORKERS - CITY EMPLOYEES (AQUATICS) Explore adjusting working schedule for Aquatics workers (shortened lifeguard rotation, swim instructor rotation, uniform modifications, etc.).	**As Needed**
Real Estate & Asset Management	**SPECIAL EVENT PERMITS** Encourage large festivals and events to provide free drinking water stations from May to October (during Heat Season period) as part of special event permits.	**May 1 - October 31**
Resilience & Public Works	**OUTDOOR WORKERS - CITY EMPLOYEES** Distribute Heat Season apparel and supplies including large hats, reusable water bottles, fans, cooling towels, and moisture-wicking clothing.	**May 1**
	BUS SHELTER SIGNAGE Schedule Extreme Heat PSA materials to be displayed at bus shelters throughout the Heat Season.	**Daily**
	OUTDOOR WORKERS - CITY EMPLOYEES Ensure regular access to ice and drinking water and encourage frequent hydration. Integrate breaks in shaded or air-conditioned areas to prevent heat-related illnesses.	**Daily**

Department	Task	Timeline
AFTER HEAT SEASON (NOVEMBER 1 AND LATER)		
Fire, Emergency Management	**AFTER ACTION REPORT** Develop post-Heat Season After Action Report detailing the City's adherence to the Heat Season Protocol, public health data, and any notable heat events that occurred throughout the season.	**December 1**

HEAT SEASON SUPPLIES

Outdoor Workers - City Employees

CLOTHING
Brimmed hats
Sunglasses
Moisture-wicking shirts
Shorts

COOLING AIDS
Motorized fans
Reusable water bottle
Personal mister
Cooling towels

Work Site Supplies

Ice
Electrolyte powder
Cooling towels
Shade tents (if needed)
Sunscreen

Supplies for Distribution

Cold water bottles
Hand fans
Electrolyte powder

KEY TERMS

1. ASSET LIMITED, INCOME CONSTRAINED, EMPLOYED (ALICE):
Households that earn above the Federal Poverty Level but cannot afford the basic cost of living in their county. Despite struggling to make ends meet, these households often do not qualify for public assistance.

2. CAPA STRATEGIES HEAT WATCH:
As part of a national campaign led by CAPA Strategies and NOAA's National Integrated Heat Health Information System (NIHHIS), community scientists in over 50 U.S. cities have helped measure the distribution of ambient heat across urban environments. City of Miami conducted a Heat Watch study in summer 2020.

3. CLIMATE JUSTICE COMMUNITIES:
In Miami, climate justice communities are historically underinvested neighborhoods (which tend to be inland), populated by individuals that are low-income, predominantly Black, and recent immigrants. These neighborhoods tend to be viewed as less physically vulnerable to climate change since flooding is less common, but they are still vulnerable to climate impacts (hurricanes, extreme heat, flooding, pandemic, recession) and their residents are relatively more socially vulnerable than other parts of the City. Neighborhoods of note in Miami include: Allapattah, Liberty City, Little Bahamas/West Grove, Little Havana, Little Haiti/Ti Ayiti, and Overtown.

4. HEAT EVENT:
Extended period (several days or more) with unusually hot weather conditions that potentially can harm human health. Episodic, usually during the Heat Season.

a. Heat Watches: Issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. It means that the risk of a heat wave has increased, but its occurrence and timing are still uncertain.
b. Heat Advisories: Issued within 12 hours of the onset of dangerous heat conditions. In Miami-Dade County, this is when the heat index is expected to reach 105°F or higher for at least two hours.
c. Excessive Heat Warnings: Issued when the heat index is expected to reach 110°F degrees for at least two hours.

5. HEAT EXHAUSTION:
Occurs when your body cannot cool itself through sweating. Untreated, it can progress to heat stroke. Symptoms include dizziness, confusion, and nausea. They usually improve by drinking water and resting in a cool place.

6. HEAT INDEX:
A function of both temperature and humidity – it is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature. The National Weather Service will issue alerts when the heat index is expected to exceed 105 degrees Fahrenheit for at least two consecutive days. Heat indices are localized and based on physiological assumptions that assess the impacts of hot and humid weather on humans. Variations in clothing thickness, height, weight, age, health, and physical activity are not accounted for in the heat index calculation. The index also does not include wind speed, cloudiness, shade levels, or any other factors, although those are known to affect heat-related impacts.

7. HEAT SEASON:
Miami-Dade County has established Heat Season to be May 1 through October 31.

KEY TERMS

8. HEAT STROKE:
The most severe form of heat illness, with primary symptoms that include confusion, altered mental status and a very high core body temperature above 104 degrees Fahrenheit (40 degrees Celsius). Often, people with heat stroke stop sweating.

9. SOUTHWEST STREETSCAPE MASTER PLAN:
City Commission passed Resolution R-23-0338 to accept and approve this plan. On February 9, 2023, the City Commission approved the expansion of the Plan to include the entire City.

10. TREE ORDINANCE:
Chapter 17 of the City Code is intended to protect, preserve, and restore the tree canopy within the City of Miami by regulating the removal, relocation, pruning, and trimming of trees. The purpose of the tree protection article is to assure that the design and construction of all development activity within the City of Miami is executed in a manner consistent with the preservation of existing trees and to maximize the City's tree canopy to the greatest extent possible.

11. TREE TRUST FUND:
Special revenue fund that was established with money collected pursuant to Chapter 17 and Section 9.5.5.c of Miami21. The fund collects money from various sources, including fees from tree removal permits and mitigation contributions required when trees are removed or replaced.

12. URBAN HEAT ISLANDS:
Urbanized areas that experience higher temperatures than outlying areas. Structures such as buildings, roads, and other infrastructure absorb and re-emit the sun's heat more than natural landscapes such as forests and waterbodies. Urban areas, where these structures are highly concentrated and greenery is limited, become "islands" of higher temperatures relative to outlying areas.

ABBREVIATIONS AND ACRONYMS

AC: Air Conditioners
ACEEE: American Council for an Energy-Efficient Economy
ADA: American with Disabilities Act
AIPP: Art in Public Spaces
ALFs: Assisted Living Facilities
ALICE: Asset Limited, Income Constrained, Employed
COOP: Continuity of Operations Plan
EV: Electric Vehicle
FPL: Florida Power & Light
NOAA: National Oceanic and Atmospheric Administration
POD: Point-Of-Distribution
PSA: Public Service Announcement
SAPs: Special Area Plans
SLRFP: Sea Level Rise and Flood Prevention
SOP: Standard Operating Procedures
UV: Ultraviolet

END NOTES

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