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Tackling Extreme Heat: Recommendations for Strengthening Massachusetts Policy

The number of extreme heat days faced by Massachusetts residents and workers is increasing over time. The impacts of extreme heat are suffered first and worst by low-income and Black, Indigenous Peoples, and People of Color (BIPOC) communities that are more likely to lack access to cooling and face disparate rates of heat-related health emergencies. In Greater Boston the municipalities with the largest number of neighborhoods at higher risk for extreme heat are Boston, Chelsea, Everett, Lynn, Malden, and Revere. This Applied Economics Clinic (AEC) policy brief prepared on behalf of A Better City develops six recommendations for Massachusetts decision-makers to support cooler neighborhoods, cooler buildings and homes, and cooler commutes in the Commonwealth. For more information, see AEC’s supplementary *Background Report: Extreme Heat Policy Review* at: tinyurl.com/msdvrbn2.

Recommendations for policymakers

To address extreme heat, AEC develops six recommendations for Massachusetts policymakers to address extreme heat emergency preparedness and resiliency (see Table 1).

To address short-term extreme heat emergency preparedness, AEC recommends that Massachusetts municipalities develop data-driven city- or town-wide heat emergency preparedness and response plans that outline actions that each municipality will take in the event of an extreme heat event to protect workers and residents, especially those most vulnerable to heat-related illness.

In addition, to support these plans and keep community members informed, real-time heat metrics—including air and surface temperature readings, humidity levels, and heat indices—and heat-related illness data should be recorded and regularly updated, supported by comprehensive public data tracking. Massachusetts should also provide an online, accessible interactive mapping tool that allows residents to identify nearby water stations, cooling centers, or other cooling services to help residents and workers find relief during extreme heat events.

Table 1. Recommendations for policymakers

Short-term policy solutions	Recommendation #1: Require municipalities to develop data-driven community heat emergency preparedness and response plans in partnership with local community
	Recommendation #2: Improve heat-related illness, temperature, and humidity record keeping and data tracking and provide real time heat exposure metrics
	Recommendation #3: Provide easily accessible online maps for residents to locate water stations, cooling stations, or other public services to aid in the event of extreme heat
	Recommendation #4: Take advantage of federal support for extreme heat preparedness and response
Long-term policy solutions	Recommendation #5: Launch partnership with local healthcare and academic institutions in extreme heat research and policy assessment
	Recommendation #6: Expand critical and green infrastructure investments in Massachusetts municipalities disparately impacted by extreme heat

Tanya Stasio, PhD, Elisabeth Seliga, Jordan Burt, Lila McNamee, and Elizabeth A. Stanton, PhD

Lastly, to support these actions, policymakers should take advantage of federal momentum and support available from the Department of Energy, the Department of Urban Housing and Urban Development, and the EPA.

To promote long-term resiliency to extreme heat, AEC recommends Massachusetts launch a partnership with local healthcare and academic institutions with expertise in extreme heat research and policy assessment. For example, in partnership with existing institutions studying extreme heat (e.g., the Boston University School of Public Health, Harvard C-Change, and MIT Office of Sustainability) conduct a heat health risk assessment to aid in understanding the relationship of heat-related illnesses, emergency department visits, and mortalities, with heat metrics (for example, daytime and nighttime maximum and minimum air and surface temperatures, and heat index). This assessment could be used to discern if the

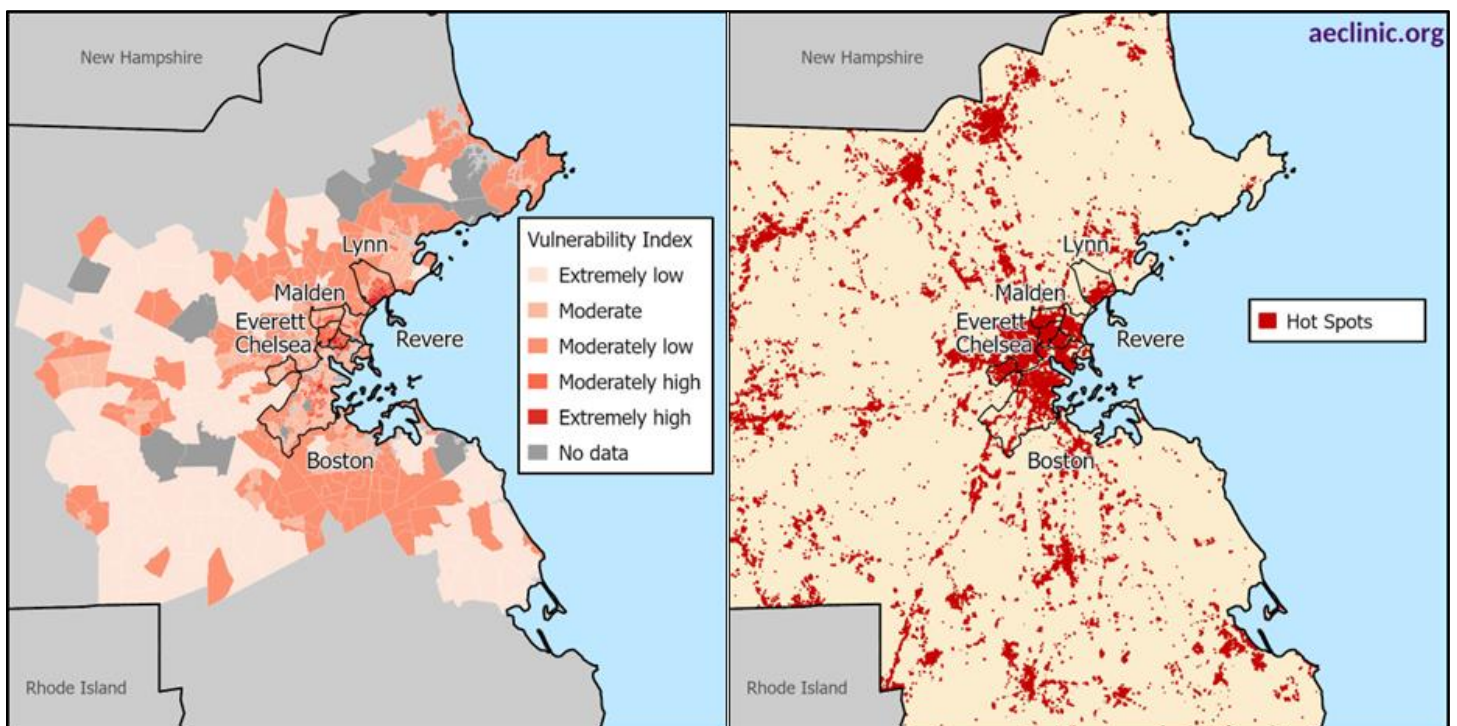
heat advisory threshold should be lowered in particular cities or statewide.

In addition, AEC recommends that policymakers identify communities where current tree canopy coverage is lacking and vulnerable communities are disproportionately exposed (for example, environmental justice communities and Gateway Cities) to the urban heat island effect in Massachusetts. Lastly, starting with communities that lack critical infrastructure to withstand extreme heat impacts, AEC recommends Massachusetts invest in energy efficiency retrofits and heat-tolerant materials, passive solar design, and conductive and internal heat gain mitigation as recommended by the U.S. Department of Housing and Urban Development.

Exposure to extreme heat

In Massachusetts, the number of extreme heat days—days with temperatures above 90°F—has remained

Figure 1. MAPC heat vulnerability (left) and hot spots (right)



Tanya Stasio, PhD, Elisabeth Seliga, Jordan Burt, Lila McNamee, and Elizabeth A. Stanton, PhD

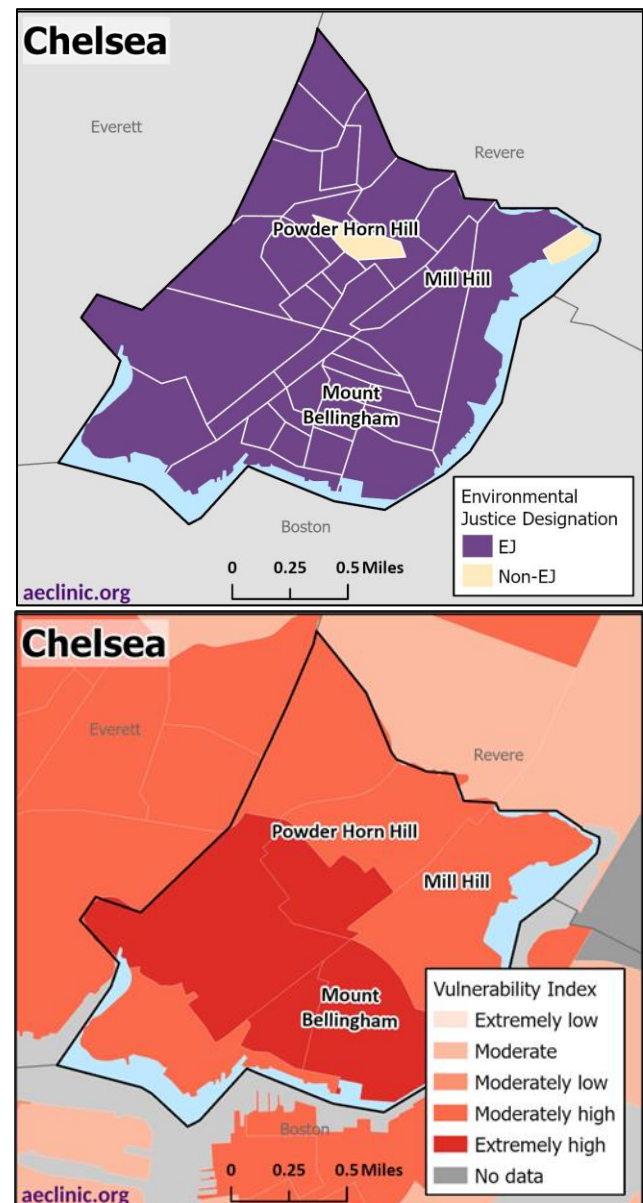
above the 1950 to 2020 average every year since 2010. According to the Massachusetts Department of Energy and Environmental Affairs’ *2022 Massachusetts Climate Assessment*, the Commonwealth’s summers are expected to grow warmer on average, with more frequent periods of extreme heat. For example, by 2050 Massachusetts residents are expected to experience 19 to 25 additional extreme heat days annually.

For people living in urban areas, the effects of extreme heat are especially severe due to the urban heat island effect. As a result, the hottest areas within each Massachusetts Regional Planning Agency region (defined as “hot spots”) are clustered around cities (see the right panel of Figure 1 on the previous page). These areas overlap with several communities that are vulnerable to extreme heat events according to the Metropolitan Area Planning Council (MAPC) *Climate Vulnerability in Greater Boston* tool (see the left panel of Figure 1 on the previous page). The Greater Boston municipalities with the largest number of neighborhoods at Moderately High or Extremely High Risk for extreme heat are Boston, Chelsea, Everett, Lynn, Malden, and Revere (see the left panel of Figure 1 on the previous page). In Chelsea, almost all residents reside in a state-designated environmental justice community and face moderately or extremely high vulnerability to extreme heat (see Figure 2).

Low-income communities and Black, Indigenous, and People of Color (BIPOC) communities across the Commonwealth face a disproportionate risk of extreme heat in part due to lack of community investment due to historical discrimination (i.e., redlining practices). Redlining has segregated low-income and BIPOC communities in areas less equipped to handle extreme heat events; these populations are more likely to live in communities that lack green spaces and in homes that have inefficient heating and cooling systems. In addition to increased risk of heat

stress or stroke, extreme heat can exacerbate pre-existing health conditions including cardiovascular disease, diabetes, mental illnesses, asthma, and other chronic illnesses.

Figure 2. Massachusetts Environmental Justice communities in Chelsea



Gaps in extreme heat policy

During extreme heat events, Massachusetts relies on the U.S. National Weather Service warning system at

Tanya Stasio, PhD, Elisabeth Seliga, Jordan Burt, Lila McNamee, and Elizabeth A. Stanton, PhD

Boston Logan Airport, along with active stations in Bourne/Hyannis, Gloucester, atop Mount Greylock in the northern Berkshires, Worcester, and Leyden to alert workers and residents of dangerously high temperatures. To protect Massachusetts workers, the Massachusetts Department of Labor Standards provides guidance to employers to encourage short-term solutions for addressing heat risks. These solutions include providing adequate ventilation, hydration stations, flexible work hours (e.g., shifting to cooler periods of the day), and developing an emergency response plan.

In July 2024, a bill before the Massachusetts Legislature that proposed a statewide standard for the prevention of heat illness in outdoor public sector workers was referred to the House Committee on Rules for further study and may be considered for a re-file in the next legislative session beginning in 2025.

Massachusetts does not currently have detailed long-term policy solutions for the impacts of extreme heat or a specific heat resiliency plan; however, the Commonwealth provides online tools to support the development of municipal heat resiliency plans. Massachusetts' most recent State Hazard Mitigation and Climate Adaptation Plan, called *ResilientMass*, identifies a Heat Flag warning system, improved cooling standards in buildings, and targeted environmental justice community outreach as strategies for addressing extreme heat in the Commonwealth. For more information, see AEC's supplementary *Background Report: Extreme Heat Policy Review*.

Federal guidance

Federal guidance from the U.S. Center for Disease Control and Prevention (CDC) and U.S. Environmental Protection Agency (EPA) is available to help inform state and local policymakers on heat emergency preparedness and extreme heat resilience strategies.

In 2020, the CDC published *Heat Response Plans: Summary of Evidence and Strategies for Collaboration and Implementation*. The U.S. Department of Health and Human Service's *National Heat Strategy for 2024-2030* promotes taking proactive steps to address heat planning, response, and resilience.

In addition, the EPA provides a set of long-term strategies to promote heat resilience in communities, including improving the resilience of urban infrastructure by using heat-tolerant materials for bridges, roads, and roofs, encouraging energy efficiency and conservation efforts to reduce stress on the electric grid during extreme heat events, and increasing tree canopy coverage. Lastly, the EPA provides funding opportunities and guidance materials to support communities in preparation for extreme heat and climate-related hazards. The recommendations from the CDC and EPA align with recommendations made by the Federation of American Scientists, particularly those regarding investment in heat-resilient infrastructure and communities.

In 2016, the National Institute for Occupational Safety and Health (NIOSH) published *Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments* that provided eight recommendations for an occupational standard for workers exposed to heat and hot environments, including workplace limits and surveillance, medical monitoring, surveillance of heat-related health events, posting of hazardous areas, protective clothing and equipment, worker information and training, control of heat stress, and recordkeeping.

Extreme heat best practices

With these guidance materials in mind and based on an extensive review of short- and long-term extreme heat policies being employed in states and municipalities across the United States (see

Tanya Stasio, PhD, Elisabeth Seliga, Jordan Burt, Lila McNamee, and Elizabeth A. Stanton, PhD

Background Report: Extreme Heat Policy Review), AEC identifies six best practices (see Table 2). These best practices inform the recommendations to Massachusetts policymakers discussed above.

Key takeaways

With climate change, extreme heat is becoming more common across the Commonwealth. For those living and working in urban areas, and low-income and BIPOC communities, the effects of extreme heat are especially severe. Extreme heat acts as a threat multiplier, with cascading effects impacting not only individuals, but also critical facilities and infrastructure, including transportation, power lines, and medical facilities, affecting the broader regional economy and electric grid. Heat-related illnesses also tend to increase hospitalization rates, thereby straining hospital capacity, emergency services, and impacting the level of care. As a result, states across the nation, including Massachusetts, are employing short- and long-term policy interventions for heat resilience. Based on a review of best practices, the six recommendations for Massachusetts decision-makers presented in this policy brief support cooler neighborhoods, cooler buildings and homes, and cooler commutes in the Commonwealth (see Table 1 above). For more information, see AEC's supplementary *Background Report: Extreme Heat Policy Review*.

Table 2. Extreme heat policy best practices

Short-term policy solutions	Best Practice #1: Create heat emergency preparedness and response plans and heat resiliency plans informed by temperature monitoring data
	Arizona statewide <i>Extreme Heat Preparedness Plan</i> and <i>Extreme Heat Annex</i> ; North Carolina <i>Triangle Regional Resilience Partnership Resilience Assessment</i>
	Best Practice #2: Create and maintain publicly available online data tracking systems on heat-related risk and health impacts
	New York State Department of Health and Maine Department of Health online data tracking systems on heat-related risks and impacts
Short-term policy solutions	Best Practice #3: Establish electric disconnection bans for customers during extreme heat events
	Arizona, the District of Columbia, Georgia, Illinois, Maryland, Missouri, New Jersey, and Oklahoma utility disconnection bans
	Best Practice #4: Provide access to cooling services, distribution of fans, AC units, water and energy subsidies, and enlist community groups to support local residents
Long-term policy solutions	Arizona appointed statewide cooling center coordinator; Ohio "Beat the Heat Fan Campaign"; New York City "Be A Buddy" program; Salvation Army (Arizona) water distribution
Long-term policy solutions	Best Practice #5: Evaluate data-driven state and municipal heat emergency protocols and assess heat advisory thresholds
	Arizona, New York State and New York City, New England, and Arizona heat-health assessments
Long-term policy solutions	Best Practice #6: Invest in critical and green infrastructure to help reduce the impact of extreme heat
	Georgetown Climate Center Green Infrastructure Toolkit; Detroit Climate Action Plan; Atlanta Community School Park Initiative; California Extreme Heat State Action Plan

Tanya Stasio, PhD, Elisabeth Seliga, Jordan Burt, Lila McNamee, and Elizabeth A. Stanton, PhD

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