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## Recommendation: Prepare for and respond to the threats of climate change

### Strategy 1

Direct resources and technical assistance to communities that have experienced historic disinvestment and commit to long-term climate and health planning.

The COVID-19 pandemic hit harder in communities of color and low-income neighborhoods, and numerous studies over the years have documented that these neighborhoods and populations also bear a disproportionate share of environmental harms such as flooding, air pollution, and exposure to toxic facilities. Similarly, negative impacts of climate change will not be borne equally across the region. The lasting effects of deliberate discrimination and disinvestment are illustrated by a recent study of over 100 communities, which found that neighborhoods historically subject to red-lining are, on average, five degrees hotter in the summer.<sup>1</sup> The red-lined neighborhoods have fewer trees and parks, and more paving and industrial facilities. Climate change also exacerbates public health disparities in these communities, with extreme heat and the poor air quality and humidity that often accompanies it triggering asthma. Warmer temperatures will have disproportionate impact on Black people and Latinos who are already hospitalized for asthma at higher rates than Asians and Whites. Resources must be directed to improving public health outcomes and increasing assets available to communities that have been subject to institutionalized discrimination and disinvestment.

► **Action 1.1: Assure that state resources are directed where the need is the greatest by providing dedicated funding and priority in state climate grants, loans, and investments for Environmental Justice communities.**

Environmental Justice communities should be identified for dedicated funding and priority in state climate grants, loans, and investments. To do so, Massachusetts should develop new metrics that more fully account for environmental burdens. California's Enviro Screen tool provides a model that considers pollution exposure, sensitive populations, and socioeconomic factors.<sup>2</sup> Currently, Massachusetts considers only race, income, and English language isolation to identify Environmental Justice communities, although the recently passed Next Generation Roadmap legislation offers more nuance in that definition. Additional Enviro Screen measures include exposure to air and water pollution and toxic facilities; prevalence of

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1 New York Times. How Decades of Racist Policies Left Neighborhoods Sweltering. (August 24, 2020). <https://www.nytimes.com/interactive/2020/08/24/climate/racism-redlining-cities-global-warming.html>.

2 <https://oehha.ca.gov/media/downloads/calenviroscreen/factsheet/ces30factsheetfinal.pdf>.

asthma and cardiovascular disease; unemployment; housing cost burden; and educational attainment. Cap-and trade proceeds are invested in communities with the highest scores. The Commonwealth should similarly identify a dedicated funding stream for investment in communities with the highest demonstrated need using these more comprehensive metrics. Any applications for funding should be straightforward and require readily available data so that communities with fewer resources do not experience the application process as a barrier. Additional support should be provided to community-based organizations and community action agencies to increase local capacity, expertise, and access to resources.

- ▶ **Action 1.2: Establish a statewide mandate to integrate climate and public health planning and provide support to municipalities and regions.** The nexus between public health and climate change is critical for supporting resilient communities in the face of climate disasters. The Commonwealth should institute a mandate to address climate through the lens of public health and social resilience, in addition to infrastructure development. This mandate should include funding and technical assistance for municipalities and regions to carry out the work locally. Strengthening this nexus should influence decision making; program design, development, and implementation; and funding and investments. This includes increasing staff capacity at the local level and connecting with and providing support to home healthcare workers, emergency care providers and other front-line workers. Public health experts should be integrated into climate related taskforces at the local, regional, and state levels. The Commonwealth should issue guidance and assistance to integrate social determinants of health into climate planning and program implementation, including factors such as economic stability, housing access, and education access.

**Best/emerging practice:** There are several examples of climate planning processes that have focused on climate justice along with equity and public health. The City of Providence, Rhode Island created a Climate Justice Plan, which was co-designed by the Racial and Environmental Justice Committee (REJC).<sup>3</sup> The REJC led engagement for the plan and worked to ensure that recommendations prioritized reducing emissions in communities most impacted by climate change, and that the solution pursued would not lead to resident displacement. At the regional level, Seattle and King County, Washington released a Blueprint for Addressing Climate Change and Health.<sup>4</sup> The plan focuses on how climate changes impact residents experiencing health inequities because of structural racism and identifies how to tackle both the impacts of climate change and the upstream factors that lead to health disparities to achieve a more resilient region.

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<sup>3</sup> <https://www.providenceri.gov/wp-content/uploads/2019/10/Climate-Justice-Plan-Report-FINAL-English-1.pdf>

<sup>4</sup> <https://kingcounty.gov/~media/depts/health/environmental-health/documents/publications/blueprint-climate-change-and-health.ashx?la=en>

- ▶ **Action 1.3: Establish a statewide program to make municipal buildings more resilient and create Resilient Hubs.** Municipalities can lead by example in ensuring that municipal buildings are adapted and made resilient to climate impacts such as flooding, power outages, extreme temperatures, and more. Municipal buildings - in particular, schools, libraries, senior centers, community centers, and other designated emergency shelters - provide a valuable opportunity to not only provide an area for emergency sheltering during a crisis, but also a place for programming that increases social cohesion and emergency preparedness ahead of a disaster. There should be dedicated funding to do full-building retrofit and retro-commissioning of these buildings to improve energy efficiency and indoor air quality, reduce exposure to heat, incorporate green infrastructure, move mechanical equipment out of basements, and add solar storage and other resilience technologies. Additional funding for staff capacity and operational management and training, as well as toolkits for local programming should be allocated to help leverage existing networks prepare and recover more quickly after emergencies. Resilience Hubs that include solar-plus-storage and are co-located with municipal buildings could be used to develop microgrids that can “island” during grid outages. This program should prioritize communities most in need, as outlined in Action 1.1 above, and provide staff training and capacity to carry out the work. For more details on accelerating deep energy retrofits for buildings, see Action 1.1 in “**Accelerate retrofits of existing buildings to achieve deep energy efficiency and eliminate fossil fuels.**”

## Strategy 2

Prepare buildings, infrastructure, and the natural environment to withstand and be resilient to the impacts of climate change.

Supporting resilience in the built and natural environment will require several critical steps, including: 1) adapting existing buildings and infrastructure to withstand and recover from the impacts of climate change, 2) developing new buildings and infrastructure in ways that incorporate resilience standards and adaptive principles, and 3) developing additional infrastructure, including natural infrastructure, specifically to protect and adapt communities from climate hazards. Infrastructure includes the primary life-line sectors of transportation, telecommunications, energy, water, healthcare, and food systems, as well as “green” infrastructure and natural systems that provide critical ecosystem services such as flood storage and cooling. These large-scale investments will require significant increases in funding and financing. Some estimate that the need is at least \$100 million annually (a ten-fold increase over current state funding of around \$10 million annually through the Municipal Vulnerability Preparedness (MVP) program). A robust strategy that includes local, state and federal dollars must be developed and implemented in the near-term.

► **Action 2.1: Establish a Climate Funding and Financing Commission to develop a broad, long-term strategy to fund climate projects and programs.** In 2020, the MVP program funded \$11.1 in Planning and Action Grants, out of \$46 million in funding requests. This is one example of where the need for climate-related funding far outweighs the availability of funds from either local capital budgets or the state, against the backdrop of an uncertain federal funding landscape. While funding for the MVP program should be increased, the Commonwealth also needs a longer-term climate funding and financing strategy. The Executive Office of Energy and Environmental Affairs should create a Climate Funding and Financing Commission to develop strategies that leverage traditional funding structures and innovative climate financing that increases the amount of dedicated capital for climate projects, while ensuring that resources are allocated to those with the greatest need (see Action 1.1). The Commission should include experts, stakeholders, and decision makers from infrastructure finance, municipal finance, academia, impact investing (investments designed to yield a social/environmental benefits as well as financial return), and traditional investment banking. The Commission should focus on both a statewide strategy that includes advocating for federal funds and developing financing tools for local governments. Innovative funding and financing strategies may include developing a Massachusetts Climate Infrastructure Bank, passing enabling legislation to expand the use of Public-Private Partnerships (P3s) to include climate projects, and advancing various types of debt financing (such as Green Bonds and Environmental Impact Bonds). While federal recovery funds could provide initial capital for an infrastructure bank, the Commission should also consider adoption of mechanisms such as a carbon tax as a longer term funding option. The Commission should be empowered to set up and deploy these financing structures and mechanisms. Relatedly, the Commission may also be part of a parallel effort to help establish a cohesive state or multi-state carbon offset program that maximizes natural lands, forests, soils, wetlands, and green infrastructure as carbon sinks, while balancing/co-optimizing that sequestration with other policy needs (such as sites for solar and wind, recreational areas, mass timber, agriculture, and more). For more details on a Climate Infrastructure Bank, see Action 2.2 in the recommendation, “**Ensure sufficiency and resiliency of revenue for meeting local and regional needs.**”

Municipal financing strategies may include establishing additional district-level fees (such as a Resilience District), Stormwater Utilities, or innovative municipal bonds. Special consideration should be given to municipalities that lack the capacity or credit to take advantage of traditional financing methods. Strategy and tools should also include support for private property owners to make improvements to protect their property, as well as support for small businesses as valuable members of the community. Municipal finance is likely to be disproportionately impacted by climate change and loss of tax revenues for communities that are hardest hit by climate hazards. Thus, providing local and regional tools will be critical to closing the funding gap.

- ▶ **Action 2.2: Incorporate projections for sea level rise, increased precipitation, and increased heat in all state permits and construction.** All state permitting should be updated to require that standards reflect projected climate conditions for the life of the project. In addition to protecting public safety, higher standards can provide cost savings, including substantially reduced flood insurance premiums and lower heating and cooling costs. As a priority, building code standards must be revised to ensure infrastructure will be functional and able to protect health and safety for the duration of anticipated use. Locations projected to be in future flood zones should be subject to flood zone standards. Building elevation requirements should reflect future sea level rise. Energy efficiency standards should assure that homes are designed to address projections for extreme heat and cold and can withstand power outages. See Strategy 2 in “**Accelerate retrofits of existing buildings to achieve deep energy efficiency and eliminate fossil fuels**” for more details on how to promote building energy efficiency and energy resiliency.

The Legislature should require that all state-funded infrastructure utilize a life-cycle cost analysis that accounts for climate related costs associated with sea level rise, precipitation, heat projections, natural resource impacts, and future relocation or retrofit requirements, and that prioritizes climate-related benefits. The Commonwealth should similarly provide guidance for municipalities to do the same with locally owned infrastructure.

- ▶ **Action 2.3: Incentivize and require local policy changes through state’s MVP Program.** The MVP program has been widely successful in encouraging municipalities to complete municipal level planning for climate impacts, as well as funding millions of dollars of Action Grants to implement priority projects. Since 2017, the program has allocated \$44 million in both Planning and Action Grants. This program could be even more impactful by requiring and incentivizing local policy changes as part of grant funding eligibility requirements. The state’s Green Communities program, which requires five municipal actions, including adoption of local policies and the state’s Stretch Energy Code, provides a precedent for this type of program. An updated version of MVP could be used to incentivize municipalities to adopt climate resilient zoning ordinances and policies, such as flood resilient zoning, cool roof requirements, and green factors codes that encourage green infrastructure for residential and commercial properties. Policies should encourage and require the use of nature-based solutions where appropriate, including additional on-site water infiltration requirements, shading and shade trees, and protection of natural resources and land conservation. The program could provide technical assistance and template policies to help municipalities to take actions that make them eligible for additional funding and technical assistance support.

## Strategy 3

### Move out of harm's way.

Over the next thirty years, sea level is projected to rise as much as 1.4 to 2.4 feet<sup>5</sup> and coastal storms will become more frequent and severe. Communities will experience more chronic flooding as daily tides encroach and groundwater levels rise. Inland locations will also be affected due to the projected increase in extreme rain events. Increasingly residents will be priced out of their homes as flood insurance premiums rise and damage to property increases. As conditions worsen, pressure to relocate people and infrastructure will mount. Properties at risk will experience decreasing value, while the need to relocate will put pressure on housing availability and affordability elsewhere. Low-income residents will be particularly vulnerable to the impacts of disruption and dislocation. Critical natural resources including salt marshes, tidal flats, and beaches are at risk of being submerged where coastal development blocks pathways for upland migration as sea level rises. Now is the time to develop the regulatory tools and programs to address those locations where future relocation will be unavoidable. These actions will promote equitable transitions that protect people, natural resources, and communities.

- ▶ **Action 3.1: Implement a state-funded program to facilitate managed retreat, including purchase of flood prone properties from willing sellers.** The Commonwealth should develop a buyout program to facilitate retreat from unsafe locations and preservation of natural resources. Buyouts under Federal Emergency Management Agency (FEMA) programs average five years to complete, while flood insurance repair payments are available within months. This encourages reinvestment in vulnerable locations. A state program should incorporate pre-approval, leaseback, and life estate options that allow residents to stay in their homes until a triggering event occurs (storm damage, erosion, end of life). Specific supports for low-income residents should include relocation assistance for renters and homeowners, connections to opportunities for rental assistance, and loan forgiveness for underwater mortgages. This should also include technical assistance for community buy-out programs and relocating multiple residents. In addition to financial assistance, the program should include experts in relocation, including social workers to address the mental health and community impacts of relocation and post-disaster support. As a starting place, the Legislature should pass An Act establishing a Massachusetts flood risk protection program ([S.603/H.983](#), filed by Senator Marc Pacheco and Representative Sarah Peake), which begins to address several of these concerns.

The Commonwealth should prioritize lands that can facilitate migration of critical natural resources and preservation of contiguous properties to improve public access to the shoreline and create new community amenities. The buyout program should be coordinated with state land protection grant programs to maximize natural resource protection and creation of public spaces. Funding of properties that will allow migration

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<sup>5</sup> <https://resilientma.org/>.

of critical natural resources should take priority, and the Commonwealth should encourage the use of the Community Preservation Act (CPA) and other land protection funds for natural resource migration. For more information on specific land conservation tools and funding mechanisms, see the recommendation, “**Ensure land preservation, conservation, and access to recreational spaces.**”

**Best/emerging practice:** Created following Superstorm Sandy and working with its Green Acres program that protects open land, New Jersey created the Blue Acres program that buys out properties from willing sellers, preserves the land and makes it available to the public for conservation and recreation.<sup>6</sup> Owners of homes damaged in Superstorm Sandy can sell their homes at pre-storm value through this program, which includes case managers to assist property owners, provide relocation assistance for renters, and help with loan forgiveness for underwater mortgages. The program focuses on contiguous properties to create community benefits.

► **Action 3.2: Encourage and incentivize adoption of local zoning that restricts development in high-risk locations.** A handful of Massachusetts’s communities have adopted prohibitions on development in coastal and inland flood prone locations. While often controversial, this is an important tool to prevent development in locations that will be a threat to future residents, first responders, and communities. The Commonwealth should marshal its resources to support efforts by communities to limit their exposure to future threats. Strategies should include developing model bylaws, providing technical assistance, and providing both grant support and grant incentives to adopt protective zoning, as well as dropping the voting approval threshold for zoning changes to a majority vote of the Select Board or City Council.

Furthermore, the Commonwealth should establish a commission to develop strategies to facilitate relocation and lessen negative impacts on sending and receiving communities. The commission should consider how the Commonwealth can still meet its housing production goals and affordable housing needs in light of potential development restrictions in high-risk areas, and more broadly consider strategies for maintaining community cohesion. Zoning strategies might include incentives along the lines of Chapter 40B, as well as Transfer of Development Rights.

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<sup>6</sup> [https://www.nj.gov/dep/greenacres/blue\\_flood\\_ac.html](https://www.nj.gov/dep/greenacres/blue_flood_ac.html).



- **Action 3.3: Advocate for reform of FEMA programs to protect low-income residents and improve the accuracy and transparency of flood data.** FEMA houses critical programs that provide flood insurance, mitigation funding, and floodplain mapping. Low-income residents are increasingly at risk of losing homes due to rising flood insurance premiums and repeated storm damage. Funding for FEMA programs that support safety retrofits is inadequate to meet the need and program requirements are prohibitive for those without substantial financial reserves. Reforms are urgently needed to increase access and resources for property retrofits and relocation, and to cushion the impact of rising flood insurance premiums on low-income residents.

Access to accurate flood data is key to protecting residents and preventing continued investment in flood prone locations. Current FEMA Flood Insurance Rate Maps do not incorporate future climate projections. Moreover, federal privacy regulations prevent individuals and communities from accessing flood claims data critical to understanding flood risk. Federal and state regulations require reform to reduce flood risk and support community planning. Two critical areas to address include:

- **Direct mitigation funding and flood insurance relief to low-and-moderate income residents.** The National Flood Insurance Program currently provides substantial discounts to properties built before FEMA flood maps were adopted. This obscures actual flood risk and contributes to the program's multi-billion dollar debt. Actuarial rates are necessary to assure that premiums reflect actual risk. However, for low-income residents and communities, adjustment to actuarial rates will likely trigger displacement and a foreclosure crisis. Congress should target mitigation programs to low-income residents and, in the near-term, provide direct support to maintain insurance affordability. Insurance affordability options should include means-tested discounts, revolving loans, and allowing policyholders to pay flood insurance premiums in monthly installments.

Targeted reforms to FEMA flood mitigation programs can reduce damage and flood insurance premiums. Funding should be prioritized for communities most in need of financial support. A mechanism, such as the Centers for Disease Control Social Vulnerability Index, should be utilized to prioritize funding. Current FEMA mitigation grant programs feature after-the-fact reimbursements, precluding participation for many low-income residents. FEMA should provide interest-free loans as a bridge to mitigation reimbursement. The state could also fill this gap with a revolving loan fund. Damage to building utilities is costly and often substantially extends displacement after a flood. FEMA should expand utility elevation mitigation grants and recognize the value of elevating utilities by significantly discounting flood insurance premiums.

- **Improve accuracy and transparency of flood data.** Flood risk information is critical to steering investments to safe locations. Update FEMA Flood Rate Insurance Maps to reflect projected sea level rise, precipitation, and storm frequency. Disclosure of flood history to prospective homebuyers before purchase and making all insurance and disaster claim information publicly accessible should be required. Access to claims data will allow individuals and communities to make investments with full knowledge of flood risk and assist communities in making the case for federal flood mitigation support.

**Best/emerging practice:** Harris County Thrives is a comprehensive resiliency strategy for the greater Houston area.<sup>7</sup> County voters passed a \$2.5 billion bond bill to fund 500 flood protection projects. Instead of using strict a cost/benefit analysis, which favors high value properties, they incorporated the CDC Social Vulnerability Index to prioritize communities that would have the most difficulty recovering from flooding. The Louisiana Strategic Adaptation for Future Environments (SAFE) plan is another holistic community resiliency plan.<sup>8</sup> The year-long planning process to determine which projects should be funded incorporated deep community engagement, hosting 71 meetings with 3,000 participants. Funded projects were diverse in their focus and included relocation and improvements to receiving areas. Some of the categories of funded projects include resilient housing, resilient transportation, resilient energy, resilient infrastructure, economic development, community nonstructural mitigation/flood risk reduction, planning, and public services/education.

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<sup>7</sup> <https://www.harristhrives.org/>.

<sup>8</sup> <https://lasafe.la.gov/>.