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### Equity, Education, and Emergency: Examining Social Resilience Building Pilot Programs, Methods, and Successes in Massachusetts Communities

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*Equity, Education, and Emergency: Examining Social Resilience Building Pilot Programs,  
Methods, and Successes in Massachusetts Communities*

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Mia Kania

In partial fulfillment of a Bachelor of Arts Degree in Environmental Analysis,  
2019-20 academic year, Scripps College, Claremont, CA

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Readers:

Professor Char Miller, Pomona College Department of Environmental Analysis  
Professor Joanne Nucho, Pomona College Department of Anthropology

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## Introduction

Massachusetts residents are no strangers to a little rough weather. Growing up, my sleepy Boston suburb lost power for upwards of a week at least once every winter, leaving us sleeping under piles of blankets for nights in a row; I learned how to recognize and avoid black ice by kindergarten; teens are taught how to safely break in the snow during driver's ed. as much as they learn parallel parking; I have even witnessed a friend risk walking out in a blizzard to get her Dunkin Donuts iced coffee. In early 2018, however, East Boston<sup>1</sup> and neighboring coastal towns got hit with a storm too brutal for even us hardy New Englanders to be prepared for. Early on the morning of January 4th, a brutal Nor'easter swept through the northeast of the United States, causing tidal surges further inland than usual and dangerous conditions throughout the city of Boston. This was not the first time Eastie has experienced severe flooding, complete with road closures and currents strong enough to carry away a grown adult running through the streets, but the January 4th flooding presented the community with more significant threats than usual. Flood waters inundated further inland than ever before in living memory. Low temperatures kept the precipitation frozen in a dangerous wave of slush-and-ice sludge that plowed through streets, damaged cars and building foundations, and even carried a full dumpster bobbing down a central street in the city's Seaport district. Surging flood waters set a record high tide of 15.16 feet, topping the previous 15.1 feet tide that flooded the neighborhood during the blizzard of 1978.<sup>2</sup> Just three months later, a second 100-year storm walloped the Massachusetts

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<sup>1</sup> Colloquially known as "Eastie", this the area separated from downtown Boston by the Boston Harbor, which was created by connecting several islands off the coast of Massachusetts using landfill. Historically, Eastie is a neighborhood dominated by Irish, Russian Jews, and Italian immigrants throughout the 20th century. From the early 1990's through the late aughts, the area became a primarily Latin American immigrant neighborhood.

<sup>2</sup> "It's Officially a Record: Storm Tops Blizzard of '78 for High Tide," *Boston Herald* (blog), January 5, 2018, <https://www.bostonherald.com/2018/01/05/its-officially-a-record-storm-tops-blizzard-of-78-for-high-tide/>.

coast, with high powered, icy winds driving flood waters into business and residential districts up and down the coast of Massachusetts. The storm shut down whole neighborhoods and destroyed property. One resident described the flooding, saying, “In my garage, it was all the way up to my waist... Many of my neighbors' houses are flooded and some of them destroyed with foundations that collapsed.”<sup>3</sup> The second torrent of flooding even caused the evacuation of several residents, who had to be transported to safety in the shovels of construction vehicles, which were the only trucks strong enough to move through flood currents safely.

While severe weather events such as these storms are still an extreme example of typical weather in the region, their increased frequency and the extent to which they completely cripple entire areas of the state for up to weeks offers a preview of what will soon become the new normal throughout the Commonwealth and beyond. As climate change’s imminent impacts loom closer on the horizon, Massachusetts officials and residents alike are beginning to wonder how we will survive a consistent onslaught of severe, property damaging and life threatening events. Within the next thirty to fifty years, the Commonwealth is looking towards rising sea levels that will envelop significant portions of populated neighborhoods and make an even larger amount of land vulnerable to severe flooding. Massachusetts will also experience increased heat and humidity in the coming years, with approximately ten days of temperatures rising above 100 degrees within twenty years and fifteen to twenty extreme heat days within fifty to seventy years.

<sup>4</sup> Storms will continue to grow stronger and wetter, and the state will become at risk for

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<sup>3</sup> Ralph Ellis CNN, “Boston Streets Flooding as nor’easter Pounds New England,” CNN, accessed December 1, 2019, <https://www.cnn.com/2018/03/02/us/boston-flooding/index.html>.

<sup>4</sup> The Union of Concerned Scientists, “Killer Heat in the United States: The Future of Dangerously Hot Days,” accessed December 1, 2019, <https://ucsusa.maps.arcgis.com/apps/MapSeries/index.html?appid=e4e9082a1ec343c794d27f3e12dd006d>.

hurricane-level winds and tropical storm currents, in addition to Nor'easters, "bomb cyclones", and the other severe winter storms we currently weather.

These climatic changes undoubtedly pose a threat to all Massachusetts residents, but populations who are already marginalized in society due to factors like socio-economic status, race and ethnicity, immigration status, gender, and more, can experience increased vulnerability to extreme weather because of their situations. Low income communities have fewer resources to safely evacuate if necessary; people in such groups may be told they will lose their job if they leave, may not have a vehicle to transport themselves and loved ones to safety, or not have options for longer-term relocation if necessary. Individuals who are not comfortable speaking English can have trouble receiving information on emergency procedures and warnings, and undocumented individuals can put themselves at risk by showing up to certain emergency shelters or seeking medical attention if affected by extreme weather. Malden and Everett, two towns directly along the Charles River's floodplain, provide a stark example of these vulnerabilities with their large Haitian immigrant population. Many immigrants displaced after the 2010 earthquake have chosen to settle in these specific neighborhoods because of their comparatively low housing prices for the Boston area, access to nature and urban landscapes, and a growing sense of relationships built on shared experiences among residents. Although this budding Haitian-American community is flourishing in many ways because of their ability to establish strong physical and social bonds in the Malden-Everett neighborhood, their locality also puts them at severe risk for worsening weather conditions. While knowledge about the growing threat to their housing is spreading throughout the community, most residents are not able to alter their living situation because they don't have the necessary funds or job security, but

also because many of the residents have worked hard to build a life and community where they are, and the thought of moving elsewhere can be devastating to them.

Throughout Massachusetts, vulnerable populations like the one in Malden-Everett are facing the growing threat of climate change and the severe weather it will bring. Thankfully, Massachusetts is a relatively progressive state in terms of its general politics and specifically in its approach to working towards creating a sustainable future in the face of climate change. The state has supported a wide variety of sustainability, mitigation, and adaptation efforts, from conversations about building a seawall to keep rising sea levels at bay to hosting green energy conferences and symposiums across the state to dedicating a \$2.4 billion environmental bond to updating and building climate resilient infrastructure throughout the state. Officials across the state recognize the urgency climate change places on creating a sustainable future. The state places significant emphasis on finding innovative, equity-based ways to do so, and works to engage in larger conversations surrounding sustainable building, best practices for mitigation and adaptation, place-based and community-based solutions, and climate justice. In doing so, both governmental and non-governmental efforts across Massachusetts have focused their efforts on one of the latest concepts in holistic sustainable development, the movement towards resilience.

Resilience building seeks to bridge the conceptual gap between mitigation and adaptation approaches to combating the effects of climate change. When applied to climate change, the term can be defined as the “capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation,



learning, and transformation.”<sup>5</sup> Framing climate change action through the lens of resilience allows communities to work within and take full advantage of current structures and systems to prepare for the impacts of climate change and educate community members on how to alter behaviors to mitigate these coming changes. Because of its comprehensive approach to both social and physical systems’ reaction to “hazardous events,” a resilience-based approach to climate change preparation efforts can allow communities who are affected by multiple disenfranchising forces – both social (socio-economic status, race or ethnicity, gender, etc.) and physical (physical location, property rights, access to good quality infrastructure, etc.) – to pursue multi-pronged solutions that work to fight these different forces cohesively.

Although approaching climate change preparation through a resilience-building framework does offer this more justice-oriented opportunity, the term has gained most of its popularity “among architects, planners, non-profits, journalists, and academics...[who] privilege design solutions and externally imposed ideas for community cohesion.”<sup>6</sup> In an answer to the growing need for all populations to protect themselves from the extreme weather events climate change will bring and to rebuild their physical, social, and economic structures after these events occur, various organizations, municipal and state programs, and other groups have devoted a significant amount of energy, resources, and effort towards constructing and building upon resilient infrastructure. Legislation ranging from the “Green New Deal” to smaller initiatives such as “Resilient Boston Harbor” propose bold modifications, additions, or complete revamps of current infrastructure to create buildings, roads, etc. that embody the term “resilient.” Many

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<sup>5</sup> R. K. Pachauri, Leo Mayer, and Intergovernmental Panel on Climate Change, eds., *Climate Change 2014: Synthesis Report* (Geneva, Switzerland: Intergovernmental Panel on Climate Change, 2015).

<sup>6</sup> Malini Ranganathan and Eve Bratman, “From Urban Resilience to Abolitionist Climate Justice in Washington, DC,” *Antipode* n/a, no. n/a: 2, accessed November 27, 2019, <https://doi.org/10.1111/anti.12555>.

private firms, non-profit consultants, and architecture agencies have also devoted themselves to the mission of building resilient cities and towns. While this wide selection of organizations are devoted to creating opportunities for climate resilience within their communities, few of these efforts focus primarily or exclusively on building *social* resilience to help communities prepare for and react to the impacts of climate change. Official government aid efforts, too, also overlook these communities, due to not only their focus on physical solutions, but also to vulnerable populations' lack of personnel capacity or preparation to receive funding from the government. By approaching resilience through purely physical methods, these projects frequently leave certain communities, namely low-income, immigrant and undocumented, and/or communities of color, unprotected when extreme weather hits.

The concept of resilience and the methods and process of building it are as-of-yet undefined, set, or universally agreed upon. Similarly, the goals that resilience efforts seek to fulfill can vary greatly depending on the project leaders' approach to and definition of this new concept. This great variation in the way resilience efforts manifest can be attributed in large part to the concept's relative newness within environmental practices and in the context of climate change, as well as its cross-sector nature. However, as the need to build resilience's essential components, i.e. "the capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance," increases, the urgency to understand the driving factors behind the concept and develop effective methods to foster these capacities grows as well. To gain insight into how climate change preparations can best facilitate resilience in their target communities, therefore, this thesis will explore the concept of resilience as it is built, practiced, and manifested in Massachusetts. Because of how grossly physical efforts can and often do

overlook already vulnerable communities, I will focus on the critical nature of creating social bonds, resilience hubs, and cultures of empathy, responsibility, and climate awareness in building resilient communities. To this end, this thesis will argue that climate and social justice workers can utilize existing social structures and systems to empower communities in Massachusetts populations vulnerable to extreme weather to create an emergency preparedness “infrastructure” that does not require altering the built environment. However, doing so effectively is only possible through incorporating a community-based, justice-informed framework.

I begin by exploring the various academic and activist-based concepts that have led to or influenced the development of resilience theory and building to situate this thesis’ work within a greater scholarly context. My thesis will then examine current resilience, adaptation, and mitigation efforts at the state level in Massachusetts in order to identify gaps in coverage and protection; which communities are the most vulnerable to extreme weather; are these the communities getting the investments they need from the state government; if so, what does this funding overlook; and how can other, community-based efforts supplement state funding most effectively. I will then analyze community-driven efforts designed to close the gaps left by inadequate state services to discover how communities can embrace resilience-building to become better prepared in the face of extreme weather events that are worsened by climate change. To do so, I will explore the model and practice of a grassroots non-profit designed specifically to combat the impacts of extreme weather on frontline communities called Communities Responding to Extreme Weather Events (CREW). CREW is a subgroup of the Cambridge-based non-profit Better Future Project that seeks to unite local leaders to build

grassroots climate resilience through inclusive and hands-on education, service, and planning. I will then examine the efforts of CitySprouts, another Cambridge-based program that partners with Boston area schools to plant gardens at schools with little-to-no nature access. My goal in doing so is to ask whether efforts designed specifically to do social resilience work for climate preparedness are as effective as groups who merely accept preparedness as part of their work; I will ask if one model is more effective at creating social resilience than another; if these practices are adaptable to other communities; and more. I will conclude by summarizing what we can take from Massachusetts' social resilience building efforts and suggesting best practices going forward.

## **Chapter One**

### **Putting Social Resilience in Context: A Literature Review**

Social resilience, defined as “the ability of a human community to cope with and adapt to stresses such as social, political, environmental, or economic change,”<sup>7</sup> is an emerging topic within environmental scholarship. Despite the fact that scholars have discussed the theory surrounding this concept in significant ways for at least twenty years, academics, policy makers, and environmentalists alike have yet to reach consensus on a consistent definition, or term, for that matter, for the theory surrounding social resilience. Although thinking on exactly how we define and actualize resilience-building differs, the same desire to give a name and form to the immense power and potential to create and spread change contained within social relationships remains at the center of all these conversations. To this end, terms like social resilience and community resilience, as well as “social capital” in economics and political science, “asset-based community development” in policy research, “social infrastructure” in anthropology and sociology, and “collective impact” in the social sector, all seek to conceptualize what role social relationships play in our society.

### **Social Capital**

The concept of “social capital” presents us with one of the oldest understandings of the potential power of social relationships. This term refers to “the links, shared values and understandings in society that enable individuals and groups to trust each other and so work together.”<sup>8</sup> While the term “social capital” itself has only been in use for little over a century,

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<sup>7</sup> “Social Resilience,” accessed November 14, 2019, <https://reefresilience.org/resilience/what-is-resilience/coral-reefs-social-resilience/>.

<sup>8</sup> “What Is Human Capital?,” 102, accessed November 14, 2019, <https://www.oecd.org/insights/37966934.pdf>.

thinkers from Aristotle to James Madison to Alexis de Tocqueville have all been credited with commenting on the themes underlying the term. The exact phrase “social capital” first appeared in the early 1900s, gained momentum in sociology in the early second half of the century, and was fully popularized by the 1990s, due in large part to its application in political discussions.<sup>9</sup> Around this time, academics from a variety of disciplines started delving into the question of how interpersonal relationships influence the ways in which our societies function. Robert Putnam, a political scientist who was instrumental in bringing the idea of social capital into the mainstream in his 1992 book *Making Democracy Work*, posited that the economic prosperity and level of political involvement of a given region are a direct result of the community’s successful accumulation of social capital.<sup>10</sup> In doing so, Putnam’s examination of social capital help to popularize the explicit and intentional study of the role of relationships within society from lenses other than the purely anthropological. While different theorists conceptualize the details of social capitalism in their own ways, from Putnam’s three-pronged representation of moral obligations and norms, social values (namely trustworthiness) and social networks, to Pierre Bourdieu’s 1970s understanding, which puts more emphasis on conflicts and the power function, those who explore its theory generally agree that the concept is one of the driving forces of a successful society.<sup>11</sup>

Due to the power that Putnam et al. ascribe to social relationships throughout their various works on social capital, it is no wonder that many environmental scholars have begun examining the connections between social capital and the shifting societal norms that come with

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<sup>9</sup> Tristan Claridge, “Social Capital and Natural Resource Management,” n.d., 91.

<sup>10</sup> Robert D. Putnam, *Making Democracy Work: Civic Traditions in Modern Italy* (Princeton University Press, 1992).

<sup>11</sup> Martti Siisiäinen, “Two Concepts of Social Capital: Bourdieu vs. Putnam,” n.d., 1.

climate change. Of primary interest for environmental scholars is social capital's potential implementation in creating networks of knowledge and social-emotional bonds that can protect communities against the devastation of increasing extreme weather and hostile living environments caused by climate change. In a case study of social capital's real-life applications to climate change, Neil Adger argues that framing the issue of resource management to build resilience in the face of climate change through private and public institutions increases the adaptive capacity of communities who receive aid from these institutions. He states: "public-good aspects of particular forms of social capital are pertinent elements of adaptive capacity in interacting with natural capital and in relation to the performance of institutions that cope with the risks of changes in climate."<sup>12</sup> In contrast, environmental critiques of the application of social capital to the issue of resilience cite social capital's "dark side" through which it can be used to advance "private or sectarian interests at the expense of the public good."<sup>13</sup> These critics call for a reorganizing of social relationships, based on but not reliant upon social capital, that puts power squarely and explicitly into the hands of the people directly facing the impacts of climate change.

### **Social Sector Approaches**

A wide variety of social-justice activists also engage with techniques, methods, and processes that intentionally or unintentionally mimic social resilience-building. Many of these scholars and activists advocate for a transition away from an approach structured purely around

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<sup>12</sup> W. Neil Adger, "Social Capital, Collective Action, and Adaptation to Climate Change," *Economic Geography* 79, no. 4 (2003): 387.

<sup>13</sup> Brian H. MacGillivray, "Beyond Social Capital: The Norms, Belief Systems, and Agency Embedded in Social Networks Shape Resilience to Climatic and Geophysical Hazards," *Environmental Science & Policy* 89 (November 1, 2018): 118, <https://doi.org/10.1016/j.envsci.2018.07.014>.

capitalist ideals and understandings to social networks and building resilience, in favor of adopting the term “asset-based community development,” or ABCD. This theory of community development, originally proposed by John Kretzman and John McKnight in 1993, is built on four foundations: it focuses on community assets and strengths rather than problems and needs; it identifies and mobilizes individual and community assets, skills and passions; it is community driven (“building communities from the inside out”); and it is relationship driven.<sup>14</sup> ABCD builds off many of the same core concepts as social capital, especially in its relationship-driven essence and the power it puts into the hands of community members. Where ABCD diverges from social capital theory is in its explicit focus on the active role of community members in shaping society. While the study of social capital is just that, a study based on observation and analysis, ABCD applies its theory to actively growing and improving communities. Its practice seeks concrete results in the form of prosperous, successful, dynamic communities that are self-support and self-sustaining; in Kretzmann and McKnight’s words, “the key to neighborhood regeneration, then, is to locate all of the available local assets, to begin connecting them with one another in ways that multiply their power and effectiveness, and to begin harnessing those local institutions that are not yet available for local development purposes.”<sup>15</sup> ABCD also embraces community relationships specifically to put power into the hands of underserved and disenfranchised communities, whereas social capital focuses on the dominant social relationships already in place. Although ABCD is closely linked to and built upon the foundation of social capital and

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<sup>14</sup> John P. Kretzmann and John L. McKnight, “Introduction to ‘Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community’s Assets,’” accessed November 14, 2019, <https://resources.depaul.edu/abcd-institute/publications/Documents/GreenBookIntro%202018.pdf>.

<sup>15</sup> Kretzmann and McKnight, “Introduction to ‘Building Communities from the Inside Out.’”



takes a more equity-driven approach to social relationships, environmental justice spheres have yet to include this method in their conceptualization of social resilience.

Collective impact, another theory of that focuses on community-driven, collaborative change, presents an alternative exploration of practices similar to what environmental justice advocates now call social resilience. Developed within the non-governmental social sector, collective impact gives a name and shape to “the commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem.”<sup>16</sup> Collective impact calls for a collaboration of experts in various fields to come together with community members to develop solutions across multiple sectors that more effectively addresses various disenfranchising forces. Kania and Kramer argued in their 2011 paper that the effective efforts to increase graduation rates in greater Cincinnati hinged on the heads of influential private and corporate foundations, city government officials, school district representatives, the presidents of eight universities and community colleges, and the executive directors of hundreds of education-related nonprofit and advocacy groups coming together and putting aside their individual agendas to find the most effective solution. While collective impact is not in and of itself a revolutionary concept, the actual act and success of a collective impact-driven effort can drastically alter the face of a movement and produce significant results. Collective impact advocates for the use of social networks to bring different agents and organizations together, and its powerful outcomes are due to the fact that the practice catalyzes collaboration *within* the systems already established in target communities. In other words, not only does it seek

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<sup>16</sup> John Kania and Mark Kramer “Collective Impact,” accessed November 14, 2019, 36, <http://magnoliaplacela.org/wp-content/uploads/2016/07/Collective-Impact.pdf>.

solutions, but it works towards strategies that will have the largest impact on communities without altering the fabric and experience of their members.

Social infrastructure, a term developed primarily within sociological and anthropological studies, also embraces an integration of various services and support systems to fuel social connections, thus driving community prosperity. Social infrastructure describes the “set of physical places and organizations that shape our interactions,”<sup>17</sup> such as schools, libraries, as well as commercial establishments like the corner bar or coffee shop. The concept of social infrastructure identifies the mechanisms through which networks like those identified in social capital theory operate. It calls attention to the spaces in which social relationships are formed and interact and provides a window into how they are shaped. Scholars who stress the importance of social infrastructure in protecting vulnerable members of society argue that it is the spaces and places defined in the concept that allow social capital to function. Simply put, without places for the public to connect, for different communities to integrate, and for individual communities to grow (aka social infrastructure), the bonds that shape the effective social relationships reviewed here would not be possible.

### **Social Resilience in Environmental Work**

Although academic and activism spheres are both rife with social- and equity-based methods for approaching environmental work, scholars’ dedication to integration of these concepts into environmental studies has been relatively new. The concept initially entered the environmental sphere through the Jane Jacobs’ 1967 urban studies book, *The Death and Life of*

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<sup>17</sup> Richard Florida, “Why ‘Social Infrastructure’ Is the Key to Renewing Civil Society,” CityLab, accessed November 14, 2019, <https://www.citylab.com/life/2018/09/how-social-infrastructure-can-knit-america-together/569854/>.

*Great American Cities*. In the book, Jacobs' emphasized the value of social networks within environmental studies in her book briefly brought the term social capital to light within environmental circles. Because of the environmental and urban studies' separate focuses at the time, Jacobs' work surrounding social networks did not make a significant impact on environmentalist thought, however. Shortly after the book's release, the term also began gaining popularity within the political and economic spheres, and environmental scholars almost universally left behind discussion of the concept. Subsequently, one of the first works to directly connect social ties and community composition to environmental issues was Eric Klinenberg's 2002 book *Heat Wave: A Social Autopsy of Disaster in Chicago*. Through analyzing years of his own fieldwork in Chicago, interviews with city officials and residents, and archival research, Klinenberg examines the 1995 Chicago heat wave and the resulting "human catastrophe" of disproportionately high death rates in certain neighborhoods. Klinenberg acknowledges that death rates were statistically higher among the elderly and other physically isolated, largely low income residents. However, he goes on to theorize that a community's resilience to the heat wave correlates strongly with the robustness of its social infrastructure, stating "there is a good reason to believe that residents of the most impoverished, abandoned, and dangerous places in Chicago died alone because they lived in social environments that discouraged departure from the safe houses where they had burrowed, and created obstacles to social protection that are absent from more tranquil and prosperous areas."<sup>18</sup> In so arguing, Klinenberg helped bridge the academic conversation surrounding the concept of resilience in response to environmental hazards to the composition of a given group or community.

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<sup>18</sup> Eric Klinenberg, *Heat Wave: A Social Autopsy of Disaster in Chicago*, 2nd ed. (Chicago, IL: The Chicago University Press, 2002), 127.

Since *Heat Wave* and similar articles' initial release, conversations around climate change, extreme weather, and how we can prepare communities for the coming impacts of climate change have shifted to include human-based solutions. That being said, many conversations surrounding adaptation and the mitigation of higher death and injury tolls as extreme weather increases promote solutions focused on retrofitting and/or rebuilding physical infrastructure. Because of the many ways in which traditional, physically bounded adaptation efforts can play into dominant power regimes, an increasing amount of scholarly research, non-governmental organization programming, and even progressive government agency funding has begun to incorporate the principles for social resilience into their sustainability, adaptation, and mitigation efforts.

### **Critiques on Social Resilience**

While the ideas explored above present promising strategies for protecting and empowering vulnerable populations in the face of climate change, many academics have also cautioned that these approaches have the potential to lead to tokenization and appropriation of marginalized communities' survival cultures and strategies. Anthropologist Julia Elyachar labeled this issue the value of "microinformality," a trend she describes as "admiration for the poor's ability to survive... promoting and propagating the survival techniques of poverty in which social networks of the poor t[ake] a primary place."<sup>19</sup> Elyachar argues that development strategies that rely on microinformality essentially absolve state and national government actors of the responsibility to protect their most vulnerable citizens; in other words, that these strategies

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<sup>19</sup> Julia Elyachar, "Empowerment Money: The World Bank, Non-Governmental Organizations, and the Value of Culture in Egypt," *Public Culture* 14, no. 3 (September 1, 2002): 499.

allow formal aid institutions to claim that marginalized, low-resource communities have the ability to protect themselves from the decimation of an unforgiving capitalist society. Based on Elyachar's analysis, all efforts to advance marginalized communities' ability to prosper by utilizing a community's natural assets inherently play into this dynamic. During my examination of Massachusetts' resilience-building efforts, therefore, I will pay close attention to whether these projects play into the dynamics Elyachar cautions against.

Environmental scholars Eve Bratman and Malini Ranganathan provide another important critique of the movement towards resilience in their article "From Urban Resilience to Abolitionist Climate Justice." Bratman and Ranganathan argue that "resilience language fails to account for what creates the need to be resilient *in the first place*."<sup>20</sup> According to Bratman and Ranganathan, resilience efforts do not take into context the greater historically oppressive systems that lead certain communities to be more vulnerable because "everyday threats, such as gentrification or food insecurity, that do not fall under the categories of environment or climate *per se* tend to be ignored."<sup>21</sup> Bratman and Ranganathan also advocate for the centering of historic systems of oppression, such as redlining, in resilience conversations so that solutions not only address the various disenfranchising forces affecting vulnerable communities, but that these efforts also address the underlying drivers of these forces. In response to this issue within resilience building practices, the authors call for a transition from resilience-based rhetoric to fighting for "abolitionist climate justice", a term that works to recenter the intersectionality of climate issues and the impact of differing identities on the vulnerability of a specific community or individual to emergency events.

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<sup>20</sup> Ranganathan and Bratman, "From Urban Resilience to Abolitionist Climate Justice in Washington, DC," 3–5.

<sup>21</sup> Ranganathan and Bratman, 5.

Given these critiques, it is essential to acknowledge the shortcomings of solutions to climate change impacts based exclusively in altering physical infrastructure, to dissect what “resilience” has come to mean within the environmental movement, and to center preparations for increased extreme weather around the immediate need to protect certain communities from extreme weather and other climate change impacts. In developing a framework to grapple with these concerns, many people working in the environmental sector have turned to the concept of “social resilience” to lessen the undue risk imposed on communities who are underserved and underrepresented by traditional infrastructure-based solutions. This approach to climate change preparation and environmental justice seeks to bring together resilience building principles with a special emphasis on the human relationships that help people survive before, during, and after natural disasters and severe weather events. The majority of social resilience efforts and studies do not seek to replace or undermine adaptation and mitigation projects. Rather, they aim to strengthen networks and relationships that are already in place within different groups to increase the capacity of communities to withstand disruption and then rebuild more efficiently, effectively and equitably, and return to some equilibrium state after an environmental disaster.

## **Chapter Two**

### **Progressive In Theory: Environmental Justice and Resilience Efforts Led by the Massachusetts State Government**

In recent years, Massachusetts has set itself apart as a leader not only in sustainability, but also in climate mitigation and adaptation. With programming dedicated to building community resilience in its capital city and at least \$2.4 billion dollars allocated for adaptation and mitigation funding across the state, Massachusetts has demonstrated its commitment to preparing for the coming impacts of climate change. The state government's long history of environmental protection stretches back to early English colonization, with legislation instituted to protect natural resources from human expansion and production as early as the mid-17th century.<sup>22</sup> Home to some of the oldest conservation organizations, such as the Massachusetts Audubon Society, the Appalachian Mountain Club, and Trustees of Reservations, as well as one of the oldest Sierra Club chapters in the nation, Massachusetts promotes a culture of environmental stewardship that survives to this day.

Massachusetts' passion for the environment is embodied in countless environmental grassroots efforts, citizen-led sustainable policy changes, and physical resilience efforts on the state level. Environmental groups from the US Green Building Council<sup>23</sup> to the Rockefeller Foundation to Resilient Cities Initiative<sup>24</sup> have highlighted Massachusetts for its bold policy in reaction to climate change. The city of Boston has completed the 100 Resilient Cities challenge,

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<sup>22</sup> "The History of the Massachusetts Environmental Police," Mass.gov, accessed November 14, 2019, <https://www.mass.gov/service-details/the-history-of-the-massachusetts-environmental-police>.

<sup>23</sup> "Boston Resiliency Case Study," accessed November 10, 2019, <https://www.usgbc.org/sites/default/files/boston-resiliency-case-study.PDF>.

<sup>24</sup> "Boston - 100 Resilient Cities," 100 Resilient Cities, accessed November 14, 2019, <https://www.100resilientcities.org/cities/boston/>.

solidifying its commitment to building an accessible, adaptive city for all residents regardless of socio-economic status. In addition, the state government sponsors multiple robust adaptation and mitigation efforts and has passed important environmental justice legislation, such as its 2017 Environmental Justice Policy and bills centering the protection of the vulnerable groups defined in the EJ Policy. While Massachusetts has strong legislation, policy, and funding in resilience, adaptation, mitigation, and environmental justice, these efforts often fail to adequately create and designate services explicitly for some of the state's most vulnerable populations. In other words, despite the considerable work the Massachusetts state government does to respond to the challenges that climate change poses across the state, some of the communities who are most vulnerable to climate change impacts are also those least likely to receive funding and governmental support.

Although the state is not perfect when it comes to environmental regulations and protections, Massachusetts has made significant commitments to sustainability, mitigation, and adaptation through bold, sweeping legislation and policy, primarily within the last decade. In 2016, Governor Charlie Baker issued Executive Order 569, "Establishing an Integrated Climate Change Strategy for the Commonwealth," which lay the groundwork for an expansive community-led resilience and adaptation effort, as well as vital emergency preparedness and hazard mitigation analysis. The executive order established plans and next steps for many different sectors and issues regarding climate change strategy that aligned with contemporary climate strategies. The order called for state-wide emission reductions in accordance with national and global standards, directed state agencies to lead by example and implement green policies throughout their facilities, and established a review process of the current Global



Warming Solutions Act and the policy Massachusetts had already enacted in regards to the act. What sets the order apart from similar climate change strategy mandates as an innovative piece of climate legislation is the Governor's call to develop infrastructure and resources specifically to enable resilience at the community level. In doing so, Executive Order 569 lays the groundwork for three vital aspects of Massachusetts' resilience initiatives: the Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP), Resilient MA (an online gateway to climate data and information), and the Municipal Vulnerability Preparedness (MVP) program.

Adopted on September 17, 2018, SHMCAP is a first-of-its-kind report and planning proposal that integrates climate change impacts and adaptation strategies with hazard mitigation plans. The plan fulfills E.O. 569's call to the Secretary of Energy and Environmental Affairs (EEA) and the Secretary of Public Safety to publish a Climate Adaptation Plan that included "guidance and strategies for state agencies and authorities, municipalities and regional planning agencies to proactively address these impacts through adaptation and resiliency measures" and "strategies that conserve and sustainably use the natural resources of the Commonwealth to enhance climate adaptation, build resilience and mitigate climate change."<sup>25</sup> Although Baker's executive order did not explicitly call on the Secretariates to include hazard mitigation in their climate adaptation plan, the offices chose to intertwine the hazard mitigation and climate adaptation plans due to the relationship between increasing natural hazards and climate change, and the need to devise responses to both. In order to identify driving principles for their work, the Secretariates developed a set of goals, listed below:

1. Enhance the Commonwealth's resiliency to natural hazards and climate change by

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<sup>25</sup> "No. 569: Establishing an Integrated Climate Change Strategy for the Commonwealth," Mass.gov, accessed November 14, 2019, <https://www.mass.gov/executive-orders/no-569-establishing-an-integrated-climate-change-strategy-for-the-commonwealth>.

**integrating programs and building institutional capacity.**

2. Reduce the impacts of natural hazards and climate change with forward-looking **policies, plans, and regulations.**
3. Understand our **vulnerabilities and risks** and develop immediate and long-term risk reduction strategies for current and future conditions using the best available science.
4. Increase the resilience of State and local government, people, natural systems, the built environment, and the economy by investing in **performance-based solutions.**
5. Support implementation of this plan through increased **education, awareness, and incentives** for action for state agencies, local governments, private industry, non-profits, and the general public.<sup>26</sup>

SHMCAP proposes a detailed timeline of hazard mitigation or climate adaptation “actions,” broadly defined as “a specific action, project, activity, or process taken to reduce or eliminate long-term risk to people, property, and natural systems from climate change and/or natural hazards and their impacts”,<sup>27</sup> for various state agencies to undertake in order to fulfill their stated goals. The plan engages detailed risk and vulnerability assessments, made up of almost 80 state agency climate change vulnerability assessments conducted in fulfillment of E. O. 569 to pinpoint Massachusetts’ weakest areas in terms of climate adaptation and hazard mitigation. These assessments identified the top five “high risk” physical hazards established through these assessments for Massachusetts as: extreme precipitation, hurricanes/tropical storms, nor’easters, ice storms, and severe winter storms, as well as pointing towards coastal flooding as the number one threat to Massachusetts populations. Based on this analysis, SHMCAP determines which actions are most impactful for which state agencies to take in terms of furthering the plan’s goals. Along with approving SHMCAP, Baker signed a \$2.4 billion Environmental Bond Bill into law and allocated more than \$60 million of the state’s Fiscal Year 2019 Capital Investment Plan to directly address issues related to climate change, which together serve as the primary

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<sup>26</sup> “2018 Massachusetts State Hazard Mitigation and Climate Adaptation Plan,” 7–2, accessed November 14, 2019, <https://www.mass.gov/files/documents/2018/10/26/SHMCAP-September2018-Full-Plan-web.pdf>.

<sup>27</sup> “2018 Massachusetts State Hazard Mitigation and Climate Adaptation Plan,” 8–6.

funding source for SHMCAP. Through the planning process, therefore, SHMCAP generated comprehensive, long term and short term blueprints for the role of state government's climate adaptation and hazard mitigation actions, as well as set concrete goals whose fulfillment increase Massachusetts citizens' overall resilience capacity.

The second innovative resilience program Executive Order 569 put into motion is the Massachusetts Climate Change Clearinghouse, colloquially known as "Resilient MA," whose goal is "to support scientifically sound and cost-effective decision-making and to enable users to plan and prepare for climate change impacts."<sup>28</sup> Resilient MA is an online gateway that provides policymakers, planners, and the general public with access to climate data, maps, websites, documents, and other information regarding climate change adaptation and mitigation in Massachusetts. The site offers information on greenhouse gas emissions and reduction strategies, projected climatic changes and impacts such as sea level rise and periods of increased high temperatures, and vulnerability assessments for neighborhoods and business sectors across the Commonwealth. Resilient MA provides users with Geographic Information System maps that illustrate the data provided and extensive statistics and graphics to support the information provided. Through digitizing and disseminating the information Resilient MA contains and opening it to the public, the Clearinghouse project has put Massachusetts at the forefront of climate adaptation along with California and New York, who are the only other states to have developed similar online climate information sharing platforms. The Clearinghouse empowers citizens with the knowledge to participate in climate conversations within their communities and

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<sup>28</sup> "MA Climate Change Clearinghouse," accessed November 14, 2019, [http://resilientma.org/about#about\\_macc](http://resilientma.org/about#about_macc).

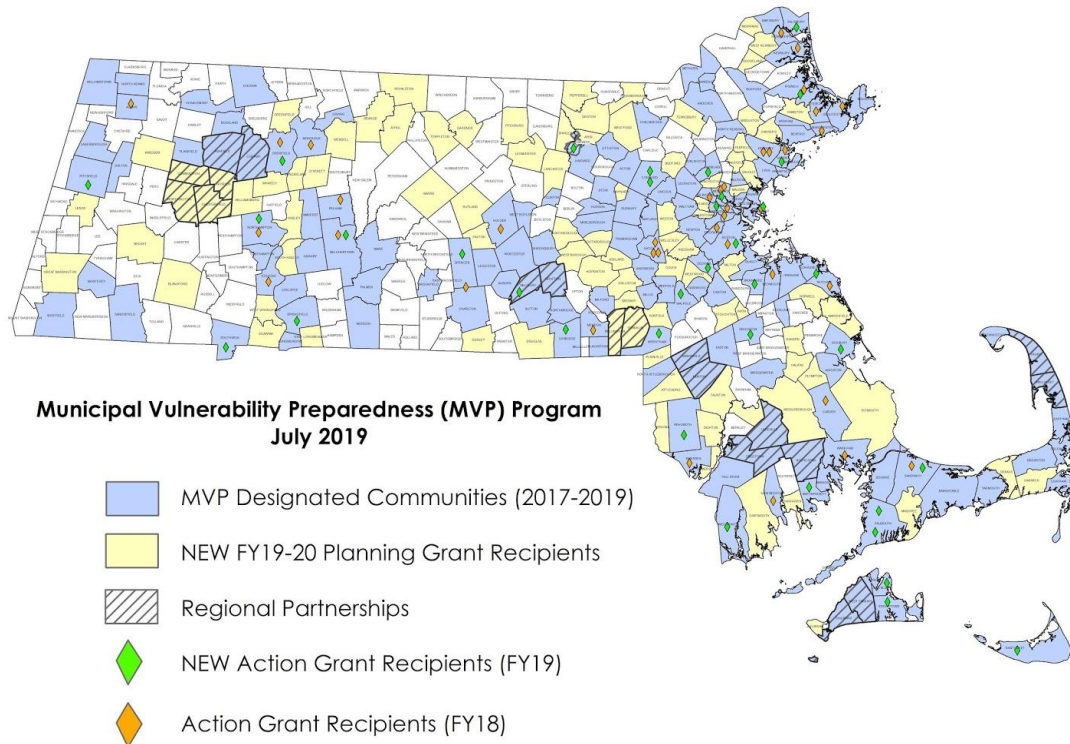
through participatory democracy, and to advocate for and engage with programs that enhance their ability to withstand and rebound from environmental disasters.

The third and final program that Executive Order 569 establishes is the Municipal Vulnerability Preparedness (MVP) grant program, which empowers local government to drive community-led reviews and analysis to better prepare their residents for the impacts of climate change. The MVP program awards municipalities with funding and technical support to complete a planning process that: “define[s] extreme weather and natural and climate change related hazards; identif[ies] existing and future community vulnerabilities and strengths; and develop[s] and prioritize[s] actions and opportunities to reduce risk and build resilience.”<sup>29</sup> Funding is divided into “planning” and “action” grants and organized as a two-step program. First, municipalities apply for a planning grant, which funds an assessment of each community’s vulnerability to local hazards and climate change impacts, followed by the development of a localized hazard mitigation and climate adaptation plan. After completion of this process, towns and cities receive designation from the EEA as a Climate Change Municipal Vulnerability Preparedness (MVP) program municipality, and are able to apply for a secondary action grant. Action grants, in turn, fund specific project proposals generated based on the vulnerability assessment and planning completed during the planning grant from start to finish. Since its beginning in 2017, the MVP program has awarded planning grants across the Commonwealth funding planning processes in 141 of Massachusetts’ 351 municipalities, in addition to

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<sup>29</sup> “MA Climate Change Clearinghouse,” accessed October 16, 2019, <http://www.resilientma.org/resources/resource::2475>.

seventy-two action grants (fig 1). In total, the state has funded just over \$15 million of action grants and just under \$4 million in planning grants.<sup>30 31</sup>



*Fig. 1: Municipal Vulnerability Preparedness (MVP) Program Map of Current Projects; Map of existing municipalities who have or are currently receiving MVP grants; Credit: Massachusetts Executive Office of Energy and Environmental Affairs<sup>32</sup>*

While the MVP program provides a promising source of funding and motivation for increasing overall community resilience across the Commonwealth, its structure does not always

<sup>30</sup> “Baker-Polito Administration Awards \$5 Million in Grants to Address Climate Change Impacts,” Mass.gov, accessed October 16, 2019, <https://www.mass.gov/news/baker-polito-administration-awards-5-million-in-grants-to-address-climate-change-impacts>.

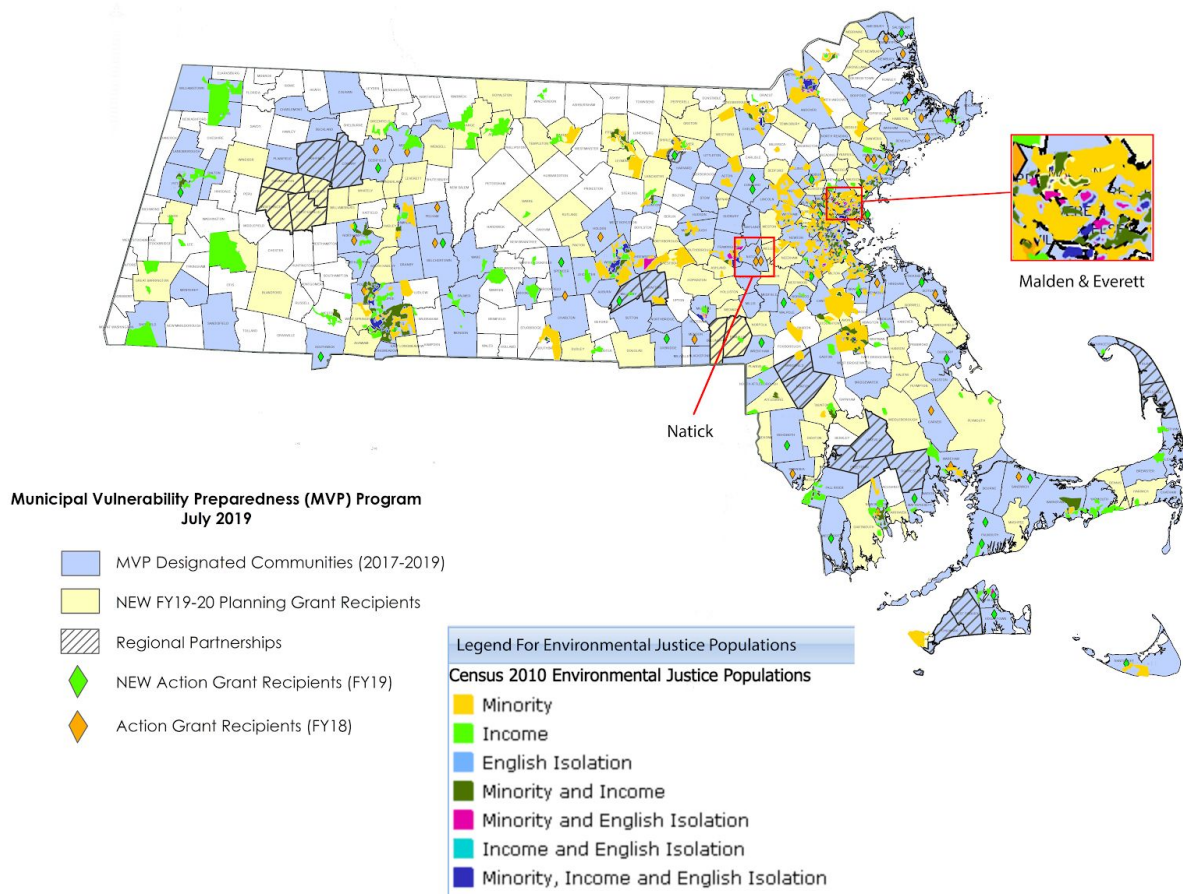
<sup>31</sup> “Baker-Polito Administration Awards Climate Vulnerability Preparedness Funding to 82 Communities,” Mass.gov, accessed November 14, 2019, <https://www.mass.gov/news/baker-polito-administration-awards-climate-vulnerability-preparedness-funding-to-82>.

<sup>32</sup> “MA Climate Change Clearinghouse,” accessed October 16, 2019, <http://www.resilientma.org/resources/resource::2475>.

effectively reach many of the most vulnerable populations in Massachusetts. The first reason for this shortcoming is the requirements for receiving grants, which set a complex list of expectations with which applicants are expected to comply. To be eligible for a Planning Grant, cities and towns must make an in-kind staff time match, and applicants for Action Grants must do the same and also match 25 percent of state funding. Due to these requirements, municipalities with little of their own funding or a small number of government employees would find it very difficult to qualify to receive funding. Oftentimes, this furthers the discrepancy between wealthy, majority white neighborhoods and majority low-income neighborhoods resilience capacity. This dynamic is illustrated below in figure 2, which shows the officially designated environmental justice populations (defined on p. 32-33) overlaid on the MVP grant map. In one specific example, the inland town of Natick, in the 16th percentile of highest median incomes per capita, 85.4 percent white, and with no environmental justice populations, has received three action grants since 2018 to improve its infrastructure.<sup>33</sup> In contrast, the vulnerable coastal town of Everett, similar in size of population to Natick, has one of the lowest median incomes per capita in the state, a population that is majority people of color, and is almost entirely classified as an environmental justice population. Everett did not secure its first Planning Grant until 2019. Therefore, although Everett is a more vulnerable municipality based on the assessments set forth in SHMCAP, it and towns similar to it do not receive proportionate funding, because they cannot as easily fulfill the requirements of the grant.

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<sup>33</sup> Jaelyn Reiss et al., "Full List of Massachusetts Median Household Incomes by Town - The Boston Globe," BostonGlobe.com, accessed November 14, 2019, <https://www.bostonglobe.com/metro/2018/12/11/full-list-massachusetts-median-household-incomes-town/eZpgJkpB1uF2FVmpM4O8XO/story.html>.



*Fig. 2: Environmental Justice Populations and the MVP Program: Municipal Vulnerability Preparedness (MVP) program map of current projects overlain with environmental justice populations as defined by Massachusetts, made with data from the US 2010 Census. Credit: Mia Kania<sup>34</sup>*

Coupled with the programs and support structures generated through E. O. 569, policymakers in Massachusetts have made two other bold proposals to fund resilience building throughout the state: GreenWorks and State Bill 10. Unanimously passed in the Massachusetts House on July 24th, 2019, the GreenWorks bill proposes a \$1.3 billion grant program to fund sustainable projects at the municipal level. The bill authorizes the state to dole out \$100 million

<sup>34</sup> “OLIVER: MassGIS’s Online Mapping Tool,” Census 2010 Environmental Justice Populations, accessed December 9, 2019, [http://maps.massgis.state.ma.us/map\\_ol/oliver.php](http://maps.massgis.state.ma.us/map_ol/oliver.php)  
 “MA Climate Change Clearinghouse,” accessed November 14, 2019, [http://resilientma.org/about#about\\_macc](http://resilientma.org/about#about_macc).

per year in order to help cities and towns confront the impacts of climate change such as sea level rise and damage from worsening severe storms. Similarly to GreenWorks, Governor Baker proposed a bill in June of 2019 to create more funding for resilience projects in the state. In contrast to GreenWorks, whose funding would come from state borrowing, therefore increasing the debt ceiling, S10 would generate its own funding source by raising real estate transfer taxes by three percent. The resulting revenue would fund physical adaptation projects, just as GreenWorks would. Although S10 produces the funding necessary for its programming, whereas GreenWorks adds to the state's overall debt, the governor's bill has met with criticism from multiple sectors since its release. A coalition of climate workers and housing-justice advocates argue that the governor's choice to put real estate transfer tax revenue towards sustainability efforts, while commendable, ignores the growing problem of housing insecurity in the state. Governor Charlie Baker stated that the funding would help "implement priority adaptation projects that fortify infrastructure, enhance natural resources, and protect public and private property and our municipal tax bases."<sup>35</sup> Critics, however, argued that the bill is akin to funding education through a carbon tax while carbon emissions are still a serious issue throughout the Commonwealth that require funding to reduce. In other words, Massachusetts housing advocates have long been advocating the transfer tax revenue for affordable housing projects, and climate justice workers have come to stand in solidarity with their housing colleagues, because they recognize that a real estate transfer tax can more logically be applied to issues regarding housing than climate resilience. The coalition also argues that S10 would only benefit residents with

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<sup>35</sup> "Governor Baker and Secretary of Energy and Environmental Affairs Katie Theoharides Testify Before Joint Committee on Revenue," Mass.gov, accessed December 8, 2019, <https://www.mass.gov/news/governor-baker-and-secretary-of-energy-and-environmental-affairs-katie-theoharides-testify>.



housing security and physical assets to protect, who are the people who would want to benefit from a lower transfer tax. Opposition to the bill also argues that it would further disenfranchise low-income communities, who are primarily renters and thus already more vulnerable to housing insecurity. While these bills have significant flaws, the increase in policymakers' focus on climate resilience and developing resilient communities clearly demonstrates the extent to which Massachusetts seeks to curb current and coming climate change impacts.

In addition to these bills, the state has put a good amount of work into developing policies that address environmental justice issues. In 2002, the EEA, at the time called the Executive Office of Environmental Affairs (EOEA), adopted an Environmental Justice Policy that built on national environmental justice frameworks within the context of Massachusetts. Stretching across disciplines, from infrastructure improvements to education to public health, the Environmental Justice Policy seeks to educate citizens about differential environmental impacts, empower people who live in "environmental justice" communities (defined below) to participate in environmental conversations, and emphasize the importance of implementing policy that actively improves quality of life in environmental justice neighborhoods.

The policy sets forth a number of specific services that various state agencies must offer regarding resilience building and social network facilitation, such as public involvement and community engagement programs, and enhanced public participation initiatives. These programs mandate state agencies to engage more with EJ populations, which the policy defines as "neighborhoods that meet *one or more* of the following criteria: 25 percent of households within the census block group have median annual household income at or below 65% of the statewide median income for Massachusetts; *or* 25 percent or more of the residents are minority; *or* 25

percent or more of the residents have English Isolation.”<sup>36</sup> In order to effectively engage these populations, the EJP calls for the use of non-traditional outreach methods. The non-mainstream engagement strategies the policy suggests include working with alternative media outlets, including community newspapers or translation of materials, and interpretation services prior to and during public meetings where the relevant EJ population uses a primary language other than English within their homes. Services such as these invite residents of EJ populations to become better educated on the issues impacting them, but more importantly, give them the space and platform to voice their concerns and take an active role in finding community solutions. The EJP also highlights the importance of promoting economic partnerships and job opportunities in environmental justice populations. While the overall policy does not go into detail about what specific actions the state should take to this end, it does identify partner agencies critical to this mission, such as the Economic Assistance Coordinating Council, the Massachusetts Office of Business Development, and the Department of Housing and Community Development. Finally, in 2017 the EEA published a revised version of the document that designated a Director of Environmental Justice position to increase representation for environmental justice populations in state government planning and policy relative to sustainability issues. The revision also added a climate mitigation, adaptation, and resiliency clause to “consider the current and future impacts that climate change will have on EJ populations” (EJP 2017, 13). The clause is designed to ensure that the measures taken to assure EJ populations’ adaptive capacity are proportionate to the threats EJ populations face as vulnerable populations, rather than merely measures equal to those taken to increase non-EJ populations’ adaptive capacity.

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<sup>36</sup> “2017 Revised Environmental Justice Policy,” 5, accessed November 14, 2019, [https://www.mass.gov/files/documents/2017/11/29/2017-environmental-justice-policy\\_0.pdf](https://www.mass.gov/files/documents/2017/11/29/2017-environmental-justice-policy_0.pdf).

In contrast to their plans and broad policies, Massachusetts does not yet have significant legislation that creates specific protections and funding opportunities for EJ populations. Since 2017, many senators and representatives in the Massachusetts legislature have proposed more clear-cut environmental justice protections, such as S.426, An Act Relative to Environmental Justice and Toxics Reduction in the Commonwealth. The few that have been through the review process have not been passed, and the rest have not yet been voted on, so are in limbo as of December of 2019. If passed, the environmental justice bills currently up for review would make aid for EJ communities more accessible through prioritizing the need to fund projects in EJ populations. For example, House Bill 3922 would ensure that municipalities where 75 percent or more of the population resides in EJ-designated communities preference for competitive funding opportunities. House Bill 761 would establish an Environmental Justice Advisory Council dedicated to representing EJ populations, with no less than four council seats reserved for residents of EJ communities. The passage of these acts and others currently being discussed in the state government would expand EJ communities' protections beyond theoretical and into specific actions and support systems. Creating these distinct services facilitates the growth and prosperity of EJ communities, therefore increasing their overall resilience through education and knowledge dissemination, financial support, and more.

Many of the largest Massachusetts municipalities have developed more rigorous, pointed resilience efforts. The Boston city government has developed a series of community resilience programs that seek to educate, protect, and empower environmental justice communities. Programs such as Greenovate Boston, Climate Ready Boston, and Resilient Boston all seek to address the city populations' disparities in regards to up-to-date infrastructure, education, and

how different residents will experience the impacts of climate change. Resilient Boston, a comprehensive strategy developed in fulfillment of the 100 Resilient Cities challenge, directly explores holistic resilience building throughout the city bounds. Crucially, the plan emphasizes building both physical and social resilience. Written collaboratively between the Mayor's Office of Resilience and Racial Equity and 100 Resilient Cities, the strategy envisions a connected, adaptive city with a "redundant and reliable public transportation network" that is prepared for "the impacts of climate change and other threats while accelerating sustainable infrastructure, environment, and communities," and seeks to "improve the collaboration of partners working in Boston communities to address climate change and other emergencies."<sup>37</sup> It advocates for improving infrastructure in low-income neighborhoods, creating more representation for EJ populations in city government, and sets out a two-pronged education plan for schools and residents regarding local climate threats and what individuals can do to prepare for these impacts. Resilient Boston also directly influenced the development of Climate Ready Boston, the city's initiative to prepare for climate change. Climate Ready Boston takes a neighborhood approach to building an adaptive, accessible city. Through breaking adaptation and mitigation efforts down into neighborhoods, Climate Ready Boston is able to tailor programming to each specific community and its needs. In doing so, the program effectively addresses the large wealth gaps and racial segregation within different Boston neighborhoods. The ways in which these programs create essential protections for all Boston citizens but emphasize the need to serve EJ populations provides a strong, real-world framework of potential policies that could be applied state-wide.

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<sup>37</sup> "City of Boston Climate Action Plan 2019 Update," n.d., 15.

Although Massachusetts has clearly dedicated a large amount of energy and resources to increasing resilience across the state, the policy and programming currently in place does not adequately emphasize the importance of preparing and protecting some of the state's most vulnerable populations at the state level. Despite the government's demonstrated awareness of its responsibility to protect these vulnerable people, as seen in the Environmental Justice Policy, some of the most at-risk populations in Massachusetts cannot access vital funding opportunities like the MVP program or receive protection from newer resilience bills due to lack of physical assets. Because of these oversights, many communities who currently or will imminently experience increased extreme weather and other climate change impacts cannot properly prepare and protect themselves. In response to these gaps in protection, concerned community members have founded several non-government organizations to offer services and protections the state cannot or does not offer. Whether they offer educational and climate change awareness support, planning expertise, guidance on participatory democracy, or other vital services, these organizations seek to empower communities to grow their capacity for resilience.

## Chapter Three

### Building Grassroots Resilience: Communities Responding to Extreme Weather

My first day as an intern at Communities Responding to Extreme Weather (CREW) began in a kerfuffle of disarray. Little did I know it, but this was also the last day before my anticipated supervisor (and to date my only contact with CREW) left for graduate school; it was my *new* supervisor's first day not only at CREW, but working in climate justice; and over half of the office was off-site on a strategizing retreat. By the end of the day, I had solved a minor crisis involving printed materials for an upcoming fair, compiled a presentation to give the coming weekend, and spent over \$100 of the organization's money. When my family asked me my impressions after my first day, I could only cobble together how shocked I was by how welcoming and trusting everyone in the office was of a complete stranger, not to mention a twenty year-old with virtually no professional experience or idea what she was doing. It soon became clear to me, however, that the fast-moving, ever-changing office I walked into on my first morning, was going to be my day-to-day life for the next two months. As I met more members of the Better Future Project, CREW's parent organization, I realized everyone was equal parts grateful for the help and excited to have another friend to fight the good fight with. My background, my professional experience, did not matter. What mattered was that we were all here, crammed together in our three open-plan office rooms that housed all 15-odd employees, working to create a more equitable and sustainable future.

That is the attitude that Communities Responding to Extreme Weather brings to its work. The Better Future Project and its subsidiaries systematically fight negative environmental impacts, advocate for policy change, and spread life-saving emergency preparedness knowledge.

Founded in 2018, Communities Responding to Extreme Weather specifically was established to address the lack of immediate governmental support for communities in Massachusetts preparing for the dangerous and worsening weather conditions caused by climate change. Incubated under the federally registered non-profit, Better Future Project, CREW is part of a network of nonprofits dedicated to “build[ing] a diverse, powerful, and democratic grassroots movement that will drive society to address climate change and its devastating effects, advancing a fair and fast transition beyond coal, oil, and gas toward an economy powered by renewable energy that equitably benefits all people.”<sup>38</sup> The network consists of the core non-profit itself, 350 Massachusetts, Divest Ed, and CREW. 350 Massachusetts focuses on building the climate justice movement through policy and legislative advocacy, using its 17 local “nodes” to strengthen citizen-led campaigns for climate policy; Divest Ed supports student divestment organizers at colleges and universities across the nation through mentor and leadership development, campaign coaching, and connecting campaigns to the greater movement; CREW dedicates itself to preparing communities for the increased extreme weather that is a result of climate change. Through his work at the Better Future Project, which he founded in 2011, and 350 Mass, which he started one year later, CREW’s founder, Craig Altemose, soon detected a major oversight in the protections and preparations the Massachusetts government offers to its citizens. He realized that while it is vitally important to advocate for policy to reduce carbon emissions and other pollutants, more funding for adaptation and mitigation projects, and other environmental protections, all the policy change in the world would still leave many communities immediately exposed to the growing threat of climate change. During the time it takes organizations like

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<sup>38</sup> “About Us,” Better Future Project, accessed October 27, 2019, [https://www.betterfutureproject.org/about\\_us](https://www.betterfutureproject.org/about_us).

Better Future Project and 350 Mass to do the fundamental work of advocating for life-saving climate change policies, communities across Massachusetts continue to experience increased periods of heat and brutal, escalating storms, and anticipating sea level rise and floodplain expansions into their homes, schools, and places of work.

With this in mind, Craig formed the idea of an organizational aide provider, dedicated to facilitating critical social connections in vulnerable communities through disseminating knowledge and providing resources, and in 2017 CREW was born. In its short life, CREW has since grown into a small but mighty hub for resilience building throughout Massachusetts. The organization describes itself as a “network of local leaders building grassroots climate resilience through inclusive & hands-on education, service, and planning... working to equip families & communities with the resources and capacity to prepare for and respond to local climate changes equitably, sustainably, & collaboratively.”<sup>39</sup> Craig developed CREW based on social resilience theory put forth in Eric Klinenberg’s *Heat Wave*, that posited that communities with stronger social networks are more likely to survive extreme weather events. Klinenberg’s work, in combination with contemporary resilience-building projects and case studies, inspired Craig to design a network of resilience resources to help empower communities facing an immediate threat of extreme weather to their health and homes.

CREW is guided by five central values: local leadership, equity, service and action, mutual benefits, and collaboration. Together, these values shape the methodology behind CREW’s actions and social resilience-building strategy. Through emphasizing *local leadership*, CREW ensures that people with community-specific knowledge and relationships spearhead any

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<sup>39</sup> “CREW,” CREW, accessed October 27, 2019, <https://www.climatecrew.org/>.



plans, solutions or projects the organization facilitates. Empowering community members to take an active role in resilience building also allows CREW to reach a diverse array of neighborhoods while still tailoring its strategies to each specific population, and engaging a diverse group of stakeholders it may not otherwise have been able to bring into the movement. CREW's emphasis on *equity* underscores the importance of actively addressing the historic and structural disparities present in our society that make some communities more susceptible to climate impacts and marginalized in climate conversations. *Service and action* work takes the principles and theory behind CREW and makes these tangible through hands-on projects that directly impact the communities it seeks to serve. Incorporating service and action into its central praxis also helps CREW foster long-term awareness and engage a diverse group of community members. The value of *mutual benefits* highlights the various functions that building social resilience can have within a community; preparing neighborhoods for climate change through improving education and conversations around public and community safety can improve the overall health, sustainability, and equity these populations, as well. *Collaboration* emphasizes the importance of “drawing on knowledge and experience from the widest possible set of stakeholders, including the civic, public, and private sectors.”<sup>40</sup> Combined, these values form a central praxis dedicated to emphasizing community-led action and building a holistic, just approach to preparing communities for climate impacts.

CREW has divided its work into three main sectors: educational, service, and planning. In doing so, it seeks to effectively bolster social resilience from multiple directions, ultimately creating a web of support and knowledge within the neighborhoods it works with. The

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<sup>40</sup> “Our Values,” CREW, accessed October 28, 2019, [https://www.climatecrew.org/our\\_values](https://www.climatecrew.org/our_values).

organization's educational programming aims to create awareness about what specific climate impacts threaten a given community, and how to prepare oneself and one's loved ones for such impacts. The educational events CREW sponsors, hosts, and takes part in can range from introductory presentations on climate change and what it means to a given community, to talks and panels on topics relating extreme weather, to hands-on activities like making emergency kits and creating earthquake shake tables and testing model structures' durability. Its educational efforts acknowledge that the people the organization engages with come from a variety of backgrounds and knowledge about climate change, so many begin by building the climate conversation from the ground up, starting with the simple science behind climate change before tying it directly to communities' lives, health, and well-being. The central goal behind CREW's educational programs, whatever form they take, is to empower individuals with the knowledge to prepare themselves for climate impacts, in order to increase their communities' overall safety and survival during extreme weather events.

CREW's service efforts are designed to make communities more resilient through hands-on, direct actions that immediately increase the ability of the neighborhoods CREW serves to respond to and recover from extreme weather events. Service projects work towards tangible, explicit goals, engage community members, and actively improve the overall social networks, infrastructure, or resilience of their target neighborhood. One of CREW's most successful and popular service events is "depaving parties," during which community members come together to turn a plot of land from a parking lot, driveway, or other paved surface into a greener space that absorbs less heat and adds to the value of the neighborhood. During Climate Prep Week 2019, CREW collaborated also collaborated on a tree measuring project that helped a fellow

non-profit, Speak for the Trees, create a map of tree coverage in low income neighborhoods in the greater Boston area. Such tactical urbanism-inspired service projects, like uprooting invasive species, tree plantings and shoreline greenings, work towards similar goals of improving the built environment to better allow for resilience within communities. Whatever specific resilience issue these projects address, whether the urban heat island effect created by concrete absorbing UV rays and a lack of trees or helping to make riverbeds more absorbent to flooding through planting more greenery, these activities make small changes that can be profoundly influential in protecting a community from extreme weather.

CREW's third area of focus, planning, seeks to provide the organization's constituents with concrete emergency procedures from the individual to the neighborhood level. Measures may include creating a family plan so that all family members know where to meet and contact one another if an emergency occurs when they are not together, preparing supplies in case they are stranded during an extreme weather event, or making a pet plan in case they need to evacuate and cannot take their domestic animals with them. Planning programming can and often does engage emergency preparedness professionals through workshops and talks designed to teach attendees about the emergency procedures and resources that are available to them through state or local government. CREW acknowledges the great amount of work that local emergency planners and workers do, but is also aware of how little community members actually know about the support available to them. CREW intends this kind of program, therefore, to raise awareness for procedures and preparations that can make the difference between someone surviving and perishing in an extreme weather event. Planning programs can also involve a participatory processes through which municipal officials and residents come together to develop

planning procedures that most effectively utilize the resources the local government provides in ways that are accessible to its citizens. Through emphasizing the importance of planning, knowledge, and awareness through its programming, CREW helps to increase extreme weather preparedness.

Communities Responding to Extreme Weather has designed four primary programs that further the goals and activities outlined above: the Interfaith Climate Summit, CREW teams, Resilience Hubs, and Climate Preparedness Week. These projects each connect to communities on different scales, bringing them into the conversation about preparing for extreme weather, and engaging in different aspects of CREW's main sectors to achieve respective goals. The Interfaith Climate Summit on responding to climate change, extreme weather, and vulnerability gathered faith leaders from across Massachusetts. The goal of the summit was to discuss the role of faith communities not only in preparing their members for future climate impacts, but also in sustaining movement efforts, as well as nurturing hearts, minds, and souls. The interfaith summit brought together leaders of various faiths to talk about risks in their communities, how to bring equity into the worship space, spiritual sustenance in a time of climate crisis, actions for congregations to take to further climate justice, and more. The summit looked at the climate justice movement holistically, and the viewpoint of religion allowed participants to ask questions about how we fuel a movement that requires grueling, emotionally taxing work. The summit actively brought together leaders from a field not typically associated with climate work. Through uniting these seemingly disparate causes (religion and environmentalism) together, the summit effectively extended CREW's work into a new sector with significant people power behind it. In these ways, the interfaith summit encouraged collaboration across faiths and

embraced the power of working across disciplines and perceived social divides to add to the climate movement.

CREW's second program, CREW teams, seeks to deepen the organization's impact within target communities through creating neighborhood-specific volunteer groups. The teams are groups of individuals dedicated to building "community climate resilience through education and outreach, participatory planning, and small-scale service projects"<sup>41</sup>. This program is designed to bolster local leadership by giving members of the public a consistent, reliable forum to engage in climate conversations and the tools to implement changes within their community. Teams are made up of residents in a given municipality or neighborhood to effectively target place-based and network-based solutions. The idea behind CREW teams is based on the consensus that resilience-building is more effective when designed and driven by members of the target community.<sup>42</sup> The teams' focus on action, service, and local engagement also offers an alternative entry point into climate change discourse for people who are not comfortable with or cannot participate in policy debates. As of late 2019, CREW hosts two pilot teams, one based in Somerville, a suburban town abutting Cambridge, Massachusetts, and one in Arlington, a semi-urban urban, mixed income community adjacent to Boston. Both teams are made up entirely of volunteers from these communities, many, but not all, of whom are active within other climate justice groups in the area. The program is still in its pilot stage, so each team has the opportunity to shape a structure and strategy that works best for its members; for example, the Somerville CREW team meets all together every first Wednesday of the month with a

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<sup>41</sup> "Joining or Starting a CREW Team!," CREW, accessed October 29, 2019, [https://www.climatecrew.org/joining\\_or\\_starting\\_a\\_crew\\_team](https://www.climatecrew.org/joining_or_starting_a_crew_team).

<sup>42</sup> Taj James et al., "Community-Drive Climate Resilience Planning: A Framework, Version 2.0," n.d., 64; "Toward Climate Resilience," Union of Concerned Scientists, accessed October 29, 2019, <https://www.ucsusa.org/resources/toward-climate-resilience>.

representative from CREW's office. During meetings, teams discuss methods for building resilience within their community, from tabling at fairs and festivals to raise awareness about local climate impacts, to hosting service events like depaving parties, to reaching out to different institutions in their municipalities to grow their local movement. In this way, each team functions as an outpost of CREW, helping to further the organization's overall mission of equipping individuals and groups with the tools and knowledge to prepare for the impacts of climate change.

Another pilot project central to CREW's work is Climate Resilience Hubs, a network of local organizations like churches, businesses, and libraries that have committed to providing support before, during and after extreme weather events. These resilience hubs are inspired by a pilot study conducted in Maryland's Prince George and Sandtown-Winchester districts, which developed a similar network of emergency resource hubs as a way to increase engagement with residents on resilience-building.<sup>43</sup> The hub program aims to increase the variety of organizations who are involved in resilience-building, deepen these stakeholders' engagement with climate change issues, and provide more robust emergency services to underserved communities. The function of each hub is relatively wide-ranging, and dependent on the capacity and resources of a given hub: hubs based in businesses may choose to have longer hours and open their doors to non-customers to warm up during a severe snowstorm or cool down during a heatwave; hubs with larger capacity facilities, such a religious organization, may choose to offer temporary housing during extreme weather events, or open their kitchen for emergency food services to

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<sup>43</sup> "2016-MD-Community-Resilience-Report-101216.Pdf," accessed October 29, 2019, <https://climatechangecommunication.org/wp-content/uploads/2016/10/2016-MD-Community-Resilience-Report-101216.pdf>.

displaced folks after an event. Because of varied capacity, each individual hub designates the services it will provide in terms of emergency support.

While resilience hubs are dependent on the host organization's abilities and resources, their structure is also more defined than that of the CREW teams' pilot program. Beyond the services an individual hub determines it is capable of providing, when an organization signs on to become a resilience hub, it commits to a certain set of promises and actions its facilities will provide on a daily basis and in the case of an extreme weather event. These actions include: displaying a decal in the window that designates a space as a resilience hub, so that passersby can see the sponsor's commitment and services offered. All resilience hubs must also display emergency preparedness materials about climate threats most significant to vulnerable populations in the area. Each hub must have a designated employee or volunteer who acts as the hub coordinator. This person is required to undergo a resilience hub training that CREW provides. Finally, hubs are required to host at least one educational event per year, which the hub employees may design themselves or ask for CREW's assistance with. Hubs are also encouraged, but not required, to sponsor or organize service events, host a CREW team, or donate to the Climate Resilience Hub CREW fund, which finances medical emergency kits for each hub. As of August of 2019, CREW has begun conversations with multiple potential hubs ranging from churches to public businesses, but does not have any official hubs.

CREW also organizes an annual Climate Preparedness Week designed to engage a diverse set of stakeholders through a week of educational, service, and planning events hosted by local institutions across the state of Massachusetts. This week takes place during the last seven days of September, which is National Preparedness Month. Climate Prep Week seeks to meet its

constituents where they are, both physically and in terms of their understanding of climate issues, through programming that engages a variety of subjects relevant to both CREW's mission and the communities in which the events take place. Many of these events reach across multiple disciplines, connecting diverse issues through expert speaker panels, book readings and displays, movie screenings, nature walks, protests and strikes, tree plantings, and more. Unfortunately, because CREW is a small and new organization, the organization itself does not have the capacity to personally fund, design, or attend all of the events occurring during the week. Therefore, CREW partners with a variety of local institutions in order to effectively reach communities across the entire state.

In preparation for the week, CREW reaches out to a variety of organizations to identify hosts and facilitators for the events that will take place during Climate Prep Week, ranging from faith institutions and city governments, to schools and libraries, to non-profits and environmental organizations. Through asking local organizations host events, CREW also ensures that each individual program held during Climate Prep Week is tailored to the issues and topics most relevant to each given area, neighborhood, or community. Collaborating with these various organizations also allows CREW to reach a more diverse group of constituents than it would if this small non-profit were the only organization to host events throughout the week. For example, many faith institutions and libraries connect with a wide range of constituents who may or may not otherwise engage with climate conversations in their daily lives. Bringing Climate Prep Week programming into these institutions, however, can introduce these community members to the salient topics and how they may apply to their own lives. In addition to the events hosted throughout the state, CREW asks municipal governments to pass proclamations



declaring the week an official event throughout their town or city. In doing so, CREW hopes to raise awareness and again bring the issues behind climate resilience to the forefront of events and conversations in a town for a week. CREW has also found that, when a municipality declares Climate Prep Week throughout its jurisdiction, various organizations and groups (such as schools, libraries, and businesses) become much more likely to host an event of their own.

In September of 2019, CREW held its second annual Climate Preparedness Week. Over seven days, Climate Prep Week celebrated 144 events hosted by 107 organizations across the state of Massachusetts. This year boasted an approximately 400 percent increase from CREW's inaugural Climate Prep Week in 2018, which had 33 events hosted by 31 organizations. Much of the success of the second annual Climate Preparedness Week can be attributed to a crucial partnership between CREW and the Massachusetts Library System. After a few libraries hosted events during the 2018 Climate Prep Week, many more librarians expressed interest in getting involved with community resilience building in their towns. CREW partnered with two climate librarians to host a webinar inviting librarians across Massachusetts to participate in Climate Prep Week 2019. The Massachusetts Library System committed to hosting fifty events statewide, and ultimately exceeded its goals, with a grand total of ninety-nine events hosted at seventy-three libraries. CREW also successfully declared Climate Preparedness Week in six municipalities, doubling their number from the year previous. Because of these partnerships, CREW was able to broaden and deepen the impact of its programming, demonstrating in the process the powerful difference collaboration can make in achieving goals, especially when it comes to community resilience-building.

## Organization Analysis

Although CREW has made substantial progress in the two years since its inception, the organization is still very new in comparison to many other environmental organizations in the Boston area. As such, it has yet to develop consistent metrics to measure its programs' success, such as post-presentation surveys or dependable estimates of how many people its programs reach. Because of this, it is difficult to comment objectively on the organization's performance and the impact of its various efforts. Similar to many newer organizations, CREW has a small paid staff, which at the time this thesis was written was made up of one full-time staff member, one fellow, and an executive director whose time is split between CREW, 350 Mass, Divest Ed, and Better Future Project. Due to its small staff numbers, CREW's capacity is relatively limited, so the organization has to choose where to put its manpower. Further, CREW is building up its donor base, so it has a smaller budget than older organizations — its incubation under BFP, however, does help to supplement this deficit. Recognizing CREW's recent beginnings and the limitations of a new organization, during my summer working for CREW, I nonetheless observed ways in which the organization could improve its structure and strategy in order to more effectively carry out its mission.

One of the main points of tension within CREW's work concerns its position within the greater environmental justice movement. Because social resilience is a relatively new theory and resilience-building is an even newer practice, the sector has no set methods for how to most effectively construct and strengthen these social bonds. Beyond this, many environmental justice activists, let alone the communities CREW seeks to serve, have not even heard of social resilience. CREW's newness also means that all of the programming it has begun to offer is still

in the pilot stage. Therefore, many of the issues I observed arise from the fact that solutions CREW has developed to combat issues within its target communities are not yet fully established or deployed within neighborhoods.

CREW's mission very clearly lays out its function as an organization specifically designed to *prepare* communities to respond by themselves to extreme weather events. This means that CREW does not provide aid during extreme weather events, but rather gives people the tools to essentially *not need outside aid* during these events. The very concept of protecting vulnerable communities from climate change threats central to CREW's mission creates a tension within the emergency preparedness sector. Many outside parties ask whether CREW's mission prompts them to provide aid relief, and if so, to what extent. Thus far, CREW has focused on preparation techniques manifested through its educational, planning, and service programming. This means the resources with which it "equips" communities and families are knowledge, concrete plans, and only occasionally physical mitigation solutions. While such conversations and actions are indeed vitally important to increasing awareness about climate change threats and creating resilient communities, they happen largely independently from actual extreme weather events. Working with CREW over the summer, I ran into a considerable amount of confusion from people about what exactly CREW's role was in regards to how the organization actually helps people survive extreme weather events.

Part of this lack of clarity could be due to the fact that CREW supports resilience hubs, whose main goal is to provide aid locally during extreme weather events. The Climate Resilience Hub program's main function is to respond to the lack of local aid in the neighborhoods in which the hub is located and provide a place for people to obtain resources like emergency supplies and

rations, and as a check in hub where community members can connect for support. Because resilience hubs are in the very early stages of development, however, it can appear to outsiders that the organization is lacking in terms of the aid its efforts provide to communities.

Successfully creating resilience hubs that actually provide adequate aid during crises, however, would require the hub employees to have a certain level of training, as well as physical resources like access to emergency supplies or rations. No CREW employees have the qualifications to run such a training, nor does the organization have enough funding to provide hubs with emergency resources. As CREW grows and gains support, its ability to achieve its mission will depend heavily on the success of the Climate Resilience Hub program.

Because CREW does not yet have its resilience hubs fully up and running, the effectiveness of its educational programming is particularly important to the organization's current mission. CREW faces obstacles in this regard as well. CREW's educational and service efforts are essential to its effective existence as social resilience-building organization, as these are the primary means through which CREW actually establishes the social networks that act as protective infrastructure in the case of extreme weather. CREW puts significant energy into its educational programming, through which it teaches communities to take care of each other, check in during emergencies, make sure neighbors are prepared, and more. As Eric Klinenberg argues, "social ecology and its effects on cultural practices account for much of the disparity" in neighborhood mortality rates during an event like a heat wave.<sup>44</sup>

While the organization emphasizes the importance of holding educational events about emergency preparedness and climatic threats, its capacity to personally facilitate these

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<sup>44</sup> Klinenberg, *Heat Wave*, 91.

conversations directly contradicts its goal. With education as one of their central tenets, CREW's presentations, talks, interdisciplinary panels, and other educational programming are central to its success. However, because the organization has a two-person full-time staff, employees do not have the ability to personally attend, facilitate, or present at the climate change preparedness events they try to help organize. The only such event I participated in over the summer at CREW, we presented to an organization in Everett called the Haiti Initiative, that provides a support network for Haitians built around hurricane preparedness and climate change both in the US and in Haiti. We met with US members living in the Malden-Everett community to talk about steps they could take to prepare themselves domestically, including developing emergency plans and signing up for anonymous emergency notification services. On the one hand, this talk was important and effective in spreading preparedness skills throughout this community, whose immigrant and possible undocumented status, varying English language skills, and largely low-income neighborhoods already make them highly vulnerable to climatic threats. On the other hand, this was the only such event we participated in during the two and a half months I worked with CREW. Events such as our presentation to Haiti Initiative have the ability to spread potentially life-saving knowledge about disaster preparedness and facilitate and bolster the social connections scholars including Klinenberg and Adger argue "promotes the adaptive capacity of societies to cope with climate change."<sup>45</sup> Engaging more consistently in events such as this would directly fulfill CREW's educational and equity goals, following through on their mission to fight the disproportionate climate threats imposed on low-income and undocumented individuals and communities of color.

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<sup>45</sup> Adger, "Social Capital, Collective Action, and Adaptation to Climate Change," 397.

Along the same lines, CREW's faces limitations due to its lack of personnel power when it comes to organizing Climate Preparedness Week programming. One of the main issues I consistently ran into while planning Climate Prep Week events was that groups would express interest in hosting an event, but would not have any people qualified to run a workshop or give a presentation on the subject. While one of CREW's goals is to hand the reins of these events directly to the communities they seek to connect with, many of the people we talked to did not feel prepared or knowledgeable enough on emergency preparedness topics to facilitate their own event, and instead asked for CREW's support. These constituents frequently asked CREW to send a representative to help with their event, requests CREW simply did not have the personnel to support. Oftentimes, we were able to solve this issue by connecting the parties interested in hosting an event to officials or experts, like emergency preparedness municipal employees, university professors, or environmental leaders who could act as the authority at the event. Other times, however, a community would pull back from organizing an event because we could not find a speaker who fulfilled the goals for a Climate Prep Week event, or because the process of collaborating with other parties seemed too complicated or time-consuming for that organization's current capacity. In many of these cases, the potential organizers I spoke with expressed interest in receiving training to run an event of their own, or simply sought a template presentation introducing the topic of emergency climate preparedness. As CREW does not currently have these support materials, however, we were unable to help these groups plan events, and therefore lost the chance to connect with those community members. While the issue of CREW's small staff cannot be fixed immediately, the organization could focus on developing

trainings in advance of large-scale events like Climate Prep Week to give community leaders the tools and confidence to lead events on their own to reach a wider audience.

CREW also faces limits on the amount and diversity of the communities it is able to reach. One of the organization's guiding values is *equity*, specifically "actively addressing the historical and structural inequities that cause some, including low-income and undocumented individuals and communities of color, to be disproportionately threatened by climate impacts and marginalized in climate deliberations." The organization still overlooks certain marginalized populations in its work, though. This issue became apparent when I was tabling for CREW at the Americans with Disabilities Act Celebration Day, organized by the Boston mayor's office. During the course of the event, several people approached the table expressing excitement and gratitude seeing that CREW was offering an opportunity to engage with emergency preparedness. I learned very quickly that emergency preparedness is profoundly important for disabled individuals, who have to make intentional and specific plans about having necessary medications, how their service animals factor into evacuation plans, where they will keep emergency power for electric-powered chairs, and so much more. The people who came up to the CREW table were happy to see a preparedness organization bringing them into the conversations and acknowledging their differentiated needs. When they asked me what resources we could give them, however, we had none. Because of the limitations that a small staff and little people-power impose, CREW does not currently have the knowledge or resources to properly help prepare the disabled community. As the organization gains more of its own resources, it is possible it will be able to better serve this community, as well as others it may have previously not been able to serve.

Because CREW's full-time staff is very small and its programming is so dependent on volunteers, the organization's work is also limited to areas in which it can find interested, dedicated parties with the capacity to work on its efforts. CREW teams, for example, require volunteers with the free time to meet and spend time working on their neighborhood programming. Even a once-monthly meeting can pose difficulties for people holding multiple jobs, taking care of children, or with other obligations that prevent them from having significant free time. The added time commitment of tabling at local fairs, planning events, and community outreach increases the amount of time team members are expected to give to their projects. A successful resilience hub program also requires staff who are able to make the time commitment of both attending and leading trainings, planning educational events, and offering emergency services. In order to provide emergency supplies, since CREW does not currently have the funding, these hubs would need to be sufficiently resourced to spend money stocking the hub with the proper supplies. Because of these volunteer requirements and the constrictions they impose, CREW's programming has the potential to become limited to wealthier, already better-equipped neighborhoods, rather than where its services are most needed. As evidence to this, CREW's current two teams are located in cities with higher-than-state-average median household income. While both of these cities (Somerville and Arlington) also have significant wealth gaps, and one city has a higher-than-average percentage of residents of color, both also already have vibrant communities dedicated to fighting for environmental justice and increasing parity of emergency resources in their cities. Therefore, as CREW matures and expands, it must embrace a more diverse outreach program in order to properly achieve its goals of local leadership, collaboration, and equity.



Finally, CREW also faces an ideological dilemma in its value and adoption of marginalized folks' survival culture and strategies. When put in the context of previously mentioned critiques of protective measures that put the onus on vulnerable populations to save themselves (see Critiques on Social Resilience, Chapter One), CREW's work absolutely "promot[es] and propagat[es] the survival techniques of poverty in which social networks of the poor t[ake] a primary place." In fact, CREW quite intentionally builds up and promotes the social networks of marginalized communities to spread knowledge and information that can make members safer and more prosperous. What Elyachar's work does not take into context, then, is how much providing the tools to protect itself benefits a community who is already not being served by its government's protective policies. Elyachar does not fully address how important it can be in a time of national climate change denial to work on local, community-based efforts as hard as possible, since national actors are failing to act. Especially within the context of climate change, because we are already seeing the impacts in the form of dangerous extreme weather events that pose a real and immediate threat to all people, giving at-risk communities the tools to prepare and respond in order to survive potentially trumps the concern that governments will lose interest, or lack a sense of urgency to create policies that adequately protects all residents.

Another way that CREW helps to offset the burden its approach to social resilience-building places on vulnerable communities is its close relationship with the organization 350 Mass. 350 Mass advocates directly for changes in legislation and policy that effectively and holistically prepare Massachusetts communities for the impacts of climate change. In doing so, Better Future Project's model of multiple NGOs under one non-profit

umbrella protects Massachusetts citizens immediately *and* fights for longer term protections while holding the people in power responsible for creating these protections. CREW's work could in theory absolve governments of feeling a responsibility to protect its most vulnerable populations, but the immediacy of the threats these programs are combatting, as well as CREW's close relationship with 350 Mass, safeguards against the organization exclusively putting the onus on vulnerable populations to save themselves. In the future, however, CREW must be alert so that its partnerships, programs, and actions do not fall into the trap of microinformality laid out by Elyachar.

Ultimately, CREW's future success as an organization is dependent on whether it can grow its support, funding, resources, and people-power, and what directions chooses to take as it expands. The organization has immense potential for success, a strong support network guiding it, and communities ready to accept its assistance and knowledge. The programming CREW has developed provides promising templates for achieving its goals in ways that put the voices and needs of the communities it seeks to help front and center in developing place-based and community-based solutions. It must also develop plans for how to engage and support groups who may not have the capacity to volunteer for CREW themselves, but still require many of the services the organization provides. It is imperative that the organization establish strategies to bring together more parties who are typically marginalized in climate conversations into the groups they represent, even if it requires specialized programming. As CREW broadens its programming and transitions from pilot projects to set practices, it must do so in an intentional way that empowers community members but does not rely on them to do all the work of protecting themselves from extreme weather events.

## **Chapter Four**

### **CitySprouts: Sprouting Resilience through Youth Education**

While Communities Responding to Extreme Weather offers one very promising template for how to build community climate resilience, the organization is not the only one cultivating resilient communities in Massachusetts. To better understand the resilience-building landscape in Massachusetts, therefore, this chapter will explore the work of CitySprouts, another Massachusetts non-governmental organization whose work effectively develops resilient communities. CitySprouts offers an alternative resilience-building framework to CREW's direct approach, as it does not explicitly shape the social networks and preparedness education that create a resilient community. Instead, the organization dedicates itself to providing equal access to nature and science, technology, engineering, and mathematics opportunities for all students in the schools it serves. While its work is not driven by deliberately building social resilience, as is the case with CREW, much of CitySprouts' garden-based learning curriculum promotes social characteristics vital to increasing the resilience of a community, specifically: cross-generational engagement, community members' relationships to nature, and understanding of natural processes. The organization has a strong track record of improving children's engagement in the classroom, their excitement in the world around them, and relationships within the communities where the organization works. Just as with CREW, however, CitySprouts is not a perfect organization. The non-profit's approach to innovative learning opportunities and community engagement still has room to grow, and curriculum builders could strengthen certain aspects of the organization to more intentionally circulate the life-saving knowledge and preparation skills groups that CREW seeks to teach. My goal in examining the work, guiding theory, and

achievements of CitySprouts is to throw CREW into a wider relief and challenge the effectiveness of an organizational structure designed purely to grow climate resilience.

Founded in 2001, CitySprouts aims to increase hands-on learning opportunities in the Cambridge Public School (CPS) system via urban gardens. The organization got its start when a group of concerned parents teamed up with a teacher and a school principal to build a schoolyard garden program in two schools in the CPS system. According to one interview with CitySprouts, its founders “were motivated by a shared concern about children growing up hungry for hands-on learning, ignorant of where their food comes from and with too few opportunities to really know their natural environment.”<sup>46</sup> The program began with a small garden offering programming to two Cambridge middle schools, but CitySprouts soon developed an on-going relationship with the CPS science department that allowed it to expand its reach. Within just eight years, the organization successfully established programs at every K-8 school in the CPS system - a total of twelve garden programs in all. In 2012, CitySprouts began collaborating with Boston Public Schools (BPS), and started to build programs and gardens throughout the city of Boston. As of 2019, CitySprouts has designed a dynamic, multi-program set of curricula that seeks to “cultivate wonder for all children with hands-on learning through urban gardens.”<sup>47</sup> Beyond purely inspiring an interest for nature in their students, CitySprouts now aims to act as a reliable point of access for children’s learning in core STEM subjects, expand students’ knowledge about health and food systems, and build environmentally literate communities inside and outside of the classroom.

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<sup>46</sup> “Member Spotlight: CitySprouts,” accessed November 6, 2019, <https://www.cambridgechamber.org/blog/cambridge-chamber-blog-2360/post/member-spotlight-citysprouts-5885>.

<sup>47</sup> “Mission & Impact,” CitySprouts, accessed November 6, 2019, <https://www.citysprouts.org/mission-impact>.

CitySprouts achieves its goals by creating a comprehensive set of curricula that provides the foundation for teachers, students, and family members to enter into a critical and growth-oriented relationship with nature. Along with the foundation that CitySprouts provides in the form of urban gardens, the organization builds dynamic relationships with the participating educators from BPS and CPS through in-class assistance and course planning guidance. All of the schools that CitySprouts works with receive consistent support from the organization's own garden educators, who provide assistance both inside and outside of the classroom and garden time. Garden educators help maintain on-site gardens at each of their schools, develop grade-specific curriculum, and connect garden lessons to classroom lectures, concepts, and activities. CitySprouts also creates community sharing spaces for all BPS and CPS teachers who participate in its programming. Through these forums, teachers can compare best methods and approaches to achieve learning goals, collaborate on developing new lessons, and more.

CitySprouts also works to extend its programming beyond the structure of science classes and reach a broader community by encouraging students to take conversations from class home to their families, using gardens to alter the physical appearance of the neighborhoods it works in, and opening garden events to parents and other members of school communities. Events such as the CitySprouts' yearly cider pressing festival extend its programming and efforts to build nature and environmental literacy to a greater community. In doing so, CitySprouts effectively welcomes more people into the conversations it seeks to facilitate about science, climate change, food production, and more.

CitySprouts' work takes form through three main programs: its School Partnership Program, Middle School Program, and Early Start in Science. The School Partnership Program

provides the foundation for CitySprouts' connection to the Cambridge and Boston Public School systems. Through this public school system-NGO collaboration, schools exchange funding and teacher-power for curricular guidance and assistance with facilitation, and garden development and maintenance. The School Partnership Program:

- “Ensures all children have on-going opportunities to learn from nature during their elementary education
- Builds students’ STEM and social emotional skills directly through inquiry-based activities in the garden and by building teachers’ capacity to integrate garden-based learning in their practice
- Teaches students about food systems and encourages them to make healthy food choices”<sup>48</sup>

From September through the end of the academic year, CitySprouts’ garden educators provide on-site support to 23 elementary and middle schools in Cambridge and Boston through CitySprouts’ co-teaching inquiry-based lessons in the gardens, and helping to design meaningful, compelling “follow-on” in the classroom. Garden educators meet twice weekly with all participating teachers, once in grade-level meetings, and once individually with each teacher “to assist them in developing and implementing garden-based extensions to teachers’ science, English language arts and other curricula.”<sup>49</sup> This curricula can take the form of gardening activities and maintenance, cooking classes, service projects, engineering experiments, and more. Depending on the school, its ability to provide funding, and its contract with CitySprouts, students are able to engage with garden-based learning anywhere from once a semester to every week. In providing low-resource or understaffed schools with this forum for hands-on,

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<sup>48</sup> “CitySprouts School Report 2019,” accessed November 4, 2019, <https://static1.squarespace.com/static/5c12b3915417fc6974991ae4/t/5d697e8a6b06be0001e96a5b/1567194762857/CitySprouts+School+Report+2019.pdf>.

<sup>49</sup> “CitySprouts Inc - GuideStar Profile,” accessed November 4, 2019, <https://www.guidestar.org/profile/04-3521413>.

cross-disciplinary learning, CitySprouts effectively enhances its partner schools students' academic experience while also developing its students more wholly. This comprehensive approach to education adds to children's overall willingness to engage with what excites them, both inside and out of the classroom, helping to create vibrant, dynamic communities ripe for social resilience-building.

CitySprouts' other two programs, Early Start in Science and the Middle School Program, focus on target groups the organization does not specifically connect with through its School Partnership Program. Early Start in Science is designed to develop a lifelong understanding of and proficiency in science, technology, engineering, and math in children ages three to six. This program builds off of the Joan Ganz Cooney Center's finding that the pipeline to successful STEM careers can begin as early as age three.<sup>50</sup> Early Start in Science seeks to address the gap in young people of varying backgrounds' access to STEM careers later in life. Through age-appropriate activities such as regularly watering a garden, feeling the textures of different plants' leaves, and picking vegetables off the vine, Early Start in Science “ensur[es] children have opportunities for guided exploration in the garden as part of their school day”<sup>51</sup>.

CitySprouts also provides teachers who participate in this program with six site-based professional development workshops where they can come together to share ideas, experiences, and learn from one another. The Middle School Program works to help an older demographic of students, approximately ages eleven to fourteen, learn about their natural environment. The organization breaks this program into three major offerings: a summer program, an after-school

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<sup>50</sup> “Joan Ganz Cooney Center - STEM Starts Early: Grounding Science, Technology, Engineering, and Math Education in Early Childhood,” accessed November 10, 2019, <https://joanganzcooneycenter.org/publication/stem-starts-early/>.

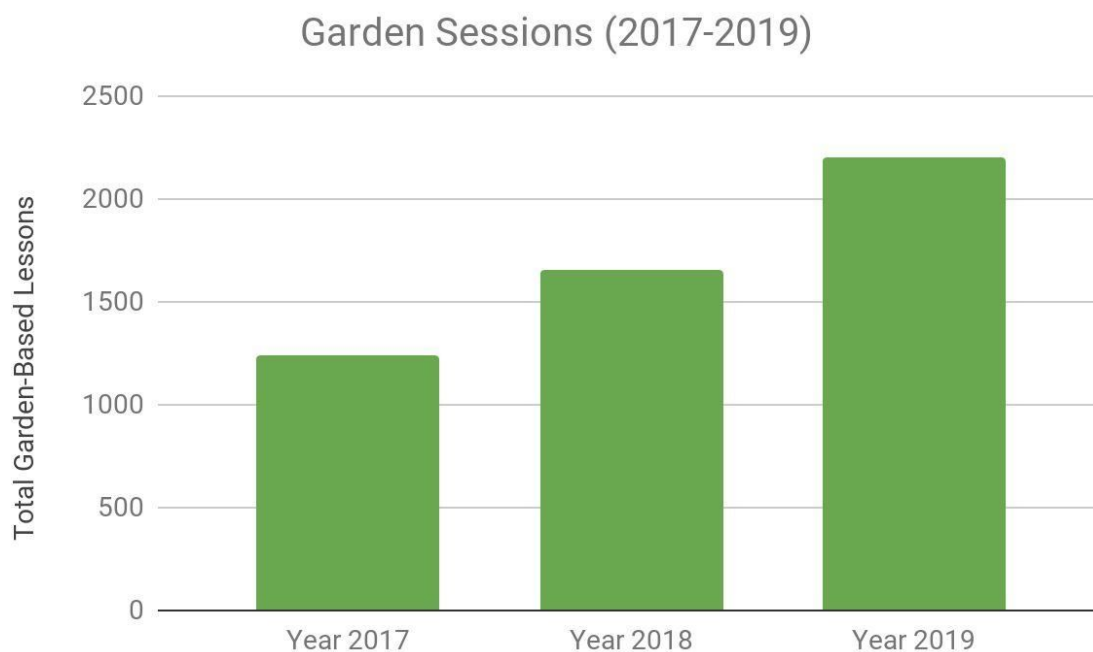
<sup>51</sup> “CitySprouts Launches a New Science Education Teacher Training for Boston Early Educators,” CitySprouts, accessed November 4, 2019, <https://www.citysprouts.org/news/new-science-education-teacher-training>.

program, and a youth leadership team. These tuition-free learning opportunities allow CitySprouts students to dive into more in-depth, complex projects, which usually span a semester in length. The summer and after-school programs use field trips, kitchen activities, STEM projects, and gardening to teach students about complicated scientific processes through universally accessible methods. The Youth Leadership Team (YLT) offers students who have participated in other CitySprouts programs a chance to make an impact on their community through direct service and independent projects. The YLT helps youth to find their voices, and empowers them to become leaders in their communities and engage with real issues that impact where and how they live. YLT members meet with professionals in food production, environmental justice, and STEM fields to help the students learn more about the topics and to see futures for themselves in these areas. With these programs, CitySprouts motivates children to think about nature and science and provides individualized curriculum and opportunities for engagement tailored to each age group. Through creating these specialized programs, CitySprouts helps students not only engage with nature, but to do so at an appropriate level for their development and age-specific needs, therefore deepening the richness and impact on students' experiences overall.

CitySprouts also carefully curates program data that demonstrates the success of its programs. In School Year 2018-2019, CitySprouts partnered with 21 schools; all eleven district elementary schools and one kindergarten through eighth grade school in Cambridge, and nine elementary and middle schools in the Boston school district. As of December of 2019, CitySprouts has partnered with an additional two Boston public schools. The program currently



reaches approximately 8,000 students and 350 teachers per year.<sup>52</sup> The total amount of hours each school district's students spend in the gardens has steadily increased year to year, as is documented in chart 1.



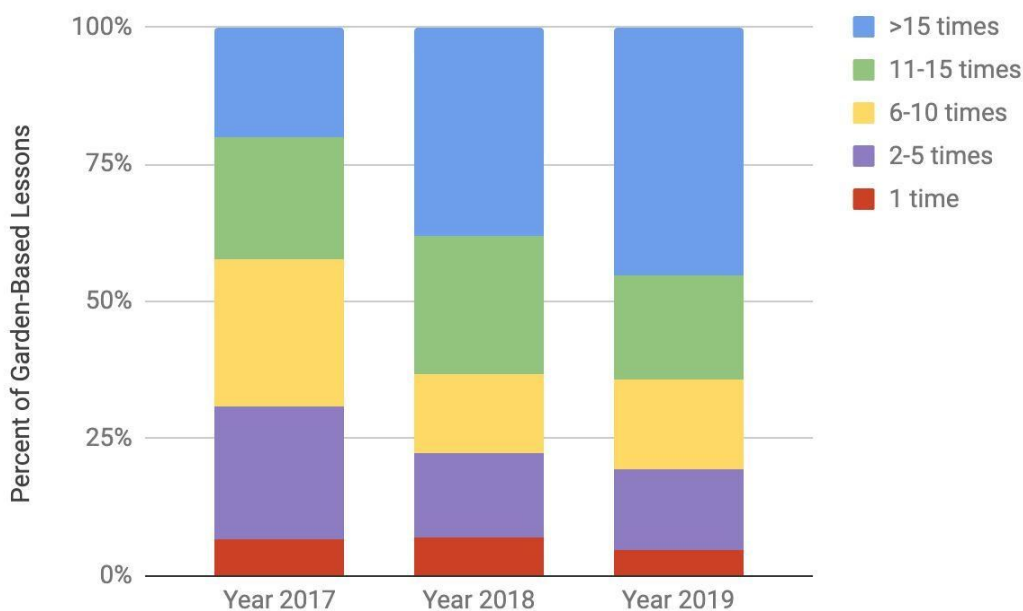
*Chart 1: Total number of garden-based lessons students experienced across Cambridge and Boston Public School Districts year to year.*<sup>53</sup>

The 2018-19 school year also marked a 30 percent increase overall in students' time spent in the gardens and garden programming, with more than a third of students in CitySprouts' partner schools participating in at least 6 garden-based programs a year.<sup>54</sup> As CitySprouts develops its programming, establishes relationships with more Boston public schools, and increases garden educators' capacity, the organization's ability to reach more students, and connect with them consistently, has grown correspondingly, as seen in the chart below:

<sup>52</sup> "CitySprouts School Report 2019," 1, accessed November 4, 2019, <https://static1.squarespace.com/static/5c12b3915417fc6974991ae4/t/5d697e8a6b06be0001e96a5b/1567194762857/CitySprouts+School+Report+2019.pdf>.

<sup>53</sup> "CitySprouts School Report 2019," 2.

<sup>54</sup> "CitySprouts School Report 2019," 2.



*Chart 2: Distinct garden-based learning times in each program (by percentage) organized into 6 categories of frequency organized year to year (totalling 2,195 garden-based learning sessions in the 2018-19 school year).<sup>55</sup>*

CitySprouts attributes this strong upward trend in services offered and students reached to two main efforts that it implemented in the 2018-2019 school year. First, CitySprouts extended its School Partnership program throughout the entire school year, as opposed to just offering garden-based learning sessions during the warmer months as the organization had done in years past. With this extended programming, CitySprouts is able to offer more consistent lessons to partner schools, mainly by taking trips to the gardens later in the fall and earlier in the spring than ever before. The program extension also allowed garden educators to bring garden-based learning inside through activities like building and maintaining worm farms or window sill and vertical gardens, and conducting plant experiments. CitySprouts also increased its offerings in school year 2018-19 through establishing a new pilot program called Investigations in the Garden, which offers “inquiry-based activities designed around science standards and practices

<sup>55</sup> “CitySprouts School Report 2019,” 3.

at each grade level from pre-kindergarten through 5th grade.”<sup>56</sup> Investigations in the Garden enhances CitySprouts’ already meaningful educational offerings by allowing garden educators to develop set practices for each grade and curriculum, which they can then adjust to specific classes and needs within the designated age groups. Finally, CitySprouts also attributes its success and growth in part to the community building work they do to supplement their educational programming. This aspect of their School Partnership Program manifests in teacher trainings on subjects from racial equity, engaging families as partners, and using Restorative Circles (a technique for proactively building the skills and relationships students will need when challenges arise) to cultivate relationships and community.<sup>57</sup>

With its considerably longer existence and contrasting focus, it is no wonder that CitySprouts differs from CREW in many key aspects of its organization. CitySprouts’ program data, metrics for success, and future goals are considerably more concrete and tangible than CREW’s have been to date. Much of this difference comes from the fact that CREW is a much newer organization than CitySprouts and so has significantly less data on its programs. CitySprouts has much more developed systems to gather data on the success of their programs. It administers yearly surveys to all its participants — teachers, school administrators, family members, and students; collects hard data on the number of participants in each of its programs; and contracts outside organizations to perform in-depth analysis of its newer programs. Early Start in Science, for example, is roughly as new a program as the entirety of CREW. Unlike CREW, however, CitySprouts has chosen to have Sun Associates, an organization experienced in working with schools and school districts throughout the country to evaluate the impact of

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<sup>56</sup> “CitySprouts School Report 2019,” 2.

<sup>57</sup> “Building Community With Restorative Circles,” Edutopia, accessed November 10, 2019, <https://www.edutopia.org/article/building-community-restorative-circles>.

educational initiatives and innovations, to assess the programs' outcomes. Therefore, even though this program is newer than the rest of CitySprouts' offerings, there is already data on program effectiveness, as well as outside, experienced analysis of the most effective ways to tweak and improve the program.

CitySprouts' future goals also emphasize continuing growth of all its programs. In the short term, the organization aims to increase the percentage of children experiencing garden-based learning. Within the next year, CitySprouts intends to build up session frequency such that a minimum of half the students currently served will experience a garden lesson at least once a month; currently, 38 percent of CitySprouts students experience garden-based learning at that frequency. The organization also wants to bring the Early Start in Science program to another school, the Orchard Gardens Pilot School, in an effort to "build a community of engaged science practice in the school and further develop a model that can be shared statewide."<sup>58</sup> Furthermore, CitySprouts hopes to use the Investigation in the Garden program to "develop an evidence-based model for hands-on learning in the garden that can be integrated with school and district curriculum."<sup>59</sup> In the long term, CitySprouts aims to create more partnerships with Massachusetts public schools outside of CPS and BPS, continue to solidify its already existing collaborations with CPS and BPS, and make its programming available to more community members outside of the students reached through direct program offerings.

While these goals, as well as CitySprouts' methods and organizational emphasis, do not directly work to increase community climate resilience, its programming has the capacity to create the social networks, community engagement, and knowledge-sharing that help to drive

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<sup>58</sup> "CitySprouts School Report 2019," 7.

<sup>59</sup> "CitySprouts School Report 2019," 7.

resilient communities. Although CitySprouts does not explicitly engage in social resilience-building, it does intentionally engage with each of CREW's core values — local leadership, equity, service and action, mutual benefits, and collaboration — through its programming. CitySprouts embodies CREW's value for equity in its belief that hands-on, minds-on learning should be a part of every child's public school journey, regardless of socio-economic status, race, gender, or other differentiating factors. Its programming seeks to establish equity throughout classrooms through inclusive lessons for all students, including those with learning differences, varied levels of English fluency, and other obstacles to learning. Much of CitySprouts' programming also ties into service and actions, such as maintaining community gardens and public green spaces. CitySprouts' educational programming seeks to enhance multiple benefits for its students through teaching them about health and food production, environmental and climate change issues, engineering, gardening practices, and more. To this end, the organization also designs its programs not only to benefit its students academically, but to enrich their lives holistically by diversifying their school day, teaching empathy, and sparking genuine interest in their surroundings. The partnership between CitySprouts and the Cambridge and Boston public schools also offers a perfect example of CREW's value for collaboration, embracing the power and specificity that an NGO can offer combined with the capacity and potential for youth education and dedicated teachers from the public school systems to build intentional communities. Finally, through educating youth and increasing overall climate literacy in the communities CitySprouts works with, the organization empowers community members to take on leadership roles, whether those roles take the form of parents helping to teach lessons in the gardens, students running for sustainability representatives in their schools, applying for

CitySprouts' Youth Leadership Team, or pursuing leadership opportunities outside of CitySprouts' purview.

More broadly, CitySprouts also promotes many of the community traits that studies have found lead to higher levels of resilience. William Rees' "Thinking 'Resilience'" pointed to cross-generational learning and collaboration as one of the main factors that strengthens resilience within communities.<sup>60</sup> Rees' argument also aligns with Klinenberg's claim that communities with stronger social ties had lower death rates of elderly people during the 1994 Chicago heat wave because of the communal practice of checking in on one another during extreme weather events.<sup>61</sup> Through hosting events that bring together the greater communities of the schools they partner with, engaging parents in their programming, and connecting with professionals from a wide variety of nature- and STEM-related fields, CitySprouts facilitates these cross-generational bonds, as well as connections between families and other participants who may not otherwise meet one another. Fostering these relationships also increases the likelihood that community members will engage with and check in on one another when extreme weather events do occur. CitySprouts further strengthens the communities it works in by disseminating important knowledge of and engagement with environmental issues, which is proven to enhance communities' ability to react to and recover from extreme weather events.<sup>62</sup>

CitySprouts' actions also directly align with many of the next steps laid out in the US Green Building Council's 2018 case study of resilience in Boston. This report emphasizes "the human side of resiliency" as a crucial element of any effective resilience-building effort.

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<sup>60</sup> William Rees, "Thinking 'Resilience,'" *Post Carbon Institute* (blog), March 21, 2011, <https://www.postcarbon.org/publications/thinking-resilience/>.

<sup>61</sup> Klinenberg, *Heat Wave*.

<sup>62</sup> James et al., "Community-Drive Climate Resilience Planning: A Framework, Version 2.0."

Specifically, the report names social equity, health and wellness considerations, education, and food management as the key focal points within this category of building resilience.<sup>63</sup>

CitySprouts' programming, developed 17 years before USGBC released this study, engages with each of these sectors. CitySprouts' philosophy and programming is built upon educational theory and the belief that every student is entitled to certain experiences. All of its programming also seeks to level the gap in opportunities for young people in STEM and to offer every student, regardless of background, an accessible entry-point into learning. The organization's efforts are also reflected in its program evaluations, in which 79 percent of teachers reported increased equity in learning for students on special education plans, and 75 percent of teachers reported increased equity in learning for English Language Learners.<sup>64</sup> Furthermore, through offering children an opportunity to spend time outdoors in nature, CitySprouts seeks to increase its students overall quality of life, reporting 60 to 70 percent increases in students' social awareness, self-awareness, responsible decision-making, and self-management.<sup>65</sup> Lastly, working in gardens teaches children about where their food comes from and gives them access to healthy, homegrown vegetables. Although CitySprouts does not approach building community resilience directly, as CREW does, indirectly, it successfully creates and nurtures many of the essential characteristics of a resilient community.

Despite having a strong methodology that produces both intended and unintended benefits for the communities CitySprouts works with, the organization is still not a perfect one.

One of the main obstacles this non-profit faces is that a large portion of their budget comes

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<sup>63</sup> "Boston Resiliency Case Study."

<sup>64</sup> "CitySprouts School Report 2019," accessed November 4, 2019, <https://static1.squarespace.com/static/5c12b3915417fc6974991ae4/t/5d697e8a6b06be0001e96a5b/1567194762857/CitySprouts+School+Report+2019.pdf>.

<sup>65</sup> "CitySprouts School Report 2019."

through state funding. In fiscal year 2018, for example, just under one third of CitySprouts' funding came directly from government grants, with similar portions of funding coming from the government dating at least three years back.<sup>66</sup> The amount of school funding directly supporting CitySprouts programming in schools is currently unavailable, but, given the organization's relationships with public school systems and the fact that CitySprouts does charge a rate to maintain its programming, one can conclude that this revenue also accounts for a large portion of CitySprouts' total revenue. However, a revenue stream from public education is also dependent on consistent interest in their programs from area public schools. In comparison to other forms of revenue for non-profits, government grants are a relatively insecure form of funding; with one change of administration, CitySprouts' funding can alter drastically with little warning. This phenomenon could work in its favor by greatly increasing the organization's capacity, or against it by suddenly reducing the amount of support the organization gets from the government. The fact that CitySprouts has a legally-binding partnership with all of CPS' elementary schools lessens some of the concern about inconsistent funding from these state sources. However, while the Massachusetts government is relatively consistent in its emphasis on education, some of the fluctuation in CitySprouts' past funding can most likely be explained by a shift in which political party controls the government. With a dependence on state funds, therefore, CitySprouts' constantly has to be aware and engaged with the political sphere and successfully advocate for itself to state politicians in order to succeed and retain this stream of revenue.

CitySprouts also has an intriguing, complex relationship with community resilience and climate education. As an organization that seeks to increase environmental and climate change

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<sup>66</sup> "CitySprouts FY2018 990 Form" (GuideStar, January 9, 2019), <https://pdf.guidestar.org/PDF/Images/2018/043/521/2018-043521413-106bf8bd-9.pdf>.  
"CitySprouts Inc - GuideStar Profile," accessed November 4, 2019, <https://www.guidestar.org/profile/04-3521413>.



literacy throughout its student body, it has the potential to increase community resilience beyond the extent to which it is currently doing so. If the organization were to intentionally address many of the issues that CREW takes on directly, it could add to the resilience of its target communities in powerful ways. CitySprouts does not face the same issues as CREW when it comes to connecting into communities; rather, CitySprouts navigates the established system of schools to make powerful connections in its target communities. Because CitySprouts is able to establish meaningful connections with communities regardless of the given pre-existing interest (or lack thereof) in nature and science in those communities, and because its collaboration with schools provides them consistent contact with its constituents, it can successfully disseminate knowledge throughout a wide variety of constituents, not just those who have the capacity to volunteer to work with the organization. Because CitySprouts has this natural, pre-built community network, it could use this framework to spread emergency preparedness knowledge.

Building emphasis on climate resilience into the organization's curriculum would align with its mission, as CitySprouts is already dedicated to increasing environmental literacy and strengthening the social relationships of communities it works in. Including aspects of community resilience in their curriculum would not be a difficult or off-mission task. Even if the organization just committed to offering a once-a-semester workshop or presentation on emergency preparedness, its established connection to students would ensure that the addition would be impactful. The organization also has the potential to create more in-depth programming surrounding community resilience. For example, since CitySprouts seeks to improve students learning opportunities in not just natural science, but also math and engineering, it could undertake projects such as building rain gardens to learn about water management and help

gardens be more sustainable, or designing boardwalks over muddy grounds at their schools in order to make them more easily navigable after heavy rain storms. These projects would introduce CitySprouts students to engineering concepts, but also invite them to think about their built environment and how extreme weather can impact and alter it. CitySprouts might also hold after-school emergency preparedness planning sessions and invite family members, or assign students the work of sitting down with their families to create emergency plans at home. This would achieve the organization's central goal of engaging not only students, but also families, encouraging people of all ages to create emergency plans and increasing community resilience and preparedness. The organization could even partner with CREW to teach classes on climate resilience, or host some of its community events during Climate Preparedness Week to raise awareness for preparedness issues in its communities. In this and other ways, incorporating projects that more directly address the issues of community resilience building would make CitySprouts work even more meaningful, impactful, and far reaching than it already is.

## **Conclusion**

Climate change is happening now, and it is here to stay. We see that in extreme weather events across the globe, from Puerto Rico to Europe, from California wildfires to flooding in Boston's Back Bay. The built environment will of course need to respond to these threats and new realities. But as important as sea walls or urban shelters that may take years to approve, fund and build is the immediate preparedness of humans to respond to these events. These infrastructure-based solutions only serve the populations with access to the updated structures, and disenfranchised populations are the least likely to benefit from significant investments to rebuild the physical environment. As such, it is imperative to find other ways to prepare *all* people for the impacts of climate change, beyond adapting the built environment. The relatively undeveloped concept within environmental planning and justice circles of "social resilience" attempts to meet this immediate need. A review of contemporary literature on resilience-building shows that this concept has applications in other sectors beyond the purely environmental that may assist environmental justice work on preparedness. Resilience-building work can also face potential pitfalls if they simply encouraged at-risk communities they seek to help to be resilient without state, philanthropic and other tangible support. Furthermore, an examination of state efforts demonstrates that the Massachusetts state government is committed to climate action but lacks a cohesive approach on social resilience and climate preparedness.

The case studies in this thesis have sought to discover whether active resilience-building takes place in Massachusetts. Because social resilience is a somewhat new approach to environmental justice in Massachusetts, and because CREW is in its infancy, the case studies explored in this thesis are correspondingly incomplete. Nonetheless, they demonstrate: a strong,

leverageable appetite on the part of citizens for effective information and support, shown through the passionate volunteer engagement in CREW's various programs; a commitment to engaged relationship with the natural environment, exemplified through both CREW and CitySprouts programming surrounding the natural world; the benefit of using existing aspects of the built environment as a launching pad for cultivating social resilience, which CREW does through collaborating with public libraries, places of worship, and neighborhoods, and CitySprouts achieves through its school partnerships; and the challenges of creating social resilience out of thin air (e.g. without some reason for folks to already be in some level of community) as seen through CREW's experience with hubs and teams.

A key question at the heart of this thesis has been how we can move forward to best build social resilience. Throughout this paper, I have used two lenses, one (CitySprouts) that leverages existing social relationships that accrue to a specific built environment - in this case, schools - and the other (CREW) that attempts to aggregate more broadly across different cohorts within a community and create a connective infrastructure of social networks and knowledge.

CitySprouts' methodology piggybacks off of and benefits from the pre-existing structure of a public school system and student-teacher-family relationships, while CREW's work attempts to build new systems of resilience through engaging multiple stakeholders cross-sectorally.

Because CREW is so new, it is difficult to gauge its future success, but it is clear from the foregoing analysis that both organizations *might* provide a measure of protection in a climate crisis.

The question that then remains, then, is whether CREW can independently construct an "infrastructure" that overarches different aspects of a community to connect different social

infrastructures like churches, libraries, schools, hubs, etc. Along with this question comes another, which asks whether climate resilience is best cultivated in a microcosm like a school, as CitySprouts does, or more broadly and across cultural centers, as CREW seeks to do. Given the lack of data behind CREW's work, it is not yet possible to answer these questions for certain within the scope of this thesis.

What is clear, however, is that the majority of funding and focus statewide goes to built-environment solutions such as adapting building codes to account for future changes in climate, building flood defenses, developing sustainable energy sources and making them accessible and capable of large scale production, and more. This thesis does not contest the essential and dire need to generate research, as well as to invest money and effort into developing these vital infrastructures. However, focusing purely on developing and retrofitting infrastructure can leave certain, most often already disenfranchised, groups just as unprotected as they were before changes to their infrastructure.<sup>67</sup> Many adaptation and mitigation efforts can favor already wealthy, largely white, privileged communities; adaptation efforts often only work to improve and update already built infrastructure systems that disadvantage low income people and communities; and funding is frequently granted to systems with the best "capacity" to handle new programming. Due to the specialized nature of social resilience-building efforts, designing movements to create resilient neighborhoods that stretch across multiple communities presents a significantly difficult task for the organizations trying to do so. Despite these obstacles, however, this thesis presents case studies of two organizations that successfully create spaces and

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<sup>67</sup> Adger, "Social Capital, Collective Action, and Adaptation to Climate Change." Brian Mayer, "A Review of the Literature on Community Resilience and Disaster Recovery," *Current Environmental Health Reports* 6, no. 3 (September 2019): 167–73, <https://doi.org/10.1007/s40572-019-00239-3>. Julia Elyachar, "Empowerment Money: The World Bank, Non-Governmental Organizations, and the Value of Culture in Egypt," *Public Culture* 14, no. 3 (September 1, 2002): 493–513.

opportunities for the social relationships that are integral in building resilient communities to grow, thus fostering resilience throughout a diverse population.

Examining CREW, CitySprouts, and state-sponsored resilience-building efforts in Massachusetts reveals the necessity to include a climate justice framework in all resilience-based projects. Across these three considerably different sets of programming, the most successful projects not only centered residents' voices and needs, but also engaged with the other factors adding to individual populations' overall vulnerability. The fact that CitySprouts' work has the unintended benefit of building the characteristics key to resilient populations demonstrates the effectiveness of a social resilience-building strategy that engages with other issues that also impact critical vulnerable populations, in this case, public education. CREW also exhibits the power in engaging with issues beyond those the scope traditional resilience frameworks, which tend to focus around physical infrastructure independent of who it serves and view resilience as separate from "purely social" issues like housing and food insecurity or education gaps. One such example of this cross-sector collaboration is CREW and 350 Mass's joint partnership with many local unions across the state of Massachusetts. Through taking the time to sit down with representatives from these different unions, CREW was able to drastically increase its reach into vulnerable communities, thereby expanding the number of people who are exposed to the issues CREW talks about. Even if the union members who heard about CREW did not commit to volunteering for CREW or suddenly altering their lifestyles, just hearing about the work CREW does and the reasons why Massachusetts residents should care about environmental issues increases the likelihood these individuals will think about emergency preparedness and their role within their communities during a disaster. Empowering union leaders to articulate

environmental issues in their own words allowed these leaders to put the issues into a relevant context, to reframe climate change in a way that made union constituents care, and to make arguments that climate resilience workers outside of the unions would never have even known to make. In that way, embracing a justice-oriented approach to building resilience, one that acknowledges the differentiated experience of various communities, made the actual act of resilience-building far more impactful than it would otherwise have been.

The success of CREW and CitySprouts' intersectionality-based resilience-building calls attention to the need to incorporate justice and socially-aware approaches to *all* resilience efforts. Projects sponsored through the Massachusetts state government seek to do so on the surface, for example, but rarely succeed in giving adequate support to the communities who are most vulnerable to the impacts of climate change (see fig 2, p 30). The state government's passive neglect of these communities only further emphasizes the importance of reframing "resilience" to include an understanding of and attention to actively combatting all of the forces that make a community vulnerable. These forces can range from lack of comfort in English speaking to recent immigrant status to income to demographic disparities not even tackled in the Environmental Justice Policy, like access to sufficient, supportive education, consistent, healthy food sources, or secure housing. If the government had experts well-versed on social justice issues and how these issues impact communities' ability to be resilient at the table during grant proposal reviewal for the Municipal Vulnerability Preparedness program, these services may increasingly be granted to the communities who need them most, rather than the communities who find it easiest to meet the government's requirements.

Not only does this thesis demonstrate the need to incorporate a justice-informed approach into resilience-building projects, but it highlights the necessity of bringing climate resilience activists into conversations about strengthening the social fabric and fighting oppression in vulnerable communities. Unlike thirty years ago, when we as a society did not understand the drastic threat climate change poses to our communities, the impacts of climate change and the danger it poses to all humans are now undeniable. Given this shift in understanding, efforts focused around improving the quality of life, as well as simply asserting the right to live for all people must now necessarily include a focus on building physical, social, and climate resilience. Many efforts based in climate resilience struggle to get a foothold in these conversations because attempting to do so can feel like adding another oppressive weight to the obstacles that minority communities, low-income communities, and other vulnerable populations face in fighting for their right to a safe, healthy life. Ignoring the growing risk of climate change, however, does far more of a disservice to these communities than resilience efforts choosing not to engage with them because of the hurdles these groups must already jump, or failing to engage because a community's focus is elsewhere. This is not to say that climate resilience workers should feel the need or the right to barge into high-risk communities and tell residents that they must drastically change how they live. I call instead for a restructuring of social justice efforts that incorporates an understanding of how imperative it is to begin preparing for the impacts of climate change. This means bringing climate experts into "social justice" conversations, not to dominate the discussion, but to provide insight on how social resilience-building efforts can include climate resilience in their work.



Moving forward, climate resilience efforts need to embrace social resilience in their approach to both the built environment and environmental justice in order to establish effective, supportive social infrastructure that truly aids and empowers vulnerable communities in the face of climate change. This social infrastructure will have to connect into communities with the power of indirect resilience-building efforts like CitySprouts that function completely within established social systems, while also creating spaces specifically to support the climate resilience within vulnerable populations, like CREW does. These projects must continue to foster the naturally resilient characteristics of a community, stimulate conversations about extreme weather preparation, and help residents navigate how their communities can engage with the established support systems—government grants, emergency preparedness officials, and preparation knowledge—available to them.

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