

# Surviving Climate Change: An Examination of Government Disaster Response and Its Effect on People Impacted by Poverty

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## Introduction

Gwendolyn Williams picks through the flooded shell of what used to be her family home of twenty years. The walls are rotting. The floors are separating. And family treasures—photographs, birth certificates, and diplomas—are all gone.<sup>1</sup> After Hurricane Harvey nearly swept their home away, Gwendolyn and her husband lived in a motel for about eight months and then transferred to a trailer provided by a federal government agency for a few months.<sup>2</sup> However, that aid will soon be rescinded, and Gwendolyn may be left homeless.<sup>3</sup> She

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<sup>1</sup> See Washington Post, *A Year After Harvey, A Struggle to Rebuild*, YOUTUBE (Aug. 23, 2018), <https://www.youtube.com/watch?v=wD5ex0X16hw> (explaining, from 0:00-0:38, that Hurricane Harvey destroyed the Williams' home and irreplaceable items).

<sup>2</sup> See *id.* (explaining, from 0:43-0:50, that Williams and her husband had to live in a motel and a trailer following the destruction of their home by Hurricane Harvey).

<sup>3</sup> See *id.* (explaining, from 1:01-1:11, that the trailer may be taken away, once

and her family worked hard to return to normalcy, but the recovery was slow.<sup>4</sup> They did most of the repairs and replacements on their own, which killed what savings they had.<sup>5</sup> Otherwise, the family has had to rely on community support for information and supplies.<sup>6</sup> Gwendolyn's story is not new or uncommon. Because of climate change, it is more likely than ever many more will have to suffer through the same experience.<sup>7</sup>

Climate change is a phenomenon caused by human influence, especially emissions of greenhouse gasses.<sup>8</sup> Ordinarily, “[g]reenhouse gasses such as water vapor, carbon dioxide, methane and nitrous oxide, are an important part of our atmosphere because they keep Earth from becoming an icy sphere” by creating a protective layer that holds in heat.<sup>9</sup> However, widespread deforestation, fossil fuel combustion, and other human activity cause massive releases of carbon dioxide and other greenhouse gasses.<sup>10</sup> When those greenhouse gasses cannot be stored close to the ground in vegetation or ice, they become part of the atmosphere.<sup>11</sup> Similar to adding extra blankets to a bed, more and more heat becomes trapped underneath—and that extra heat can have unprecedented effects.<sup>12</sup>

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again leaving the Williams family homeless).

<sup>4</sup> See *id.* (discussing, from 1:23-1:30, the difficulty of returning the house to a livable condition).

<sup>5</sup> See *id.* (discussing, from 1:30-1:41, the lack of funds to obtain assistance to repair the house).

<sup>6</sup> See *id.* (discussing, from 1:43-2:00, the help that the Williams family has received from their community).

<sup>7</sup> See generally *Extreme Weather and Climate Change*, CTR FOR CLIMATE AND ENERGY SOLS., <https://www.c2es.org/content/extreme-weather-and-climate-change/> (explaining the correlation between climate change and increased costs).

<sup>8</sup> See generally DONALD J. WUEBBLES ET AL., *Climate Science Special Report: Fourth Climate Assessment*, 1 U.S. GLOBAL CHANGE RESEARCH PROGRAM 12, 14, 32 (2017),

[https://science2017.globalchange.gov/downloads/CSSR2017\\_FullReport.pdf](https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf) (discussing human influence in climate change and global warming).

<sup>9</sup> *What is Climate and Climate Change?*, THE NAT'L CTR. FOR ATMOSPHERIC RSCH. & THE UCAR OFF. OF PROGRAMS, [https://eo.ucar.edu/basics/cc\\_1](https://eo.ucar.edu/basics/cc_1) (last visited Nov. 22, 2020).

<sup>10</sup> See generally WUEBBLES ET AL., *supra* note 8, at 32 (discussing the effect of human activity on global warming).

<sup>11</sup> See *id.* at 77 (describing the effects of land surface properties in global warming).

<sup>12</sup> See generally U.S. GLOB. CHANGE RSCH. PROGRAM, *THE CLIMATE REPORT: THE NAT'L CLIMATE ASSESSMENT – IMPACTS, RISKS, AND ADAPTATION IN THE UNITED STATES* 196 (2019).

Temperature and precipitation extremes are a side effect to climate change already being felt across the world. The “extremes have already become more frequent, intense, or of longer duration, and many extremes are expected to continue to increase or worsen, presenting substantial challenges for built, agricultural, and natural systems.”<sup>13</sup> And those extremes extend to storms, wherein, severe weather events—tornadoes, floods, hurricanes, winter storms and droughts—are different because of climate change.<sup>14</sup>

People impacted by poverty are particularly vulnerable to the severe weather impacts of climate change.<sup>15</sup> They have less access to resources before, during, and after extreme weather events—which include savings, food, access to knowledge, and infrastructure.<sup>16</sup> And failure by all levels of government to protect low-income communities means that they are at exceptionally high risk.<sup>17</sup> When extreme weather events hit (especially in succession) low-income communities will continue to suffer.<sup>18</sup>

Human adaptation to climate change will require “a planned approach that deals with adjustment to socio-economic and ecological systems in relation to climate change and its consequences.”<sup>19</sup> This requires greater communication and collaboration across federal, state, and local levels of government. Ideally, this refocus would give local governments a greater

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<sup>13</sup> WUEBBLES ET AL., *supra* note 8, at 18.

<sup>14</sup> See *Climate Change Indicators: Weather and Climate*, ENVTL. PROT. AGENCY, <https://www.epa.gov/climate-indicators/weather-climate> (last updated Nov. 9, 2020) (describing the relationship between climate change and weather conditions).

<sup>15</sup> See Popular Gentle & Tek Narayan Maraseni, *Climate Change, Poverty and Livelihoods: Adaptation Practices by Rural Mountain Communities in Nepal*, 21 ENVTL. SCI. & POL. 24, 25 (2012) (“Reducing individual and society’s vulnerability to climate change is closely linked to the poverty reduction, as poverty is both a condition and determinant of vulnerability.”).

<sup>16</sup> See *id.* at 25. (describing the impact of severe weather conditions on the impoverished).

<sup>17</sup> See generally e.g., Carla Campbell et al., *A Case Study of Environmental Injustice: The Failure in Flint*, 13(10) INT’L J. ENVTL. RSCH. PUB. HEALTH 951 (2016) (explaining how the Flint, Michigan water crisis was the byproduct of failures on the part of all levels of government.)

<sup>18</sup> See U.S. GLOB. CHANGE RSCH. PROGRAM, *THE IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES: A SCIENTIFIC ASSESSMENT* 101 (2016), [https://health2016.globalchange.gov/high/ClimateHealth2016\\_FullReport.pdf](https://health2016.globalchange.gov/high/ClimateHealth2016_FullReport.pdf) (discussing that extreme events that occur in succession have compounding impacts).

<sup>19</sup> Gentle & Maraseni, *supra* note 15 at 25.

opportunity to utilize land use tools at their disposal with state and federal support.

Part I of this article will examine the challenges that people impacted by poverty face because of climate change. It will begin by examining general challenges, including increased exposure to heat, flooding, and communicable diseases. Then, it will consider increased exposure to extreme weather events, with a focus on hurricanes. People impacted by poverty are especially vulnerable to extreme weather events because their communities are frequently located in high-risk areas.<sup>20</sup> They often cannot evacuate before an extreme weather event.<sup>21</sup> Afterward, people impacted by poverty are unable to access the same recovery resources as neighboring affluent communities.<sup>22</sup>

Part II will then examine government response to severe weather events. It will focus on hurricane response, using Hurricanes Katrina, Harvey, and Imelda as case studies to demonstrate where government strategies regarding disaster response could be improved. In particular, it recommends that all levels of government refocus their disaster-related goals to provide more protection for people impacted by extreme weather events.

### Part I. CLIMATE CHANGE AND POVERTY

Poverty is a determining factor regarding whether a person can adapt to—or should retreat from—extreme weather events.<sup>23</sup> Low-income communities in urban environments suffer disproportionately from immediate exposure to extreme weather events and from subsequent impacts, including heat islands; poor

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<sup>20</sup> See SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., DISASTER TECHNICAL ASSISTANCE CTR. SUPPLEMENTAL RESEARCH BULLETIN, GREATER IMPACT: HOW DISASTERS AFFECT PEOPLE OF LOW SOCIOECONOMIC STATUS 7-8 (2017), [https://www.samhsa.gov/sites/default/files/programs\\_campaigns/dtac/srb-low-ses.pdf](https://www.samhsa.gov/sites/default/files/programs_campaigns/dtac/srb-low-ses.pdf) (analyzing reports noting that people in poverty are more likely to live in high risk of disasters).

<sup>21</sup> See *id.* at 3, 5-6 (explaining that people living in poverty may lack the resources necessary to evacuate).

<sup>22</sup> See *id.* at 9-12 (explaining that people in poverty lack access to resources following disasters).

<sup>23</sup> See ORG. FOR ECON. COOPERATION AND DEV., POVERTY AND CLIMATE CHANGE: REDUCING THE VULNERABILITY OF THE POOR THROUGH ADAPTATION 5-6 (2012), <http://www.oecd.org/env/cc/2502872.pdf> (stating that poorer countries are more susceptible to climate change).

air quality; and energy and food shortages.<sup>24</sup> These communities lack the resources to mitigate the immediate impacts—they may be unable to afford an air conditioning unit; or an air filtration system; or a generator; or extra food.<sup>25</sup> If they cannot afford the mitigating resources, they may be unable to afford to leave their community and restart somewhere else.

The ability to adapt to climate change, “including the decision to retreat from, accommodate, or protect against a particular impact, are dependent on several factors. Economically, a property owner’s access to capital or insurance to fund these strategies contributes to adaptation choices, making poverty a driver of vulnerability in the face of climate-based impacts.”<sup>26</sup> Yet, “. . . fewer than 40 [percent] of Americans have enough savings to cover a \$1,000 emergency, most families, and especially lower-income households, need federal, state, and local support for preparedness and recovery costs like raising a home above the base flood elevation, home repairs, and mold remediation.”<sup>27</sup> Property owners who cannot afford to modify or insure their properties against projected extreme weather events become financially tied to high-risk property that lacks a safety net; and low-income renters are left with no other choice but to live in those high risk properties.<sup>28</sup> When an extreme weather

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<sup>24</sup> See JEFFREY PAYNE ET AL., *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*, 2 U.S. GLOB. CHANGE RES. PROGRAM 334 (2018),

[https://nca2018.globalchange.gov/downloads/NCA4\\_2018\\_FullReport.pdf](https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf).

<sup>25</sup> See e.g., CTR. FOR DISEASE CONTROL AND PREVENTION, CLIMATE AND HEALTH INTERVENTION ASSESSMENT, EVIDENCE ON PUB. HEALTH INTERVENTIONS TO PREVENT THE NEGATIVE HEALTH EFFECTS OF CLIMATE CHANGE 58-61 (2017) (stating that air filtration and cleaning units are effective in reducing smoke concentration); TRACEY ROSS, CTR. FOR AM. PROGRESS, A DISASTER IN THE MAKING: ADDRESSING THE VULNERABILITY OF LOW-INCOME COMMUNITIES TO EXTREME WEATHER 6-7 (2013) (discussing that after Superstorm Sandy, there were issues with securing generators for public housing); *Disasters and Poverty: Natural Disasters Disproportionately Affect the World’s Low-Income Countries*, CTR. FOR THE STUDY OF TRAUMATIC STRESS, [https://www.cstsonline.org/assets/media/documents/CSTS\\_FS\\_Disasters\\_and\\_Poverty\\_Natural\\_Disasters\\_Disproportionally\\_Affect\\_the\\_Worlds\\_low\\_income.pdf](https://www.cstsonline.org/assets/media/documents/CSTS_FS_Disasters_and_Poverty_Natural_Disasters_Disproportionally_Affect_the_Worlds_low_income.pdf) (last visited Nov. 9, 2020) (providing that people living in poverty have less expendable income to use on extra resources in the event of a disaster).

<sup>26</sup> See JEFFREY PAYNE ET AL., *supra* note 25, at 334.

<sup>27</sup> Laurel Blatchford, *Climate Change Disproportionately Affects Low-Income Communities*, ENTERPRISE, (Dec. 7, 2018) <https://www.enterprisecommunity.org/blog/climate-change-disproportionately-affects-low-income-communities>.

<sup>28</sup> See JEFFREY PAYNE ET AL., *supra* note 25, at 334 (explaining the difficulty facing low income people in adapting to disasters).

event comes, the property will not be prepared.<sup>29</sup> The property will be destroyed, and if it is not insured, the cost of repairs will fall on the property owner, who will not likely be able to afford the cost.<sup>30</sup>

Those who live in high-risk properties may be unable to leave before a severe weather event occurs simply because evacuation is prohibitively expensive.<sup>31</sup> Evacuation often requires a functioning car and access to an emergency disaster shelter, which typically fill up quickly.<sup>32</sup> If a shelter is full, evacuees may need to either drive further to another shelter or check into a hotel (which is a massive cost on its own).<sup>33</sup> If residents do not have their own means of travel, they are placed in a precarious situation of either sheltering in place or trusting the systems that agencies set in place to help them.<sup>34</sup> When Hurricane Katrina hit in 2005, some who did rely on the Federal Emergency Management Agency (FEMA) for evacuation ended up displaced:

In the hours before, during, and after the storm, New Orleanians evacuated to cities and towns all over the country. Sometimes they chose a destination in order to be with family or friends. Other times, FEMA sent them off to places unknown. “We have residents who were loaded onto buses bound for Memphis or Salt Lake City and only found out once they got there . . .”<sup>35</sup>

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<sup>29</sup> See *id.* at 338-40 (discussing that coastal flooding may lead to high economic costs).

<sup>30</sup> See Sarah O’Brien, *Options are Few for Storm-Ravaged Homes with Insufficient Insurance*, CNBC (Jan. 12, 2009, 3:26 PM EDT) [<https://perma.cc/L8MH-5MGL>] (stating that insufficient insurance coverage leaves homeowners in a difficult situation, often unable to afford cost of repairs).

<sup>31</sup> See Adrian Florido, *Why Stay During a Hurricane? Because It’s Not as Simple as ‘Get Out,’* NPR (Oct. 18, 2018, 3:45 PM ET), [<https://perma.cc/F4BJ-3629>] (discussing how the cost of a seven-day evacuation can be upward of \$2,000 for a family of four without nearby relatives).

<sup>32</sup> See Samantha Fields, *For Thousands in Dorian’s Path, Cost can Stand in the Way of Evacuating*, MARKETPLACE (Sept. 4, 2019), [<https://perma.cc/8CWN-ZFNH>] (interviewing Diane Yentel, president of the National Low-Income Housing Coalition).

<sup>33</sup> *Id.* (describing the difficulties of accessing a shelter).

<sup>34</sup> See U.S. DEP’T OF HOMELAND SEC., PLANNING CONSIDERATIONS: EVACUATION AND SHELTER-IN-PLACE GUIDANCE FOR STATE, LOCAL, AND TERRITORIAL PARTNERS at 2, 5 (2019) (discussing how individuals and families should prepare if they elect to shelter-in-place and how New Orleans has developed an evacuation system where those without transportation can assemble at “evacuspots” to wait for city transportation assistance).

<sup>35</sup> Laura Bliss, *10 Years Later, There’s So Much We Don’t Know About Where Katrina Survivors Ended Up*, BLOOMBERG CITYLAB, (Aug. 25, 2015, 11:05 AM EDT), [<https://perma.cc/9UHR-WNET>] (interviewing Enterprise Community

In the meantime, evacuees are often still expected to pay rent, utilities, and other essential bills.<sup>36</sup> The costs associated with evacuation can add up quickly. People impacted by poverty may feel the need to shelter in place during an extreme weather event because they cannot afford to evacuate.<sup>37</sup>

Regardless of whether they evacuate, people impacted by poverty may be unable to remain in their home once the storm subsides.<sup>38</sup> More than 348,000 people reported living in New Orleans during Hurricane Katrina.<sup>39</sup> And of those, about 283,300 did not return for at least two weeks after the storm.<sup>40</sup> Of those, 11 percent had a household income of less than \$5,000 and thirty-two percent had a household income between \$5,000 and \$29,999.<sup>41</sup> About 53 percent of displaced adult New Orleanians were back in the city about a year after Hurricane Katrina.<sup>42</sup> Those who did not return to the city largely moved to Texas (about 40 percent) or other places in Louisiana (about 12 percent); much of which had to do with the lack of affordable housing available in New Orleans after the hurricane.<sup>43</sup>

Low-income communities are in danger long before an extreme weather event strikes because those communities lack the resources to physically modify properties, or they lack resources to evacuate beforehand.<sup>44</sup> When their properties are destroyed by an extreme weather event, an inability to afford insurance nearly guarantees that the property owner will be unable to afford rebuilding the property.<sup>45</sup>

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Partners, Inc. Vice President Michelle Whetten, an affordable housing and community development nonprofit).

<sup>36</sup> See Fields, *supra* note 33 (explaining that evacuees are concerned about paying bills and missing work).

<sup>37</sup> Florido, *supra* note 32 (stating that many cannot afford the cost to evacuate).

<sup>38</sup> See SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., *supra* note 20, at 7 (discussing studies that show people of low socioeconomic status were at greater risks of hazards and damages to their homes because the quality of the construction was significantly lower).

<sup>39</sup> Kimberly A. Geaghan, *Forced to Move: An Analysis of Hurricane Katrina Movers* 4 (Soc., Econ., and Hous. Statistics Div., U.S. Census Bureau Working Paper No. 2011-17, 2011), [<https://perma.cc/P4SJ-N7ED>].

<sup>40</sup> *Id.* at 5.

<sup>41</sup> *Id.* at 6.

<sup>42</sup> Bliss, *supra* note 36.

<sup>43</sup> See *id.*

<sup>44</sup> SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., *supra* note 20, at 7; see also *supra* text accompanying note 32.

<sup>45</sup> See TRACEY ROSS, *supra* note 26, at 4 (explaining how low-income communities are especially vulnerable to extreme weather and that extreme weather only continues the poverty cycle).

The disparity in exposure to danger may only worsen as low-income, high-risk areas continue to be hit by extreme weather events. Coastal areas, for example, will likely see mass migration within the next century as sea level rise “reshape[s] the U.S. population distribution, with 13.1 million people potentially at risk of needing to migrate[.]”<sup>46</sup> Poverty will continue to make migration difficult for low-income communities, who may struggle to relocate even as their communities become uninhabitable due to climate change.<sup>47</sup>

While living in low-income, high-risk areas, people impacted by poverty will continue to face disparate impacts from climate change in the form of heat, storms, flooding, and communicable diseases.<sup>48</sup>

### *a. Heat*

Low-income communities are especially vulnerable to rising temperature levels due to climate change.<sup>49</sup> This is especially true in urban environments, where green spaces and blue spaces are considered environmental assets.<sup>50</sup> Green spaces include “parks, urban forests, cemeteries, vacant lots, gardens and yards, campus areas . . . ; and blue spaces include[] streams, lakes, ponds, artificial swales, and stormwater retention ponds.”<sup>51</sup> These spaces are important assets because they provide services to the people around them, including air quality regulation,

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<sup>46</sup> JEFFREY PAYNE ET AL., *supra* note 25, at 335 (explaining that the sea level is projected to rise six feet by the year 2100, which will displace 13.1 million people).

<sup>47</sup> See Oli Brown, *Migration and Climate Change*, INTERNATIONAL ORGANIZATION FOR MIGRATION [IOM] 19 (2008), [https://publications.iom.int/system/files/pdf/mrs-31\\_en.pdf](https://publications.iom.int/system/files/pdf/mrs-31_en.pdf) (discussing how climate change affects low-income communities and that they must have financial and social stability to move).

<sup>48</sup> See Carmin Chappell, *Climate Change in the US Will Hurt Poor People the Most, According to a Bombshell Federal Report*, CNBC (Nov. 26, 2018, 1:53 PM), <https://www.cnbc.com/2018/11/26/climate-change-will-hurt-poor-people-the-most-federal-report.html> (discussing how climate change will especially affect low-income communities).

<sup>49</sup> See RACHEL MORELLO FROSCHE ET AL., *THE CLIMATE GAP: INEQUALITIES IN HOW CLIMATE CHANGE HURTS AMERICANS AND HOW TO CLOSE THE GAP* 5 (2009) (detailing how climate change disproportionality affects low-income communities and exploring how to remedy the effects).

<sup>50</sup> See T. Elmquist et al., *Benefits of Restoring Ecosystem Services in Urban Areas*, 14 CURRENT OP. ENVTL. SUSTAINABILITY 101, 101 (2015).

<sup>51</sup> *Id.*



carbon sequestration, storm water reduction, temperature regulation, recreation, and positive health effects.<sup>52</sup> However, these relatively small ecosystems are relied upon by large populations, and they often cannot keep up with the demand.<sup>53</sup>

Green spaces, in particular, are instrumental in mitigating “heat-island effect.”<sup>54</sup> This results “from lowered evaporative cooling, increased heat storage and sensible heat flux caused by lowered vegetation cover, increased impervious cover and complex surfaces, and possibly from heat trapping by elevated levels of locally produced CO<sub>2</sub>.”<sup>55</sup> In short, trees provide shade and CO<sub>2</sub> absorption. “Pavement—particularly if it’s black—absorbs heat and holds it in. At night, a city of more than [one] million people can be as much as [twenty-two] degrees warmer than its surroundings. Even the buildings themselves . . . can create a sort of canyon that traps heat.”<sup>56</sup> Having green spaces to mitigate the impact of that heat trap can protect low-income communities who would otherwise suffer.<sup>57</sup>

The Environmental Protection Agency (EPA) released a series of recommended policy strategies to mitigate the impacts of heat island effect through building codes and zoning ordinances, both of which give state and local governments an opportunity to implement change in a way that reflects local values and needs.<sup>58</sup> Georgia, Florida, and California building codes have implemented cool roof regulations, in which overall energy usage

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<sup>52</sup> See *id.* at 103.

<sup>53</sup> See *id.* at 101-02.

<sup>54</sup> See *Reduce Urban Heat Island Effect*, ENVTL. PROT. AGENCY, <https://www.epa.gov/green-infrastructure/reduce-urban-heat-island-effect> (last visited Nov. 7, 2020) (defining urban heat island effect and how it can be mitigated).

<sup>55</sup> Diarmid Campbell-Lendrum & Carlos Corvalán, *Climate Change and Developing-Country Cities: Implications for Environmental Health and Equity*, 84 J. URB. HEALTH 109, 111 (2007).

<sup>56</sup> Meg Anderson & Sean McMinn, *As Rising Heat Bakes U.S. Cities, the Poor Often Feel it Most*, NPR (Sept. 3, 2019, 5:00 AM), <https://www.npr.org/2019/09/03/754044732/as-rising-heat-bakes-u-s-cities-the-poor-often-feel-it-most>.

<sup>57</sup> See Delfina Grinspan et al., *Green Space: An Underestimated Tool to Create More Equal Cities*, WORLD RES. INST. (Sept. 29, 2020), <https://www.wri.org/blog/2020/09/green-space-social-equity-cities> (detailing the importance of green spaces for low-income communities).

<sup>58</sup> See generally U.S. ENVTL. PROT. AGENCY, *Heat Island Reduction Activities, in REDUCING URBAN HEAT ISLANDS: COMPENDIUM OF STRATEGIES 16-17* (2008), [https://www.epa.gov/sites/production/files/2017-05/documents/reducing\\_urban\\_heat\\_islands\\_ch\\_6.pdf](https://www.epa.gov/sites/production/files/2017-05/documents/reducing_urban_heat_islands_ch_6.pdf) (describing efforts governments have made to adopt energy code provisions).

is decreased by reflecting heat that would otherwise be absorbed by dark roofs.<sup>59</sup> Meanwhile, Sacramento, Chicago, and Baton Rouge zoning ordinances have implemented natural shade regulations on parking lots to reduce heat island effect and lower evaporative emissions from parked cars.<sup>60</sup> The cumulative effect of various mitigation strategies can help reduce the overall impact of heat island effect in urban areas simply by reducing the amount of dark surfaces exposed to sunlight.<sup>61</sup>

In the Franklin Square neighborhood of Baltimore, Maryland, more than one-third of the residents live in poverty, making it one of the city's poorest communities.<sup>62</sup> On average, the neighborhood is "about [six] degrees hotter than the city's coolest neighborhood."<sup>63</sup> The local government is attempting to reduce the city's heat-island effect by creating community green spaces and planting trees in low-income neighborhoods.<sup>64</sup> But a lack of local government funding means that, even in the early stages of mitigation, Baltimore is not on track to meet its goal of increasing tree canopy cover 40 percent by the year 2037.<sup>65</sup>

As the global temperature rises from climate change, low-income communities will feel the effects first and hardest.<sup>66</sup> The lack of resources available to mitigate the impacts of rising heat means that the temperature within these heat islands will continue to spike.<sup>67</sup> Residents within these communities will suffer from constant exposure to heat, both physically and financially.<sup>68</sup> Those residents may be unable to seek medical

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<sup>59</sup> *See id.* (explaining that several state governments that have implemented cool roof regulations in their buildings codes; these regulations allow developers to reduce the amount of insulation ordinarily required to meet building standards if the roof meets a certain level of solar reflectance and thermal emittance).

<sup>60</sup> *See id.* at 12.

<sup>61</sup> *See* U.S. ENVTL. PROT. AGENCY, *Urban Heat Island Basics*, in REDUCING URBAN HEAT ISLANDS: COMPENDIUM OF STRATEGIES 6-8, 16 (2008), [https://www.epa.gov/sites/production/files/2017-05/documents/reducing\\_urban\\_heat\\_islands\\_ch\\_1.pdf](https://www.epa.gov/sites/production/files/2017-05/documents/reducing_urban_heat_islands_ch_1.pdf) (discussing benefits of measures to reduce effects of heat islands).

<sup>62</sup> *See* Anderson & McMinn, *supra* note 57.

<sup>63</sup> *See id.*

<sup>64</sup> *See id.*

<sup>65</sup> *See id.*

<sup>66</sup> *See id.* (stating that vulnerable populations are more likely to be exposed to the extra heat).

<sup>67</sup> *See id.* (describing that lower income people have less resources than their wealthier counterparts to deal with the rising temperatures).

<sup>68</sup> *See* Anderson & McMinn, *supra* note 57 (describing that the increase in heat can lead to health consequences).

treatment for continued heat exposure (and if they do, they may be driven into debt).<sup>69</sup> Further, the higher cost of cooling dwellings as the temperature rises means that residents inside heat islands will continue to pay more for their utilities than surrounding high-income communities.<sup>70</sup>

### ***b. Flooding and Storms***

People impacted by poverty are more likely to live in high-flood risk areas across both rural and urban environments.<sup>71</sup> However, their home infrastructure is less likely to be able to withstand flood impacts.<sup>72</sup> Chronic inundation is sea-level induced flooding that occurs 26 times or more per year.<sup>73</sup> By 2035, 170 coastal communities are projected to suffer from chronic inundation because of sea level rise induced by climate change.<sup>74</sup> Of those 170 communities, 55 percent are low-income.<sup>75</sup>

In both urban and rural areas, homes in low-income areas face more exposure to disasters.<sup>76</sup> During Hurricane Sandy, there were 812 high-poverty census tracts in New York City.<sup>77</sup> Only 44 of those tracts were flooded.<sup>78</sup> However, in flooded tracts, “a larger percentage of the population than in non-flooded tracts was living below the poverty line (18.7 percent below the poverty line in flooded tracts versus 14.7 percent in non-flooded

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<sup>69</sup> *See id.* (naming several diseases linked to heat exposure and that some do not have access to health care).

<sup>70</sup> *See id.* (providing that people in poverty have less than wealthier communities).

<sup>71</sup> *See* ERIKA SPANGER-SIEGFRIED, ET AL., UNION OF CONCERNED SCIENTISTS, WHEN RISING SEAS HIT HOME: HARD CHOICES AHEAD FOR HUNDREDS OF US COASTAL COMMUNITIES 11-12 (2017) (explaining that low income communities face the biggest risks concerning natural disasters).

<sup>72</sup> *See id.* (stating that low income communities may not have the resources to respond to natural disasters); JEFFREY PAYNE ET AL., *supra* note 25, at 334 (explaining the difficulty facing low income people in adapting to disasters).

<sup>73</sup> *See* Courtney Lauren Anderson, *Climate Change and Infrastructure*, 18 HOUS. J. HEALTH L. & POL'Y 1, 4 (2018).

<sup>74</sup> *See id.*

<sup>75</sup> *See id.*

<sup>76</sup> *See* SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., *supra* note 20, at 7 (“[P]oor urban households are more exposed to floods than the average urban population.”).

<sup>77</sup> Jacob William Faber, *Superstorm Sandy and the Demographics of Flood Risks in New York City*, 43 HUMAN ECOLOGY 363, 368 (2015).

<sup>78</sup> *See* SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., *supra* note 20, at 8.

tracts). . . .”<sup>79</sup> These homes are vulnerable because they were not built to withstand the impacts of flooding.<sup>80</sup> They are also more likely to be located in areas where flooding is a risk.<sup>81</sup>

In urban areas, “neighborhoods containing the poor, racial and ethnic minorities, the elderly, and the disabled were ‘disproportionally affected by floods’. . . .”<sup>82</sup> This is because these vulnerable communities often live in older neighborhoods that are in high flood-risk areas, and because “[s]ustained underinvestment in water infrastructure may amplify vulnerability. . . .”<sup>83</sup>

In Baltimore, this does not just mean that homes are inundated with water.<sup>84</sup> “[A]ccess to food distribution centers, schools or childcare facilities, and regular health services” are interrupted during a flood.<sup>85</sup> Those facilities are then left molding or are closed entirely after the flood subsides, cutting off access to vital services.<sup>86</sup> Meanwhile, neighboring affluent communities receive access to services during and after a flood.<sup>87</sup> Affluent homes that are situated in high flood-risk areas are more likely to receive support.<sup>88</sup> “[R]esidents of valuable historic properties, which are in the flood channel and flood repeatedly, receive subsidized National Flood Insurance Program (NFIP) flood insurance because of this historic status of the buildings.”<sup>89</sup> Baltimore’s Department of Public Works manages flood

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<sup>79</sup> *See id.*

<sup>80</sup> *See* Faber, *supra* note 78, at 364 (“the poor in the United States are often located in particularly vulnerable places”).

<sup>81</sup> *See id.* (discussing that lower income people live in “less resilient” neighborhoods).

<sup>82</sup> John Fialka, *When Storms Hit Cities, Poor Areas Suffer Most*, SCI. AM. (April 1, 2019), <https://www.scientificamerican.com/article/when-storms-hit-cities-poor-areas-suffer-most/>.

<sup>83</sup> *See* THE NAT’L ACADEMIES OF SCI., ENG’G & MED., FRAMING THE CHALLENGE OF URBAN FLOODING IN THE UNITED STATES, 16 (National Academies Press, Washington D.C., March 2019); (using Baltimore, Maryland; Houston, Texas; Chicago, Illinois; and Phoenix, Arizona as case studies to demonstrate the disparate impact of flooding in urban areas).

<sup>84</sup> *See id.* (explaining that flooding impacts food distribution, schools, and health services).

<sup>85</sup> *Id.*

<sup>86</sup> *See id.* (“[F]looded health clinics and mold in schools were named as problems related to flood events. . . .”).

<sup>87</sup> *See id.* (discussing that contrast of affluent versus low income neighborhoods).

<sup>88</sup> *See e.g., id.* (providing that residents of historic properties received subsidized flood insurance).

<sup>89</sup> THE NAT’L ACADEMIES OF SCI., ENG’G & MED., *supra* note 84.

mitigation, management, and recovery, but the department has no dedicated budget for flooding in the city.<sup>90</sup> “Baltimore works closely on water *quality* improvements with and through the [EPA] and its Chesapeake Bay Program[,]” and flooding mitigation is left as a secondary goal.<sup>91</sup>

Rural areas “sometimes need years to address problems[]” caused by flooding.<sup>92</sup> For residents in low-income, rural areas, flood mitigation sounds simple. They need “drainage areas, more resilient cell towers, [and] buried power lines.”<sup>93</sup> However, taking action is difficult when the local government is relatively small and the tax base is narrow.<sup>94</sup> Support from state governments is lacking. “[M]uch of [North Carolina’s] adaptation dollars [went] to wealthier cities like Raleigh and Charlotte[]” after Hurricane Florence.<sup>95</sup> Low-income, rural communities did not have the same access to state recovery funds, and do not generate enough funds on their own to mitigate for future floods.<sup>96</sup> Which means that rural communities that are already vulnerable to flooding will continue to be at risk.<sup>97</sup>

As climate change worsens, extreme weather events, such as flooding will become more frequent.<sup>98</sup> People impacted by poverty who live in high flood-risk areas will be flooded on multiple occasions.<sup>99</sup> Residents may be driven from their homes as repairs and mitigation efforts become unaffordable.<sup>100</sup>

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<sup>90</sup> *Id.* at 17.

<sup>91</sup> *Id.*

<sup>92</sup> Adam Aton & Daniel Cusick, *Florence’s Floods Reveal Exposure of Rural Areas to Climate Change*, SCI. AM. (Sept. 18, 2018), <https://www.scientificamerican.com/article/florences-floods-reveal-exposure-of-rural-areas-to-climate-change/>.

<sup>93</sup> *Id.*

<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> *See id.* (discussing rural communities lack funding to address flooding issues).

<sup>97</sup> *See id.* (“Cash-strapped rural communities sometimes need years to address problems.”).

<sup>98</sup> *See Mapped: How Climate Change Affects Extreme Weather Around the World*, CARBONBRIEF (Apr. 15, 2015, 4:30 PM), <https://www.carbonbrief.org/mapped-how-climate-change-affects-extreme-weather-around-the-world> (discussing impacts of extreme weather).

<sup>99</sup> *See* Camilo Sarmiento & Ted E. Miller, *Inequities in Flood Management Protection Outcomes*, AM. AGRIC. ECON. ASS’N MEETINGS 2 (2006), <http://ageconsearch.umn.edu/bitstream/21042/1/sp06sa08.pdf> (discussing the relationship of poverty and flood risk hazard areas).

<sup>100</sup> *See id.* at 1-2, 13-14 (discussing how vulnerable low-income families may be more exposed to the devastating costs resulting from floods).

### *c. Communicable Diseases*

Low-income communities are particularly vulnerable to communicable diseases because a lack of access to sanitary water, shelter, food, health care, and waste management heightens the risk of exposure to communicable diseases.<sup>101</sup> The major source points of communicable diseases during disasters include (1) waterborne diseases, such as diarrheal disease, hepatitis A and E, and leptospirosis; (2) crowd-borne diseases, such as acute respiratory infections, meningitis, and measles; (3) vector-borne diseases, such as malaria, cutaneous leishmaniasis, and rabies; and (4) infections from injuries such as tetanus, staphylococci, and streptococci.<sup>102</sup> Continuous exposure to multiple source points has meant that, invariably, low-income communities have been more likely to lose their lives during and after an extreme weather event.<sup>103</sup>

Even ignoring weather events as a compounding factor, people impacted by poverty are especially vulnerable to communicable diseases.<sup>104</sup> The COVID-19 pandemic has shown that people impacted by poverty and people of color are among those at the most risk of contracting communicable diseases during a pandemic.<sup>105</sup> This is, in part, because people within these communities disproportionately tend to be employed in ‘front-line’ jobs such as “grocery and drugstore clerks, delivery drivers and in-home care providers—[which] have suddenly been recognized as ‘essential.’”<sup>106</sup> These employees are put at high risk

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<sup>101</sup> See Najmeh Jafari et al., *Prevention of Communicable Diseases After Disaster: A Review*, 16 J. RESEARCH MED. SCI. 956, 957-58 (2011) (discussing recommendations for planning and preventing disease after natural disasters in communities).

<sup>102</sup> See *id.*

<sup>103</sup> SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., *supra* note 20, at 8 (explaining that lower income people communities have higher rates of injury).

<sup>104</sup> See Marcella M. Alsan et al., *Poverty, Global Health and Infectious Disease: Lessons from Haiti and Rwanda*, 25 INFECTIOUS DISEASE CLINICS N. AM. 611, 614 (2011) (discussing the relationship between poverty and communicable diseases).

<sup>105</sup> See Jeffrey C. Mays & Andy Newman, *Virus is Twice as Deadly for Black and Latino People than Whites in N.Y.C.*, N.Y. TIMES (April 8, 2020), <https://www.nytimes.com/2020/04/08/nyregion/coronavirus-race-deaths.html> (discussing how the Covid-19 virus has disproportionately affected low-income communities).

<sup>106</sup> Sam Harnett, *The Big Challenge of Being an ‘Essential’ Worker in a Global Pandemic*, KQED (April 3, 2020), <https://www.kqed.org/news/11809643/the-many-challenges-of-being-an-essential-service-worker-in-a-pandemic>.

of exposure by having to work; and then they go home, where they may be unable to isolate from family or housemates.<sup>107</sup> Further, when they get sick, people impacted by poverty cannot afford to be tested for COVID-19.<sup>108</sup> Researchers have instead had to rely on emergency room visits with “flu-like” symptoms—which has shown that emergency room visits “surged in neighborhoods where the typical household income is less than the city’s median of \$60,000. . . .”<sup>109</sup> Where a typical March in New York City saw an average of “9,250 flu-related visits to emergency rooms[;] this March, the number tripled to about 30,000.”<sup>110</sup>

The Centers for Disease Control (CDC) has resources to help families, businesses, healthcare facilities, and state and local governments prepare for public health emergencies, along with access to model federal, state, and local government pandemic strategies.<sup>111</sup> When an outbreak hits during or after an extreme weather event, government response through better communication and diagnostic testing could protect people impacted by poverty. Failure by federal and state governments to engage in educational or outreach efforts can lead to misinformation spreading.<sup>112</sup> And failure by state and local

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<sup>107</sup> See *id.*; see also Larry Buchanan et al., *A Month of Coronavirus in New York City: See the Hardest-Hit Areas*, N.Y. TIMES (April 1, 2020), <https://www.nytimes.com/interactive/2020/04/01/nyregion/nyc-coronavirus-cases-map.html> (discussing how coronavirus has devastated low-income neighborhoods in New York City).

<sup>108</sup> See Jon Zhou, *Coronavirus Feeds on U.S. Inequality*, CONN. MIRROR (Mar. 5, 2020), <https://ctmirror.org/category/ct-viewpoints/coronavirus-feeds-on-u-s-inequality-jon-zhou> (discussing the trade-off between economic prosperity and the health of individuals in the United States).

<sup>109</sup> Mays & Newman, *supra* note 106; see also Buchanan et al., *supra* note 107.

<sup>110</sup> Buchanan et al., *supra* note 108.

<sup>111</sup> *Preparedness & Planning*, CTR. FOR DISEASE CONTROL & PREVENTION (CDC), <https://emergency.cdc.gov/planning/index.asp> (last visited May 4, 2020); see also *Federal Resources for Planning*, CDC, <https://www.cdc.gov/flu/pandemic-resources/planning-preparedness/federal-government-planning.html> (last visited May 4, 2020) (discussing some of the essentials for planning for a pandemic), *State and Local Government Planning*, CDC, <https://www.cdc.gov/flu/pandemic-resources/planning-preparedness/state-local-government-planning.html> (last visited May 4, 2020) (stating that preparing for the influenza pandemic is important for state and local governments and providing resources to prepare).

<sup>112</sup> See Meghana Keshavan, *‘We’re Being Put at Risk Unnecessarily’: Doctors Fume at Government Response to Coronavirus Pandemic*, STAT (Apr. 9, 2020), <https://www.statnews.com/2020/04/09/doctors-fume-at-government-response-to-coronavirus-pandemic/> (stating that physicians and scientists critiqued the federal and local government, under the Trump administration, for

governments to enact testing and safeguarding protocols can lead to a faster spread of the disease.<sup>113</sup> People impacted by poverty are especially vulnerable to communicable diseases because they may be unable to find sanitary, safe shelter.<sup>114</sup> As extreme weather events become more common, low-income communities will continuously be placed at risk from communicable diseases.

***d. Questioning Response to Hazards Worsened by Climate Change***

A question lingers when people impacted by poverty face the disparate impact of these hazards: What is going wrong? What is happening between federal, state, and local government response that makes it so hard to protect vulnerable populations from the effects of climate change? It would be an over-exaggeration (or at least an oversimplification) to say that the government does not care. Instead, it is much more likely that breakdowns in communication—both between different levels of government and between government and aid recipients—has left people impacted by poverty to suffer after an extreme weather event strikes.<sup>115</sup>

A shift that empowers state and local governments to control mitigation and recovery strategies could be effective. When the federal government deals with disaster relief, it deals with thousands of issues at once, which has the potential to overwhelm federal agencies and make response slowed and

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“downplay[ing] the severity of the disease” and causing the “spread of misinformation.”).

<sup>113</sup> See *id.* (stating that instead of using the existing COVID test from the World Health Organization (WHO), the CDC adopted its own, causing delays in accessible testing, and allowing the disease to spread unchecked throughout the U.S.).

<sup>114</sup> See Emily A. Benfer & Lindsay F. Wiley, *Health Justice Strategies to Combat COVID-19: Protecting Vulnerable Communities During A Pandemic*, HEALTH AFFAIRS (Mar. 19, 2020),

<https://www.healthaffairs.org/doi/10.1377/hblog20200319.757883/full/>

(“Individuals and families in poverty have less control over their environment,” and have limited access to essential resources necessary to protect themselves from possible diseases).

<sup>115</sup> See Tracey Ross, *A Disaster in the Making: Addressing the Vulnerability of Low-Income Communities to Extreme Weather*, CTR. FOR AM. PROGRESS (Aug. 19, 2013, 11:01 am),

<https://www.americanprogress.org/issues/poverty/reports/2013/08/19/72445/a-disaster-in-the-making/> (“It is not until after the dust settles from a disaster that we begin to discuss how to better serve these vulnerable communities.”).



disorganized.<sup>116</sup> Meanwhile, state and local governments that have to reach out to federal agencies for support are stuck trying to apply federal solutions to local problems.<sup>117</sup> These solutions, which state and local governments may waste important time trying to parse through, may not adequately reflect the needs of the impacted community.

## Part II. GOVERNMENT RESPONSE

### *a. Disjointed Communication*

Government response to extreme weather events happens in steps. Local governments act as the first responder, with the understanding that disasters occur at the local level.<sup>118</sup> If a local government determines that it cannot adequately address a disaster, it may declare a local state of emergency and request access to state assistance.<sup>119</sup> If state governments cannot provide adequate assistance, the governor may declare a state of emergency and request federal assistance.<sup>120</sup> If the disaster is so severe that the state and local governments cannot address the problem, FEMA may coordinate and implement a Federal Response Plan and provide programs and support.<sup>121</sup> Once a

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<sup>116</sup> See Rob Moore, *Maria Exposed Problems With U.S. Disaster Policy*, NAT'L RES. DEF. COUNCIL (NRDC) (Sept. 19, 2018), <https://www.nrdc.org/experts/rob-moore/maria-exposed-problems-us-disaster-policy> (stating that FEMA had five Level 1 disasters operations simultaneously occurring when Hurricane Maria made landfall. FEMA was inadequately prepared: short handing all disaster zones and responding in a slow and disorganized manner).

<sup>117</sup> See FED. EMERGENCY MGMT. AGENCY (FEMA), OPERATIONAL LESSONS LEARNED IN DISASTER RESPONSE, (June 2015) (discussing that state and federal resources are accessible by local governments only after a series of procedures occur and all existing resources have been exhausted and stating that the extent of federal resources provided is dependent on damage assessments).

<sup>118</sup> See EMERGENCY MGMT. INST., FEMA, OVERVIEW OF LOCAL, STATE, AND FEDERAL RESPONSES TO A DISASTER, in STATE DISASTER MANAGEMENT COURSE, 3.4-3.5, <https://training.fema.gov/emiweb/downloads/is208sdmunit3.pdf> (last visited May 4, 2020) (“Disasters always occur at the local level.”) (“Local response includes . . . [a]cting as the primary “first provider” of emergency response services.”).

<sup>119</sup> See *id.* at 3.5 (noting that local response includes requesting federal assistance).

<sup>120</sup> See *id.* at 3.6 (“Proclaiming a state of emergency by the Governor . . . [b]egins the process for requesting Federal assistance.”).

<sup>121</sup> See *id.* at 3.7 (“The Federal Emergency Management Agency (FEMA) is the Federal agency that coordinates the activation and implementation of the Federal Response Plan (FRP), so the States work with FEMA to access Federal programs and support.”).

disaster reaches the level of requiring federal support, communication and coordination between all levels of government becomes complicated. “During a catastrophe, which by definition almost immediately exceeds state and local resources and significantly disrupts governmental operations and emergency services, the role of federal government is particularly vital, and it would reasonably be expected to play a more substantial role in response than in an ‘ordinary’ disaster.”<sup>122</sup> State and local governments can quickly become overwhelmed during a disaster.<sup>123</sup> Complex processes, communication issues between levels of government, and failure to implement response or recovery plans before an extreme weather event may mean people impacted by poverty are left to suffer while local, state, and federal governments are busy trying to coordinate.<sup>124</sup>

In 2005, Hurricane Katrina was massive—a Category Three storm with winds reaching 127 miles per hour by the time it hit Louisiana—and would directly and indirectly kill 1,833 people.<sup>125</sup> An analysis of 971 deaths related to Hurricane Katrina showed that the majority of the victims were 75 years old or older (49 percent), and those victims most commonly died of drowning (40 percent); injury or trauma (25 percent); or heart conditions (11 percent).<sup>126</sup> Many others died simply “because they did not have access to supplies that could fulfill their basic human needs: food, water, shelter, security, and medicine.”<sup>127</sup> It was one of the most costly natural disasters that the United States has ever faced,

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<sup>122</sup> Comm. on Homeland Sec. & Gov’t Affairs, *Hurricane Katrina: A Nation Still Unprepared*, U.S. DEPT. OF HOMELAND SEC. 4 (May 2006), <http://www.nytimes.com/packages/pdf/national/ExecSum.pdf?mcubz=3>.

<sup>123</sup> *See id.* at 7 (“ . . . delay may preclude meaningful assistance and that state and local resources could be quickly overwhelmed and incapacitated . . .”).

<sup>124</sup> H.R. Rep. No. 000-000, at 3, 20 (2006) (“Massive inoperability had the biggest effect on communications, limiting command and control, situational awareness, and federal, state, and local officials’ ability to address unsubstantiated media reports.”).

<sup>125</sup> *See* Richard D. Knabb, Jamie R. Rhome, & Daniel P. Brown, *Tropical Cyclone Report: Hurricane Katrina*, NAT’L HURRICANE CTR. 3, 11 (2011) [https://www.nhc.noaa.gov/data/tcr/AL122005\\_Katrina.pdf](https://www.nhc.noaa.gov/data/tcr/AL122005_Katrina.pdf) (stating that Category 3 Hurricane “Katrina,” made landfall in Louisiana with 110kt winds, indirectly or directly causing 1833 fatalities).

<sup>126</sup> Joan Brunkard, et al., *Hurricane Katrina Deaths, Louisiana, 2005*, in *Disaster Med. Public Health Prep.*, NAT’L CTR. FOR BIOTECHNOLOGY INFO. (NCBI) (Dec. 2, 2008), <https://www.ncbi.nlm.nih.gov/pubmed/18756175>.

<sup>127</sup> Tarak Anada, *The Perfect Storm, an Imperfect Response, and a Sovereign Shield: Can Hurricane Katrina Victims Bring Negligence Claims Against the Government?*, 35 PEPP. L. REV. 279, 295 (2008).

reaching an estimate of 108 billion dollars in damages.<sup>128</sup>

Although much of the damage caused by Hurricane Katrina was unavoidable, “many of the issues were worsened—if not caused—by government response that was unable to deal with the storm before, during, and after it made landfall.”<sup>129</sup> The U.S. Army Corps of Engineers admitted, in a report, that the levees around New Orleans “were built in a disjointed fashion based on outdated data. . . . [This resulted] in a flawed system of levees that was inconsistent in quality, materials, and design[,]” and did not account for the “poor soil quality and sinking land” in the area.<sup>130</sup> Further, after Louisiana Governor Kathleen Blanco declared a state of emergency, federal aid was sluggish.<sup>131</sup> Although Louisiana National Guard requested 700 buses from FEMA to evacuate residents, FEMA only sent 100 buses—and it sent them days after.<sup>132</sup>

A study by the George W. Bush Administration identified seventeen critical challenges that all levels of government faced during and after Hurricane Katrina, which included the distribution of human services.<sup>133</sup> One of the largest issues regarding distribution of human services was an inability to efficiently distribute financial assistance that people had been receiving prior to the disaster in addition to disaster-related financial assistance.<sup>134</sup> Patricia Thompson, a New Orleans native, said that after the storm:

We were abandoned. City officials did nothing to protect us. We were told to go to the Superdome, the Convention Center, the interstate bridge for safety. We did this more than once. In fact, we tried them all every day for over a week. We saw buses, helicopters, and FEMA trucks, but no one stopped to help us. We never felt so cut off in all our lives. When you feel like this you do

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<sup>128</sup> See Knabb, Rhome & Brown, *supra* note 126, at 13 (2011) (stating the cost of Hurricane Katrina).

<sup>129</sup> German Lopez, *Hurricane Katrina, in 7 Essential Facts*, VOX (Aug. 28, 2015), <https://www.vox.com/2015/8/23/9191907/hurricane-katrina>.

<sup>130</sup> *Id.*

<sup>131</sup> *Id.* (stating that the federal aid was slow, but the Bush administration tried to blame it on the Governor, claiming that she did not “declare a state of emergency” soon enough).

<sup>132</sup> *Id.*

<sup>133</sup> See TOWNSEND ET AL., *THE FEDERAL RESPONSE TO HURRICANE KATRINA: LESSONS LEARNED*, CHAPTER FIVE: LESSONS LEARNED 59 (2006), <https://georgewbush-whitehouse.archives.gov/reports/katrina-lessons-learned/> (discussing the insufficiency of the Federal government’s human services).

<sup>134</sup> *Id.*

one of two things, you either give up or go into survival mode. We chose the latter. This is how we made it. We slept next to dead bodies, we slept on streets at least four times next to human feces and urine. There was garbage everywhere in the city. Panic and fear had taken over.<sup>135</sup>

The question for many after the slow response to Hurricane Katrina became apparent was *whose fault* was it? FEMA and FEMA Director Michael Brown took much of the blame.<sup>136</sup> After all, the agency had been “shouldered [with] the primary responsibility for managing the national response to domestic catastrophic disasters” since 2002 when it was incorporated into the Department of Homeland Security.<sup>137</sup> Additionally, FEMA is responsible for creating National Response Plans (NRP) to ensure the distribution of benefits during natural disasters.<sup>138</sup> However, in 2005, a Bipartisan Select Committee determined that despite the widely held belief that FEMA had a duty to intervene during the disaster, FEMA was “*not* a first responder agency with the resources to assume principal responsibility for overwhelmed state and local governments. . . . There is no Tommy Lee Jones character that comes in and takes charge of . . . well . . . *everything*.”<sup>139</sup> FEMA’s primary responsibility is to “coordinat[e] government-wide relief effort[]” and “bring an orderly and systemic means of federal [natural] disaster assistance for state and local governments in carrying out their responsibilities to aid citizens.”<sup>140</sup>

However, the federal government could not claim surprise that 70,000 residents were unable to evacuate New Orleans before Hurricane Katrina hit.<sup>141</sup> FEMA had conducted a simulated hurricane exercise in 2004, titled Hurricane PAM, and concluded

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<sup>135</sup> H.R. Rep. No. 000-000, at 6; BARB PALSER, HURRICANE KATRINA: AFTERMATH OF DISASTER 36 (2007).

<sup>136</sup> See Scott Shane, *Michael DeWayne Brown: Facing Blame in a Disaster*, N.Y. TIMES (Sept. 7, 2005), <https://www.nytimes.com/2005/09/07/us/nationalspecial/michael-dewayne-brown-facing-blame-in-a-disaster.html> (explaining FEMA director Michael Brown’s experience in disaster relief and the challenges that led to the criticism Brown and FEMA faced in their response to Hurricane Katrina).

<sup>137</sup> Anada, *supra* note 128, at 297-98.

<sup>138</sup> See H.R. Rep. No. 000-000, at 32 (describing NRP’s framework, structure, and role in providing care during Hurricane Katrina).

<sup>139</sup> *Id.* at 13.

<sup>140</sup> Emergency Mgmt. Inst., *Emergency Management Institute (EMI) Overview*, FEMA, <https://training.fema.gov/history.aspx> (last modified Oct. 10, 2019).

<sup>141</sup> See Anada, *supra* note 128, at 293 (stating that city officials failed the evacuation attempt during Katrina).

that in a hurricane like Katrina, it was possible that as many as 300,000 people would not evacuate before the storm hit.<sup>142</sup> Further, it estimated that more than 60,000 would be killed, and about 1,000 emergency shelters would be necessary.<sup>143</sup> The federal government had the foresight to know that thousands of vulnerable residents in New Orleans would be at risk of injury or death without intervention, but it still failed to act until two days *after* Hurricane Katrina hit.<sup>144</sup>

This lack of response continued well after the storm.<sup>145</sup> Survivors quickly discovered that receiving aid would become their next biggest struggle. “By September 23, 2005, 1.36 million applications had been submitted to FEMA by former Gulf Coast residents for Katrina-related disaster assistance. . . . [Those] applications came in from every state [and] almost half of all ZIP codes.”<sup>146</sup> The Bush Administration found that after Hurricane Katrina hit, the federal “system for distribution of human services was not sufficiently responsive to the circumstances of a large number of victims—many of whom were particularly vulnerable—who were forced to navigate a series of complex processes to obtain critical services during a time of extreme duress.”<sup>147</sup> Low-income communities, in particular, faced barriers to receiving aid during and after Hurricane Katrina, “including lack of knowledge of the systems through which disaster survivors receive aid; discomfort with these systems; and issues in getting to and from disaster assistance centers, such as transportation, child care, and work schedules.”<sup>148</sup>

Even when low-income survivors who need aid can access the federal distribution system, the system is wrought with confusion and miscommunication, which often leads to disastrous

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<sup>142</sup> See H.R. Rep. No. 000-000, at 83 (describing the weaknesses of the PAM exercise).

<sup>143</sup> See *id.* at 81 (breaking down the statistics from PAM).

<sup>144</sup> *Id.* at 12.

<sup>145</sup> See Chris Edwards, *Hurricane Katrina: Remembering the Federal Failures*, CATO INST. (Aug. 27, 2015, 2:56 PM), <https://www.cato.org/blog/hurricane-katrina-remembering-federal-failures#:~:text=Perhaps%20the%20most%20appalling%20aspect,out%2Dof%2Dstate%20headquarters> (explaining the federal governments ongoing failures with Katrina long after the storm).

<sup>146</sup> Laura Bliss, *10 Years Later, There's So Much We Don't Know About Where Katrina Survivors Ended Up*, BLOOMBERG CITYLAB (Aug. 25, 2015), <https://www.citylab.com/equity/2015/08/10-years-later-theres-still-a-lot-we-dont-know-about-where-katrina-survivors-ended-up/401216/>.

<sup>147</sup> TOWNSEND ET AL., *supra* note 134, at 59.

<sup>148</sup> SUBSTANCE ABUSE AND MENTAL HEALTH SERVS. ADMIN., *supra* note 20, at 9.

consequences down the road for survivors—sometimes years after the disaster.<sup>149</sup> Gregory Allen, Jr., a college student at Xavier University during Hurricane Katrina, was forced to evacuate New Orleans when Hurricane Katrina’s floodwaters covered the university’s campus.<sup>150</sup> Allen moved to Washington D.C. to be with his brother and enrolled in Howard University, but then didn’t have the access to the scholarship money from Xavier University.<sup>151</sup> He reached out to FEMA to relieve the financial pressure and was granted \$10,000 in disaster assistance.<sup>152</sup> Twelve years later, FEMA requested \$12,203 from Allen—the original \$10,000 plus a 28 percent penalty.<sup>153</sup> A FEMA representative explained that “[t]hey weren’t supposed to have given disaster aid to college students through the avenue [that] Allen took. It was not necessarily that he didn’t deserve relief funds. He just applied for them the wrong way. And FEMA didn’t catch the mistake.”<sup>154</sup>

Nearly fifteen years after Hurricane Katrina, disaster planning is still clumsy. Disaster response is primarily up to state and local governments, and the many disaster recovery federal programs available are complex and may not fit local needs.<sup>155</sup> While state and local governments are breaking down and tailoring federal programs to a community’s unique needs, people impacted by poverty may not be receiving aid that they need to survive after a disaster strikes.<sup>156</sup>

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<sup>149</sup> See Richard C. Coyne, *Beware of FEMA Repayments*, WITHUM (Nov. 18, 2015), <https://www.withum.com/resources/beware-fema-repayments/> (discussing FEMA’s errors with granting awards to 83,000 people and years later asking for the money back); See Danny Vinik, *‘People Just Give Up’: Low-Income Hurricane Victims Slam Federal Relief Programs*, POLITICO (May 29, 2018, 5:08 AM), <https://www.politico.com/story/2018/05/29/houston-hurricane-harvey-fema-597912>

<sup>150</sup> Eric Flack, *12 Years After Hurricane Katrina, FEMA Asks Survivor for \$12k Back*, CBS WTSP 10 NEWS, (Oct. 6, 2017), <https://www.wtsp.com/article/news/12-years-after-hurricane-katrina-fema-asks-survivor-for-12k-back/480611234>.

<sup>151</sup> *Id.*

<sup>152</sup> *Id.*

<sup>153</sup> *Id.*

<sup>154</sup> *Id.*

<sup>155</sup> See Amy Liu, *Feds, States, Cities – The All of the Above Disaster Response*, BROOKINGS (Nov. 2, 2012), <https://www.brookings.edu/blog/up-front/2012/11/02/feds-states-cities-the-all-of-the-above-disaster-response/> (discussing the ways in which federal government disaster recovery programs can be shaped or adopted to fit into local disasters’ needs).

<sup>156</sup> See *id.* (stating that bending a federal program to fit the needs of a local disaster takes time).

FEMA admitted that its relationships with local and state governments became strained after the Department of Homeland Security pulled resources from natural disaster response programs.<sup>157</sup> After Hurricane Katrina, the agency has taken steps that indicate an effort to make itself more accessible to state and local governments.<sup>158</sup> The agency created the National Response Framework (NRF) in 2008 to clarify the roles of federal government in various disaster scenarios.<sup>159</sup> It also created the National Disaster Recovery Framework (NDRF) in 2011 to clarify recovery support structures available to state and local governments.<sup>160</sup>

When Hurricane Harvey fell on Texas on August 25, 2017, more than 19 trillion gallons of water came with it—flooding about 80,000 homes.<sup>161</sup>

[24] hospitals were evacuated, 61 communities lost drinking water capability, 23 ports were closed and 781 roads were impassible. Nearly 780,000 Texans evacuated their homes. . . . Local, state and federal first responders rescued 122,331 people and 5,234 pets.<sup>162</sup>

FEMA worked with about 18 agencies across all levels of government and more than 300 volunteer organizations during the initial response.<sup>163</sup> FEMA has also created educational tools for the public, such as its Disaster Survivor Checklist and the Disaster Assistance website, which informs survivors about how best to receive assistance.<sup>164</sup>

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<sup>157</sup> See Comm. on Homeland Sec. & Gov't Affairs, *supra* note 123, at 2, 6 (stating that DHS had instead focused its resources on terrorism response and planning as a reaction to the terrorist attacks on Sept. 11, 2001).

<sup>158</sup> See U.S. GOT' ACCOUNTABILITY OFF., GAO-09-59R, ACTIONS TAKEN TO IMPLEMENT THE POST-KATRINA EMERGENCY MANAGEMENT REFORM ACT OF 2006 2 (2008) (discussing FEMA's role and responsibilities in responding to disasters in the nation); *infra* notes 160-61.

<sup>159</sup> See U.S. DEPT. OF HOMELAND SECURITY, NATIONAL RESPONSE FRAMEWORK 1 (2008), <https://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf> (providing the framework of the organization's response to disasters).

<sup>160</sup> See U.S. DEPT. OF HOMELAND SECURITY, NATIONAL DISASTER RECOVERY FRAMEWORK 1 (2011), <https://www.fema.gov/pdf/recoveryframework/ndrf.pdf> (providing the structure of recovery during a disaster).

<sup>161</sup> *Historic Disaster Response to Hurricane Harvey in Texas*, FEMA (Sept. 22, 2017), <https://www.fema.gov/news-release/20200220/historic-disaster-response-hurricane-harvey-texas>.

<sup>162</sup> *Id.*

<sup>163</sup> *Id.*

<sup>164</sup> *Disaster Survivor's Checklist*, FEMA, <https://www.fema.gov/media-library-data/1505143234654-0094f4d1a798c1d5175d7e11a114e77a/disaster-survivors->

After immediate disasters subside, state agencies take the lead on recovery management.<sup>165</sup> In theory, this deference to state agencies is helpful because state and local governments are in a better position to see needs as they arise. These lawmakers live in the communities they serve and may have been personally impacted by the disaster.<sup>166</sup> Many local governments have land use regulations, zoning ordinances, and housing plans in place that can help state and local governments develop plans before an extreme weather event strikes.<sup>167</sup> In practice, however, studies suggest that the process by which state governments divide disaster recovery funds has disproportionately benefited affluent and primarily white communities.<sup>168</sup> More oversight across various levels of government may be required to ensure that low-income communities receive adequate assistance.

Failure to provide adequate state and local government assistance to low-income residents could cause those residents to fall further into poverty, as “[s]everal studies have found that, post-welfare reform, low-income parents increasingly rely on credit to weather emergencies. . . . [C]redit cards provide a ‘fast, easy, stigma-free’ way of coping with most financial emergencies.”<sup>169</sup> Relying on credit cards also means that borrowers might be stuck paying off high interest rates when government intervention could have helped them from the beginning.<sup>170</sup>

The disparity in state and local government disaster relief between low-income and affluent communities was proved particularly problematic in Southeast Texas after Hurricane

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checklist.pdf (last visited Nov. 19, 2020); see also *DisasterAssistance.gov*, FEMA, <https://www.disasterassistance.gov/> (last visited Nov. 19, 2020).

<sup>165</sup> See *Historic Disaster Response to Hurricane Harvey in Texas*, *supra* note 162 (explaining the roles agencies took in the Harvey recovery).

<sup>166</sup> See John Travis Marshall & Ryan Max Rowberry, *Urban Wreckage and Resiliency: Articulating a Practical Framework for Preserving, Reconstructing, and Building Cities*, 50 IDAHO L. REV. 49, 79-80 (2014) (explaining the connection between resiliency and personal connection).

<sup>167</sup> *Id.* at 66 (discussing cities and communities making plans to move “families out of harm’s way in the event of disaster. . .”).

<sup>168</sup> See Rebecca Hersher & Robert Benincasa, *How Federal Disaster Money Favors the Rich*, NPR (Mar. 5, 2019), <https://www.npr.org/2019/03/05/688786177/how-federal-disaster-money-favors-the-rich> (discussing that after a disaster, “white Americans and those with more wealth often receive more federal dollars . . . than do minorities and those with less wealth.”).

<sup>169</sup> Sara Sternberg Greene, *The Bootstrap Trap*, 67 DUKE L. J. 262, 262 (2017).

<sup>170</sup> *Id.* at 291, 295.



Harvey.<sup>171</sup> Southeast Texas received 157 million dollars through a Community Development Block-Grant Disaster Recovery (CDBG-DR) fund.<sup>172</sup> The block-grants serves to fund (1) “buyouts and acquisitions of properties” (primarily homes); and (2) infrastructure to mitigate the impact of future severe weather events.<sup>173</sup> Southeast Texas failed to consider population size or damage severity when it dispersed funds, which created large disparities in the amount of funding received by residents.<sup>174</sup> China and Nome are two small, affluent, primarily white towns in Texas. In China, Texas, twenty-seven residents split about one million dollars (about \$40,000 per resident).<sup>175</sup> In Nome, Texas, twenty-three residents split more than \$1.12 million (about \$49,000 per resident).<sup>176</sup> Meanwhile, Beaumont, Texas, is a large, low-income, primarily minority city.<sup>177</sup> In Beaumont, 92,000 residents split about \$3.7 million dollars (about \$40 per resident).<sup>178</sup>

Disparity in relief distribution may not be purposeful. Different local governments may not have the same tools to be able to rebuild after an extreme weather event.<sup>179</sup>

One local government’s housing development experience may be largely limited to selling vacant properties to Habitat for Humanity for single-family housing construction. Another local government may have significant experience layering federal grants with federal tax credits and private foundation dollars. One city may not be able to find enough capable low-and moderate-income housing developers to spend the city’s annual allocation of federal block grant funds, while a different city may enjoy intense competition for federal grant monies.<sup>180</sup>

Any plan of action offered to local and state governments

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<sup>171</sup> See Kriston Capps, *Why Are These Tiny Towns Getting So Much Hurricane Harvey Aid?* BLOOMBERG CITYLAB (Oct. 3, 2018, 1:12 PM) <https://www.citylab.com/equity/2018/10/whos-losing-out-on-hurricane-harvey-aid-in-texas/571327/> (explaining how affluent areas received more relief funds).

<sup>172</sup> *Id.*

<sup>173</sup> *Id.*

<sup>174</sup> *Id.*

<sup>175</sup> See *id.* (stating this number assumes that the distribution among residences was even for illustrative purposes).

<sup>176</sup> *Id.*

<sup>177</sup> Capps, *supra* note 172.

<sup>178</sup> *Id.*

<sup>179</sup> See John Travis Marshall & Ryan Max Rowberry, *supra* note 167, at 64 (discussing the different tools needed for different cities or local governments for rebuilding the neighborhoods).

<sup>180</sup> *Id.*

cannot be treated as a one-size-fits all solution.<sup>181</sup> Local governments that are not used to working with complex federal strategies may be unable to adequately respond residents' needs.

Altogether, federal, state, and local responses to extreme weather events suffer because the phases of disaster response create too much room for confusion in the moment.<sup>182</sup> Failure to communicate and collaborate before or during disasters means that response is slowed, which presents an incredible danger to people impacted by poverty.<sup>183</sup> State and local governments may be in a good position to address the issues because they see the immediate impacts of extreme weather events and understand the specific values, needs, and resources of a community. However, without solid federal support and oversight, state and local governments may abuse the power given to them or may simply lack the resources to create a disaster relief strategy for effected communities.

### ***b. Response Strategies***

Local and state governments are in a unique position to create disaster response strategies that fit the values and needs of their communities. Solidifying a strategy in a local comprehensive plan allows local government to “. . . stake out a path and priorities for orderly development prior to the chaos of crisis. If a local government has adopted and updated a comprehensive plan, then that document gives the local government basis for making tough or even unpopular redevelopment decisions following disasters.”<sup>184</sup>

Extreme weather events will continue to tear into communities as climate change worsens.<sup>185</sup> Failure by federal, state, and local

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<sup>181</sup> *See id.* (stating that it is wrong to “assume that different local governments” have similar tools to address housing developments).

<sup>182</sup> *See id.* at 81-83 (discussing the shortcomings of the federal response to Hurricanes Katrina and Rita and discusses the new approach that is meant to address those shortcomings).

<sup>183</sup> *See id.* (discussing the new federal government disaster response approach which is meant to help identify the best steps that cities can take before and immediately after a disaster strikes, helping facilitate a more effective response to a disaster).

<sup>184</sup> *Id.* at 66-67.

<sup>185</sup> *See How Climate Change Is Fueling Extreme Weather*, EARTHJUSTICE (Aug. 27, 2020), <https://earthjustice.org/features/how-climate-change-is-fueling-extreme-weather#:~:text=Human%20activity%20is%20causing%20rapid,is%20released>

government entities to provide adequate infrastructure for people impacted by poverty means that those communities will be impacted more severely by extreme weather events as the events compound.<sup>186</sup> People impacted by poverty will face the unique and terrible challenge of returning (if at all) to damaged homes that are more vulnerable to extreme weather events than before.

Low-income residents in Texas experienced this challenge when Hurricane Imelda landed shortly after Hurricane Harvey. Carla Cruz, a resident of Beaumont, Texas, woke in the middle of the night during Hurricane Harvey to find floodwaters overtaking her home.<sup>187</sup> “[I]t took more than a year to replace her ruined furniture, and [she] could not drink the tap water or shower at home for two weeks after the storm.”<sup>188</sup> Two years later, she woke again to water quickly overtaking her bedroom.<sup>189</sup> When Hurricane Imelda hit the city, Cruz was again forced to leave her furniture, clothes, and home behind.<sup>190</sup> By the time she evacuated her home for a second time, the water was up to her waist.<sup>191</sup>

Low-income residents who are impacted by extreme weather events may have to continuously rebuild their homes or leave.<sup>192</sup> Federal, state, and local governments do not currently have a comprehensive plan to improve, rebuild, or move home infrastructure after extreme weather events occur in low-income communities that cannot afford to rebuild or improve homes on their own. When subsequent disasters strike, cities like

%20into%20our%20atmosphere. (stating that the “spike in global temperatures is fueling climate disasters that will only get worse. . .”).

<sup>186</sup> Marshall & Rowberry, *supra* note 167, at 67-68 (stating that the failure of local governments to provide infrastructure to low- and moderate-income residents made vulnerability to disasters in those communities higher, especially considering that these individuals have less resources to “ride out a longer-term disaster recovery.”).

<sup>187</sup> Manny Fernandez, et al., *Flooding Hits Texas Towns Devastated by Harvey*, THE N.Y. TIMES, <https://www.nytimes.com/2019/09/19/us/houston-beaumont-flooding-imelda.html> (last updated Sept. 20, 2019).

<sup>188</sup> *Id.*

<sup>189</sup> *Id.*

<sup>190</sup> *Id.*

<sup>191</sup> *Id.*

<sup>192</sup> See Annie Lowrey, *What the Camp Fire Revealed: Two Months After Disaster Struck, the Recovery in Paradise, California, is Harder for Some Than for Others*, THE ATLANTIC (Jan. 21, 2019), <https://www.theatlantic.com/ideas/archive/2019/01/why-natural-disasters-are-worse-poor/580846/> (discussing the issues individuals from lower-income communities face that individuals from wealthier communities do not have to worry about).

Beaumont are left especially vulnerable.<sup>193</sup>

Looking at flooding damage, a foot of water in a 1,000 foot, one story home, can cause more than \$29,360 worth of damage.<sup>194</sup> For low-income communities, this means that rebuilding homes after they have been destroyed by a disaster could take up to a decade.<sup>195</sup> As extreme weather events become more frequent, even if low-income communities try to rebuild homes to be disaster resistant, they may not be able to rebuild these homes in time for the next disaster.<sup>196</sup>

Government agencies use this issue to stress the importance of disaster-related insurance—frequently ignoring the incredible expense that comes along with it.<sup>197</sup> After Hurricane Harvey, part of the struggle homeowners faced with rebuilding came from the fact that 80 percent of households affected by Hurricane Harvey did not have flood insurance because they could not afford it.<sup>198</sup>

The average cost of flood insurance is about \$700 per year, but that varies depending on how at risk the property is for flooding.<sup>199</sup> Coverage could cost more than \$2,500 a year for high-flood-risk areas.<sup>200</sup> Low-income residents “are more likely to live in neighborhoods or buildings susceptible to storm shocks. Substandard infrastructure in affordable housing units and low-income communities place residents at greater risk to the effects of a severe storm.”<sup>201</sup> “[F]indings indicate that homeowners with

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<sup>193</sup> See Fernandez et al., *supra* note 188 (discussing the vulnerability of the individuals who were struck by Hurricane Harvey and now had to face Tropical Depression Imelda, when they still had not fully recovered from the first disaster).

<sup>194</sup> See *The Cost of Flooding*, FEMA, <https://www.floodsmart.gov/flood-insurance-cost/calculator> (last visited Nov. 20, 2020) (showing a calculation of the damages from FEMA’s website).

<sup>195</sup> See Emily Wax-Thibodeaux, *The ‘Harvey Homeless’*, THE WASH. POST (Aug. 22, 2018), <https://www.washingtonpost.com/graphics/2018/national/hurricane-harvey-aftermath-and-recovery/> (discussing that long after a storm is gone, sometimes it takes a decade to rebuild).

<sup>196</sup> See *id.* (discussing the difficulty of even rebuilding it to withstand a disaster in today’s climate due to the continuous weather strikes).

<sup>197</sup> See *id.* (discussing FEMA’s push for homeowners to buy insurance, as they will likely get higher payouts, but failing to recognize that those in lower-income communities cannot always afford this extremely expensive insurance).

<sup>198</sup> *Id.*

<sup>199</sup> Kimberly Lankford, *How Much Does Flood Insurance Cost?*, KIPLINGER (Oct. 2, 2015) <https://www.kiplinger.com/article/insurance/T028-C001-S003-how-much-flood-insurance-costs.html>.

<sup>200</sup> *Id.*

<sup>201</sup> Eleanor Krause & Richard V. Reeves, *Hurricanes Hit the Poor the Hardest*,

a lower median income tend to live in higher risk flood areas. . . . [T]hose [who] can least afford to pay for flood insurance also can least afford to be without it given their high level of risk.”<sup>202</sup> With respect to Hurricane Harvey, “[i]n the eight counties most severely affected by Hurricane Harvey, only 17 percent of homeowners held flood insurance policies.”<sup>203</sup> In short, low-income residents are set up for failure. Their homes are more likely to be in high-flood-risk areas, but they cannot afford the insurance necessary to help them rebuild after a hurricane.<sup>204</sup>

When a hurricane does strike, low-income homeowners who lack flood insurance are left without much aid from FEMA.<sup>205</sup> The agency pays for emergency housing for about a year, offering a hotel voucher program or temporary access to recreational vehicles.<sup>206</sup> But low-income residents are then on their own with respect to housing.<sup>207</sup>

This is especially true for low-income, minority communities.<sup>208</sup> A year after Hurricane Harvey, a survey by the Kaiser Family Foundation and Episcopal Health Foundation found that 27 percent of Latinx Texans’ and 20 percent of black Texans’ homes remained badly damaged, compared to 11 percent of white Texans.<sup>209</sup> And that 50 percent of low-income respondents reported that “they weren’t getting the help they needed, compared to 32 percent of those with higher incomes. . . .”<sup>210</sup>

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BROOKINGS (Sept. 18, 2017), <https://www.brookings.edu/blog/social-mobility-memos/2017/09/18/hurricanes-hit-the-poor-the-hardest/>.

<sup>202</sup> Joel Scata, *Flood Insurance Subsidies Must Include Options to Lower Risk*, NRDC (Apr. 24, 2018), <https://www.nrdc.org/experts/joel-scata/flood-insurance-subsidies-must-include-actions-lower-risk>.

<sup>203</sup> Krause & Reeves, *supra* note 202.

<sup>204</sup> See Scata, *supra* note 203.

<sup>205</sup> See Wax-Thibodeaux, *supra* note 196 (recounting one couple’s experience of rebuilding their house, slowly, with their own money, because they did not receive much from FEMA).

<sup>206</sup> *FEMA Individuals and Households Program (IHP) – Housing Assistance*, DISASTER ASSISTANCE, <https://www.disasterassistance.gov/get-assistance/forms-of-assistance/4471> (last visited Oct. 26, 2020).

<sup>207</sup> See Wax-Thibodeaux *supra* note 195 (stating that after a year, those who are in lower-income communities must start paying for all the expenses caused by a disaster themselves); see also Manny Fernandez, *A Year After Hurricane Harvey, Houston’s Poorest Neighborhoods are Slowest to Recover*, THE NEW YORK TIMES (Sept. 3, 2018), <https://www.nytimes.com/2018/09/03/us/hurricane-harvey-houston.html> (giving examples of FEMA denying assistance to those suffering in the aftermath of Hurricane Harvey).

<sup>208</sup> Fernandez, *supra* note 208.

<sup>209</sup> *Id.*

<sup>210</sup> *Id.*

Local and state governments do not have effective plans to rebuild or relocate homes after an extreme weather event.<sup>211</sup> Properties left behind after a hurricane may therefore be left dilapidated. A focus on localized land use and disaster response strategies that mitigate the effects of extreme weather events could help.

State and local governments may be in the best position to establish law that mitigates the effects of extreme weather events because there is no clear, federal body of law aimed at reducing vulnerability to climate change.<sup>212</sup> In particular, land use tools afforded to local governments by state governments allow “local communities [to act] ‘as important laboratories for climate change action.’”<sup>213</sup> Some scholars assert that adaptation strategies may work best when they are site-specific because local resources, geography, site-specific risks, and local values are intrinsically better understood by local governments.<sup>214</sup> When used correctly, land use strategies can be incredibly progressive in protecting low-income communities from future extreme weather events.<sup>215</sup>

Local tools may include “protection, accommodation, or retreat strategies.”<sup>216</sup> These strategies range from efforts to protect high-risk areas as they are, to encouraging communities to move away from high-risk areas altogether.<sup>217</sup> Protection includes efforts to

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<sup>211</sup> See Cathleen Kelly, et al., *Safe, Strong, and Just Rebuilding After Hurricanes Harvey, Irma, and Maria*, CTR. FOR AM. PROGRESS (Oct. 3, 2017), <https://www.americanprogress.org/issues/green/reports/2017/10/03/440134/safe-strong-just-rebuilding-hurricanes-harvey-irma-maria/> (stating that state and local governments should make plans that better address disasters to help with rebuilding and cleaning up the neighborhoods).

<sup>212</sup> See Sarah J. Adams-Schoen, *Beyond Localism: Harnessing State Adaptation Lawmaking to Facilitate Local Climate Resilience*, 8 MICH. J. ENVTL. & ADMIN. L. 185, 189 (2018) (discussing the lack of federal law and local or state laws that do not address retreat plans).

<sup>213</sup> *Id.* at 193

<sup>214</sup> See *id.* at 194-95 (discussing the role of local governments in understanding the needs of the community better).

<sup>215</sup> See Guillermo Ortiz, et.al., *A Perfect Storm: Extreme Weather as an Affordable Housing Crisis Multiplier*, CTR. FOR AM. PROGRESS (Aug. 1, 2019), <https://www.americanprogress.org/issues/green/reports/2019/08/01/473067/a-perfect-storm-2/> (discussing that local governments must be diligent in combating climate risks in low-income neighborhoods).

<sup>216</sup> Adams-Schoen, *supra* note 213, at 199.

<sup>217</sup> See *id.* at 199-200 (discussing the tools strategies of protection, accommodation, and retreat in detail and explaining what each requires to be done); see also John R. Nolon, *Post-Zoning: Alternative Forms of Public Land Use Controls: Land Use and Climate Change: Lawyers Negotiating Above*

defend existing structures that may be vulnerable to extreme weather events.<sup>218</sup> Accommodation includes efforts to increase resilience of structures to adapt to extreme weather events.<sup>219</sup> Retreat includes efforts to shift development out of high-risk areas altogether.<sup>220</sup>

Accommodation is the most popular tool because it allows local governments to “harness familiar land use tools.”<sup>221</sup> For example, in an area prone to hurricanes, the local government could implement construction requirements for new developments that make the building resistant to flooding and high winds. However, local governments must consider the long-term dangers of accommodation. The people living in high-risk areas are still in harm’s way, and the cost of maintenance might be unaffordable for low-income communities.<sup>222</sup>

These local tools require support from state and federal government entities to be productive.<sup>223</sup> Otherwise, local governments that do not have the resources to implement protection, accommodation, or retreat strategies may be unable to keep up with neighboring communities.

Altogether, local and state governments are in a good position to respond to the effects of climate change. However, the federal government must be available to support local and state efforts to prevent abuse or inability to implement response strategies because of a lack of resources. People impacted by poverty would benefit from a higher degree of collaboration between these levels of government, especially if greater decision-making power is given to local governments. This is because local governments are in the best situation to understand and respond to the unique needs; values; and resources of their communities through the community’s comprehensive plan, zoning ordinances, and building codes.

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*Regulation*, 78 BROOKL. L. REV. 521, 549 (2013) (discussing protecting high-risk areas, but also the retreat strategy of moving away from high-risk areas).

<sup>218</sup> Adams-Schoen, *supra* note 213, at 199.

<sup>219</sup> *Id.*

<sup>220</sup> *Id.* at 200.

<sup>221</sup> *Id.* at 199 (discussing that accommodation is the easiest and quickest adaption strategy).

<sup>222</sup> *See id.* (stating that economic costs should be a variable when using local tools).

<sup>223</sup> *See id.* at 197 (stating that local government orders can be weakened by state or federal government decisions).

## Conclusion

People impacted by poverty are particularly vulnerable to extreme weather events because their homes are most likely to be located in areas where extreme weather events are likely to occur, and the infrastructure of homes in these areas is not suited to withstand impacts from weather events as they become more frequent and severe.<sup>224</sup> Further, property owners in these high-risk areas often cannot afford to modify properties to protect them from the effects of extreme weather events or the insurance to rebuild the property when it is inevitably destroyed by a natural disaster.<sup>225</sup>

Miscommunication, barriers to aid, insufficient aid, and lack of mitigation strategies for extreme weather events has meant that response to extreme weather events is often delayed and inadequate.<sup>226</sup> Looking at hurricanes in the United States as a case study, we see that before, during, and after an extreme weather event, people impacted by poverty are not adequately protected.<sup>227</sup> Federal, state, and local governments must establish a dialogue to make future disaster response run more smoothly. Ideally, this collaborative response would give state and local governments more power to implement localized mitigation and response strategies while federal government resources provide support and oversight.

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<sup>224</sup> Ortiz, *supra* note 216.

<sup>225</sup> See Diana Olick, *Millions of Homes are Underinsured Against Natural Disasters as Construction Costs Keep Rising*, CNBC (May 3, 2019), <https://www.cnbc.com/2019/05/03/millions-of-homes-are-underinsured-against-natural-disasters.html> (discussing rising costs of material to rebuild or reconstruct homes, along with rising insurance costs).

<sup>226</sup> See Elizabeth L. Mclean & Austin Becker, *Decision Makers' Barriers to Climate and Extreme Weather Adaptation: A Study of North Atlantic High- and Medium-Use Seaports*, U. OF R. I. MARINE AFF. FAC. PUBLICATIONS 1, 8 (2019) (discussing several barriers that delay and provide inadequate responses to natural disasters).

<sup>227</sup> See Richard M. Zoraster, *Vulnerable Populations: Hurricane Katrina as a Case Study*, 25 PREHOSP. DISASTER MED. 74, 75 (2010) (discussing that homes of poverty are more likely to collapse in a natural disaster).