



THE NEXT AMERICAN MIGRATION:

# What Cities Should Know About Climate Change and Populations on the Move



### About the National League of Cities

The National League of Cities (NLC) is the voice of America's cities, towns and villages, representing more than 200 million people. NLC works to strengthen local leadership, influence federal policy and drive innovative solutions.

NLC's Center for City Solutions provides research and analysis on key topics and trends important to cities, creative solutions to improve the quality of life in communities, inspiration and ideas for local officials to use in tackling tough issues, and opportunities for city leaders to connect with peers, share experiences and learn about innovative approaches in cities.

### About Buy-In Community Planning, Inc.

Buy-In Community Planning, Inc. (Buy-In) is a national 501(c)(3) organization that works with flood-prone communities in need of targeted, affordable services to permanently eliminate residential flood risk through voluntary relocation assistance. Using the power of geospatial data and participatory planning, Buy-In helps communities design better buyout programs that are transparent, equitable, and environmentally restorative to ensure that no household is left in harm's way.

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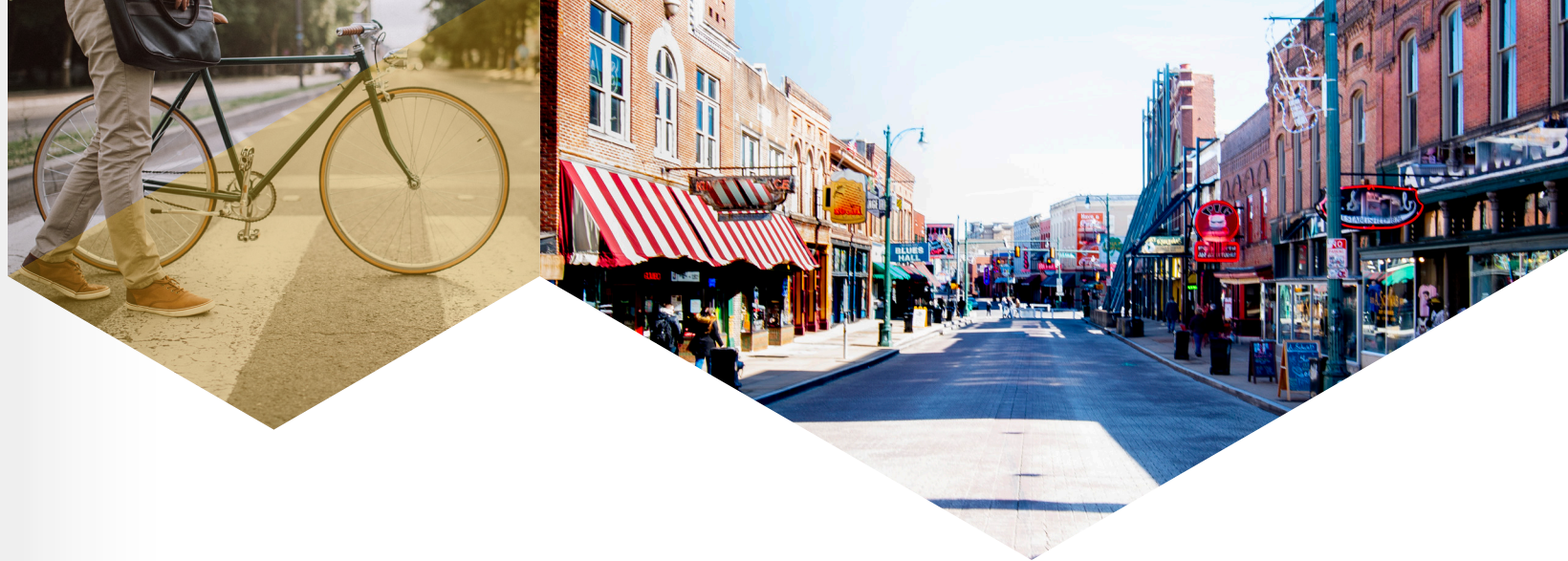
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# Introduction

**A**mericans have historically been some of the most mobile people in the world, continually seeking better housing and job opportunities.<sup>1</sup> However, in recent years, mobility — particularly among young Americans — has slowed, due largely to dramatic increases in housing prices and housing-related debt among American families since the Great Recession of 2008.<sup>2</sup> The COVID-19 pandemic has also impacted household decision making and thus broader demographic trends, with an estimated 10–13 percent of the population relocating annually in the last five years.<sup>3</sup> Although local moves (within the same county or state) are still the most common, the United States has a long history of significant voluntary and forced migrations that have transformed regional demographics, such as the Trail of Tears, the Great Migration of Black Americans, “White flight” out of urban areas beginning in the 1960s, and even the post-World War II population boom of the Sunbelt — due in large part to the advent of the air conditioner.<sup>4</sup> Population movements are important because a significant loss or influx of residents can affect local, state, and federal resource allocations, private sector investments and decisions, housing availability, and even cultural and social dynamics. Processes such as gentrification and

displacement or the steady, post-industrial loss of residents from the Rust Belt can destabilize communities. In other instances, once sleepy towns may view growth as an opportunity to welcome newcomers and revitalize their economy. Local governments that are prepared for growth can prevent overdevelopment in vulnerable areas, prepare for current and future climate impacts, anticipate the need for more public services, and grow sustainably and equitably.

Today, a new type of migration is taking shape, yet cities across the U.S. remain unprepared for the subsequent impacts and opportunities that the resulting population shifts may present. Across the globe, climate change is wreaking havoc on the earth’s ecological and social systems. Domestically, residents experience these climate impacts in the form of increased hurricanes, heavy flooding, deadly heat waves and horrific wildfires accompanied by a toxic haze that travels on the wind, hovering over communities for days or weeks on end. Over the past two decades, an increasing number of residents have been forced to leave their homes temporarily or permanently to escape these extreme events. In effect, America’s towns and cities are already experiencing both climate

impacts and subsequent migrations — they just might not have recognized them. Mainstream news outlets including the *New York Times*, CBS News, National Public Radio, and others have regularly been reporting on the “climate migration” phenomenon. Even *Fodor’s Travel* and *Business Insider* claim to have the inside scoop on “which cities are the most climate resilient.”<sup>5</sup> For city staff and elected officials, understanding how climate migration could impact their town or city is critically important.

Although international and cross-border displacement are critical issues, this report focuses on internal displacement *within* the U.S. and its territories. Most people displaced or migrating as a result of climate impacts stay within their countries of origin.<sup>6</sup> The Internal Displacement Monitoring Center estimates 1.7 million Americans were displaced by disasters in 2020.<sup>7</sup> Although it is difficult to determine which disasters are related to climate change, scientific consensus holds that climate change is increasing the frequency and intensity of certain extreme events, such as heat waves, wildfires, floods and hurricanes.<sup>8</sup>

The goal of this report is to demystify the climate migration issue for local governments through background information and case studies from cities that are currently experiencing climate impacts and subsequent demographic shifts. It also proposes a simple climate migration framework for three types of cities that aims to inspire local conversations around the potential impacts and opportunities that these population movements may present. Notably, this report does not assign categories to specific cities. It is up to practitioners and local leaders to determine which characteristics fit their respective community. It is likely that many cities will fall under more than one category, or that over time, characteristics may change. Additionally, cities that take action to improve local resilience, protect affordable housing, decarbonize their economies and keep at-risk residents out of harm’s way will be in a better position regardless of their net population loss or gain.





## How will my city be affected?

**S**INCE 2018, the number of Americans directly affected by climate disasters has dramatically increased. In the summer months of 2021 alone, nearly one in three Americans were living in a county hit by an extreme weather disaster. Additionally, 64 percent of Americans experienced a prolonged heat wave.<sup>9</sup> Still, many Americans perceive climate change as a coastal problem. This is an inaccurate and dangerous presumption as it does not consider the dramatic changes in temperature and precipitation that midwestern and other inland states will experience. In May 2020, a dam failure in Michigan triggered 40,000 evacuations, an event that was linked to aging infrastructure and increased precipitation

linked to climate change.<sup>10</sup> On the other end of the spectrum, ongoing drought conditions and extreme heat contributed to an estimated \$27 billion in insurance payments to American farmers between 1991 and 2017.<sup>11</sup>

Partisan beliefs around climate change and competing priorities may be preventing elected officials — particularly in non-coastal communities — from approving much needed climate resilience investments, from upgrades in critical infrastructure to heat mitigations such as parks and green roofs. If a local government is not engaged in any kind of environmental planning, it is also unlikely that officials are considering how climate migration will impact their communities. To understand how a particular community might be impacted by in- or out-migration, local governments must first understand and evaluate their climate risk.

All regions of the country will be affected by climate change, but not every region is as prone to devastating events such as wildfires and hurricanes. As warming trends continue, more northern and northwestern states may experience milder winters and longer growing seasons. Evidence that residents in higher risk states are relocating to lower risk states due to climate-related reasons remains largely anecdotal.<sup>12</sup> Several of the city practitioner interviewees for this report felt strongly that in recent years (and even more so during the pandemic), new residents have arrived in their cities seeking refuge from more risky locations. But due to the lack of city-to-city data on relocations and reasons for moving, it is difficult to find evidence of these claims. Yet such trends are projected to increase in the coming years.<sup>13</sup> Some experts believe that residents who are growing weary of living in areas exposed to repetitive extreme events may seek out housing and jobs in states where climate risks are less catastrophic. Overall, slow moving changes across the country are projected to cause profound shifts in where Americans live, grow food, and do business.<sup>14</sup>

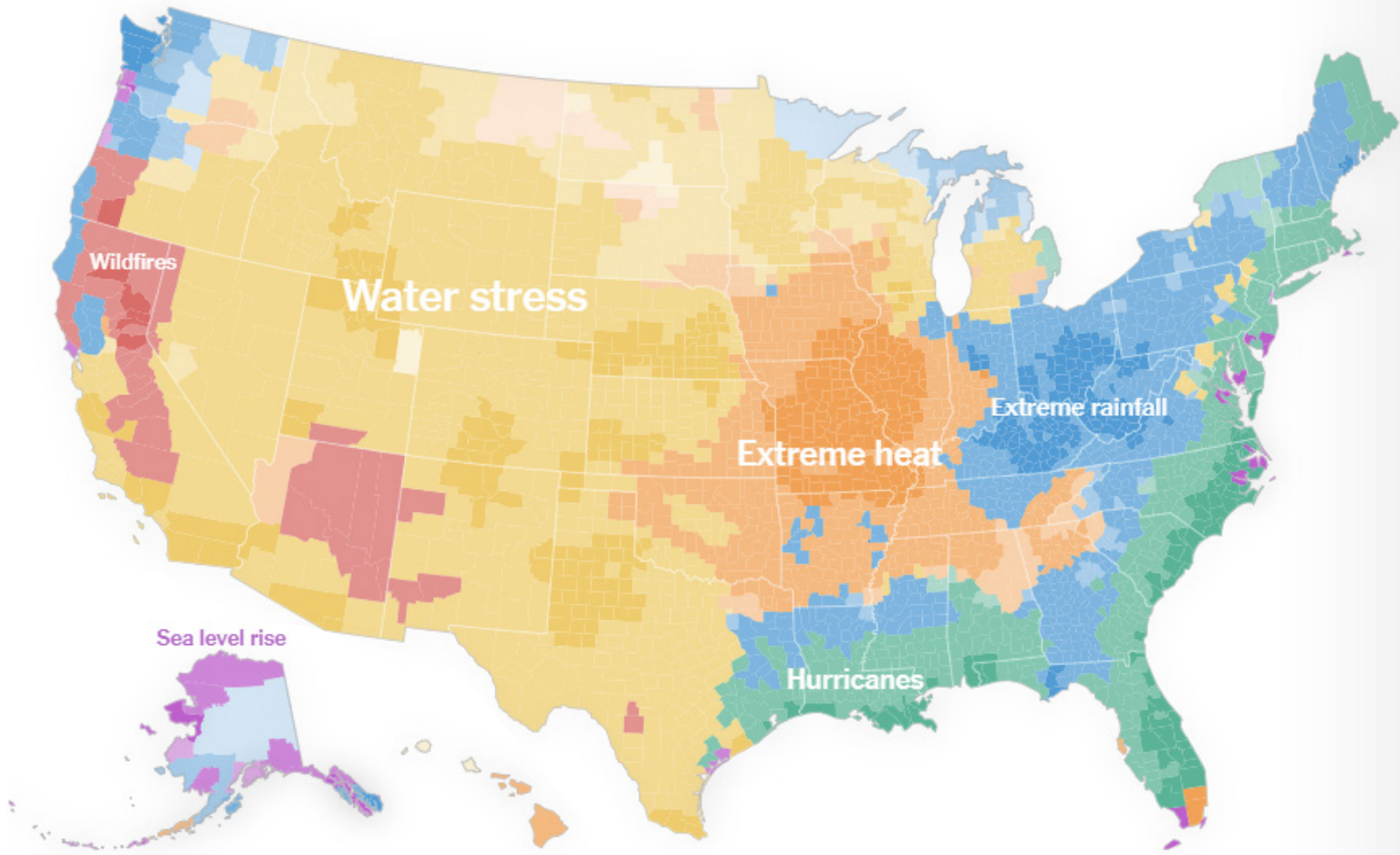


See [FEMA's National Risk Index](#) or the [4th National Climate Assessment](#) to determine the risks in your region.



What to call climate change where you live

Intensity shows risk level from low (lighter) to very high (darker)



Source: Thompson, S.A., & Serkez, Y. (2020, September 18). Every place has its own climate risk. What is it where you live? *New York Times*. [www.nytimes.com/interactive/2020/09/18/opinion/wildfire-hurricane-climate.html](https://www.nytimes.com/interactive/2020/09/18/opinion/wildfire-hurricane-climate.html)

Facts and figures



**Disasters**  
In 2020, **1.7 million Americans** were displaced by weather-related disasters.<sup>15</sup>



**Climate change**  
Nearly **1 in 3 Americans** directly experienced climate-related impacts in 2020.<sup>16</sup>



**Extreme heat**  
**More Americans die from heat** exposure than any other weather-related event. Four to six times more people could be exposed to extreme heat by 2050.<sup>17</sup>



**Sea level rise**  
40 percent of the population of the U.S. lives in coastal areas, with over half a million square kilometers in the Low Elevation Coastal Zone (LECZ), threatening as many as **63 million people** by 2100.<sup>18</sup>



**Flooding**  
By the end of the 21<sup>st</sup> century, nearly 2.5 million residential and commercial properties **(\$1.07 trillion total estimated value)** will be at risk of chronic flooding.<sup>19</sup>



**Extreme precipitation**  
2019 was the second wettest year in U.S. recorded history with the Midwest bearing the brunt with **\$6.2 billion in damages**.<sup>20</sup>



**Wildfires**  
**1 in 7 Americans** experienced dangerous levels of air quality from wildfire smoke in 2020.<sup>21</sup>



## Slow versus sudden onset events

There are key differences between the types of climate impacts and the subsequent migration patterns that may ensue. **Slow onset events** include droughts, extreme heat (particularly in regions that already experience high temperatures), and sea level rise that typically do not incite sudden relocation. **Sudden onset events**, however, such as wildfires, hurricanes, or extreme precipitation events, can result in immediate displacement which may be temporary or permanent. Eventually, cities may face out-migration as residents grow weary of repetitive disasters. Other factors such as city size, staff capacity, existing stressors such as transportation gridlock or a housing shortage can influence these movements as well as the community's ability to absorb and adapt to these new conditions.

EXPERTS WEIGH IN:

### What is climate migration?

“

**Climate migration is the voluntary or forced displacement of communities due to a climate induced stressor.**

– **Vivek Shandas**

Professor, Portland State University

“

**Climate migration is human migration which is caused in some part by the impacts of climate change.**

– **Linda Shi**

Assistant Professor, Cornell University

“

**The movement of people, development, and investment to areas that are less susceptible to environmental hazards.**

– **Katherine Burgess**

Vice President of Land Use and Development, Smart Growth America

“

**It's a broad terminology... we are trying to understand the difference between disaster displacement and climate displacement, and the interconnections between those.**

– **Vincent Fung**

Regional Team Leader, Internal Displacement Monitoring Center





# Disproportionate impacts on residents

**Climate change does not affect all Americans equally, even within the same community.** It is much harder for lower income residents and families who live paycheck-to-paycheck to prepare for and recover from climate-related events and their associated costs, such as temporary housing and reconstruction. While some displaced residents may be able to temporarily lodge with friends or family until the threat passes, many remain permanently displaced because they cannot afford to rebuild. Renters are particularly vulnerable to involuntary and permanent displacement after a disaster due to the loss of affordable rental housing. Less resourced Americans, Black communities, rural residents, immigrants and indigenous people are often located in high-risk areas due to decades of disinvestment and racist zoning policies such as redlining. Residents with disabilities, the elderly and other at-risk populations may be choice-constrained when faced with higher risk. Many long-time residents in communities that experience frequent floods and storms may also be less likely to have the means or desire to relocate to higher ground, leaving them exposed and vulnerable to yet another likely event.<sup>22</sup>

## Populations at-risk during climate-related events<sup>23</sup>



**Children**



**Elderly**



**Low-income households and renters**



**The uninsured, underinsured**



**Residents living in poor environmental conditions or lack access to services**



**Rural communities**



**People of color**



**Non-English-speaking residents**



**Immigrant communities**



**Indigenous communities**



**Undocumented residents**



**Those living a subsistence lifestyle or paycheck-to-paycheck**



**People living with mental or physical disabilities or chronic conditions**



**Women, particularly mothers and pregnant women**



**People experiencing homelessness**



**Outdoor workers**



In contrast, wealthier residents may have the means to leave in advance of both sudden onset and slow onset impacts. They may have second homes in safer locations or have the means to “adapt in place” by elevating, floodproofing or fireproofing their homes. For example, as residents in Phoenix, AZ, grow tired of the heat, those with financial means have flocked to higher and cooler areas, such as Flagstaff, AZ, which now has the country’s fifth most active market for secondary homeowners.<sup>24</sup> A study of New Orleans, LA, after Hurricane Katrina found that the level of damage a neighborhood experienced was positively correlated with gentrification 10 years after the storm, evidence of the financial inequalities that allow some households to rebuild while others must relocate.<sup>25</sup> These trends are growing more evident in flood-prone cities across the country where lower income residents on “higher ground” —often Black or from immigrant communities — are being displaced as wealthier residents fleeing risky areas spur higher housing and rental prices, thus forcing longtime residents of color into less expensive, risky floodplains.<sup>26</sup>



## Disproportionate impacts on towns and cities

**Likewise, the climate crisis will not affect every city equally.** Disasters and slow onset climate stressors are having an outsized effect on smaller, less resourced and understaffed towns and cities, many of which may already be facing economic decline, disinvestment, and out-migration.<sup>27</sup> Communities with fewer or no dedicated planning, emergency management or sustainability staff may find applying for and winning grants challenging, while towns that lack political power at the state level may find that their needs and priorities are ignored in situations where federal funding guidelines are broad and no monitoring or enforcement structures exist once funding has been delivered to the state.<sup>28</sup> Smaller cities and rural towns may also lack access to localized climate data and planning, engineering, or climate knowledge as well as the best practices or solutions that may help mitigate local impacts. Furthermore, practices developed by larger cities may not apply or may be more difficult to implement in smaller communities.<sup>29</sup> As the climate adaptation challenge grows more evident among smaller cities, it is critical that states and federal agencies develop better policy solutions and improve existing funding mechanisms to address these inequities.



## Using data and demographic models

Local, state, and federal governments, utilities, regional planning councils, the private sector and members of the public are eager to know what an America of the future might look like. Demographers, geographers and other researchers are using innovative methods to respond to this demand by developing new data sources and tools to project climate migration trends. Historically, many demographers felt that climate migration was far too uncertain and complicated to model. However, a few recent studies have provided compelling visions of what the U.S. might look like if, for example, unmitigated sea level rise forces millions of residents away from coastal areas, using established social networks to predict migration routes.<sup>30</sup> Some models examine choice and individual decision-making processes, while other researchers have used a variety of economic, environmental and other data sets to determine cross-border climate migration.<sup>31</sup>

Models such as the one shown on the next page can provide local governments with valuable insight into possible migration trends. But local officials and residents are the primary experts on local culture, history and politics, and modelers do not necessarily incorporate these elements into their projections. Keeping in mind that projections are not predictions, planners, communities and leaders can and should utilize migration data and demographic models as part of a suite of tools and strategies that include scenario planning exercises, community engagement and comprehensive, smart climate planning.

## Migration induced by sea level rise could reshape the U.S. population landscape



Circular plot of bi-lateral sea level rise migration flows for U.S. states under the 1.8m scenario and no adaptation. Tick marks show the number of migrants (inflows and outflows) in thousands. States are ordered clockwise by the size of inflows.<sup>32</sup>

Source: Hauer, M. E. (2017). Migration induced by sea-level rise could reshape the US population landscape. *Nature Climate Change*, 7(5), 321-325.



## Cities and states planning for climate migration

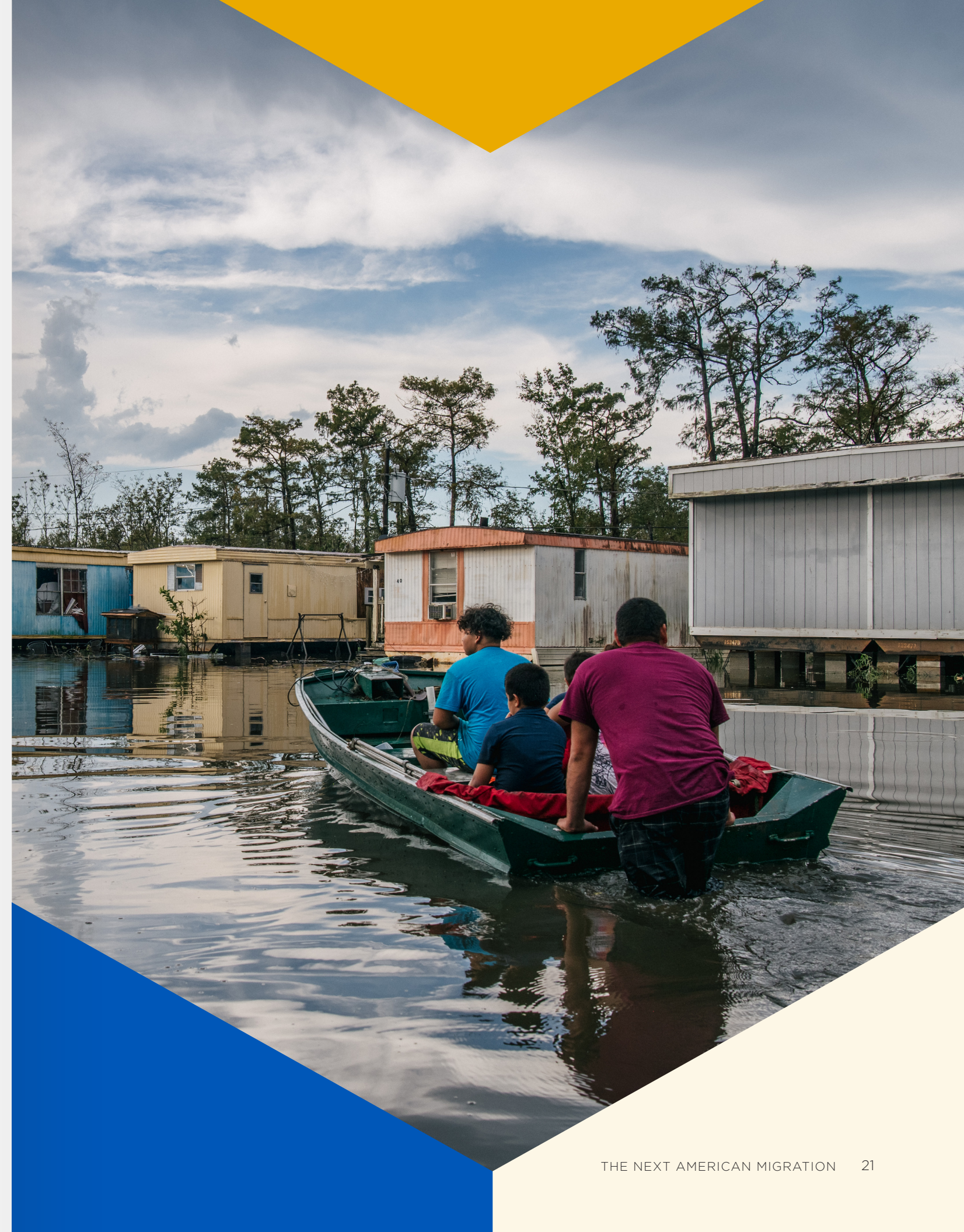
Many cities are already integrating climate migration in their plans. As far back as the mid-2010s, several U.S. cities, including Cincinnati, OH, Denver, CO, Evanston, IL, and Bozeman, MT, acknowledged the impact that climate-induced in- or out-migration may have on their housing stock and affordability, transportation systems, and workforce by including related concepts in their vulnerability assessments and climate action plans.<sup>33</sup> Others, like St. Louis, MO, are wondering if they have “what it takes to be a climate haven.”<sup>34</sup> In Louisiana, federal agencies, regional and national foundations, and the State of Louisiana implemented a joint venture called LA SAFE (Louisiana Strategic Adaptations for Future Environments) to develop a six-parish, grassroots effort to design and deploy the nation’s largest stakeholder and resident engagement process. The cross-sectoral program helped participants envision the future of the state’s coastal communities, particularly those at severe risk of land loss from subsidence and sea level rise.<sup>35</sup> In New Jersey, the highly touted Blue Acres program has provided social services, flood protection and buyouts for residents in flood-prone communities since 1995.<sup>36</sup>



**You can’t actually make good policy or make policy tweaks when you’re in disaster response mode.**

– **Joe Thompson**

Assistant Director, U.S. Government Accountability Office







# What factors influence climate migration?

**F**EDERAL, STATE AND local policies factor into how, when and where climate migration may occur. Building codes, insurance rates and requirements, and land use planning will shape the future of communities across the country by influencing how public and private investments are made while housing costs, buyout availability, risk tolerance, preferences for particular amenities and long-term planning at the household level may influence demographic trends and mobility patterns. Although some Americans are acutely aware of their local climate risks and can afford to move out of harm's way, those with less means may lack this privilege.

## Push and pull factors

Except for residents whose homes and livelihoods have been destroyed and are unwilling to return or rebuild, most people who move—even after a disaster—are not likely to say that they moved *because* of climate change. The household decision to relocate is one that incorporates a wide variety of life considerations including housing, employment, amenities, and social or familial networks. The considerations that influence migration decisions are often referred to as **push factors** and **pull factors**. Push factors are those variables which drive people and business *away* from a place, such as a damaged home, loss of a job, or high costs of housing. Conversely, pull factors attract people and businesses *toward* a place. Individuals with limited resources and other at-risk populations generally face constraints in their choices.

**Push factors**  
drive people and business away from a place (lack of employment or decline of industries, unfavorable weather conditions, high taxes, annual exposure to wildfire smoke or pollution, etc.)

**Pull factors**  
drive people and businesses towards a place (skilled workforce, strong anchor institutions such as universities and hospitals, walkability, parks, etc.)

## Rapid growth in high-risk regions

Many Americans seeking desirable amenities such as warmer weather, access to the outdoors, affordable housing, economic opportunities and pandemic-fueled dreams of additional space are being drawn to areas of the country that face the most risk from climate change. From 1990 to 2010, there was a 41 percent increase in the number of new homes in the wildland urban interface (WUI), where wildfire risks are most pronounced, making it the fastest growing land use type in the country during that time period.<sup>37</sup> And despite the increase in publicly available flood risk data from First Street Foundation and the Federal Emergency Management Agency (FEMA), eastern coastal states such as Connecticut, Delaware, New Jersey, Rhode Island, New Jersey, Florida and North Carolina are all developing new housing two to three times faster in vulnerable zones than in safer locations.<sup>38</sup> A 2021 Redfin report offers more troubling data: the 50 counties with the greatest exposure to extreme heat, flooding, drought,



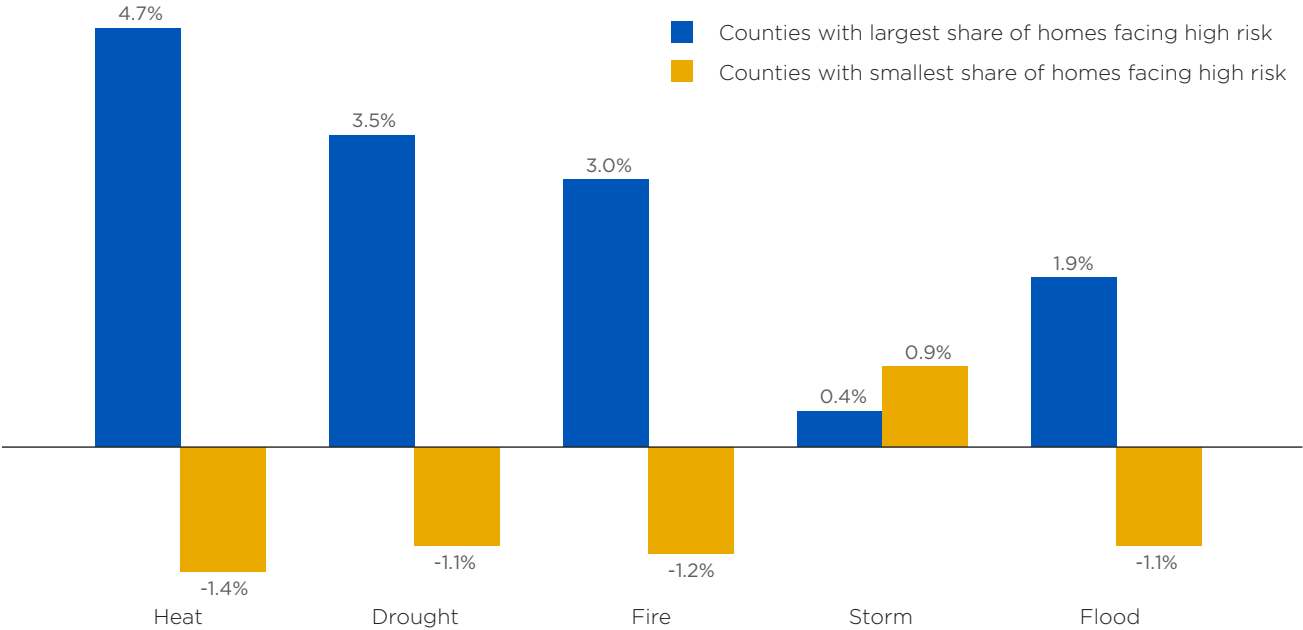
storms and wildfires all saw their populations grow between 0.4 percent and 5 percent since 2016 due to in-migration.<sup>39</sup> Meanwhile, a record number of wealthier Americans are buying second homes, particularly in high-risk areas.<sup>40</sup> With ever more residents living in hot, dry regions, coastal areas, flammable landscapes and floodplains, it dramatically increases the likelihood that people will face extreme events or long-term climate impacts – and subsequently, the need to evacuate or relocate.

# Climate-based decisions

In contrast, a separate Redfin report and the 2020 Census indicate that a significant number of Americans are rethinking housing and relocation decisions based on climate change. However, these impressions vary significantly by age, political party, education level, income, and region, and mirror partisan beliefs around climate risk more broadly.<sup>41</sup> Ultimately, these gaps in perception may hinder efforts to communicate short- and long-term climate risk in states that face the worst impacts — and are least prepared — such as Georgia, South Carolina, Louisiana, Florida, Texas and Mississippi.<sup>42</sup> Notably, these are states where legislators are also actively passing preemption laws to limit the decision-making abilities of local government climate efforts.<sup>43</sup>

# America's climate-endangered areas are becoming more populous

Population change due to net migration in counties with certain climate risks, 2016-2020



Source: Katz, L., & Sandoval-Olascoaga, S. (2021, August 25). More people are moving in than out of areas facing high risk from climate change. *Redfin News*. [www.redfin.com/news/climate-migration-real-estate-2021/](https://www.redfin.com/news/climate-migration-real-estate-2021/)





“

**Evacuation is a form of dispossession. Proactive migration suggests the notion of privilege because communities with more resources have more agency. There is a privilege for being able to move. So there are strong equity issues at play.**

– Vivek Shandas

Professor, Portland State University

“

**It's very difficult to disentangle climate from many other factors, all of which together would influence a family's decision to move. The result is the same: we have to accommodate people in a new place, housing, jobs, and schools, etc. Do we need to call it climate migration, or are we focusing on how we are providing affordable, healthy, resilient communities?**

– Linda Shi

Assistant Professor, Cornell University

## Role of insurance

The federally subsidized National Flood Insurance Program (NFIP) has historically played a role in enabling ongoing development in high hazard flood zones but has the potential to help shape where to safely build new homes or replace those that were damaged during disasters. In 2021 FEMA announced important changes to the program's methodology for pricing flood insurance through Risk Rating 2.0 — an effort to modernize NFIP by more appropriately pricing flood risk based on the structure's precise location, resilience retrofits, and the cost of replacement.<sup>44</sup> The program reduces insurance premiums for inland homeowners who have long subsidized wealthier homeowners in higher risk areas.<sup>45</sup> In some states such as Florida and New Jersey, where coastal hazards are a way of life, insurance rates may make home ownership cost prohibitive for lower- and middle-income residents, pushing them to relocate while wealthier residents continue to inhabit and retrofit their homes in high-risk waterfront neighborhoods.<sup>46</sup> While Risk Rating 2.0 may elicit strong objections from coastal communities and homeowners, overall, it reflects the federal effort to equalize NFIP and end taxpayer subsidization of expensive coastal properties.

Fire-prone communities are also affected by increasing and inequitable costs as insurance companies reconsider their coverage areas and premiums. Some states are taking action to prevent a rapid exodus of insurance companies. In California, for example, more than 1 million homeowners have been issued non-renewal notices since 2015. And although the state has for three consecutive years since 2018 issued a moratorium on non-renewal notices to protect fire-affected households, these temporary solutions are unlikely to build longer-term strategies for addressing decades of poor land management in the wildland urban interface.<sup>47</sup> Ultimately, insurers are passing costs on to policyholders, forcing many lower-income residents to seek homes elsewhere.



## Building codes

Similar to insurance, building codes can serve as a tool to reduce risk in fire, hurricane and tornado prone areas, ultimately promoting better building practices in communities and keeping residents out of harm's way. After the Marshall Fire destroyed more than 1,000 structures in suburban Colorado in 2021, the National Fire Protection Association and some lawmakers are now pushing the state to enact minimum statewide building codes to ensure that new structures are built with ember and flame resistant materials and landscaped for fire safety.<sup>48</sup> In the past, state officials faced stiff resistance from local governments and homebuilders who argued that this would be an added cost burden for municipalities and that building codes should be developed at the local level.<sup>49</sup> Indeed, cities must write, administer, adopt and enforce building codes, but the cost of inaction is an even greater cost burden. One study from Headwaters Economics found that nearly half of wildfire disaster costs are borne at the local level in the form of property damage, lost tax revenue, lost businesses, infrastructure repair and damage to ecosystem services.<sup>50</sup>

Another study from the National Bureau of Economic Research found that California's building codes have reduced the average structure loss risk during a wildfire by about 40 percent.<sup>51</sup> Similarly, hurricane-prone states such as Florida, Virginia and South Carolina have adopted and are enforcing building codes that have reduced costs from storm damage while limiting their subsequent need for disaster aid.<sup>52</sup>

## Land use

A few local governments are waking up to the hard realities of the climate crisis by calling into question the *growth-at-all-costs* mindset, and realizing that protecting existing residents should be a priority. Council members in Raleigh, NC, recognized the threats to coastal communities and in 2021 approved regulation to limit new development in the floodplain.<sup>53</sup> And in the West, where hundreds of communities are in the midst of a megadrought, officials in Oakley, UT, have halted all new building construction. It is the first jurisdiction in the U.S. to intentionally stall growth due to drought conditions. For a state that grew 18 percent from 2010 to 2020, this is big news. However, Oakley likely will not be the last to institute such drastic changes. Some 99.9 percent of the state is locked in severe drought conditions and reservoirs are drying up.<sup>54</sup>

Municipalities across the country may have to make similar challenging and politically unpopular choices but prohibiting development in high-risk areas is a decision that many local governments are reluctant to even discuss. The urgency to create more affordable housing and the potential tax revenue from approving new construction or authorizing reconstruction after a major disaster are real demands that municipalities face.<sup>55</sup> As *Bloomberg Businessweek* reported in 2018, some fire-devastated communities in California weakened zoning rules to allow new and returning residents to expand their homes beyond their previous size and waived development fees for new construction.<sup>56</sup> Instead, thoughtful, long-term planning that takes ecological and climatic changes into consideration can protect existing residents from additional risk.



#### Market-driven retreat

If property owners, developers, investors, financial lenders, and insurers in a city all anticipate climate disasters and their potential negative financial impacts on the value and cost of existing and future development that is at risk. Fear of financial losses — reduced value of houses, for instance, increased mortgage foreclosures, and mounting insurance payouts — could trigger a cascade of disinvestment in local development, resulting in abandonment of property, decline of neighborhoods, and other distress.\*

## Task Force on Climate-related Financial Disclosures and credit ratings

Spearheaded by the Task Force on Climate-related Financial Disclosure (TCFD), private sector leaders in asset management, insurance and banking are being urged to describe and disclose the climate-related risks and opportunities on their organizations' businesses, strategy, and financial planning as well as how the organization identifies, assesses, and manages climate-related risks.<sup>57</sup> In simpler terms, TCFD encourages companies to examine their operations and determine what impact their activities are having on the climate, and conversely, how climate change will impact their businesses.<sup>58</sup> Joyce Coffee, President of Climate Resilience Consulting, suggests that, **“if asset owners determine that moving capital out of high risk areas is in their best interest, this could depress real estate prices and reduce property taxes in those communities, and subsequently limit a community’s ability to provide public services for residents, and worse, lead to a market-driven retreat.”** Similarly, credit rating agencies such as Moody’s are now including climate risk in their analysis and are providing banks and asset managers with data on the climate risk of cities, counties, and states.<sup>59</sup> Maintaining high credit ratings is critical to cities because without access to capital markets, state and local governments would struggle to provide basic services or invest in infrastructure.<sup>60</sup> Moody’s Vice President Michael Wertz notes that a city might struggle to pay back its bonds if it is solely dependent on one source of revenue such as beach tourism, which could easily be disrupted by climate change. Similarly, if a large number of residents do not return or rebuild after a disaster, a city may face repayment challenges.<sup>61</sup>

\* Plastrik, P., & Cleveland, J. (2019, March). *Can it happen here? Improving the prospect for managed retreat by US cities*. Innovation Network for Communities. [adaptation.ei.columbia.edu/sites/default/files/content/Managed-Retreat-Report-March-2019.pdf](https://adaptation.ei.columbia.edu/sites/default/files/content/Managed-Retreat-Report-March-2019.pdf)

## Federally funded buyouts

Currently, there are a variety of federal agencies responsible for managing domestic climate migration or internal climate displacement, but little coordination among them, and no single agency uniquely dedicated to addressing this issue. The U.S. Government Accountability Office (GAO) has suggested that “a climate migration pilot program could enhance the nation’s resilience and reduce federal fiscal exposure,” citing unclear federal leadership as the key challenge to addressing climate migration.<sup>62</sup> Grassroots organizations such as the Anthropocene Alliance are calling for the creation of a Climate Migration Agency within a new Department of Climate Change to “help plan, facilitate, and support U.S. migration and community revitalization.”<sup>63</sup>

Currently, FEMA oversees emergency relief for people displaced by disasters and manages several voluntary buyout programs. From 1989 to 2017, FEMA funded 43,633 voluntary buyouts of flood-prone properties.<sup>64</sup> Other agencies such as the U.S. Department of Housing and Urban Development (HUD), the Small Business Administration (SBA), the U.S. Department of Agriculture (USDA), and the U.S. Army Corps of Engineers (USACE) have also funded voluntary buyouts or provided loans to help people relocate after their homes have been destroyed.<sup>65</sup>

While federal resources for local resilience-building activities are available through FEMA’s Hazard Mitigation Assistance (HMA) grants, these funds are limited.<sup>66</sup> Due to increasing competition for finite resources, smaller municipalities with less staff capacity, experience or matching funds, or even those in states without statewide building codes may be at a disadvantage or completely ineligible.<sup>67</sup> With limited resources, local governments may inevitably be forced to choose between funding post-disaster recovery efforts in high risk areas where repetitive losses are common and providing equitable relocation assistance to adversely affected households and businesses.<sup>68</sup>



### Managed retreat

Purposeful, planned and coordinated movement of people away from hazardous areas or areas of extreme environmental degradation. It is also called planned retreat, relocation, or resettlement.<sup>71</sup>

A handful of communities are starting to view proactive relocation, or **managed retreat**, as a viable or necessary part of their resilience and climate adaptation toolbox.<sup>69</sup> Voluntary property acquisitions, or buyouts, are one tool local governments can deploy to help homeowners relocate if they are at risk. Buyouts can also save money: a 2019 report from the National Institute of Building Sciences found that the U.S. could save more than \$1 trillion dollars by removing 1 million homes from the country's most flood-prone areas.<sup>70</sup>



## Careful communication and timing

The process of providing relocation assistance to frontline communities must be done with tremendous care. Local government leaders and other facilitators must be sensitive to culture and history, as well as terminology and messaging, and should invest in engagement strategies that empower local residents. The keys to positive engagement are listening, asking questions and earning trust over time.<sup>72</sup> Historically, forced relocation and eminent domain have been used as tools to intentionally uproot Black, indigenous, immigrant, rural and other disenfranchised communities from their homes and ancestral lands.<sup>73</sup> Even without this negative association, relocation planning is difficult if not impossible for most communities to imagine. But proactive and conscientious support and assistance are preferable to a potentially chaotic, market-driven and unmanaged decline that could trap the most at-risk residents in dangerous living conditions.<sup>74</sup>

However, coastal indigenous communities in Alaska and Louisiana that have long suffered from the effects of sea level rise have waited decades for federal assistance.<sup>75</sup> A 2019 report from the Natural Resources Defense Council examined 30 years of FEMA data and found that it takes a median of more than five years for the completion of a federally funded buyout after a flood disaster. Delays in the process make buyouts “less accessible, less equitable, and less effective for disaster mitigation and climate adaptation,” but new buyout models and other solutions such as making direct assistance for buyouts available through the NFIP could reduce wait times.<sup>76</sup>







## A simple framework for a complex issue

**F**OR COMMUNITIES INTERESTED in initiating discussions around climate migration, consider this simple framework with three categories to describe cities in various situations: vulnerable cities, recipient cities and climate destinations. A community may be large enough to have characteristics of two or even all three categories, or it may fall under just one. We provide a description of each category followed by guidance on how to use the typology to spur further conversation and action in every community.

### Vulnerable cities

Communities that are in high hazard areas and that lack the financial resources to adapt to climate change may experience varying levels of out-migration as a result of job losses, economic decline or the inability to rebuild after recurrent disasters due to declining credit ratings.<sup>77</sup> Attempts to increase climate resiliency while maintaining normal operations for communities is likely to force financial tradeoffs, such as deciding how to prioritize between roads, schools, staffing, and hazard mitigation infrastructure. This will be even more difficult in smaller, less resourced communities facing high exposure to climate risk. A 2021 New York Times featured several small communities that, after taking repetitive hits from storms, floods or wildfires, are facing employer and resident abandonment, tax base shrinkage and subsequent difficulties funding basic public services.<sup>78</sup>

Currently, many vulnerable cities may be experiencing rapid growth due to their coastal location, warmer weather, relatively affordable housing, job availability and other pull factors. It may be difficult for elected officials in these communities to envision a future where new residents stop flowing in and climate impacts begin to push residents out. But as one city official who asked to remain off the record on this issue described it, “The minute capital markets and real estate pull out, you’re done. Coastal communities have two sets of economic values: tourism, hotels, restaurants; and then real estate that continues to go up and up, defying all reason. The minute the markets pull out, that all goes away.”



# Recipient cities

Some cities, even if not directly affected by a slow or sudden onset disaster, may find themselves playing host to large numbers of regional or in-state residents seeking refuge. They may be temporarily displaced or eager to resettle if unable to return to their homes. Recipient Cities are typically geographically close to the “sending communities” but more distant relocations are common as well. They are often small or mid-sized cities with their own share of social, economic or climate-related stressors, including housing affordability. In some circumstances, the recipient city may have been spared the full impact of the immediate disaster but would not be immune from later catastrophic events. In 2005, the city of Houston, TX, absorbed nearly 250,000 displaced New Orleans area residents after Hurricane Katrina, with an estimated 25,000 to 40,000 people settling there permanently. Years later, Houston itself was at the center of the devastation wreaked by Hurricane Harvey.<sup>79</sup> Nevertheless, a larger city such as Houston may be more equipped to support and resettle larger numbers of incoming residents and could reap economic and cultural benefits from such an influx. Smaller and mid-sized cities could be disproportionately impacted by such an event.

As highlighted in the case studies of Chico, CA, and Orlando, FL, later in this report, cities that face a rapid influx of people displaced

by climate-related disasters or other events may find it difficult to fulfill their obligations to existing residents. Larger and sudden in-migrations can compound existing stressors such as high levels of homelessness and housing shortages, creating further strains on municipal services. This in turn tends to affect the city’s at-risk communities first, as they may be more reliant on city services and programs.

# Climate destinations

Recently, cities such as Syracuse and Buffalo, NY, and Duluth, MN, have received significant media attention about their potential to become America’s future “climate havens” due to their access to plentiful fresh water, affordable housing and relative safety from hurricanes and wildfires.<sup>80</sup> Many cities in the Northeast and Midwest are known as legacy cities, once powerful industrial hubs that lost significant population during the periods of urban disinvestment. Despite their challenges, these cities typically have strong anchor institutions such as universities and hospitals, and high-quality amenities like historical waterfronts, an abundance of parks, and walkable downtown areas.<sup>81</sup> Likewise, many were originally designed to support several thousand more residents than currently live there. Legacy cities may have a sizable affordable housing stock and a strong desire to return to their pre-industrial size.<sup>82</sup> Unlike

Vulnerable Cities and regions that are likely to face population decline, or recipient cities that have little room for sudden growth, climate destinations are in a much better position to leverage these projected population shifts as opportunities for reinvestment and growth.

“  
**First, cities need to acknowledge that this is going to happen. People will move. How do you position your city to accept them and also be a place that they want to go?**

– **Michael Forrester**  
Sustainability Director, City of Cincinnati

Although these features make legacy cities good candidates to become Climate Destinations, decades of disinvestment have resulted in numerous challenges such as aging housing stock and infrastructure in dire need of upgrades and revitalization. Racial segregation, exclusion, wage and health disparities among low-income Black and immigrant communities remain critical issues, and regional economies in these areas have not kept pace with growth

in other parts of the country.<sup>83</sup> However, many legacy cities have remained resilient in the face of disinvestment, establishing vacant land revitalization and urban greening programs. Others have become home to refugees and immigrants seeking new lives in the U.S., working with the nonprofit Welcoming America to create models and pathways for equitable and inclusive relocation.\* Buffalo, for example, has seen outsized economic benefits to hosting newcomers, including \$622 million in taxes paid and \$1.5 billion in spending power in 2017.<sup>84</sup>

While they may seem safe from the worst climate impacts, the ability of climate destinations to create affordable, equitable and resilient communities both now and in the long term depends heavily on how they respond to these challenges today. These cities must keep in mind that rapid in-migration could amplify existing displacement trends such as gentrification, where low-income residents get priced out by rising home prices and rents. Cities aspiring to be climate destinations should take great care to engage existing residents in all planning processes, protect affordable housing stock, and enact renters’ protection laws.

\* Welcoming America and New American Economy are two organizations that have provided technical assistance to cities interested in revitalizing their economies by leveraging immigrant and refugee capacity and entrepreneurship. See [www.newamericaneconomy.org](http://www.newamericaneconomy.org) and [www.welcomingamerica.org/initiatives/gateways-4-growth](http://www.welcomingamerica.org/initiatives/gateways-4-growth) for more information.



# What is your city’s type?

Vulnerable City	Recipient City	Climate Destination
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It is important to emphasize that these categories exist along a spectrum, and cities could easily exhibit characteristics of more than one category at one time — particularly larger cities. Characteristics can also change over time depending on policy interventions. Some cities may not identify with any of the typologies provided above. Rather than prescribing cities into categories, cities themselves are best positioned to self-identify and start planning for climate-related risks in their own communities.

## Testing the framework

At the American Planning Association (APA) Colorado Planning Conference in 2021, representatives from the Brendle Group and Welcoming America presented this framework to a group of 90 planners from 21 rural and urban communities across the state. Workshop participants quickly identified their communities along the spectrum:

- ◆ 71 percent classified their communities as more than one type
- ◆ 50 percent classified their communities as “**vulnerable**”
- ◆ 85 percent classified their communities as “**recipients**”
- ◆ 38 percent classified their communities as “**destinations**”

Wildfires and floods emerged as chief examples of how climate displacement is showing up in Colorado communities, while housing costs and availability were commonly shared concerns and challenges. Brendle Group provided suggestions for what planners and communities can do to prepare for climate migration:

- ◆ Use the typology in scenario planning
- ◆ Survey recent arrivals to the city
- ◆ Build and leverage intercity networks and regional collaboration
- ◆ Make the case for welcoming immigrants and newcomers into the community

As highlighted in Coming Soon(ish): 6 Planning Trends on APA’s Watchlist in August 2021, “Large-scale migration is not an unprecedented phenomenon. But paying attention to this signal early is one way that planners can help manage the long-term, irreversible impacts of climate change.”<sup>85</sup>





# Stories from cities across the country

**W**HETHER A CITY is likely to lose residents, grow or remain constant in the coming decades, it is helpful to read about experiences from city officials on the ground. To better understand if the typology resonated with public officials, the authors and Buy-In Community Planning interviewed municipal staff from cities across the U.S. to discuss the challenges and opportunities local governments face with respect to climate migration. These case studies showcase a wide variety of impacts and responses related to domestic climate migration and help illustrate the importance of building resilience, protecting affordable housing and envisioning a low-carbon city of the future.







## CHARLESTON, SC: Living on the water's edge

For hundreds of years, Charleston, SC, was the economic hub of the Southeast, and it is one of the oldest continuous cities in the U.S. Residents in its more than 150 neighborhoods are proud of their history with many family homes dating back to the early 1700s. The city's numerous historical sites, architecture and well-preserved beauty draw nearly 7 million visitors each year. Economically, Charleston's growing medical and bioengineering industries are second only to tourism with a recent tech boom that now attracts thousands of younger residents to the region. But it is not all easy in the Holy City; like many culturally and amenity-rich American cities with a thriving economy, Charleston is grappling with an affordable housing crisis that today is further complicated by worsening climate impacts such as storm surge, sea level rise and high tide records that are broken every year. Many residents in the city's urban core who face flood risks are Black and low income and live in multi-family housing, while other residents live in historical houses that were not built to withstand floods and storms.

In addition to its flooding challenges, the city is prone to a litany of natural hazards such as hurricanes, hotter temperatures and earthquakes. Between growing periods of drought, the system is frequently overwhelmed by extreme precipitation events that cause flooding across the city. Storm surge remains a primary concern, but the slow threat of sea level rise, which over the next 30–50 years will eventually inundate large parts of the city, is already causing problems for the city's storm drain systems and roadways on the edge of the peninsula islands.

To address these growing challenges, Mayor John Tecklenburg hired former emergency manager Mark Wilbert (now retired) as the city's first ever Chief Resilience Officer. During his tenure, Wilbert advocated for a science-based approach to planning for the city's future, launching

a sequence of initiatives that aimed to establish clear priorities and objectives to address the city's growing flood woes. These included hosting a five-day workshop with the Dutch Dialogues, an All Hazards Vulnerability and Risk Assessment, a Hazard Mitigation Plan Update, a USACE Peninsula Flood Risk Management Study, and the formation of a Stormwater Program Management team contracted to update the City's Master Drainage and Floodplain Management Plan, which was more than 30 years out of date.<sup>86</sup> As a result, city leaders supported a massive strategic upgrade of Charleston's Comprehensive Plan to incorporate flood risk and resilience into a vision of the city's future.

These efforts eventually bore fruit in concrete projects to push the city's resilience plan forward. With full support from Mayor Tecklenburg, Wilbert was able to collaborate with department heads across the city as they implemented new adaptation strategies, including an updated stormwater manual for all new construction, an underground tunnel system to whisk water away from the urban core, raised base flood elevation requirements, and new conservation zoning that will leave more land in new developments to store water and preserve green space. Wilbert describes the seemingly never-ending work of supporting a city on the water's edge: **“We had 67 items to get through. Now, we’re still a long way away to go. This will never be done, and we will never quit paying for it. This is the future. There’s a premium for living where you live. But as long as you’re ahead of it and doing something, that is good.”**

Meanwhile, the city is taking a measured approach to support building elevation and voluntary buyouts for residents who have been subjected to severe repetitive losses, though public interest and engagement appears to wax and wane depending on the occurrence of storms. From 2015–2017, when the city suffered from regular flooding, eager and engaged residents packed large auditoriums to learn about federal buyout programs and participate in the Dutch Dialogues. In the drier years since, it has been harder to keep people involved. But city officials know that sea level rise will likely force communities to discuss the tradeoffs of funding more widespread home buyouts versus the alternatives such



as elevating roads and building seawalls, since the later options are known to harm local ecology and have recurring maintenance costs.

Since funding for acquisitions is limited, the city's floodplain manager reaches out to communities to gauge interest among high risk, repetitive loss homeowners. Once a property has been acquired by the city, development is not permitted and the area is "returned to nature" through a partnership with the National Fish and Wildlife Federation. These bought-out parcels now serve as an amenity for local residents and a flood mitigation tool that absorbs excess water when it rains. A formal plan to limit development in flood prone areas is still two to three years away, but Wilbert insists that the combination of these efforts has significantly improved flood resilience for large parts of the city.

Wilbert emphasizes the importance of intentional outreach: **"In the end, we had a very educated community. They now understand flood maps, the risks, the real threats.** Flood and risk tools are on our website. Our local newspaper also has some of the best writers on this topic in the world, so we're getting it out through that avenue too. And in lower income neighborhoods, we went door-to-door with firemen to talk about evacuation. We have not yet seen a program as successful as the Dutch Dialogues. The recognized global experts really drew a crowd." In addition to engagement, Wilbert insists that collaboration across departments, particularly among staff in planning, community development and stormwater, was key to supporting year-long efforts with City Council, developers and residents to get effective legislation passed to eliminate future development mistakes. The city is also focused on improving public safety and purchasing fire trucks and other vehicles that can be driven through flood waters. As officials, long-time denizens and the private sector mull over tough questions around retreat, resilience and the future of their historical city, new residents arrive every week and for now, Charleston's population continues to grow.

## Is your city experiencing climate migration?

“

**The big question now is the next level of adaptation. Do you construct seawalls, do you raise homes, do you raise roads, or do you abandon areas over time? That's kind of our next chapter.**

– **Mark Wilbert**

Chief Resilience Officer, City of Charleston (retired)

## Resources

[All Hazards Risk and Vulnerability Assessment](#)

[Charleston Comprehensive Plan](#)

[Flooding and Sea Level Rise Strategy](#)

[Dutch Dialogues in Charleston](#)





## ORLANDO, FL:

### Navigating growing pains

The city's location in Central Florida helps Orlando, FL, avoid *direct* sea level rise impacts, and this relative safety will continue to make it an attractive destination for coastal residents seeking higher and drier ground. Orlando has already hosted hundreds of thousands of residents fleeing Caribbean islands during the 2017 hurricane season. But the city has its own share of climate threats and social stressors, and according to recent climate migration projections that take sea level rise into account, Orlando may continue to receive residents displaced after storms and those looking to permanently relocate to a more inland city.<sup>87</sup> In preparation, Mayor Buddy Dyer and city staff, including sustainability director Chris Castro, have pushed to make the city sustainable, livable and more resilient to current and future conditions through integrated city and regional planning.

Prior to the pandemic, Orlando, home to Disneyland and numerous other theme parks, was America's most visited city with nearly 75 million recreational visitors per year, or around 200,000 a day. The city's population is young and diverse. Its economy has diversified in recent years to include tech and healthcare. Due to the region's growing economy, natural and social amenities, general affordability (no state income tax) and access to higher education institutions, the Orlando metro region is a wildly popular destination for both Americans and immigrants looking to relocate. **Pre-pandemic, an estimated 1,000–1,500 newcomers were arriving in the Orlando metro region every week. The 2.4 percent growth rate from 2018 to 2019 was four times the national rate.**<sup>88</sup> As in many metro regions, desirability and rapid growth coincide with a lack of affordable housing, and Orlando ranks high on the list.<sup>89</sup> Most new housing developments in the private market cater to newcomers with higher wages, leaving the elderly, disabled and the hundreds of thousands of low-wage hospitality

workers in the region at high risk of homelessness.\* Recently, the city modified its land development code, enabling homeowners to construct accessory dwelling units (ADU) on their properties, thus increasing the number of units available in the city. Overall, the city's housing crisis remains a top-of-mind issue for the community and its leaders.

The city is preparing for rapidly changing stressors and conditions through its Green Works Orlando initiative, which addresses a wide variety of social, ecological, economic and infrastructural challenges. These range from green job programs, climate adaptation efforts, decarbonizing the built environment, increasing renewable energy generation and investing in multimodal, clean transportation and electrification. The Green Works plan includes the creation of "resilience hubs" across the city, an expanded tree canopy and more green infrastructure to address both extreme heat and flooding. Castro and his team are currently developing an addendum to the Green Works plan that includes holistic resilience strategies to address business continuity, cybersecurity and the digital divide.

Castro described the unique culture of partnership and collaboration in Orlando that has enabled a wide variety of stakeholders to work together to address short and long-term challenges: "We've developed a foundation for collaboration so that we can activate partners immediately when needed. We make proactive investments in our facilities, social support programs like the Hispanic Office for Local Assistance (HOLA) and United Way. We all want to create a different future for Orlando, and this camaraderie between the utility, the city, the county, transit, nonprofits and the universities is helping us transform Orlando into a city at the forefront of innovation and sustainability."

\* According to the National Low Income Housing Coalition report *The Gap: A Shortage of Affordable Housing* from March 2019, "Absent public subsidy, the private market is unable to produce new rental housing affordable to these households, because the rents that the lowest-income households can afford to pay typically do not cover the development costs and operating expenses of such housing. New rental housing, therefore, is largely targeted to the higher-price end of the market."



These partnerships demonstrated their value during the 2017 hurricane season when an estimated 300,000 Floridians and Puerto Ricans fleeing hurricanes Irma and Maria arrived in Orlando, most without lodging, employment or resources. HOLA set up booths at remote operation centers and used the city's airport to provide recent arrivals with immediate housing, employment and school assistance. Partnerships came into play once again as community centers and gymnasiums turned into temporary housing, and as Orlando's plethora of hotels generously donated rooms and discounted rates. Approximately 25,000 of the evacuees resettled in the Orlando region.

Regional partnerships are also critical. The city and the regional planning council are lead partners in the East Central Florida Regional Resilience Collaborative (R2C). "This is 35 government members all committed to working together, and we've already created a regional greenhouse gas inventory and a vulnerability assessment," says Castro. On the transportation front, MetroPlan Orlando, the regional transportation authority, just underwent a 2045 forecast planning exercise that incorporated climate change and the projected influx of new residents in its 2045 Plan. Castro is a member of the Orlando Utilities Commission (OUC) advisory board, which supported the use of future climate scenarios (and a higher regional population) into their load forecasts and integrated resources plan (IRP) for 2050. Castro maintains that decarbonization must be part of future considerations if a city wants to be livable, economically competitive and climate resilient. "The biggest thing coming out of this utility IRP plan is that moving forward, climate change and carbon are part of the calculus for how we forecast future utility infrastructure. The transition to renewables, battery storage and other clean technologies is drastic; it's a huge pivot towards energy diversity and reliability," Castro says.

## Is your city experiencing climate migration?

“

**It happens after big events like hurricanes, but I wouldn't say it's a consistent influx of people due to climate—yet. But we may start to see people moving away from the coasts, especially where saltwater intrusion is a big challenge. I do see a future, maybe 20 to 30 years from now, where that may become a consistent influx of people, whereas right now it's based on certain events.**

– **Chris Castro**

Director of Sustainability and Resilience, City of Orlando



## Resources

[Green Works Orlando](#)

[Hispanic Office for Local Assistance \(HOLA\)](#)

[East Central Florida Regional Resilience Collaborative](#)

[MetroPlan Orlando: the 2045 Plan](#)

[Orlando Utilities Commission Electric Integrated Resource Plan \(EIRP\)](#)



## CHICO, CA:

### Adjusting to overnight growth

With just over 100,000 residents, the city of Chico, CA, is the largest urban center north of Sacramento. In this breathtaking mountainous and agricultural landscape, wildfire risk has steadily increased over the past decade, with fires each year burning more forested lands than the last. Chico is relatively safe from the direct impacts of wildfires, but residents typically suffer through very hot, dry summers blanketed by heavy smoke on the worst days, and hazy air when fires are farther away. In recent years, spring flooding has affected both residents and businesses across the city.

Chico's bikeability and livability, unrivaled access to outdoor amenities, its variety of employment opportunities, and appeal to Bay Area residents seeking lower rents and home prices have made it a highly desirable — and increasingly less affordable — community for lower- and middle-income earners. It is widely known that California's cities are experiencing a housing unaffordability and homelessness crisis, but displacement due to wildfires has also increased in the past decade. Former Vice Mayor Alex Brown notes that "housing affordability is inextricably linked to climate change, but the housing crisis is even deeper than that."

Some towns have suffered dramatic

population losses while others, like Chico, have mushroomed overnight. In 2018, the city suddenly played host to more than 20,000 residents from the nearby town of Paradise whose lives had been upended by the Camp Fire. Evacuees poured into Chico's emergency shelters, hotels, rentals and parking lots as the city rapidly and efficiently transitioned into an emergency hub. Chico city council moved quickly to pass a 10 percent maximum price gouging ordinance on local businesses to minimize impacts on new and existing residents. This also applied to rents, but only as long as emergency orders were in place. Initially, residents in Chico responded to the tragedy by opening their homes, hearts and wallets to strangers.

As time passed, however, the overnight influx of traumatized evacuees posed obvious challenges to the city such as traffic, an uptick in car crashes, crime, fewer available hospital beds, an increase in homelessness, more students in the school system and even a 16 percent increase in average daily sewage flows, which placed added demands on the public works department and other city staff. But the long-term implications were even more severe. Prior to the Paradise tragedy, Chico's housing vacancy rate was already less than 1 percent. Many wealthier



residents fleeing the Bay Area's sky-high rents and home prices had begun settling in Chico, which had led to higher rents, home prices and subsequent evictions. After the Camp Fire, new renters flooded the market. Councilmember and former Vice Mayor Alex Brown adds that shortly thereafter, "there was a mass wave of evictions, including by landlords who didn't renew leases, especially to renters in single family homes. The City Council received hundreds of emails asking for help." When evacuees who could not return to Paradise finally received compensations from the utility, PG&E, they were able to purchase homes in cash, further tightening a red-hot market. She adds, "Realtors have told me that there's no expectation this is going to change anytime soon. I think we're now stuck in this high-priced home environment."

Immediately after the Camp Fire, the city established a climate action commission and declared a climate emergency. Brown explains why: **"You do have to recover, you do have to deal with the trauma with immediate impacts of an emergency. But you can also take the 10,000-foot view and understand that this didn't happen in a vacuum. It happened because of some serious emergencies that are bubbling under the surface."** Brown's sage advice to other communities: "We need

to simultaneously acknowledge that there are some things we need to take care of right now, and we need to be thinking and planning for the future. Science informs us that climate change is connected to these disasters, and the subsequent connection to migration needs to be named."

Since Chico was not directly in the burn zone, it received only \$3 million in federal assistance to manage the disruptions in public services and housing. However, it was also eligible for \$32.5 million in CDBG-DR (Disaster Recovery) funding to facilitate the development of multi-family housing. The city will receive a portion of the funds delivered to Butte County for the same program. Brown notes, "There are some significant affordable housing units coming online due to those funds. It's not going to make a huge dent, but it's a movement in the right direction when we have historically severely underproduced affordable housing units." Residents and officials have discussed other affordable housing models such as investments in single room occupancy or multi-family housing, but nothing has come to fruition. A moratorium on evictions nearly passed, but several property owners pushed back on the city's efforts. Legislation that would permit residents living in trailers to



park on private property failed, as did a proposal to host a large FEMA trailer site for displaced people. Resentment among residents on all sides has grown and solutions seem to be more out of reach with time.

Eventually, the conversation around housing protections dwindled as evacuees settled either in Chico or elsewhere and the initial crisis wave subsided. However, the number of Californians experiencing homelessness in the region has increased dramatically, many having been displaced by wildfires. Brown adds, “For many in our community, now that the initial tragedy is over, the residual trauma and impacts on housing do not feel as significant because they’re not as present. Many think that everything is okay. Yet the people whose cost of living has increased so significantly since the fires don’t have a seat at the table, and so that residual impact is simply not acknowledged.”

It is a rapidly growing community that faces both climate and housing stressors, and despite efforts by local champions and city council to ameliorate the housing and homelessness crisis, address climate impacts and improve sustainability, pushback from property owners and residents who are less concerned with these threats have largely thwarted proposed improvements. Imagining how yet another nearby wildfire would affect Chico is practically unthinkable. Residents who can no longer afford to live in Chico must seek housing elsewhere. Often that means living in the wildland urban interface (WUI), where fire risk is high. Many concede that neither the housing prices nor the political climate will ever be the same in Chico. For now, Brown is still standing up for her community, but she is not optimistic about the housing market or the shift in local politics and acknowledges that the immediate economic needs of the region to develop more housing in the WUI is outweighing the ability to take a more proactive approach to long-term resiliency planning.

## Is your city experiencing climate migration?

“

**Yes. An interesting reality is you’ve got a lot of people who relocated from after the fire in Paradise. Now, those people who lived through such a tragedy are getting their checks from PG&E and are able to pay for homes with cash in hand. Our housing market is hot, and that is part of the reason why people who live and work in the community can’t afford it. It’s disastrous all around.**

– **Alex Brown**

Councilmember and former Vice Mayor, City of Chico

## Resource

[Chico Climate Action - Plan Update and Commission Information](#)





## ANN ARBOR, MI: Taking a learning-focused approach

Ann Arbor, MI, is a college town nestled on the banks of the Huron River, less than an hour outside of Detroit. Home to the University of Michigan and a wide variety of world class amenities including museums, restaurants, arts, culture, and music, it is frequently ranked as “the most educated city in America.” It still retains a small-town feel, is very walkable and has reasonable access to public transit and proximity to Detroit and a much larger metropolitan area. Ann Arbor is a highly desirable and costly place to live but has a notable lack of ethnic or immigrant communities — particularly as the cost of living has increased

With cold winters and warm summers, Ann Arbor’s location near the Great Lakes provides residents with access to clean, fresh water and relative protection from other natural disasters such as hurricanes, tornadoes and wildfires. But the city is not without its own challenges: there has been a 44 percent increase in annual rainfall over 30 years, leading to chronic nuisance flooding as stormwater systems are frequently overwhelmed. As Missy Stults, Director of Sustainability and Innovation, at the city notes, “When it rains, it really does pour, causing significant public health, safety, environmental impacts.” Extreme heat is also a growing issue. Summers are hotter for longer, and lower income residents without air conditioning and homeless populations remain vulnerable to heat stress. Warmer winters and less snowfall mean more freeze/thaw and ice events, which creates increasing strain on infrastructure and the deterioration of roads.

Ann Arbor has undertaken significant efforts to increase sustainability and resilience through several city plans and programs, including the nationally recognized A<sup>2</sup>Zero Climate Action Plan, an effort passed by City Council in 2020 that aims to prepare the city for climate impacts while equitably achieve net zero greenhouse gas emissions by 2030. The



city has also engaged in a robust hazard mitigation planning process, provided emergency preparedness kits and food distribution to lower income residents, created several community resilience hubs, launched solar-plus-storage initiatives and finalized stormwater improvement plans. The city is working with nonprofit leaders throughout the community to enhance both physical and social infrastructure. Stults emphasizes that building community resilience goals necessitates trust-building and strong relationships. **“When we work with community members and organizations, we want to make sure we understand their needs and find ways to help fill those before jumping into dialogue about our shared sustainability and resilience goals,”** she says. She focuses on deep, people-centered relationship building by hosting neighborhood events like ice cream socials — and always showing up.

In 2019, Stults and her team received a grant from NLC to investigate how climate migration projections could help the city plan for potential shifts in population due to climate migration, especially as it pertains to Ann Arbor’s Capital Improvement Plan (CIP) and imminent upgrades of the city’s water treatment plant. She acknowledges that Michigan is a water-rich state and Ann Arbor is a desirable destination. Even if Ann Arbor itself experiences minimal growth, if neighboring municipalities increase in population, everyone is affected. “With people moving in, it has the potential to strain our infrastructure if it’s not designed to increase capacity.” More development on the outskirts of the city could create more impervious surfaces and increased stormwater runoff. Even public transit could feel the pinch if the city were to see increased regional growth.

Stults partnered with Mathew Hauer, Assistant Professor at the Center for Demography and Population Health at Florida State University, to better understand local and regional climate migration projections. They held meetings with city department heads, Southeastern Michigan Council of Governments (SEMCOG), and the regional planning council, and hosted an informal community meeting for interested residents. As Stults actively searches for data and other ways to improve Ann Arbor’s planning processes, she recognizes the limitations of migration models. “Modelers



aren't currently comfortable with providing detailed information to cities about exactly how many people may move here, due to high levels of uncertainty. But it is helpful to have a range of possibilities, even if we can't get an exact number. Local communities know how to deal with uncertainty; we just need some information to begin planning around."

Stults is following the conversation around climate migration at the national level and reiterates just how difficult it is to plan for future climate migration. "We've been successful at integrating climate projections into many of our planning models but still haven't been able to integrate demographic changes influenced by climate-based migration. Our goal is to do more research while also supporting community conversations on the topic. Climate-based migration can be a boon to a community, but it can also strain physical, social, cultural, and other forms of infrastructure if it isn't planned for. We want to normalize this conversation, so Ann Arbor stays a world-class city for all."

Although Stults would like to increase the city's research into climate migration trends, capacity and budgets are a major limitation. For cities looking to develop robust programs like those in Ann Arbor, she notes, "Make sure you've integrated climate change into your existing work, like land use planning, water planning, and community outreach. Otherwise, you're going to be dealing with cascading impacts when things do start changing."

## Is your city experiencing climate migration?



**It's hard to tell, because we don't have the data yet. But we likely will because we are the land of water and a highly desirable community. People may just be looking for a place with a high quality of life and good schools, or maybe they went to U Mich and want to move back because of climate stressors where they currently live. Regardless, it behooves us to plan for this migration and ensure we are a welcoming community.**

– **Missy Stults**

Director of Sustainability & Innovation, City of Ann Arbor

## Resource

[A<sup>2</sup>Zero Climate Action Plan](#)







## FLAGSTAFF, AZ: Dealing with rising costs of refuge and tourism

Flagstaff, AZ, is a picturesque mountain community and the hub of northern Arizona, 74 miles from the Grand Canyon. It was built as a logging community in the 1800s and maintains a quaint and historic downtown area despite recent rapid growth. The city sits in a high, arid desert, nested at the base of the San Francisco Mountain range, 7,000 feet above sea level in the largest contiguous ponderosa pine forest in the world. The city's elevation makes it a cool refuge for newcomers and weekend visitors who are pouring into the city from hotter Arizona cities and California. In addition to being the home of Northern Arizona University, Flagstaff sees nearly 5.5 million tourists every year with outdoor activities and related tourism accounting for as much as 60–70 percent of the town's economic activity. Income inequality is growing and so is the region's housing crisis.

Climate change has an outsized impact on Flagstaff's natural resources and human health. The city currently experiences one of the highest freeze/thaw event numbers in the

nation. These temperature extremes place significant demands on the city's infrastructure — asphalt meant for 20 years sometimes lasts less than 10. Most of the city's precipitation used to be snow, but more than half now falls as rain, leading to flash flooding and increased runoff events. Decreasing snowpack also impacts the local well water supply by limiting aquifer recharge. In a region that has been in extreme drought for decades, water resilience intersects dangerously with wildfire threats, which remain the largest public health and safety concern.\* **“We need to shift away from the concept that there is a ‘fire season.’ We have fires year-round, even in December. We need to take this into consideration as we create resilience programs that are long-lasting,”** declares the city's Sustainability Director, Nicole Antonopoulos.

After the catastrophic Schultz fire caused \$23 million worth of damage to the city's primary well, voters passed the Water Resource and Infrastructure Protection Fee,

which was revenue debt financed and backed with a monthly fee of around \$1 to \$5 per household or business, generating more than \$1 million each year for forest health and watershed protection. Antonopoulos notes that the measure passed because residents made the connection between local ecology, watershed protection and human health. They also recognized the urgency to ensure that visitors and new residents are educated and prepared for wildfire and drought. **“One of our biggest challenges with community engagement and education is our continually transitioning community, either university students, second and third homeowners, or visitors,”** Antonopoulos says. City staff continue to expand community engagement efforts through the Resilient Neighborhood Network, Climate Working Groups, sustainability leaders training and a climate ambassador program.

Costs are adding up. The city is experiencing more infrastructural strains as increasing numbers of visitors and new residents use roads and water, require sewage and sanitation,

and utilize other public services. Additionally, newcomers may have expectations around how often snow is plowed, while tourists may be unaware of how their activities are depleting local natural resources. Due to Flagstaff's cooler weather and attractive amenities, higher income residents from Arizona and elsewhere have purchased second and third homes there. These trends accelerated during the pandemic as part of the “Zoom town” phenomenon, in which remote workers with more disposable income relocated to small- to mid-sized, amenity-rich, outdoor-style communities in the mountains.<sup>90</sup> Weekend visitors seeking relief from the heat of nearby cities such as Phoenix are an economic boon, but their presence also places a strain on regional infrastructure and natural resources. The pressure for second homes and vacation rentals has stressed an already tight housing market and prices are skyrocketing. More than 40 percent of residents in Flagstaff are renters, but vacation rentals have become more prominent as their relative profits increase, increasing economic inequality between the city's low-income residents.\* “As a

\* Fire danger remains a critical public health issue, compounded by rising temperatures. Due to Flagstaff's traditionally mild climate, most of its older housing stock does not have air conditioning. On poor air quality days, low-income residents have to choose between wildfire smoke and a cool breeze.

\* According to the U.S. Census, Flagstaff has a poverty rate of 17.5%.



city, we declared not only a climate emergency last June, but a housing emergency as well.” Antonopoulos refers to the city’s tourism economy as “adding complexity to an already challenging situation. We are developing tools for renters in our community to make informed decisions about their housing choices. Through RentLab, we are crowdsourcing data about energy bills and other sustainability related information.”

Antonopoulos bemoans the lack of accurate data, which will make it difficult for the city to incorporate climate migration into its upcoming regional plan amendments and its capital improvement plan. “We need to be strategic and think about short- and long-term planning rather than reactionary planning. We need a more sophisticated way to capture and analyze data that can inform our policies and programs.” Arizona state laws make it difficult to identify financing mechanisms to address climate-related issues. But as climate impacts worsen locally and population numbers increase, new funding and revenue sources for resilience efforts will be needed. The community is growing, changing and doing its best to manage an increasing cost of living for longtime, lower-income residents while continuing to attract visitors and wealthy residents to keep town coffers filled. Antonopoulos recognizes that these and other challenges are simply beyond the city’s control: “Our community is growing, and our values are changing. We are working hard to develop engagement efforts that inspire action in every sector of our community.”



## Is your city experiencing climate migration?



**We have limited data to validate the climate migration phenomenon. But we are seeing a shift as the number of days over 100 degrees is increasing in the Phoenix area; we’re experiencing associated impacts. We have ‘weekend refugees’, second-or-third homeowners, and remote workers, so it’s expanded beyond just weekend visitation. When you couple that influx with university events and holidays, it puts a tremendous pressure on the city’s infrastructure. We have a difficult time planning for and reducing peak demand in energy and water.**

– **Nicole Antonopoulos**  
Sustainability Director, City of Flagstaff



## Resources

[Sustainability Leaders](#)

[Climate Ambassador Program Website](#)

[Flagstaff Regional Plan](#)

[Carbon Neutrality Plan](#)





## CINCINNATI, OH: Getting ready to grow

Like many other midwestern cities with a rich history, Cincinnati, OH, suffered a gradual post-industrial economic decline. Its population shrank and many of the old industrial jobs moved away. However, today, Cincinnati is thriving once again and things are looking up. As the city's Sustainability Director Michael Forrester notes, "In general, we're an optimistic mid-sized city that punches above our weight. We're in a great position to grow." In fact, the 2020 Census showed that Cincinnati saw an increase in population — for the first time in 70 years.<sup>91</sup>

City officials recognize that investments in climate resilience, electrification and equitable climate adaptation will prepare the residents of both today and tomorrow for current and future climate impacts. The city has invested in restoring ecological systems and reducing stormwater impacts on the sewage system by "daylighting" previously hidden streams, passing a massive transit bill, mapping the city's hottest neighborhoods to determine where targeted heat reduction efforts should be focused and

supporting community-driven climate solutions — particularly in lower-income neighborhoods. The city has also completed a 100-megawatt power purchasing agreement for development of an industrial solar facility 40 miles outside of Cincinnati — the largest municipally led project in the country.

With so much potential and projected growth on the horizon, housing challenges are coming into focus. Encouraging affordable housing construction and ensuring residents can stay in their homes is a priority for the city, using development incentives to encourage investment and leveraging federal funds to drive projects. However, the city is now entering a new chapter. "Now we ask, '*who are you going to serve?*' We haven't been able to ask that before because any investment was a good investment. But now affordability is an issue that we are actively debating," notes Forrester.

The historic city has undergone quite a revitalization. What was once a ghost town after 5 p.m. is now bustling with nightlife, restaurants

and small businesses. Large brick buildings provide an undeniable charm that connects the city's past to its future. "We're very fortunate that during that period of disinvestment we kept all those buildings and neighborhoods," Forrester says. "When you look to the future, these are buildings that are begging to be repurposed. Instead of a resurfaced parking lot, we have five-story, multi-family homes. So, when you talk about climate refugees and all those things, we literally have the infrastructure now to support significant amounts of new residents."

Forrester sees huge potential for the city, partially because new residents are already coming. "Is Cincinnati viewed as the place that people are moving to escape climate impacts? I don't think we're there yet. But anecdotally, people are absolutely leaving areas impacted by fire and extreme weather, and they are moving here." Forrester knows that this is a longer-term vision for the future. **"We'll be impacted, just like everyone will be impacted by climate, but I would consider Cincinnati as an opportunity to be a safe haven 20 to 50 years out. We're**

**fundamentally in a better position than a lot of other cities are. We are away from the coasts, and at low risk of wildfire. And we have water."** Notably, Cincinnati is one of just a handful of cities that have recognized the potential opportunities of climate-induced migration and they have included this idea in their 2018 Green Cincinnati Plan, a five-year sustainability and resilience road map.

Although city staff recognize its potential as a safe haven in the coming decades, Cincinnati has a long way to go to ensure its infrastructure is updated and ready for future climate challenges. "Our city isn't built to handle the weather of Little Rock, AR," Forrester warns. Many residents, particularly those who are lower income in multi-family housing, are less likely to own an air conditioner — and more heat is on its way in the coming years. The city also faces flood risks, particularly due to cloudburst rainfall events that can cause significant flooding and geological changes.



Today, significant racial discrepancies in life expectancy, employment, health outcomes and home ownership between Black and White neighborhoods remain. The city knows that climate change is only likely to exacerbate these inequalities. But with resident support, they are making strides to prepare for the future. Forrester notes, “We’re making Cincinnati a good place to live. People can go anywhere, so how do you make Cincinnati the place that they want to go to? We can position ourselves around resiliency, stormwater management, and housing, but it’s more than that.” **Centering equity at the front of the strategy will be critical so that long-term residents can enjoy the benefits of redevelopment. “We want Cincinnati to be for everyone, but we want Cincinnati to be for Cincinnatians too.”**



## Is your city experiencing climate migration?

“

**Anecdotally, yes. When we talk to people, new residents, people who have been out in California or coastal cities or had their home hit by two or three hurricanes—those people are definitely here in Cincinnati. If avoiding hurricanes is your motivation for moving, we’re one of the few cities that will be able to provide you that comfort.**

– **Michael Forrester**  
Sustainability Director, City of Cincinnati

## Resource

[Green Cincinnati Plan](#)







## CITIES IN VERMONT: Starting the conversation

With plenty of fresh water, potentially milder temperatures in the coming decades, relative safety from coastal hazards or wildfires, and many working farms, the Green Mountain State may seem like an ideal location for those seeking a less climate-affected place to live.<sup>92</sup> But Vermont is not free of risk. Its infrastructure is aging. The geography lends itself to flash floods that can cause widespread erosion as rivers change their course. During severe storms, homes have been swept entirely off their foundations and pulled under bridges. Many of Vermont's scenic roads and villages were built along rivers in risky areas that only become more so with increased extreme storms.

Life in Vermont has its quirks. Many parts of the state remain broadband-free and lack cell phone service. Many local governments are staffed by volunteers or just a few officials. Most towns do not have public sewer or water or transit, which makes it challenging for towns and cities to adapt to any influx of people who require public services. There is limited cross-jurisdictional collaboration among small towns peppered across this picturesque state. Kevin Geiger, Director of Planning at Two Rivers-Ottauquechee Regional Commission (TRORC), illustrates, "We have no county government; everything is wall-to-wall town,

and our towns are all minimally staffed. So, you might have a two-person road crew and a part-time town clerk, and if you call on a Friday, no one will answer the phone."

Vermont was hit hard by Tropical Storm Irene. The 2011 storm dumped up to 11 inches of rain, killed seven people, destroyed nearly \$750 million in property and damaged 200 bridges, 450 utility poles, 600 historic buildings, 1,000 culverts, 2,400 road segments, 3,500 homes (hundreds of which were a total loss) and 20,000 acres of farmland.<sup>93</sup> With his background in emergency response, Geiger is particularly attuned to the value of pre-disaster preparedness and understands the staffing challenges of most Vermont towns. The fact that the storm's floods hit mainly during the day on a Sunday when volunteer responders were available helped avoid many additional deaths.

Since Irene, he has helped develop and administer programs around the state to buy homes and properties that were destroyed during the storm or are in a high-risk zone. "There is a myth that Vermont is green and safe — and we are, but we still do have risks and people don't really understand that." For example, despite the recent memory of Irene, the storm only heavily impacted about

half of the state, so many Vermonters are unaware of their true flood risk. Most still rely on outdated FEMA flood maps, which makes risk communication significantly more challenging for state floodplain managers. Vermont also suffers from lateral erosion of streams and rivers, a risk not shown on even the best FEMA maps, which focus on inundation. State officials have developed their own "river corridor" maps that show this risk to help guide decision-making for residents and towns.

There remain significant psychological, cultural and economic barriers to reducing risk for Vermonters in flood zones. Relocating roads in hilly terrain is difficult. Investing in historic villages places more development at risk. And for those properties where buyout does make the most sense, the whole process can take up to five years. "Some towns have concerns about losing property tax revenue from buyout programs." But he adds, "I tell them that they're going to lose the value whether they like it or not. If you don't do the buyouts, you could have an abandoned neighborhood after a flood." For those who still don't want to lose a tax base, Geiger is frank: "You may be the one hauling a body

out from under a bridge in a home that got swept away when the next disaster happens." He acknowledges that these community decisions are never easy, but, **"You never have the solution until you have the discussion, so you need to start the conversation... By the time you're tired of telling people, they're starting to hear it."** If people live in a flood zone, they're either in a pre-disaster or disaster situation, so we must communicate non-stop until they adapt and prepare."

In the smallest towns with longtime residents, these conversations are particularly difficult. "We aren't doing whole-neighborhood buyout programs. It's just one house at a time. I'd really like to find ways to maintain the social structure of a community by providing rehousing assistance and matching them to other housing options in the community. We should have a program that builds a new house for every one that gets bought out, but this will take proactive planning."

Currently, Vermont's population is just under 650,000 residents, rapidly graying, and growth is barely visible.\* Land transitions loom on the horizon as many farmers reach

\* According to the U.S. Census, growth rate in Vermont was 2.8% between 2010-2020.



retirement and could be looking to cash out. The state's small-town feel has inspired out-of-state residents from wealthier households to purchase first or second homes in rural areas. From 2020-2021, the value of farmland\* and homes rose sharply, making these properties out of reach for many Vermonters. Towns and regional planning agencies now face new demands from younger residents.<sup>94</sup> "People have been wanting to move in, but they have been limited by broadband and cell service. Now that there is more broadband and cell rolling out, we can expect more growth. We may consider ourselves expensive, but compared to Boston, D.C., or Oakland, we are much more affordable. Our housing sales have been crazy — people are buying properties sight-unseen, in cash, \$100,000 over the asking price," Geiger says.

Proactive planning to reduce vulnerability to flood risk intersects with the state's other needs, especially those that may be triggered by climate in-migration. Like other receiving communities and climate destinations, Vermont would need to invest in water infrastructure and affordable housing, consider establishing state mandates for flood protection (a challenge in a state that prides itself on local control), restrict development in floodplains (a challenge for towns and cities that rely on property taxes) and improve flood risk disclosure to homebuyers. Until then, as new, wealthier residents continue to purchase homes in the state, existing residents are finding it increasingly difficult to get out of harm's way.

\* According to USDA's Land Values 2021 Summary, the increase in agricultural land value has risen across all states prior to the pandemic but has accelerated sharply since 2020 in Massachusetts (21.2%) and several other states including Vermont (9.9%).

## Is your state experiencing climate migration?



**Yes, anecdotally. We saw spikes after 9/11 and again during the pandemic. But if you look at the lists that say where people should move to in response to climate change, Vermont has half of the top 15 places on the list. Vermont has also emerged as a climate haven in popular culture—in the film *I am Legend*, people flee to Bethel, Vermont—the place with the big wall.**

– **Kevin Geiger**  
Director of Planning,  
Two Rivers-Ottawaquechee Regional Commission



## Resources

[Vermont's Tropical Storm Irene Buyout Program: An Overview and Recommendations](#)

[Vermont Economic Resiliency Initiative \(VERI\)](#)



# Conclusion

**T**HIS CLIMATE MIGRATION typology is not the final word for local governments. Each city is unique and has its own blend of politics, climate impacts, cultures and history that make it a special place to live. Following the release of the grim United Nations IPCC Sixth Assessment Report and as “Net Zero by 2030” targets gain momentum among stakeholders across the globe, the 2020s are the last chance to put forward-thinking, equitable policies, programs and practices into place that turn climate migration into an opportunity and a viable adaptation choice.<sup>95</sup> The goal of this framework and report is to support city leaders, practitioners and advocates for climate action and adaptation to inform change and instigate more in-depth discussion across scales and sectors. Lastly, it is important to be humble when thinking about the earth’s natural systems. Climate projections are not predictions but working within a range of uncertainties and with the best data possible today it is possible to prepare for the unknown.







# Recommendations

**T**HERE HAS BEEN limited guidance or agreed-upon frameworks to support governments at any scale in their planning and preparation for climate migration. And with little support until recently from the federal government, fiscally strapped local governments have picked up this daunting responsibility — and the tab.

Today, the landscape is different. Cities across the U.S. have a once-in-a-generation opportunity to leverage American Rescue Plan Act (ARPA) and Bipartisan Infrastructure Law (BIL) funding to prepare their sewage and drinking water systems, upgrade bridges and transportation systems, revitalize local assets and amenities, and invest in and protect affordable housing. These funds are flexible and can support a variety of projects that better help communities mitigate and adapt to the impacts of climate change.

## All cities

### Leadership and governance

- ◆ Talk with other elected leaders and across municipal departments to discuss risk, population movements and adaptation responses.
- ◆ Engage directly with residents, community leaders and other key stakeholders in the community to discuss risks and subsequent adaptation responses.
- ◆ Collaborate with neighboring jurisdictions and regional entities to address climate impacts and population movements. Identify shared priorities, exchange knowledge and capacity, and build trust and relationships. See the [Southeast Florida Climate Change Compact](#), [East Central Florida Regional Resilience Collaborative](#), and [Green Umbrella](#) for more information.



## Planning

- ◆ Invest in climate action planning and decarbonization. Reducing our greenhouse gas emissions is the first step in preventing climate disasters.
- ◆ Invest in resiliency planning and conduct a risk and vulnerability assessment to evaluate key hazards, exposures and risks posed to sensitive populations, infrastructure, the local economy, cultural assets and city services.
- ◆ Engage with county and state agencies in scenario planning workshops.
- ◆ Discuss and re-examine current growth projections for the city. It is unlikely that regional or state population projections consider climate change and thus may under or over-shoot.
- ◆ Incorporate risk and population projections into the city's comprehensive plans, particularly for infrastructure modernization, affordable housing, and social services.
- ◆ Prioritize at-risk populations in emergency and climate preparedness. Use resources from the [Institute for Diversity and Inclusion in Emergency Management](#) for support.
- ◆ Make preserving existing affordable housing a priority and increase units of affordable housing by reexamining zoning laws and improving local land use regulations.

## Funding

- ◆ Use ARPA and available federal infrastructure dollars to make climate-smart decisions and plan for long-term scenarios that integrate climate risk.
- ◆ Support lower income residents by providing funding for climate proofing in advance of extreme events.

## Vulnerable cities

- ◆ Move to limit new developments in high-risk areas such as the wildland urban interface (WUI), coastlines or floodplains. Start discussions around how legislation can help prevent disasters and how residents can prepare.
- ◆ Hold community-wide conversations regarding adaptation options early and often and before disaster strikes. Look to other communities and state programs that have provided consultation and support for buyouts and acquisitions if that is a viable option.
- ◆ Consider how property tax revenue for your community may be affected if residents and businesses relocate away from high-risk areas. If your community is growing rapidly now, conduct internal scenario planning workshops to discuss these issues and prepare for the unknown.
- ◆ Advocate for statewide building code mandates that reduce risk for extreme events such as hurricanes, tornadoes and wildfires. Request additional funding to cover procedural or implementation fees.

## Recipient cities

- ◆ Create an acquisition fund for both affordable rental homes and owner-occupied homes.
- ◆ Develop and support the creation of both a community land trust and/or shared equity homeownership program.
- ◆ Develop and support the development of land banks to retain affordable housing.
- ◆ Increase density in residential areas by allowing the development of multi-family housing and ADUs.
- ◆ Develop and implement anti-displacement plans and center equity to produce and preserve affordable housing.



## Climate destinations

- ◆ Protect the city's affordable housing stock by establishing a land bank and supporting the establishment of community land trusts with local organizations to protect existing residents and reduce the potential for gentrification.
- ◆ Create opportunities for vacant lots or abandoned properties through a variety of methods, including acquisitions, to support wider neighborhood stabilization, new parks or gardens that reduce localized crime and provide stormwater mitigation services.
- ◆ Leverage the enormous body of research and practice around legacy cities and community revitalization with a new lens so that climate change may present new opportunities.
- ◆ Consider acquiring certification through Welcoming America's "[Welcoming Cities](#)" program.
- ◆ Consider how densification, improved public transportation and economic development in focused areas could reduce local emissions and create a more sustainable, walkable community.
- ◆ Use the best available climate forecasts and demographic projections to estimate infrastructure sizing upgrades if you are anticipating in-migration.
- ◆ Ensure that new and existing residents have access to sustainable transportation options; invest in public transportation, bike lanes and pedestrian-friendly neighborhoods.
- ◆ Examine how an increase in population may impact sustainability or net zero targets; consider making a faster switch to renewables and ensure your grid has enough power to meet future demands.
- ◆ Consider incentives and funding for low-income homeowners to make climate-friendly investments such as solar panels, insulation and new windows.

## States

### Leadership and governance

- ◆ Allow jurisdictions to create tax and fee authorities or other funding mechanisms for climate fees, stormwater fees, etc. The inability to do so hinders cities from addressing local issues.
- ◆ Address the root cause of climate migration by reducing greenhouse gas emissions and decarbonizing economies. Climate mitigation is a critical part of the solution.
- ◆ Decentralize the electrical grid and allow local jurisdictions to purchase or generate their own renewable energy.
- ◆ Consider community choice aggregation: pass legislation to allow communities to make decisions about pricing, sourcing and mixing of power sources and allow for local incentives that permit landowners to create renewable projects within the community. This lowers electricity bills for residents and builds local resilience.
- ◆ Create statewide resilience and climate adaptation plans. Cities cannot always afford these on their own but can take cues from state leadership. Look for federal funding opportunities that can support local jurisdictions in implementing state recommendations.
- ◆ State policy and lawmakers should engage local elected officials in developing climate smart land zoning and policy. Disincentivize new construction in high-risk areas by supporting climate-smart land use policies in cities and counties.



## Funding and technical assistance

- ◆ Housing is at the center of the climate crisis. Fund affordable housing programs with dedicated, non-appropriable funds to build or renovate safe, energy efficient housing that will be resilient to the impacts of climate change.
- ◆ Use incoming federal funds to provide local governments with funding for hazard mitigation, shoreline erosion, green infrastructure, land conservation, forest and watershed protection.
- ◆ Create shared principles of sustainability and equity when making investments; money should first and foremost go to local communities that need it most. These may be rural, urban or suburban.
- ◆ Create centralized resource hubs for local governments to access state regulations, recommendations and funding streams. Often, city managers must call other communities when disasters strike to ask for support on navigating state policies.
- ◆ Expediently adopt new or updated building codes statewide and provide small grants to communities that require procedural assistance.

## Federal agencies

### Leadership, standards and research

- ◆ Provide leadership to increase knowledge and awareness on the issue of climate migration across all states and territories.
- ◆ Establish the inter-agency working group identified by [GAO Report 20-488](#).
- ◆ Create more uniform language regarding climate adaptation and migration issues. Federal definitions for terminology or a guide for local communities would minimize confusion among states, emergency managers, planners and local officials.
- ◆ Continue to identify best practices for local governments to specifically address the issue of climate migration after a disaster, particularly cities that fall into the Recipient City category. Having accessible information and recommendations for local governments (e.g., on-call resources to help cities design and implement policies and programs quickly) can reduce local burdens.
- ◆ Support climate migration research in universities, institutions and grant-making programs.
- ◆ Address the root cause of climate migration by reducing greenhouse gas emissions and decarbonizing economies. Climate mitigation is a critical part of the solution.





## Funding and technical assistance

- ◆ Help local governments access federal resources by eliminating or addressing restrictive state hurdles in funding streams. Whenever possible, create direct allocations of resources to local governments for greenhouse gas mitigation and resilience and pre-hazard mitigation projects. Local leaders know their communities and priorities best; direct investments in cities can accelerate climate action and preparedness.
- ◆ Provide customized, technical assistance directly to local governments for grant writing, pre-design and resilience planning. For smaller or under-resourced communities, a small amount of technical support for developing plans, writing grants and pre-design can have an outsized impact.
- ◆ Earmark funds dedicated to climate migration planning and implementation in Vulnerable and Recipient Cities. When these funding opportunities are competitive, it creates less incentive for understaffed communities to apply.
- ◆ Fund more pre-disaster mitigation or proactive adaptation and resilience work that can help at-risk households relocate if they are in danger. Increase opportunities for pre-disaster buyouts for properties with flood risk and expedite the approval process for repetitive loss properties.
- ◆ Consider targeting direct federal investment to Climate Destination cities that are eager to attract new residents and that have lower climate risks. Invest in good jobs for existing low-income residents and create a relocation assistance placement program for environmental justice community members who may be interested in relocation assistance.

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**It just has not reached that level of concern. And it never does, right? It never reaches the point of people really kind of being forward-thinking about this until the crisis is upon you or about to hit you in the face.<sup>96</sup>**

**- Clifford Rossi**

Former Senior Risk Officer at Fannie Mae and Freddie Mac, speaking about how climate change could spark the next home mortgage disaster with Politico in 2020



# Appendix

## Three typologies for cities experiencing climate migration



### Vulnerable Cities

- ◆ Under existential threat from frequent, extensive coastal or inland flooding, drought, wildfire or extreme sustained heat
- ◆ Entire city or majority of the city is exposed to these hazards
- ◆ Limited resources or capacity to implement large-scale resilience initiatives
- ◆ May be currently experiencing rapid growth due to amenities and other pull factors
- ◆ Lack staff capacity to provide residents with adequate information on emergencies, evacuations and on forecasted climate risks and adaptation options
- ◆ Likely to face significant strains on public infrastructure or social services and tradeoffs in paying for resilience initiatives over other essential services
- ◆ Climate change adaptation is not a high priority and will require incentives and assistance from state and federal government
- ◆ Lower income and residents of color are severely impacted when city services are strained, especially following an extreme event
- ◆ Municipal credit ratings may decline over time as climate impacts worsen



### Recipient Cities

- ◆ Urban center in a region with climate risks and geographically close to vulnerable cities
- ◆ Marginally to significantly less vulnerable to climate risks than neighboring vulnerable cities (e.g., located at a higher elevation, inland or away from the WUI)
- ◆ May face socioeconomic or environmental stressors that limit adaptive capacity; housing affordability is likely under strain
- ◆ Existing stressors can quickly become a crisis when faced with sudden or unexpected influx
- ◆ If smaller or mid-sized, absorbing an influx of residents may strain resources
- ◆ Lower income and residents of color are disproportionately impacted when city services are strained
- ◆ Adaptation planning can help prepare for future shocks and/or population influx



### Climate Destinations

- ◆ More manageable climate impacts (e.g., no exposure to sea level rise, less risk of wildfires and hurricanes)
- ◆ Abundant fresh water supply
- ◆ Abundance of affordable and accessible housing
- ◆ Infrastructure is underutilized or can be adapted to support several thousand more residents
- ◆ A demonstrated desire to grow and a welcoming environment for new residents
- ◆ Improving adaptive capacity through sustainability or resilience efforts that ensure equity in city service delivery
- ◆ Taking action to protect existing affordable housing stock and creating new units



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