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Leading Practices for Proactive & Equitable Property Acquisitions to Enhance Climate Resilience:

A Report on Best Practices in Managed Retreat

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Preface

Acronyms

BRIC - Building Resilient Infrastructure and Communities

C2R2 - Rutgers Coastal Climate Risk and Resilience program

CDBG - Community Development Block Grant

CDBG-DR - HUD Community Development Block Grant Disaster Recovery Program

CDBG-MIT - HUD Community Development Block Grant Mitigation Program

CMSWS - Charlotte-Mecklenburg Storm Water Services

CRS - Community Rating System

FEMA - Federal Emergency Management Agency

FMA - Flood Mitigation Assistance Program

HCFCDD - The Harris County Flood Control District

HMA - Hazard Mitigation Assistance programs

HMGP - Hazard Mitigation Grant Program

HUD - US Department of Housing and Urban Development

LMI - Low- to-Moderate Income

LWI - Louisiana Watershed Initiative

MACH - Megalopolitan Coastal Transformation Hub

NFIP - National Flood Insurance Program

NJCCRC - The New Jersey Climate Change Resource Center

NJDEP - New Jersey Department of Environmental Protection

PDM - Pre-Disaster Mitigation grant program

SBA - Small Business Administration

URA - Uniform Relocation Act

WEM - Wisconsin Emergency Management

WDNR - Wisconsin Department of Natural Resources

Purpose

The New Jersey Climate Change Resource Center (NJCCRC) was established by statute in January 2020 to “create and support the use of impartial and actionable science to advance government, public, private, and nongovernmental sector efforts to adapt to, and mitigate, a changing climate.” To that end, our mission is to:

- Conduct research with real-world applications to New Jersey’s most pressing climate-related challenges;
- Create planning tools, develop technical guidance, undertake pilot projects, and provide practical support for addressing climate change in New Jersey;
- Connect actionable research to policymakers, planners, practitioners, the media, communities, students, and other individuals through outreach, training, and education.

The NJCCRC Climate Corps is a cohort of graduate students supporting the Center’s applied research, analysis, and program work. Climate Corps students are involved in a variety of projects, including conducting analyses of options for public policies designed to address climate change in New Jersey. This project was undertaken by the Climate Change Resource Center Climate Corps in order to understand how flood buyback and managed retreat programs are organized and administered nationwide. There are a substantial number of unique programs run by municipalities, counties, and special districts. These give us a number of programs focused on residential properties that are available for study and exploration, where we can determine efficacy. Our hope is to synthesize the best use-cases from around the nation for our readers.

Methodology

Research for this report was conducted in the following manner:

1. Literature Review: Academic journals, news articles and reports, conference/workshop presentations, books, and podcasts related to managed retreat, buyouts, flood mitigation, and climate adaptation were reviewed, allowing for an understanding of the issues as well as identifying specific buyout programs to evaluate further.
2. Review of state and local programs: US-based State and local programs to research further were identified upon completion of the literature review. Of those state and local programs discussed in this paper (and listed in the table below), seven were selected as for further study based on primary interviews: City of Birmingham, Alabama; Charlotte-Mecklenburg Storm Water Services (North Carolina); Harris County Flood Control District (Texas); Kinston, North Carolina; Staten Island, New York; Tulsa, Oklahoma; and the Wisconsin Department of Natural Resources.
3. Primary Interviews: Upon completing a review of state and local programs and selecting case study locations, the research team conducted interviews with practitioners, community group leaders, and academic subject matter experts.
4. Synthesis: Following completion of the interviews, the authors synthesized the information from the preceding stages to develop the following report.

Programs Examined		
State	Program Location	Program Type
Alabama	Birmingham	Municipal
Connecticut	--	State, USDA
Iowa	Cedar Rapids	Municipal
Louisiana	--	State
Louisiana	Isle de Jean Charles	Municipal
Minnesota	East Grand Forks	Municipal
Missouri	St Charles County	County
New York	New York City	Municipal
New York	--	State
North Carolina	Charlotte-Mecklenburg County	Municipal-County Partnership
North Carolina	Kinston	Municipal
North Dakota	Grand Forks	Municipal
Oklahoma	Tulsa	Municipal
Texas	Harris County Flood Control District	County
Texas	Houston	Municipal
Washington	Quinault Indian Nation	Municipal
Wisconsin	Soldiers Grove	Municipal
Wisconsin	--	State

Executive Summary

Managed or planned retreat is a climate change adaptation strategy that allows the shoreline to advance inward unimpeded, necessitating the removal of buildings and other built infrastructure. To facilitate managed retreat efforts, federal, state, and local government programs acquire lands and properties, including those that have been damaged by climate events and natural disasters or that may be prone to future damage due to conditions such as sea-level rise, storms, and storm-related flooding. In New Jersey, the state Blue Acres program seeks to make communities more resilient through the state-led acquisition of flood-prone properties.

With support from the State Policy Lab, the New Jersey Climate Change Resource Center Climate Corps conducted a three-month research effort to better understand programs, policies, and practices associated with managed retreat acquisition programs nationwide. The research team started with a thorough review of the literature, ranging from academic journals, news articles, conference presentations, books, and podcasts. Second, the team reviewed case studies of municipal, county, state, and special district programs. Finally, the researchers conducted a series of interviews with program practitioners, community group leaders, and academics. The focus of this research effort was to better understand certain key aspects of managed retreat acquisition programs, including the following topics.

<p>Proactivity</p> <p>The extent to which other programs are designed to identify priority properties for managed retreat purchase during 'blue skies' time.</p>	<p>Community benefit</p> <p>The ways other programs are operationalized to benefit the community opposed to individuals.</p>	<p>Equity</p> <p>How programs are designed for fairness among differing socio-economic and racial groups that programs such as these have historically disadvantaged.</p>	<p>Visioning</p> <p>What approaches have governments utilized to engage community leaders and residents in the planning and decision-making process.</p>
<p>Relocation assistance practices</p> <p>The extent to which state and local governments provide support to people as they transition to new homes.</p>	<p>Tracking relocation outcomes</p> <p>The extent to which programs have incorporated methods to catalog the relocation and well-being of household's post-buyout.</p>	<p>Fiscal impact</p> <p>Identifying the potential impact managed retreat presents to a municipalities' financial viability, and the strategies to overcome those objections.</p>	<p>Property valuation</p> <p>The process of how home value is determined.</p>
<p>The use of federal funds</p> <p>Determining the breakdown of current federal funding for flood mitigation and repairs on a program-by-program basis.</p>	<p>Locally funded programs</p> <p>Identifying programs that are operated and funded either at the municipal, county, state, or special district level, with minimal state involvement.</p>	<p>Laws and regulations</p> <p>Identify laws, regulations, or ordinances at the municipal, county, or federal levels that either streamline the process, or present unexpected barriers.</p>	

While research findings varied from state to state and across research topics, a series of insights highlight the importance of continued research to advance practices that have social, economic, cultural, and physical implications for those communities directly and even those not immediately affected by repetitive flooding.

Insight 1 — An equity framework to guide the process

Operationalizing the concept of equity within managed retreat policies is an emerging programmatic priority without a universal understanding of mechanisms to do so. A potential framework for factoring equity principles into managed retreat policies and programs could involve elements that integrate distributive, procedural, participatory, recognitive and restorative, and ecological equity. Distributive equity ensures that benefits, harms, and opportunities are distributed fairly among varied socio-economic and racial populations. Procedural equity outlines ways to ensure program administrators do not discriminate due to inconsistent administrative processes. Participatory equity focuses on including community members in the decision-making process. Recognitive and restorative equity emphasizes understanding the historical patterns that led to current inequities while recognizing that different people have different ideas of what is just and fair. Lastly, ecological justice raises questions about what is fair for future generations.

Insight 2 — The benefits of local funding

It appears that several of those ongoing buyout programs found to have proactive elements benefit from being managed and supported at the local levels. The Harris County Flood Control District (HCFCD) and Charlotte-Mecklenburg Storm Water Services utilize a local and independent funding source to elevate their programs. The HCFCD receives a dedicated percentage of all property taxes within the district. The Harris County Commissioners Court controls the tax rate and distribution of funds. The Charlotte-Mecklenburg program is primarily funded through storm water utility fees collected from all properties. Having a separate dedicated funding source allows these programs to operate more quickly than those without one and be adaptable to various circumstances.

Insight 3 — A focus on mapping and development

Across the nation, flood maps are a critical tool that municipalities use to help make development decisions. However, many flood maps are outdated, leading to improperly mapped flood zones and allowing new structures to be built in floodplains. Both Charlotte-Mecklenburg Storm Water Services in North Carolina, and Tulsa, Oklahoma, have undertaken significant work in updating their municipal flood maps beyond FEMA standards. Storm Water Services created an additional floodplain buffer ordinance, limiting future developments around the floodplain to reduce the number of properties that must be acquired or undergo repairs. Due to historic flooding, Tulsa developed significantly higher development standards that require any new development located within the floodplain to install storm water retention and storm sewer systems able to handle 100-year flood events.

Insight 4 — Utilizing mandatory buyouts

While a significant proportion of flood buyback programs nationwide are voluntary in nature, the research team did study one example of a program with a mandatory component. Harris County, Texas, operates a mandatory buyback program for a selection of properties that are declared 'severe repetitive loss' (SRL), meaning they have at least four flood claims made against them with the National Flood Insurance Program (NFIP). Harris County has more than 850 of these SRL properties, combined for 5,364 paid claims totaling over \$400 million in total losses. For neighborhoods of interest, of which there are currently seven, property owners receive a General Information Notice informing them of their inclusion in the program and instructing them to contact their assigned case manager. The appraisal process is the same for voluntary buyback programs, with an appeals process included. The primary difference begins if the owner refuses to relinquish the property when a fair market value has been established, with legal proceedings outlined and the County Attorney's Office initiating eminent domain as outlined by Texas state law.

Introduction

As the impacts of climate change, such as extreme precipitation and flooding, continue to increase in frequency and severity, the care with which governments construct and implement climate resiliency strategies and policies has taken on a new level of importance. The strategic acquisition of property damaged by flooding or subject to future flooding by governments through buyout programs is one critical tool in adapting to the effects of climate change. In support of the New Jersey Department of Environmental Protection's (NJDEP) effort to revamp its Blue Acres program, the New Jersey Climate Change Resource Center (NJCCRC) at Rutgers University conducted a comprehensive review of academic papers and policy reports, an examination of flood buyback programs from the federal, state, county, and municipal level, and conducted primary interviews with academics, practitioners, and advocates nationwide to evaluate best practices.

The literature reviewed included case studies of municipal, county, and state-managed programs from across the country, dating back to the 1979 relocation of Soldiers Grove, Wisconsin, to ongoing acquisition programs in Harris County, Texas. The programs studied cover a spectrum from densely populated communities in New York City to rural towns in North Dakota and Iowa . We examined projects spanning several decades to understand how policies and practices have shifted over time, and we cataloged our findings here to inform NJDEP's current efforts in updating its programs and policies. These findings are categorized and discussed below under the following topics: **proactivity, community benefit, equity, visioning, fiscal impact, relocation assistance practices, tracking relocation outcomes, valuation, the use of federal funds, laws and regulations, and local programs.**

Proactivity

A considerable proportion of programs nationwide are primarily funded through the Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP).¹ Programs funded through the HMGP receive up to 75 percent of their program costs from federal funding, while states and local governments must provide the remaining 25 percent of the funding. The most significant constraint in utilizing HMGP funds lies in the fact those specific federal funds are only available after presidentially declared disasters.² Due to this reactive funding cycle, it can be difficult for municipalities to create truly proactive programs. However, several municipalities, counties, and states from across the nation have integrated proactive measures into their programs. Two primary frameworks have been utilized across these programs; identifying programs during blue skies times to expedite buybacks when funding is acquired and identifying and purchasing properties during blue skies times.

Track One

Identifying vulnerable properties during “blue skies” times allows for quick buyouts post-disaster.

“Track One” has been utilized by a few municipalities with a long history of flooding and the administrative capacity to identify where purchases should be made once funding becomes available. Birmingham, Alabama, has dealt with flooding for decades and has implemented proactive flood mitigation practices. The staff maintains records of areas that have encountered repetitive flooding;³ there are far more people who would like a buyout than funding available to purchase their properties. A steady stream of residents reached out to the city’s Floodplain Management and Disaster Mitigation Services Program, stating their desire to participate in the buyback program.⁴

Track Two

Identifying vulnerable properties during “blue skies” times allowing for year-round buyouts.

“Track Two” is not often put into practice with buyback programs due to a

1 [fema.gov/grants/mitigation/hazard-mitigation](https://www.fema.gov/grants/mitigation/hazard-mitigation)

2 <https://www.fema.gov/grants/mitigation/hazard-mitigation/when-you-apply#applicationprocess>

3 Rasperry, Gloria. Interview. Conducted by Kathryn Balitsos. August 3 2022.

4 Ibid.

need for an independent source of funding that can be used to acquire properties without a presidentially declared disaster, in addition to a need for supplemental administrative capacity as program capabilities increase.

The Charlotte-Mecklenburg Storm Water Services (CMSWS) in North Carolina is funded through storm water utility fees across Mecklenburg County. These fees range widely depending on the town of origin and the amount of impervious surface.⁵ For 5,000 square feet of impervious surface in the City of Charlotte, the owner would be paying a monthly fee of \$13.19.⁶ For 1,500 square feet of impervious surface in the town of Huntersville, the owner would pay a monthly fee of only \$3.66.⁷ With this funding, Storm Water Services continuously identifies desired properties to buy out and extends offers, limiting the inevitable repairs needed for those properties susceptible to flood or storm water damage. Since 1999, Storm Water Services has bought out over 400 flood-prone houses, apartment buildings, and businesses. And while buyouts were funded almost exclusively with federal money from 1999-2001, an annual investment in buyouts of \$4 million from Storm Water Services has since led to most buyouts being funded solely with local money.⁸

The Harris County Flood Control District (HCFCD) is the nation's most extensive track two program. Created by the Texas Legislature in 1937 after a series of devastating floods in 1927 and 1932.⁹ HCFCD answers to the Harris County Commissioners Court, which sets the funding levels through a percentage of county-wide property tax earmarked for the district.¹⁰ It governs both the rate of the tax and the dispersal of funds.¹¹ In addition to tax revenue, county voters passed a bond after Hurricane Harvey in 2017 for \$2.5 billion for flood project funding.¹² These two funding sources have allowed the HCFCD to enact buyback projects throughout the year. This does not mean federal funds are not utilized, with HCFCD having identified 69 neighborhoods of focus containing over 5,000 properties.¹³ To purchase all identified properties would cost HCFCD roughly \$1 billion, so every dollar is important towards reaching that mark.¹⁴

In 1984, the Tulsa Memorial Day flood struck, causing hundreds of millions of dollars in damage and killing 14 people.¹⁵ Since then, Tulsa has included funding for buybacks in the annual budget,

5 <https://charlottenc.gov/StormWater/Fees/Pages/CurrentFees.aspx>

6 *Ibid.*

7 *Ibid.*

8 <https://charlottenc.gov/StormWater/Flooding/Pages/FloodplainBuyoutProgram.aspx>

9 <https://www.hcfcd.org/About>

10 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

11 *Ibid.*

12 *Ibid.*

13 *Ibid.*

14 *Ibid.*

15 https://www.weather.gov/tsa/1984may26_tulsamemorialdayflood

utilizing diverse local and federal funding sources to allow for the purchase of several properties under “blue skies” conditions each year.¹⁶ The city’s program lacks the administrative capacity to identify properties for acquisition, so interested property owners must contact the program manager to register their interest.

In the southeast, Louisiana runs a \$50 billion program to buyback properties, rebuild the land, build flood barriers, fortify levees, and elevate homes.¹⁷ ¹⁸ In 2021, \$30 million was earmarked for buyouts for the City of Lake Charles.¹⁹ This funding was coordinated by the Louisiana Watershed Initiative (LWI), which administers the CDBG Mitigation (CBBG- MIT) program. Readily accessible capital from the CDBG MIT program allows Louisiana to be aggressive with its mitigation programming, particularly in those places where the planning and administrative efforts are already in place.

16 McCormick, Gary. Interview. Conducted by Kathryn Balitsos. August 8 2022.

17 <https://www.nytimes.com/2021/03/05/climate/louisiana-mississippi-river-diversion.html>

18 Louisiana’s Comprehensive Master Plan for a Sustainable Coast, 2017.

19 https://www.thecentersquare.com/louisiana/louisiana-launches-30m-buyout-program-for-oft-flooded-neighborhood/article_0c41a202-ba75-11eb-875a-97c566119a55.html

Community Benefit

Once any existing structures have been removed from the properties acquired by municipalities, a decision must be made regarding their usage moving forward. Notably, any property acquired utilizing HMGP funds must be protected as open space in perpetuity, allowing flood waters to inundate the area without causing harm. From there, municipalities have copious options for transforming the space including as managed green spaces, parks, community gardens, wetlands, and nature preserves. In some cases, lots will remain vacant with minimal management, reuse, restoration, or redevelopment. Worst case, they can degrade into disamenity sites, hosting illegal dumping, vermin, or illicit activity. By proactively engaging the community in the planning process, municipalities have the opportunity to give a much-needed new asset to local residents. There are several programs that have done just this to great success, which are discussed below.

Municipal officials and residents of Soldiers Grove, Wisconsin first explored relocating away from the floodplain after the Kickapoo River flooded the town in 1951, devastating the community.²⁰ The town flooded again in 1978, reinforcing the community's desire to relocate, and a plan was finally devised to move the entire business district away from the floodplain to a new location close to the interstate.²¹ However, a number of residents of the neighborhood adjacent to the original business district decided they would rather floodproof their homes than move alongside the newly selected site.²² As part of the community engagement process, it was discovered that residents feared a splintering in the community between those who moved and those left behind. To salve that tension, officials planned to transform the former business district into a municipal park. This plan alleviated many residents' concerns by gluing the new town with the old.

In St. Charles County, Missouri, officials run a program that leases acquired properties within the floodplain to county residents.²³ It has two primary purposes; to offset county maintenance costs, and to allow community members to benefit from the open land. Richard Luttrell, a local resident and marina owner, has leased two adjacent properties from the county for nearly a decade.²⁴ Yearly flooding from the Mississippi River drowns these properties for several months every year, so Mr. Luttrell allows for camping and parking during the dry months. Additionally, he occasionally hosts concerts for community

20 Becker, William S.. Come Rain, Come Shine: A Case Study of a Floodplain Relocation Project at Soldiers Grove, Wisconsin. United States, Wisconsin Department of Natural Resources, 1983.

21 Ibid.

22 Ibid.

23 <https://news.stlpublicradio.org/health-science-environment/2019-07-28/why-fema-buys-flood-prone-property-in-missouri-and-what-becomes-of-it>

24 Ibid.

members to enjoy.²⁵ All of these land uses are boons to the community. However, the lease has strict usage guidelines, including no construction of any permanent structures.²⁶

After Superstorm Sandy in 2012, New York State began purchasing hundreds of flood-damaged properties in several neighborhoods across Staten Island.²⁷ That could have been the end of the process, with crumbling structures or empty lots dotting the island's eastern coast. Instead, 196 properties were demolished, and after each demolition, a unique mixture of wetlands seeds was spread over the property to transform the land.²⁸ This seed mixture was utilized across the neighborhoods of Oakwood Beach, Ocean Breeze and Graham Beach.²⁹ While returning developed land to wetlands may seem less beneficial than transforming it into a community park or baseball field, it plays a significant part in preventing future flooding by providing space to absorb future flood waters rather than have them inundate residential neighborhoods.

Administrators in Tulsa, Oklahoma leave the vast majority of acquired properties as open spaces, with maintenance conducted on an as-needed basis.³⁰ Charlotte-Mecklenburg Storm Water Services partners with other local agencies, often the Park and Recreation Department, to plan and manage purchased properties. This partnership has led to the design of a greenway, and to the expansion of the trail system adjacent to the creeks. However, purchased properties are not immediately beneficial to communities and are often put into temporary conditions (i.e., left untouched except for the mowing of grass) prior to their ultimate transformation. From there, municipalities determine permanent use of the space dependent on the needs of community. Timing of this stage often varies from an afternoon to a year.³¹ All properties purchased by the HCFCD have a feasibility study conducted to determine their best use, often a flood reduction project such as a detention basin.³²

25 *Ibid.*

26 Lease Agreement – Saint Charles County Flood Plain Property

27 <https://ny.curbed.com/2016/10/27/13431288/hurricane-sandy-staten-island-wetlands-climate-change>

28 *Ibid.*

29 *Ibid.*

30 McCormick, Gary. Interview. Conducted by Kathryn Balitsos. August 8 2022.

31 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

32 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

Equity

As tides continue to rise and the use of managed retreat increases, neither effect will be evenly distributed among disparate socio-economic populations across the country.³³ Properties in tidal and riverine floodplains are often home to those with few other options on where to live, minimal financial ability to rebuild, and generational connections to the land they reside on.³⁴ Due to these factors, the notion of government-sponsored relocation is complicated to navigate, but programs manage it in various ways. In the twin cities of East Grand Forks, Minnesota, and Grand Forks, North Dakota, the focus was on expediting the process to ensure that property owners did not get stuck with years of maintenance bills or a lack of housing with winter fast approaching.³⁵ The Houston, Texas, municipal program focuses on multifamily homes, which are often neglected due to the complicated nature of equally distributing benefits to multiple non-property-owning parties.³⁶ Buybacks in Marathon, Florida, prioritize low- and moderate-income households.³⁷ Programs across the country have incredibly varied approaches to incorporating equity considerations.

The HCFCD focuses its wide-ranging efforts on those properties with the most significant risk of severe and repetitive flooding.³⁸ James Wade, the Manager of Property Acquisition Services for the District, spoke on their approach toward running an equitable program.

*"It goes back to what we're most interested in at the flood control district, these areas that are several feet deep (in the floodplain) ... (where) the homes and the people that are at most risk."*³⁹

After Hurricane Harvey struck Texas in August 2017, more than 4,000 property owners applied for the flood buyback program in Harris County alone. But one year later, authorities had approved only approximately 1,000 applications and acquired only thirteen properties, leaving thousands of homeowners in limbo for years while federal disaster funds were processed.⁴⁰ A large portion of this was due to delayed federal funding. The Presidential Disaster Declaration on which the HMGP is contingent was not declared until February 2018, nearly six

33 Siders, A.R. (2018) Social justice implications of U.S. managed retreat buyout programs, Climatic Change <https://doi.org/10.1007/s10584-018-2272-5>.

34 <https://www.scientificamerican.com/article/flood-risks-to-low-income-homes-to-triple-by-2050/>

35 <https://www.fema.gov/case-study/east-grand-forks-accelerated-acquisition-program>

36 <https://recovery.houstontx.gov/buyout/>

37 <https://www.ci.marathon.fl.us/planning/page/cdbg-voluntary-home-buy-out-grant-program>

38 <https://www.hcfcd.org/>

39 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

40 Ibid.

months after Harvey struck.⁴¹ This delay is especially burdensome for LMI households given the escalating costs associated with repairing flood damage, fortifying against future adverse weather events, or saving for a move to a new home. When programs do not depend on HMGP funding, they can likely cut down their program timeline by 1-2 years if there is a local funding source. Some programs have even been able to buy homes in as little as three months.⁴²

When the twin cities of East Grand Forks, Minnesota, and Grand Forks, North Dakota, were flooded by the Red River in 1997, 99 percent of buildings were severely damaged.⁴³ Because of the northern location of the municipalities, a short window existed in which to construct. In partnership with FEMA, the State Division of Emergency Management, and the “Minnesota Recovers” Task Force, the municipal governments led an accelerated buyback process that ensured homeowners were not accumulating expensive maintenance and repair bills.⁴⁴ Within 75 days of the disaster, authorities approved 407 properties for acquisition. The following year officials acquired the additional 100 properties, completing the project in approximately 16 months.⁴⁵

The Charlotte-Mecklenburg SWS has historically used a risk-based equity framework to prioritize acquisition projects.⁴⁶ However, they are currently undergoing an equity study from planning and implementation standpoints to ensure that the work is done equitably.⁴⁷ SWS is one of the only programs that does not shy away from dealing with multifamily properties. Administrators look to provide incentives and assist with moving and relocation expenses to ensure a smooth transition and to assist the renter in finding a new home.⁴⁸

Charlotte-Mecklenburg SWS has several neighborhoods where it believes there is a severe need to relocate those who live there. However, there is strong opposition within those neighborhoods, and officials have not yet come up with good solutions to placate that opposition.⁴⁹ Due to this, only voluntary relocations have been utilized. HCFCD, on the other hand, has observed the same need and has moved forward with mandatory buyouts in several neighborhoods.⁵⁰ Substantial relocation assistance is provided to mitigate the stressors faced by those forced out of their homes,

41 Ibid.

42 Siders, Dr. AR. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 3 2022.

43 East Grand Forks Accelerated Acquisition Program, FEMA (2021). <https://www.fema.gov/case-study/east-grand-forks-accelerated-acquisition-program>

44 Ibid.

45 Ibid.

46 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

47 Ibid.

48 Ibid.

49 Ibid.

50 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

including aid for undocumented citizens who do not typically qualify for federal assistance.⁵¹ However, additional funding alone does not always appease those being forced out, and Mr. Wade has seen the outrage firsthand at the Commissioners Court.

"Some of the participants in that program are not happy and have been very vocal, making several appearances at Commissioner's court. I've attended several public meetings where there's a contingency of folks within those areas that are not happy about it at all. They acknowledge that they flooded, they acknowledge that the area has a flood risk, but they do not want to leave."

Equity is essential when programs veer into forced relocations due to the removal of choice as a program element. One of the significant challenges regarding retreat is attempting not to exacerbate social inequities. When choice is removed from the equation, governments must take even greater care of the process. That is, forced buyouts to relocate wealthy beachfront vacation homeowners or investment properties must be compared to the forced relocation of BIPOC communities.⁵²

There is a stark disparity in how equity is thought of between practitioners and academics, with often conflicting visions of what equity truly means in a theoretical sense within academia itself. Competing frameworks have been put forward that focus on distributional, procedural, participatory, recognitive and restorative, and ecological justice.⁵³ Another has been outlined surrounding only distributional, participatory, recognitive, and restorative equity.⁵⁴ Distributive equity ensures that benefits, harms, and opportunities are distributed fairly among varied socio-economic and racial populations.⁵⁵ Procedural equity outlines ways to ensure program administrators integrate equity in standard ways.⁵⁶ Participatory equity focuses on including those involved in the decision-making process.⁵⁷ Recognitive and restorative equity emphasizes understanding the historical patterns that led to current inequities while recognizing that different people have different ideas of what is just and fair.⁵⁸ Lastly, there is ecological justice, which asks what is fair for those that come after us.⁵⁹

Not all programs actively integrate equity considerations into their decision-making. Programs in Tulsa, Oklahoma, and Birmingham, Alabama, prioritize other elements such as depth in the

51 Ibid.

52 Siders, Dr. AR. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 3 2022.

53 Ibid.

54 Shi, Dr. Linda. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 10 2022.

55 Ibid.

56 Ibid.

57 Ibid.

58 Ibid.

59 Ibid.

floodplain (five feet below sea level compared to ten feet) and demand from those applying.^{60 61} Administrators in Tulsa often focus their efforts on older neighborhoods with properties that have deteriorated worse than others. While those who live there are often LMI, they are not prioritized due to that. Then there is the problem of the costs that coastal communities could impose on states that may eventually outweigh the economic benefits those neighborhoods provide.⁶² While some states may not resort to explicitly removing homes in those neighborhoods, they will likely start restricting services that would presumably have the same effect, such as road repair, guaranteed water quality, and disaster rescue. It is essential to monitor these practices carefully to ensure they are not discriminatory in design or practice.⁶³

Lastly, climate gentrification is an area of increased focus from academics that has seemingly not yet been integrated into any program. Climate gentrification, structured in dual directions, results from the resulting demographic shift when housing in risky areas loses value and the increase of targeted development funding in areas perceived as being safer.⁶⁴ Because of the limited nature of the literature available and the lack of program focus, this is a problem to learn more about as the knowledge develops.

60 Raspberry, Gloria. Interview. Conducted by Kathryn Balitsos. August 3 2022.

61 McCormick, Gary. Interview. Conducted by Kathryn Balitsos. August 8 2022.

62 Siders, Dr. AR. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 3 2022.

63 Ibid.

64 Ibid.

Visioning

Since buyback programs began more than four decades ago, governments have utilized varying approaches in engaging community leaders and residents in the planning and decision-making process. In 1979, leaders in Soldiers Grove implemented a three-tiered, bottom-up approach to engage community leaders and residents consisting of a structured and unstructured framework. The structured framework consisted of a Citizens Planning Committee, town hall meetings, formal surveys, and organized publicity, while the unstructured framework consisted of an informal open-door policy from those leading the process, a focus on interaction and conversation between citizens and planners, and a weekly newspaper column published by the planners and leaders. A series of additional educational events were utilized, including workshops, individual consultations with the planning technicians, and hands-on demonstrations of the planning process. While this took place beginning in the 1970s, it remains the gold standard for engaging community leaders and residents in planning and decision-making.

The Quinault Indian Nation in Washington State has more recently embraced a similar enthusiasm for connecting leaders with community members in developing their relocation master plan. Several similar strategies have been emphasized, including village-wide meetings, embracing personal conversations, presentations at tribal dinners, door-to-door and online surveys, and convening several stakeholder committees. Tribal leaders sought to use these interactions in order to compile an inventory of existing vulnerabilities to natural disasters and community requests for improved infrastructure. To encourage engagement at village meetings, leaders provided meals and held raffles.

For modern municipal programs, Charlotte-Mecklenburg Storm Water Services has implemented a process by which to engage both staff and community members. For program staff, a Risk Assessment Risk Reduction Plan was developed that gives them an understanding of risk and planning. For community members, a risk score was compiled that integrates all available data on flooding, developed with community members' input regarding loss avoidance, on-the-ground knowledge, personal concerns, and priorities.⁶⁵

These are exemplary of what visioning has the power to accomplish. The need to move one's home or community comes with its own cacophony of difficulties, adding on an additional layer of difficult decision making is not something all programs look to take on. But these programs, when looking to get away from the disasters that had wrought their communities, decided they also wanted to consider what their town could aspire to in the future.⁶⁶ Discussions between

65 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

66 Siders, Dr. AR. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 3 2022.

officials and citizens regarding the type of community that citizens want to have has often missing from the process.

Not all programs have integrated these types of interactions, and preventable issues arise. Joe Tirone is the founder of the Oakwood Beach Buyback Committee in Staten Island, which organized multiple neighborhood buybacks in the aftermath of Superstorm Sandy. During the buyout process, a rumor of what the bought-out properties would be redeveloped into (“McMansions”) nearly upended the process. This rumor greatly upset homeowners who, in experiencing the crisis of Superstorm Sandy, were, according to Tirone, willing to *“believe a ridiculous, outlandish rumor, way quicker than they will believe the truth.”*⁶⁷ The lack of communication and forward thinking allowed this confusion to spread regarding the different available programs and how they planned to utilize the bought-out properties (open space v. redevelopment) and almost ended participation in the program.⁶⁸

Program to program, the extent of support provided to participants as they transition to new homes varies significantly. That level of support often depends on the available federal and state

67 Tirone, Joseph. Interview. Conducted by Garin Bulger. August 5 2022.

68 Ibid.

Relocation Assistance Practices

funding and the administrative capacity of the program. In Kinston and Lenoir County, North Carolina, an array of relocation assistance is available to residents to allow them to remain within the county, including funding from the ReBuild NC Strategic Buyout Program.⁶⁹ Lenoir County residents are eligible for a matching down payment of up to \$50,000 on properties within the same county.

Charlotte-Mecklenburg SWS has utilized a multitude of relocation strategies through its program's tenure. At the program's onset, substantial financial benefits were awarded to program participants. Subsequently, the program removed all relocation assistance funding. Currently, the program is utilizing a mixed relocation assistance package consisting of general funding covering moving expenses, but no supplemental housing payments.⁷⁰ The HCFCD lied on the other end of the benefit spectrum, offering flexible and expansive relocation benefits.⁷¹ A lump sum of \$19,875 is provided to any property owner that stays within the county, which they may use at their discretion.⁷² Additionally, the program provides funding or those typically illegible for such programs, such as undocumented citizens, in partnership with the Harris County Community Services Department.

There's money available for supplements (to) get into a comfortable home outside the floodplain, and there's no cap on that amount. So, if it takes \$75,000 to get into a comparable home outside the floodplain, you get that on top of (any other funding). Moving costs are paid for, closing costs are paid for. There's a program available where if you find a replacement home that may need some repairs, it can (cover) repairs to the replacement property.⁷³

Additional relocation assistance for those in mandatory buyout neighborhoods includes the Down Payment Assistance Program and, and on a case-by-case basis, further assistance in securing a loan for a replacement home.⁷⁴

Buyout programs often shy away from acquiring multi-family properties due to the difficulties involved in dealing with multiple beneficiaries.⁷⁵ Renters are covered under the Uniform Relocation Act for any federally-funded buyout, thus eligible to receive advisory services, payment for moving expenses, and

69 <https://www.rebuild.nc.gov/media/1643/open>

70 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

71 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

72 <https://harrisrecovery.org/buyout-faq/>

73 Ibid.

74 https://harrisrecovery.org/wp-content/uploads/2022/05/Buyout-FAQs.ENG_SPN.7.28.2020.FINAL7_30.2020.pdf

75 Siders, Dr. AR. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 3 2022.

replacement housing assistance.⁷⁶ But administrators have had trouble ensuring those receiving benefits are those that were living in the affected properties when the disaster hit. Property owners, in some edge cases, have driven out their renters and moved in family members to ensure additional financial benefits.⁷⁷

76 https://harrisrecovery.org/wp-content/uploads/2020/07/24_1042_RELO_BROCHURE_HUD-1042-CPD_RelocationAssistancetoTenantsDisplacedFromTheirHomes.pdf

77 *Ibid.*

Track Relocation Outcomes

The extent to which programs have incorporated methods to catalog the relocation and well-being of household's post-buyout is minimal. Programs keep track of relevant information on homeowners involved in a buyout until the property deed is transferred from the owners to the municipality. Information is rarely tracked beyond that point. The prevailing exception to this tends to be when financial benefits are offered to homeowners who either promise to relocate within a specific municipal or county in exchange for financial benefits (i.e., Staten Island) or those prohibited from relocating within the floodplain (i.e., Charlotte-Mecklenburg Storm Water Services).^{78 79}

As part of the Staten Island buyout, a five percent financial bonus was offered to those staying within the five boroughs of New York City. With location-based financial bonuses of this nature, it is clear that the new locations of participants be known and of some level of importance to program administrators. Joe Tirone, the founder of the Oakwood Beach Buyback Committee, argues that the data is there but is not being utilized.

“For some reason, the state will not release the information about where people moved. I can just tell you, based on the hundreds of people that I spoke to, that I knew where they were going to move to. But we don't have that information. And it's available. It's 100% available. The state knows all the zip codes where (program participants) moved to because they were getting a 5 percent bonus if they stayed in New York City.”⁸⁰

Charlotte-Mecklenburg Storm Water Services, as part of their buyback program, prohibits participants from relocating to another property in the floodplain.⁸¹ For the past three decades, this has taken the form of participants signing a legal document stating that they will not use the proceeds of the buyback to relocate to another property in the floodplain.⁸² Beyond these two practices, the program staff's last contact with participants is the handover of the property deed. There is ample room for research surrounding this topic, none more important than post-program interviews to understand whether there are unrealized or unmet needs that participants are experiencing.

78 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

79 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

80 Ibid.

81 Raspberry, Gloria. Interview. Conducted by Kathryn Balitsos. August 3 2022.

82 Ibid.

Fiscal Impact

Municipalities considering buyouts often face severe challenges by the impact it presents to their financial viability. Municipal budgets depend heavily on local property values and the number of rateables (taxpaying properties). Buyouts reduce the year-over-year funding available to municipalities, and for a buyout to serve both homeowner and the municipalities, the fiscal impacts are essential.

After Superstorm Sandy, the neighborhood of Oakwood Beach, Staten Island, began to push for a buyback program, leading to a group of long-term residents forming the Oakwood Beach Buyout Committee. However, the committee considered their local municipal officials unlikely advocates for their relocation given the potential lost tax revenue if they were to leave Staten Island. Due to this conflict, they appealed to the state's governor, Andrew Cuomo, for assistance.⁸³ The Governor created a buyback program through his Office of Storm Recovery in which particular neighborhoods would be bought out, including Oakwood Beach, and others acquired and redeveloped to updated standards.⁸⁴ Homeowners that participated were eligible for a 5-percent relocation incentive if they provided proof of relocation within the county of their former property.⁸⁵ This 5-percent bonus served to lessen the fiscal impact on the New York City budget, keeping Oakwood Beach residents in New York City and as part of the tax base.

To limit the negative impact on property values for neighbors that choose to stay, many programs require clusters of interested property owners to submit their applications for a buyout together.⁸⁶ Municipalities can remove services, as opposed to when a buyout is scattered, allowing for municipal cost savings. Clustered buyouts also allow a municipality to save on flood emergency and rescue-related expenses, preventing emergency services from being dispatched to uninhabited areas that are often the hardest hit. However, the whole-neighborhood system is not used by all programs. Kinston and Lenoir County, NC, and Charlotte-Mecklenburg SWS allow for individual property buyouts. Tim Trautman, the Program Administrator for SWS noted the inherent unfairness associated with whole-neighborhood buying, saying "It's not fair to pull the rug out from under people if their neighbors don't participate." Additionally, over time, programs have demonstrated an ability to acquire the surrounding properties as owners eventually decide to join their departed neighbors.⁸⁷

83 DeVuono-Powell, Saneta. 2021, Staten Island Managed Retreat: Community Driven Decision-Making. Lincoln Institute of Land Policy.

84 <https://stormrecovery.ny.gov/housing/buyout-acquisition-programs>

85 <https://stormrecovery.ny.gov/housing/buyout-acquisition-programs>

86 <https://www.fema.gov/grants/mitigation/hazard-mitigation/before-you-apply#eligibility>

87 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

The HCFCDC challenges many municipalities' normal fiscal assumptions regarding buyouts, providing financial benefits to relocate within the county from any of the dozens of municipalities that are in the county. It is currently in the process of the largest buyout in the county, with plans to purchase 8,000 total properties distributed over 69 different neighborhoods.⁸⁸ The program has two primary benefits, significant amounts of real estate, and very flexible zoning laws.⁸⁹ These unique circumstances of Harris County allow for serious malleability in where participants can relocate, not easily replicable by other locations. Harris County has designed a program that allows buyouts to occur without a complete upheaval of the financial health of a community.

Reducing municipalities reliance on property tax revenue would reduce the friction that is currently present, especially in coastal towns that are likely to see decreasing property values as sea level rise increases. The central question becomes how to best assist towns in diversifying their income streams away from strict reliance on municipal property tax.⁹⁰ A shift in perspective may be needed at the state level to best reorganize numerous municipalities, namely New Jersey with 564, to decrease the overall number. It could also involve presenting municipalities with additional revenue option, or reorganizing property taxes at the county level.⁹¹

88 <https://kinder.rice.edu/urbanedge/2021/07/12/urban-flood-buyouts-disparity>

89 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

90 Ibid.

91 Shi, Dr. Linda. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 10 2022.

Property Valuation

There are several financially focused elements as part of the holistic buyback process, and property valuation might be the most consequential. When programs utilize FEMA funding, which is the overwhelming percentage of programs, the process for determining property valuation is laid out in the agency's Property Acquisition Handbook for Local Communities.⁹²

*"If a home is eligible for acquisition, the homeowner is offered a pre-disaster fair-market value for the property as determined by a certified appraiser. There is an appeals process available for homeowners who disagree with the appraisal value of the property."*⁹³

States and municipalities have leeway in which mechanisms they employ for determining property value, including the cost to replace, sales 'comps,' or rental income. As previously stated, the homeowner can appeal if they are unsatisfied with the appraised value. This mechanism, however, is not foolproof. There is no guarantee that one or even two appraisers will be able to adequately capture the changes in the market from pre- to post-flood. Or even if that is accounted for, to give an attractive enough appraisal to interest the owner. If property owners are unhappy with their second appraisal, little recourse is available. Wealthy participants could hire a lawyer and appeal the process further, but that would further decrease participatory equity in that not all households would be able to afford to involve a lawyer. Additionally, there is no guarantee that the third appraisal will differ from the first two.⁹⁴

92 Property Acquisition Handbook for Local Communities: A Summary for States. FEMA.

93 <https://www.fema.gov/news-release/20200220/fey-enfomasyon-akizisyon-pwopriyete-apre-yon-inondasyon>

94 Koslov, Dr. Liz. Interview. Conducted by Garin Bulger and Kathryn Balitsos. July 27 2022.

Use of Federal Monies

The majority of funding for flood mitigation activities nationwide originate in the federal coffers. Specifically for flood buyback, the most utilized agency and program is the FEMA Hazard Mitigation Assistance (HMA) program. However, federal funding is available from multiple programs within FEMA, as well as other agencies including the Department of Housing and Urban Development (HUD), the Small Business Administration (SBA), and the Department of Agriculture (USDA). Even programs that develop local sources of revenue to pursue year-round buyback such as CMSWS and HCFCFCD rely on supplementary federal funding. Each federal program has unique requirements and funding available for specific activities, with occasional overlap. Below the programs are broken down per their originating federal agency.

Federal Emergency Management Agency (FEMA)

Hazard Mitigation Assistance (HMA): The overall system of grants for flood mitigation and repairs awarded to state, local, tribal and territorial governments;

- HMGP: Funding is awarded after a presidential disaster to those who have an approved hazard mitigation plan that aims to rebuild infrastructure in order to reduce future disaster losses.⁹⁵
- FMA: Funding is awarded for projects that are insured by the National Flood Insurance Program (NFIP) to reduce or eliminate the risk of repetitive flood damage.⁹⁶
- PDM: Funding is awarded for municipalities to plan and implement “sustainable, cost-effective measures designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters.”⁹⁷

Building Resilient Infrastructure and Communities (BRIC): Funding is awarded for projects to reduce disaster risks through mitigation, capacity building, and management.⁹⁸

95 <https://www.fema.gov/grants/mitigation/hazard-mitigation>

96 <https://www.fema.gov/grants/mitigation/floods>

97 <https://www.fema.gov/grants/mitigation/pre-disaster>

98 <https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities/before-apply>

Department of Housing and Urban Development (HUD)

- CDBG-DR: Allows states and municipalities to utilize funds to repair damage after a flood. Qualification for program funding depends on community income status and resource management.
- CDBG-MIT: Funds are available to increase community resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship by lessening the impact of future disasters.⁹⁹

Small Business Administration (SBA) Disaster Loan Program

- Financing is often directly awarded to homeowners and businesses as their primary source of government assistance. Sometimes treated more as a matter of credit solely to assist with rebuilding from disasters.

Each program reviewed in this report had implemented varying detailed flood hazard mitigation plans, all part of the NFIP. Tulsa, Oklahoma implemented significant flood mitigation measures, improving their Community Rating System score to Class 1, the top possible level. There were no clear best practices surrounding staffing levels for running programs funded with federal dollars, each having greatly different needs depending on its level of operation.

Program	Funding Source		
	Federal	State	Local
Birmingham, AL	x		
Charlotte-Mecklenburg Storm Water Services	x	x	x
Kinston/Lenoir County, NC	x	x	
Harris County Flood Control District, TX	x		x
Tulsa, OK	x		x
Staten Island, NY	x		x
Wisconsin		x	

Table 1: Programs and their funding sources

⁹⁹ <https://www.hudexchange.info/programs/cdbg-mit/overview/>

Locally Funded Programs

While there are programs nationwide that have excelled while receiving the majority of their funding from federal sources, those best situated have developed steady sources of local funding. And while these programs do not operate independently from the federal government, the self-funding aspect allows them to go above and beyond what would have been possible otherwise. The programs in Charlotte-Mecklenburg County, NC; Harris County, TX and Tulsa, OK, all utilize varying mixes of storm water utility fees and property taxes to fund buyouts projects.¹⁰⁰ These programs serve to contribute to the municipal cost share for federal grants, complete projects that otherwise would not have been funded by the federal government, and boost the programs administrative capacity. And while locally funded programs are managed differently than those funded exclusively through federal funding, they all abide by federal program guidelines outlined in the previous section.

The HCFCD receives a dedicated percentage of all property taxes within the district, which is set and distributed by the Harris County Commissioners Court. Furthermore, following Hurricane Harvey voters passed a \$2.5 billion bond to finance flood damage reduction projects. This bond serves as a supplement to the billions the county also received from the federal government.¹⁰¹

The programs in Charlotte-Mecklenburg and Tulsa are partially funded through the storm water utility fees, which allows them to work faster and be more adaptable.¹⁰² Tim Trautman, the Administrator for Charlotte-Mecklenburg Storm Water Services, emphasized that adaptability and how important it is.

*“Timing is a factor for people, you know, moving out of their homes or their businesses. And if the timing is terrible, and you have a grant that you’ve spent years getting, then it’s not going to happen. And so that local funding allows us some flexibility. Allows us some flexibility to accommodate individuals’ needs and desires to relocate out of the floodplain.”*¹⁰³

The importance of timing is hard to overstate, with programs taking 18–36 months for buyouts utilizing solely federal money, and some taking years longer. When program administrators are waiting for grant windows to open, or for unused funding from other departments to be transferred over for us is when funding takes substantially longer. Due to this, the timelines of buyouts could be reduced with the presence of steady local or state funding.¹⁰⁴

100 <https://charlottenc.gov/StormWater/Fees/Pages/FeesBillingFAQs.aspx>

101 Wade, James. Interview. Conducted by Garin Bulger. August 10 2022.

102 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

103 Ibid.

104 Siders, Dr. AR. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 3 2022.

Based on research and conversation with the three programs that used local funding and state and federal funds—storm water utility fees or another dedicated funding source that is court ordered and managed are ways to have stability and consistent revenue source.

Laws and Regulations

The buyout process is very often administratively cumbersome, with numerous opportunities for the process to be delayed or completely fall apart. While the decision for a homeowner to proceed with a buyout can often be a challenging one, laws, regulations, or ordinances at the federal, state, county or municipal levels aim to streamline the process. While the aim is often benevolent, they sometimes add barriers to the process.

While funding for flood buyback programs often primarily originates from the federal government, programs are often operated at the municipal, county, and state level. Due to this dichotomy, municipal, county, and state laws and regulations have been used to bolster local programming efforts and supplement federal funding. Most programs utilize a combination of federal, state, or municipal funding sources. Some programs, such as Birmingham, Alabama, rely nearly exclusively on federal funds, whereas the Charlotte-Mecklenburg Storm Water Services operates and conducts buyouts primarily utilizing both federal funds and their utility service fee. The array of funding sources presents administrative obstacles, especially in smaller programs that lack the administrative capacity to navigate the National Flood Insurance Program (NFIP).

In North Carolina, the board of Mecklenburg County Commissioners created the Charlotte-Mecklenburg Storm Water Services agency in the early 1990s, which was outlined in the 'Proactivity' section. Funded through storm water utility fees, which allow their 'quick buy' flood buyout program to operate. SWS sets their program criteria, identifies potential participants, and make offers quickly to limit the amount spent repairing a damaged property prior to a buyout. They also evaluate how regulations can be implemented to "get ahead" on the issue of flooding by correcting prior regulations that led to the flooding problems. This is done in a two-prong approach outlined below.¹⁰⁵

Prong 1

- To adapt the currently existing infrastructure in homes and businesses.
- To prevent future development in the floodplain from occurring.

105 Trautman, Tim. Interview. Conducted by Kathryn Balitsos. August 10 2022.

Prong 2

- Set stricter floodplain standards that look to future conditions, along with improved and expansive floodplain maps that allow for future development. This should incorporate anticipated increased rainfall due to climate variability.
- It should acknowledge that this is not a perfect system, as future weather conditions will affect buildings and development being built for 50+ years.

CMSWS has a floodplain buffer ordinance, placing limitations on future development. This preventative measure reduces the number of places that will have to be bought out or repaired in the future.

The HCFCD's 1937 enabling legislation aimed to create a local partner for the US Army Corps of Engineers. Since then, with the numerous storms Harris County has faced, the HCFCD has evolved to its current focus on buyouts for homes "hopelessly deep"¹⁰⁶ in the floodplain.

Throughout the 20th century, the City of Tulsa developed substantially within the floodplain. Then in 1984 the Memorial Day Flood struck, causing extensive damage across the city. This devastating flood galvanized the community, creating political support to implement significant flood mitigation changes. In the years following, Tulsa implemented several policy changes, including higher development standards, joining the FEMA Community Rating System (CRS), and evaluating and updating the municipal floodplain. Tulsa then began mapping beyond the FEMA floodplain map, adding approximately 40 acres of drainage area and fully-urbanized watershed development conditions.

The restrictive floodplain development ordinance in Kinston and Lenoir County, NC is notable for requiring a two-foot freeboard¹⁰⁷ threshold for residential and commercial development.¹⁰⁸ According to Adam Short, the Planning Director of Kinston and Lenoir County, the two-foot freeboard threshold it is not so much prohibitive as it is dissuasive for development deep in the floodplain. The more significant issue for municipalities with small planning departments is the administrative cost of these programs. Implementing programs like the CRS take substantial time and effort.

"I am the only planning person on staff, and (the effort) to have to maintain the CRS program takes a lot of time (and) energy. For a long time, the biggest benefit that we got from the CRS program was how much buyout property we do have. And then in 2017, they changed how they calculate the value of your open space, to basically give it diminishing returns over time... if you don't have an

¹⁰⁶ Hopelessly deep is defined by HCFCD as "areas that are two feet or deeper in the current 100 year effective floodplain and in the 100 year floodplain or floodway."

¹⁰⁷ An additional amount of height above the Base Flood Elevation used as a factor of safety (e.g., 2 feet above the Base Flood) in determining the level at which a structure's lowest floor must be elevated or floodproofed to be in accordance with state or community floodplain management regulations. <https://www.fema.gov/glossary/freeboard>

¹⁰⁸ Short, Adam. Interview. Conducted by Garin Bulger and Kathryn Balitsos. August 10 2022.

*active, self-funded buyout program, there's no way to maintain it or to even get ahead."*¹⁰⁹

As noted in the Fiscal Impacts section, a shift in the municipal organization of the state, from hundreds of small municipalities to a smaller number of larger legal districts, would likely streamline regulatory outcomes. But a solution of that scale is likely politically infeasible, especially in a home rule state such as New Jersey¹¹⁰, meaning municipalities can't have changes legally forced on them by the state. If there are citizens who wish to take part in the New Jersey Blue Acres program, but their municipal government won't cooperate, there is little for them to do. Dr. Siders spoke on the legally advantageous aspects of home rule.

"In New Jersey, Blue Acres is hamstrung by the need to only operate in towns where the towns approve it. This is (one of) the reasons New Jersey also does some buyouts through NJOEM (New Jersey Office of Emergency Management) and other offices - so towns that don't want to be seen as using Blue Acres can still do buyouts quietly. Home rule is advantageous if towns are motivated to use their authority to do innovative actions - it is disadvantageous if local governments are slow to act because it limits the ability of the state to push them to action."

109 *ibid.*

110 Dillon's Rule comes from two court decisions by Judge John F. Dillon in 1868. It affirmed narrow interpretation of a local government's authority to derive from the state government sanctioning. As a result, in most states, municipalities can only exercise powers explicitly granted to them by the State, if there is any reasonable doubt about whether a power has been conferred to a local government, the power has not been conferred by the State. <https://www.nlc.org/resource/cities-101-delegation-of-power/>

Conclusion

The difficulty associated with families being forced to choose whether to leave their homes due constant and devastating flooding is immeasurable. Managed retreat is a multi-dimensional process to better protect life and property from further potential loss and damage. This report is a first step in evaluating how managed retreat programs are functioning across the nation, as well as understanding best practices. The necessity of managed retreat is only increasing as places that have been inhabited for generations are being lost to encroaching seas, rising rivers, and horrific storms. The research conducted led to the following four primary policy insights:

The development of an equity framework to guide program administration

The meaningful inclusion of equity was absent from most of the programs that we reviewed, while being emphasized by the academics interviewed. We have put forward a framework for program administrators to utilize to best integrate equity into program administration moving forward.

Highlighting the benefits local funding provides to programs

Programs that establish an independent and dedicated funding source are most able to develop proactive, long-term, and successful buyout programs.

Importance of floodplain mapping

Charlotte-Mecklenburg, North Carolina, has developed flood maps that go beyond FEMA standards, providing them with more expansive knowledge of where floods are likely to occur. This guidance has helped practitioners determine areas suitable for future development along with knowledge about proper building standards.

The use of mandatory buyouts

Mandatory buyouts are extremely rare, as any programs that receive FEMA funding need to be voluntary. Harris County Flood Control District in Texas is currently conducting mandatory buyouts in several neighborhoods that have been designated as severe, repetitive loss properties. If needed, the county's attorney's office will utilize eminent domain in order to take charge of the

properties.

As managed retreat expands and further develops, its form will continue to shift. Research in areas such as tracking relocation outcomes, property valuation processes, fiscal impacts of land use policies, and use of mandatory buyouts will only become more necessary. New Jersey is especially vulnerable to rising tides and riverine flooding. While global seas have risen approximately eight inches since 1900, New Jersey has seen a rise of close to 17 inches, or roughly twice as much. Robert Kopp, Co-Director of the Rutgers Office on Climate Action and the Director of the Megalopolitan Coastal Transformation Hub (MACH), has worked tirelessly to educate others on the expected impacts by 2100. “With 3.5 feet of sea-level rise, the area subject to annual flooding in New Jersey encompasses about 180,000 people and \$80 billion of property. With 7.5 feet of rise, it encompasses nearly 580,000 people and \$180 billion of property.”¹¹¹ Those figures are substantial in their scale, and critically reinforce the importance that managed retreat programs should be given moving forward.

111 Kopp, et al. The Future Sea Level in New Jersey: 3 feet, 4 feet, 7 feet higher. Rutgers Impact. <https://impact.rutgers.edu/the-rising-tide/>

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The New Jersey State Policy Lab assists the State of New Jersey and its many communities in the design, implementation, and evaluation of state policies and programs by conducting rigorous evidence-based research that considers equity, efficiency, and efficacy of public policies and programs in holistic and innovative ways.

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