



REPORT

# GOING UNDER: LONG WAIT TIMES FOR POST-FLOOD BUYOUTS LEAVE HOMEOWNERS UNDERWATER

ANNA WEBER AND ROB MOORE, NATURAL RESOURCES DEFENSE COUNCIL



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## Introduction

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By the end of this century, as many as 13 million people in the United States will see their homes affected by sea level rise.<sup>1</sup> Millions more who live, work, or travel through coastal or riverine areas will be subjected to repeated flooding as severe weather events become more frequent and cause greater damage.<sup>2</sup>

We must acknowledge that climate change is already affecting our lives and our communities and adapt accordingly. The hard truth is that sea level rise and escalating flood risk will make it increasingly difficult for people to stay in the places where they live today. Among the millions who could be displaced, many will need assistance to move to higher ground.

The Federal Emergency Management Agency (FEMA) provides assistance for this type of climate adaptation by funding voluntary buyouts, in which local or state governments purchase flood-damaged properties from willing sellers at pre-flood values and preserve the land as open space.<sup>3</sup> However, current buyout programs already struggle to meet existing need, with years-long wait times that can make this option difficult to pursue and contribute to inequities in disaster recovery. These problems will only make it more difficult to provide assistance to the millions more who may seek it in the coming decades.

Buyouts are complex efforts with a range of interconnected considerations, including funding availability, state and local capacity, community engagement, land use planning, cultural heritage, and social and environmental justice. However, one relatively simple factor can torpedo buyouts' effectiveness: the amount of time it takes for them to be completed.

NRDC reviewed nearly 30 years of FEMA data on buyout funding and found that it takes a median of more than 5 years between a flood and the completion of a FEMA-funded buyout project.<sup>4</sup> We also spoke with state and local personnel with direct buyout experience to gain a more complete understanding of these projects' timelines. While every buyout project is different, one thing is clear: long wait times make buyouts less accessible, less equitable, and less effective for disaster mitigation and climate adaptation. Addressing this issue is essential to making FEMA-funded buyouts a more viable option as climate change increases flooding throughout the United States.

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*One thing is clear: long wait times make buyouts less accessible, less equitable, and less effective.*

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## What is a buyout?

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Before and after: West Haven, CT. The home on the left was demolished in the summer of 2016, years after it was seriously flooded during 2012's Hurricane Sandy. The photo on the right shows the same neighborhood in the summer of 2018.

In the context of flood disasters, the term *buyout* refers to a specific type of property acquisition in which a government agency (usually a local municipality) purchases private property, demolishes the structures standing on it, and preserves the land as open space.<sup>5</sup> Buyouts allow interested homeowners to relocate while reducing overall flood risk: maintaining land in perpetuity as public, undeveloped space (used for parkland, stormwater management, wetland restoration, recreation, etc.) permanently eliminates the risk of flood damage on that property.<sup>6</sup> Moreover, the newly acquired land can help reduce flood risk for those who remain nearby. Because the property cannot be redeveloped, buyouts also reduce the potential for gentrification and economic displacement that can occur when natural disasters force residents from their homes—developers cannot, for example, purchase the land to build luxury housing. FEMA-funded buyouts are generally not at the scale of whole communities or entire neighborhoods; because these are voluntary programs, they tend to occur block by block or home by

home, depending on the extent of the flood risk, the level of interest among residents, and other local factors.

Since the late 1980s, FEMA has provided funding to state and local governments to buy out tens of thousands of flood-damaged properties across the United States.<sup>7</sup> Buyouts were first widely deployed in the United States after the devastating Great Flood of 1993 forced multiple midwestern neighborhoods—and in some cases entire communities—to move out of low-lying areas.<sup>8</sup> More recently, after 2012's Hurricane Sandy, more than 500 homes in Ocean County, New Jersey, were purchased through the state's Blue Acres Program, and New Jersey recently expanded these efforts to Atlantic County and other communities in the state.<sup>9</sup> In the aftermath of 2017's Hurricane Harvey, Harris County, Texas, which had already targeted certain neighborhoods for flood buyouts, committed to spending hundreds of millions of dollars to purchase thousands of homes damaged by the storm and several earlier floods.<sup>10</sup>

## HOW MANY FEMA-FUNDED BUYOUTS HAVE THERE BEEN, AND WHERE DID THEY TAKE PLACE?

NRDC reviewed a FEMA data set of more than 43,000 properties that have been acquired since the 1980s, or are in the process of being acquired, using grants that FEMA provides to local or state governments. FEMA has funded buyouts in 49 states as well as in Guam, Puerto Rico, and the U.S. Virgin Islands. About half of the buyout records included information on property characteristics; of those, 82 percent were single-family homes. Seventy-two percent served as the owner's primary residence, and 12 percent were rental properties. FEMA identified only 4 percent of the acquired properties as affected by coastal flooding. The rest were located some distance inland and faced flooding due to river overflow and/or intense rains, as seen in Hurricane Harvey in 2017 and Hurricane Florence in 2018. The median amount paid by FEMA to acquire each property (based on the pre-flood market value of the home, not adjusted for inflation, and not including flood insurance claims) was approximately \$54,000.

FIGURE 1: FEMA-FUNDED BUYOUTS, FISCAL YEARS 1989–2017

Buyouts peaked after the Great Flood of 1993 on the Mississippi River. (The years shown in the figure below represent the federal fiscal year in which a buyout project was initiated, not the year in which the purchase took place.)

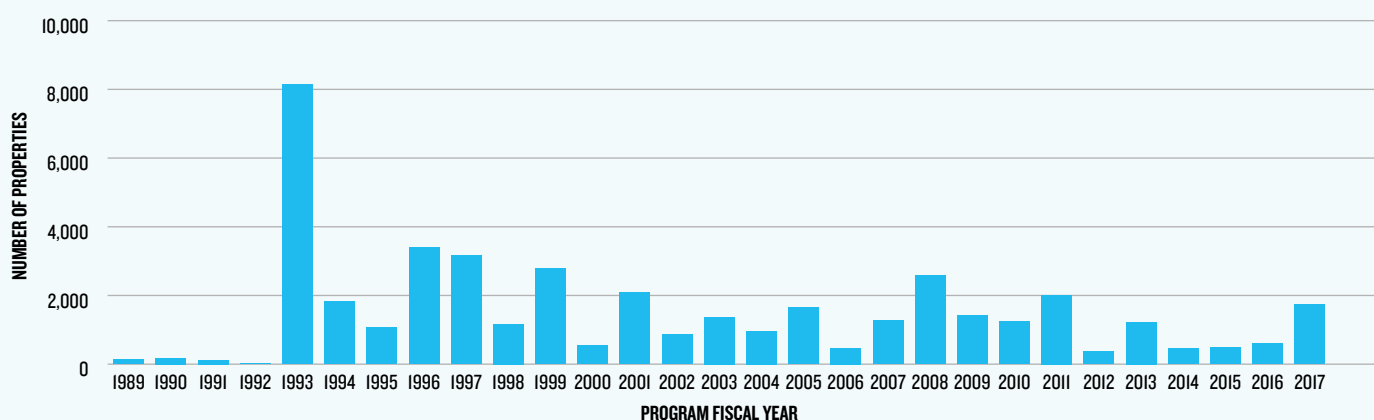
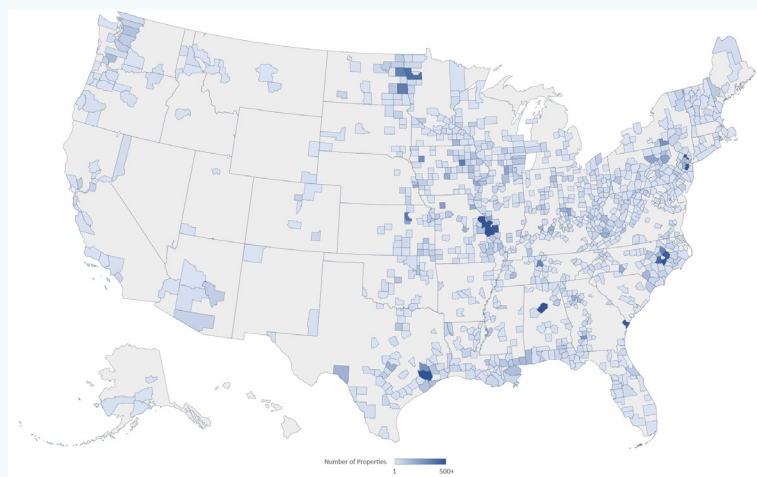


FIGURE 2: FEMA-FUNDED BUYOUTS PER COUNTY, 1989–2018

Left: FEMA-funded buyouts have occurred in 49 of the 50 states, in more than 1,000 counties.

Right: These 17 disasters account for half of all acquired properties.

The majority of buyout projects acquire five or fewer properties, with a median of three properties per project. At the county level, the median number of acquired properties is 13. A few counties, shown in dark blue on the map below, have seen hundreds of buyouts; they tend to be areas affected by major flood disasters, such as the St. Louis, Missouri, region after the Great Flood of 1993 and eastern North Carolina after 1999's Hurricane Floyd.



DISASTER	YEAR	PROPERTIES
Great Flood of 1993 (midwestern states)	1993	8,024
Hurricane Floyd	1999	1,880
Tropical Storm Allison	2001	1,300
Red River Flood (MN and ND)	1997	1,204
Hurricane Harvey	2017	984
Flood of 1997 (IN, KY, and OH)	1997	968
Hurricane Fran	1996	907
Tropical Storm Alberto	1994	949
Hurricane Sandy	2012	796
Iowa Severe Storms of 2008	2008	918
Hurricane/Tropical Storm Irene	2011	759
June 2008 Midwest Floods	2008	673
Hurricane Katrina	2005	587
Flood of 1994 (TX)	1994	477
Flood of 1996 (IL)	1996	436
Hurricane Matthew	2016	443
Tropical Storm Lee (PA)	2011	398

# What is the current buyout process, and why does it need to change?

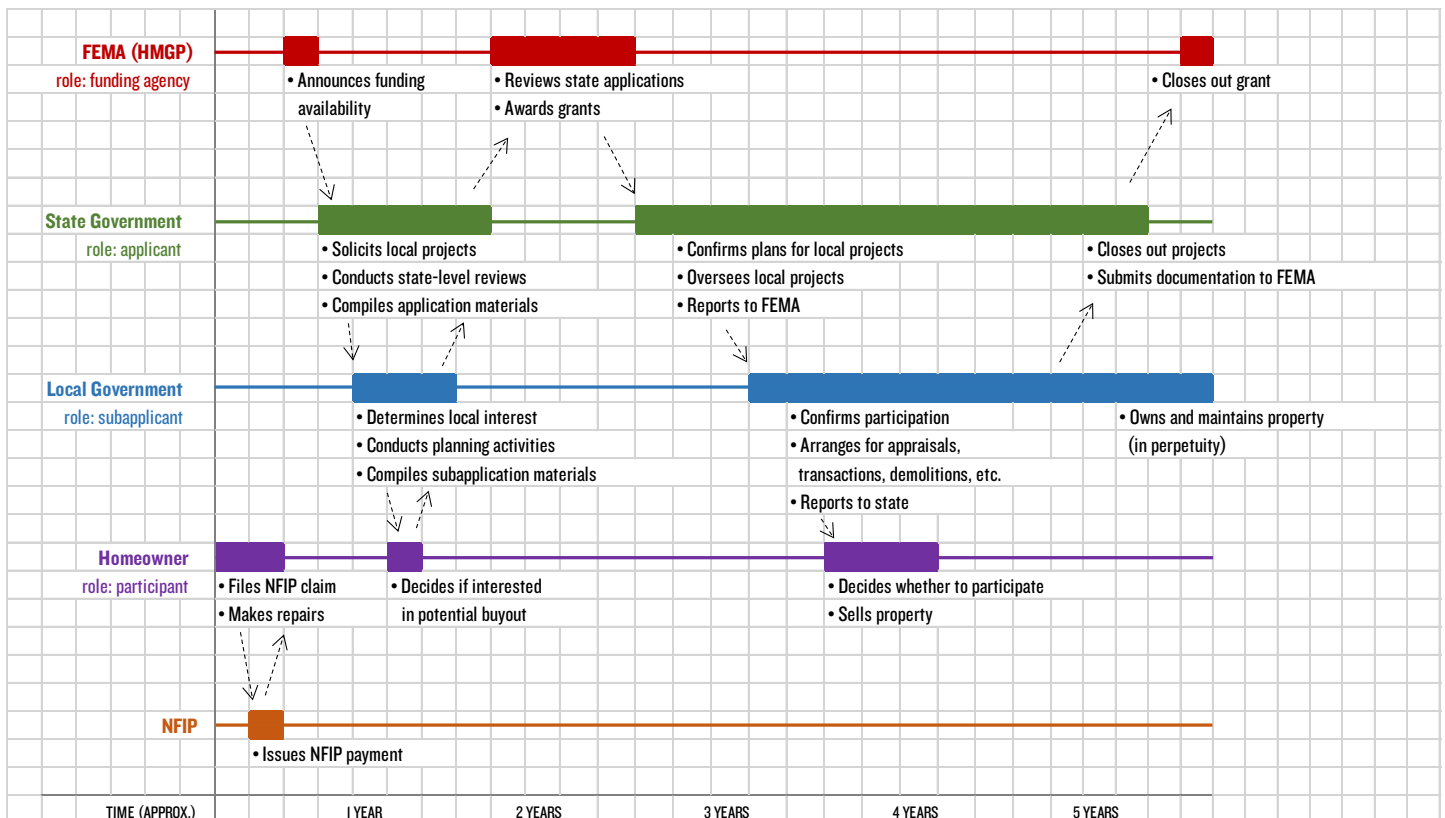
FEMA currently funds buyouts and a variety of other activities through three Hazard Mitigation Assistance grant programs: the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Grant Program, and the Pre-Disaster Mitigation (PDM) Program.<sup>11</sup> HMGP funding, which is made available only when the president declares a major disaster, accounts for 89 percent of the buyouts in FEMA’s data set. Funding for FMA and PDM is appropriated annually by Congress and is not associated with a particular event; these programs account for only 5 percent and 4 percent of buyouts, respectively. The remaining 2 percent were funded by legacy programs that are no longer active. This report focuses primarily on HMGP-funded projects, because that program funds the vast majority of FEMA buyouts.<sup>12</sup>

Figure 3, below, illustrates just how time consuming and complex the HMGP buyout process is, as well as the

intersecting roles of local, state, and federal players, including the National Flood Insurance Program (NFIP). Following a presidential disaster declaration, FEMA invites affected states to apply for HMGP funding, which can be used for a range of hazard mitigation activities. States’ HMGP applications are composed of individual projects, known as “subapplications,” which the states compile from disaster-affected communities.<sup>13</sup> As shown in the diagram, this leads to a multilayer process for grant application, review, and award. Local “subapplicants” with an interest in using HMGP monies for buyouts—generally local governments or established flood control districts—work with their states to identify and engage with potential participants, conduct benefit-cost analyses (BCAs), complete environmental and historical preservation reviews, and prepare the required documentation, which may involve title searches or other research.

FIGURE 3: BLUEPRINT OF A BUYOUT

Currently, FEMA-funded buyouts are subject to a long and complex process. It typically takes more than five years to fully close out a project. This diagram is a generalized illustration of the buyout application, approval, and implementation process.<sup>14</sup>



Even if a local jurisdiction is ready to implement a buyout program immediately after a flood disaster, officials cannot submit a subapplication until FEMA makes funding available to the state and the state announces the availability of funding to localities. By law, the amount of HMGP funding depends on certain costs associated with the disaster, so the value of available grants is not immediately known.<sup>15</sup> In addition, because HMGP buyouts require matching funds from applicants and/or subapplicants, there may be a further delay as local entities determine whether they are able to provide the appropriate match share. Under federal law, applicants can request up to 25 percent of their HMGP funding in advance (up to a maximum of \$10 million), which could address some of these issues.<sup>16</sup> However, it is unclear how often states and communities take advantage of this Advance Assistance. There is also no available information on how many buyout applications are denied or do not go forward due to funding constraints or other barriers.

FEMA accepts HMGP applications for one year after a federal disaster declaration, with the possibility for up to 180 days' extension at the state's request.<sup>17</sup> (The agency aims to award all funds within 24 months of a disaster declaration, but it is unclear how often that occurs.<sup>18</sup>) Given the previously discussed complications, it generally takes months after a disaster for the buyout process to even begin. For example, the HMGP Notice of Funding Availability for Florida following Hurricane Irma was issued in February 2018, about five months after the September 2017 storm.<sup>19</sup> After FEMA approves (or denies) applications and awards funding, the local jurisdiction arranges for property appraisals and title searches; prepares and makes offers to homeowners; participates in the closing process; and arranges for demolition, abatement of hazardous materials (such as asbestos), waste disposal, and landscaping/restoration work. Local governments are also responsible for maintaining the land after a buyout takes place. While FEMA requires that demolition be completed within 90 days of closing on a property, federal regulations do not specify other deadlines for buyout implementation.<sup>20</sup>

Because the current process for planning, funding, and implementing buyout projects is so complex and time consuming, many residents simply rebuild after a flood disaster and hope the next flood misses them, rather than enter into a long and uncertain process that may or may not result in a buyout. Homeowners may not even hear about a buyout option until months after a flood has damaged or destroyed their home, the NFIP has paid a flood insurance damage claim, and rebuilding efforts are underway or completed.<sup>21</sup> Consequently, communities, states, and FEMA miss opportunities to help people

permanently escape flooding. Instead, we perpetuate the cycle of paying billions to rebuild homes in areas that will almost certainly flood again. In addition, long waits for buyouts mean they are often out of reach for those who could most use the assistance, contributing to inequitable post-disaster outcomes.

It's possible that lower-income homeowners or residents of historically under-invested neighborhoods who seek a buyout are less likely to receive one, because FEMA's required BCA process may find fewer benefits due to the lower property values.<sup>22</sup> Because FEMA does not publish information on rejected grant applications, it's impossible to know to what extent this is happening. However, research conducted in Iowa after the state's major 2008 floods found that "households in high social vulnerability areas were less likely to obtain full financial compensation" from federally funded buyout programs and that these households waited longer to receive acquisition funds.<sup>23</sup> And a 2019 NPR investigation found that buyouts have disproportionately occurred in white communities rather than communities of color.<sup>24</sup>

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As seas rise and floods grow more common, a buyout must become one of the first options available to owners of increasingly vulnerable homes, not one of the last and least accessible options. For this to happen, we need a more efficient, equitable, predictable, and timely way of facilitating buyouts. This will require investigating the details of current buyout practices and addressing the challenges these programs face, as well as developing entirely new ways of delivering this much-needed assistance. To make buyouts a more viable choice for homeowners and communities, federal, state, and local government agencies should explore ideas such as streamlining the current buyout application and implementation process, supporting the formation of locally or state-financed buyout programs, and funding buyouts directly through the NFIP (see the Recommendations section of this paper for discussion of these and other possible remedies).



## How long do buyouts currently take?



Olga McKissic indicates the height of floodwaters outside and inside her home in Louisville, KY. “We didn’t replace the drywall here,” she said, “because we felt like it was a waste of time. A waste of money, because it’s just going to get flooded again.” McKissic first began pursuing a buyout for her repeatedly flooded home in 2006.

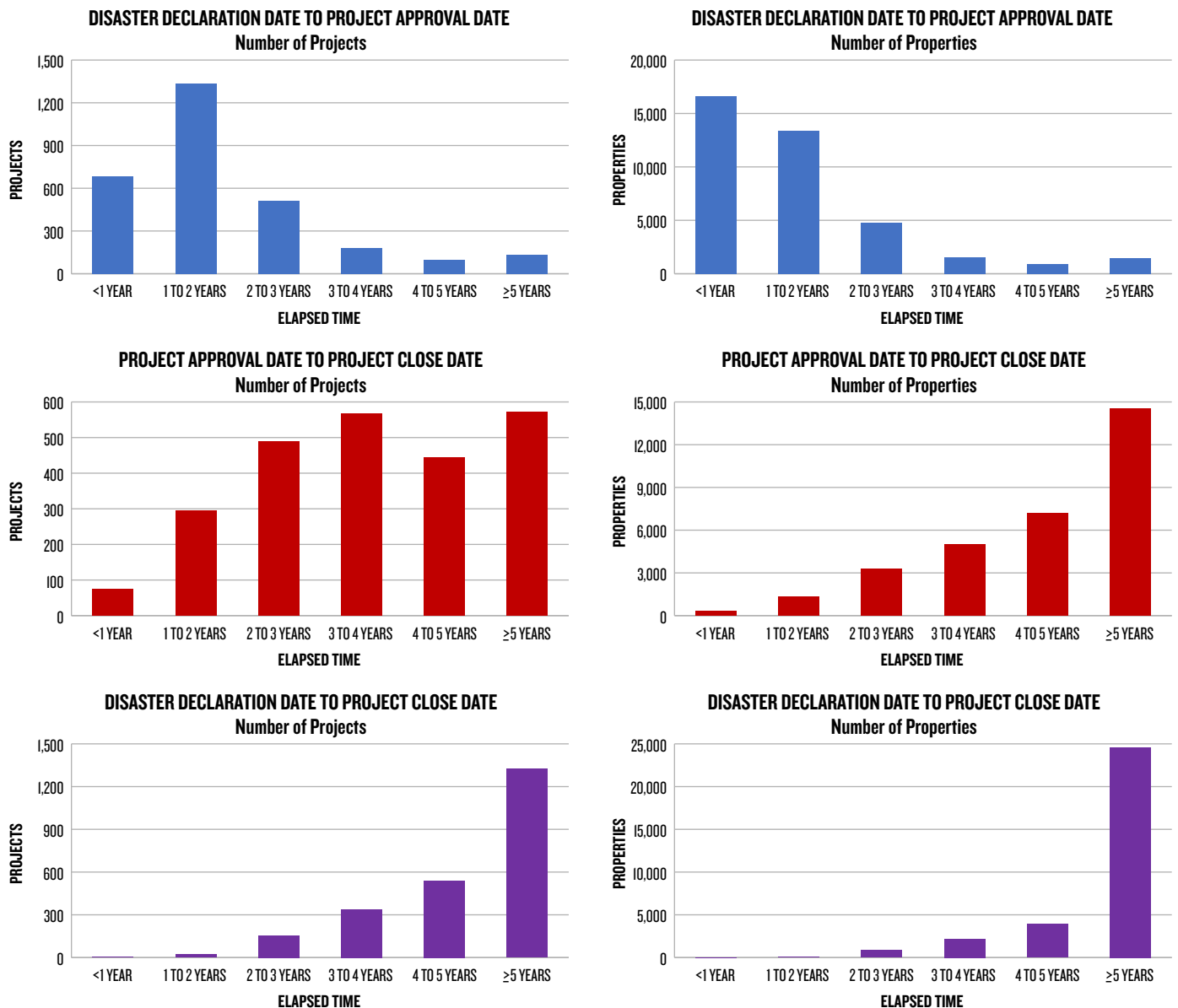
NRDC reviewed nearly 30 years’ worth of FEMA data on buyout funding, examining the time between three project milestones: the disaster declaration (for HMGP-funded buyouts only; as mentioned above, FMA and PDM funding is not tied to a particular disaster), the date FEMA approved the project, and the project closeout (when FEMA considers all administrative and financial obligations, including the buyouts themselves, to be complete). Years can elapse between each of these milestones, and fewer than half of buyout projects reach closure in less than five years (Figure 4). Ultimately, NRDC found the median time frame to be 5.2 years, from the date of a flood disaster until a buyout project is officially completed.

It is worth noting, however, that the official closeout date in the FEMA data set may be later than the actual acquisition or demolition date for any properties. This is because states may wait to compile all materials from a given disaster before officially closing out projects with FEMA, and some buyout projects may be bundled with other activities that have longer construction or monitoring timelines.<sup>25</sup> Even so, a multiyear project timeline is consistent with the experiences reported by personnel working on state and local buyout projects and by buyout participants themselves. As annual grant programs, FMA and PDM avoid some of the timing challenges associated with disaster-based funding; however, applicants are still told to expect at least six months of FEMA review time.<sup>26</sup>

FIGURE 4: BUYOUT TIME FRAMES

Since 1989, FEMA has approved or provided funding for the purchase of 43,368 properties as part of 3,839 projects carried out by local or state governments. Approximately 70 percent of approved buyout projects were approved within two years of the associated disaster, but over 400 have taken three years or more to receive approval. Several years usually elapse between project approval and closeout, and fewer than half of buyout projects are closed within five years.

Note: In each of the graphs below, only projects or properties with valid data for both milestones of interest are included (e.g., because FMA and PDM are not associated with specific declared disasters, the “Disaster Declaration Date to Approval Date” and “Disaster Declaration Date to Project Close Date” graphs include only HMGP-funded buyouts).

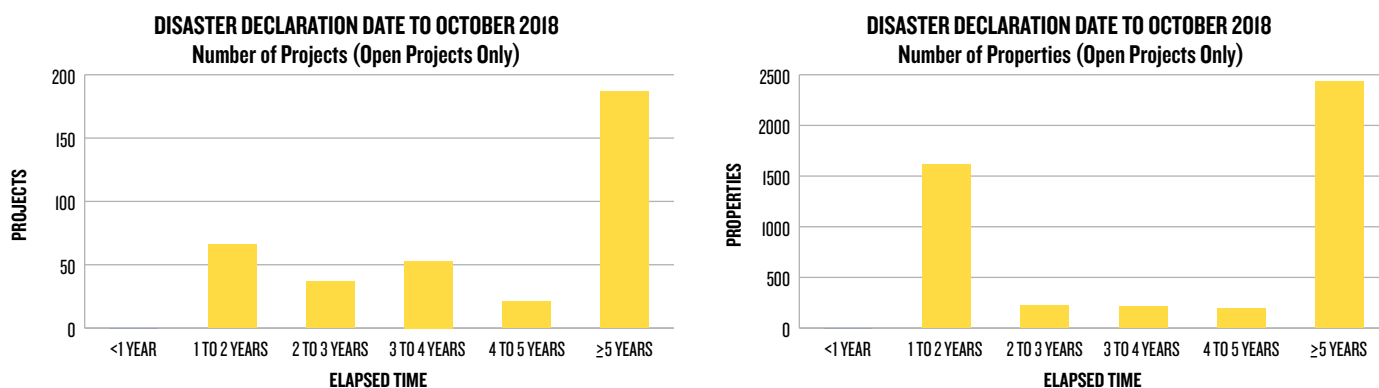


The data set includes hundreds of FEMA-funded buyout projects that have yet to be closed, representing 4,675 individual properties. Some of these are associated with major floods that occurred between 2015 and 2017 and are likely years away from completion, regardless of how efficiently the project proceeds. Nearly 200 projects,

however, were approved more than five years ago and are still awaiting closure (Figure 5). And in light of the flooding that continues to occur, there are undoubtedly projects pending approval that are too recent to be included in the data set at all.

FIGURE 5: BUYOUT TIME FRAMES FOR OPEN PROJECTS

As of October 2018, nearly 200 approved buyout projects (representing more than 2,000 properties) had waited more than five years without being closed out by FEMA.



How long a buyout takes varies somewhat across the country (Figures 6 and 7) and it is influenced by a variety of factors at the federal, state, and local levels. These factors include the length of time used for state review, the prioritization of buyouts relative to other disaster recovery or mitigation activities, the availability and source of necessary nonfederal matching funds, the potential for delays during the real estate transaction, and whether projects can take advantage of a precalculated BCA instead of a BCA calculated individually for each property.<sup>27</sup> Typically, FEMA requires a separate BCA for each property acquired during a buyout project, to ensure that the project is cost effective.<sup>28</sup> However, FEMA has determined that all properties meeting certain pre-

established criteria (namely, all properties located in the Special Flood Hazard Area that cost up to \$276,000 to acquire) are cost effective, and those cases can move forward using FEMA’s pre-calculated BCA, saving time and effort.<sup>29</sup>

Another factor is the percentage of participants who remain interested in and able to wait for a buyout throughout the process. To account for homeowner attrition and avoid the need to identify new participants partway through a project, the Blue Acres Program in New Jersey submits application materials for twice as many properties as it expects to purchase, knowing that many people will drop out/give up before the process can be completed.<sup>30</sup>

FIGURE 6: MEDIAN BUYOUT TIME FRAMES, BY STATE

Buyout time frames vary widely from state to state. Note that the FEMA data set does not include any buyouts in Hawaii, and Connecticut has no closed projects. Median time frames in the maps below were calculated at the project (not property) level, including only projects with valid dates for applicable milestones.

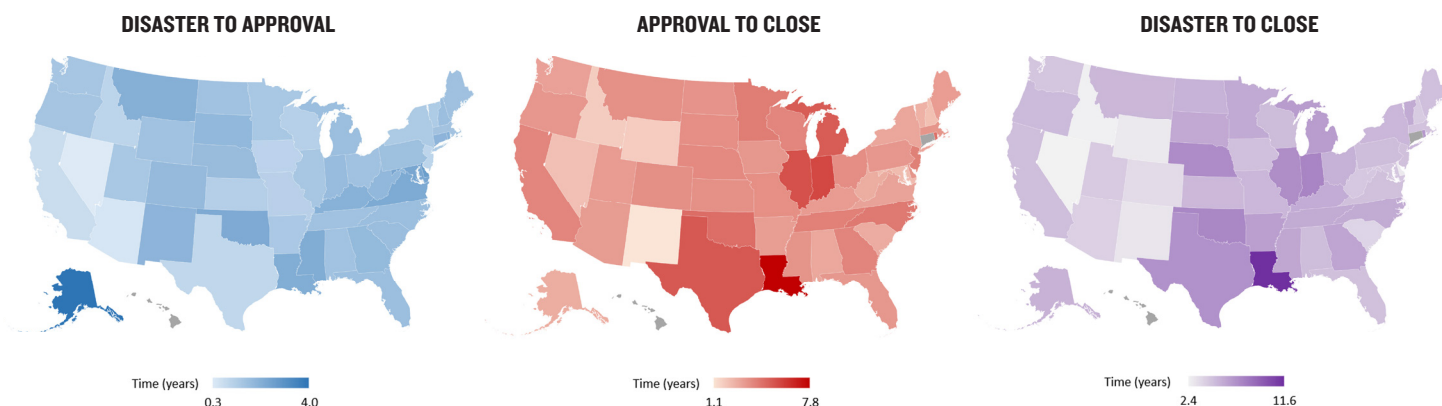
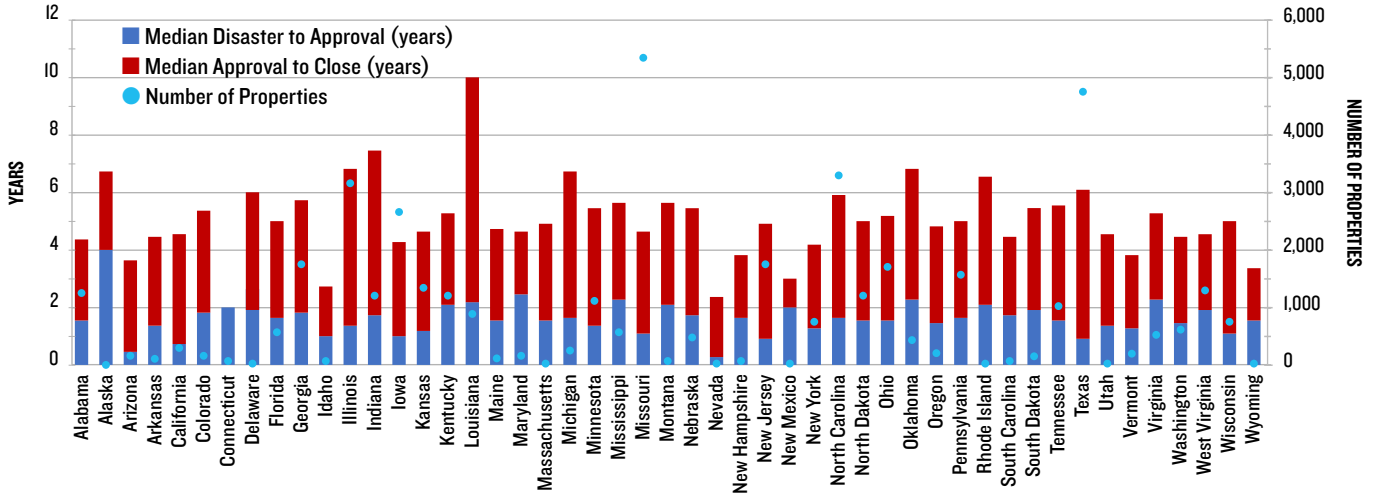


FIGURE 7: MEDIAN BUYOUT TIME FRAMES AND TOTAL NUMBER OF PROPERTIES, BY STATE

Time frames in a given state are not necessarily associated with the number of buyouts that have taken place there. Note that median time frames in the graph below were calculated at the project (not property) level, including only projects with valid dates for applicable milestones. The total bar height may not match the “Disaster to Close” value shown in Figure 6 because that map only includes closed projects.



The FEMA data set does not show any clear timing trends among states. Overall, how long a buyout project takes does not appear to be strongly associated with the amount paid for the properties, the population or median household income of the county where the project took place, or the total number of buyouts completed in a given state or county. Completion times also vary within states.

Importantly, there is no clear trend over time, either—in general, it does not seem that project time frames are getting shorter as states and communities gain more experience with buyouts (Figure 8). This is consistent with observations made by researchers Alex Greer and Sherri Brokopp Binder, who found that buyout projects tend to be developed from scratch instead of incorporating lessons learned from previous efforts.<sup>31</sup>

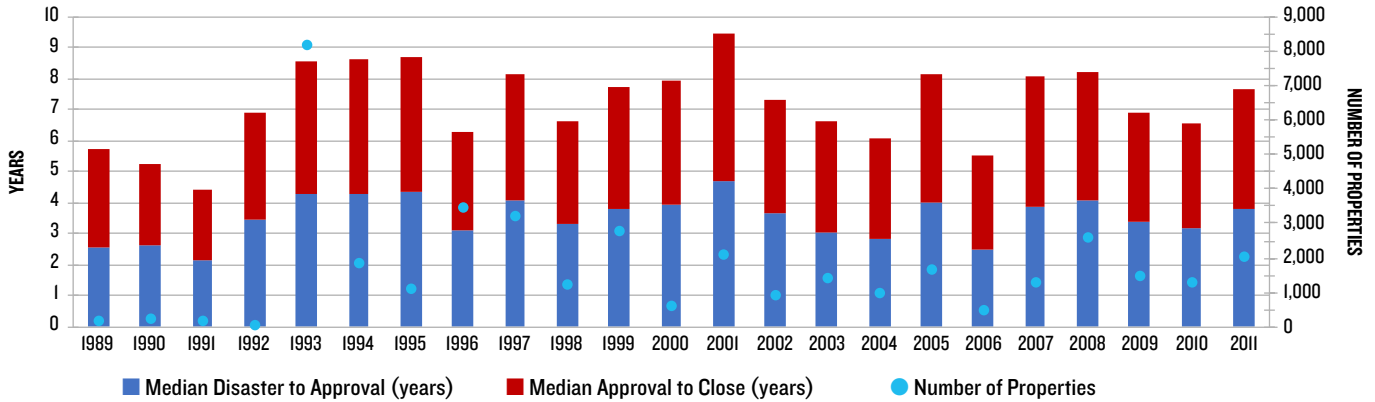
© David Salvesen



An abandoned home awaits a buyout in New Jersey in 2015.

FIGURE 8: MEDIAN BUYOUT TIME FRAMES AND TOTAL NUMBER OF PROPERTIES, BY PROJECT FISCAL YEAR

Buyout project time frames have remained generally consistent over the years. Note that projects must have received approval to be included in FEMA's data set, which means that only the most rapidly approved projects from recent years appear in the data at all. To avoid showing results biased toward those fast-moving projects, those that began after 2011 are not included. (The years shown in the figure represent the federal fiscal year in which a buyout project was initiated.)

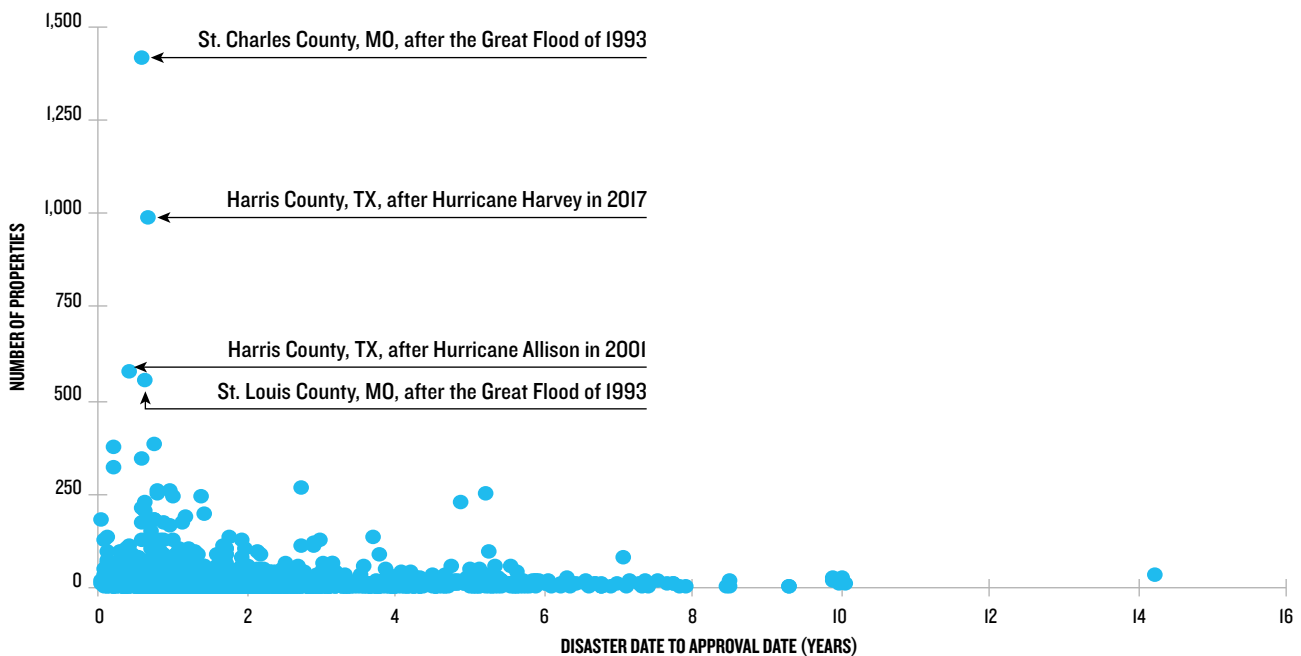


The data set includes a few large buyout projects that took place after very high-impact disasters and had relatively short approval time frames (Figure 9). The four largest projects are each associated with more than 500 properties, and all received approval within nine months of their respective disaster declaration—much more

quickly than most projects. Perhaps this is due to the capacity of the state or local government, or to the political will associated with extremely large-scale disasters. In any event, it suggests that acquiring large numbers of properties is not necessarily a barrier to faster approval times.

FIGURE 9: TIME TO APPROVAL VS. NUMBER OF PROPERTIES

Four buyout projects, each approved to acquire more than 500 properties following large-scale flood disasters, experienced relatively short approval time frames. Each point on the graph represents one buyout project.



## Why are these long time frames a problem?

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*“You know, I have mounds and mounds of paper and I’m still waiting. I am still waiting,”*  
*Olga McKissic said as she reviewed buyout-related documentation in 2017.*

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The long project time frames associated with FEMA-funded buyout programs have a host of negative consequences. Once a property is included in a request for FEMA funding, homeowners can be kept in limbo for years, waiting to find out if their homes will or won’t be purchased. During that time, what happens if they need to repair the roof or replace major systems or appliances? Do they spend the money knowing that a buyout, which is based on pre-flood home value, won’t reimburse the expense? Or do they take a risk and wait, only to find out that their buyout application was denied? In addition, a home may flood again while the owner is waiting to find out the status of a potential buyout. If the home is covered by the NFIP, the federal program will pay to rebuild it yet again. As Matt Zeve from the Harris County Flood Control District puts it, “all we’re doing is perpetuating a cycle of flooding.”<sup>32</sup>

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*“All we’re doing is perpetuating a cycle of flooding.” — Matt Zeve, Harris County (Texas) Flood Control District Operations Chief*  
*(quoted in the Houston Chronicle, May 10, 2018)<sup>33</sup>*

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Most important, many of the homeowners suffering through these long waits are those who can least afford it. Earlier research by NRDC found that the most flood-prone homes in the nation are likely to be owned by lower-income residents.<sup>34</sup> In addition, in many cities the legacy

of redlining—denying access to credit based on the racial characteristics of a property’s location—means that low-income people and people of color are more likely to live in flood-prone neighborhoods.<sup>35</sup> According to a study by the National Community Reinvestment Coalition, many of the neighborhoods that were evaluated and labeled “hazardous zones” by the government-sponsored Home Owners Loan Corporation (HOLC) and other lending institutions in the 1930s continue to reflect persistent patterns of economic inequality and depressed home values.<sup>36</sup> Especially in inland locations, low-income communities and communities of color are likely to experience higher flood risk due to lower-lying elevations and/or underinvestment in flood mitigation infrastructure.<sup>37</sup>

However, simply offering buyout programs in lower-income neighborhoods is not enough; the buyouts need to be accomplished within a time frame that actually allows people to participate. Wealthier homeowners may be able to absorb the costs associated with waiting for a buyout, such as finding temporary housing, paying for repairs not covered by flood insurance, or dealing with the disruption of subsequent floods. Lower-income residents are unlikely to be able to afford to wait for months or years to be offered a buyout, while their home may be uninhabitable and they continue to face the risk of flooding. As a 2001 FEMA Inspector General report noted, unclear policy following Hurricane Floyd in 1999 “caused significant delays in the commencement of the buyout process, contributed to much confusion and frustration over the funding requirement to execute such projects, and may have caused potential inequities in the type of structures targeted for buyout.”<sup>38</sup>

As a result, the slow pace of buyouts can contribute to inequitable redevelopment. Six months after Hurricane Harvey, thousands of people had already given up on waiting for a buyout. If buyouts had more reasonable time frames, the owners would have received a fair price for their home and been able to more easily move to a safer location, and the acquired property would have been protected in perpetuity as open space. Instead, according to the *Houston Chronicle*, 5,500 homeowners who wanted to escape future flooding sold their properties to real estate speculators for dimes on the dollar, shifting flood

risk to the next resident.<sup>39</sup> This dangerous and expensive game of musical chairs perpetuates the cycle of flooding and rebuilding. When real estate speculators redevelop a flood-prone property, there is also the potential for gentrification in some circumstances, for example if older homes are replaced by updated luxury housing.<sup>40</sup> In addition, the community misses the opportunity to acquire land that could be used for parks, green infrastructure, ecological restoration, and other projects that decrease flood risk and improve quality of life.

## Recommendations

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Communities across the United States are already facing increased flood risk as seas rise, rainfall patterns change, and extreme storms become more common. Enabling people at risk to move out of harm's way must be an essential component of the nation's climate adaption strategy, but NRDC's analysis of FEMA-funded buyouts shows that current practices are not capable of rising to the challenge. Currently, buyouts take too long to initiate and far too long to complete. Even when homeowners become part of an application for FEMA buyout assistance, there is no guarantee that funding will be approved or that their home will be purchased. As a result, many people who want to relocate are left behind, giving up as years pass and they wait for a buyout that may or may not take place. This contributes to negative outcomes for residents, communities, and the NFIP while exacerbating inequity in disaster recovery.

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*Enabling people at risk to move out of harm's way must be an essential component of the nation's climate adaption strategy, but NRDC's analysis of FEMA-funded buyouts shows that current practices are not capable of rising to the challenge.*

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There is no single solution to address the growing flood risk facing millions of people in the United States. Communities and individuals should have access to a range of options, including the option to relocate away from areas susceptible to rising waters and to find a new home in a safer location—preferably within the same community,

if they want to stay. Below are some approaches for improving the current system, as well as new buyout models that NRDC believes are worth exploring by FEMA, other federal agencies, and state and local governments.

**Investigate the reasons for delays in the current process and study how to make buyouts more timely and more accessible, with special attention to low-income homeowners.** The FEMA data set provides some information on the long wait times associated with current buyout projects, but questions remain about the reasons for those delays (see Appendix B for topics NRDC recommends for further investigation). And because FEMA's data set includes only project approval and closure dates, it is hard to tell exactly how long it takes for purchases to be completed or for families to move into a new home. In addition to exploring innovative buyout approaches like the ones recommended below, more work should be done to understand the obstacles in the current process and how they can be addressed. Congress has already shown interest in answering these questions; for example, the U.S. House passed H.R. 5846 in 2018, directing the Government Accountability Office (GAO) to study the efficacy of current buyout funding programs and ways to streamline the associated processes.<sup>41</sup> GAO is now planning to initiate that study.<sup>42</sup> Future work should also include consideration of the interconnected social, cultural, economic, and equity issues related to buyouts and how these are influenced by current and proposed processes.

**Make direct assistance for buyouts available through the NFIP.** Every NFIP insurance policy already includes "Increased Cost of Compliance" (ICC) coverage.<sup>43</sup> Currently, ICC coverage provides an additional \$30,000 to policyholders to bring a substantially damaged home into compliance with modern building codes in the aftermath

of a flood; this money is most often used to elevate houses. Congress should allow the NFIP's ICC coverage to be used for a buyout. When a property is damaged in a flood and the owner files a damage claim, the total amount of the claim plus the ICC coverage would often be enough to cover most or all of the home's value, leaving the local government to make up—at most—a relatively small difference to acquire the property and maintain the land as publicly owned open space. Using ICC coverage could allow more localities to implement streamlined, expedited buyout projects similar to a successful, locally funded Quick Buy program in Mecklenburg County, North Carolina. There, Charlotte-Mecklenburg Storm Water Services uses a "rainy day" fund to support buyouts of eligible properties immediately after a flood event.<sup>44</sup> Because flood insurance claims (including ICC payments) are generally settled within weeks of a flood, rather than the months or years needed for mitigation grant funding, this approach would allow buyouts to happen within a short time frame that makes more sense for homeowners.

Congress has already demonstrated its inclination to increase ICC coverage. The NFIP reform bill passed by the U.S. House in 2017 included an optional increase in ICC coverage from \$30,000 to \$60,000 for interested policyholders.<sup>45</sup> Several NFIP bills introduced in the U.S. Senate also proposed increasing ICC coverage and making buyouts an eligible use of ICC coverage.<sup>46</sup> And as of August 2019, bills introduced in both the House and the Senate include similar provisions.<sup>47</sup>

**Pre-approve and guarantee buyouts as a benefit of flood insurance coverage for people whose homes have flooded multiple times.** NRDC has developed a mechanism that would guarantee these homeowners a buyout and alleviate their uncertainty.<sup>48</sup> Qualifying homeowners could voluntarily commit to accepting a buyout of the home if it is substantially damaged (or reaches a certain damage threshold) in a future flood disaster.<sup>49</sup>

As part of their flood insurance coverage through the NFIP, qualifying homeowners would be guaranteed future assistance to relocate in exchange for discounted flood insurance premiums. The local government or the state would be responsible for purchasing the damaged home using funds provided by FEMA through the National Flood Insurance Fund.<sup>50</sup> Once the buyout is complete, the owners would move to a safer location, the damaged home would be demolished, and the property would become open space. Additional funding could be made available to families who have trouble finding an affordable new home outside the flood zone but within the same community (this is already FEMA's existing protocol for some traditional buyouts). As with the ICC proposal, routing buyout funding directly through the NFIP would avoid the long delays associated with HMGP funding, and preapprovals would eliminate the uncertainties of the current process.



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After finally receiving a buyout, Olga McKissic stands on the former site of her home. The Louisville/Jefferson County Metropolitan Sewer District demolished the home in July 2019.

**Leverage the capacity of nonprofit organizations to facilitate buyouts, similar to the role they play in acquiring land for conservation.** Land trusts and other nonprofit organizations often work with government agencies to acquire land for conservation purposes. For example, when a privately owned property with a high ecological or recreational value becomes available to purchase, a government agency may be interested in acquiring it to add to an existing park, recreational area, or nature preserve or to create a new one. When a government agency is unable to quickly purchase such land, a land trust can move to acquire a property immediately, with an understanding that the agency will purchase it at a later date, forever protecting the land as public property. FEMA-funded buyouts do not lend themselves to similar partnerships because FEMA cannot provide a grant to a project that has been completed or is already underway.<sup>51</sup> Changing this provision to allow local governments to purchase land initially acquired by conservation groups would expedite the process for homeowners while allowing localities to access traditional sources of buyout funding.

Current flood insurance and disaster assistance processes leave anxious homeowners wondering if they should rebuild and worrying that the next storm will just put them underwater yet again. Ultimately, changes must be made to ensure that buyouts are a realistic option as waters continue to rise.



## APPENDIX A: FEMA Data Set Details

The FEMA data set used in this report was drawn from two OpenFEMA data products downloaded on October 3, 2018: “Hazard Mitigation Assistance Mitigated Properties—V1” (available at <https://www.fema.gov/openfema-dataset-hazard-mitigation-assistance-mitigated-properties-v1>) and “Hazard Mitigation Assistance Projects—V1” (available at <https://www.fema.gov/openfema-dataset-hazard-mitigation-assistance-projects-v1>). Previous versions of the same OpenFEMA data products were used to inform our preliminary investigations.

At the recommendation of OpenFEMA staff, we limited our analysis to properties with the Property Action type “Acquisition” in the “Hazard Mitigation Assistance Mitigated Properties—V1” data set. Every property is associated with a project (representing the subgrantee/subapplication), and FEMA assigns every project a unique identifier. We used this identifier to combine the property-level and project-level information into a single data set that contains all of the acquisitions and associated project-level information. We manually assigned counties based on zip code and/or subgrantee name if the county field

was blank in the original data. The resulting numbers of projects and properties are summarized in Supplementary Table 1.

To determine the amount of time associated with buyout projects, we calculated the number of days between the three available milestones: the date of the associated major disaster declaration (if applicable), the project approval date, and the project close date. In some cases the FEMA data set included two dates for the project’s approval: Date Initially Approved and Date Approved. Per guidance from OpenFEMA staff, we used the Date Approved if available; otherwise, we used the Date Initially Approved. The FEMA data set did not include dates for other milestones (e.g., date of funding award or obligation). For display purposes, we divided the elapsed days by 365 to give the time in years. In this report, summary time frame information (e.g., median times between milestones) is shown at the project level, to ensure that large and small projects were fairly represented. The mean and median time frames are summarized in Supplementary Table 2. Because the accuracy of the data is uncertain, we use median values in the body of the report to limit the effect of outliers.

**SUPPLEMENTARY TABLE 1. SUMMARY OF BUYOUT PROJECTS IN THE FEMA DATA SET, BY FUNDING PROGRAM AND STATUS**

FUNDING PROGRAM	APPROVED	AWARDED	OBLIGATED	COMPLETED	CLOSED	TOTAL
<b>PROJECTS</b>						
HMGP	384	0	0	0	2,558	2,942
FMA	35	24	289	7	224	579
PDM	1	0	151	0	20	172
Other	0	0	114	0	32	146
<b>Total</b>	<b>420</b>	<b>24</b>	<b>554</b>	<b>7</b>	<b>2,834</b>	<b>3,839</b>
<b>PROPERTIES</b>						
HMGP	4,970	0	0	0	33,750	38,720
FMA	75	155	1,339	16	478	2,063
PDM	4	0	1,490	0	280	1,774
Other	0	0	773	0	38	811
<b>Total</b>	<b>5,049</b>	<b>155</b>	<b>3,602</b>	<b>16</b>	<b>34,546</b>	<b>43,368</b>

**SUPPLEMENTARY TABLE 2. MEAN AND MEDIAN TIME FRAMES FOR BUYOUT PROJECTS, BY FUNDING PROGRAM. OF FEMA'S CURRENT HAZARD MITIGATION ASSISTANCE PROGRAMS, ONLY HMGP IS ASSOCIATED WITH DECLARED DISASTERS; AS A RESULT, THE DISASTER DATE CAN BE USED AS A MILESTONE ONLY FOR HMGP-FUNDED BUYOUT PROJECTS**

FUNDING PROGRAM	NUMBER OF BUYOUTS		DISASTER TO APPROVAL		APPROVAL TO CLOSE		DISASTER TO CLOSE	
	PROJECTS	PROPERTIES	MEAN	MEDIAN	MEAN	MEDIAN	MEAN	MEDIAN
HMGP	2,942	38,720	1.89	1.57	3.94	3.65	5.62	5.22
FMA	579	2,063	N/A	N/A	3.17	3.42	N/A	N/A
PDM	172	1,774	N/A	N/A	4.06	3.69	N/A	N/A
Other	146	811	N/A	N/A	3.58	3.51	N/A	N/A
Total	3,839	43,368	1.89	1.57	3.90	3.63	5.62	5.22

The FEMA data set includes a field titled Actual Amount Paid at the property level. FEMA defines this as the “amount paid to the property owner,” noting that “the Actual Amount Paid field may not reflect the amount actually paid by FEMA to mitigate the structure. Often the negotiated price, based on fair market value, will be offset by duplication of benefits prior to settlement. In addition, the actual amount paid may not include ancillary costs such as appraisals, closing cost or legal fees, asbestos assessment and abatement and/or demolition costs.”<sup>52</sup> As a result, Actual Amount Paid generally does not reflect the full value of the property, but rather the amount that was not covered by other forms of assistance. Of the 43,368 properties in the data set, 13,502 have valid (positive, non-zero) amounts paid.

The total Actual Amount Paid in the FEMA data set, summed across all properties, is approximately \$4.1 billion (dollar year is not specified; presumably the data set reflects the nominal amount at the time of the transaction). However, there are several properties with suspect values, such as a \$713 million Actual Amount Paid value for a home that was part of a Hurricane Floyd project in Greenville, North Carolina. That amount is more than 10 times the total assigned to the project in the “Hazard Mitigation Assistance Projects—V1” data set, and it also exceeds the total countywide damage for the storm.<sup>53</sup> We identified a total of 16 properties whose Actual Amount Paid values were greater than 10 times the reported project value, presumably due to data errors. If those properties are excluded from the data set, the total Actual Amount Paid for all properties is approximately \$1.1 billion. Because of these uncertainties, we do not include further analysis of project values or amounts paid in the report.

## APPENDIX B: Questions for Further Investigation

Change is clearly needed to make buyouts a more viable option for homeowners and communities. Congress, the Government Accountability Office, and FEMA should investigate the stumbling blocks that local, state, and federal agencies encounter when implementing buyout programs. While FEMA's data show some outcomes of these challenges—long wait times and slow progress—we need a better understanding of the underlying reasons. The following questions could guide a deeper examination of current buyout practices and the potential for streamlining those activities.

- **How much time elapses before a property is purchased and the structure is demolished?** As described above, FEMA's data capture only the project approval date and the project closeout date. While participants' experiences largely corroborate our analysis, the data do not give a clear answer about the time between a flood and closing or demolition.
- **How can communities best identify potential properties in advance of receiving funding?** Communities that have already identified properties that are potential candidates for buyouts—or, better yet, that have already determined which owners desire a buyout—can save a great deal of time when funding becomes available. Are there communities that have had success identifying interested homeowners in advance? What are the best practices and resources for evaluating potential participants?
- **How many communities dedicate staff to manage the buyout process?** Communities that have one or more staff members whose job is to manage a buyout program seem to have more success. Buyout programs require a great deal of effort, and when such a complex program is simply added to the duties of a local official, whose full-time job may not even be emergency management, it can lead to delays. How many buyout programs have dedicated staff? What resources are available for communities to support buyout manager staff positions?
- **To what extent do communities use FEMA's precalculated BCA?** As noted in the main text, FEMA allows communities to use a standard, precalculated BCA for properties in the Special Flood Hazard Area that cost less than or equal to \$276,000 to acquire. However, the extent to which communities take advantage of this is unclear, and some states may require local applicants to conduct additional BCAs.
- **Could the BCA be simplified to streamline processes and improve outcomes?** Local and state officials take a great deal of time doing property-specific BCAs for buyouts. It's important to ensure that these projects are cost effective, but if a community wants to help a large number of property owners move out of harm's way, it can be daunting to do BCAs on each individual property. In addition, property-specific BCAs fail to capture any additional benefits from purchasing contiguous properties.<sup>54</sup> How could FEMA streamline its BCA requirements to address sets of properties?

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Repeatedly flooded townhomes await demolition in the West Ashley area of Charleston, SC.

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Demolition took place in July 2019, following multiple years of catastrophic flooding in the neighborhood.

- **Have any programs used a reimbursement approach for buyouts?** Most buyouts are not attempted until after FEMA has approved an application for funding. However, for HMGP, it may be possible to move quickly to purchase homes from willing sellers and later apply for reimbursement. It is unclear whether any states or communities have done this, or what challenges could make this infeasible.
- **How many states secure advance HMGP funding when a flood disaster is declared?** Under Section 1104 of the Sandy Recovery Improvement Act of 2013, FEMA can make up to 25 percent of a recipient’s anticipated HMGP funding available in advance. With this Advance Assistance, communities that have pre-identified buyout participants could work swiftly with their states to purchase those homes, sparing the homeowner the time and cost of rebuilding. How many states have used Advance Assistance, and what can we learn from their experiences?
- **Which states have received delegated authority to approve HMGP applications?** A buyout project in Winneshiek County, Iowa—which has one of the shortest time frames in the FEMA data set—benefited from Iowa Homeland Security and Emergency Management’s ability to review its own buyout subapplications at the state level.<sup>55</sup> Do other states have similar arrangements with FEMA?
- **How might the overall HMGP application process be simplified?** Local officials may find buyouts daunting due the sheer volume of paperwork and documentation FEMA requires for these efforts. According to office staff we spoke with in Iowa, their application to buy out 12 homes is more than 700 pages long.<sup>56</sup> How could FEMA streamline its application requirements to collect the necessary information without unduly burdening applicants and subapplicants?

## ENDNOTES

- 1 Mathew E. Hauer, Jason M. Evans, and Deepak R. Mishra, “Millions Projected to Be at Risk from Sea-Level Rise in the Continental United States,” *Nature Climate Change* 6, no. 7 (July 2016): 691–95, <https://doi.org/10.1038/nclimate2961>.
- 2 Union of Concerned Scientists, “Underwater: Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate,” June 2018, [www.ucsusa.org/underwater](http://www.ucsusa.org/underwater). U.S. Global Change Research Program, *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment*, volume II, D. R. Reidmiller et al., eds., 2018, doi: 10.7930/NCA4.2018.
- 3 Federal Emergency Management Agency (hereinafter FEMA), Federal Insurance and Mitigation Administration, “Property Acquisitions for Open Space,” 2017, [https://www.fema.gov/media-library-data/1487973067729-d34bd451527229a45bad0ef5ac6ddf93/508\\_FIMA\\_Acq\\_FAQs\\_2\\_24\\_17\\_Final.pdf](https://www.fema.gov/media-library-data/1487973067729-d34bd451527229a45bad0ef5ac6ddf93/508_FIMA_Acq_FAQs_2_24_17_Final.pdf).
- 4 NRDC analyzed information from two OpenFEMA data sets: “Hazard Mitigation Assistance Mitigated Properties—V1” (available at <https://www.fema.gov/openfema-dataset-hazard-mitigation-assistance-mitigated-properties-v1>) and “Hazard Mitigation Assistance Projects—V1” (<https://www.fema.gov/openfema-dataset-hazard-mitigation-assistance-projects-v1>), both accessed on October 3, 2018. This report refers to the combined data as the “FEMA data set.” Values cited or displayed in this report are sourced from this data set unless otherwise noted. See Appendix A for more information.
- 5 A. R. Siders, “Anatomy of a Buyout Program—New York Post-Superstorm Sandy,” presented at the 16th Annual Conference on Litigating Takings Challenges to Land Use and Environmental Regulations, New York, New York, November 22, 2013, [https://www.researchgate.net/publication/308518538\\_Anatomy\\_of\\_a\\_Buyout\\_Program\\_-\\_New\\_York\\_Post-Superstorm\\_Sandy](https://www.researchgate.net/publication/308518538_Anatomy_of_a_Buyout_Program_-_New_York_Post-Superstorm_Sandy).
- 6 FEMA, “Property Acquisitions for Open Space.”
- 7 FEMA data set.
- 8 Dennis M. Knobloch, “Moving a Community in the Aftermath of the Great 1993 Midwest Flood,” *Journal of Contemporary Water Research & Education* 130, no. 1 (March 2005): 41–45, <https://doi.org/10.1111/j.1936-704X.2005.mp130001008.x>.
- 9 Justin Auciello, “N.J. Expands Flood Zone Buyout Program at the Shore,” WHYY, September 6, 2018, <https://whyy.org/articles/n-j-expands-flood-zone-buyout-program-at-the-shore/>.
- 10 FEMA, “FEMA Awards More than \$81 Million for Harris County Property Acquisition,” August 31, 2018, <https://www.fema.gov/news-release/2018/08/31/fema-awards-more-81-million-harris-county-property-acquisition>. Harris County Flood Control District, “HCFCD—2018 Bond Program,” November 1, 2018, <https://www.hcfcd.org/2018-bond-program/>. Jen Para, “FEMA Approves More Funds for Harris County Flood Control District Home Buyout Program (Update),” *Houston Business Journal*, June 5, 2018, <https://www.bizjournals.com/houston/news/2018/06/05/fema-approves-26m-for-harris-county-home-buyouts.html>.
- 11 The Disaster Recovery Reform Act of 2018 replaced PDM with a new program called Building Resilient Infrastructure and Communities (BRIC). As of mid 2019, FEMA was collecting public input on how to structure and implement BRIC. For more information, see <https://www.fema.gov/disaster-recovery-reform-act-2018> and <https://www.fema.gov/DRRA-BRIC>.
- 12 Other public funding sources, notably the Community Development Block Grant Disaster Recovery (CDBG-DR) program administered by the U.S. Department of Housing and Urban Development (HUD), are also used for buyouts (and, because of nonfederal match requirements, local buyout projects often use more than one source of funding). However, this report focuses specifically on FEMA-funded buyouts because HUD-funded buyouts do not include a prohibition on redevelopment. This report also focuses on homeowners; renters and residents of multifamily buildings are generally not the audience for existing buyout efforts, and addressing their needs—while critically important—is beyond the scope of this document. For a discussion of the particular challenges faced by low-income tenants after a flood disaster, see Zoe Middleton, “A Look at GoogleMaps Reveals Unsettling Reality of Recovery for Houston Renters,” *Texas Housers*, March 19, 2018, <https://texashousers.net/2018/03/19/a-look-at-googlemaps-reveals-unsettling-reality-of-recovery-for-houston-renters/>. For information on other social, economic, and environmental challenges associated with buyouts (beyond the time frame issue), we refer the reader to the work of researchers including Sherri Brokopp Binder, Daniel H. de Vries, James C. Fraser, Alex Greer, Rebecca Kihlsinger, Carolien Kraan, David Salvesen, A. R. Siders, and Elyse Zavar.
- 13 This report uses the term *project* to describe a set of buyouts within the same jurisdiction that are funded by the same FEMA subapplication. A project may involve buyouts for one or more properties, and a local government may oversee more than one project at a time. For example, after Tropical Storm Allison in 2001, the FEMA data set shows that Harris County, Texas, conducted six FEMA-funded buyout projects in different neighborhoods. The county acquired more than 900 properties across the six projects, but the number of properties per project ranged from 1 to 568.
- 14 Maryland Emergency Management Agency, “Frequently Asked Questions (FAQs): FEMA Funded Residential Property Voluntary Flood Buyouts,” <https://mema.maryland.gov/Documents/Buyout%20FAQ.pdf> (accessed April 18, 2019). Megan Cawley, attorney, Holland & Knight LLP; Jon Duddles, city engineer, Des Plaines, Illinois; and Stew Weiss, attorney, Holland & White LLP, interviews with authors, December 10, 2018. Paul Osman, chief, Statewide Floodplain Section/National Flood Insurance Program, Illinois Department of Natural Resources, email communication with authors, September 6, 2018. Tim Trautman, flood mitigation program manager, Charlotte-Mecklenburg (North Carolina) Storm Water Services, interview with authors, September 6, 2018. Dusty Pogones, lead mitigation project officer, Iowa Homeland Security and Emergency Management, interviews with Julie Skarha, July 31, 2018, and August 9, 2018. Frances Ianacone, project manager, New Jersey Department of Environmental Protection Blue Acres Program, and Fawn McGee, chief of state land acquisition, New Jersey Department of Environmental Protection Blue Acres Program, interviews with Julie Skarha, July 25, 2018. Jennifer Cobian, Calcasieu Parish (Louisiana) Police Jury, email communications with Julie Skarha, July 18, 2018, and July 26, 2018. Rice University Kinder Institute for Urban Research, “Case Studies in Floodplain Buyouts: Looking to Best Practices to Drive the Conversation in the Houston Region,” February 2018, <https://kinder.rice.edu/research/case-studies-floodplain-buyouts-looking-best-practices-drive-conversation-houston-region>.
- 15 Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended, 42 U.S.C. § 5170c.
- 16 FEMA, “Hazard Mitigation Assistance Guidance: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program,” February 27, 2015, [https://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA\\_Guidance\\_022715\\_508.pdf](https://www.fema.gov/media-library-data/1424983165449-38f5dfc69c0bd4ea8a161e8bb7b79553/HMA_Guidance_022715_508.pdf).
- 17 44 CFR 206.436(d)-(e).
- 18 Florida Department of Community Affairs, “Handbook for Floodplain Acquisition and Elevation Projects,” January 2001, <https://www.floridadisaster.org/globalassets/importedpdfs/floodplainacqlevproj.pdf>. FEMA, “State Disaster Management Student Manual: Unit 9, Hazard Mitigation,” 2003, <https://training.fema.gov/emiweb/downloads/is208sdmunit9.pdf>. FEMA, “Hazard Mitigation Grant Program (HMGP) Phases for State, Tribal, Territory, and Local Applicants,” 2017, [https://www.fema.gov/media-library-data/1492192425001-7bee4fle7dfde07f83e4f9b81a5441db/HMGP\\_ProjectTips\\_SLT\\_13APRIL17\\_508.pdf](https://www.fema.gov/media-library-data/1492192425001-7bee4fle7dfde07f83e4f9b81a5441db/HMGP_ProjectTips_SLT_13APRIL17_508.pdf).
- 19 Florida Division of Emergency Management, “Hazard Mitigation Grant Program Notice of Funding Availability,” February 5, 2018, [https://www.floridadisaster.org/contentassets/6db37aca84d71b1ae0cb988fbae2446/nofa\\_4337\\_with\\_attachments.pdf](https://www.floridadisaster.org/contentassets/6db37aca84d71b1ae0cb988fbae2446/nofa_4337_with_attachments.pdf).
- 20 44 CFR 80.17(d).
- 21 Rachel Mickelson, “For Sandy Survivors This Program Made All the Difference,” Natural Resources Defense Council (hereinafter NRDC), May 17, 2018, <https://medium.com/@mickelsonre/for-sandy-survivors-this-program-made-all-the-difference-991f7d8019ac>.
- 22 A. R. Siders, “Social Justice Implications of US Managed Retreat Buyout Programs,” *Climatic Change*, September 10, 2018, <https://doi.org/10.1007/s10584-018-2272-5>.
- 23 Cristina Muñoz and Eric Tate, “Unequal Recovery? Federal Resource Distribution After a Midwest Flood Disaster,” *International Journal of Environmental Research and Public Health* 13, no. 5 (May 17, 2016): 507, <https://doi.org/10.3390/ijerph13050507>.

- 24 Robert Benincasa, “Search the Thousands of Disaster Buyouts FEMA Didn’t Want You to See,” NPR.org, March 5, 2019, <https://www.npr.org/2019/03/05/696995788/search-the-thousands-of-disaster-buyouts-fema-didnt-want-you-to-see>.
- 25 Jennifer Cobian, email communications with Julie Skarha.
- 26 FEMA, “EGrants for Beginners Webinar,” August 21, 2018.
- 27 Cawley, Duddles, and Weiss, interviews with authors. Trautman, interview with authors. Pogones, interview with Julie Skarha. Ianacone and McGee, interviews with Julie Skarha. Cobian, email communication with Julie Skarha.
- 28 FEMA, “Benefit-Cost Analysis,” May 31, 2019, <https://www.fema.gov/benefit-cost-analysis>.
- 29 FEMA, “Cost Effectiveness Determinations for Acquisitions and Elevations in Special Flood Hazard Areas Using Pre-Calculated Benefits,” 2013, [https://www.fema.gov/media-library-data/1382557637411-c1e5842153d2c957aabc0a09f008564c/PrecalcBenClarific\\_memo\\_508withsig.pdf](https://www.fema.gov/media-library-data/1382557637411-c1e5842153d2c957aabc0a09f008564c/PrecalcBenClarific_memo_508withsig.pdf).
- 30 Ianacone and McGee, interviews with Julie Skarha.
- 31 Sherri Brokopp Binder and Alex Greer, “A Historical Assessment of Home Buyout Policy: Are We Learning or Just Failing?” *Housing Policy Debate* 27, no. 3 (2016): 372, 10.1080/10511482.2016.1245209.
- 32 David Hunn and Matt Dempsey, “In Houston’s Flooded Neighborhoods, Real Estate Investors See an Opportunity,” *Houston Chronicle*, May 10, 2018, <https://www.houstonchronicle.com/news/houston-texas/houston/article/houston-harvey-flood-homes-real-estate-investor-12901718.php>.
- 33 Ibid.
- 34 Rob Moore, “Seeking Higher Ground: How to Break the Cycle of Repeated Flooding with Climate-Smart Flood Insurance Reforms,” NRDC, July 2017, <https://www.nrdc.org/sites/default/files/climate-smart-flood-insurance-ib.pdf>.
- 35 Jeremy Deaton, “Hurricane Harvey Hit Low-Income Communities Hardest,” Nexus Media, September 1, 2017, <https://nexusmedianews.com/hurricane-harvey-hit-low-income-communities-hardest-6966d859e61f>. Jonathan M. Katz, “Who Suffers When Disasters Strike? The Poorest and Most Vulnerable,” *Washington Post*, September 1, 2017, [https://www.washingtonpost.com/outlook/who-suffers-when-disasters-strike-the-poorest-and-most-vulnerable/2017/09/01/0efab8a2-8e65-11e7-84c0-02cc069f2c37\\_story.html?utm\\_term=.7d109ef88418](https://www.washingtonpost.com/outlook/who-suffers-when-disasters-strike-the-poorest-and-most-vulnerable/2017/09/01/0efab8a2-8e65-11e7-84c0-02cc069f2c37_story.html?utm_term=.7d109ef88418).
- 36 Bruce Mitchell and Juan Franco, “HOLC ‘Redlining’ Maps: The Persistent Structure of Segregation and Economic Inequality,” National Community Reinvestment Coalition, March 20, 2018, <https://nrc.org/holc/>.
- 37 Marilyn C. Montgomery and Jayajit Chakraborty, “Assessing the Environmental Justice Consequences of Flood Risk: A Case Study in Miami, Florida,” *Environmental Research Letters* 10, no. 9 (September 1, 2015): 095010, <https://doi.org/10.1088/1748-9326/10/9/095010>. Deaton, “Hurricane Harvey Hit Low-Income Communities Hardest.” Brentin Mock, “Zoned for Displacement,” CityLab, September 13, 2017, <https://www.citylab.com/equity/2017/09/climate-changes-inevitable-displacement-of-most-vulnerable/539232/>.
- 38 FEMA, Office of Inspector General, *Buyouts: Hurricane Floyd and Other Issues Related to FEMA’s Hazard Mitigation Grant Program*, February 2001. Cited in: American Institutes for Research, the Pacific Institute for Research and Evaluation, and Deloitte & Touche LLP, *A Chronology of Major Events Affecting the National Flood Insurance Program*, December 2005, [https://www.fema.gov/media-library-data/20130726-1602-20490-7283/nfip\\_eval\\_chronology.pdf](https://www.fema.gov/media-library-data/20130726-1602-20490-7283/nfip_eval_chronology.pdf).
- 39 Hunn and Dempsey, “In Houston’s Flooded Neighborhoods.”
- 40 Rice University Kinder Institute for Urban Research, *Neighborhood Gentrification Across Harris County: 1990 to 2016*, December 2018, <https://kinder.rice.edu/research/neighborhood-gentrification-across-harris-county-1990-2016>.
- 41 Promoting Flood Risk Mitigation Act, H.R. 5846, 115th Cong. (2018).
- 42 Orice Williams Brown, letters to Representative Peter DeFazio, Sean Duffy, Earl Blumenauer, and Mark Sanford, July 30, 2018.
- 43 42 U.S.C. § 4011(b).
- 44 Charlotte-Mecklenburg Storm Water Services, “Floodplain Buyout (Acquisition) Program,” October 2018, <https://charlottenc.gov/StormWater/Flooding/Pages/FloodplainBuyoutProgram.aspx>.
- 45 The 21st Century Flood Reform Act, H.R. 2874, proposed an option for enhanced ICC coverage up to \$60,000. Other House bills introduced in the 115th Congress also proposed increasing ICC coverage, including H.R. 1929 (increasing primary ICC coverage to \$60,000), H.R. 2875 (including optional ICC coverage up to \$60,000), and H.R. 3285 (increasing ICC coverage up to \$100,000).
- 46 Senate proposals for ICC reform in 2017 included S. 1313 (increasing primary ICC coverage to \$75,000), S. 1368 (increasing primary ICC coverage to \$100,000), and S. 1575 (increasing primary ICC coverage to \$60,000, with optional coverage up to \$100,000). For more information, see Wharton Center for Risk Management and Decision Processes, “Post-Flood Mitigation: The NFIP’s Increased Cost of Compliance (ICC) Coverage,” Issue Brief, Informed Decisions on Catastrophe Risk, Summer 2017, [http://opim.wharton.upenn.edu/risk/library/WRCib2017c-NFIP-Increased-Cost-of-Compliance-\(ICC\)-Coverage.pdf](http://opim.wharton.upenn.edu/risk/library/WRCib2017c-NFIP-Increased-Cost-of-Compliance-(ICC)-Coverage.pdf).
- 47 National Flood Insurance Program Reauthorization Act of 2019, H.R. 3167, 116<sup>th</sup> Cong. (2019). National Flood Insurance Program Reauthorization and Reform Act of 2019, S. 2187, 116<sup>th</sup> Cong. (2019).
- 48 Moore, “Seeking Higher Ground.”
- 49 Substantial damage is defined as damage exceeding 50% of the fair market value of the property. See 42 U.S.C. § 4014(a)(2)(E).
- 50 Premiums from the sale of flood insurance are deposited in the National Flood Insurance Fund, which is then used to pay damage claims. See 42 U.S.C. § 4017.
- 51 FEMA, “Hazard Mitigation Assistance Guidance: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program.”
- 52 FEMA, “OpenFEMA Dataset: Hazard Mitigation Assistance Mitigated Properties—V1,” November 7, 2018, <https://www.fema.gov/openfema-dataset-hazard-mitigation-assistance-mitigated-properties-v1>.
- 53 Pitt County, North Carolina, “Pitt County Flood Recovery Final Report,” 2003, <https://www.pittcountync.gov/DocumentCenter/View/1347/Hurricane-Floyd-Flood-Recovery-Report-PDF>.
- 54 David Salvesen et al., “Are Floodplain Buyouts a Smart Investment for Local Governments?” prepared for the University of North Carolina Policy Collaboratory, August 30, 2018, <https://collaboratory.unc.edu/files/2018/09/Project-Report-Floodplain-Buyout.pdf>.
- 55 Pogones, interview with Julie Skarha.
- 56 Ibid.