



# Case Studies in Floodplain Buyouts

Looking to best practices to drive  
the conversation in the Houston region

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February 2018

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U.S. Air National Guard photo by Staff Sgt. Daniel J. Martinez

# Introduction

Cities depend on federal grant programs from the Federal Emergency Management Agency (FEMA) and from the Department of Housing and Urban Development (HUD) to finance flood mitigation efforts. As disasters increase in frequency, home buyout programs are growing in popularity as a mitigation investment because they can be a cost-effective alternative to larger flood control infrastructure and can help reduce repetitive flood losses. Local jurisdictions and FEMA officials most often pursue buyouts in places where the cost of acquisition and demolition is less than the cost of repeatedly repairing and rebuilding in areas that are flood-prone.<sup>1</sup>

This report, meant to frame the buyouts discussion in the Houston region, begins by overviewing the basic elements of federal funding for floodplain acquisitions, more commonly known as buyouts. The central component of the federal government's approach to buyouts is the Hazard Mitigation Assistance (HMA) program and its multiple subprograms, which are administered by FEMA. This report examines three jurisdictions at different levels of government that have undertaken buyouts and shows the variety of ways the tool can be used as one element in a larger flood mitigation strategy. Harris County has done the greatest number of buyouts in the United States, the

City of Charlotte and Mecklenburg County have a consolidated program and the State of New Jersey has revised and shortened the process to cover more ground.

In addition, this report includes a brief examination of the implementation challenges around buyout programs, with specific discussion of the issues facing Harris County jurisdictions considering the approach. Finally, the three case studies will be used to describe the acquisition process and to discuss innovative ways the three case study areas are using buyouts as a part of their flood mitigation strategies.

# Key Findings

1. Nationwide, HMA programs are heavily skewed toward projects that do not include buyouts and demolition, although Harris County has focused on buyouts in using HMA funds.
2. Nationwide, median FEMA contributions to buyout related projects are larger than other mitigation projects (planning and feasibility studies, structural repairs and new construction, etc.). This supports the idea that despite steep initial costs, avoiding future repetitive losses in floodplains ultimately saves communities money.
3. Nationwide, 90 percent of HMGP buyout funds have been used on single family homes, despite non-residential public and private lands, multifamily properties, and vacant properties also being eligible.
4. Between 1985 and 2017, Harris County Flood Control District has used \$342 million in FEMA, Army Corps of Engineers, and HCFCD funds to acquire over 3,100 properties. Harris County has received 14 percent of all HMGP funds between 2004 and 2016, making it the single largest program in dollars spent and properties acquired.
5. Since Hurricane Harvey's landfall, HCFCD has received over 3,500 voluntary applications to participate in the buyout program. However, estimates show that more than 100,000 homes remain in flood-prone areas.
6. The high number of acquisitions in Harris County could be explained in part by the relative low cost of land. For example, median FEMA payouts in New Jersey were twice as high as they were in Harris County between 2004 and 2016.
7. Many communities in the Houston-Galveston region, including Harris County, Houston, Fort Bend County, and others are just now using FEMA funds from the floods in 2015 and 2016 to begin buyout efforts. They have received a lot of interest from residents in starting or expanding buyout efforts, but must receive more federal and state financial support to move forward.
8. Charlotte and Mecklenburg County have been able to expand buyout efforts as a result of consolidating city and county storm water services and floodplain regulations. They have also successfully leveled local fees based on the amount of impervious surface on a property. These and local rainy day funds allow rapid purchase of repeat loss properties following floods.
9. Charlotte and Mecklenburg County have successfully expanded floodplain regulation and mitigation in general by creating a regulatory flood map based on projections of future growth, allowing them to cover more ground with mitigation strategies.
10. In the Blue Acres program, the State of New Jersey has been able to acquire over \$300 million in floodplain properties in a very short period of time. This success can be attributed in part to process innovations which included harnessing new technologies, coordinating with multiple entities, colocating officials from across levels of government in the communities impacted by Sandy, and implementing a number of services to assist residents in moving through the acquisition process.

# Overview of FEMA's Hazard Mitigation Assistance Program

**F**EMA administers five subprograms through the HMA that help fund eligible mitigation projects. States generally are the eligible applicants. They solicit subapplications and become fund recipients and pass-through entities to lower jurisdictions such as cities, counties, or metropolitan planning organizations.<sup>2</sup> While the local jurisdictions ultimately manage the subgrants, states ensure accountability, administer subgrants, maintain program compliance and oversee financial and project management. The HMA program is made up of the following five subprograms:

- Hazard Mitigation Grant Program (HMGP)<sup>3</sup>—These funds are available following Presidential Major Disaster Declarations. The governor of an impacted state submits an application specifying which counties need funding and how much funding is needed. These funds can be used for planning or implementing structural and nonstructural mitigation strategies. Structural mitigation interventions include channel widening or the building of new detention basins and dams. Nonstructural strategies typically include land use planning, floodproofing homes and floodplain buyouts.
  - Pre-Disaster Mitigation (PDM)<sup>4</sup>—These funds assist states and localities in implementing successful hazard mitigation programs prior to disasters occurring in order to reduce local dependence on federal funding. Again, funds can be used for planning, construction and raising public awareness. They are funded annually by congressional appropriations.
  - Flood Mitigation Assistance (FMA)<sup>5</sup>—These funds are awarded with the goal of reducing National Flood Insurance Program (NFIP) claims. This program, granted annually in a highly competitive process, is funded from NFIP proceeds and can be used for the planning or construction of mitigation projects.
  - Repetitive Flood Claims (RFC)<sup>6</sup>—Repetitive loss properties are insurable buildings that have had 2 or more claims of more than \$1,000 paid within any rolling ten-year period. The goal of these funds is to reduce flood damages to individual properties that were previously rebuilt using NFIP payouts. This program can only be used by communities that are NFIP participants and that have repetitive loss residences, but that cannot provide the twenty-five percent of project costs required by other programs.
  - Severe Repetitive Loss (SRL)<sup>7</sup>—Severe repetitive loss properties have had 4 or more separate claim payments of more than \$5,000 each or 2 or more separate claim payments where the total of the payments is greater than the post-disaster value of the property within a rolling ten-year period. The goal of these funds is to reduce flood damages to NFIP-covered residential properties with severe repetitive losses through any number of interventions from buyouts to elevating structures with the aim of generating savings to the NFIP.<sup>8</sup>
- Funds from all these programs can be used for the costs associated with acquisition and demolition of properties in floodplains. HUD also offers funds through the Community Development Block Grant—Disaster



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Recovery (CDBG-DR) program to support flood mitigation projects, including acquisition and demolition.

It is worth looking at what portion of HMA funds go toward buyouts, given that they can be used for structural or nonstructural projects. An investigative report done in collaboration between *ProPublica* and *Texas Tribune* shows that between 1989 and 2016, 41 percent of mitigation funds spent after natural disasters in Harris County have been spent on buyouts.<sup>9</sup> Appendix A includes a table providing figures for median and total FEMA contributions to buyout programs in our three case studies, separated into buyout and non-buyout projects. This table can help begin to tease out how those communities have prioritized use of federal dollars on acquisitions versus other projects. For instance, in most of the HMA programs, more than half of funds are used on projects that do not include buyouts and demolition. In contrast, the table shows that Harris County focuses FEMA dollars on acquisitions, depending on other funding streams for its structural strategies. In the State of New Jersey, there are more non-buyout projects than buyout projects, and

yet the total FEMA contributions and the median FEMA contributions for buyout projects far surpass non-buyout projects in three of four HMA programs. In fact, nationwide, median FEMA contributions for non-buyout projects are smaller than for buyout projects (See Appendix A). This reiterates that while buyouts may be more expensive initially, savings through avoided future damage makes the strategy worthwhile for many communities.

## Hazard Mitigation Grant Program Overview

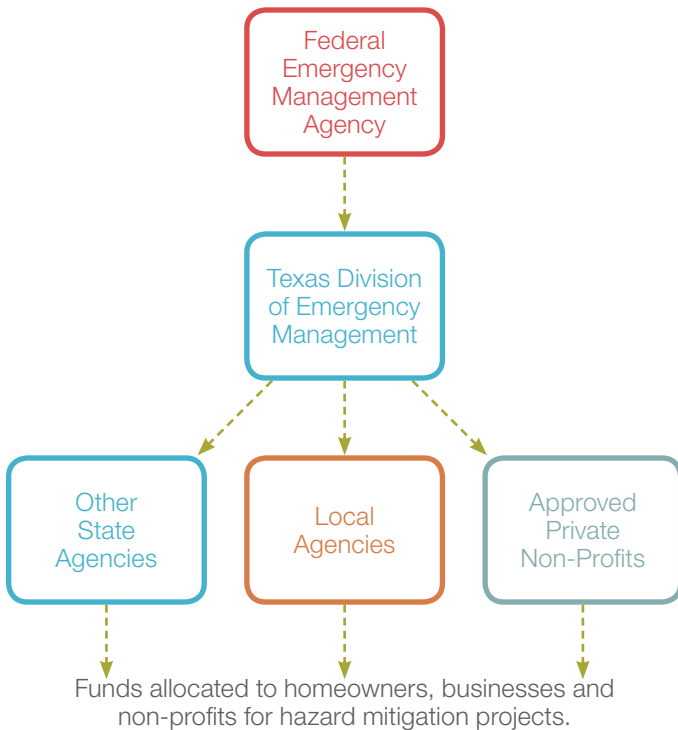
In 1993, the Mississippi River flooded from May through September. Nine Midwestern states were severely impacted. The region had 50 flood-related deaths and suffered \$15 billion in damages.<sup>10</sup> It was the most destructive flood event in the United States since the 1927 Mississippi River flood. In response, FEMA initiated the Hazard Mitigation Grant Program (HMGP).<sup>11</sup> By amending the Stafford Act of 1988, Congress authorized FEMA to fund long-term mitigation measures. This could include property acquisition and demolition in flood-prone areas.<sup>12</sup> Of the

various programs under the umbrella of the HMA, the HMGP is the largest and the longest running. An application from a local jurisdiction to FEMA for HMGP funding can take between 12 and 36 months to process and can only begin after Congress approves disaster recovery funds. The timing of this allocation can vary depending on the president and the political composition of Congress.<sup>13</sup> In some cases communities use local funds as a stopgap while waiting for federal disaster recovery dollars to pay back those funds.<sup>14</sup>

The following outlines the basic process for communities to secure HMGP funding for buyouts:<sup>15</sup>

1. A local jurisdiction develops an HMGP application that identifies properties for acquisition based on location in the floodplain and ability to meet other federal requirements. This application is submitted to the state.
2. The state works with FEMA on the community's behalf, evaluating the localized buyout plan for alignment with the state-wide mitigation plan and coordinating between state agencies and FEMA.
3. FEMA conducts a final review and, if the application is approved, awards the grant money to the state, which then administers the funds to subapplicants.

**Hazard Migration Program**



In order for a property in an area identified by a local jurisdiction as a site for buyouts to qualify for HMGP funding, several eligibility requirements must be met.<sup>16</sup> The jurisdiction within which a potential buyout sits must be a NFIP participating community with a FEMA-approved Hazard Mitigation Action Plan in place. Further, in order to qualify, each property must have its own NFIP policy. Finally, any buyout proposals must undergo a Benefit-Cost Analysis (BCA) showing that the estimated cost of future flood damage surpasses the cost of purchasing and demolishing a structure. When officials refer to estimated savings from buyouts, they are referring to this difference.<sup>17</sup>

HMGP can fund up to 75 percent of hazard mitigation projects such as buyouts. Funds are not restricted to acquisition, but can also be used for relocation assistance and other hard and soft costs.<sup>18</sup> The other 25 percent of funding must come from non-federal sources, which can include local, philanthropic or non-profit investment.

The BCA plays a key role in determining which proposals are funded. Prior to 2013, most BCA decisions were based on comparing the value of properties being bought out against the costs of projected future flooding. In 2013, the benefits analysis was changed to include a more comprehensive understanding of flood risk and the benefits of open green space, known as ecosystem-based management.<sup>19</sup> The approach promotes the idea that restoring habitats can generate ecosystem services—environmental and ecological benefits—that accrue benefits to the local jurisdiction beyond the direct savings from acquisition.<sup>20</sup> To determine the values of these ecosystem services, FEMA collaborated with private, public and academic sectors to design an Environmental Benefits Analysis Report (EBAR). The report provides a framework for including ecosystem service benefits within the broader BCA which is shown in Appendix B.<sup>21</sup> The ecosystem services approach added several factors to the BCA equation:

- Aesthetic Value
- Air Quality
- Biological Control
- Climate Regulation
- Erosion Control
- Flood Hazard Reduction
- Habitat
- Food Provisioning
- Pollination
- Recreation/Tourism
- Storm Water Retention
- Water Filtration

According to the EBAR, the accumulated benefits (projected for 100 years) that communities can gain from open space and riparian preservation are \$2.57 and \$12.29 per square foot per year, respectively. This figure is calculated using estimated benefits per acre per year of the factors



listed above, a 7 percent discount rate, and a 100-year project lifespan.<sup>22</sup>

Several equity concerns have come up around the BCA method. For instance, because the cost of repeat flooding must be greater than the cost of acquisition and demolition, neighborhoods with low land values and cheaper homes may not qualify. Residents of these low-lying, affordable neighborhoods are more likely to be low-income, elderly, or people of color. On the other hand, while indirect benefits of ecosystem services are incorporated into the benefit-cost ratio, indirect costs are less frequently considered. These can include unequal access to information about the process, dislocation from social networks and community resources and the loss of affordable single-family residential homes.<sup>23</sup>

**Impact of HMGP Buyout Programs**

According to FEMA data, between 2004 and 2016, more than 10,000 voluntary property acquisitions have been completed nationwide under the HMGP program (Table 1).<sup>24</sup> HMGP grant money can be leveraged with local, state or private funding. However, a major challenge in using the HGMP is that most local jurisdictions have few resources devoted to property acquisition and often contend with state legislatures or constituencies that oppose taxes or fees that could generate the needed revenue to stretch mitigation dollars.<sup>25</sup>



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From 2004 through 2016 in the US, 90 percent of HMGP buyout funds went to the purchase of single family homes (including manufactured homes). However, the program also covers non-residential property, multifamily projects, and vacant land.<sup>26</sup> Notably, in Harris County all HMGP buyout funds have been used on single-family residential acquisition (Appendix C). Furthermore, Harris County has received nearly 14 percent of the nation's HMGP acquisition and demolition funding since 2004 . According to the available data, participation in HMGP looks very differently in New Jersey than it has in Harris County. The median amount paid out for individual properties is over twice as high in New Jersey. Furthermore, Harris County has completed 995 acquisitions (total \$63.4 million) compared to New Jersey's 131 (total \$16.7 million) (Table 1).

<b>FEMA Contributions to HMGP Buyouts, 2000–2016</b>					
	Amount Paid			Date Range	
	Number of properties	Median actual payout amount	Total payouts	Earliest	Most Recent
Harris County	995	\$ 64,162	\$ 63,370,283	2006/08/03	2016/01/13
Charlotte-Mecklenburg	4	\$ 50,065	\$ 447,782	2009/01/20	2010/08/18
New Jersey	131	\$ 131,684	\$ 16,721,670	2002/12/20	2013/11/12
<b>United States</b>	<b>10,265</b>	<b>\$ 50,314</b>	<b>\$ 648,421,227</b>	<b>2000/04/22</b>	<b>2016/01/28</b>

Table 1. OpenFEMA Dataset: Hazard Mitigation Grant Program Property Acquisitions—V1. Data from Hurricane Sandy, which occurred in 2012, is not included in the Public FEMA dataset, suggesting that HMGP was not a funding component of New Jersey's Blue Acres Program, discussed more below. Similarly, despite being a successful program by many measures, Charlotte-Mecklenburg only has 4 recorded HMGP buyouts, meaning they have depended on other federal programs or nonfederal funds for their buyouts.

# Challenges with Buyout Programs

**W**hile buyout programs continue to gain popularity, they face perception and buy-in issues in many communities. Getting homeowners on board can be a particular challenge because of the voluntary nature of the approach.<sup>27</sup> A major issue with getting buy-in stems from the fact that the process takes a long time. After a disaster is declared, the grant and approval process can only begin once federal allocation of funds for FEMA or HUD have occurred. The whole process can take more than two years from the disaster itself.<sup>28</sup> This slow pace means that many homeowners who might have otherwise considered a buyout have already completed repairs to a damaged home by the time buyout funds become available.

Compounding this challenge, many officials still prefer engineered solutions. Table 2 shows the percentage of various program funds that were used for acquisition and demolition specifically in the three case study areas and in the country as a whole. Understanding what portion of federal awards go to acquisitions, versus other components such as structural projects, salaries, feasibility studies, management and hazard mitigation plans can give a sense of how communities prioritize the use of federal funds. For instance, Harris County spends its HMA dollars on acquisitions and demolitions, funding soft costs and infrastructural projects through local funding, Army Corps of Engineers funding, state funding, or local annual county allocations approved by the Harris County Commissioners Court. New Jersey on the other hand uses over 20 per-

cent of its FMA funds on non-buyout costs. These differences may speak to different political and policy climates in which flood managers operate.

Percent of FEMA HMA program dollars spent on buyouts			
Case Study Area	Program	Percent	Number of Grants Directly applied to Acquisition Projects
Harris County	FMA	100%	2
	PDM	100%	6
	SRL	100%	6
Charlotte-Mecklenburg	FMA	96%	16
	PDM	99%	2
New Jersey	FMA	79%	18
	PDM	7%	7
	RFC	79%	10
	SRL	60%	10
US Total	FMA	41%	503
	PDM	21%	193
	RFC	66%	45
	SRL	36%	80

Table 2. FEMA HMA Data. NOTE: FEMA includes other project types such as salaries, management, hazard mitigation plans, feasibility studies, public outreach, and others that could pertain to buyout efforts. We cannot tell from public FEMA data which of these awards may support buyout efforts indirectly.

# Buyout Programs in the Region

**H**arris County has engaged in buyouts since the 1980s. Recently, the County has also coordinated with the City of Houston on a number of occasions, including a recent buyout program using CDBG-DR funds Houston received following the Memorial Day floods of 2015 and the Tax Day flood of 2016.<sup>29</sup> This effort, which will use \$10.7 million to purchase 60 homes, is separate from other grant applications Harris County has submitted for buyouts and other mitigation projects.<sup>30</sup> Despite this encouraging collaboration, most other communities in the Houston-Galveston region have not engaged in buyout programs for various reasons. Friendswood acquired 114 single-family homes in 2014 using \$16.2 million in HMGP funding. Between 2014 and 2015, the City of Pearland used \$9.3 million in HGMP funds to acquire 82 single-family homes.<sup>31</sup>

For the bulk of communities who do not participate in buyout programs, the barriers to entry are simply too great. In Montgomery County for instance, the Office of Homeland Security and Emergency Management set up a hotline after Hurricane Harvey that received a high volume of calls from residents inquiring about a buyout program.<sup>32</sup> However, without additional allocations for disaster mitigation from the federal government, Montgomery County lacks the resources to properly assess eligibility and interest or to move forward with program formation.

Similarly, Fort Bend County accepted applications for FEMA voluntary buyouts or elevations through January 2017 for properties affected by the Tax Day floods of 2016.<sup>33</sup> If homeowners did not meet that deadline, they could have their names added to a list of Alternate Properties, or properties that would become eligible as others dropped out of the process.<sup>34</sup> Thus, residents who were impacted by 2016 flood events and Harvey could qualify to sell their homes to the County. To date, the State has recommended that FEMA approve only \$10 million of the \$17

million proposed by Fort Bend.<sup>35</sup> The Texas General Land Office, which administers CDBG-DR funds from 2016 flood events, has approved Fort Bend's \$18 million Method of Distribution (MOD) for housing and infrastructure projects.<sup>36</sup> In the MOD, Fort Bend County asserts that 55 percent of CDBG-DR funds will go to housing projects, including leveraging HMGP funds to raise homes above flood elevations or to do floodplain buyouts, with a focus on low-income homeowners.<sup>37</sup> While this is a big step, MOD approval does not guarantee eligibility or funding approval for any proposed projects.<sup>38</sup> Projects must also go through HUD's process, meeting the goal of benefiting low- to moderate-income residents and other requirements.<sup>39</sup> Fort Bend County Emergency Management personnel have begun work on the required planning steps to receive additional funding from FEMA and HUD for recovery from Harvey. The size of this process will hinge on when Congress passes a bill authorizing additional disaster recovery allocations.

# Case Studies

## Harris County

### Program Quick Facts: 1985–2017<sup>40</sup>

- HCFCD has spent \$342 million in Federal, State, and County funds since 1985 to acquire over 3100 properties <sup>41</sup>
- FEMA funding breakdown since 1985
  - \$64.9 million in HMGP buyout funds
  - \$23.6 million in FMA buyout funds
  - \$34.9 million in PDM buyout funds
  - \$27.7 million in SRL buyout funds
- 2,075 structures purchased with FEMA grants
- 960 properties purchased with District funds
- 30 structures purchased with Corps of Engineers funds
- Total of 1,060 acres restored to the floodplain

Since the program's inception in 1985, the Harris County Flood Control District (HCFCD) has spent \$342 million in federal and local funds to acquire over 3,100 properties in floodplains, making it the single largest buyout program in the country in terms of successful acquisitions.<sup>42</sup> In a 2015 FEMA best practices case study, James Wade, acquisition program manager for the District, said, “nearly 550 homes would have flooded during the [Memorial Day floods] had they not been purchased via the District’s Voluntary Home Buyout Program” and that those would-be flood damages would have cost local government and residents \$12.4 million.<sup>43</sup> Since then, the county’s buyout program has acquired an additional 92 units.<sup>44</sup>

While the District depends on HMGP funding, it also uses revenues from HUD’s CDBG-DR and FEMA’s other mitigation grant programs. Because the funding streams move so slowly, the District applies every year for buyout funding, regardless of flooding in the county that year.<sup>45</sup>

Harris County currently has a buyout budget of \$44 million, including the \$10.7 million granted to Harris County by Houston out of a CDBG-DR grant from the 2015 flooding. The current budget also includes \$13.3 million from a routine FEMA grant application in 2016 and \$20 million in county-approved funds designed to speed up the buyout process after Hurricane Harvey.<sup>46</sup> However, officials recognize the need to raise more non-federal funds to leverage with FEMA and HUD grants. Harris County Judge Ed Emmett in his 2017 State of the County address asserted the need for the county to find other ways to raise additional revenues and criticized state leaders for undercutting this need with caps set on property taxes—virtually the only local revenue source for Harris County.<sup>47</sup>

As the local sponsor of FEMA’s buyout program, the Harris County Flood Control District collects voluntary buyout application forms and handles the planning process.<sup>48</sup> In addition to FEMA requirements, HCFCD considers a variety of other factors when considering acquisitions, including the following:<sup>49</sup>

- Flooding caused by ditches, ponding, or sheet flow typically does not qualify. Sheet flow and ponding result from intense local rainfall flowing or gathering across land as it moves toward the nearest channel. Sheet flow and ponding can result in flooding when the runoff exceeds storm sewer or ditch capacity.
- Priority is given to homes closest to bayous and creeks—those in regulatory floodways, 10-year floodplains, or 100-year floodplains at least 2 feet below base flood elevation.<sup>50</sup>
- Flood retention projects must prove cost effectiveness, meaning the cost of future flood damages must outweigh the cost of property acquisition and demolition.
- Programs must show potential for contributing to long-term floodplain preservation plans.

- Programs must have community support and show compatibility with community values.

Since Hurricane Harvey, more than 3,500 Harris County homeowners have called or submitted online forms to the District to request buyout assistance. However, only one in five of those homeowners meet the County's complex criteria.<sup>51</sup> So far, the District has identified 200 buyout-eligible homes that flooded during Harvey, recognizing that approximately 107,000 residential parcels remain in special flood hazard areas.<sup>52</sup> See Appendices D and E for a more detailed timeline of progress with buyouts in Harris County and for description of how the process plays out in Harris County.

### What's Innovative

- County officials have recognized the need for rapid buyouts and have released County funds, as well as funds granted by the City of Houston to begin the process as soon as possible.
- While only 2 percent of currently available funds are allocated by HCFCD for acquisitions, the Capital Improvement Program for fiscal year 2017 funds recommends 21 percent of the expected annual authorization of \$60 million from Harris County Commissioners Court be used on acquisition and demolition. By contrast, the FY 2018–2021 funding proposal recommends only \$4 million (2 percent) of expected funds for buyouts, signaling that the County may, in the long term, continue to depend mostly on federal support for this mitigation strategy.<sup>53</sup>
- The County has successfully planned and implemented flood detention basins and greenspace where large clusters of buyouts have been completed (Appendix F).

## Charlotte-Mecklenburg Buyout Program:

### Program Quick Facts: 1999–2017<sup>54</sup>

- Funding Breakdown since 1999 (total \$67 million)
  - \$28.8 million (43 percent) from FEMA HMA programs
  - \$1.3 million (2 percent) from state hazard mitigation funds
  - \$32.2 million (48 percent) from local funds, including property taxes, revenues from storm water fees, etc.
  - \$4.7 (7 percent) other
- 400 properties acquired
- 185 acres restored to floodplain
- Estimated \$25 million in flood losses and \$300 in future losses avoided

**F**or decades, the City of Charlotte and Mecklenburg County, North Carolina have built a consolidated governance structure, merging key agencies and services to reduce duplication and interjurisdictional regulatory issues. A key example of this functional consolidation is the Charlotte-Mecklenburg Storm Water Services, the joint municipal/county storm water utility that covers the cities of Charlotte, Davidson, Cornelius, Huntersville, Matthews, Mint Hill and Pineville, as well as the rest of Mecklenburg County. Operational since 1999, the utility's buyout program has successfully leveraged federal funding with local funds. Recent circumstances have necessitated increasing shifts to local revenues. For instance, most of the properties which meet FEMA's current cost-effectiveness criteria, based on the new ecosystem-based management, have already been mitigated.<sup>55</sup> Furthermore, officials at Storm Water Services have observed that the Pre-Disaster Mitigation program and the Flood

Mitigation Assistance program at FEMA have shifted focus away from buyouts in recent years.<sup>56</sup> Finally, FMA grants focus more on Severe Repetitive Loss Properties, most of which Storm Water Services has already acquired.<sup>57</sup> In fact, Charlotte-Mecklenburg regulates floodplain development and shapes mitigation strategies around a Community Floodplain, which was designed to account for increased flood elevations caused by future growth and development in the community.<sup>58</sup> Many homes considered priorities for buyouts according to this logic are not eligible under FEMA guidelines.



## What's Innovative

- Flood mitigation strategies, including buyout priorities and development regulations, are based on Charlotte-Mecklenburg's own Community Floodplain, also called the Ultimate or the Future Floodplain. This floodplain is a higher standard established in 2000 and meant to account for increased runoff caused by future development.<sup>59</sup>
- Storm Water fees generate local revenue and are collected from both residential and commercial properties based on area of impervious surface on a given parcel. This system incentivizes the minimizing of impervious surfaces in new development.
- Local Risk-Based Buyouts Program (2012-present) fully funds acquisitions with Storm Water fees and local contributions, reducing dependence on slow moving federal funds and changing federal standards.
- The Quick Buys program (2003-present) allows Storm Water Services to use its own Rainy Day Fund to acquire properties rapidly following a disaster, allowing volunteering residents to be relocated from damaged or distressed properties prior to spending money making repairs.
- The RetroFIT program supports mitigation efforts. For properties that are not eligible for buyouts, this fund will reimburse up to 95 percent of project costs to floodproof homes. The program also provides technical advisory services to ensure quality retrofitting work.<sup>60</sup>

## New Jersey Blue Acres Buyout Program

### Program Quick Facts: 2013–2017<sup>61</sup>

- Funding breakdown since 2013:
  - \$185 million FEMA
  - \$175 million HUD CDBG-DR
  - \$15 million Blue Acres Acquisition Fund<sup>62</sup>
  - An additional \$75 million funding announced by Governor Christie in October 2017<sup>63</sup>
- Offers have been made on 900 homes
- 678 families have accepted offers for pre-disaster value
- The state recently completed its 600<sup>th</sup> Blue Acres closing
- 460 homes have been demolished thus far
- Completion of short sales or lender payoff approvals for 64 properties for which owners are underwater—for a total debt forgiveness of \$4.5 million<sup>64</sup>

In May 2013, in response to Hurricane Sandy, Governor Chris Christie's administration announced the Blue Acres program, an ambitious \$300 million acquisition program targeting 1,300 homes to be administered by the New Jersey Department of Environmental Protection (DEP).<sup>65</sup> The program made its first offers in July 2013 and closed on the first properties at pre-storm values in October 2013, about a year after the storm.<sup>66</sup> Successful leveraging of non-federal dollars and innovations in planning and implementation expanded the program beyond the original Sandy response plan with \$64 million of additional HMGP allocations.<sup>67</sup>

## What's Innovative

- Blue Acres staff travel to meet with representatives and residents in towns interested in buyout participation, setting the tone of high-touch coordination early.<sup>68</sup>
- Blue Acres staff relocated from Trenton to a field office in Eatontown, bringing resources closer to the communities most impacted by the storm. This allowed frequent, easy communication between staff at FEMA, New Jersey Office of Emergency Management, and the Blue Acres team.
- Case managers are assigned to each homeowner to help navigate the process from application to closing.
- Teams of experts—appraisers, hazard inspectors, title reviewers, GIS analysts, real estate professionals and others—are colocated, shortening the lengthy Benefit-Cost Analysis requirement and facilitating coordination with case managers.
- Blue Acres staff work with FEMA and State Historic Preservation Offices to design a Dashboard Survey, a preliminary site survey that sharply reduces the number of properties requiring full review.
- The Blue Acres staff use the most up-to-date light detection and ranging (LiDAR) mapping technology to capture topographic information and create digital elevation models quickly, a move which saved two to three months and approximately \$1,000 per application.
- The Blue Acres program includes measures to take into account equity concerns in the buyout process. The main components of this push include the following:
  - Homeowners can opt out of the buyout at any time of the process.
  - Blue Acres partners with local non-profits to provide pro-bono legal and financial services to low-income Sandy survivors.

# Conclusion

**B**y comparing buyout efforts in Harris County to those of other communities at different levels of government, it is possible to generate a list of best practices in implementation which can be applied locally. As a region, we need to continue looking at what other communities around the United States are doing in their buyout

efforts—how they engage communities, speed up the process, and generate more funding sources. This practice of engaging in extensive case studies will allow our region to make sure we are doing everything we can to scale up our mitigation efforts and get people out of harm's way.



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# Appendix A:

## Buyout Figures by Program

		Non-Buyout					
		Number of Non-Buyout Projects	First Project Approval	Latest Project Approval	Median FEMA Contribution	Total FEMA Contributions	
New Jersey	FMA	41	28-AUG-97	18-AUG-17	\$ 97,695.07	\$ 22,663,130.49	
	PDM	36	16-SEP-04	05-SEP-17	\$ 173,774.97	\$ 9,913,533.69	
	RFC	4	21-SEP-09	28-AUG-11	\$ 115,462.50	\$ 632,172.00	
	SRL	8	10-SEP-10	04-SEP-12	\$ 2,360,268.00	\$ 24,670,469.68	
Harris County	FMA	0					
	PDM	0					
	SRL	0					
Charlotte-Mecklenburg	FMA	3	30-MAR-06	11-JUL-17	\$ 65,076.64	\$ 316,568.07	
	PDM	1	03-MAY-04	03-MAY-04	\$ 75,000.00	\$ 75,000.00	
US Total	FMA	1182	15-JUL-97	20-SEP-17	\$ 50,000.00	\$ 455,965,646.45	
	PDM	2833	01-OCT-01	27-SEP-17	\$ 63,865.99	\$ 704,128,760.62	
	RFC	57	25-JUN-08	16-SEP-15	\$ 167,725.00	\$ 13,747,937.95	
	SRL	163	27-AUG-08	09-JUN-16	\$ 264,379.50	\$ 202,552,045.53	

Source: FEMA Open Data. <https://www.fema.gov/data-feeds>. NOTE: The FEMA Data does not delineate which New Jersey Projects are associated with the Blue Acres program. Limiting the results to state agency subgrantees brings the number of acquisition projects down to a very small number. Given the possibility that Blue Acres programs are accounted for according to the final subgrantee, all projects in the state of New Jersey were included.



	Buyout				
	Number of Buyout Projects	First Project Approval	Latest Project Approval	Median FEMA Contribution	Total FEMA Contributions
	16	22-SEP-97	18-AUG-17	\$ 3,149,992.50	\$ 86,325,318.07
	2	02-SEP-10	23-MAR-15	\$ 400,000.00	\$ 800,000.00
	2	03-SEP-10	28-AUG-11	\$ 1,164,262.50	\$ 2,328,525.00
	6	16-SEP-10	26-APR-12	\$ 4,311,567.00	\$ 37,508,251.51
	6	23-AUG-05	03-JAN-17	\$ 2,324,442.82	\$ 23,638,256.28
	18	27-APR-04	12-MAY-11	\$ 2,167,983.08	\$ 34,876,011.04
	7	11-SEP-08	22-JUN-12	\$ 2,122,800.20	\$ 27,690,797.96
	10	11-JUL-02	16-SEP-16	\$ 229,404.88	\$ 6,890,050.28
	10	28-JUL-05	04-APR-12	\$ 1,389,257.98	\$ 14,767,229.50
	503	05-AUG-97	29-SEP-17	\$ 163,706.00	\$ 322,145,693.41
	193	06-APR-04	18-SEP-17	\$ 583,157.44	\$ 192,581,153.81
	45	25-JUN-08	27-SEP-12	\$ 329,500.00	\$ 26,581,430.65
	80	21-JUL-08	19-SEP-13	\$ 389,360.70	\$ 112,936,594.13

# Appendix B:

## Annual Estimated Monetary Benefits per Acre per Year of Greenspace Preservation for Inclusion in HMGP Benefit-Cost Analysis

Environmental Benefit	Green Open Space	Riparian
Aesthetic value	\$1623	\$582
Air Quality	\$204	\$215
Biological Control		\$164
Climate Regulation	\$13	\$204
Erosion Control	\$65	\$11,447
Flood Hazard Reduction		\$4,007
Habitat		\$835
Food Provisioning		\$609
Pollination	\$209	
Recreation/Tourism	\$5,365	\$15,178
Storm Water Retention	\$293	
Water Filtration		\$4,252
<b>Total Estimated Benefits</b>	<b>\$7,853</b>	<b>\$37,493</b>

According to FEMA Mitigation Policy (FP-108-024-01), green open space and riparian benefits are calculated per square foot per year using a 7 percent discount rate applied over the project's useful life, assumed to be 100 years. Benefits accrue over a 100-year lifespan. For green open space, the accumulated benefit is estimated as \$2.57 per square foot per year. For riparian areas, the accumulated environmental benefit is estimated as \$12.29 per square foot per year.

# Appendix C:

## Property Types Acquired through HMGP by Case Study Area

		HMGP Buyouts by Case Study Area			
		Harris County	Charlotte-Mecklenburg	New Jersey	United States
2-4 Family	Number of Buyouts	0	0	3	<b>202</b>
	Percent	0.0%	0.0%	2.3%	<b>2.0%</b>
Manufactured Home	Number of Buyouts	13	0	0	<b>815</b>
	Percent	1.3%	0.0%	0.0%	<b>7.9%</b>
Multi-Family Dwelling— 5 or More Units	Number of Buyouts	0	0	0	<b>121</b>
	Percent	0.0%	0.0%	0.0%	<b>1.2%</b>
Non-residential—Private	Number of Buyouts	0	0	0	<b>117</b>
	Percent	0.0%	0.0%	0.0%	<b>1.1%</b>
Non-residential—Public	Number of Buyouts	0	0	0	<b>36</b>
	Percent	0.0%	0.0%	0.0%	<b>0.4%</b>
Other (Specify in Comments)	Number of Buyouts	0	0	1	<b>80</b>
	Percent	0.0%	0.0%	0.8%	<b>0.8%</b>
Single Family	Number of Buyouts	982	4	127	<b>8457</b>
	Percent	98.7%	100.0%	96.9%	<b>82.4%</b>
Vacant Land	Number of Buyouts	0	0	0	<b>403</b>
	Percent	0.0%	0.0%	0.0%	<b>3.9%</b>

OpenFEMA Dataset: Hazard Mitigation Grant Program Property Acquisitions—V1.

# Appendix D:

## Timeline of major events in Harris County buyout effort

### TIMELINE:

The following outlines major steps in the buyout program and mentions a few anticipated next steps:

**September 12, 2017**—Harris County Commissioners Court authorized \$17 million FEMA Flood Mitigation Assistance (FMA) grant application for pre-Harvey buyouts. If FEMA approves, the grant would fund about 100 property acquisitions identified for buyouts before Harvey. Properties in this project will meet the following criteria:

- In a community with good standing in NFIP (any property in Harris County meets this criteria)
- Cost of acquiring property less than cost of future flooding
- Property must be covered by federal flood insurance

**September 26, 2017**—Commissioners Court authorized \$20 million in County funds for home buyouts in unincorporated areas. Harris County Engineering Department (HCED), not HCFCD, will administer the effort.

**October 10, 2017**—Commissioners Court authorized two actions related to home buyouts:

- In partnership with the City of Houston, Commissioners Court authorized a buyout program to address repetitive flood losses. Houston identified areas in which HCFCD has purchased homes that meet requirements of City's CDBG allocation. The City will provide HCFCD \$10 million to pursue buyouts on its behalf.
- Commissioners Court authorized appraisals on properties from the 2016 HCFCD FMA grant.<sup>69</sup> This grant, recently approved by FEMA, funds 41 qualifying properties in Harris. To qualify, properties must be covered by flood insurance and be located in buyout areas where HCFCD has already completed numerous acquisitions.

**October 24, 2017**—Commissioners Court authorized additional activities for the October 10 and September 26 actions listed below related to home buyouts:

- Building off the activity of October 10, 2017, Commissioners Court authorized two tracts for the 2016 FMA Buyout Grant in Precincts 2 and 4 on behalf of HCFCD, which submitted the application in 2016. The grant—only recently approved by FEMA—includes funding for 41 property acquisitions in Harris County.
- Building off the activity of September 26, 2017, Commissioners Court authorized 34 buyouts in Precincts 2 and 4 on behalf of Unincorporated Harris County. HCED is administering the effort.

**November 14, 2017**—Commissioners Court authorized further action related to home buyouts:

- Commissioners Court authorized five property acquisitions related to the September 26, 2017 action in the HCED-led buyout effort.
- Related to the October 10, 2017 action, Commissioners Court accepted roughly \$13 million in funds from the Texas Water Development Board (TWDB) from a pre-Harvey Flood Mitigation Assistance (FMA) application submitted by HCFCD in 2016 and \$1.8 million in local funds to be used for acquisition and demolition of repetitive flood risk homes. .
- Commissioners Court authorized Harris County Community Services to submit application for CDBG-DR funds to the Texas General Land Office (GLO). This \$3.2 million would go toward infrastructure repair and buyouts in connection with 2015 presidentially declared major disasters. While this pre-Harvey application is being led by Harris County Community Services, HCFCD hopes to use \$1.3 million of that money for buyouts spring 2018.

**December 5, 2017**—Commissioners Court authorized seven property acquisitions led by Department (HCED). Funds for these buyouts were authorized September 26, 2017.

**January 9, 2018**—Commissioners Court authorized two actions.

- Commissioners Court authorized acquisition of 39 tracts for the City of Houston’s CDBG-DR 2015 award in Precincts 1, 3, and 4 on behalf of the Flood Control District. This pre-Harvey CDBG grant application was submitted by the City of Houston in 2015. This properties included in this grant are within the City of Houston.
- Harris County Commissioners Court authorized acquisition of and eminent domain, if necessary, for eight tracts for the Hurricane Harvey buyout project in Precinct 2 being led by Harris County Engineering Department (not the Flood Control District). This is related to previous Court authorizations occurring on September 26, 2017, and December 5, 2017

# Appendix E:

## Buyout process for individual property owners in Harris County<sup>70</sup>

1. Property owner submits a voluntary application form online.
2. After doing a preliminary gauge of interest and eligibility, the District submits an application to the State, which is the FEMA grantee for HMGP and FMA. The state agency that prepares HMGP applications is the Office of Emergency Management under the Department of Public Safety. The Texas Water Development Board prepares FMA grant applications, competitively awarded annually.
3. The HCFCD Grant Coordinator meets with property owners to discuss the process and timeline. They review 1) a Privacy Act Statement allowing FEMA to notify the public of property sale, 2) a Property Appraisal Permission and Release form for HCFCD to authorize the appraisal, and 3) Declaration and Release form indicating the owner's residence status.
4. A certified real estate appraiser conducts the appraisal, with the Harris County Right of Way Division (HCROW) heading up acquisition processes. This piece of the process can take up to 30 days. The appraisal uses fair market value and pre-disaster value, depending on the circumstance.
5. Once funding is confirmed, HCROW assigns a purchase agent to present the owner with an offer, an agreement for sale contract, and the appraisal report.
6. While HCROW awaits funding approval from the State, the property owner may appeal the appraisal, obtaining another state-certified real estate appraisal of their own. In these cases, HCROW will use both appraisals in determining a final offer.
7. HCROW assigns a relocation agent to determine need for relocation assistance and benefits.
8. HCROW closes on the property once vacated by its previous owners. This process does not start until at least one year but up to two years after the process begins.
9. Demolition begins up to 26 months after the process begins with the property owner. An open space use deed restriction is placed on the property.

# Appendix F:

## Planning and Implementation—Open Space Preservation on Buyout Land in Harris County

Some examples of successful projects done with bought out property include:

### **Bretshire Storm Water Detention Basin<sup>71</sup>**

- Project completion in 2012
- Done to reduce flood risk along Halls bayou near US 59
- Partnership between HCFCD and City of Houston
- Houston got a grant to fund and manage basin construction, the property is owned by Harris County Flood Control District
- The basin has a capacity of 425 acre-feet (140 million gallons)

### **Hall Park Storm Water Detention Basin<sup>72</sup>**

- The project was completed in 2014
- Located near 59 and Langley Road on 97-acre site owned by Flood Control District
- Capacity of 774 acre feet (250 million gallons)

### **South Belt Storm Water Detention Basin<sup>73</sup>**

- Partnership between Harris County Flood Control District and Galveston County
- 174 acre site northwest of Beamer and Dixie Farm roads. Designed for more than 278 acre/feet (over 90 million gallons)
- Galveston has pledged 10 million for construction.
- Harris County Commissioners Court awarded \$3.46 million in 2016 for construction of Phase 1.
- Construction began in 2014 and was expected to be complete in 2017.

### **Inwood Forest Storm Water Detention Basin<sup>74</sup>**

- 226 acre property bought by City of Houston in 2011 for \$9 million.
- A land use agreement requires open space use
- Harris County Flood Control District will design and build storm water detention basins on the property.
- Houston will deal with stakeholder engagement to discuss recreational improvements
- The goal is max capacity of 1200 acre-feet (391 million gallons)
- The former clubhouse has been converted to White Oak Conference Center and community center. It is managed by the Near Northwest Management District
- Phase 2 continues the partnership on the same site
- Extent of expansion depends on budget. The basin is designed to ultimately hold up to 1250 acre/feet (407 million gallons)
- Also comes with Beamer Ditch channel improvements, which will necessitate increased channel improvement

# Endnotes

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