

Home Buyouts: One Adaptation Approach to Rising Sea Levels

By

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A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts

In

Urban and Environmental Policy and Planning

Tufts University
May 2017

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Abstract

On October 29th, 2012, Superstorm Sandy severely damaged residential and commercial buildings on Staten Island, along with other communities in New York, New Jersey, and Connecticut. This event triggered residents in the Oakwood Beach Neighborhood of Staten Island to organize and seek funding to relocate through home buyouts. This study examines Oakwood Beach to understand how the current practices of buyout programs enable residents in coastal communities to relocate from flood prone areas. Features of buyout programs from the Federal Emergency Management Agency and the Department of Housing and Urban Development are explored.

Oakwood Beach is an important example of “bottoms up” advocacy for post-inundation buyouts. Policy recommendations include: 1) evaluating the impact of potential buyouts using benefit cost analysis 2) incorporating buyouts into pre-disaster planning and climate change planning 3) increasing public engagement preemptively 4) incorporating relocation support services in buyout program designs to increase homeowner participation rates.

Acknowledgements

I would like to express my gratitude to my thesis committee, Ann Rappaport and Justin Hollander. Especially to Ann Rappaport for her patience, feedback and guidance during this process.

I would like to thank Kristen Grubbs, of the Ipswich River Watershed Association, for her encouragement in pursuing my research topic. Thank you as well to Jordan McGinty, my family, friends and fellow classmates for providing feedback and support throughout the year.

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Abbreviations

CDBG-DR	Community Development Block Grant for Disaster Recovery
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance Grant Program
FMV	Fair Market Value
GOSR	Governor's Office of Storm Recovery
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HUD	United States Department of Housing and Urban Development
PDM	Pre-Disaster Mitigation Grant Program
RL	Repetitive Loss
SLR	Sea Level Rise
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

Home Buyouts: One Adaptation Approach to Rising Sea Levels

Chapter One: Introduction

The number of Americans living in floodplains and hurricane zones has grown dramatically in recent years and as a consequence more people are exposed to flooding (Knowles & Kunreuther 2014). Approximately 39 percent of people in the United States live in coastal counties, including the Great Lakes (Polefka et al. 2013, 2; NOAA 2013, 2). Development has expanded in more risky areas because local governments have invested in building protective flood measures, such as levees in New Orleans. In general infrastructure to reduce floods can create a false sense of security and lead to riskier land use practices.

Subsidized flood insurance through the federal National Flood Insurance Program (NFIP) governed by the Federal Emergency Management Agency (FEMA) has also encouraged development in floodplains and shielded homeowners from the true costs of living in vulnerable areas. For instance, from 1970 to 2010 there has been a 40 percent increase in the number of people living in coastal shoreline counties in the United States (Knowles & Kunreuther 2014, 327). NFIP was originally created as a federal program in 1968 through the National Flood Insurance Act to address the rising federal costs in providing public assistance following natural disasters (Knowles & Kunreuther 2014, 327).

In recent years, the true cost of living in floodplains is impossible to ignore. Take for instance the devastation caused by Hurricane Katrina in 2005, an estimated 1,600 people died and damages resulted in \$25.5 billion

in insurance losses for State of Louisiana alone (Jones 2015). Overall, hurricanes in the United States from 2004 to 2014 have cost an estimated \$200 billion (Knowles & Kunreuther 2014, 328). NFIP went into \$18 billion worth of debt following Hurricane Katrina and forced the program to borrow more money from the United States Treasury totaling \$27 billion as of 2012 (Knowles & Kunreuther 2014, 328). Therefore, the cost of having development in floodplains is unsustainable for the future.

In the future, climate change will most likely expand the number of homeowners exposed to flooding and storm surges in coastal communities. For instance, a study conducted by AECOM for FEMA found that due to climate change there could be a 55 percent increase in the flood-hazard area by 2100 for the United States coastal floodplains (Polefka et al. 2013, 2). Low-lying communities will need to decide together which adaptation approaches to take in response to climate change impacts, such as flooding from sea level rise (SLR) and higher storm surges. Many homeowners and businesses located along shorelines may want to protect their assets in the future from climate change impacts with coastal armoring by building hardened structures, such as seawalls and bulkheads. This type of response may be appropriate for some places that do not have room to expand or need to be near the shoreline for commercial purposes such as maritime activities.

However, not all coastal communities may be able to afford to protect their coastlines. Initial construction costs can be very high to build defense structures for coastal armoring. Coastal armoring also has long-term

maintenance costs that must be taken into consideration. Coastal armoring also can damage precious coastal ecosystems, such as beaches and wetlands, by preventing habitats from migrating inland as sea levels rise in the future. Coastal armoring can possibly eliminate ecosystems, such as wetlands, that can buffer inland communities against coastal hazards.

In the short-term, communities may seek to elevate buildings and infrastructure to accommodate SLR while maintaining historic shoreline boundaries. This approach is already occurring in Miami-Dade County, where roads and infrastructure is being elevated because of reoccurring flooding from daily tides that backup the stormwater pipes (Alvarez & Robles 2016). However, many communities may be overwhelmed with the costs associated with elevating structures or building defense structures when addressing SLR.

A more cost-effective approach to limit exposure to coastal flooding would be to give residents and businesses the opportunity to relocate from low-lying areas to higher ground or non-hazardous areas. The permanent relocation of buildings and human activity away from low-lying flood prone areas in the context of climate change adaptation is referred to as managed retreat or simply as retreat (Dyckman et al. 2014). Relocation is a contentious issue among community stakeholders and governing bodies. This topic is discussed in further detail in chapter three.

The main objective of retreat is to enable natural ecosystem processes to occur along waterways, such as coastal shorelines, instead of trying to

resist nature through manmade structures. Retreat also involves creating buffer zones, such as coastal wetlands, that act as sponges for floodwaters. Retreat is not a new concept; many coastal states already regulate the type of structures homeowners can erect on shorelines with high erosion rates in order to preserve public resources, such as public beaches. Retreat may also occur in the same community in conjunction with other planning strategies, such as coastal armoring and elevating buildings. Ultimately, it is up to each local government and stakeholders to determine where it makes financial sense to use buyouts in the future.

There are numerous planning tools to begin the retreat process. For instance, many coastal governments use regulations that require setbacks along shorelines, have building codes that restrict coastal development, and employ zoning overlays to ensure floodplains are regulated properly (Siders 2013a). One way to facilitate retreat is through home buyouts in which the government purchases homes at a fair market value from homeowners to enable them to relocate out of floodplains and then create permanent open space with the vacant land (Grannis 2011; Siders 2013a). There are many other retreat planning tools for local governments to consider for encouraging retreat on privately owned land, such as banning shoreline structures, or using voluntary rolling easements and transferable development rights (TDR) for private property (Siders 2013a; Williams 2014). However a detailed discussion of these planning tools is beyond the scope of this work.

The purpose of this thesis is to investigate buyouts and understand the current buyout program practices that enable residents to relocate from floodplains. Chapter two provides information on the types of research methods used for this analysis. Chapter three explores the traditional funding methods for buyouts. Chapter four investigates the existing literature on buyout programs. Chapter five presents a case study of the New York State buyout program in the Staten Island neighborhood of Oakwood Beach. Chapter six presents an overall discussion of the research findings. And the final chapter, seven, presents policy recommendations for other local governments interested in buyouts based on the case study findings.

Chapter Two: Research Methods

A combination of methodologies was used during the research and analysis phase in order to investigate the main thesis research question:

How do the current practices of buyout programs enable coastal communities to relocate residents away from flood prone areas?

The research consisted of a literature review and a single case study. The types of data sources gathered for the research included interviews with public officials, newspaper articles, scholarly articles, community websites, press releases, government publications, and government websites.

I. Literature Review Methods

An extensive literature review was conducted on the specific topic of buyouts, also known as property acquisitions. A literature search, of peer-reviewed literature was conducted using three different databases: ProQuest, Tufts Jumbo and Scopus. The search consisted of the same keywords as follows: buyouts; property acquisitions; climate change; mitigation; floodplain; flooding; disaster; relocation; community; coastal areas; coastal planning; coastal communities; coasts. The following is the yield and selection of documents for each database:

ProQuest Database yield: 12 & selection: 4
Tufts Jumbo Database yield: 16 & selection: 7
Scopus Database yield: 36 & selection: 8

Additional literature was obtained from referencing listed resources from articles found in the initial literature search of the three databases. In some

instances, literature was obtained directly from government webpages or other methods.

II. Sample Buyout Programs Selection

In order to understand the current practices of existing buyout programs, an analysis was conducted of two programs that are operated by state agencies. The two state programs were located in New York and New Jersey. The main selection criteria for the buyouts were coordinated through a formal state program. Only coastal states were considered for analysis. Also, I was interested in how the two adjacent states responded to the same natural disaster event of Superstorm Sandy in 2012.

III. Case Study Methods

Case Study Selection Criteria

A single case study, Oakwood Beach neighborhood in Staten Island, NY, was chosen because I wanted to do an in-depth analysis of one location. A case study research strategy was chosen because I wanted to investigate the contextual conditions of buyouts and understand the many variables influencing the practice in the real world (Yin 1994). Yin (1994) suggests that a single case study, as opposed to multiple case studies, is appropriate in circumstances where the single case study represents an “extreme or unique case” (Yin 1994, 39). Oakwood Beach represents a unique case study because

residents directly advocated for buyouts, along the coast, following a natural disaster.

The case study location was based on several factors. The first factor was a location where buyouts have taken place in a coastal community, because I am particularly interested in policy recommendations for other coastal communities where buyouts may be applicable. The second factor was based on a location that had experienced severe flooding within the past 10 years or a long-term history of flooding in the community was a third factor. The final factor was to pick a location where the buyouts were conducted through a state program.

Data Collection: Newspaper Literature Search

A literature search was conducted in order to understand the media representation for my case study. Using the Tufts Jumbo database, a search was conducted for the time period of October 1, 2012 to December 31, 2017 using the keywords: buyouts & Staten Island. The database initial results were 316.

Tufts Jumbo Database yield: 316.

Tufts Jumbo Database - refined using keyword "homeowners" yield: 38

Selection: 13

Interview Methods

Interviews were conducted with a variety of public officials from local and state agencies. The total sample size for the interviews was seven.

Interviewees were selected from three different states as follows: three from New York, three from Massachusetts, and one from New Jersey. The average length of each interview was 30 minutes. All interviews were conducted over the phone and were not recorded. None of the interviews were transcribed. All seven interviews were confidential and none of their names are used in this document. The research interviewing methods received approval on January 25, 2017 by the Tufts University Institutional Review Board. My methods for conducting the interviews and analysis were informed by Rubin & Rubin's (2005) methodology. For further details on the interviewing methods please see the Interview Guide in the appendix section.

IV. Research Limitations

There were several limitations of this research. First, this research does not include a comprehensive quantitative analysis. Instead, the case study has taken a qualitative approach. Second, the overall economic impact of buyouts, and the influence of the local government finances was not a primary focus of this research. Last, the limited number of available public officials for interviews due to the timing and availability may have influenced the ultimate findings of the research.

Chapter Three: Federal Funding Sources

In the United States, buyouts have been used as a risk management tool to relocate residents from hazardous locations. Buyouts are viewed in the planning field and government as tools for natural disaster recovery or hazard mitigation. Hazard mitigation is defined as any “...effort to reduce loss of life and property by lessening the impact of disasters. In other words, hazard mitigation keeps natural hazards from becoming natural disasters.” (FEMAb 2017, 1). For instance, a natural hazard could be from tornados, wildfires, hurricanes, floods, earthquakes, or drought. Buyouts typically seek to address hurricane and flood hazards. Natural disasters are defined as any natural hazard event that affects a community on a large-scale causing severe damage to buildings and infrastructure and loss of lives (FEMAb, 2017).

Since the 1970s, the federal government has been using property acquisitions to encourage residents to move to safer locations. Ultimately the federal government is able to save money by avoiding costs associated with natural disasters. For example, an independent study commissioned by FEMA in 2005 found that for every \$1 spent on “hazard-mitigation activities” the U.S. Treasury saves \$3.65 in costs, and the American economy saves \$4 in losses (Polefka et al. 2013, 5). Therefore, the federal government has created several government programs to help states and local communities finance buyout programs.

I. FEMA Funding

There are two principal federal funding sources for buyout programs used by states and local governments in the United States. The Federal Emergency Management Agency (FEMA) is the first major funding source for buyout programs. Within FEMA, communities apply to the Hazard Mitigation Grant Program (HMGP) to finance buyouts. Congress is able to appropriate funding to HMGP through the Robert T. Stafford Disaster Relief and Emergency Assistance Act (FEMA 1998; FEMA 2015; FEMA 2016). The program's main purpose is to provide funding to communities to implement hazard mitigation projects that can prevent deaths and property damage from natural disasters in the future (FEMA 2016). Buyout programs qualify for the program funding because they create permanent open space and permanently reduce the number of people living in hazardous areas.

Following a natural disaster, state governors apply for HMGP funding from FEMA to create buyout programs. Funding can only be distributed to counties that have been declared a major disaster by the president upon a state governor's request. Local governments and federally recognized tribes can also act as applicants on behalf of individual homeowners (sub-applicants) for HMGP funding in addition to the state government. Figure 1 shows the application process for HMGP funding beginning with the sub-applicants. Funding is available to communities even if the local government has not created a FEMA-approved hazard mitigation plan. In which case,

funding through HMGP can be used to develop a hazard mitigation plan (FEMA 2016).

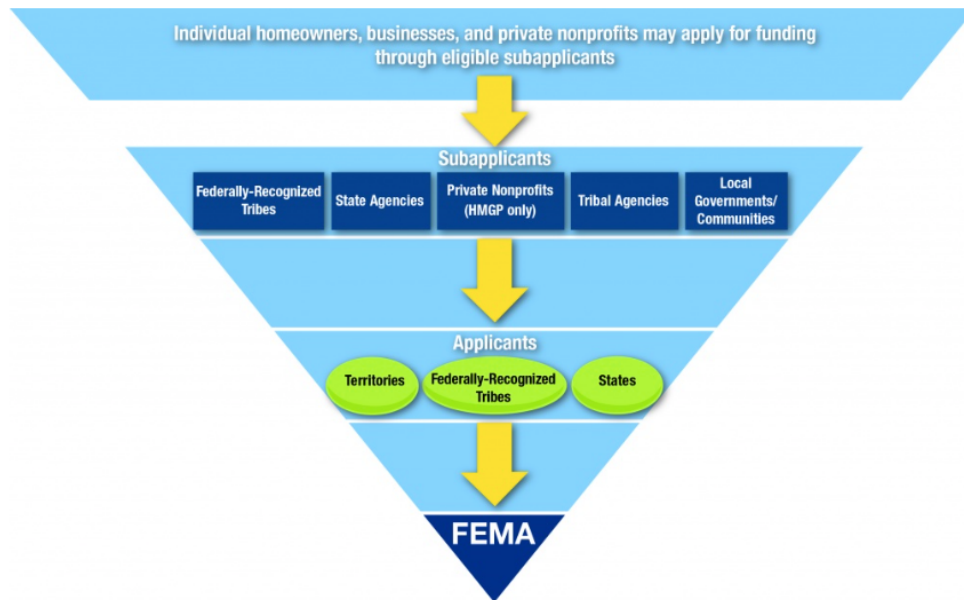


Figure 1. FEMA Flowchart for HMGP Application Process. Source: FEMA 2016

Local municipalities using HMGP funding are required to contribute 25 percent of the total cost share and the federal government matches the other 75 percent cost share. Homeowners receive buyout offers based on a fair market value (FMV) and an assessment of their property before the storm occurred, known as the pre-storm value (FEMA 1998; FEMA 2015). Buyouts using HMGP funding are required by law to place deed restrictions on the property. The deed restrictions permanently restrict the parcel for recreational, open space or floodplain uses (FEMA 1998).

The federal government has contributed a substantial amount of money to hazard mitigation activities. Approximately \$14.5 billion has been allocated to FEMA's three main Hazard Mitigation Assistance grant programs

(HMGP, PDM, FMA) from fiscal years 2005 to 2017 (FEMA 2017). The budget has fluctuated over the 2005 to 2017 fiscal year time period, with the three largest years, FY 2005, FY 2008, and FY 2013, each costing over \$2.3 billion as shown in Figure 2 (FEMA 2017). The HMGP alone has spent over \$400 million from 2003 to 2014 to purchase a total of 7,000 properties from homeowners across the country as shown in Figure 3 (Benincasa et al. 2014). The vast majority of HMGP funding for buyouts from disasters have been for inland states (Benincasa et al. 2014). Table 1 shows the ten states that received the most HMGP funding from 2003 to 2014 for disaster buyouts.

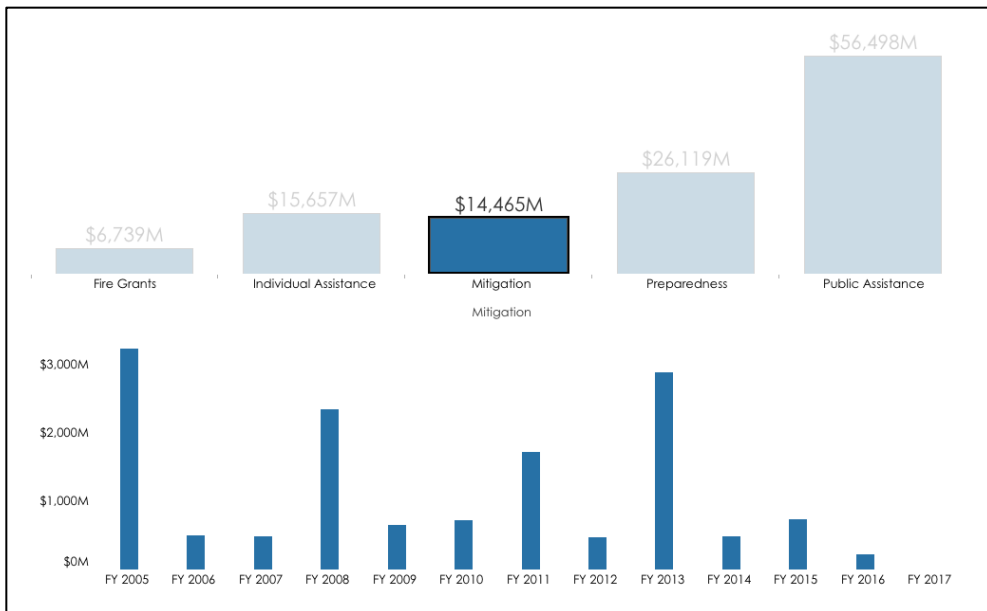


Figure 2. FEMA Hazard Mitigation Assistance Funding, FY 2005 to 2017. Source: FEMA 2017

FEMA-funded property buyouts have topped \$417 million

Total amount paid to property owners, by county, since 2003

None Less than \$750,000 \$750,000 - \$4,000,000 Greater than \$4,000,000

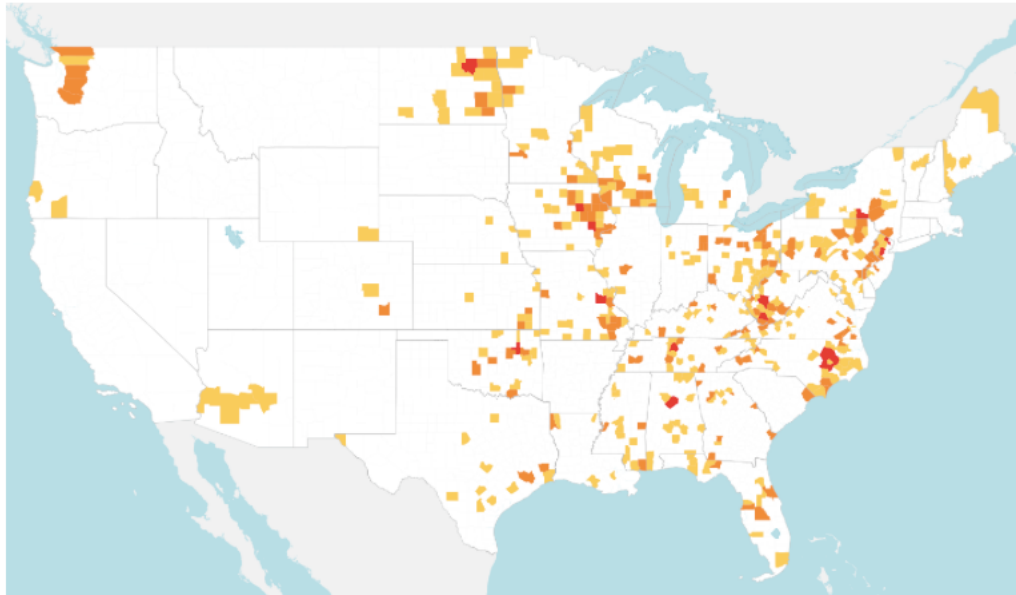


Figure 3. Total HMGP Buyouts from 2003 to 2014.

Note: Data analysis by NPR of the Federal Emergency Management Agency (FEMA) available data for the Hazard Mitigation Grant Program (HMGP) from 2003 to 2014 for over 7,000 properties. FEMA provided 75 percent of the funding cost share.

Source: Benincasa & Boyer 2014.

State	Incident	Year	Total Amount Paid
North Carolina	Hurricanes Floyd & Irene	1999	\$62,821,759
Iowa	Severe Storms, Tornadoes, and Flooding	2008	\$36,992,883
Pennsylvania	Tropical Depression Ivan	2004	\$9,938,600
New Jersey	Hurricane Floyd	1999	\$9,613,895
Oklahoma	Severe Winter Storm	2001	\$9,012,121
West Virginia	Severe Storms & Flooding	2001	\$8,069,938
Wisconsin	Severe Storms, Tornadoes, and Flooding	2008	\$7,388,676
Alabama	Hurricane Ivan	2004	\$6,824,555
New York	Severe Storms and Flooding	2006	\$6,390,868
Missouri	Ice Storm	2002	\$6,206,856

Table 1. Top Ten States with Highest HMGP Funding for Buyout, 2003 to 2014. Table created by author.

Note: Data analysis by NPR of the Federal Emergency Management Agency (FEMA) available data for the Hazard Mitigation Grant Program (HMGP) from 2003 to 2014 for over 7,000 properties.

Source: Benincasa & Boyer 2014.

II. HUD Funding

The United States Dept. of Housing and Urban Development (HUD) provides the other main source of federal funding for buyout programs.

Following a presidentially declared disaster, Congress appropriates funding to HUD's Community Development Block Grant Program for Disaster Recovery (CDBG-DR) to aid local and state recovery (Boyd 2011; HUD 2014). The Robert T. Stafford Disaster Relief and Emergency Assistance Act gives Congress the authority to appropriate funding to CDBG-DR, as is the case with HMGP funding (HUD 2014). For instance, from 1993 to 2013 Congress has appropriated funding every year ranging from a \$39 million to \$16.7 billion for disaster recovery (HUD 2014, 21-10).

Funding is available to the states, local governments, and Native American tribes who submit an action plan to HUD (HUD 2017). The main purpose of the program is to provide funding to governments with residents who have experienced severe damage from a recent disaster or a history of multiple disasters or flooding in the past (HUD 2013). Unlike the FEMA funding, funding through CDBG-DR is required to benefit at least 70 percent of low to moderate-income persons (HUD 2017). Therefore, buyout programs have to be tailored to meet this federal requirement. CDBG-DR funding allows local or state governments to supplement funding gaps from other disaster recovery programs, such as the 25 percent local match required in HMGP projects (Boyd 2011). Therefore, CDBG-DR funding in some approved special cases can be used to cover the 25 percent local portion, or cost share, for HMGP buyouts.

Other Federal Funding

FEMA also finances buyouts through the Pre-Disaster Mitigation Grant Program (PDM) and Hazard Mitigation Assistance (HMA) programs in addition to the two main federal funding sources. The United States Department of Agriculture has also provided funding for buyouts, although not as frequently as HUD or FEMA. The bulk of the current funding for buyout programs is typically available to communities after an event has occurred because HMGP & CDBG-DR funding is only available to counties after a disaster is declared by a president (see Figure 4) (Boyd 2011; FEMA 1998; FEMA 2015; HUD 2014).

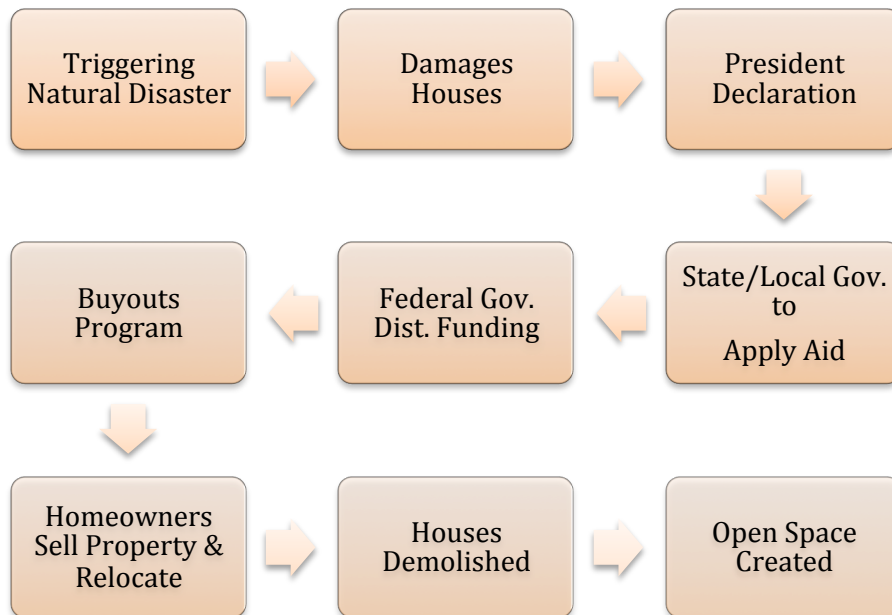


Figure 4. Flowchart of Typical Buyout Process. Source: Graphic by author.

III. Sample State Buyout Programs: New York & New Jersey

In response to presidentially declared disasters, several states have created formal state programs to acquire property from homeowners of residential dwellings. In existing buyout programs, residential dwellings refers to only one and two family homes. This section presents an overview of the New York and New Jersey state buyout programs as they relate to Superstorm Sandy.

New York State – NY Rising Buyout and Acquisition Program

The New York State NY Rising Buyout and Acquisition Program was officially launched in April 2013 as a response to Superstorm Sandy to purchase damaged homes from homeowners (NYSe 2013). Through the program single and two family houses are purchased at their pre-storm value within state designated locations called “Enhanced Buyout Areas” (NYSe 2013). The program has also assists homeowners recovering from Hurricane Irene, August 2011, and Tropical Storm Lee, September 2011. Figure 5 shows how the NY Rising Buyout & Acquisition Program falls within the New York State governance.

The program is comprised of two main components, the NY Rising Buyout component, and the NY Rising Acquisition component. The purpose of the buyout component is to demolish the homes and create open space forever by placing deed restrictions on the parcels of land. Participation in the program is completely voluntary and the state government has opted to

let local leaders and communities decide first if they want to participate in the program. The purpose of the acquisition component of the program is to purchase residential properties that have been identified as substantially damaged and redevelop the land to build flood resilient housing.

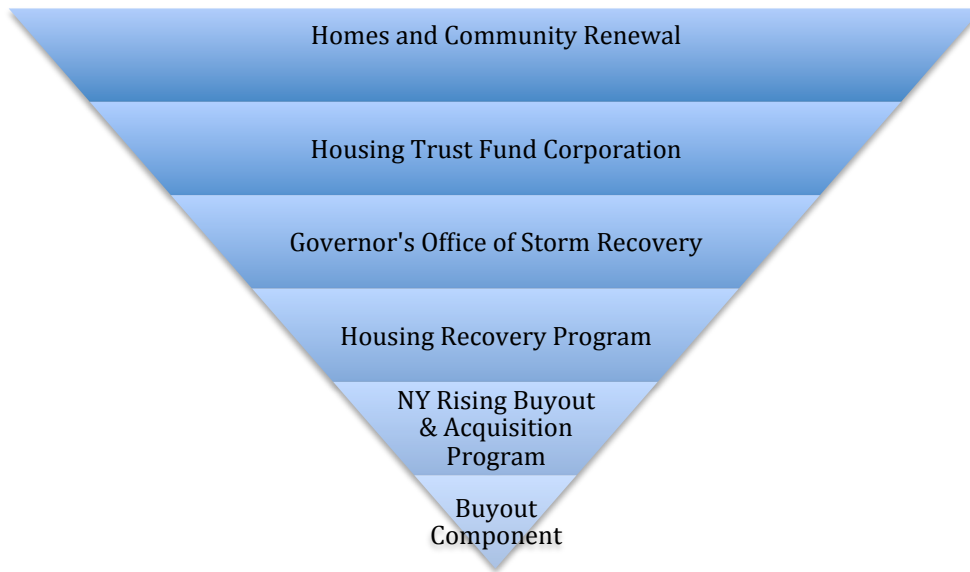


Figure 5. New York State Program Hierarchy for Buyout Component. Graphic by Author.

Buyout Component

In order for a homeowner to participate in the buyout component of the program, their home had to be located within an Enhanced Buyout Area. Enhanced Buyout Areas are defined by New York State as locations that are in a 100 year floodplain, and have a history of flooding or a history of extreme weather that has resulted in damage to properties, which places home properties at risk for future disasters (NYSb 2014). Only private residential dwellings that are located within a state classified Enhanced Buyout Area that have been determined to be in an “Extreme Risk Area” or

“High Risk Area” are eligible for the NY Rising Buyout component. These areas were based on the New York State vulnerability risk mapping assessment for future damage from storms or disasters. Property was automatically considered substantially damaged if it was within the Extreme Risk Area or High Risk Area. A large majority of residents had to show in writing that they were interested in participating in the buyout program in order for their neighborhood to be considered for the program. However, New York State does not clearly define what the majority is, such as 75 percent or 95 percent of residents.

Acquisition Component

By contrast, homes located outside of Enhanced Buyout Areas could sell their homes to the government through the acquisition component of the NY Rising Program. The acquisition component acquires private property of one-unit or two- unit dwellings that are located in areas within 100 year or 500 year floodplains and have been substantially damaged as determined by an official or floodplain manager (GOSR & HCR 2016). In the acquisition component of the program, homes that were substantially damaged in either the 100 year or 500 year floodplain qualified for this program (NY Rising 2016). Residents participating in the program received offers for their property also at the pre-storm value, however without the other incentives that were included in the NY Rising Buyout Program (NYSb 2014).

The main difference between the acquisition component and the buyout component is that properties in some cases qualify for redevelopment in the acquisition component. Therefore, some locations were being targeted by the State administration to convert floodplains back into open space. By contrast, other locations were using acquisitions to promote redevelopment with new flood resilient buildings that complied with federal flood standards. Figure 6 summarizes the total number of homes that were purchased by New York State through the NY Rising Buyout & Acquisition Program as of December 2016. Overall, the acquisition program was created to provide similar buyout options to homeowners, while still retaining some land for redevelopment for residential housing in order to preserve the tax base in other sections of Staten Island and other boroughs in NYC¹.

¹ Interview with New York City public official, March 1, 2017.

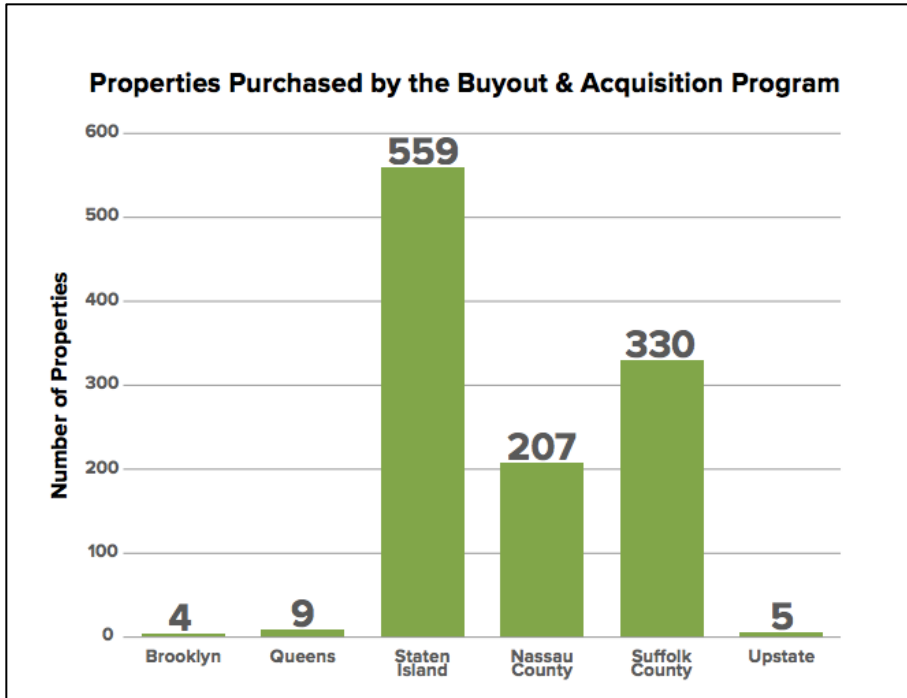


Figure 6. Total Statewide Purchased Properties through the NY Rising Buyout & Acquisition Program, as of 2016. Source: GOSR 2016.

Overall Funding Sources

On January 29th, 2013 Congress approved \$60 billion in federal funding through the Disaster Relief Appropriations Act (NYSc 2013). Because Superstorm Sandy was a presidentially declared disaster, New York State was able to submit an action plan to HUD to seek \$1.7 billion in federal funding for CDBG-DR funding (GOSR 2016; NYSb 2013). They used those funds to aid in the state’s recovery efforts after Superstorm Sandy, along with recovery for Hurricane Irene, 2011, and Tropical Storm Lee, 2011 (GOSR 2016; NYSb 2013). Among the many disaster recovery programs, the NY Rising Buyout and Acquisition Program was created.

Overall, New York State received a total of \$4.4 billion from HUD. Beginning in March 2013 the state received an initial \$1.8 billion, then

another tranche of approximately \$2 billion in November 2013, and a final tranche in May 2014 of \$600 million (NYSd 2014). By Superstorm Sandy's two-year anniversary in October 2014, approximately \$141 million had been spent in purchasing 394 homes from Staten Island homeowners (NYSe 2014). Overall, New York State has spent \$240 million to purchase 610 properties through the NY Rising Buyout Program and \$68 million to purchase 395 properties through the NY Rising Acquisition Program as of October 2016 (GOSR 2016).

New Jersey – Blue Acres Buyout Program

The Superstorm Sandy Blue Acres Buyout Program (Blue Acres Buyout Program) was created to assist residents wishing to sell their homes to the state that were damaged in the storm. The buyout program was created as part of the New Jersey Department of Environmental Protection (NJDEP) under the Green Acres Program. All properties acquired through the buyout program are demolished by the state and used for perpetuity as open space or conservation land with the goal of creating buffer areas from future storms or flood hazards (NJDEP 2015).

Funding Sources

Funding for the Blue Acres Buyout Program came from a variety of state and federal sources. The State of New Jersey received the vast majority of its funding from the federal programs HMGP and CDBG-DR. The rest of the

funding came from the NJDEP Green Acres Program, a land acquisition program, and from United States Department of Agriculture (USDA) along with the Natural Resources Conservation Service. For example in 2007, \$12 million was authorized by the New Jersey State legislature through the Green Acres, Farmland, Blue Acres, and Historic Preservation Bond Act to acquire land in floodways to create conservation and recreational space (NJDEPa 2017). An additional \$24 million was allocated through a public vote approving the Bond Act called the Green Acres, Water Supply and Floodplain Protection, and Farmland and Historic Preservation Bond Act (NJDEPb 2017). New Jersey also received a total of \$300 million in federal funds for disaster recovery that was applied to buyouts following Superstorm Sandy (NJDEP 2015).

A main difference between New York and New Jersey is that buyouts in New Jersey have mainly taken place in non-coastal communities following Superstorm Sandy. One reason is that federal funding for buyouts is not available for second homes or vacation homes. The New Jersey coastline has a large amount of residences that are not the primary residence of the homeowner. For instance, as of March 2013, FEMA had estimated that out of the 81,871 houses damaged during Superstorm 59,971 houses were the primary residences of the owners (Paik 2013). As of September 2015, 519 out of 690 owners had accepted buyout offers through the Blue Acres Buyout Program. Overall, the state has the ultimate goal of purchasing 1,300 homes,

of which 1,000 are in tidal areas, and 300 are in locations where repeated flooding has occurred in the past (NJDEP 2015).

Chapter Summary

To summarize, the federal government currently is the primary source of funding for buyout programs. Buyouts are used typically after a presidentially declared natural disaster or severe damage to a home has occurred. This has been the case for both New York State and New Jersey when Superstorm Sandy hit in 2012. The natural disaster triggered both states to pursue buyout programs for select locations, yet each state structured their programs differently. Overall, the two main federal sources of funding for buyout programs come from FEMA and HUD from HMGP and CDBG-DR respectively. Buyouts are normally orchestrated through either state or local government authority as the applicant on behalf of homeowners. Homeowners do not directly apply to the federal government for buyouts. Overall, the federal funding structure has largely shaped buyout programs in the real world.

Chapter Four: Literature Review

In the literature buyouts are generally framed as a way to relocate homeowners away from hazardous areas by using federal funding after damage occurs. The federal government has supported funding buyouts because it can reduce the costs for the NFIP (Conrad et al. 1998; HUD 2014; FEMA 2015; Nelson 2014). For instance, NFIP has to pay insurance claims for insured homes that are repeatedly flooded. These insured homes are referred to as “repetitive loss (RL) property” by the federal government if they have incurred damage at least two or more times over a ten-year period that resulted in a claim over \$1,000 (FEMA 2005). RL property is targeted for buyouts by the federal government as a cost effective strategy to reduce the overall insurance payouts that are ultimately paid by American taxpayers (Polefka 2013).

Buyout programs also reduce any future loss of life that may occur by relocating residents away from flood-prone areas (Conrad et al. 1998; Nelson 2014). Some authors frame buyouts as a nonstructural hazard mitigation strategy that is an alternative option when the hazard cannot be addressed using a structural mitigation strategy, such as a levee (De Vries & Fraser 2012).

Federal Funding: Open Space v. Redevelopment

Some authors believe that the land from buyouts can be used for many purposes depending on the local or state government’s planning

objectives (Tate et al. 2016). Depending on the intended land use for buyouts, states may apply to either HMGP or CDBG-DR funding. For instance, HMGP funds are typically used for buyouts if a local government would like to have a buyout program to create permanent open space or restore a floodplain through deed restrictions.

By contrast, local governments typically use CDBG-DR funds in buyout programs if they plan to redevelop the floodplain with housing that meets federal flood requirements in some special cases. Yet, the vast majority of the time open space is created in buyout programs using CDBG-DR funding. However, some authors argue that buyouts should only serve to create open space and not be redeveloped (Conrad et al. 1998; Grannis 2011). They believe that the federal government should only invest in residents once through buyouts instead of wasting federal funding in paying residents to repeatedly rebuild their homes in floodplains, such as with the National Flood Insurance Program.

Tate et al. (2016) believe there needs to be more flexibility in land uses involving HMGP and CDBG-DR funds. Such as allowing for structural flood protections when HMGP funds are used. Also, creating more restrictions to reduce redevelopment in floodplains when CDBG-DR funds are used in buyout programs. For instance, during disaster recovery planning the local and state governments may be burdened by complying with the federal requirements of HMGP funding (IFMRC 1994; Nelson 2014). For example, converting private land from the homeowner to public land

requires the local government to come up with funding in the fiscal budget to maintain the land. This places additional burdens on the local government. Although the two federal programs have supported many communities in successfully implementing buyout programs, at times others may find many challenges in navigating the federal application process because of the program restrictions in both CDBG-DR and HMGP funding.

Disaster Recovery

Several authors advocate for local governments to dialog with residents about a buyout program option before a natural disaster occurs. Many believe that federal funding can be used to facilitate these talks as a pre-disaster planning activity (Conrad et al. 1998; Tate et al. 2016). Pre-disaster planning is thought to allow space for the community and local officials to discuss buyouts in a flexible timeline and relaxed environment (De Vries & Fraser 2012; Nelson 2014). The federal government encourages pre-disaster planning through FEMA's the Pre-Disaster Mitigation (PDM) grant program. However, funding for buyouts typically is allocated after a natural disaster or severe flooding has occurred. Buyouts are seen to be one possible tool for recovery planning after a disaster due to the belief that not all residents would be interested or willing to participate in a buyout program (Maly & Ishikawa 2013).

Decision Making: Individual v. Community

Residents are influenced by several factors to participate in buyout programs. There will be a variety of levels of interest in participating in a buyout program depending on the individual homeowner (FEMA 1998). The literature primarily focuses on the role of individual homeowners' decisions influencing whether to relocate or rebuild after a natural disaster or severe flooding. The primary aim of buyouts is to compensate individual homeowners for the value of their property to encourage them to move out of flood prone areas (FEMA 1998; FEMA 2015).

However, the ultimate goal of buyouts is to get whole neighborhoods to participate. That way the land from buyouts can create open space in large areas. To accomplish this the federal government encourages buyout programs, designed by state or local governments, to provide incentives if whole neighborhoods agree to accept buyout offers together (FEMA 2015; HUD 2014). In the end, the ultimate decision to accept a buyout offer is an individual homeowner's decision.

Several authors critique the framing of buyouts solely as individual decisions. Instead the literature indicates that the local community can sway individual homeowners to consider relocating through buyouts instead of rebuilding after a natural disaster. In many instances after a natural disaster, local community leaders emerge to advocate either for or against buyouts. (Maly & Ishikawa 2013; Zavar 2016). For instance, community leaders might organize informal community meetings for neighbors to discuss the best

option after a storm. In some cases, community groups may have already dealt with rebuilding from flooding or a natural hazard in the past. Ultimately, the influence of local community leaders depends on how strongly connected the community was before the natural disaster occurred. It might be easier for communities with more longtime residents to gain community consensus on buyouts than neighborhoods with newer residents.

However, in the literature and federal guidelines little attention has been given to framing programs with the community in mind. Therefore, many authors believe buyout programs should focus on the whole community not just the individual homeowner and understand the impact of buyouts on the whole community (Binder et al. 2015; De Vries & Fraser 2012; Phillips et al. 2012; Maly & Ishikawa 2013).

Local Identity

In some instances, residents' strong identity attachment to their neighborhood may prevent them from considering buyout offers. Older communities tend to have long histories that have developed their own unique cultures. Take for instance New Orleans. Following Hurricane Katrina the government attempted to use buyouts in the city through the Road Home Program (Green & Olshansky 2012). This was met with fierce resistance because many residents of New Orleans are deeply attached to their community (Phillips et al. 2012). New Orleans is a good example of how it is hard to implement buyout programs in locations that are historically

significant. Residents therefore may be reluctant to accept buyouts because they have developed an attachment to their home and community.

Overall, values and local cultural norms that make up one's identity can influence residents' acceptance of buyouts. If one's personal identity is determined by living in a specific geographic location, such as living by the ocean or owning a waterfront home, then buyouts may not seem like a feasible recovery option after severe flood damage (Binder et al. 2015; Phillips et al. 2012). However, if a resident identifies with being a homeowner regardless of the specific location, a buyout offer allows them to continue to be a homeowner in a new location. As a result, more residents would be likely to consider a buyout offer because they are not strongly attached to their neighborhood but more to the identity associated with homeownership (Binder et al. 2015).

Voluntary Participation

A key program objective of buyout programs is that resident participation is voluntary. In the literature, this federal requirement is stated without the federal government providing guidance on how to achieve voluntary participation among residents (HUD 2014; FEMA 2015; Conrad et al. 1998). Several authors raise concerns that the execution of buyout programs can lead residents to feel that participation in the program is being forced. Concerns of coercion to accept buyout offers is an issue that can influence residents' experiences (Muñoz & Tate 2016; De Vries & Fraser

2012; Tate et al. 2016; Binder & Greer 2016). For instance, some residents mistrust government officials because of past injustices related to relocation. This can be especially prevalent in vulnerable populations, such as the elderly, Latino groups and other minority groups (Muñoz & Tate 2016). For example, forced relocation by the government using eminent domain to expand the federal highways in the 1960s targeted minority groups with little political power to resist (Platt 2014). Historical injustices therefore might motivate vulnerable groups to resist a buyout program. This may hold especially if they perceive outsiders, such as local public officials, restricting access to their homes after a natural disaster (Phillips et al. 2012).

Typically, buyout programs are launched after a natural disaster and local governments are under pressure to complete buyouts quickly. In order to encourage participation in a buyout program some local governments have been found to use planning tactics that restrict rebuilding after a storm. Local government officials may place a rebuilding moratorium in order to update building codes so homes are rebuilt to withstand future storms. In some cases, residents have been prevented from returning to their homes because the local government has to evaluate storm damage. Also, sometimes the local governments do not have a clear recovery plan for rebuilding and updating protection infrastructure at the time buyouts are offered. All of these circumstances can contribute to the perception among residents that they have been forced to participate in the buyout program.

Therefore, existing power structures play an important role in the level of community input for buyout programs (De Vries & Fraser 2012). The local government relationship with the public will either create space for open dialog on buyouts or discourage public input (Zavar 2016). In turn if residents feel their voices are heard through the planning process on buyouts then they are more likely to feel they have a free choice to participate.

Relocation Support

Several authors in the literature critique the buyout programs for the lack of focus on relocating residents together in a group (Maly & Ishikawa 2013). Relocation support is seen by some authors as an important program feature to assist residents. However, homeowners are not entitled to relocation assistance with buyout programs using federal FEMA funds, such as HMGP programs, because participation is voluntary. The Uniform Relocation Assistance and Real Property Acquisition Policies Act prevents homeowners, with the exception of renters or low-income homeowners, from receiving relocation benefits (FEMA 1998). HUD funding from the federal government also provides limited relocation assistance to homeowners (HUD 2013; HUD 2014).

Although there are incentives to encourage groups of residents to accept buyouts (FEMA 2015), both programs are required by the federal government to have voluntary participation by homeowners in order to qualify for HMGP or CDBG-DR funds. The funding from HUD encourages

relocation within the municipal tax base to ensure that the local economy remains strong (HUD 2013; HUD 2014).

Conrad et al. (1998) suggest that the federal government could streamline coordination of relocation support services through a national program. The program could coordinate with local and state governments to provide relocation support to residents following a natural disaster (Conrad et al. 1998). Issues of alternative affordable housing can prevent residents from accepting or considering relocating (Binder & Greer 2016; Phillips et al. 2012). Several authors raise the main issue that many residents live in flood-prone areas because that is where there is affordable housing. Therefore, low-income residents or vulnerable population groups are more likely to accept buyout offers because they have limited resources for alternative housing options (De Vries & Fraser 2012). These groups of people may have limited resources to navigate finding a new home to relocate to.

Chapter Summary: Literature Gaps

Overall, in the literature there is very little discussion of why certain geographical locations, such as coastal versus non-coastal areas, are selected by governments for buyout programs. For instance, climate change and the impact of sea level rise was not a central issue linked directly to buyout programs in the majority of literature focused on the topic. Conrad et al. (1998) recognized buyouts need further investigation within the context of climate change. Buyout programs could be expanded as a way to adapt to sea

level rise proactively through acquiring private property from homeowners in floodplains (Grannis 2011). A gap in the literature cited by authors is the need for the inclusion of buyouts as an option in pre-disaster planning before natural disasters.

Finally, buyout programs are generally viewed in the literature as a top-down approach that is driven and encouraged by the local or state government in responding to a disaster (Conrad et al. 1998; De Vries & Fraser 2012; Nelson 2014). However, there is a need to understand instances where residents have actively organized and advocated for a buyout program for their community after a disaster. Currently, examples of grassroots organizing for buyouts do not exist in the dominant literature. Buyouts are viewed as an exchange of property from the seller, or homeowner, to the buyer, or government. However this framing needs to change in order to understand the role of community organizing in successful buyout programs. Framing buyouts as a simple buyer-seller exchange also does not take into account that homeowners need somewhere to relocate to. The literature does not fully explore the issue of relocation support services for homeowners considering buyout offers.

Chapter Five: Case Study - Oakwood Beach Neighborhood

On October 29, 2012 Superstorm Sandy hit the coastlines of New York, New Jersey, and Connecticut. Staten Island, in New York City (NYC) experienced a 13-foot storm surge that flooded low-lying neighborhoods and resulted in 23 deaths in the borough alone (see Figure 7)(Knafo & Shapiro 2012; Bloomberg 2013; NYCb 2017). Overall, Superstorm Sandy damaged an estimated 300,000 homes in New York State and approximately 11,700 buildings were inundated from flooding in the East and South Shore areas of Staten Island (Bloomberg 2013; NYCb 2017; NYSb 2013).

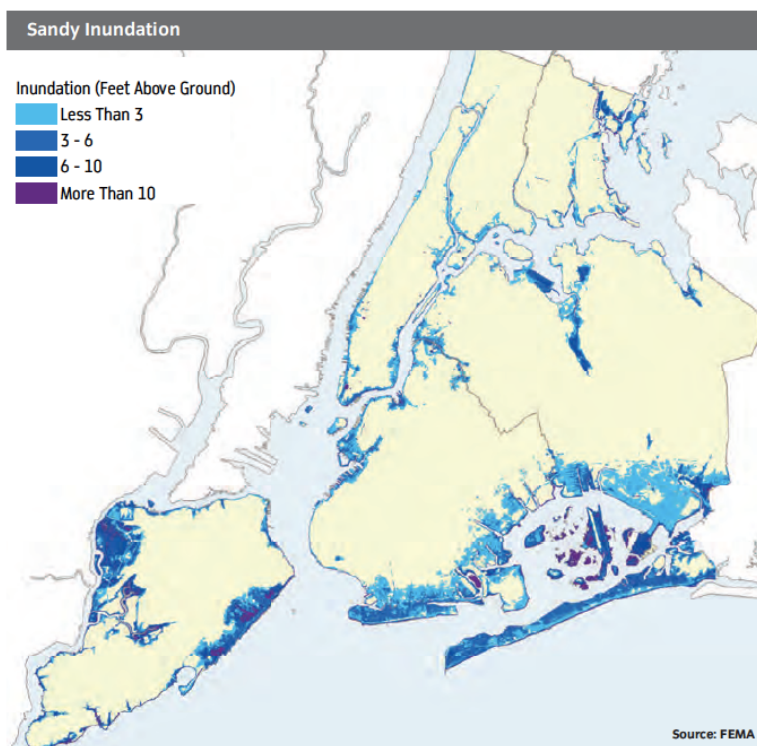


Figure 7. Superstorm Sandy Inundation Map for New York City, 2012. Source: FEMA. Retrieved from Bloomberg 2013.

After the storm many residents could either choose to rebuild their homes or relocate to higher ground. Only two thirds of residents in New York

State had flood insurance when Superstorm Sandy hit and in many cases insurance claims were not enough to cover the costs of home repairs for damaged homes (NYSb 2013). For instance, residents located within the 100 year flood plain were anticipating insurance rates could increase to as high as \$20,000 a year for some locations (Belmaker 2014). Homeowners could elevate their homes in order to comply with insurance requirements and have a lower insurance premium. Costs varied according to the structure, but for one homeowner it would have cost \$60,000 to raise her home (Gregory 2013).

In the East Shore area of Staten Island, homeowners of the Oakwood Beach neighborhood grew wary of future flooding and additional flood costs, persuaded the state government to purchase their homes at the pre-storm value, through a buyout program in order to relocate. The state and local government were onboard to transform low-lying neighborhoods into buffer zones that could protect other inland neighborhoods from future flooding.

The primary location of the case study, for this analysis, is the Oakwood Beach neighborhood located in the East Shore of Staten Island (see Figure 8). Roughly around 9,000 people live in the neighborhood of Oakwood Beach (Gregory 2013). Staten Island is a borough located in New York City and is approximately 58 square miles (US Census 2010). The total population of Staten Island, Richmond County, is approximately 474,558 people (U.S. Census 2015). Oakwood Beach along with the adjacent Oakwood neighborhood has approximately 3,000 residents out of 22,000 living in

FEMA Special Flood Hazard Zones (Freudenberg et al. 2016, 44). Figure 9 illustrates the area the buyouts occurred in the Enhanced Buyout Area, within a section of the Oakwood Beach neighborhood, from Delwit Avenue to Kissam Avenue and Riga Street to the southern streets ending at the Atlantic Ocean (Gregory 2013).



Figure 8. Oakwood Beach, Staten Island, New York City. Source: Athavaley 2013



Figure 9. Enhanced Buyout Area for Oakwood Beach. Source: Garrison 2013.

The Oakwood Beach neighborhood is located along the Riparian Bay on the east shore of Staten Island. Historically, Staten Island had many tidal and freshwater wetlands, however over time due to development many have been filled (Belmaker 2014; Bloomberg 2013). As a result, the Oakwood Beach neighborhood is only five feet above sea level (Belmaker 2014; Bloomberg 2013). This chapter will focus on the Oakwood Beach neighborhood as a case study to explore the central research question: How do the current practices of buyout programs enable coastal communities to relocate residents away from flood prone areas?

I. Social and Environmental Context

Demographics

Staten Island is considered to have affordable housing compared with the rest of New York City. For instance, the median value of homes is approximately \$439,500 and rents typically are \$1,169 per month as of 2015 (U.S. Census 2011-2015). By comparison rent for a Manhattan apartment as of 2013 was \$3,973 per month on average (O’Leary 2013). And in 2016 Staten Island was found to have the lowest rent burden of all five boroughs in New York City illustrated on Figure 10 (Lightfeldt, 2016). Overall, residents own approximately 68 percent of the roughly 179,000 housing units on Staten Island (US Census 2011-2015).

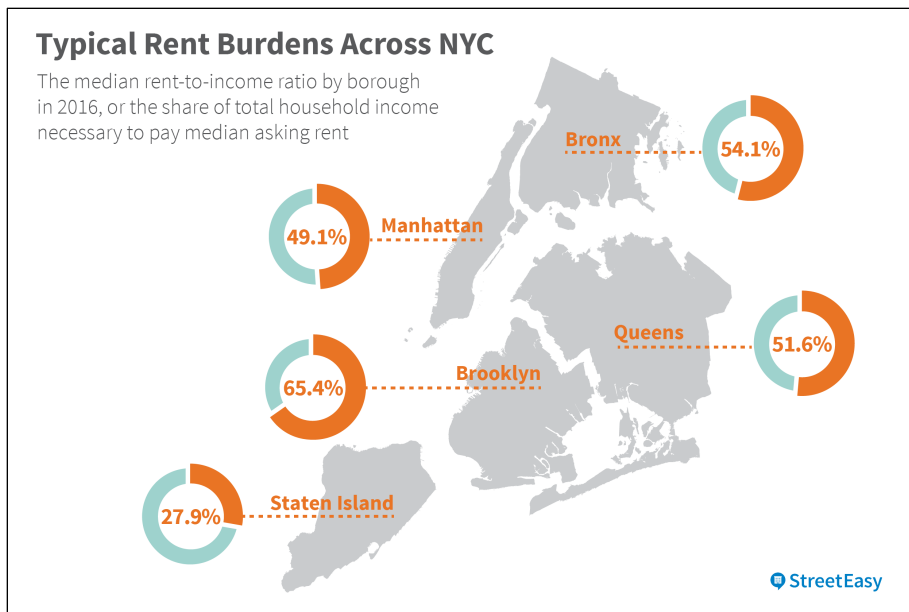


Figure 10. Rent Burden by Borough for New York City. Source: Street Easy. Retrieved from Lightfeldt 2016.

Staten Island has largely been described as a working class borough. The median income for Staten Island households was \$73,197 in 2015

dollars and had a poverty rate of 14.2 percent of residents for the New York geographical region, which differs from the rest of the country (U.S. Census 2011-2015). Comparatively, in the East Shore section of Staten Island, where Oakwood Beach neighborhood is located, the median household income as of June 2013 was approximately \$68,600 and 8 percent of residents living in poverty (Bloomberg 2013).

Socially there is a diverse range of ethnic groups in Staten Island. However, 76 percent of residents in 2015 identified as “white only” for the borough, which has increased slightly over five years from 2010 to 2015 (U.S. Census 2015). Hispanics or Latinos was the second largest ethnic group on the island, making up 18 percent of residents (U.S. Census 2015). And approximately 12 percent of residents are African Americans as of 2015, which also increased slightly from 2010 (U.S. Census 2015). Residents of many other ethnic groups live in Staten Island as well.

History of Flooding

Staten Island has a long history of flooding and coastal storm events. On the East Shore, where Oakwood Beach neighborhood is located, there have existed seasonal bungalows and beachfront resorts dating back to 1898 (Bloomberg 2013, 271). Prior to development in the early 20th century, the East Shore of Staten Island had many different types of wetlands that were able to hold floodwaters (Benimoff et al. 2015). For instance, hurricanes in 1932 and 1933 caused high storm surges, yet there was little damage

because tidal wetlands were able to store the floodwaters and fewer buildings were located near the coastline (Benimoff et al. 2015). However, flooding is a chronic issue for many residents in low-lying neighborhoods in the East Shore because many of the tidal wetlands have been filled due to development mainly beginning in the 1960s (Benimoff et al. 2015). As a result, on the East Shore the flood storage capacity to hold floodwaters has been greatly diminished (Benimoff et al. 2015). Therefore, more flooding has impacted residents because of the loss of wetlands from development (see Figure 11).

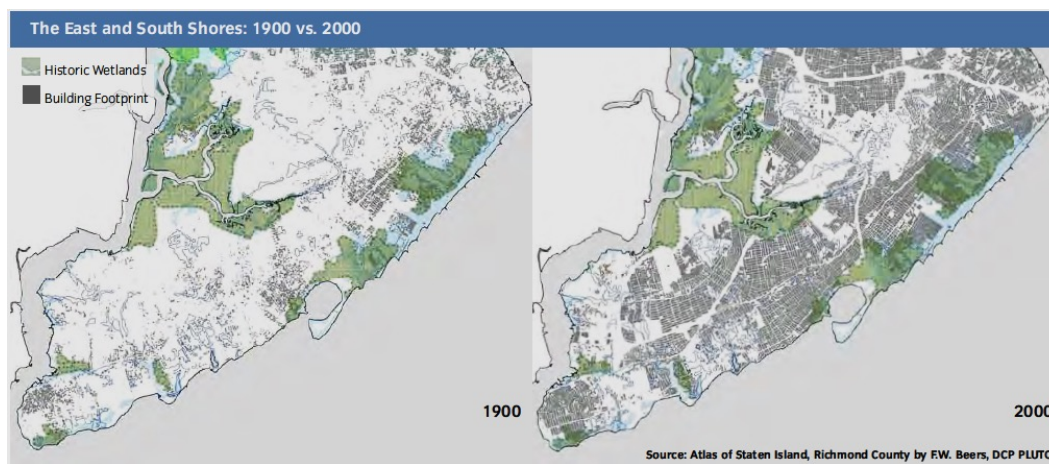


Figure 11. Historic Wetlands in the East and South Shores of Staten Island. Source: F.W. Beers, DCP Pluto. Retrieved from: Bloomberg 2013.

In recent years, prior to Superstorm Sandy in 2012, Staten Island experienced several flood events. For instance, coastal storms in 1988 and 1992, along with Tropical Storm Floyd in 1999 and Hurricane Irene in 2011, all caused flooding in Oakwood Beach. For instance, Fox Beach, a subsection of the Oakwood Beach neighborhood, experienced extensive flooding in 1992 from a winter Nor'easter. The South Shore and Midland areas in Staten Island

also experienced flooding during the same storm in 1992 (Benimoff et al. 2015). In the East Shore, flooding occurs regularly from various weather events such as king tides, heavy rainfall, nor'easters, and hurricanes (Perkins Eastman/ BFJ Planning & Louis Berger Group 2014).



Figure 12. Staten Island Bluebelt Watersheds. Source: NYCDEP. Retrieved from U.S. Army 2014.

Although Staten Island has had an innovative stormwater storage system since the 1980s called the Bluebelt, it was not originally built to handle storm surges from coastal flooding. The Bluebelt is a stormwater system consisting of 10,000 acres on Staten Island that helps convey, store, and filter stormwater, using natural land features such as wetlands, to drain over 12 watersheds (See Figure 12) (Bloomberg 2013, 275). During Superstorm Sandy, the Bluebelt was not able to prevent the massive flooding

that devastated the borough. Because of the angles of Long Island and New Jersey, floodwaters were funneled directly into Staten Island. Therefore, with the East Shore and South Shore was particularly vulnerable to flooding during Superstorm Sandy (Bloomberg 2013).

Land Use & Housing Characteristics

The East Shore of Staten Island, the location of Oakwood Beach neighborhood, has low elevation with lots of coastal sandy beaches and development that is surrounded by low-lying wetlands. Historically, the residential housing has consisted largely of single-family detached homes with smaller areas of semi-detached homes. For instance, 84 percent of the entire housing on Staten Island consists of one to two family structures (Bloomberg 2013). Much of the housing stock as of 2012 was built from rapid development on the island. See appendix for more data on new housing dwelling units from 1960 to 2015.

After the construction of the Verrazano-Narrows Bridge in 1964, development on Staten Island occurred rapidly. Development continued into the 21st century with the borough having the fastest development rate from 2000 to 2010 of all the five boroughs in New York City; Staten Island borough was one of the top ten fastest growing counties in New York State (Perkins Eastman/ BFJ Planning & Louis Berger Group 2014). During the 1960s development of residential housing occurred in filled in wetland in some areas in the East Shore.

Filling wetlands was a common local and state government policy until the federal government put a stop to it in 1972 through the Clean Water Act (Votteler & Muir 2002). However, as late as 1997 the City Council in NYC allowed the sale of marshland for development after the U.S. Army Corps of Engineers proposed building a levee in the area (Knafo & Shapiro 2012). Even though in 1992 there was outspoken concern of the impact of losing the wetland for development from an Oakwood Beach community activist, John LaFemina, during community meetings before the sale was finalized (Knafo & Shapiro 2012). Additionally, due to pressures for more new development, housing over the years also has expanded closer to the coastline exposing residents to flooding.

Due to the old housing stock in Staten Island, many single family and two family homes are not built to withstand serious flood events. For instance, 59 percent of the single and two family homes were built before 1983, when the city began to require flood standards in new residential construction (Bloomberg 2013). Also, as new development was built stormwater infrastructure did not keep pace with housing to address potential flood issues (Perkins Eastman/ BFJ Planning & Louis Berger Group 2014). Taken together the housing quality and lack of infrastructure to handle massive storm surges exposed residents in Staten Island to widespread devastation from Superstorm Sandy.

II. Community Activism

History of Community Activism

Within Oakwood Beach, the community petitioned the local government for decades to address flood issues. For instance, after resident's prodding the U.S. Army Corps of Engineers (USACE) in 1965 agreed to conduct a study to come up with a long-term solution for flooding (Knafo & Shapiro 2012). However, years later residents of Oakwood Beach were still dealing with flooding. Beginning in 1992, the residents in Oakwood Beach formed a community group called the Flood Victims' Committee following a Nor'easter storm to advocate for better coastal protections after the storm damaged the seawall built in the 1950s and a berm (Knafo & Shapiro 2012; Koslov 2014). They wanted the government to have the USACE conduct a long-term study on the flooding issues in order to develop a long-term strategy for the community (Koslov 2014). For over four years the Flood Victims' Committee met with local government officials each week to discuss the issue (Knafo & Shapiro 2012). However, over an eight-year period funding issues delayed the completion of the USACE study that would have eventually led to improved flood mitigation measures for the community. Therefore, after Superstorm Sandy hit, the Oakwood Beach Buyout Committee in 2012 formed because residents had already tried to address flooding issues with the local government by advocating for better coastal protections.

Oakwood Beach Buyout Committee

Homeowners, instead of the government, drove the buyouts in Oakwood Beach through grassroots organizing. Their efforts built upon prior years of residents advocating for the government to address flood issues in Staten Island. In Oakwood Beach local residents petitioned New York State Governor Andrew M. Cuomo to consider their neighborhood as a location for a buyout program. After Superstorm Sandy hit Staten Island on October 29, 2012, residents in the neighborhood of Oakwood Beach quickly held a community meeting at the St. Charles Church in November of 2012 to discuss options for recovery (Rivoli 2013). Several newspaper articles have identified one resident in particular, Joe Tirone, as the main leader at this meeting in discussing buyouts as an option for homeowners instead of rebuilding after the storm after hearing about buyouts from a U.S. Small Business Administration agency personnel (King 2013, Rivoli 2013; Yuan 2013).

During the initial community meeting, Tirone asked the attendees if they would be interested in considering a buyout program through the state that would purchase property owners' homes on an individual basis. The majority of the 200 attendees at that meeting showed interest in participating in a potential buyout program (Beck 2014; King 2013; Koslov 2014; Rivoli 2013). Tirone during an interview about the initial meeting stated:

I knew Fox Beach had history of flooding, and it'd now become apparent that it was a dangerous place, so a buyout at a favorable

price started to look like a good deal...So I went to a meeting with my neighbors at this church. We were finished talking about food, blankets and essentials when I asked how many people would be interested in a buyout at pre-storm value. Everyone raised their hand. (Beck 2014)

From this initial community meeting after Superstorm Sandy the residents decided to form the Oakwood Beach Buyout Committee to gain government support (Brady 2015). The Oakwood Beach Buyout Committee created a community website called Fox Beach 165 to promote the buyout idea before they were able to gain official approval from the New York State's government. The Committee also setup a tent on the street corner in Oakwood Beach to encourage residents to learn about buyouts. The community group met on a weekly basis to gain consensus. Initially, Tirone and the committee reached out to the city government about buyouts, however the city wanted to promote redevelopment and rebuilding following Superstorm Sandy (Beck 2014). However, Tirone was able to meet with Governor Cuomo and present a written document of 185 residents who were interested in a buyout option (Beck 2014).

The Oakwood Beach Buyout Committee website published relevant newspaper articles and residents' personal letters stating why they wanted a buyout as an option to recovery after Superstorm Sandy in 2012. The dates for each letter are not published, however the date range is likely between the storm event date October 29, 2012 and February 25, 2013 when Governor Cuomo officially announced Fox Beach, an Oakwood Beach

neighborhood subsection, would be a pilot buyout program (Fox Beach 165 2017).

Overall, a theme of the personal letters that emerged was a fear of continuing to live in the neighborhood after experiencing flooding from Superstorm Sandy. Some of the letters reference that residents had known about previous floods in their neighborhood. However, one lifelong resident states she never expected the degree of damage from Superstorm Sandy and described the neighborhood after the storm event as a “war zone” (Fox Beach 165 2017). Figure 13 shows an aerial view of destroyed homes on Kissam Avenue. Other longtime residents, who lived in the area for more than 20 years, also expressed similar sentiments about feeling unsafe after Superstorm Sandy (Fox Beach 165 2017).



Figure 13. Aerial View of Kissam Avenue in Oakwood Beach following Superstorm Sandy. Source: Lyons 2012.

Another concern expressed in the letters was the chronic flooding the neighborhood experienced after heavy rain, high tides, and full moon events. Several residents were concerned that their neighborhood was not adequately being protected from the ocean. During Superstorm Sandy, the berm that provided coastal protection to the neighborhood was severely damaged. One resident expressed her doubt that the neighborhood would ever be safe in the future. Another resident had previously rebuilt their home after the Nor'easter in 1992 believing that proper protection measures would be put in place in the future. And yet another resident stated that in the years leading up to Superstorm Sandy the flood protection, a flood gate and berm, in the neighborhood had been "failing", which was one reason she believed the flooding was so terrible during the event (Fox Beach 165 2017). Besides the flood hazard, many residents also expressed concern about the yearly brush fires the neighborhood experienced. These two recurring hazards caused residents to feel unsafe in their homes making them seek a buyout from the government in order to relocate themselves and their families to a safer environment after Superstorm Sandy (Fox Beach 165 2017).

The deaths of three neighbors who lived close by in the neighborhood was also a traumatic experience for most of the six residents who wrote to the Oakwood Beach Buyout Committee website. One resident's father had died during Superstorm Sandy. Another resident who had experienced the 1992 Nor'easter remembers her three-year-old son having to be rescued

during flooding from that storm. Another resident during Superstorm Sandy was trapped with her husband for twelve hours in their attic crawl space after barely escaping the floodwaters that flooded her home within seconds. These experiences along with knowing that three close-by neighbors died during Superstorm Sandy contributed to why the neighborhood felt unsafe (Fox Beach 165 2017).

Residents were advocating for buyouts as a recovery option because they were no longer able to feel safe living in their homes. Although many longtime residents were strongly attached to their community and had close relationships with their neighbors, they still wanted to relocate. Some had already decided to permanently move to new locations after Superstorm Sandy. One resident explained the cost of paying rent plus their old mortgage was impacting her family's ability to pay for basic daily needs such as food. Buyouts were seen as a long-term solution for moving people away from the flood and fire hazards and to prevent deaths from future storms (Fox Beach 165 2017).

Overall, the residents' letters published on the Oakwood Beach Buyout Committee website show a small sampling of why residents were petitioning the State government to consider buyouts as an option for Oakwood Beach after Superstorm Sandy. Residents felt that the government needed to intervene because living in the neighborhood felt to them as a life or death situation. Ultimately, continuing to reside in the neighborhood jeopardizes the residents' safety. Residents were able to have the option to

relocate by having the choice of selling their homes to the government with federal funding at the pre-storm values. Without the government intervention, many residents felt they had to rebuild in their homes in a neighborhood they felt was no longer safe after Superstorm Sandy.

III. Buyout Participation: Influencing Factors

Support for Buyouts

Many residents living in Oakwood Beach had several reasons for accepting buyouts. Many people were interested in buyouts that were not a part of the state original Enhanced Buyout Areas as well. Reasons homeowners wanted to consider buyouts were financial, emotional, future security, and knowledge of flood risk from past. Financial concerns included issues of the cost of rebuilding their homes to new flood standards and the increased cost of flood insurance premiums that were expected to rise in 2013 following Superstorm Sandy. It wasn't until June 2013 when FEMA finally released new flood maps that increased the number of homeowners that would need flood insurance from 8,000 in 2007 to 11,200 in June 2013 (Wilson 2013). The city ultimately challenged these initial flood maps and FEMA revised them to include fewer homes in the zone requiring flood insurance (Sanders 2016). Figure 14 shows the various flood zones areas in Oakwood Beach.

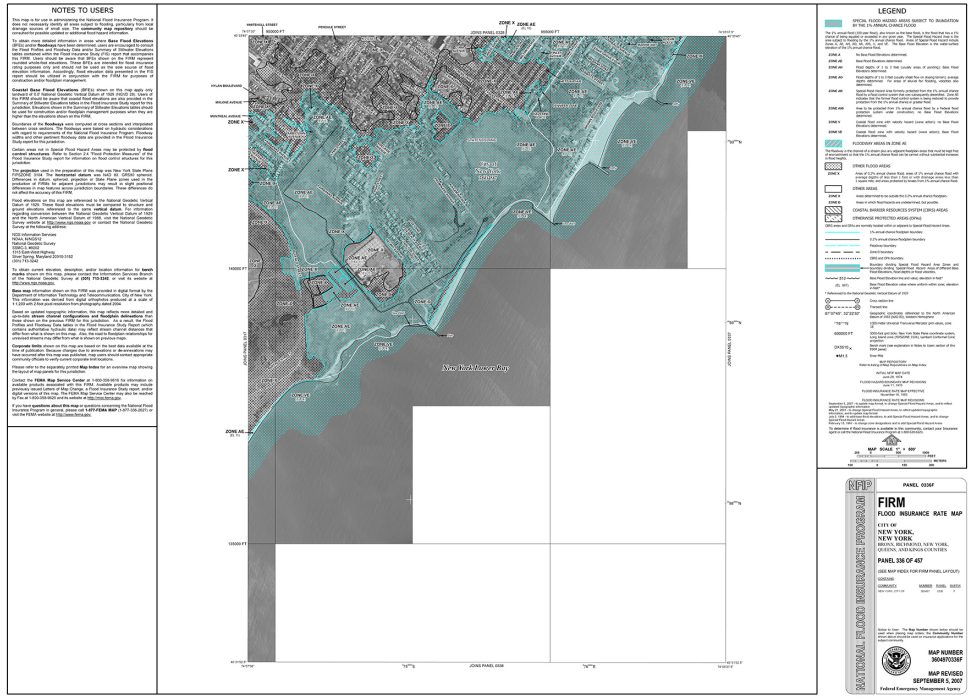


Figure 14. 2007 Flood Insurance Rate Map for Oakwood Beach Neighborhood. Note: Map is panel 336 of 457. Source: FEMA 2017.

Another financial factor was concern about the future value of their property given that flooding had now occurred, especially when considering passing on a property to a relative in the future. For example, residents experienced a drop in the median average sale price from \$330,000 to \$125,000 in the second quarter of 2012 due to the damage from Superstorm Sandy (Brady 2015, 92). Yet, the drop in prices in the market turned out to be temporary following Superstorm Sandy due to the high demand for housing in Oakwood Beach (Brady 2015).

Other financial concerns are that buyouts are a limited time offer. For example, at least one resident was concerned that it may be the only financially feasible time to relocate. Because the state was offering to purchase homes at the pre-storm value with some incentives, such as an

additional 5 percent of the property value, if they purchased a home within Staten Island, or 10 percent if they were located in an Extreme High-Risk Buyout area. The other alternative if someone wanted to relocate from Oakwood Beach was to rebuild his or her home and sell it on the market. However, the real estate market in Oakwood Beach as of August 2013 was described as at a “virtual standstill” due to homeowners having to wait for the City to release new building codes before they invested money in rebuilding their homes (Wilson 2013). Therefore, residents felt they had a limited time opportunity to take the government buyout.

Another concern was residents wanting the land to be returned to nature to create a buffer zone so future residents would not have to live through the emotional experience of another natural disaster. Emotions for those that were interested in buyouts included fear, fear of future flooding, and fear of bankruptcy. Also, chronic stress and concern for children’s safety were reasons people considered relocation as a response to Superstorm Sandy instead of rebuilding their homes. One resident said they did not want to go through the traumatic experience of Superstorm Sandy again.

Buyouts were first introduced and advocated for by local residents in Oakwood Beach for the state to consider as an option. Homeowners in other neighborhoods near Oakwood Beach also had to organize themselves and collect their own information on buyouts. For instance, Ocean Breeze and Graham Beach in Staten Island were also able to successfully advocate for

their neighborhood to be included in the NY Rising Buyout & Acquisition Program.

Non-support of Buyouts

Although many residents showed interest in a buyout option, some residents were not interested in buyouts at all. It is to be expected in any response to a disaster event that some residents will want to rebuild their homes and some will want to relocate to other areas where they feel safer. Some factors contributing to why residents wanted to remain in place and rebuild were financial concerns of relocating, such as finding equivalent and affordable housing, place attachment, and personal history or personal identity with the neighborhood. Also, some seemed not ready to make the decision as of October 2013. Additionally, some owners had already invested their own savings and personal time and energy into rebuilding after Superstorm Sandy before the buyouts were announced in February 2013. Therefore for some homeowners there was a reluctance to walk away from their investment.

III. Role of Local Government

Different levels of government supported the buyout program, including Staten Island representatives and a congressional delegation from New York. Governor Cuomo was very supportive of each community that wanted to participate in the buyout program and continued to draw

attention to communities over a long period of time. He first highlighted buyouts as an individual decision that homeowners wanted as an option in January 2013 during his 2013 State of the State Address, declaring:

There are some places where people may choose not to build back. I've talked to homeowners who have dealt with serious floods three, four, five times over the past few years. Many of them are saying I don't want to have to do it again. I'd rather buy out the parcel and move on. There are some parcels that Mother Nature owns. She may only visit once every few years, but she owns the parcel and when she comes to visit, she visits. We want to run a program that will provide the funds to buy out those homeowners who don't want to rebuild and want to move on to higher ground literally, and that would be smart. (NYSa 2013)

Governor Cuomo took the approach that some communities that want to relocate and are at risk for future storms should have the option. His vision was to enable homeowners in Staten Island, and other counties, to relocate by purchasing their homes. Buyouts are seen as response to a changed perception of the severity of weather events in vulnerable areas. By compensating residents for their property through the Buyout Program for homes located within the 100 year floodplain, Governor Cuomo had the ultimate goal of demolishing those homes and restoring wetlands or open space to buffer the other surrounding communities.

There is acceptance that in certain areas of New York, such as parts of Staten Island, extreme weather will continue into the future and will be exacerbated with climate change. Therefore, the response needs to be a new approach. Governor Cuomo stated in October 2014 on the second year anniversary of Superstorm Sandy that "Superstorm Sandy demonstrated that

New York as we know it faces a different reality – a reality of increasingly frequent extreme weather events that cannot be ignored...”(NYSf 2014). He believed that the buyout program could be a model for the rest of the country to learn from when recovering from natural disasters (NYSg 2014).

Since October 29, 2012 to the present, Staten Island has had two different borough leaders. Both Staten Island borough presidents have been supportive of the state buyout program in Staten Island. Former Borough President James Molinaro welcomed the buyout options for residents. Molinaro commented when referring to Staten Island residents stating, “They tell me, we’ve had enough of this, it happened once, it happened twice, it happened three times. I have 18,000 residents who live in the flood plain.” (Dawsey & Haddon 2013). When the new Staten Island Borough President James S. Oddo began his term in January 1, 2014, he had also been supportive of the Staten Island buyouts as a way to expand the stormwater management project known as Bluebelt. In April 5, 2014, when the Graham Beach neighborhood was included in the Enhanced Buyout Area within Ocean Breeze on Staten Island, he said, “Offering the residents of Graham Beach a buyout makes sense given its topography, lack of infrastructure, proximity to the Bluebelt and continued vulnerability to the forces of nature...” (NYSb 2014). In a press release from May 1, 2014 Borough President Oddo stated support for the acquisition of homes through the NY Rising Acquisition Component located in Midland Beach and New Dorp Beach in the East Shore of Staten Island:

I would like to thank the Cuomo administration for their recognition of how important it is to forever protect areas adjacent to our Bluebelt. Bluebelts work, and are necessary to help alleviate some of the flooding conditions that occur during even small rainstorms in flood prone areas. These properties, once acquired, will help provide a greater measure of protection for the Midland Beach and New Dorp Beach communities, which is so important for residents who have chosen to stay in those neighborhoods. I am hopeful that this funding comes soon so that our Bluebelts can be expanded as quickly as possible." (NYSc 2014)

Congressman Grimm, representing part of Staten Island, was given credit for helping push for congress to pass the Disaster Relief Act that approved approximately \$60 Billion for disaster recovery of which a portion was allocated to New York State. Representative Michael Grimm heard from residents in different communities, such as Midland Beach and Tottenville, that they would be interested in a buyout option from the state. Oakwood Beach in his opinion was a good option for buyouts because of the location stating, "literally, it is just surrounded by marshland. When you look on a map, you realize instantly this is not an area where people should have been living." (Athavaley 2013). At the November 19th press conference in 2014 the then Staten Island Borough President James Molinaro was supportive of the buyouts for Ocean Breeze neighborhood in Staten Island. A representative from Ocean Breeze Buyout Committee praised the governor for listening to their community that they wanted to have a buyout option (NYSg 2014). Governor Cuomo also during his address to the audience said that his administration was taking the approach to let communities decide if they want to relocate and then the State would support the efforts. (NYSg 2014)

Staten Island municipal officials have also advocated for redevelopment in some parts in low-lying neighborhoods for buildings that are more resilient and elevated. The redevelopment has been a part of the Build It Back acquisition program through New York City. For instance, in January 2013 Staten Island officials visited a New Orleans redevelopment that was built after Hurricane Katrina (Kusisto 2014). Since the current President Borough James Oddo began his tenure in January 2014, he began to strongly advocate for the redevelopment projects in Midland Beach and Ocean Breeze for residential housing (Kusisto 2014). However, some frustrated residents in Ocean Breeze of Staten Island were not interested in rebuilding and decided instead to pursue state buyout offers because of the slow progress of the city's Build It Back program (Kusisto 2014).

Although there was widespread support for buyouts on Staten Island from local government officials, in other boroughs of New York City local government officials were less enthusiastic about a buyout option following Superstorm Sandy. In the beginning of February 2013, officials representing neighborhoods that had storm damage during Superstorm Sandy didn't expect that many residents would be interested in buyouts although some could understand how some residents might be interested in buyouts because of the possible increase costs of flood insurance or difficulties reselling their homes after Superstorm Sandy. For instance, a New York State Senator representing Queens, Joseph P. Addabbo said only three residents out of 300,000 residents in his district in Queens, Rockaways, Broad Channel,

and Howard Beach that were interested in a state buyout program (Kaplan 2013). During an interview Senator Addabbo stated, “...I don’t buy into the buyout program so to speak. It is a loss of revenue for the city, and the neighborhood behind the neighborhood loses their storm buffer...” (King 2013). Also, on Long Island there was little interest in buyouts from public officials. A spokesperson for Long Island, Gordon Tepper reported that there was little interest from residents, although the borough had experienced severe damage similar to Staten Island from Superstorm Sandy (Dawsey & Haddon 2014). Instead rebuilding after Superstorm Sandy was the mainstream norm promoted by the local city leadership.

In June 2013, the local government and New York City’s Mayor Michael Bloomberg, in office from 2002 to 2013, designed an acquisition program through the NYC Build It Back program with a different policy objective than the NY Rising Buyout and Acquisition Program of Governor Cuomo’s state buyout program. The primary motivation for acquisitions was redevelopment of waterfront properties in select locations in order to create improved housing for flood resiliency (Brady 2015). The program was announced in February 26, 2013 during a City Council committee hearing. From the onset the program sought to use some of the properties to be redeveloped as long as they met federal flood standards. The NYC’s program was managed under the NYC’s Housing Recovery Office and \$700 million in funding came out of the \$1.77 billion allocated to New York City alone from HUD’s CDBG funding (Meriwether 2013; Schuerman 2013).

The Bloomberg administration took the approach that floodplains with development should not be converted to open space to create buffer zones, but instead to acquire flood prone properties for redevelopment. During a public event in June 2013, Bloomberg stated, “We cannot and will not abandon our waterfront. It’s one of our greatest assets. We must protect it, not retreat from it.” (Murphy 2015). The director of the Housing Recovery Office stated when referring to potential redevelopment of property acquisitions that “These are valuable properties...There is a limited amount of coastline properties.” (Schuerman 2013). In some areas of Staten Island and other boroughs of New York City the policy was to retain the housing stock and tax base with the acquisition program instead of taking the opportunity to create open space along the waterfront.

IV. Case Study Summary

Oakwood Beach Buyouts – Statistics

Many residents throughout NYC were interested in buyouts. For example, around 2,500 homeowners showed interest in buyouts during the pre-registration process launched by the state in order to understand who would need housing assistance (Siders 2013b, 10). Neighborhoods included in the Enhanced Buyout Areas for Staten Island are Graham Beach, Oakwood Beach, and Ocean Breeze as of April 5, 2014. For example, from September 2013 to April 5, 2014, 170 properties were purchased costing approximately \$70 million in the Oakwood Beach neighborhood on Staten Island. As of April

5, 2015, in addition to Staten Island borough, Enhanced Buyout Areas have also been designated in seven other neighborhoods in Suffolk County on Long Island (NYSb 2014).

In Oakwood Beach a total of 310 homes have been purchased in Oakwood Beach through the state buyout program (GOSR 2016). A total of 610 properties among all boroughs have been purchased through the NY rising buyout program totaling \$240 million through the Superstorm Sandy housing recovery (GOSR 2016). On average the cost of purchased homes was approximately \$400,000 based on a pre-storm value assessment (Blemaker 2014, Randall 2013). The first demolitions for the state buyouts began in January 2014 by the state (Blemaker 2014).

Post-Sandy - Recovery Initiatives

The New York State buyout program occurred in conjunction with a variety of recovery programs in the state following Superstorm Sandy. For instance, a massive coastal protection and flood control program costing \$1.9 billion is being led by the U.S. Army Corps of Engineers to protect 83 miles of coastline using green infrastructure and traditional techniques (NYSa 2014). The buyout properties from Oakwood Beach will be converted to a buffer zone with green infrastructure to expand the Bluebelt stormwater system. These will include tidal wetlands, earthen levees, a maritime forest, tide gates, a breakwater reef, and two miles of recreational open space for the public (NYSa 2014). Also, a seawall will be built from Fort Wadsworth to

Oakwood Beach neighborhood beginning in 2018 with 2021 as a final completion date (Shapiro 2016).

Another major recovery effort following Superstorm Sandy has been the NY Reimagining Home Construction Program, which helped residents in Staten Island and other communities rebuild after Sandy. The program has provided mortgage assistance to residents (NYSa 2014). NYC has also helped many residents in Staten Island through the Build It Back programs. For instance, as of February 20, 2017, 1,353 single-family household applicants had received checks and over \$23 million had been reimbursed for various Sandy recovery programs (NYCa 2017). There are many more recovery initiatives and program beyond the scope of this work that have taken place in a response to Superstorm Sandy since 2012.

Chapter Summary

The old housing stock located in low-lying areas along with inadequate infrastructure contributed to the massive destruction during Superstorm Sandy. The city and state have responded by enabling residents to freely relocate to higher ground. The choice to leave for some residents was easy and for others a harder decision. In Oakwood Beach, the close-knit community came together and was able to advocate from the bottom up for a buyout option. Their success came from a supportive local and state government that was receptive to hear the communities' wishes. In other parts of the city, such as in parts of Queens and Long Island, residents and

local officials have chosen not to take the buyout route and instead have rebuilt. Overall, the Oakwood Beach community was ready to consider buyouts because of many years of dealing with flooding and many ready to convert their land back into open space to help better buffer inland neighbors from the next major coastal storm.

Chapter Six: Discussion

There are many key lessons for other state governments from the Oakwood Beach case study and the New York and New Jersey buyout programs. Although buyouts have occurred across the country from various natural hazards, Oakwood Beach is unusual since it is one of the first coastal communities where the buyout concept was instigated by the homeowners in an urban setting. NYC is an unlikely location for whole neighborhoods to be converted back to nature because of natural hazards. However, Superstorm Sandy was a wakeup call for many homeowners in Oakwood Beach.

Buyouts: A Planning Tool for Climate Change Adaptation

Overall, buyouts are seen among interviewed New York government public officials as an important tool for planning for climate change. Buyouts could be used as a fundamental tool to facilitate retreat from the coast in the future². The use of buyouts will need to be targeted at a micro-scale level or neighborhood level. As seen in the Oakwood Beach neighborhood, in Staten Island, residents responded collectively to a changed environment. Many residents supported the program because they believed that their property should be used as open space to create a buffer zone for inland neighborhoods. The community in Staten Island also values open space. For example Staten Island is known as “the Borough of Parks” and approximately

² Interview with New York State public official, February 3, 2017.

25 percent of the landmass is parkland³. Therefore, residents who accepted state buyouts understood the value in creating more open space in Staten Island and that open space can serve as a buffer zone for other neighborhoods.

The New York City government believes buyouts in select locations are suitable for adapting to climate change, especially addressing sea level rise in the future, because having available land can support other resiliency projects, such as the levee project by the U.S. Army Corps of Engineers on Staten Island and the Raised Shorelines Program⁴. Otherwise, the land would need to be acquired through NYC in order to conduct certain projects. In coastal locations, such as Staten Island, buyouts are seen as one method to facilitate coastal restoration of the natural shoreline, which in the future, the local government could see the use of buyouts in resiliency planning to target the most vulnerable locations⁵.

Conflicting Local Government Perspective on Buyouts

From the perspective of decision-makers in public official roles, buyouts are perceived to have financial benefits and limitations. Overall, there is a belief that reducing the number of residents living in floodplains will ultimately reduce the costs of providing public services to those areas. In Staten Island, there is an understanding that savings will occur in the local

³ Interview with Staten Island public official, February 21, 2017.

⁴ Interview with New York City public official, March 1, 2017.

⁵ Interview with New York City public official, March 1, 2017.

municipal operating budget by reducing the frequency that first responders, such as emergency personnel, police and rescue crews, would need to respond to neighborhoods that are flooded⁶. Also, in vacant areas from buyouts, NYC is looking to see where they can find savings in the overall operating budget.

However, loss of tax revenue associated with buyouts has also been a concern among public officials in NYC. Some borough public officials in NYC, such as Suffolk County and Nassau County, it was reported have not considered participating in the state buyout program due to concerns of losing the residential tax base⁷. Public officials also cite the lack of interest from residents as the reason for not participating in the state buyout program. However, the NYC planning department did not conduct an economic impact analysis of the tax revenue loss from buyouts compared to other costs while the buyout locations were selected⁸. Ultimately, Oakwood Beach was only one neighborhood in a large city with a local government budget of approximately \$75 million that could absorb the loss in tax revenue from the buyouts (Freudenberg et al. 2016, 45).

In Staten Island, the state and city acquisition component of the NY Rising Buyout and Acquisition Program is seen as complementary to the state buyout component because it helps retain the tax base without eliminating the housing stock through redevelopment, while still creating

⁶ Interview with Staten Island public official, February 21, 2017.

⁷ Interview with New York State public official, February 3, 2017.

⁸ Interview with New York City public official, March 1, 2017.

open space in locations where development was unsuitable⁹¹⁰. Outside of the Enhanced Buyout Areas in the state buyout program, residents wanted to be able to sell their home at the pre-storm assessment value to the government. However, at times the city's rebuilding policy seemed opposed to the state's buyout policy to return certain neighborhoods back to nature. Governor Cuomo created the NY Rising Buyout & Acquisition Program because many residents wanted to relocate through buyouts. However, the city government at the same time was promoting redevelopment for flood prone areas.

Long-term maintenance of new open space from buyout areas was another concern in Staten Island and NYC when considering buyouts. Since buyouts are transforming private land into public land, the local municipality will be responsible for managing the land. For example, the NYC operating budget has reportedly been impacted by the state buyouts in Staten Island by having to reallocate capital funds to the Transportation Department and the Parks & Recreational Department to make up funding gaps¹¹. A comprehensive economic impact analysis should be conducted to determine the level of impact the state buyouts, such as in Oakwood Beach Neighborhood, have truly had on long-term maintenance costs of additional open space.

⁹ Interview with Staten Island public official, February 21, 2017.

¹⁰ Interview with New York City public official, March 1, 2017.

¹¹ Interview with New York City public official, March 1, 2017.

Buyouts Organized through Grassroots Approach

Residents were the drivers of having their community selected for buyouts through grassroots community activism. This type of approach is a bottom up approach rather than top down planning approach. The Oakwood Beach case study dispels the common belief in the literature that buyouts are primarily initiated by government officials then presented as an option for homeowners. The literature typically contends homeowners will need to be convinced to consider accepting a buyout offer from the government. However, the residents in Oakwood Beach came together first after Superstorm Sandy and collectively pursued buyouts as a community.

The Oakwood Beach buyouts had a high participation rate because homeowners were already organized in the past around flood issues. First, the community had previous experience coming together to discuss flood issues affecting their community, beginning in 1992 when residents started to advocate for flood measures through the Flood Victims' Committee. Second, immediately after Superstorm Sandy the community of Oakwood Beach came together, initially the neighborhood of Fox Beach, to discuss recovery options. This was a critical window of opportunity for building consensus among homeowners on buyouts. Essential to this process was the leadership of a local community stakeholder, Joe Tirone, who had already researched buyout programs in other communities. Community organizing along with other factors influenced homeowners in the Oakwood Beach neighborhood to accept buyout offers.

The Oakwood Beach neighborhood had strong social cohesion with longtime residents, in some cases more than 20 years, and some had already dealt with rebuilding after storms. Beginning in 1992 residents petitioned the local government to address the flood hazard in Oakwood Beach. However, the lack of action from the local government to erect flood measures in the past or replace the damaged berm contributed to frustration and feelings of abandonment among some residents. For instance, one committee member described Mayor Bloomberg as being out of touch with the residents' concerns stating "we know that he's shown himself as being disconnected to the community." (Athavaley 2013). Therefore, homeowners in Oakwood Beach were not anticipating getting official support for the buyouts from the New York City Mayor Michael Bloomberg in January 2013.

Interestingly, homeowners advocating for the buyout program through Oakwood Beach Buyout Committee did not demand that the local government address the flood and fire hazards in Oakwood Beach. For instance, the personal letters on the Oakwood Beach Buyout Committee website reflect a lack of trust in the government to properly protect the neighborhood from future disasters (Fox Beach 165 2017). Buyouts therefore were seen as a more appealing option than rebuilding to some residents in Oakwood Beach. Buyouts were seen as a good option because of the financial benefits for the homeowners.

Another factor that contributed to the success of the buyout program was it provided homeowners compensation for their homes that was viewed

by the homeowners as both equitable and generous with the additional incentives. Homeowners were compensated for their homes at the pre-storm value with additional incentives, such as a 5 percent of their homes pre-storm value if they purchased a home within the same borough. Overall, the buyout program provided financial certainty to residents that were facing uncertainty with the cost of rebuilding through the NYC Build It Back program and the potential additional costs to meet federal FEMA building standards.

Residents Experience with the Buyout Program

Binder et al. (2015) conducted a qualitative and quantitative analysis comparing two different communities post-Sandy. At the time of the study, buyouts had been officially announced as a government program through the state, however had not been implemented. Through their research, they found that residents were influenced at the “collective” or community level whether to consider accepting a buyout and relocating after Superstorm Sandy. A statistical analysis showed that race and community were significant factors influencing decision making to either accept or decline a buyout offer in the Oakwood Beach neighborhood. For example, for residents who identified as a race other than “white” there was a strong likelihood that they would accept a buyout offer (Binder et al. 2015, 187).

The community in Oakwood Beach was a resilient community with strong social ties, and this enabled the residents to take adaptive measures in

response to the disaster. Binder et al. (2015) characterize relocation as one of the most extreme responses to “an altered environment”. The study also suggests that although Oakwood Beach has many long-term residents, the average tenure for survey and interview participants being 19.3 years, however the stability of the community was potentially weakening in recent years with an influx of new residents into the community (Binder et al 2015).

Overall, the New York State approach to the buyouts rewarded proactive communities that were able to quickly mobilize after Superstorm Sandy. Communities had to first show in writing that the majority of homeowners were interested in buyouts. This reinforced the federal requirement that homeowners felt that participation was voluntary and not forced. Oakwood Beach became the pilot program for buyouts because they had strong community support and had strong community leadership that was able to leverage government resources.

Homeowners Challenged by Housing Recovery Programs

Following any natural disaster the role of government is generally to assist residents in recovery. Typically, many options are needed to address the diverse wants for residents. Some will want to rebuild their homes, while others may want to relocate to safer places. This was the case in New York State following the widespread damage from Superstorm Sandy. The state government created a wide range of housing programs, such as the NY Rising Buyout & Acquisition Program and the Build It Back Program, from the

recovery aid it received from the federal government. See chapter three, section two for details on federal funding following Superstorm Sandy.

However, in the case of Oakwood Beach and other neighborhoods, many residents were challenged by having to navigate the numerous housing program recovery options and evolving information on FEMA insurance rates (Rivoli 2013). For instance, a community organizer for the Great Kills and Eltingville neighborhoods, on the South Shore of Staten Island, commented that, “People in Great Kills and Eltingville have complained about how chaotic and confusing it is to get any information about buyouts.” (Lore 2013). See the appendix for a timeline from when various programs and initiatives took place. For residents in Staten Island, in particular Oakwood Beach, the delay in program announcements made decision-making to rebuild or accept a buyout more challenging. Homeowners were also having to decide to rebuild or relocate in the context of not knowing for long periods of time the city’s strategy for whether the city would eventually build coastal flood protections for their neighborhood (King 2013).

Homeowners in communities outside of Oakwood Beach on Staten Island felt some frustration with progress of the Build It Back program through New York City. For instance, approximately a year after Superstorm Sandy only one home in Staten Island had been purchased through the NYC Acquisition Program (Meriwether 2013). As a result, some residents on Staten Island turned to the state buyout program to be considered for buyouts. For example in Ocean Breeze, a neighborhood on the East Shore of

Staten Island, residents formed the Staten Island Alliance and got neighbors, approximately 90 percent of whom were interested, to sign a petition to show their support to the state for a buyout program after receiving lukewarm support from local officials when inquiring about the program. For instance, one local public official stated, “I think we can both agree that ship has sailed,” to a resident inquiring about the state buyout program as a possibility for Ocean Breeze (McEnery 2014). Because residents in Ocean Breeze organized and advocated directly with state officials their neighborhood was approved for the state buyout program on November 19, 2013 (NYSe 2013).

Buyouts have been a recovery option that residents in various parts of Staten Island have had to seek out. The lack of information on buyouts initially caused some homeowners to miss out on the opportunity to sell their home for the pre-storm value. For instance, before the buyout program was announced in February 2013 many residents had already spent large sums of money rebuilding their homes. One homeowner, located within the Oakwood Beach Enhanced Buyout Area, spent \$70,000 fixing damages from Superstorm Sandy on his home before February 2013 (Gregory 2013). There also has been criticism that some public officials did not adequately inform homeowners that a buyout was an alternative option to rebuilding.

New York & New Jersey Buyout Programs State-Level Buyouts

Recent successful buyout programs have been implemented at the state level. Other states can learn from the experiences of New York and New Jersey. New Jersey State was able to successfully coordinate buyouts by creating the Blue Acres Program within the pre-existing land acquisition program, Green Acres Program. One benefit was this buyout program was able to draw on funding that had already been allocated to Green Acres in addition to federal recovery aid (see chapter three, section two). New York State was able to create their buyout program by also tying the program to other housing recovery programs. Governor Cuomo's previous experience as Secretary of HUD from 1997 to 2001 and prior experience with buyouts in Jay, NY helped the state to successfully implement the buyouts (Powell 2010). Therefore, future programs can build on the successes of New York's and New Jersey's buyout programs.

Chapter Summary

Overall, understanding how buyouts are used in the real world provides many valuable lessons for future programs. First, buyouts are an important planning tool to consider for facilitating retreat in the context of climate change. The Oakwood Beach case study shows that retreat can happen at the neighborhood level and can complement other planning objectives, such as creating buffer zones to protect inland communities. Local governments have to consider the impact of buyouts from a budget

perspective. Buyouts are largely framed as a loss of tax revenue, however the local government may find savings in reduced costs from relocating residents from hazardous locations. And in many cases, residents want to have a buyout option instead of only rebuilding after a natural disaster. However, when residents have to navigate too many housing recovery programs they may get overwhelmed. Finally, the buyout state programs of New York and New Jersey serve as a valuable guide for other states considering buyouts in the future.

Chapter Seven: Policy Recommendations & Conclusion

Oakwood Beach is a unique case study that provides valuable lessons for other local governments. There are four main policy recommendations that could benefit other local governments considering buyout programs for their communities. Each community will need to determine on a case-by-case basis if buyouts are the best strategy to protect residents from flood hazards.

Recommendation One: Evaluate Buyouts with Benefit Cost Analysis

Currently, local governments and homeowners may not be motivated now consider a buyout program necessary in the absence of immediate pressures to address the issue, such as natural disasters or when sea levels submerge coastlines in the future¹²¹³¹⁴. However, as part of long-term climate change planning local governments have the opportunity now to investigate the feasibility of a buyout program in their communities. They can evaluate the impact of reducing the number of homes in floodplains through a benefit-cost analysis and determine how it would impact the local operating budget. The loss of tax revenue has been a concern among many public officials when considering whether a buyout program makes sense for their community and federal and/or state funding would be needed in order

¹² Interview with Newbury public official, February 17, 2017.

¹³ Interview with Newbury public official, February 23, 2017.

¹⁴ Interview with Newbury public official, March 1, 2017.

to pursue a buyout program¹⁵. However, there are costs associated with providing public services and infrastructure to homeowners in floodplains¹⁶. For instance, the costs associated with providing flood mitigation measures may exceed the costs associated with the state buyouts in many cases (Freudenberg et al. 2016). Also, long-term maintenance of acquired land through buyouts will need to be factored into benefit-cost analysis. In order for buyouts to be sustainable consideration must be given to how local governments will finance managing the open space from converted locations.

Recommendation Two: Incorporate Buyouts into Pre-Disaster Planning & Climate Change Planning

Buyout programs can be incorporated into pre-disaster planning now to take a more strategic approach to addressing future issues. Currently, buyouts are seen as a tool to be used mainly as a recovery tool after a disaster has occurred. This is mainly a product of funding requirements designed by the federal government, HUD and FEMA. However, local governments have the opportunity to learn from the Oakwood Beach Neighborhood case study to use buyouts to remove residents away from floodplains instead of waiting for the next big storm to hit.

In the future sea level rise will result in coastal inundation from daily tides, along with flooding from storm surges, and will likely be an issue every coastal community will need to address due to climate change. One possible

¹⁵ Interview with Newbury public official, February 17, 2017.

¹⁶ Interview with Newbury public official, February 17, 2017.

approach to preparing for SLR is through managed retreat. The scale and extent of retreat in each community will ultimately be decided at the local level, with consideration to local stakeholders concerns. Local governments may determine to retreat in some strategic locations, in which case a buyout program can be used as a tool to facilitate participation. Therefore, it is imperative that local governments begin to consider buyouts as one planning option when preparing for climate change.

Recommendation Three: Initiate Public Engagement on Buyout Option

As part of planning for climate change, local governments will need to begin to engage their communities about buyouts. Typically, buyouts are viewed as a top-down approach, however the Oakwood Beach case study shows that buyouts can be viewed positively when the local residents are involved in initiating buyouts. Therefore, it is important to understand the various levels of interest in buyouts through encouraging public discussion prior to flooding events. This allows homeowners sufficient time to consider if they would like to elevate their homes or relocate prior to severe coastal flooding, such as Superstorm Sandy. Immediately following a disaster can be a stressful and traumatic time for homeowners. For some, the thought of relocating to a new location can be an overwhelming process. Therefore, many homeowners may decide to rebuild by default without considering the long-term consequences of rebuilding in a floodplain if they have not been given the opportunity to think through all their options.

Recommendation Four: Offer Relocation Support Services

One way to improve participation rates in buyout programs would be to integrate relocation support services as a program component. A possible barrier for a homeowner to accept a buyout offer could be the issue of finding a new affordable home to move to. Local governments consider buyout programs as a one-time exchange between the seller, homeowner, and the buyer, government, without providing comprehensive relocation support services to homeowners.

One way to encourage acceptance of buyouts among homeowners is to help them find equivalent affordable housing within the same municipality. It is true that relocation within the same municipality is encouraged through incentives, such as in NY Rising Buyout and Acquisition Program. However, current federal funding does not require the state or local government using buyout programs to assist homeowners in finding a new home. A real estate advisor could assist homeowners participating in a buyout program. This added service would likely increase participation in buyout programs. The additional cost of a real estate advisor would need to be built into the buyout program, however this program component would likely be overall beneficial to the residents and the success of a buyout program.

One relocation support service that could improve buyout programs is integrating land swaps as an option for relocation services. For instance, at the local level in NYC has used this as a solution in a select number of cases to

address homeowner's concerns about finding equivalent affordable housing. This has encouraged homeowners to swap their land through the Build It Back Buyout Program¹⁷. Therefore, land swaps could be a program component of future buyout programs to support homeowners.

Further Research

In general, there needs to be further research into how various retreat planning tools can be used successfully in the future to address climate change. Especially, there needs to be a focus on social justice ramifications of residents resorting to using buyouts because they feel their concerns about flooding have been ignored in the past by government bodies that have delayed implementing flood measures or taken no action at all. The social and economic impact of land acquisitions, using different funding than buyouts, for redevelopment following a natural disaster should be studied further. This occurred in Staten Island in other parts of the borough outside of enhanced buyout areas where residents wanted to relocate but did not fall within the buyout locations through the NY Rising Buyout & Acquisition Program. Finally, research is needed to explore whether relocation services improve participation in buyout programs.

¹⁷ Interview with New York City public official, March 1, 2017.

Thesis Conclusion

Overall, Superstorm Sandy on October 29, 2012 forever changed the residents in Oakwood Beach. Their neighborhood was able to organize as a community to relocate through the NY Rising Buyout & Acquisition Program. The success of this neighborhood shows that residents may be the primary advocates for buyouts. Through the vision of Governor Cuomo and other government efforts, Oakwood Beach is now protecting other residents further inland through newly created wetlands and other green infrastructure initiatives. Staten Island is one of the few places where buyouts have happened on the coasts. However, in the future, buyouts will be an essential tool to relocate residents away from the coasts through retreat. Climate change is already changing our shorelines. More intense storms and sea level rise will expose more people around the country to flooding. Now is the time to take proactive steps to address this issue by creating buffer zones through buyouts. Buyouts can help save lives and protect homes while creating open space for the benefit of the entire community. Homeowners are more likely to willingly relocate in the future from hazardous areas if they are properly compensated for their main asset, their homes.

Appendix

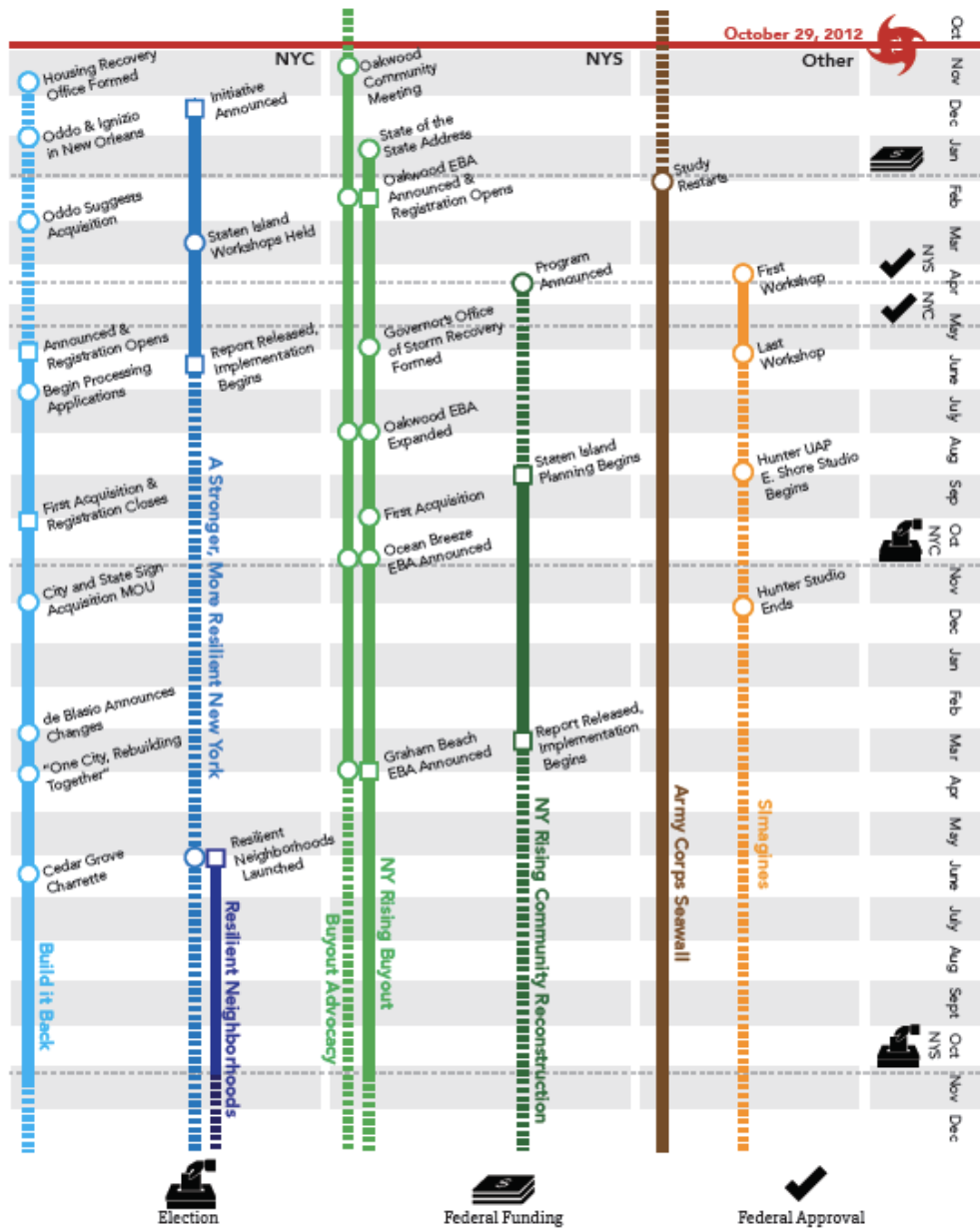
4. New Dwelling Units Completed in New York City, 1960-2015

Year	Bronx	Brooklyn	Manhattan	Queens	Staten Island	Total
1960	4,970	9,860	5,018	14,108	1,292	35,248
1961	4,424	8,380	10,539	10,632	1,152	35,127
1962	6,458	10,595	12,094	15,480	2,677	47,304
1963	8,780	12,264	19,398	17,166	2,423	60,031
1964	9,503	13,555	15,833	10,846	2,182	51,919
1965	6,247	10,084	14,699	16,103	2,319	49,452
1966	7,174	6,926	8,854	6,935	2,242	32,131
1967	4,038	3,195	7,108	5,626	3,069	23,036
1968	3,138	4,158	2,707	4,209	3,030	17,242
1969	1,313	2,371	6,570	3,447	3,768	17,469
1970	1,652	1,695	3,155	4,230	3,602	14,334
1971	7,169	2,102	4,708	2,576	2,909	19,464
1972	11,923	2,593	1,931	3,021	3,199	22,667
1973	6,294	4,340	2,918	3,415	3,969	20,936
1974	3,380	4,379	6,418	3,406	2,756	20,339
1975	4,469	3,084	9,171	2,146	2,524	21,394
1976	1,373	10,782	6,760	3,364	1,638	23,917
1977	721	3,621	2,547	1,350	1,984	10,223
1978	464	345	3,845	697	1,717	7,068
1979	405	1,566	4,060	1,042	2,642	9,715
1980	1,709	708	3,306	783	2,380	8,886
1981	396	454	4,416	1,152	2,316	8,734
1982	997	332	1,812	2,451	1,657	7,249
1983	757	1,526	2,558	2,926	1,254	9,021
1984	242	1,975	3,500	2,291	2,277	10,285
1985	557	1,301	1,739	1,871	1,939	7,407
1986	968	2,398	4,266	1,776	2,715	12,123
1987	1,177	1,735	4,197	2,347	3,301	12,757
1988	1,248	1,631	5,548	2,100	2,693	13,220
1989	847	2,098	5,979	3,560	2,201	14,685
1990	872	929	7,260	2,327	1,384	12,772
1991	656	764	2,608	1,956	1,627	7,611
1992	802	1,337	3,750	1,498	1,136	8,523
1993	886	616	1,810	801	1,466	5,579
1994	891	1,035	1,927	1,527	1,573	6,953
1995	1,166	1,647	2,798	1,013	1,268	7,892
1996	1,075	1,583	1,582	1,152	1,726	7,118
1997	1,391	1,369	816	1,578	1,791	6,945
1998	575	1,333	5,175	1,263	1,751	10,097
1999	1,228	1,025	2,341	2,119	2,264	8,977
2000	1,385	1,353	6,064	2,096	1,896	12,794
2001	1,617	2,404	6,036	1,225	2,198	13,480
2002	1,220	2,248	8,326	1,981	2,453	16,228
2003	1,473	2,575	3,798	2,344	2,589	12,779
2004 π	3,326	4,512	6,150	3,087	2,291	19,366
2005 π	3,012	5,007	5,006	4,526	1,942	19,493
2006 π	4,311	6,418	5,199	5,940	1,900	23,768
2007 π	4,422	7,109	7,498	5,907	1,446	26,382
2008 π	4,217	7,254	6,118	5,437	1,019	24,045
2009 π	2,964	7,522	8,110	4,969	887	24,452
2010 π	3,948	7,181	7,801	4,401	714	24,045
2011 π	3,417	4,728	2,375	2,852	612	13,984
2012 π	1,413	3,611	1,159	2,632	640	9,455
2013 π	1,272	3,948	3,126	3,854	482	12,682
2014 π	1,660	4,485	2,231	2,961	530	11,867
2015 π	2,396	5,324	2,986	3,110	541	14,357

Note: Dwelling unit count is based on the number of Certificates of Occupancy issued by NYC Department of Buildings, or equivalent action by the Empire State Development Corporation or NYS Dormitory Authority. Prior year's data may be adjusted and may not match prior reports.

π Data from 2004-2015 now includes Final Certificates of Occupancy (as with all other years) as well as Temporary Certificates of Occupancy data for the first time. Data will be updated every year to reflect the most current estimates.

Source: New York City Department of City Planning, Certificates of Occupancy issued in Newly Constructed Buildings.



Post-Sandy Planning and Acquisition Processes. Source: Brady 2015

Interview Guide: IRB Research Description

1) Research Purpose/Background:

After a review of relevant literature, I have learned that some communities (coastal and inland) located in floodplains have established buyout programs (i.e. property acquisitions) for purchasing homes vulnerable to flooding. The purpose of my research is to understand how buyout programs function in mitigating flood exposure to residents. Also, through my research I would like to learn about the motivations for the development of the buyout programs and how residents in the community were involved in the process. If time allows, I would like to learn why some communities located in floodplains have not created a buyout program for vulnerable homes. Please see the Thesis Proposal document for a comprehensive description on my topic.

2) Objectives:

The purpose of my research is to learn more about buyout program(s) (i.e. property acquisitions) at a local level and/or state level through conducting interviews. I seek to investigate my thesis research question, see Thesis Proposal document.

3) Subject Population:

- (1) Public Officials (local and state)
- (2) Other: Government affiliated Committee Members and Non-Profit Staff

4) Recruitment Process:

Recruitment will be conducted through email contacts or by phone call. The phone call will follow the same script as the email template. See Recruitment Process – Email Template below.

5) Consent Process:

Verbal consent will be requested at the start of each interview, see Interview Guide.

6) Method for Conducting Interviews:

- (1) Initial recruitment email, with Research Informational Sheet document attached, will be sent out to each interviewee after IRB approval received. If individual willing to interview, then interview will be scheduled according to interviewee's availability. If requested by interviewee, I will email a copy of the interview questions exactly as listed below in the interview guide.
- (2) Interviews will take place either by phone or video conference call. Interviews will not be recorded. Consent for speakerphone will be asked of each interview. I will take handwritten notes of each interview discussion. I ask at the beginning of the interview if the interviewee has any questions on the Research Informational Sheet document.
- (3) Time duration for each interview per person will be between 30 min to 1 hour.

Recruitment Process – Email Template

Good Afternoon/Morning [Person's Name],

My name is Anna McGinty and I am a graduate student in the department of Urban and Environmental Planning and Policy at Tufts University. I am working on my master's thesis on state-run buyout programs (i.e. property acquisitions) and am interested in [location name] to gain knowledge for my case study and thesis as a whole. Please see the attached document titled "Research Informational Sheet" for more information on my research purpose, interview consent details, and contact information for the Tufts University Institution Review Board.

Would you consent to participating in an interview with me for my research? I will follow up with a phone call at your office listing within one week if I do not receive a reply to this email. If you are interested in participating please let me know your available times to schedule an interview.

Please feel free to contact me on my cell phone at 978-760-9654 if you have any questions or concerns. If you have any recommendations of other staff that would be interested in speaking with me please let me know.

Sincerely,
Anna McGinty

Interview Guide

Interview Script:

Thank you for agreeing to interview with me. I would like to begin our interview with answering any questions you may have about my research and how this interview will be used in my published thesis. Do you at this time have any questions on the Research Informational Sheet document or other questions before we begin?

Confidentially Statement: Your name and job title will be kept confidential and not used in my published thesis or other related written materials.

Verbal Consent:

This interview is not being recorded. However, I would like to turn my phone on to my speakerphone in order to take notes, is that acceptable with you?

Please Note: Participation in the interview or responding to any particular question is voluntary. If any questions asked during our interview make you uncomfortable, you have the right to not answer the question. If that may be

the case during our interview can you let me know and indicate if we may proceed with the other interview questions?

Notice to IRB:

Given time constraints of each interview, not all interview questions may be asked of the interviewee.

Interview Questions:

1. What has been the main catalyst or single factor, such as a person or event, which prompted people to begin to think about property acquisitions?
2. If this has not happened yet, is a person or event needed in order for residents to consider property acquisitions?
3. How is or would a buyout program (i.e. property acquisitions) be funded?
4. How has the local government budget been or would be impacted by a buyout program (i.e. property acquisitions)?
5. How has the local government budget been impacted by flood mitigation measures in your community? Are long-term costs (i.e. public services, public safety, infrastructure maintenance) to manage floodplains a concern to the local government?
6. How has consensus among the community members for a buyout program been gained?
7. For instance, was there a town vote on pursuing a buyout program?
8. How has the local government facilitated communication among property owners that would be impacted by a buyout program?
9. Would or did the local government (municipality) consider property acquisitions before there was a major flood event?
10. Has there been any pre-analysis of the impact of property acquisitions on the community and/or for land use planning?
11. If so, has it been influential in considering property acquisitions now or in the future?
12. Was research conducted on the experience of other town buy back plans?
13. If so, what resources were particularly useful?
14. What level of community input and/or concerns has there been for deciding the land use after the properties were acquired?
15. What was the community input and/or concerns prior to the property acquisitions were began?
16. How would you describe the residents' support of the buyout program (i.e. property acquisitions) in the neighborhood(s) where properties are acquired?
17. How involved have the local residents been in the buyout process? (Community meetings, etc.)
18. How do you believe the public and/or residents overall will benefit from the buyout program?

19. What benefits or limitations are there to surrounding neighborhoods and/or residents adjacent to property acquisitions?
20. What have been the constraints or limitations to the public and/or residents of the buyout program?
21. What would you recommend to improve the buyout process overall for residents and government officials?
22. Would certain government incentives, such as relocation within the municipal boundary, be needed to encourage more residents to participate in property acquisitions?
23. What type of relocation support would be helpful for residents considering participating in a buyout program (i.e. property acquisitions)?
24. Do you consider property acquisitions suitable for mitigating future climate change related events or conditions in the future?
25. Are there any other questions that I should have asked that you would like to discuss?
26. How would you describe the coordination process and communication among the other branches of government for the buyout program?
27. Why were some other coastal locations not selected for the buyout program?
28. In the future, would coastal locations be considered for buyout programs in planning?
29. How has the buyout program been impacted by other recovery efforts in the area?

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