

Buyouts as Resiliency Planning in New York City
After Hurricane Sandy

by

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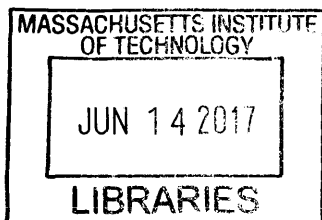
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ABSTRACT

Land buyout programs may be used to significantly improve climate resilience by creating a protective ecological buffer area to protect land at high risk of flooding. This thesis assesses the success of the New York State land buyout on the East Shore of Staten Island in achieving this resilient outcome. The New York State buyout program was created after Hurricane Sandy in October 2012 in response to pressure from landowners who had been flooded in the storm. New York City declined to participate in a buyout in response to Sandy but offered to acquire storm-damaged homes in other areas where the New York State buyout was not offered. Through the New York City program, acquired properties would be resold to private entities at auction. In contrast, the New York State program, which purchased 37 acres of land within the 100-year floodplain, was legally bound to hold the properties bought through their program as open space in perpetuity. The state was able to promise former residents that their land would become a buffer for inland areas, increasing resilience along this vulnerable coastline. I analyze the success of the state program in achieving this goal by assessing participation and attrition rates within designated buyout areas, as well as reasons for attrition. I find that the lack of coordinated goals and agreed-upon tools prevented New York Rising from successfully achieving the highest measure of resilience: creating a coastal buffer area to protect residents from sea level rise and future flooding.

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Thanks also to my classmate Dennis Harvey, who discovered the hidden data that made this analysis possible.

Acronyms

BMP	Best Management Practices
CDBG-DR	Community Development Block Grant - Disaster Recovery
CMP	Coastal Management Plan
DCP	New York City Department of City Planning
DEP	New York City Department of Environmental Protection
DPR	(also "Parks") New York City Department of Parks and Recreation
FEMA	Federal Emergency Management Agency
FIRMs	Federal Insurance Rate Maps
FMV	Fair Market Value
GOSR	New York State Governor's Office of Storm Recovery
HCR	New York State Department of Homes and Community Renewal
HPD	New York City Department of Housing Preservation and Development
HUD	United States Department of Housing and Urban Development
IPCC	Intergovernmental Panel on Climate Change
LDGMA	Low-Density Growth Management Area
NACCS	North Atlantic Coast Comprehensive Study
NFIP	National Flood Insurance Program
NPCC	New York City Panel on Climate Change
NYC	New York City
NYS	New York State
ORR	New York City Mayor's Office of Recovery and Resiliency
pFIRMs	Preliminary Flood Insurance Rate Maps
SIRR	Special Initiative for Rebuilding and Resiliency
USACE	United States Army Corps of Engineers

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Chapter 1: Introduction

In this thesis, I pursue the question of whether buyout and acquisition programs in post-Hurricane Sandy New York City have created progress towards climate resilience in the targeted areas. After Hurricane Sandy made landfall in New Jersey on October 29, 2012, residents whose homes were completely destroyed in the storm or whose loved ones had drowned were eager to leave the area and start again somewhere new. These residents also hoped to ensure that their land would never again be used for housing, and that their efforts would create long-term resilience improvements in this low-lying coastal area. On the East Shore of Staten Island, residents organized to create a buyout program that would ensure these effects. Before using this program as an example from which to build future coastal resiliency programs, it is important to understand its effectiveness in increasing resilience in these areas. Ideally, taking a critical look at existing programs will help to shape future use of buyouts as a tool for resilience planning, both in New York and elsewhere.

In assessing the outcome of this case, I use a scale of incremental resilience in which the most resilient outcome is the creation of a coastal buffer zone that is constructed to protect inland areas from flooding, is under the long-term management of a government entity, and is contiguous and large enough to have a significant effect. Steps towards this goal, whether physical or organizational, are improvements in the area's resilience. The three factors I consider are 1) the fair treatment of residents in providing a "way out" if and when they choose to leave, 2) consolidation of the land into an ecological buffer area, and 3) long-term management of the land that is coordinated across levels of government in the interest of providing protection from coastal flooding.

NY Rising was able to make progress on the first two of these goals, but despite nearly five years of work on this effort, has not publicly demonstrated progress towards a long-term maintenance and management plan for the bought-out land. The program, which has purchased 37 of 209 acres in designated buyout areas, is rapidly demolishing buildings on these parcels and has committed to maintaining the land in the short term. However, the program was not intended to manage the land long-term, and attempting to develop a plan for disposition of the acquired properties. Through this analysis, I find that NY Rising, while it has been successful in providing financial support to flood victims in targeted areas, has been unable to serve all interested residents and has suffered from attrition, which has led to “checkerboarding” of acquired land. As a result, the land acquired through NY Rising does not form an effective buffer area to protect inland residents. The City of New York has coordinated with federal agencies to develop projects that enhance coastal resiliency within the NY Rising targeted acquisition areas but the city appears to have worked around the state acquisition project and, in doing so, has undermined the success of that program. This lack of coordination across levels of government sets the program back on its progress towards a resilient outcome for the East Shore of Staten Island.

Chapter 2: Background

When Hurricane Sandy made landfall on October 29, 2012, it threw into sharp relief the inadequacy of coastal climate adaptation in New York City, a comparatively wealthy, progressive city, which had already been under the leadership of a climate-conscious mayor, Mayor Michael Bloomberg, for over ten years. With a robust sustainability program under the umbrella of PlaNYC, first published in 2007, the city had been planting trees, supporting active transportation like walking and biking, promoting green and blue roofs, and was slowly expanding permeable pavement and stormwater retention programs. Despite all of these sustainability efforts, the city was revealed to be inadequately prepared to protect the coast from storms or flooding due to sea level rise. When Hurricane Sandy¹ occurred, dozens of people died and critical infrastructure was crippled. Recovery from the storm is still ongoing, nearly five years later. Hurricane Sandy pivoted the city's long-term planning from a "sustainability" framework, in which the city's contribution to greenhouse gas emissions would be minimized, to "resiliency," in which the damage due to climate change effects would be minimized. (Pirani & Tolkoff 2014) Robust planning efforts have been launched by agencies at every level of government and by non-governmental organizations in reaction to the storm. Implementation of these plans and formulation of a unified vision of coastal protection are still not complete. The case of overlapping city and state climate adaptation programs

¹ Hurricane Sandy was not technically a hurricane when it made landfall, but a "superstorm," due to the merging of two weather systems.

within the city limits provides a rich illustration of what happens when resiliency efforts at different levels of government are not well coordinated.

New York City Context

New York City is a low-lying and densely populated coastal city, but its main population centers are protected from storm surge by relatively low-density outlying areas, including the area in question on Staten Island's East Shore, as well as Coney Island and the Rockaways. While many of the 520 miles of shoreline in the city have been built up with hard edges like seawalls and bulkheads, the areas that are most exposed to wave action (i.e. which have a large "fetch," or distance to the nearest shoreline) are generally unprotected by hardening. (City of New York 2013a) These sandy, gently sloping shorelines that face the most extreme wave force have a history of flooding and are all formally identified as at-risk areas through FEMA's National Flood Insurance Program (NFIP). Flooding in many instances has exceeded the 100-year floodplain (the area that has a 1% chance of being flooded in a given year) as indicated by the NFIP maps, shown in Figure 4. Not only did flooding occur farther inland than expected, these vulnerable areas experienced some of the highest storm surge levels in the whole city. (See Figure 3.)

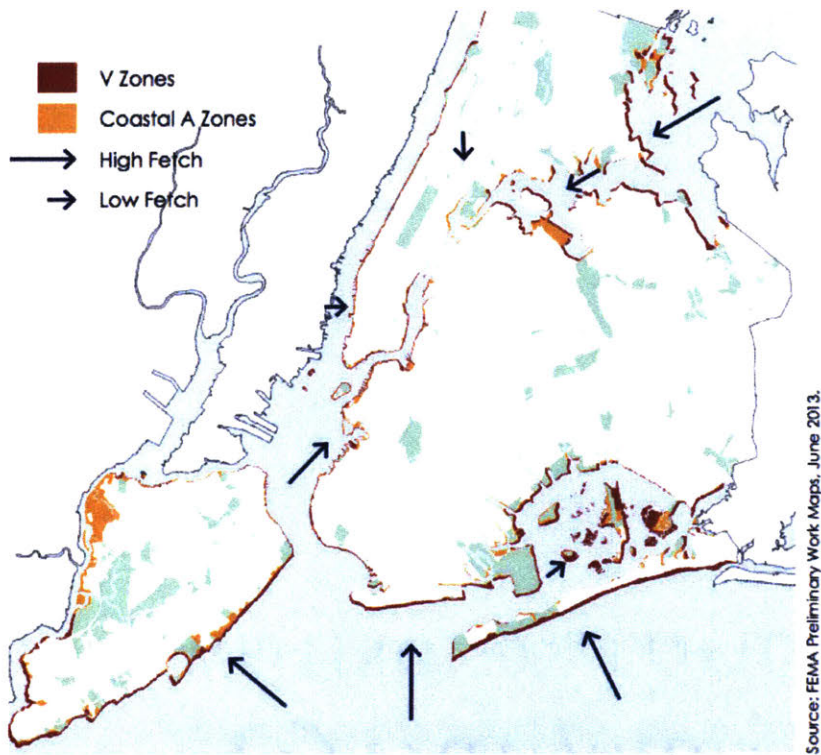


Figure 1: Exposure to Wave Force, Source: City of New York 2013 Urban Waterfront Adaptive Strategies Report, pg 17

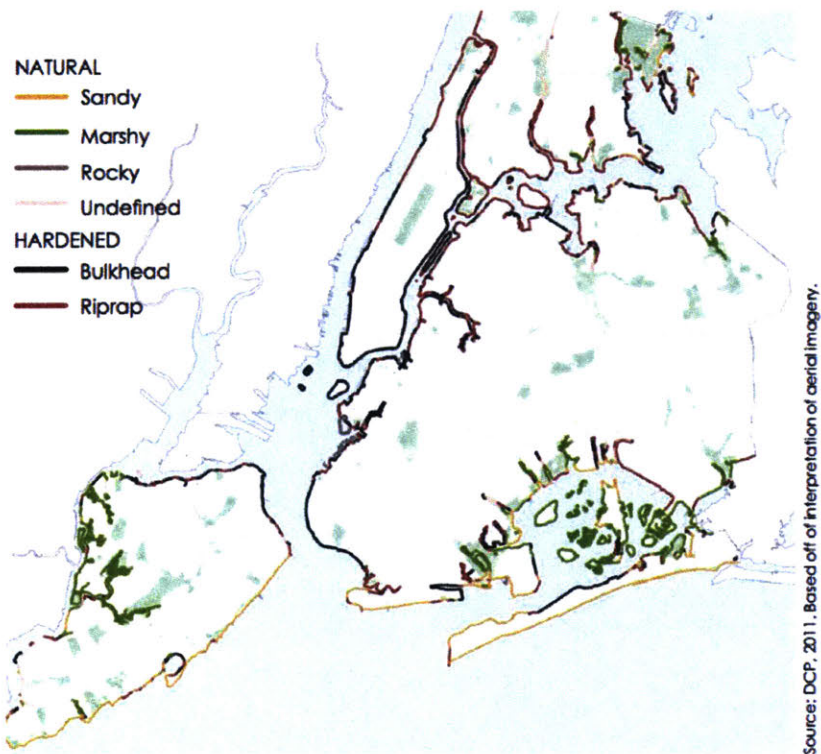


Figure 2: Shoreline Condition, Source: City of New York 2013 Urban Waterfront Adaptive Strategies Report, pg 17

One of the primary tools for communicating flood risk to residents of flood-prone areas is through flood insurance rates. (Freudenberg 2016) The National Flood Insurance Program (NFIP), created in 1968, ensures that all homeowners in the 100-year floodplain carry flood insurance. FEMA develops formal maps identifying vulnerable areas, called Flood Insurance Rate Maps (FIRMs), that form the basis of this program. FIRMs are intended to be updated regularly, but before Hurricane Sandy, they had only been incrementally updated – not significantly updated – since 1983. As a result, the maps underestimated the impact of flooding from Hurricane Sandy. (City of New York n.d.) At

Peak Storm Surge Elevations During Sandy		
Location	Time Oct. 29, 2012	Water Level in Feet (NAVD88)
1. Tottenville, Staten Island	8:38 p.m.	+16.0
2. Great Kills Harbor, Staten Island	8:52 p.m.	+13.2
3. South Beach, Staten Island	8:23 p.m.	+15.0
4. Sea Gate, Brooklyn	8:23 p.m.	+13.3
5. Gowanus Canal, Brooklyn	9:04 p.m.	+11.1
6. Broad Channel, Queens	9:18 p.m.	+10.4
7. Howard Beach, Queens	9:23 p.m.	+11.2
8. Whitestone, Queens	10:06 p.m.	+10.6
9. World's Fair Marina, Queens	10:06 p.m.	+10.4
10. Inwood, Manhattan	10:06 p.m.	+9.5
11. The Battery, Manhattan	9:24 p.m.	+11.3*

* Equivalent to 14 feet above Mean Lower Low Water (MLLW) Source: USGS, NOAA

Note: This chart calculates all elevations using the national reference standard known as NAVD88, which establishes a consistent base measurement point from which elevations are determined, unlike other local references to sea level. Press accounts or other sources are known to be reported using many reference standards and require conversion (see Chapter 2, Climate Analysis).

Figure 3: Peak Storm Surge Elevations Source: City of New York, 2013 Special Initiative for Rebuilding and Resiliency Report

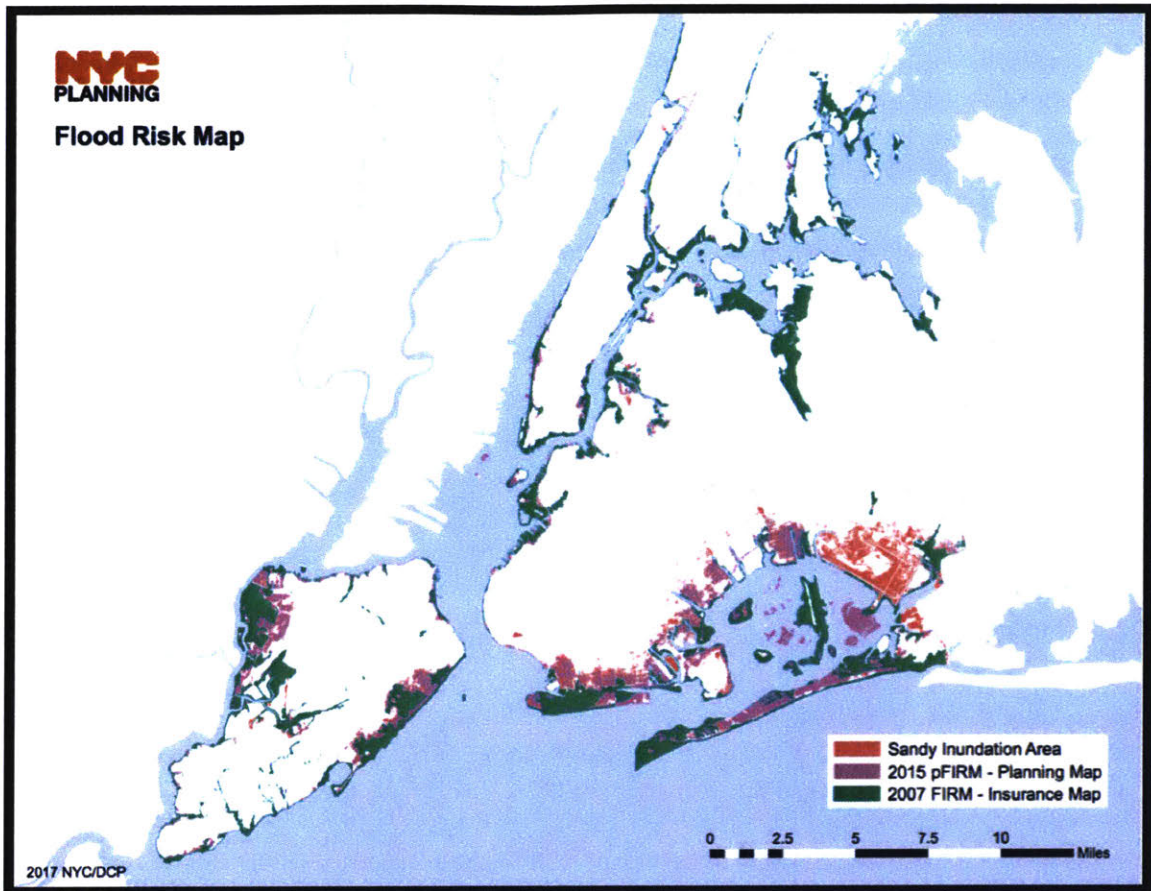


Figure 4: Updated FIRMs and Sandy Inundation, Source: City of New York

the time of Hurricane Sandy, flood estimates were based on the 2007 Effective FIRMs, which had been incrementally updated based on existing conditions but did not take into account projected future conditions, including sea level rise and subsidence.

(Freudenberg 2016) In 2015, FEMA underwent a remapping process after Hurricane Sandy and released updated preliminary FIRMs (pFIRMs). The City of New York filed a technical disagreement with the new maps, arguing that FEMA’s analysis caused them to overestimate at-risk areas. (ORR, 2015) The city is currently working with FEMA to issue new FIRMs. (City of New York n.d.)

In New York City, many coastal areas, including the East Shore of Staten Island, my study area, were already “down-zoned” before Hurricane Sandy hit, although this was not

intended to protect residents from climate-related threats, but rather to maintain the character of the neighborhoods and prevent additional development. (Laskow 2014) This zoning tool created Lower Density Growth Management Areas (LDGMA), in which development is limited, parking requirements are relatively high, and front, back, and side yards are mandated. Staten Island was designated a LDGMA when the text of this zoning amendment was approved on January 18, 2011. (DCP n.d.)

On the East Shore of Staten Island, the character of the neighborhoods was primarily small single family beach bungalows on very small lots. These buildings had been converted into year-round residences over time but were still vulnerable due to their low elevation and materials that are not compliant with current building standards. After Hurricane Sandy, the city developed new zoning for flood-hazard areas, and homes rebuilt through the city program were required to be rebuilt to these standards.

Climate Change Effects in New York City

The city has already experienced measurable climate change effects since 1900. In that time period, sea level, mean annual precipitation, and mean annual temperature have all risen:

Measure	Time Period	Total Increase	Average Increase by Decade
Mean annual temperature	1900-2013	3.4° F	0.3° F
Mean annual precipitation	1900-2013	8 inches	0.8 inches
Sea level	1900-2015	1.1 ft	1.2 inches

(Source: Horton, 2015)

Sea level rise in the New York City area is greater than the global average because of land subsidence and local water temperature. Future sea level rise in the NYC area is projected to continue to be higher than the global average, and is very likely to accelerate over time.

Timeframe	Low Estimate	High Estimate
2050s	11 in	21 in
2080s	18 in	28 in
2100	--	72 in

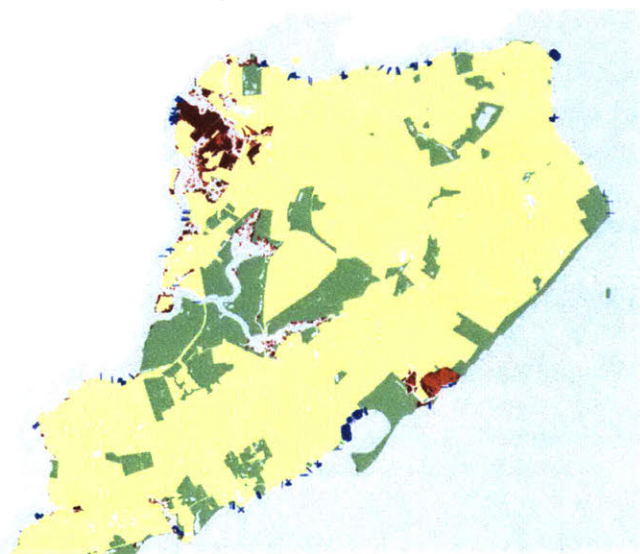
Note: These estimates use a base sea level of 2000-2004. (Source: Horton 2015)

When it comes to projecting future flooding, both sea level rise and storm intensity are important. The NPCC 2015 Executive Summary states that “projected changes in the frequency and intensity of coastal storms are uncertain at local scales.” The authors also assert that, “It is virtually

certain that sea level rise alone will lead to an increased frequency and intensity of coastal flooding as the century progresses.” (Rosenzweig & Solecki 2015, 11)

Only a few neighborhoods of the city are projected to

SIRR Sea Level Rise Analysis



■ High Tide with 2020 Sea Level Rise Projections (High-End)
■ High Tide with 2050 Sea Level Rise Projections (High-End)
— At Risk Shorelines

Figure 5: High Tide Inundation Projections, Staten Island.
Source: SIRR Chp 3, 2013

endure daily flooding at high tides by 2050, but these areas include the Oakwood Beach buyout area, as well as parts of Edgemere, in the Rockaways. (City of New York, 2013) If these areas experience daily flooding, they will become uninhabitable.

New York City Climate Planning 2007-2012

Michael Bloomberg, former Mayor of New York City, undertook an extensive sustainability-focused planning effort behind his signature package of sustainability programs, PlaNYC, which was published in 2007. (Rosenzweig et al. 2011) PlaNYC was a forward-thinking plan for an American city, one of the “first generation” of municipal climate change plans. (Wheeler 2008) New York City’s sustainability efforts with regards to city infrastructure were praised for being comprehensive and scientifically-based: “New York City’s climate change adaptation efforts are similar to the efforts in other cities, but they offer a comprehensive set of specific contributions including the design of a multi-jurisdictional stakeholder-scientist process.” (Rosenzweig et al. 2010) However, PlaNYC focused on sustainability efforts like reducing the city’s carbon footprint, and it only began to set in motion plans for coastal climate change adaptation. Although it set progressive sustainability and emissions targets, PlaNYC did not include a complete coastal adaptation plan. Instead, the administration committed to developing a coastal plan and convened the Climate Change Adaptation Task Force to lead that initiative. (Bassett & Shandas 2010)

The New York City Panel on Climate Change (NPCC) was created alongside the Adaptation Task Force by then-Mayor Bloomberg in 2007. Since then, NPCC research has formed the scientific basis for climate change policy in the city, supporting global

projections from the Intergovernmental Panel on Climate Change (IPCC). The NPCC has continued to conduct important and impactful research across mayoral administrations.

NYC Climate Planning after Hurricane Sandy

After Hurricane Sandy, the city kick-started a long-term strategy for climate change adaptation for the areas that experienced damage during the storm. That strategy was published in 2013 as the Special Initiative for Rebuilding and Resiliency (SIRR) Report. That report was the city's first comprehensive adaptation plan for its coastline. (City of New York 2013)

SIRR introduced a robust program of resiliency improvements in the city, from economic and social resiliency to infrastructure resiliency. In terms of coastal protection, the report promised to raise coastal elevations, improve the city's process for managing coastal infrastructure, and introduced a broad spectrum of coastal protection projects. It included a "full build" option which incorporated an enormous seawall across the entire New York harbor. The report did not include buyouts or coastal retreat in any form. Mayor Bloomberg ended his introductory letter to the SIRR with this mandate: "We are a coastal city—and we cannot, and will not, abandon our waterfront." (City of New York 2013, 3)

With the change of mayoral administration from Bloomberg to de Blasio in 2014, government priorities shifted from infrastructure-focused to resident-focused. The Mayor's Office debuted OneNYC, a plan to replace PlaNYC, and published the details in a report called *One New York: The Plan for a Strong and Just City* in April of that year. OneNYC continued several of the programs started through PlaNYC and added sections on coastal protection and resiliency. In April of 2014, the de Blasio administration also

created the Mayor’s Office of Recovery and Resiliency to streamline post-Sandy work and promote future plans for resiliency. (City of New York, 2014)

The Mayor’s Office of Recovery and Resiliency (ORR), along with the Department of City Planning (DCP) continue to push for more resiliency planning in the city, and have introduced new sections of zoning code to encourage improved resiliency for buildings in the 100-year floodplain. In at-risk areas, these regulations relax some of the height restrictions to allow for elevation of buildings, and they limit the amount of dwelling space allowed at or below the design flood elevations. (See Figure 6.) DCP and ORR,

along with the city’s Department of Housing Preservation and Development (HPD), have also launched a variety of resiliency planning efforts, including one called Resilient Neighborhoods, spearheaded by DCP,

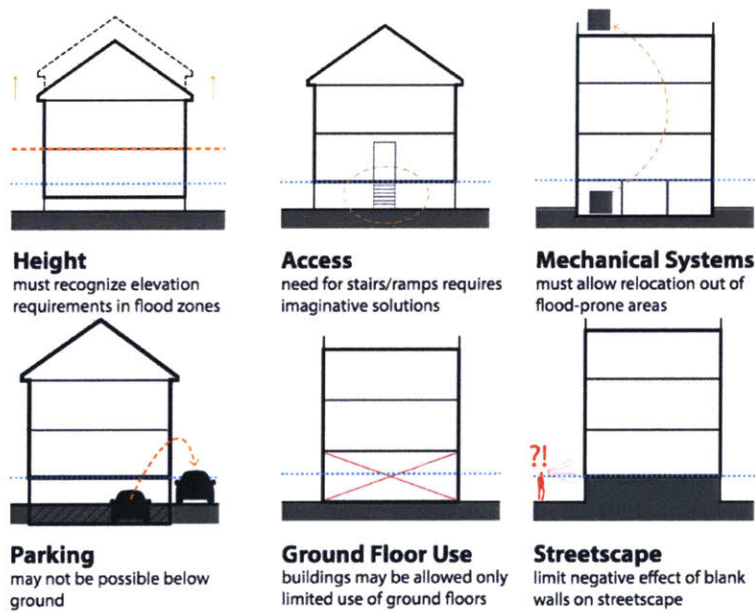


Figure 6: Changes to Zoning in Flood-Risk Areas. Source: NYC DCP Climate Resiliency 2013

which considers the needs of individual at-risk neighborhoods and has begun working with local stakeholders to develop targeted plans. (City of New York 2017)

State and Federal Climate Planning

At the federal level, the primary driver of coastal adaptation planning is the Coastal Zone Management Act of 1972. (Siders 2013, 22) This act designated coastal zones and

required participating states to develop coastal management plans (CMP). Once these are in hand, states have the power to certify or deny certification of CMP compliance to federal-level programs, which give the state considerable power over their coastlines and a tool to push back against federal regulations that affect coastal areas. New York State's CMP was completed and submitted in 1982. (New York Dept. of State 1982) New York State's climate planning until Hurricane Sandy was mainly focused on emissions reduction, not coastal issues. In 2009, then-Governor Paterson signed Executive Order 24, which set a goal of reducing emissions 80% below 1990 levels by 2050 and mandated the development of a Climate Action Plan. (Dept. of Environmental Conservation 2009) An interim report was issued in November of that year, focusing on emissions reduction, but progress slowed once the gubernatorial administration changed, and Governor Cuomo's office was reported in 2015 to say that finalizing the Climate Action Plan was not a priority. (Crean 2015)

The shift from sustainability planning to resiliency planning at the New York State level also began after Hurricane Sandy. Governor Cuomo created the NYS2100 Commission on November 15, 2012 to assess the state's resiliency and to issue recommendations for improvements to infrastructure resiliency. (NYS2100 Commission 2013) Co-chaired by Judith Rodin, President of the Rockefeller Foundation, the Commission issued a report that included a set of broad recommendations, including improvements to coastal infrastructure such as tide gates and encouraged building back damaged infrastructure in a more resilient way. The recommendations did not specifically lay out a plan for coastal areas and did not mention retreat.

New York State's planning for climate resiliency has mainly been expressed through guidance provided to local governments so that climate resiliency may be incorporated into local rulemaking. For example, Governor Cuomo signed into law the Community Risk and Resiliency Act in September of 2014, which required sea level rise projections to be incorporated into siting and permitting for infrastructure projects that would be approved by state agencies. The law also directed state agencies to develop guidance for local lawmakers to encourage them to incorporate climate change into their local legislation. (New York State n.d.) The first public stakeholder meeting associated with this work was held on November 16, 2015. The state website documenting the current status of this work still asserts that the completed documents will be circulated in 2016 or 2017 but does not show further work on the issue aside from the initial stakeholder meeting.

On a separate track, New York State published *New York State Climate Smart Communities: Climate Smart Resiliency Planning* in October 2014, which was modeled on the New Jersey Department of Environmental Protection Coastal Management Office's report called *Getting to Resilience: A Coastal Community Resilience Evaluation Tool*. Like the intended outcome of the Community Risk and Resiliency Act, this report was intended for use by municipal decision makers and was a guide for making local planning more resiliency-focused. (New York State 2014, 4) In general, state-level climate planning in New York is more directed towards clean energy and emissions reduction, and coastal planning for climate change is devolved to municipal levels.

In addition to climate planning led by municipal governments, the United States Army Corps of Engineers (USACE) has maintained a significant presence in recovery and

rebuilding efforts after Hurricane Sandy. On the East Shore of Staten Island, this work has included a temporary seawall along the coast and plans for a “Line of Protection,” which integrates beach nourishment, a berm, and public space along the coast. While this protective barrier provides some protection from flooding, hundreds of households are projected to remain in the 100-year floodplain even after it is built, and assuming full participation in the state buyout program. (Dept. of City Planning 2017)

Hurricane Sandy

Hurricane Sandy, after swirling northwards along the east coast of the United States, carved a right-angle turn and made a direct hit on the coast of New Jersey the night of October 29, 2012. In preparation for the storm, the city shut down public transportation and all major bridges, a rare and striking measure in “the city that never sleeps.” The storm surge peaked almost exactly at the highest high tide of the month, causing a larger storm surge than would typically be generated by a storm of this intensity. (City of New York 2013, 12) The damage caused by this surge was vast. Forty-three people were killed by the storm within city limits, of which twenty-three deaths were on Staten Island. Seventeen percent of New York City’s total land area flooded, exceeding the 100-year floodplain by 53%. This land area included 300,000 units of housing, many hospitals, power plants, and other pieces of critical city infrastructure. (Ibid., 13) Sandy destroyed thousands of homes, left two million people without power, and caused approximately \$19 billion in damage. (Ibid., 11) The storm indelibly changed the lives of hundreds of thousands of New Yorkers.

In the immediate aftermath of the storm, city officials were focused on life safety issues, inspecting bridges and responding to distress calls. Residents organized to provide food

and water to elderly and disabled neighbors who found themselves trapped at the top of tall residential buildings.² The protest movement Occupy Wall Street quickly deployed a task force to help the most damaged areas and stayed there even when FEMA field offices and local fire stations closed due to bad weather, as more storms moved through the area in the week after Sandy. (Feuer 2012) City officials moved thousands of residents into emergency housing within days of the storm, and repair programs began to roll out immediately.

Shortly after Hurricane Sandy made landfall, on October 30, 2012, President Obama declared a state of disaster in New York, New Jersey, and Connecticut.³ (FEMA n.d.) This cleared the way for an appropriation of federal funding for disaster relief and recovery, which was signed into law on January 29, 2013. (United States Congress 2013) At the same time, President Obama signed into law the Sandy Recovery Improvement Act of 2013, which streamlined some processes and diverted some of this funding from rebuild-in-kind programs to pilot hazard mitigation grant programs. (FEMA 2015) While emergency crews from all levels of government repaired bulkheads, roads, and other critical infrastructure, plans for long-term recovery began to come together. In total, recovery activities in New York City have received \$15.4 billion, of which \$13 billion were administered by the city itself. (City of New York 2017)

² The best of these stories may be that of “the Sherpa who speaks Yiddish,” Chhapte Sherpa, who hauled heavy bags of supplies up twenty-four floors between shifts of slicing lox at Russ and Daughters on Manhattan’s Lower East Side. (Kilgannon 2012)

³ Several days later, this area was expanded to include Massachusetts, Washington D.C., New Hampshire, West Virginia, Virginia, Maryland, Delaware, and Rhode Island.

Buyouts: Retreat from the Coast

Buyouts occur when a government entity purchases vulnerable land from private landowners in order to reduce the number of residential units in the most vulnerable areas. Typically, buyouts are conducted in response to a major storm or flooding event when federal disaster relief funds are made available. As expressed in the Lincoln Institute for Land Policy's report *Buy-In for Buyouts*, while there are many methods for reducing risk to flood-vulnerable populations, relocation out of the floodplain is the only method to dramatically and permanently reduce that risk. (Freudenberg et al. 2016)

Buyouts are part of a strategy called "managed retreat" which not only seeks to relocate residents out of vulnerable areas, but also seeks to block new development in areas that rely on coastal armament for protection from floods, as armament is considered to provide only short-term protection. (Siders 2013, iii) Among post-Sandy programs in mid-Atlantic states, "acquisition" is used to describe properties that are acquired in order to be auctioned back to a private entity and rebuilt to new, stricter flood-proofed design requirements. "Buyout" is used in this environment to describe properties that are purchased and required to remain open space in perpetuity.

Buyouts are primarily conducted in response to storm events that precipitate damaging floods, either due to riverine or coastal flooding. Because funding for buyouts is primarily tied to emergency situations, the resulting programs are inevitably shaped by this emergency environment, with the details being worked out simultaneously with program implementation and long-term plans largely not considered in the immediacy of providing relief for displaced residents. Buyouts are fairly new tools in the United States, and lack consistent implementation. This may increase fear of political unpopularity, in

addition to the short lead-time possible for programs funded only immediately after a disaster. Until buyouts are established as part of the toolbox of resiliency strategies and made easily available to people who would like to leave their land, they will remain limited in their usefulness.

The history and trajectory of buyout programs in the United States can perhaps most easily be understood through their sources of funding. In most cases, buyouts are funded through FEMA-backed disaster relief programs, although they can also be funded through Community Development Block Grants for Disaster Recovery (CDBG-DR). In either case, there is no source of funds until after a disaster declaration is made, and the amount of funds is not set until a Congressional appropriation is made. In the case of Hurricane Sandy, disaster relief funds were made available several months after the storm, in January 2013. (Pirani & Tolkoﬀ 2014) By that time, residents who had been displaced from their homes after the storm were desperate, temporary housing was scarce, and residents had begun to organize towards a buyout.

An early example of Federal buyouts in the United States is the response to historic Mississippi River flooding in the Midwest during 1993. In July of 1993, after months of flooding, President Clinton issued a disaster declaration that encompassed the entire state of Iowa. The scale of the disaster prompted a change to the government’s approach, a “shift away from six decades of thinking that all floods can be controlled by ever more extensive construction projects.” Instead, the government instituted buyouts, which were “a recognition that in many cases the most sensible way to manage high-risk floodplains is to let them be floodplains.” (Conrad et al 1998, 29) During this Midwest Flood, some parts of the Mississippi River reached their 500-year flood level (a flood which has a

0.2% chance of happening in a given year). Although FEMA had buyout authority beginning with the establishment of the Hazard Mitigation Grant Program in 1988, the buyout aspect of this program had not been implemented at a large scale until the 1993 Midwest Flood. (Conrad et al 1998) The state of Iowa organized its relief effort into ten Housing Recovery Zones that created and administered buyout programs independently. The areas whose programs were widely considered to be more effective were programs that integrated long-term land management plans and community support for the relocation effort. In the Lincoln Land Institute's accounting of these programs, they assert that, "the Iowa buyout programs demonstrate the great value of designing integrated programs that consider more than property acquisition. Successful programs must also address the function of acquired land and retain community residents." (Freudenberg 2016, 25)

In 1998, the National Wildlife Federation published a report on voluntary buyout programs called *Higher Ground: A Report on Voluntary Property Buyouts in the Nation's Floodplains, A Common Ground Solution Serving People at Risk, Taxpayers, and the Environment*. Unlike the title of the report, it provided simple documentation of disaster spending to date and straightforwardly condemned past responses to flooding while promoting buyouts as a method of habitat protection. As the report points out, it is much simpler and therefore tempting to build a levee to keep out the water than to deal with the complications of a buyout program. However, the benefits of the more challenging option is that, in its most complete form, it creates the possibility of permanently and dramatically reducing flood risk. Levees, on the other hand, incentivize development in vulnerable areas and can be overwhelmed by floodwater in a particularly large storm or

after maintenance failures. The report also emphasizes that the process of instituting a buyout could be streamlined by working with the community before a disaster occurs, but because Federal funding for buyouts is only made available in the aftermath of a disaster, opportunities for early coordination are limited. (Conrad et al 1998, 35) Financial accounting after the 1993 buyouts estimated that the benefit-cost ratio of future insurance claims because of the buyout programs was 2:1. (Ibid, 39) By the end of May 1998, this FEMA program was expected to have purchased land from 17,000 landowners. Individual disasters that precipitate buyouts typically include hundreds, if not thousands, of landowners. (Ibid, 45) Coordination of efforts like these is an immense undertaking, particularly after a disaster, when former residents may be scattered and living in temporary housing.

In some buyouts, the coordination effort is much simpler. Whereas a municipality typically coordinates with hundreds of landowners to reclaim vulnerable residential land, the Spruces Mobile Home Park, a rental community of low-income older adults in Massachusetts, was owned by a single owner who agreed to a buyout after devastating floods. The Spruces was destroyed in August 2011 by Hurricane Irene, during which the nearby Hoosic River overtopped its banks and swamped the area. (Lombard & Bent 2015) In response to these floods, a buyback and relocation project was undertaken by Williamstown, MA, and Williams College, which donated land for new low-income housing to be built. (Damon 2014) The Spruces was officially closed in February 2016. (Shanks 2016) In some ways, this was a simple, efficient model for buyout program implementation, as government entities only needed to coordinate with one land owner. Because all residents were renters, this was not a voluntary buyout program for any of the

residents.⁴ Even in the case of The Spruces, when negotiations only had to take place between one landowner and the local government, the process from storm event to real estate close still took four and a half years.

In the United States, there has been at least one buyout that is not linked to an acute disaster, but to slow, progressive inundation. Isle de Jean Charles is an island off of the coast of Louisiana that has been identified as among the United States' most vulnerable to sea-level rise. (Hasemeyer 2016) Since 1955, it has lost 98% of its land (only 320 of 22,400 acres remain) due to nine inches of sea-level rise and erosion due to nearby drilling. (Davenport & Robinson 2016) In January 2016, the Department of Housing and Urban Development awarded Louisiana a federal grant of \$48 million to resettle the residents of Isle de Jean Charles. (HUD 2016) This is not the first time that these residents and federal agencies have explored the possibility of relocation, but previous efforts failed. One particular challenge to this relocation is the makeup of the resident population, many of whom are Native Americans who have a deep distrust of the government and whose culture is inextricably linked to the land. (Davenport & Robinson 2016) As the first federally-funded relocation effort due to sea level rise, it will be closely watched as a test case for adaptation strategies that involve resettlement.

Buyouts that are not thoughtfully conceived can fail in many ways, reducing overall progress toward resiliency. These programs may insufficiently compensate homeowners

⁴ In New York City, all plans that mention buyouts or acquisition are very careful to clarify that the city has no plans to do anything other than voluntary buyouts, and that eminent domain will never be used for these purposes.

or provide insufficient relocation support, particularly for renters. They may have high rates of attrition that result in disconnected empty lots that do not provide a true coastal buffer. Although most buyout programs are voluntary, residents in buyout areas who choose not to participate are still negatively impacted by the program, as nearby homes are first left vacant and then demolished. (City of New York 2013a) Buyouts may also kick-start development and function as a tool of gentrification and discrimination. All of these have been true of buyout programs and other acquisition tools used by governments. Liz Koslov, a doctoral student at New York University who is studying these buyouts from an anti-displacement perspective was surprised to find very few – perhaps no – Staten Island residents whose homes were flooded in Sandy and who did not want to participate in the buyout. Although long-time residents certainly had mixed reactions to the prospect of leaving home, they were interested in the program as a way to survive financially and gain closure. Notably, Koslov indicated that these buyouts would not have been received warmly if they had been perceived to be initiated by the government. Instead, the buyout program was a product of intense advocacy on the part of local landowners, led by Joe Tirone, who owned an investment property in the Oakwood Beach area. Without his effort, there may have been no buyouts at all within the boundaries of New York City, demonstrating the essential role of a local, trusted agent in the success of buyouts.

Assessing Resilient Outcomes

The immediate reaction from city government to Hurricane Sandy was to rebuild, but coastal residents who had already suffered several major floods were ready to leave.

Without a coastal zone strategy that recognized withdrawal as a possibility, each level of

government responded differently to pressure from advocacy groups, leading to a critically constrained effort that was not situated within a long-term plan. In the following chapter, I attempt to identify areas of conflict and assess the outcomes of these efforts to enhance resiliency in New York City.

Chapter 3: Data and Analysis

The key factors in determining a successful resilient outcome for buyout and acquisition programs are (1) the protection of sufficient – and sufficiently contiguous – land in order to provide a buffer area; (2) the adoption of plans for long-term management and maintenance of the land as open space; and (3) in resource-constrained environments, targeted acquisition in the most highly vulnerable areas. The programs launched in the wake of Hurricane Sandy, NY Rising and NYC Build It Back do not, as yet, meet these goals. Moreover, in some instances they conflict with other existing resiliency projects, like NYC DEP’s Mid-Island Bluebelt. Although the NY Rising program still has the potential to realize some measure of resilience, NYC Build It Back was never intended to protect open space for floodplain management and quickly resold the properties it acquired to private parties. It was intended not to reduce the total number of residential units in the floodplain, but to rebuild those residences into less-vulnerable structures. NY Rising, on the other hand, mandated that newly-acquired land be maintained as open space in perpetuity. However, it did not prepare a local partner to take on this responsibility, nor did it set aside funding for this effort before launching the program, cutting short its ability to achieve a fully resilient outcome. As a result, NY Rising, even five years after the storm, is still searching for a local partner. Some former residents see the program as a success because it provided financial relief to homeowners. While discussions of the theoretical threats posed by climate change almost always turn to managed retreat, this program can provide insight into what actually works under real conditions. The most important lesson is that buyout programs developed quickly in the wake of a specific disaster and without regard for a long-term multi-scale implementation plans are very likely to fall short.

State Buyouts Through Local Activism

Local landowners representing some of the most-damaged areas along the coast of Staten Island formed a strong coalition led by Joe Tirone to petition their local government to acquire their land and ensure that it would not be used for future development. These residents had emotional and compelling stories to tell about their losses.

Nevertheless, elected officials in city government rebuffed buyout advocates. After city officials turned down their requests, the group was able to gain an audience with



Figure 7: Neighborhood Activism for Buyouts, Image from Nick Green via Flickr, "She Took Our Souls" 2014.

Governor Cuomo, who launched the NY Rising buyout program to address their concerns. The state buyout program was fundamentally structured as a response to resident needs and was not implemented as part of a long-term regional resiliency plan. The state buyout program conflicted from the beginning with municipal efforts, both in its "creation story" and in the funding source it ultimately used: not FEMA's Hazard Mitigation Grant Program (HMGP), which must be administered through a municipality, but HUD's Community Development Block Grant Disaster Recovery (CDBG-DR) program, which the state could administer directly. In order to maintain complete financial independence from the city, the state found the required matching funds for the

CDBG-DR grant, which would normally be borne by the municipality. (Freudenberg et al 2016, 28) In this way, the state was able to avoid financial coordination with the city.

Governor Cuomo, in his 2013 State of the State Address, described the State buyout program as follows:

There are some places where people may choose not to build back. I've talked to home owners 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*.

(Cuomo, 2013)

Not only did the Governor use the language of managed retreat in launching the program, the state legislature also codified this intent into law, first in 2013-14 when it required land procured through this program to be transferred into the “custody and control of the office of parks, recreation and historic preservation for use pursuant to the parks, recreation and historic preservation law.” (New York State Assembly, 2014). It went further in 2015-16, requiring: “All such land shall be dedicated and maintained in perpetuity as open space for the conservation of natural floodplain functions.” (New York State Assembly, 2015) The relevant legislation goes on to specify the few types of buildings allowed to remain, including public bathrooms and other amenities typical of parkland. However, the program is fundamentally constrained by having no local partner to participate in the long-term management of the relevant properties. In March of 2017,

the state was still in negotiations with local government entities and non-profits to find a long-term owner and manager of the lands that were purchased.⁵

The failure of the state to create a long-term plan for the management of acquired lands is primarily the result of the circumstances under which the program was developed. It was a short-term response to pressure from affected residents. In many cases, the same residents had suffered substantial flooding in earlier storms, including in 1992. They had begun to organize into a Flood Victims Committee long before Hurricane Sandy. (Rush 2015) These residents were looking for closure on this traumatic experience. Their willingness to move was characterized as a sacrifice for the greater good of the community and for the safety of inland residents. (Koslov 2014)

In addition to wishing to protect future Staten Island residents from experiencing the emotional impact of losses like these, part of the reason to advocate for this program was to find financial relief. Tirone found that residents who had taken the buyout earlier were better off financially because they were able to benefit from the housing market rebounding after the 2008 crash. The sooner people bought new property, the more they were able to benefit from the buyout program.

⁵ From an interview with Rachel Wieder, Director of the Governor's Office of Storm Recovery (GOSR) Acquisition and Buyout programs, April 2017

Selection of Buyout Areas

In order to assemble a sufficiently large and compact tract of land to develop a coastal buffer, the state needed to ensure that a high enough proportion of landowners in each block would commit to a buyout. Although many homeowners in the affected areas formally expressed interest in the program, the state ultimately designated three small areas within the boundaries of New York City to be eligible for buyouts: Oakwood Beach, Ocean Breeze, and Graham Beach.⁶ These areas are very small in comparison to the 100-year floodplain (the area that has a 1% chance of flooding in a given year) on the coast of Staten Island. The buyout areas would not provide a sufficient buffer even if all the eligible households in these three areas took the buyout. As it was, far fewer property

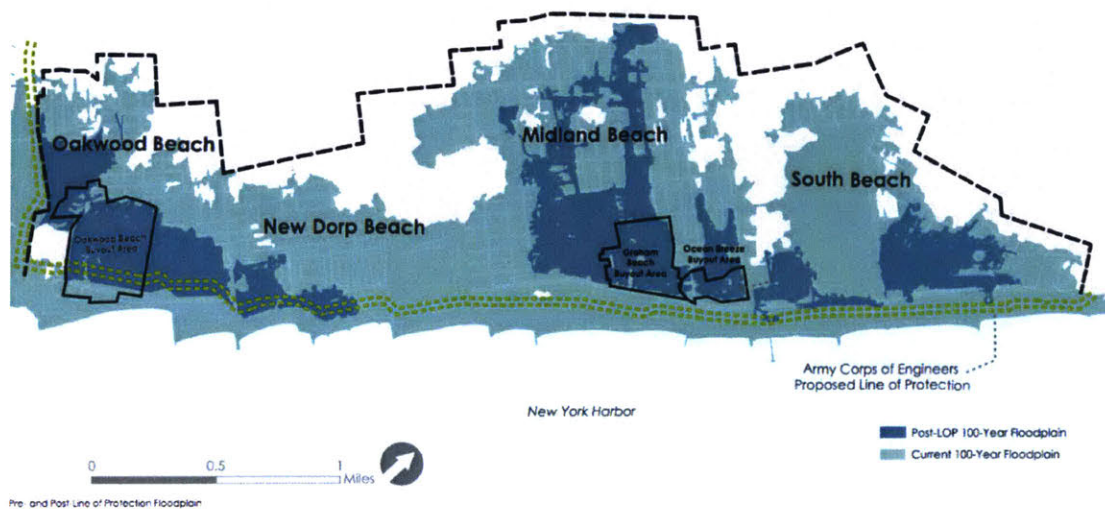


Figure 8: State Enhanced Buyout Areas Compared to 100-Year Floodplain, from NYC DCP Resilient Neighborhoods East Shore Report, 2017

⁶ NY Rising also implemented buyout and acquisition programs outside the boundaries of New York City.

owners chose to participate than were eligible: 40% in Graham Beach, 85% in Oakwood Beach, 59% in Ocean Breeze.

The reasons these neighborhoods were selected are not clear, and even precise boundaries of the final buyout areas have not been made public.⁷ In the course of my research, I encountered three different explanations for why no additional neighborhoods were included. The first is that these were the only blocks that met contiguousness requirements. The second is that the state did not have enough money to purchase more land. The third is that city officials intervened to stop the state program from expanding. As officially documented in the NY Rising Buyout and Acquisition Program Policy Manual, the requirements for an area to qualify as an enhanced buyout area are as follows:

- A history of flooding and damage to due storms;
- Multiple contiguous parcels in the floodplain that exhibit similar damage and whose owners have formally expressed interest in a buyout;
- The State and municipal officials have “a mutual understanding of the benefit of permanently removing residents/homes from the floodplain permanently [sic], and converting the site to a coastal buffer zone.” (GOSR 2016, 13-14)

The initial version of the program guidance document included a much broader definition of buyout eligibility: Properties within the 100-year or 500-year floodplain in Richmond County (i.e. Staten Island), having been substantially damaged (defined as >50% of Fair

⁷ As confirmed in communication with Joe Tirone, May 2017.



Figure 9: Kissam Avenue, Oakwood Beach. Source: SIRR

Market Value (FMV)) in Hurricanes Sandy or Irene, were all eligible.⁸ Location within an Enhanced Buyout Area was not required at all, but it qualified the owner for an additional 10% of pre-storm FMV. (GOSR 2014, 23-4)

Although residents of many other communities (Rich, 2014) documented their willingness to be bought out, only the three areas advocated for were deemed eligible. The buyout-eligible neighborhoods are still termed “Enhanced Buyout Areas,” indicating that landowners would be eligible to receive an additional 10% over pre-storm FMV, although the state program no longer offered buyouts elsewhere in New York City.⁹ GOSR reported that 99% of property owners in the Oakwood Beach buyout area

⁸ Hurricane Irene occurred in 2011 and caused major damage due to stillwater and riverine flooding, which impacts different areas than the storm surge caused by Sandy. Although the worst damage from Irene was in New England, some Mid-Atlantic areas were also affected.

⁹ The distinction holds in areas outside of New York City, where the state is offering both buyout and acquisition options.

submitted applications to the program. (GOSR 2015, referenced in Lincoln Inst. 2016, 28) As the programs evolved, however, many applicants withdrew. This left a patchwork of properties to be acquired by the state, reducing possible gains towards resilience. Additionally, because every block included in the program retains at least one private land owner, city agencies will still be required to maintain roads and other public infrastructure within designated buyout areas. Remaining residents have a right to be served, although per capita infrastructure costs will increase. This “checkerboarding” of now-vacant properties further limits the ability of any entity, city or state, to effectively use this land for adaptive infrastructure.

Checkerboarding and Attrition

To more fully understand the nature of this ownership patchwork, I have tried to determine the reasons that people chose to withdraw from the buyout program. As of April 4, 2017, the total land successfully acquired by NY Rising within their Staten Island buyout areas is 37.1 acres.

NY Rising Completed Acquisitions, Area (Acres) by Phase

NY Rising Buyout Area	Closing Complete	Disposition in Progress	Disposition Complete	Total	Percent of Grand Total
Graham Beach	2.32	6.90	0.00	9.22	25%
Oakwood Beach	6.01	16.19	0.00	22.20	60%
Ocean Breeze	5.62	0.05	0.00	5.67	15%
Total	13.95	23.14	0.00	37.10	
Percent of Grand Total	38%	62%	0%		

Of the total land area in the program, 96% has completed closing, and another 4%, or 1.61 acres, are active in the program but have not yet reached this milestone. Note that no

properties in this program have completed disposition to an entity that will maintain the land long-term, although that process has begun for 62% of the active area.

NY Rising Buyout Areas, Area (Acres) by Phase

NY Rising Buyout Area	Verifi- cation	Offer Accepted	Ready for Closing	Closing Complete	Disp. in Progress	Disp. Complete	Grand Total
Graham Beach	0.09	0.17	0.07	2.32	6.90	0.00	9.56
Oakwood Beach	0.00	0.59	0.00	6.01	16.19	0.00	22.79
Ocean Breeze	0.00	0.69	0.00	5.62	0.05	0.00	6.37
Total	0.09	1.45	0.07	13.95	23.14	0.00	38.71

Data from the New York State Department of Homes and Community Renewal (HCR) also describe several categories of applicants who subsequently withdrew from the program.¹⁰ The table below shows the number of parcels in each inactive category.

NY Rising Buyout Areas, Number of Lots Inactive by Status

NY Rising Buyout Area	Cancel Application	Inactive	Not Eligible Letter Sent	On Hold	Withdrawn	Total
Graham Beach	160	4	1		33	198
Oakwood Beach	69	18		22	55	164
Ocean Breeze	27			1	24	52
Total	256	22	1	23	112	414

¹⁰ This information was initially redacted from HCR’s FOIA response but was still retrievable.

Together, these 414 parcels represent all inactive applications, or 43% of all lots included in the HCR database. I represent these 414 parcels as “Inactive” in the following charts and maps.

NY Rising Buyout Areas, Percent of Total Lots Ever Active

NY Rising Buyout Area	Active Lots	Inactive Lots	Total Lots
Graham Beach	40%	60%	100%
Oakwood Beach	67%	33%	100%
Ocean Breeze	66%	34%	100%
Total	57%	43%	100%

Another category to consider are lots within buyout-designated blocks that were never entered into the buyout database. Because the exact limits of the buyout areas are poorly defined, for the purposes of this analysis, I have defined buyout areas as blocks in which at least one lot is represented in the HCR database. Lots within these blocks that are not represented in the database I refer to as “Never Active”.

NY Rising Buyout Areas, Percent of Total Lots in Buyout Areas

NY Rising Buyout Area	Active Lots	Inactive Lots	Never Active Lots	Total Lots
Graham Beach	31%	46%	23%	100%
Oakwood Beach	63%	32%	5%	100%
Ocean Breeze	55%	28%	17%	100%
Total	50%	37%	14%	100%

The size of these parcels varies widely. Many are very small: 143 parcels in the Enhanced Buyout Areas are less than 1555 square feet in area (0.036 acres).¹¹ The picture is quite different – and more helpful for understanding future land use – when represented by area instead of by lot.

NY Rising Buyout Areas, Active Status by Area (Acre), Percent of Total

NY Rising Buyout Area	Active Area	Inactive Area	Never Active Area	Total
Graham Beach	24%	48%	28%	100%
Oakwood Beach	15%	30%	55%	100%
Ocean Breeze	50%	27%	23%	100%
Percent of Total	19%	34%	48%	100%

Several large parcels in Oakwood Beach were never active, and substantially change the proportion of the inactive area when compared to the proportion of inactive lots.¹² The four largest never-active parcels total 83.5 acres. These are zoned as parks, and are owned by the NYC Department of Parks and Recreation. The buyout areas are surrounded by parkland and, in the case of Oakwood Beach, are primarily made up of city-owned land zoned as parkland. As a result, it seems reasonable to assume that Parks would receive the land through the state’s disposition process. However, although GOSR is in the midst of negotiations over long-term ownership of this land, they are yet to find a

¹¹ Perhaps because of these very small lots, many property owners own more than one lot. Note that these tables count each lot separately.

¹² Within the Oakwood Beach area, 36 other parcels zoned as parkland and owned (since at least 2012) by Parks are listed as cancelled applications in the NYC HCR data. This raises a question for further study: whether Parks and other City agencies initially pursued buyouts through the State program.

city agency or an acceptable non-government actor such as a non-profit organization willing to commit to long-term ownership and maintenance of this land.

These buyout areas currently have quite low participation rates, and as a result only 19% of the eligible area is being acquired through the state buyout program. This incomplete buyout lowers the value of the state’s resulting asset for use as a coastal buffer.

NY Rising Buyout Areas, Consolidated Table of Area by Active Status (Acre)

NY Rising Buyout Area	Active	Inactive	Never Active	Total Ever Active	Grand Total	% Active of Total Ever Active	% Active of Grand Total
Graham Beach	9.56	19.32	11.30	28.88	40.18	33%	24%
Oakwood Beach	22.79	47.42	85.79	70.21	156.00	32%	15%
Ocean Breeze	6.37	3.41	2.88	9.78	12.66	65%	50%
Total	38.71	70.16	99.97	108.87	208.83	36%	19%

These totals are surprisingly low for a program that was committed to targeting only highly consolidated and committed areas, and which reported applications from 99% of landowners in the Oakwood Beach area. (GOSR 2015, referenced in Freudenberg et al 2016, 28) In only one block (Block ID 4746) did all properties that applied for buyout remain in the program through the closing complete milestone, and even that block retained some private property owners.

Some attrition, although it is difficult to determine how much, is due to “underwater” mortgages. In instances where owners owed more on their property than its FMV, the state was only able to pay the pre-storm FMV plus a small bonus for resettling within

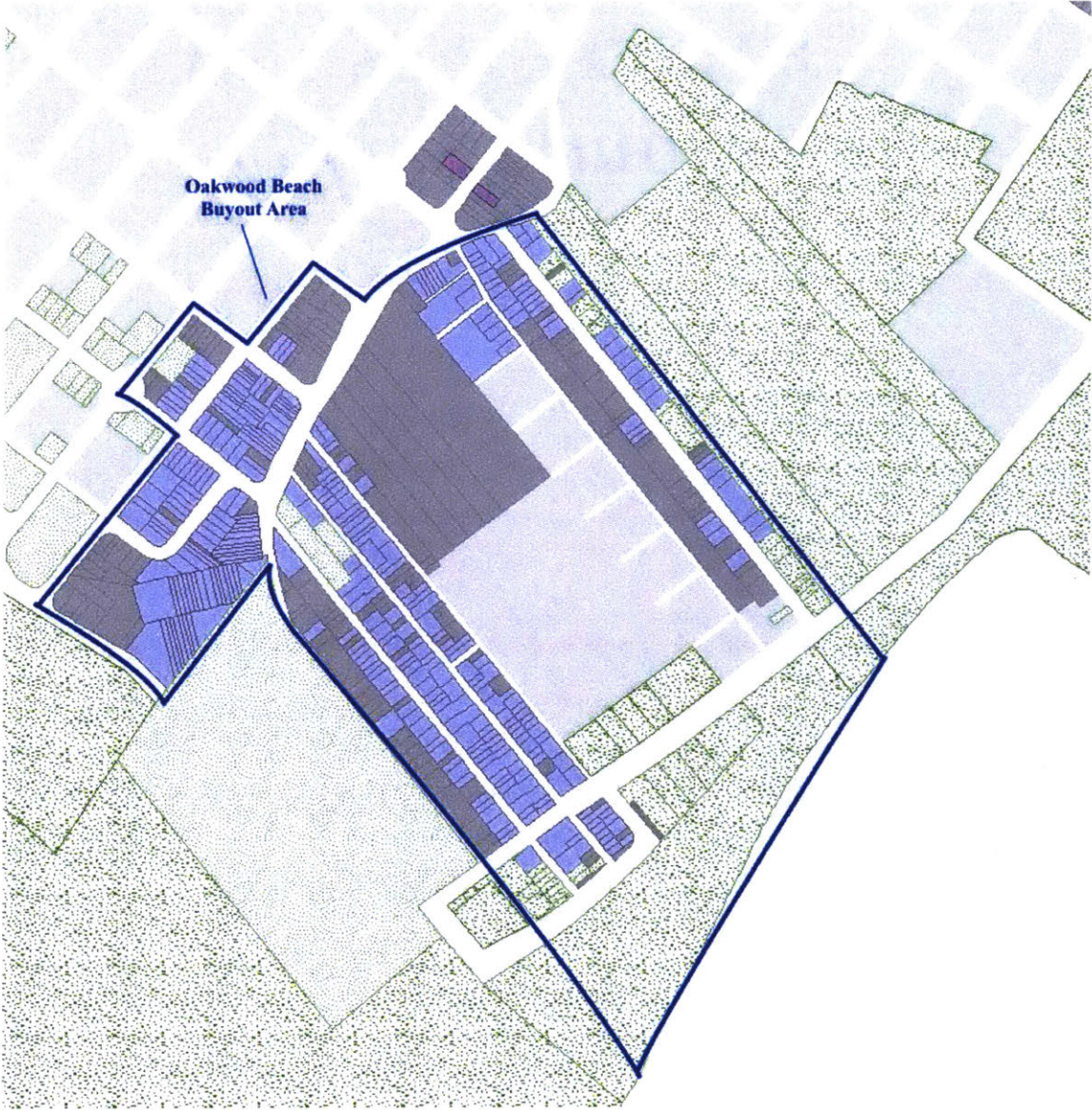
New York City limits. This is a well-known issue in the buyout literature, and the challenge exists even for foreclosed properties, for which banks may be unwilling to receive less than the amount owed on the property, rather than its present – or even pre-storm – worth. (Freudenberg 2016, 31) Although other buyout administrators have been able to negotiate with banks to forgive such debt, but New York State has not been able to reach a similar agreement.¹³ In this way, the compactness and contiguousness of the state’s acquisition – the program’s ability to create a resilient outcome – was undermined by the specific financial circumstances of private property owners. Initial plans for the program and the selection of buyout-eligible areas appears not to have taken this issue into account.¹⁴

¹³ As indicated in an interview with Rachel Wieder, Director of the GOSR Buyout and Acquisition Programs.

¹⁴ The exact scope of this problem is an area ripe for further study.

Maps of NY Rising Enhanced Buyout Areas

- Zoned as Parkland
- DEP Owned
- NYC Build It Back Acquisition Lots
- NY Rising Buyout Lots
- Blocks Containing Buyout Lots





the Bluebelt lagged, particularly acquisition and construction starts. Dana Gumb Jr., the head of the Bluebelt program at DEP, recounted to Brady (2015):

It was so much easier to buy property down here [on the South Shore]. We condemned it, we took it by eminent domain, there was a reasonable settlement, and people got their money and everybody was happy. Here [on the East Shore]—I don't know what happened, whether attorneys... got involved. It's become very difficult; the prices are going through the roof...So we're trying very hard to do as many negotiated sales as we possibly can.

Maps of completed BMPs in southern Richmond County show an efficient acquisition pattern: dense blocks of acquisition targeted to flood-prone former wetlands. Figure 11 shows an example of this pattern of acquisition in south Richmond County. The green-shaded parcels in this map are either DEP or Parks-owned.



Figure 11: South Richmond DEP Acquisition. Map by Author.

Because DEP already had acquisitions started in these areas, and is one of the city agencies that might manage the city's coastline in response to climate change impacts, it is reasonable to assume that the state, in developing its buyout plans, would work with DEP to connect the two programs. This appears not to have happened, although the buyout areas defined by the state overlapped with DEP's acquisition plans. Another possible coordination path would have been for DEP, which had found acquisition to be difficult prior to Hurricane Sandy, to support the state in its CDBG-DR acquisition and then agree to manage the land after

acquisition, but this did not happen either. GOSR is still looking for a local partner to manage its acquisitions. After private landowners had applied for the state buyout, they withdrew their applications and their land was purchase by DEP. Based on data provided by HCR, there are 38 lots – a total of 3.82 acres – withdrawn from the state buyout program that have since been acquired by DEP.

Gumb, the Director of DEP's Bluebelt program, was very transparent in speaking with former MIT planning student Alex Brady about DEP's narrow interest in acquisition and maintenance responsibility: "Our upper-level management [at DEP] is focused on acquiring... the vacant properties we need, and is not particularly predisposed to taking on any additional land management responsibilities. They're [the parcels in question are] not immediately connected to our fundamental drainage mission." (Brady 2015, 46) Who will take responsibility for maintaining this land long-term was an open question when Brady was writing in 2015, and according to Wieder at the GOSR, it is an open question today as well.

DEP's acquisitions within the State's Enhanced Buyout Areas are a major factor leading to the disruption of the state's effort to purchase contiguous land that could form a cohesive buffer area.

Although the total number of acres acquired by DEP during this time is small compared to the entirety of the buyout areas, considered at the block level, these purchases effectively break up the consolidated buyout areas selected by the state.

New York City publishes annual real estate sales information that includes sale prices for seven of the thirty-eight lots that had been transferred from private ownership to DEP ownership within NY Rising-eligible blocks. Unlike NY Rising buyouts, which were

reported to be above expected pre-storm value, many of these properties recorded a sale price of \$0.00.

NY Rising-Eligible Properties Transferred from Private Ownership (2012) to DEP Ownership (2016): Sale Data Available

Borough-Block-Lot	Sale Year	Sale Price	Lot Area (SqFt)	Residential Units	Tax Assessed Value (2016)
5038560017	2015	\$0	1,740	1	\$9,318
5048020023	2013	\$0	1,550	0	\$813
5037570013	2014	\$0	2,250	0	\$174
5038640010	2013	\$90,000	2,848	0	\$2,487
5037570011	2014	\$215,000	3,450	0	\$360
5037630010	2014	\$0	3,800	0	\$420
5037570020	2014	\$0	4,670	0	\$174

(Data Source: MapPLUTO, NYC DCP; NYC Dept. of Finance Annualized Sales)

Without a transparent process for purchasing these parcels, it is unclear why some small vacant lots were transferred to DEP ownership at no cost, and others were purchased for prices analogous to similar properties purchased through the NY Rising buyout program.

To better visualize the impact of these DEP purchases in the flood zone, I created six ownership categories that together represent all parcels in buyout-eligible blocks:

Ownership Category Descriptions

Category	Description	Current Owner
1	Active in buyout program	State ¹⁵
2	Zoned as Parkland	NYC DPR or National Park Service
3	DEP owned since pre-Sandy	NYC DEP
4	Other city agency owned pre-Sandy, now DEP	NYC DEP
5	Privately owned pre-Sandy, now DEP	NYC DEP
6	All other: mainly privately owned (not active), some public (not parkland or DEP-owned)	Private

I categorized each buyout-eligible lot using this classification and grouped by the current owner.

Buyout Areas by Ownership Category (Acres)¹⁶

Buyout Area	1	2	3	4	5	Total Open Space	Total Buffer	6	Grand Total
Graham Beach	9.65		6.77	0.17	3.32	10.27	19.92	20.26	40.18
Oakwood Beach	22.79	90.53	0.97		0.17	91.67	114.46	41.54	156.00
Ocean Breeze	6.37		0.03			0.03	6.40	6.26	12.66
Total	38.80	90.53	7.77	0.17	3.50	101.97	140.77	68.06	208.83

¹⁵ Active properties that have not reached real estate close are still captured in category one.

¹⁶ Notes: See previous chart for category definitions. Total DEP-Owned is current DEP ownership, regardless of pre-Sandy ownership. Total buffer is the sum of active buyout properties (state ownership) and DEP-owned. Category 6 is mainly private ownership but includes some publicly-owned, non-parkland.

In these charts, I have characterized the active buyout properties, Parks, and DEP-owned land as potential area to be used as a buffer against future flooding, if the state can find a city entity interested in taking on this work.

Buyout Areas by Ownership Category (Percent of Total)

Buyout Area	1	2	3	4	5	Total Open Space	Total Buffer	6	Grand Total
Graham Beach	25%	0%	87%	100%	95%	10%	14%	30%	19%
Oakwood Beach	59%	100%	12%	0%	5%	90%	81%	61%	75%
Ocean Breeze	16%	0%	0%	0%	0%	0%	5%	9%	6%
Total	19%	43%	4%	0%	2%	49%	67%	33%	100%

Gumb, speaking about the bought out properties in category one, said, “Maybe there is a parent for this orphan. But it’s not looking that way right now... so, what happens to this property? Who’s going to restore it, number one. Who’s going to remove the streets and all the utilities where that’s possible. Who’s going to excavate it if it’s necessary?”

(Brady 2015, 46) If the city strategy for flood protection along the coast included buyouts, these properties may be seen as a valuable asset, properties voluntarily bought out and available at no initial cost. Instead, any comprehensive plans for the city’s coastline do not allow for managed retreat. As a result, city actors appear to have worked around state efforts, effectively undermining acquisition of useable buffer areas. On the other side of this conflict, NYC DEP had begun to acquire land for BMPs long before Sandy and city agencies understandably chafed that the state had worked around city

authority and then sought a long-term manager of the land in city government after they had intervened.

NYC DEP is also working with the United States Army Corps of Engineers (USACE) to build additional protections in the study area, including the “Line of Protection” project that will follow the coastline along this stretch. Initial studies for this area began after the 1992 floods, but the recommendations were never implemented. With funding from the 2013 appropriation after Hurricane Sandy, USACE restarted the project. (DCP 2017) The Real Estate Plan published by USACE (2016) for this project refers to a “sponsor agency,” apparently DEP, that is assisting with acquisitions. While DEP may be working with the state buyout program out of public view to transfer these properties to either of the overlapping projects they are acquiring for in the same area, this work has not been publicly acknowledged.

The City Alternative

The city’s own post-Sandy acquisition, NYC Build It Back, was presented as an alternative for residents interested in buyouts but not within the final Enhanced Buyout Areas, but residents did not consider it to be an equivalent offer. Local activism around buyouts had focused on the idea that “no one should live here anymore” and that leaving their homes was a sacrifice to protect future generations of Staten Islanders. (Rubinstein 2013) The city also downplayed the option of acquisition in their larger Build It Back programs, although they have acquired 132 properties in total and have begun auctioning

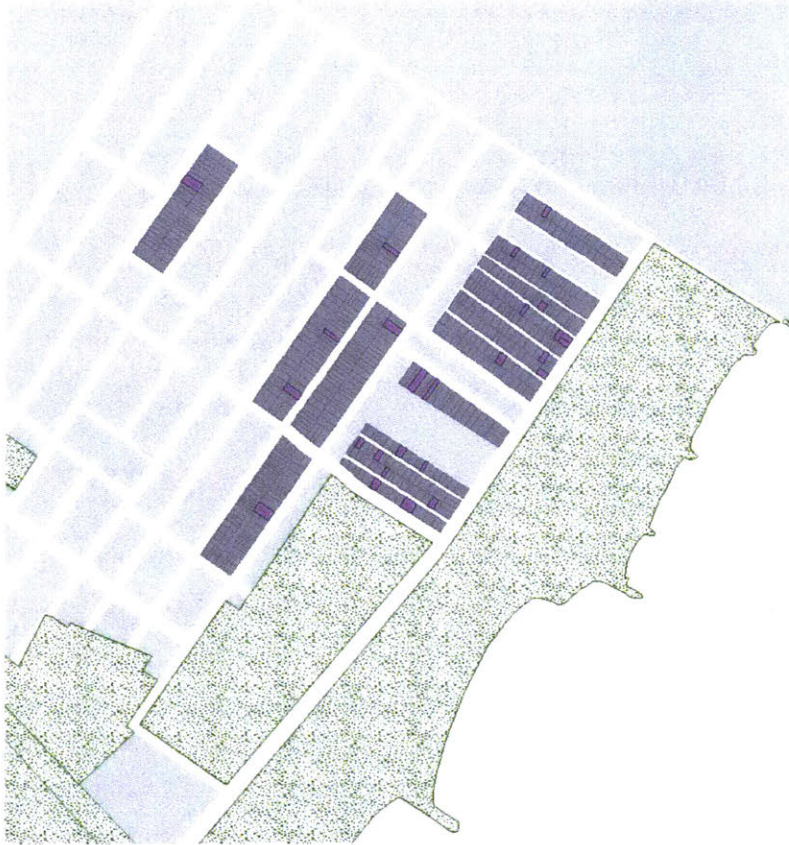


Figure 12: NYC Build It Back acquisitions cluster in a "bowl" feature behind Father Cappodanno Blvd in Staten Island. Map by author.

these properties off. (Mayor's Office of Housing Recovery Operations 2016) This acquisition and resale effort is not intended to create a buffer area or promote managed retreat, and purchased properties have been scattered across the city, with the highest concentrations in areas

that advocated for inclusion in NY Rising buyouts, but had been denied.

Generally, the City is relying on other methods, not retreat, to create resiliency, including introducing new zoning for flood-hazard areas, new a new section in the building codes for NFIP compliant-building, and Build It Back-supported home elevation. The Department of City Planning has also launched a program called Resilient Neighborhoods. These planning efforts work to fill gaps in the City’s coastal plan but do not necessarily have buy-in from capital city agencies (DEP, DOT,

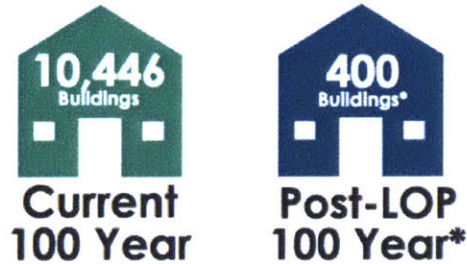


Figure 14: Projections for At-Risk Buildings on Staten Island's East Shore. Source: Dept. of City Planning 2017.

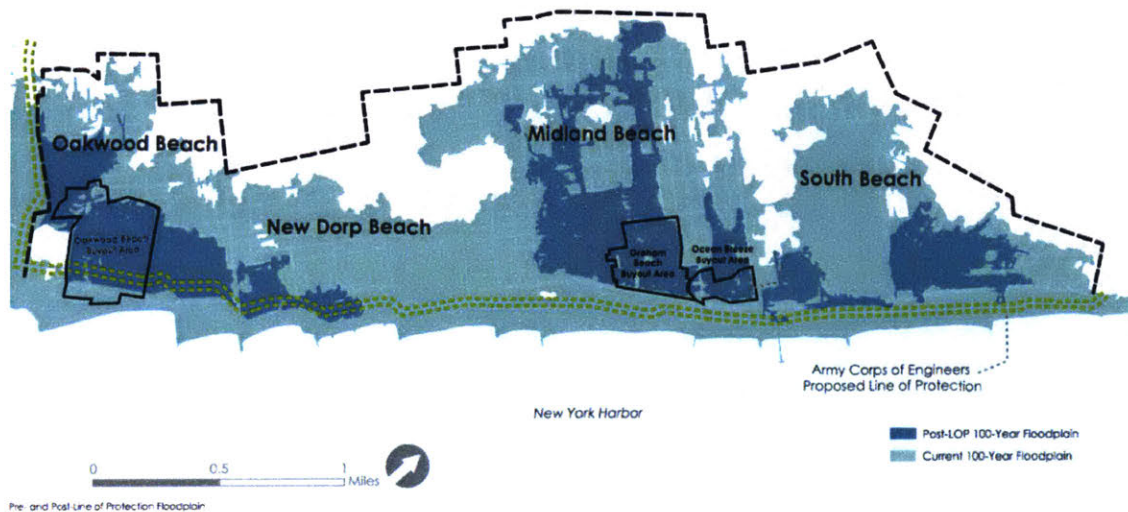


Figure 13: State Enhanced Buyout Areas Compared to 100-Year Floodplain, from NYC DCP Resilient Neighborhoods East Shore Report, 2017(Same as Figure 8)

EDC, among others) that would work together to make the plans a reality.

Even with complete compliance with the Resilient Neighborhoods plan, many residents would still remain in the 100-year floodplain. The plan for the East Shore of Staten Island, assuming success of the Line of Protection federal project and total participation

in the state buyout, still shows 400 buildings in the 100-year floodplain just within the study area. With current participation rates, 180 buildings will remain in the buyout areas, bringing the total buildings remaining in the 100-year floodplain just within this study area to 580. (See Figure 14.)

Future Buyout Options at the City Level

The City of New York introduced a pure buyout option into their Sandy recovery program Build It Back in 2015. (Housing Recovery Office 2016) Developed in response to feedback from HUD, this program created the option for city acquisitions with restrictions on future development. In the September 22, 2016 amendment to the city's CDBG-DR Action Plan, the program is introduced with language that is very similar to the existing state program:

The City believes that buyouts may be an important component of an overall housing mitigation and resiliency strategy in selected areas, alongside the resiliency measures outlined elsewhere in this proposed Action Plan....The City will offer a Buyout Program for homeowners who were not in a buyout area that was identified by New York State in its Buyout Program, if there is a programmatic need identified by the City such as the unavailability of the NYS Acquisition Program to the applicant. The City's Buyout Program is specifically designed to purchase flood-prone properties and remove impacted residents from harm's way and ensure that no residential development is permitted to be built in such locations....Buyout will only be offered if the City determines that the purchase of the property will meet its long-term goals of mitigating against future storm risk. (City of New York 2016a, 31)

For the hundreds of residents who advocated first to the city for buyout and then to the state to expand buyout areas, the late addition of this option must be disappointing. In

discussing the prospect of city buyouts, residents expressed disbelief that relief would only be offered to people in the areas that are technically at the highest risk, regardless of residents' personal experiences. This raises one of the most challenging issues in the use of buyouts as a resiliency strategy: that all buyouts occur in resource-constrained environments. Using a resource-constrained approach to target the highest-risk areas separates buyouts from their humanitarian disaster-response function and replaces it with a technical function that increases friction between residents, who perceive government overreach, and bureaucrats who perceive community intransigence.

Creating Resilient Outcomes

On the East Shore of Staten Island after Hurricane Sandy, residents advocated for a buyout program that would relieve them of the burden of their damaged or destroyed homes while preserving the land as open space so that no future Staten Islanders would suffer these same losses. After outright dismissal by public officials at the city level, New York State agreed to intervene. The extent of this intervention, and its resultant improvements to resilience in the area, were limited, and it was further constrained by conflicting goals and existing projects at the city level. This, as well as the inability to negotiate short sales¹⁷ led to attrition from the program. Although this buyout program succeeded in providing financial relief for approximately 450 landowners, the resilient outcome of the program has been limited by the political and practical realities of the case.

¹⁷ Forgiven debt above the FMV of the home.

Chapter 4: Discussion and Conclusion

It may be the most commonly-told story about the origin of the NY Rising buyout program: at an East Shore community meeting after Hurricane Sandy, local landowner Joe Tirone spoke about buyouts. A FEMA employee had casually mentioned the idea to him. Tirone explained what a buyout is. It is, he said, possible to leave and to take the pre-storm value of your property with you. He asked the crowd who would be interested in pursuing this option. In defiance of expectations, almost every hand in the room went up. (See, for example, Koslov 2014)

Ultimately, instead of using this initiative to form a protective buffer area in response to resident interest, the buyout program created in response to resident enthusiasm fell short of the most resilient outcome in several ways. The program was unable to expand its boundaries to meet the interest of residents, experienced considerable attrition once the program boundaries were set, and was unable to achieve the multi-scale cooperation between levels of government that is necessary for a fully resilient outcome. Several other resiliency projects are all underway at the city and federal level, but they all skirt any involvement with the state buyout program being conducted in the same area.

The program that resulted from resident advocacy was constrained in several ways. It was developed very quickly, and it was a response to resident requests, rather than part of a larger coastal resiliency plan. City leaders initially resisted anything that looked like a retreat from the shoreline. Ultimately, they went along with buyouts as a tool that could be used to implement coastal protection plans funded by federal CDBG-DR grants (City of New York 2016). City agencies, particularly DEP, undermined the state's buyout efforts and its attempt to create a viable buffer area.

One way that the city undermined the long-term success of the state’s effort to enhance resiliency was by declining to take ownership of state-purchased properties, leaving them as “orphans.” “Maybe there is a parent for this orphan. But it’s not looking that way right now,” said Dana Gumb Jr. in 2015. Gumb is the manager of the DEP Bluebelt Program, a city effort that overlaps with several of the state buyout areas. “So, what happens to this property?” he continued, “Who’s going to restore it, number one. Who’s going to remove the streets and all the utilities where that’s possible? Who’s going to excavate it if it’s necessary?” (Brady 2015, 46)

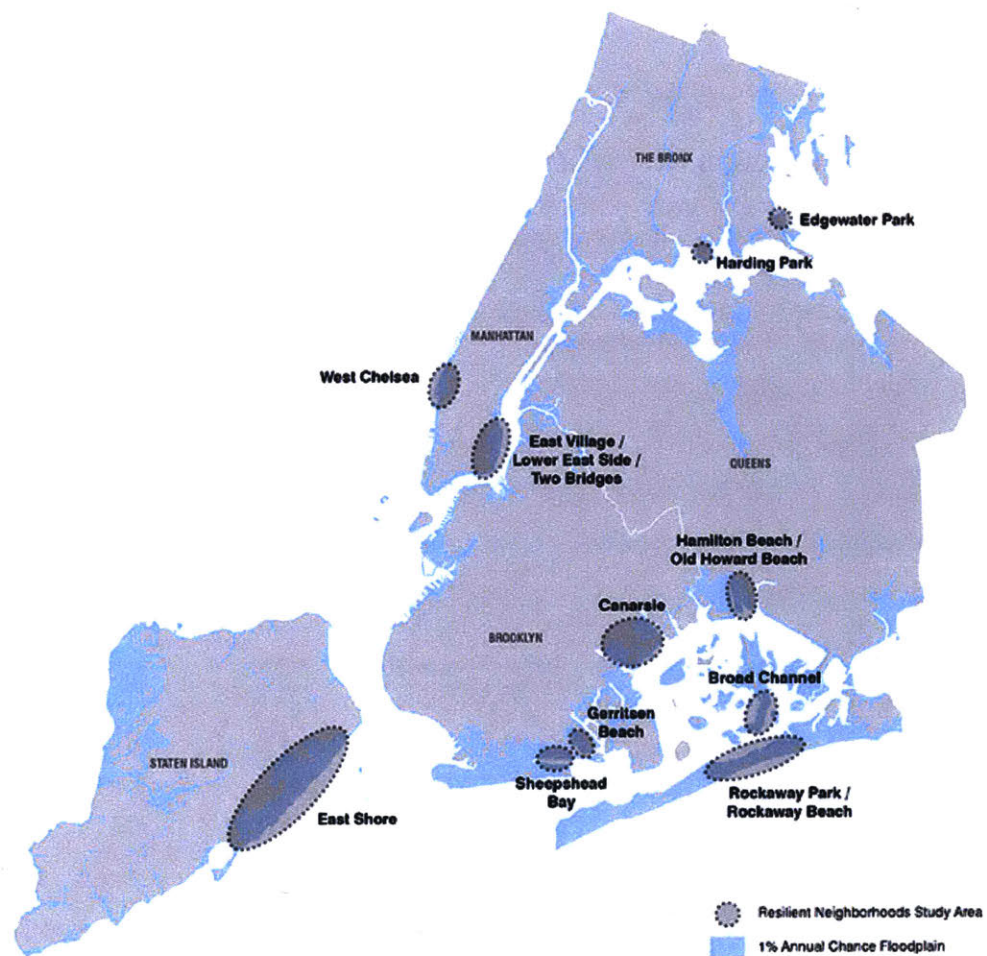


Figure 15: New York City Dept. of City Planning Resilient Neighborhoods Study Areas, Phase I. Source: DCP Resilient Neighborhoods Website

These concerns are central to the concept of incremental resilience. Although there is a resilience benefit to reducing the number of people who live in vulnerable areas, and a direct financial benefit for those people who choose to participate in a buyout, this is only the first step in creating a functional buffer area that will provide a long-term benefit for the area. In addition to purchasing the land, the state has committed to demolishing buildings, but there has been little conversation about any remediation that may be necessary in these areas. Finally, the long-term build-out and land management for this area is still unresolved.

City Use of Buyouts

Spurred by Hurricane Sandy, the City of New York has transitioned its climate planning from a “sustainability” model (reducing the city’s carbon footprint) outlined in PlaNYC, to a “resiliency” model, in which the city seeks to adapt to the anticipated changes caused by climate change and attempts to reduce damaging impacts as much as possible. One component of this planning process is the Resilient Neighborhoods program, headed by DCP.

This program targets specific neighborhoods and takes an in-depth planning approach to enhancing resiliency. In this program, DCP works with community groups and city agencies to “identify neighborhood-specific strategies, including zoning and land use changes, to support the vitality and resiliency of communities in the floodplain and prepare them for future storms.” (DCP N.d.a) Other resiliency planning programs run by other city agencies seek to do the same thing. The Department of Housing Preservation and Development (HPD) produced a coastal resiliency plan for the neighborhood of Edgemere, east of the Rockaway Park/Rockaway Beach. HPD published its Edgemere report in early March, 2017. The final proposal calls for green infrastructure upgrades, raised coastal edges, and, notably, a small buyout area called a Hazard Mitigation Zone on the northernmost part of the neighborhood, which protrudes into Jamaica Bay.

Edgemere is a remarkable neighborhood in that most of the land area is at risk of flooding in a ten-year storm (i.e. a storm that has a ten percent chance of occurring each year).

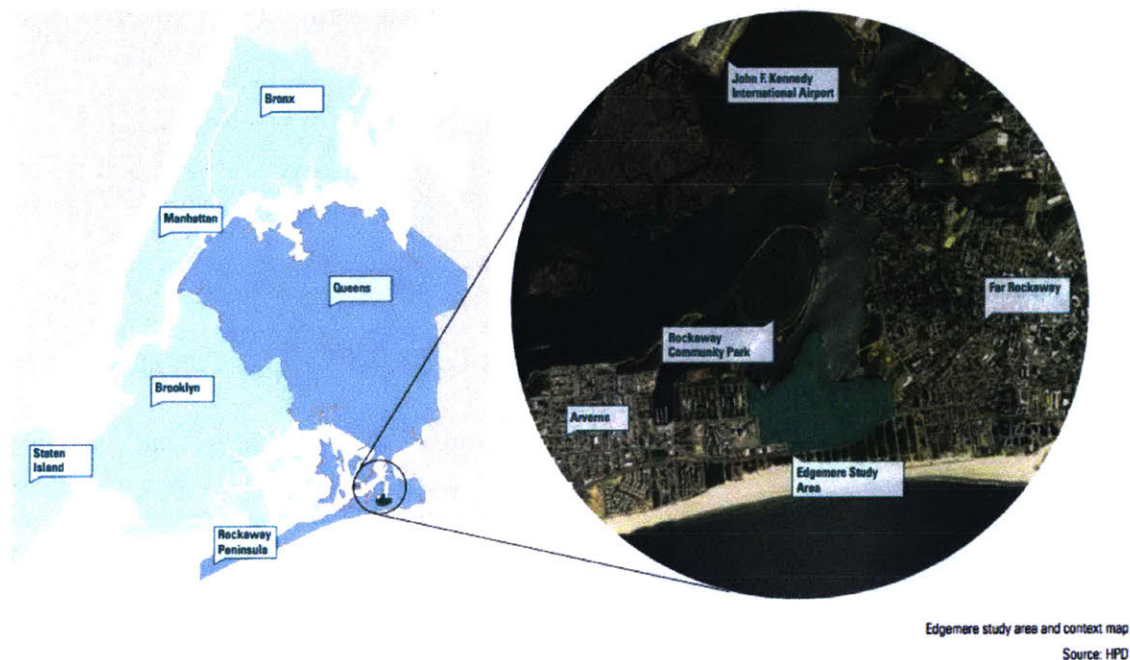


Figure 16: Resilient Edgemere Study Area. Source: Resilient Edgemere Community Plan, City of New York 2017

(HPD 2017) During Sandy, water from the Jamaica Bay side and from the ocean side met as the entire width of the narrow Rockaways peninsula was flooded. Buyouts in this area are being facilitated by the Build It Back program. Residents report that original offers of rebuilding assistance have been rescinded and replaced with offers to relocate families to newly-built homes farther inland. (Kensinger 2017) This is a notable shift from the city's earlier plans: until the real estate market crash in 2008 slowed and then stopped construction, the city promoted this area for affordable housing development and supported that development financially by purchasing properties in the area for development. (HPD 2017)

Unlike HPD's plan for Edgemere, the DCP Resilient Neighborhoods plan for the East Shore of Staten Island still does not include buyouts, even though this is the only area in the city where buyouts have already occurred. In addition to overlapping – and sometimes contradictory – layers of resiliency planning among city agencies, the city as a whole is only just beginning to develop a comprehensive waterfront plan, along with the capacity to monitor and maintain coastal infrastructure.

Creating a Comprehensive Coastal Strategy

The Strategic Initiatives for Rebuilding and Resiliency (SIRR) report presented the City's first comprehensive coastal protection plan in the immediate aftermath of Hurricane Sandy. This report outlined the history of coastal studies in the city, stating that, “a comprehensive flood protection study for the Upper New York Bay, one of the most densely populated and economically important waterways in the world, has never even been undertaken—let alone completed.” (City of New York 2013, 41) In 2013, funds were allocated to the USACE for a North Atlantic Coast Comprehensive Study

(NACCS). The final report was published in late January 2015 and called for buyouts and relocation. (USACE 2015) One key finding in the final report was: “Improved land use, wise use of floodplains, responsible evacuation planning, and strategic retreat are important and cost-effective actions.” (USACE 2015, iii) Local recommendations for Jamaica Bay include buyout and relocation for properties in the 10-year floodplain, such as Edgemere, but these recommendations have yet to be included in a plan produced by the city.

One reason for the exclusion of buyouts in citywide plans is a fundamental disconnect between residents’ and government officials’ perspectives. On one side, residents speak of fear about government overreach, being under-compensated for their homes, and being replaced by wealthier residents. If the government initiates a buyout, Koslov explained to me, this is very likely to be viewed with suspicion by residents, even residents who have suffered financial and emotional losses and have also advocated actively for a buyout. On the other side, government officials are aware of the possibility of friction and, although they believe that in some areas buyouts are the best and fairest option for most residents, they are still fearful of proposing them. Tirone indicated that residents were not interested in being targeted for buyouts based on a calculation of vulnerability, but on their personal experiences of loss. Many residents in vulnerable areas support buyouts, but effective communication between citizens and public agencies has lagged.

In the meantime, the City of New York is developing detailed plans like *Resilient Edgemere* and *Resilient Neighborhoods: East Shore of Staten Island* without a comprehensive coastal development and protection plan that addresses coastal retreat as an option. Until the larger goals of coastal planning are incorporated into a citywide plan,

overlapping agency responsibilities and conflicts between the levels of government will continue to muddy progress towards successful buyouts and resilient coastal management.

Interviews

In conducting this research, I interviewed employees of several New York City agencies who generously agreed to interview on the condition of anonymity. Their perspectives were essential to creating this thesis.

I also conducted the following interviews:

- Rachel Wieder, Director of Buyout and Acquisition Programs, New York State Governor's Office of Storm Recovery
- Joe Tirone, Representative of the Oakwood Beach Buyout Committee
- Liz Koslov, PhD Candidate at the New York University Center for Public Knowledge

Many thanks to everyone I consulted for this project for generously sharing their time and perspective.

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