RETREAT OR RESURGENCE? REIMAGING PLANNING FOR CLIMATE CHANGE IN NEW YORK CITY

COMMUNITY-BASED CLIMATE PLANNING: A CLIMATE-JUST PLANNING FRAMEWORK

Urban Planning Studio

Spring 2022

Graduate School of Architecture, Planning and Preservation

Columbia University

GSAPP

The Nature Conservancy

NYC Mayor's Office of Climate & Environmental Justice

Urban Planning Studio:

Retreat or Resurgence? Reimaging Planning for Climate Change in New York City

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To start, we must acknowledge that we are on stolen land. Columbia University stands on the ancestral and traditional homelands of the Lenape people, who were displaced when Dutch settlers colonized the Native American land of Manahatta, now known as Manhattan. We would like to recognize all those who were here before we arrived, and those who are still with us today. We would also like to acknowledge that all the lands that we focus on in this study are also stolen land: Edgemere, Hollis, Staten Island, and Harding Park.

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SUMMARY

The studio "Retreat or Resurgence" analyzes the ways in which climate adaptation planning in New York City could be pursued in a way that centers communities and social justice on a city-wide scale. This studio examines the role of managed retreat in climate adaptation planning, as well as dissects current community engagement practice, and proposes a community-centered methodological approach for those pursuing climate adaptation. This was done in support of the Mayor's Office of Climate and Environmental Justice (MOCEJ) and The Nature Conservancy joint workshop series What Happens to the Land after Residential Buyouts? and was a major part of its third workshop, at which the studio presented their work to over 70 government and non-profit climate adaptation leaders.

The studio pursued a community-first approach in order to generate our methodology, which includes a typological matrix, scenario planning, and pathways to climate adaptation. The studio began with a neighborhood-specific case study analysis and community engagement process in four neighborhoods across New York City: Hollis and Edgemere in Queens, Harding Park/ Clason Point in the Bronx, and Ocean Breeze in Staten Island. Using these four communities as a starting point, the studio pursued a community engagement strategy that helped inform the creation of a typology matrix, establishing what characteristics of these neighborhoods make them important case studies to consider in the wider New York City context. This typology matrix and our continued conversations with community members then helped us establish scenarios that reflected how various climate adaptation strategies could potentially affect social and spatial fragmentation, along with mitigating flooding risk. All of this informed the final product of our work, potential climate adaptation pathways, and an analysis of what 'types' of communities for which they are most appropriate. These pathways are not prescriptive policy recommendations. Instead, they are an example of how the city and state might apply community-centered flexibility to climate adaptation while still pursuing a city-wide strategy.

This report is intended to be a summary of the work we pursued over the course of our studio; we aim to be both critical and reparative in our approach, and realistic about our impact. While it would be impossible to change the climate adaptation paradigm in New York City from reactive to transformative over the course of one studio, the aim of this report is to add to the growing literature surrounding critical environmental justice as well as give the City our perspective on the challenges with their existing approach and offer a methodology that can begin to address these critical questions.

INTRODUCTION

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On October 29th, 2012, Hurricane Sandy hit the Atlantic Coast and the Caribbean. Leading to 44 deaths and $19 billion in damages in New York City alone, the city responded by introducing new programs to keep coastal New Yorkers safe from coastal storm surge and nuisance flooding, investing $20 billion dollars in resiliency planning, and a complete reorienting of New York City's climate adaptation planning regime to prevent 'The Next Sandy.' Almost ten years later, New York City was hit by Tropical Storm Ida, which led to at least 11 deaths of basement apartment dwellers, mostly in Queens and the Bronx. Ida exposed the limitations of reactive post-Sandy climate resiliency planning: while the city had spent 10 years and hundreds of millions trying to prevent the next Sandy, the next climate disaster was actually a much different storm that led to devastation because of rainfall, not coastal storm surge. The City has started to acknowledge the danger in only reacting to climate events, not proactively preventing harm.

This has led to a reexamination of some post-Sandy adaptation strategies in New York, such as **managed retreat** – policies that encourage people to move out of places that are facing increased risk due to climate change. In New York, managed retreat looked like the enhanced buyout zones in Staten Island; payments were offered to homeowners in three neighborhoods on Staten Island's devastated and flood-prone East Shore to move out and sell their land to the state to keep vacant, rather than rebuild their homes. The program, run by the New York State Office of Storm Recovery and funded by HUD and FEMA, has spent hundreds of millions of dollars purchasing homes in Oakwood Beach, Graham Beach, and Ocean Breeze, theoretically doing so to return the land back to nature and create a natural buffer zone between the coast and communities further inland. These neighborhoods were, unlike much of New York City, mostly single-family homes owned and occupied by homeowners; they have a distinct advantage due to the federal disaster policy designed around these kinds of homeowner communities. Managed retreat is a controversial topic in critical environmental justice theory – while it is often portrayed as a 'no-brainer' solution to getting people out of harm's way, in practice, it has the potential to exacerbate existing socio-spatial injustice, especially in places of vast inequality, like New York.

While managed retreat in Staten Island was promoted as a strategy that recognized that some places should simply be ceded to nature, our studio wanted to take a critical lens to this program, examining both the effects of managed retreat on the buyout neighborhoods ten years later, and the applicability of such a program in other neighborhoods in New York City. For example, while Edgemere, Queens, was not in the state's enhanced buyout area plan, there are many vacant lots where homes once stood due to the City's acquisition programs after Sandy. Because of the voluntary nature of the buyout program, the neighborhood is a patchwork of lots that lie vacant and homes of people that remained. Until now, the strategy has been to acquire these properties through the city or state, and get people out of flood-prone areas.

However, ten years out, these now-empty lots are simply that – patches of grass, neither being used for housing nor addressing community needs. There is a patchwork

plan for what the city should do with these thousands of properties, and communities have been left waiting. For example, as we will discuss in greater detail, this studio was partially inspired by lot management in Edgemere, where the city is trying to give a few lots over to a community land trust. However, the process of establishing this community land trust is coming under close scrutiny by the community, mostly low-income people of color, who do not trust that this city-led initiative has their best interests in mind given the decades-long neglect of Edgemere. This illustrates an important challenge of any climate adaptation practice in New York City: how can a government-led initiative succeed given the distrust for City Hall many frontline communities have due to the City's poor record of community engagement and broken promises?

Our client, the Mayor's Office of Climate and Environmental Justice, "envisions a land adaptation program that will support a network of government agencies, non-governmental organizations, and frontline communities in transitioning coastal lands with flood-vulnerable, privately-owned buildings into climate-resilient and sustainable uses that are adapted to chronic flooding and serve community needs." To that end, the City and The Nature Conservancy launched a stakeholder engagement initiative to support public agencies, NGOs, and frontline communities with managed retreat. Our studio sought to examine how this program aims to address the well-founded concerns of communities as well as the larger concerns surrounding a controversial and not often pursued strategy of managed retreat.

This is a topic that this studio takes extremely personally. Many of us grew up in New York during Hurricane Sandy, and remember its immediate aftermath, the pain our communities went through, the broken promises of rebuilding, and the way that people came together to care for one another. Others have similar stories from their hometowns. It is why many of us pursued careers in urban planning and why we wanted to center communities in the pursuit of just climate adaptation. The following report will examine not just managed retreat, but the larger landscape of climate adaptation policy in New York; we put forward not just our findings but a community-centered adaptation methodology that can be replicated by those seeking to analyze the effectiveness of these policies in neighborhoods across New York City. We hope that it reflects the care that we took in not only sharing the stories of people across the city but also their knowledge and expertise on what will make their neighborhoods safe.

PURPOSE OF STUDIO

PURPOSE

This studio explores the role community-centered actors and strategies can play in planning in low-lying areas across New York City, with a focus on communities challenged with repeated flooding, changes in property ownership and occupancy patterns, and vacancies. This studio aims to reimagine both the role of existing actors and land management strategies, such as community land trusts and land banking, in communities experiencing these transitions. Central to this studio is the examination of spatial injustices, such as racial segregation and economic inequality, and their role in the climate crisis.

OBJECTIVES

- Develop critical perspectives on community and urban resilience frameworks.
- Identify community-based actors and strategies that can support the various dimensions of planned retreat, including changing land uses and housing mobility.
- Map the current regulatory landscape of publicly-funded property acquisition programs and public and private land stewardship.
- Recommend potential pathways for operationalizing these planning strategies.

CLIENTS

We worked closely with our clients, the New York City Mayor's Office of Climate and Environmental Justice (formerly the Mayor's Office of Climate Resiliency) and The Nature Conservancy. The studio's work supported and was part of their workshop series What Happens with the Land After Managed Retreat?.

Mayor's Office of Climate and Environmental Justice (MOCEJ)

- Lauren Wang, Senior Policy Advisor

The NYC Mayor's Office of Climate and Environmental Justice works to ensure that New York City is prepared to withstand and emerge stronger from the impacts of climate change; mitigate its greenhouse gas emissions; and address needed remediation and environmental coordination efforts from an equity and public health perspective.

The Nature Conservancy

- Mike McCann, Climate Adaptation Specialist

The Nature Conservancy is a global environmental nonprofit working to create a world where people and nature can thrive. Founded in 1951, The Nature Conservancy has grown to become one of the most effective and wide-reaching environmental organizations in the world. Its mission is to conserve the lands and waters on which all life depends, boldly addressing the biodiversity and climate crises over the next decade.

A COMMUNITY-ENGAGED APPROACH

This studio champions a comprehensive community-centered climate adaptation planning approach in New York City. We consider this a necessary correction to the current paradigm that, to us, seems to focus disproportionate time, attention, and funding on climate change adaptation in Manhattan, particularly Lower Manhattan and the Financial District. There is a need for a corrective approach to the existing rational planning model, which results in projects like the contested $1.45 billion East Side Coastal Resiliency Project (ESCR), which is often vaunted as visionary by international climate adaptation experts, but has been under intense scrutiny due to a flawed community engagement process, which has alienated surrounding communities and has exacerbated class and racial tensions between those in the Lower East Side.

Planning for climate change must center the concerns of frontline communities: thousands of New Yorkers, most low-income and people of color, who live along vulnerable coastlines and in low-lying inland neighborhoods.

KEY PRINCIPLES

CLIMATE JUSTICE

Our studio chose to define environmental justice as communities of color defining their past, present, and future. In that context, the critical environmental justice movement calls for uplifting community-based organizations in decision-making rooms. This means prioritizing managed retreat outreach and funding efforts to communities of color in a way that completely aligns with the just transition mission of the Climate Justice Alliance, shifting from an extractive to democratized system of planning.

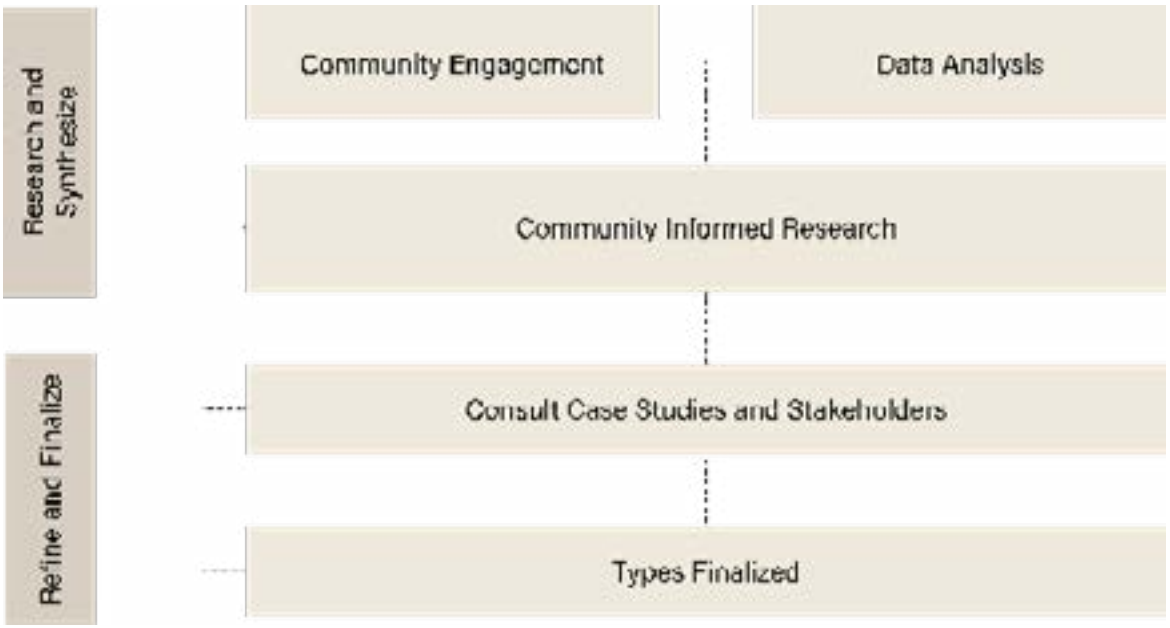
LOCAL KNOWLEDGE

In the process of determining what managed retreat and environmental justice might look like, this studio has worked with and collaborated with various community groups and organizations that have been doing similar work for years, and some, for decades. Working hand-in-hand with community groups, our findings and engagements have allowed us to compile this comprehensive report.

COMMUNITY-BASED PLANNING

Above all, we were motivated by a desire to advance social justice principles and community empowerment through the planning process. We explored the role community-centered actors and strategies can play in planning managed retreat in low-lying areas across New York City. We focused on spatial injustices such as racial segregation and economic inequality and how low-income residents and communities of color can play a role in climate adaptation planning. We reimagined both the role of existing stakeholders and land management strategies, such as community land trusts and land banking, in communities experiencing these transitions.

METHODOLOGY



In this studio, we designed a series of iterative methodologies that built on and informed one another. We used community-based research and ethnographic community interview processes in four differing neighborhoods to develop neighborhood-specific case study analyses. In consultation with MOCEJ, we selected neighborhoods where repeated flooding is expected to result in a change in the occupancy and ownership of property, dislocating and dispossessing potentially thousands of residents, and a need for new land uses.

Comparing these case studies, we developed a typology matrix, a chart that distills the key factors of New York City neighborhoods in regard to their ability and challenges in responding to climate change disasters. This matrix is an attempt to scale up the lessons learned from our community-specific research to a city-wide level and was updated throughout our process. This is to be used merely as a starting point for engaging in deeper community engagement, rather than as a deterministic methodology for other New York City neighborhoods.

We then tested different scenarios for land management and analyzed them based on our typology matrix, the likelihood of implementation, and the ability to mitigate environmental risk. We subsequently selected pathways that best preserved social and spatial cohesion in our neighborhoods and analyzed them in greater depth.

Planning practices typically utilize community engagement at the end of research projects to check a box or satisfy a requirement. Our studio believes that just climate planning must center community engagement and neighborhood strategies from the beginning. Otherwise, we exacerbate social and spatial fragmentation. We used non-structured methods of community engagement, like talking to community leaders, homeowner association presidents, basement apartment organizers, mothers, elected officials, small business owners, priests and pastors, nonprofits and community-based organizations, geologists, deli owners that know everything about their neighborhoods, local flooding aficionados, and people on the street who care about their communities. These communities are also deeply personal to us: places we go to mandir and religious functions, places we organize for city council candidates, places we grew up, and places our family and friends live. We wanted to root our research in the needs and concerns of the community as much as possible.

KEY QUESTIONS

- How can New York City effectively transform from a reactive climate adaptation planning system to a proactive planning system?
- What are key neighborhood characteristics that the city should consider when pursuing climate adaptation policy?
- How can New York City center communities in climate planning? What role do communities play in creating and deciding climate change plans?
- Can the City build trust between communities and the government? How can the City repair its relationship with communities that it has neglected?
- What is the best way to engage the community in climate adaptation planning? Are community-based organizations an effective and legitimate proxy for the community?
- What is the role of managed retreat in just climate planning? What are the potential strategies for managing land left behind by buyouts of homes in flood-prone areas? Can managed retreat be pursued in a way that centers justice?
- What are the best uses of vacant lots in communities facing climate risk?
- What role should top-down exercises like scenario building and abstract neighborhood planning play in climate adaptation policy?

CASE STUDIES

02

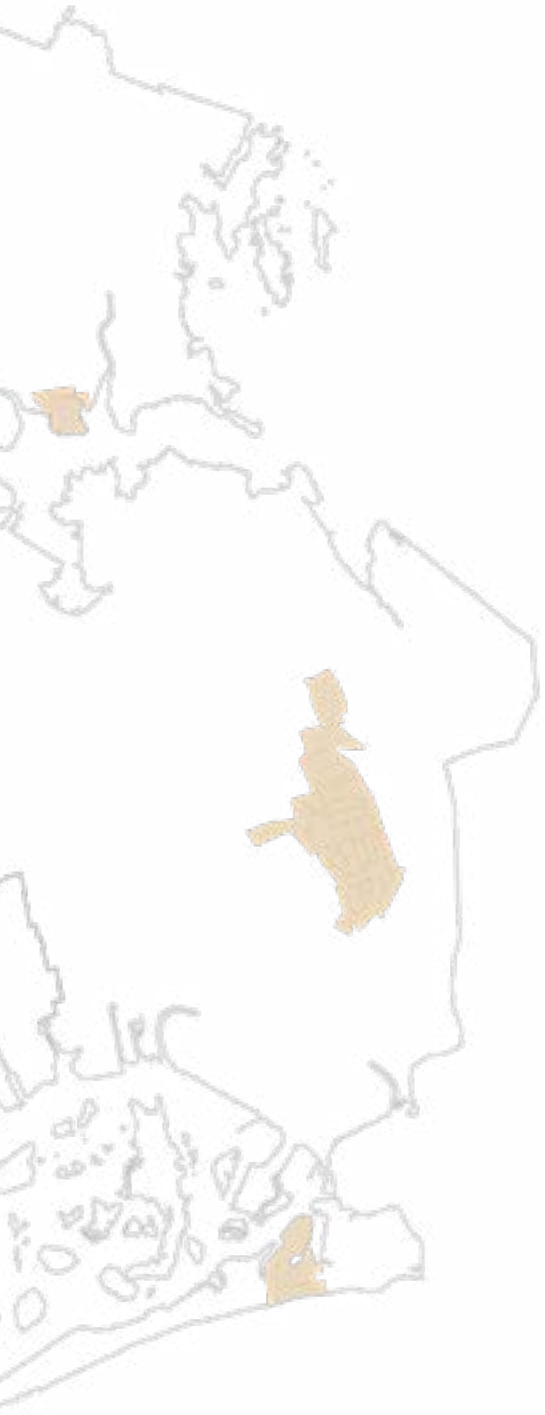
BRIEF INTRO TO CASE

Harding Park, Bronx

Ocean Breeze, Staten Island

Hollis, Queens

Edgemere, Queens



Our neighborhood-specific case studies informed much of our research, and serve as the basis for our community-centered climate adaptation pathways. We considered four communities across New York City with unique environmental and socioeconomic conditions to serve as neighborhood-specific case studies. Our desk research and data analysis owes an incredible amount to the people that we spoke to, who were generous with their time, welcomed us into their homes and communities, and gave valuable direction for what we should investigate as we expanded our typology matrix and pathway. Our four neighborhoods are Edgemere and Hollis in Queens, Harding Park/Clason Point in the Bronx, and Ocean Breeze in Staten Island. Using our research of these four communities, we were able to develop a typological climate adaptation framework with a range of categories to help describe the conditions different neighborhoods across the city may face. We spent the first half of the semester deeply researching and understanding these neighborhoods, and have spent the second half using them to develop and understand typologies and pathways.

OCEAN BREEZE, STATEN ISLAND

Ocean Breeze is a quiet coastal neighborhood on the East Shore of Staten Island. It was one of only three communities to receive neighborhood-wide buyout offers from the state post-Hurricane Sandy, totaling 679 properties. Ocean Beach, as it existed prior to Sandy, was a white neighborhood of homeowners who mostly occupied the homes they owned. Like the rest of the Eastern Shore of Staten Island, it developed from a beach bungalow community to a suburban white working-class enclave. According to the U.S. Census Bureau, Ocean Breeze is whiter than the rest of New York City at 88 percent, although representative of Staten Island south of the Verrazano Bridge. About a third of the residents are born outside of the US, mostly in Russia and Eastern Europe. With an Annual Median Income of $79,000, it is also wealthier than most of NYC, though less wealthy than the higher elevation area on Staten Island, such as Todt Hill.

However, Ocean Breeze today is quite different from what it was pre-Sandy. Most of the land

sits vacant, with only one or two houses on each block remaining. Those who survived Sandy have mostly moved on, either taking the buyout and moving away, renting their rebuilt homes, or passing away. However, some newer occupants have found things to love about the more empty neighborhood. We met one resident, a renter of a house that was not bought out; he and his wife had moved to the quiet area four months ago because she 'got in trouble for feeding the geese' near their old home. Now, they can feed a whole flock of geese, turkeys, and ducks that wander outside their property because they are the only house for hundreds of feet. When we asked the renter what he knew about Hurricane Sandy and the buyouts, he told us he had no idea that the hurricane had hit this neighborhood, nor the impact the buyout program had on the area.

STUDIO RELEVANCY

Ocean Breeze was badly damaged by Superstorm Sandy in 2012, which devastated the entire Eastern Shore with record flooding that killed 11 community members. Ocean Breeze was originally not included in the buyout program, which was only offered to neighboring Oakwood Beach. However, the neighborhood was able to organize a unified request to the state – demanding a buyout option for hundreds of homeowners at pre-Sandy prices. The request was granted, making Ocean Breeze one of only three communities that actually went through a voluntary managed retreat process after Hurricane Sandy. Our studio wanted to investigate two questions in Ocean Breeze: first, why was Ocean Breeze able to organize so effectively to receive buyouts? And second, what has happened in Ocean Breeze in the almost ten years since Hurricane Sandy – how have the buyouts affected social and spatial fragmentation?

EDGEMERE, QUEENS

Edgemere is located on the eastern part of the Rockaway peninsula, a barrier island with stark socioeconomic and racial segregation. The eastern part of the island, Breezy Point, for example, is mostly white and wealthy. However, the western part, comprising Edgemere and Far Rockaway, is largely Black and Latinx, with a lower average median income than the rest of the peninsula and the rest of the city. Roughly 36 percent of Edgemere residents live below the federal poverty line, and the unemployment rate in the area is at 17 percent. Located far from much of the city, the community faces unique social and economic benefits and disadvantages and is at the frontline of climate change.

We visited Edgemere as a studio, walking a large stretch of Beach Drive, starting at the RISE Community Center, a civic engagement and youth development center that advances social equity and the physical well-being of the Rockaway peninsula. We ended our journey north at the Bay, where we observed a number of vacant lots, allowing us to envision new possibilities for the Edgemere community. We spoke with the RISE Project Manager, Daniel and RISE Coordinator, Daris, who expressed decades-worth of concerns about Edgemere's vulnerability to natural disasters as well as community disappointments with its transportation, food access, land use, and community spaces.

STUDIO RELEVANCY

Edgemere, Queens is a low-lying waterfront area facing physical and environmental challenges related to geography, infrastructure, and high climate risk. Edgemere was amongst the communities hardest hit by Hurricane Sandy in 2012 where thousands of residents were without electricity, heat, clean water, and health care for weeks. The social, economic, health and infrastructure challenges residents faced after Sandy both predated the storm and were exacerbated by it. Due to various buyout efforts, Edgemere is now dotted with underutilized vacant lots. This landscape has resulted in a detailed plan, Resilient Edgemere, developed by NYC Housing and Preservation Development.

In response to vacant land from the buyout, residents have expressed interest in acquiring a community land trust (CLT) – a land management strategy to increase low-income homeownership as well as a capping of resale prices and the preservation open spaces for urban agriculture. However, there are concerns by community members that this decision process for lot usage is opaque and top-down, and fueled by a historic distrust of the city government which has often left Edgemere behind. Residents are concerned that it will not address their main concerns: food justice, rampant development pressure, and lack of transportation.

HARDING PARK, BRONX


Castle Hill


Clason Point


Harding Park


Shorehaven

Harding Park is a unique coastal community that sits along the Southeastern coastal area of the Bronx. A resilient community in the truest sense, Harding Park residents successfully fought back against Robert Moses' plans in 1957 to raze the neighborhood as part of his Soundview slum clearance initiative, deemed a corrupt deal. Harding Park is the central part of our study area, which includes the adjacent waterfront areas of Clason Point and its Shorehaven development, and Castle Hill. Harding Park is referred to as "Little Puerto Rico" by the locals due to its strong Puerto Rican community, and also due to its Puerto Rican village-like feel with one-story bungalows, large verandas, narrow streets without sidewalks, and the waterfront.

Here, we met Gladys, a resident of the modern Shorehaven condominiums for 17 years who is originally from the Dominican Republic. She invited us over for lunch where she told us that Harding Park is tight-knit and that its residents have a deep-seated attachment to their community, passing their homes down from generation to generation. This community is defined by its Hispanic identity and a majority

of the population is Latinx, with one-third born outside of the contiguous US – primarily in Puerto Rico and Latin America. In addition, one-quarter of the population is non-Latinx Black. A mixed low-to-moderate income area at large, the median family household income in our study area is $69,000.

Homeowner associations (commonly referred to as HOAs) make up much of the communities in our study area. These self-governing associations unite homeowners and maintain governance boards, and pay fees toward communal property and amenities. The Harding Park area has several HOAs: the Harding Park Homeowners Association – the City's first-ever low-to-middle-income cooperatively owned community – the Shorehaven Homeowners Association, a more recent gated condo development, along with the Castle Hill Homeowners Association and the less formal Waterfront Garden Homeowners Association in Clason Point. We also spoke to Haydee Rosario, board president of Shorehaven HOA. She told us that Shorehaven is primarily middle income and has a more even distribution of race in their community, compared to the rest of our study area. Haydee also mentioned that the area's HOAs know each other well and work with each other, but sometimes have differing views. For example, Shorehaven was a proponent of the NYC Ferry coming to their community because their residents are newer and favor new investments in the area, while longtime residents in Harding Park were opposed because they would prefer to maintain the quiet, working-class essence of the area.

STUDIO RELEVANCY

This collection of communities is very unique due to its high concentration of homeowner associations. A unique form of local governance in New York City, they have very interesting implications for how land management could work here in a buyout scenario. In particular, Harding Park, Shorehaven, and Castle Hill are responsible for maintaining and funding different aspects of resiliency infrastructure. Each community has different responsibilities; a longtime community leader who's known by many as the unofficial Mayor of the East Bronx, Israel 'Izzy' Morales, President of the Castle Hill HOA – a member of the Waterfront Alliance's Rise to Resilience Coalition – told us that his HOA, across Pugsley Creek from the Waterfront Garden HOA, occasionally collects dues exclusively for sewer repairs and maintenance. The sewerage in Castle Hill is privately owned, including the community-scale sump pump. Harding Park has faced significant flossing and ponding issues due to the lack of stormwater management in its private alleys.Gus Dinolis, a community leader in Clason Point since the 1970s and founder of the Waterfront Garden HOA, informed us that his area experienced flooding with some of the storms and that it is not a private community like Harding Park and Shorehaven are, with private sewers and more formalized governance.

HOLLIS, QUEENS

Hollis, Queens, is a working-class inland community which is majority Black and brown. Hollis is predominantly residential, characterized by low-density, single-family homes; to maintain this character, Hollis implemented new zoning policies like the restriction of multi-family zoning in 2007. Overall, there is a relatively high rate of homeownership, 50.5 percent. Of note, Jamaica and Hollis contain one of the largest Black homeownership rates in New York and beyond, compared to a citywide homeownership rate of 31.9%.

However, many homes were financed with high interest/ subprime loans, and after the 2008 crash and recession, there was a high rate of foreclosure on these lower quality mortgages. While there has been a rebound in recent years (10.1 notices of foreclosure rate per 1000 family and condo properties as of 2020), foreclosure rates remain high, and Hollis community members are still purchasing high-interest loans rather than government-backed loans. This relationship between banks, the government, and home ownership presents interesting implications for buyout programs.

In Hollis, 40% of low-income households are severely rent burdened; as of 2019, 7.5% of rental units are affordable at 30% AMI, 79.8% of rental units are affordable at 80% AMI, and 99.4% of rental units are affordable at 120% AMI. Because Hollis suffers a housing affordability crisis, and due to New York's strict basement apartment regulations, many residents opt to live in informal basement apartments. Although no dataset can accurately capture the number of informal basement apartments with certainty, our original analysis indicates that Hollis has over 10,000 units. Often, these basement apartments exist in areas at greater risk of stormwater flooding.

STUDIO RELEVANCY

Hollis, Queens, is unique from the other case study communities as it sits inland, where the glacial moraine ends in the center of Queens. Although Hollis is not surrounded by water, it is at major risk of storm and nuisance flooding within the next thirty years. Moving south from Hillside Avenue toward 90th Avenue, a valley created by an elevation drop of 82 feet to below 50 feet exacerbates flood risks during regular and severe rainfall.

In general, it is working-class populations in Hollis generally that lie within higher flood risk zones. Those who live in basement apartments are at especially high risk because of the unique safety problems in flood conditions. While the NYC Community Profile does not estimate there to be any basements in the floodplain, we know this data is, at best, inaccurate, and at worst, intentionally misleading and fatal; in 2021, flash flooding from Hurricane Ida resulted in the drowning of two Hollis basement dwellers. Nine others died in basement apartments citywide.

Every conversation we have ever had with Hollis residents, from service providers to gender justice champions, is about basement apartments and groundwater flooding. Local organizers are championing buyouts for those at risk in the floodplain. During one visit to Hollis, the research team spent time at a local mandir near 179th Street. While we were accidentally locked in while lurking, it resulted in a fortunate conversation; we connected with the pandit, who one researcher's mother knew, and he let us walk around and made small talk. When we spoke about doing neighborhood research on flooding, he offhandedly mentioned that he was a civil engineer who has worked on flooding and basements and Hollis' flood-prone typology.

COMMUNITY ENGAGEMENT

OCEAN BREEZE, STATEN ISLAND

Trying to get a community perspective on Ocean Breeze was heavily affected by the fact that we were functionally working with two distinct neighborhoods: Ocean Breeze as it existed before Sandy and during the buyout process and Ocean Breeze post-buyouts. Both challenged us in different ways which highlighted the extreme social and spatial fragmentation that Ocean Breeze has experienced. To get the perspective of people who lived through Sandy in Ocean Breeze, we reached out to members of the Ocean Breeze Civic Association such as Steve Elias and Frank Mosczynski. While Frank especially was generous with his time and went as far as to meet us in a parking lot in Ocean Breeze, he lives in South Jersey now, which anecdotally seems to be the case with a lot of the people that moved out of Ocean Breeze post-buyout. Basically, except for Frank, nobody really had any interest in talking to us because they were no longer residents of Ocean Breeze. Most of the organizations that arose to help out after Sandy – from Tunnels to Towers, to Occupy Sandy, to the civic association – were either defunct or at least not willing to answer emails or calls.

Trying to understand Ocean Breeze as it exists currently was also challenging because the

buyouts have left the area devoid of any natural community gathering point. The closest thing, the deli on the corner of Father Capodanno Boulevard and Seaview Avenue, is held down by Ali, who knows all about who stayed, who left, and how the neighborhood changed. But as we tried to ask him about spaces where the community gathered and who actually live in Ocean Breeze now, he had trouble answering. Walking around the neighborhood, we met one new renter who we asked about contact with neighbors – he told us he really only knows the people that come to cut the grass and collect garbage from the vacant lots. We got in touch with the community liaison at the nearby Staten Island University Hospital who told us that they do not really talk much to the current residents of Ocean Breeze. We also reached out to the Russian Orthodox Church in nearby Midland Beach where we faced a language barrier; from our broken conversation in mixed Russian and Polish, it seems like they mostly serve the Midland Beach area. Finally, we reached out to St. Margaret Mary Roman Catholic Church and asked the priest there if they kept in contact with any parishioners in Ocean Breeze. What we

found instead was that the church had actually moved most of its services after Hurricane Sandy, and followed parishioners inland, performing most masses at St. Christopher's Church in Dongan Hills. St. Margaret Mary at this point "is only used for a funeral every now and then."

EDGEMERE, QUEENS

Community engagement for Edgemere came with some complications. What started off as a very positive community engagement experience in Edgemere, was soon met with some hardship. Thanks to Daris Garnes and Daniel from RISE (Rockaway Initiative for Sustainability and Equity), we received a very detailed account of the state of community engagement, enrichment, and organizing in the Edgemere community. RISE hosted a series of community forums, group activities, and events for community members to gather over an array of different interests, and this is where we were able to learn much about Edgemere's stakeholders and continue with our research. Considering that we had a tough time getting into contact with many community groups, corporations, and others, RISE stepped in and provided beneficial resources in which we could supplement the lack of responses from these hard-to-reach entities.

Reflecting on the lack of responses from other community groups, the Edgemere group hopes to further interrogate whether community members have the same experiences trying to come into contact with larger interest groups, and have, as a result, had a difficult time in making sure their voices are heard. With this, we also wonder what issues that RISE hasn't had the opportunity to engage that have gone unnoticed, or even blatantly ignored. However, we want to thank the many people at RISE, organizers and community members alike that have told us much about Edgemere, and that has pointed us to countless resources to produce this study.

HARDING PARK, BRONX

Our project expanded from Little Puerto Rico in Harding Park to the adjacent waterfront areas of Clason Point and Castle Hill because we quickly recognized that the communities are socially connected through homeowner associations, family networks, local public schools, places of worship, and through Bronx Community Board 9. The areas all lie within FEMA's 100-year floodplain and expanding our study area allowed us to assess the level of social and spatial fragmentation that exists throughout the area's four homeowners associations. Expanding our study area from Little Puerto Rico also gave us the opportunity to engage with more community leaders in the area, allowing us to tell a more holistic story of flooding and climate justice in the Southeast Bronx.

Engaging with several communities in the Clason Point area entailed making multiple trips throughout the semester to the Southeast Bronx via subway, bus, and ferry to ensure that we, as best as we could, were getting a community-informed picture of the complexities of the area, its residents, its flood risks, and its ideas regarding flood resilient solutions and the way land is managed. Upon arrival, we were fortunate that the Clason Point area welcomed us with open arms. On our first winter visit to the area, we met Gladys, a resident who invited us over for lunch and informed us about the area's varying levels of flood risk and social cohesion. She also introduced us to her son, David, an undergraduate student at Columbia, and Haydeé Rosario, a longtime community leader in the area and President of Shorehaven HOA. Several others, from local residents, Community Board 9, and NYC Park's GreenThumb program, connected us to community leaders that we were seeking to speak with, including Izzy Morales and Gus Dinolis, underlining the level of trust across what is a relatively tight-knit and safe area, as several residents informed us.

Critically examining our engagement, however, we were not fortunate enough to speak with the Harding Park HOA who canceled their invitation to meet and did not respond to our follow-ups. We appreciate the Harding Park HOA's consideration nonetheless. Speaking to a community leader in the area about this case, it became clear that it is highly likely that the HOA would prefer to maintain the area's quiet, off-the-grid nature, distant from any attention from outsiders that may compromise their sense of community, cost of living, and unique neighborhood character. A takeaway for any planner or aspiring planner: never impose yourself onto any community and respect people's privacy.

On the other hand, although we learned that residents would prefer to stay in the flood-prone Clason Point area for as long as they could, speaking to residents on the street informed us that flooding and climate change are legitimate concerns shared by people in the community. Our interview with newly-elected City Council Member Farías, an elected official whom many residents admire and respect for her active presence in their communities, confirmed that she is well aware of the flood risks in the area and is committed to advocating for the climate-smart infrastructure investments that her constituents desire.

Lastly, it's important to note that our team consisted of two researchers with close ties to the Bronx, one who's from the borough and one who studied and worked in the borough previously, a factor that we believe allowed residents to trust and relate to us, even though we are not specifically from Harding Park.

Two members of our team also resemble the residents of the study area's predominantly Latinx and Black population, a factor that we believe allowed residents to feel as though they were talking to neighbors who live around the corner from them. We say this because representation in planning matters and it makes a world of difference when planners come from communities of color like Castle Hill, genuinely understand what such communities struggle with due to lived experience, and are tirelessly committed to ensuring that the interests of such communities are voiced and met.

Thanks to the residents, community leaders, and public officials that we spoke to, we are excited to have produced what is undoubtedly an unprecedented community-informed analysis of the greater Clason Point area – due to the lack of literature and community engagement in the area on the City's part – that, in continual collaboration with the community, can be built upon if done in an intentional, non-extractive way. We are pleased to have made new friends in the community who've graciously invited us over for summer cookouts, dominoes, and Puerto Rican music – offers we gladly accepted!

HOLLIS, QUEENS

We started our project by considering the neighborhoods of Flushing/Kissena Park and Hollis, and eventually narrowed down our scope to Hollis, because two members of the group had already established relationships (from friends, to family, to organizing and professional relationships) in South Queens. Building off of this made community engagement easier and seemingly less extractive. We also learned the most through casual conversations with friends, uncles, aunties, and cousins who grew up in Queens. There were many lessons learned from Hollis by simply walking up and down streets and observing aspects of the built environment that contribute to environmental risk. We walked down 183rd Street, where the two basement apartment residents lost their lives and saw the extreme drop in elevation from 82 feet to 50 feet. We observed Hollis' social cohesion after watching neighbors helping each other empty their basements, navigate construction, talk to each other across stoops, or stop by the neighborhood's many South Asian and Indo-Caribbean restaurants, grocery stores, and small businesses (shoutout to all the roti shops that fed us during our visits). Our most meaningful conversation happened because of chance: we talked to Pandit Ram Hardowar (President of the Hindu Federation of Mandirs) about basement apartment flooding when we got trapped inside his mandir.

We also used more formal community engagement methods. We spoke with Rima Begum, a housing organizer for Chhaya CDC and BASE – Basement Apartment Coalition, who talked to us about the fight for basement apartment legalization, especially following the immediate aftermath of Hurricane Ida. We also spoke with Hallie Kim, an organizer from MinKwon who does case work with basement apartment residents, but in Flushing. We spoke to John Choe, a community leader and former City Council candidate, who publicly opposed the Flushing rezoning and

extractive development and housing practices. We reached out to our friends, many of whom are gender justice organizers in the South Asian / Indo Caribbean community in Queens who work with the Jahajee Sisters or South Queens Women's March, interviewing Aminta Kilawan. Our friends have been instrumental in not only our research but in their efforts to serve their community. Eshti's friend Shivani, who lives on 184th Street, shared her emotional story of the responses of neighbors and family members after Tropical Storm Ida, and anecdotes about where the storm left her community.

To understand the geological conditions of Hollis contributing to flooding, we talked to geophysicist Klaus Jacob, a professor at Columbia University who studied similar phenomena across the city for his own research. We also wanted to understand the historical environmental racism that occurred in Hollis and spoke to Laura Shepherd who provided us with old maps of topological features including one showing former Rock Hollow Pond in all of its original glory, which became the area most prone to flooding. We spoke with John Kelly, an expert on all things flooding and infrastructure in Central and South Queens. Finally, we talked to Jim Killoran from Enterprise Housing and Lee Ilan from the Department of Environmental Protection

Of course, there were more people than we could count who did not respond to our emails or calls: we reached out to all elected officials in the area (from Assembly, to State Senate, to City Council, to Borough Presidents), numerous non-profits and community-based organizations, every civic association in South Queens, and every contact-able member of each adjacent community board and weren't able to establish any connections. We attended a Community Board meeting over Zoom for Queens Community Board 7, which represents a primarily immigrant Asian community and was entirely white.

TYPOLOGIES

03

INTRO TO TYPOLOGY MATRIX

TYPOLOGIES		
Natural Hazard Risk	Coastal Tidal Flooding	C
Cumulative Climate Risk	Low	
Ownership Focus	Renter	
Unique Built Environment Conditions	Capital Improvement Advantage	Cumu
Displacement Risk	Low	
Organizing Barriers	Low	

In order to better analyze communities in New York and how they fit into our climate adaptation pathways, we developed a typology system that helps us define communities based on a few indicators that our research determined are important to recognize. These typologies are a living document and were informed by research from our site-specific engagement, as well as data analysis of environmental risk, socioeconomic conditions, land tenure, and the built environment.

TYPES		
oastal Storm Surge	Flash/Chronic Flooding	Inadequate Stormwater Management
Medium		High
Homeowner (Single family)	Homeowner (Multifamily)	Common Interest Ownership
lative Maintenance Risk	Below Floodplain Occupancy	Fenced Off Shoreline
Medium		High
Medium		High

NATURAL HAZARD RISK

Our natural hazard risk typology describes the varied environmental risks neighborhoods across New York City face. Our types of risk include the risk of coastal storm surges, the risk of chronic and or flash flooding, the risks posed by high impermeability, and the risks posed by stormwater on neighborhood infrastructure.

During Hurricane Sandy, the entirety of Edgemere was completely flooded. The neighborhood, which is a barrier island, continues to struggle with significant infrastructural damage following the storm, in addition to its regular tidal flooding. The neighborhood's flat topography coupled with its high water table puts it at significant risk for flooding from high tides and heavy rains. Sea level rise predictions suggest that Edgemere will continue to face significant flood risks moving forward.

CUMULATIVE CLIMATE RISK

Cumulative climate risk describes areas that face persistent, recurring climate risks and are continuously exposed to environmental threats, mainly focusing on flooding risks and storm hazards.

To zoom in on Ocean Breeze, Staten Island: we interviewed Frank Moszczynski, head of the Ocean Breeze buyout committee, and we learned that Ocean Breeze faces persistent environmental threats because it was once an island. When a storm surge occurs, water comes in from the shore and also from the sides, because Seaview Avenue was once an inlet and has now been raised 10 feet. Rainwater also slopes down from the hills and exposes this area to severe flooding. At the same time, the invasion of reeds exposes Ocean Breeze to the risk of fires during dry spring days. These environmental risks, compounding the storm surge damage, were a major reason Ocean Breeze was able to be successfully bought out. In our conversations with community residents, we also heard stories of their experiences with disasters, such as when a Deli store worker told us about how he escaped from the waist-deep water that came in during Hurricane Sandy. The cumulative climate risk of these continuing disasters has affected the lives of the people in this area.

In contrast, the communities of Clason Point in the Bronx face evolving levels of risk. While recent efforts have shored up coastlines on the peninsula, poor housing stock and rising sea levels will impact the magnitude of future climate risk. Walking down the streets, we noticed how the mixed condition of homes often reflects the varying socioeconomic conditions in small subcommunities – cumulative climate risk drastically varies on a block-by-block level. For example, Gus Dinolis, President of the Waterfront Garden HOA, recalled times when Gildersleeve Avenue in Clason Point experienced severe flooding, submerging his house's boiler and allowing

residents to jet ski down the street. After Sandy struck New York, Gus' flood insurance paid him approximately $17,000 although his house incurred approximately $35,000 worth of damages. When Gus filed an insurance claim after Ida for post-storm house damages, he was told that money was already offered to him during Sandy and was only eligible for $1000. On the other hand, Gladys from Shorehaven told us that her newer Shorehaven HOA-owned condominium complex experienced minimal flooding, likely due to the complex's elevated infrastructure and relatively inland position.

OWNERSHIP FOCUS TYPE

Our Ownership Focus Type describes how homes and lots are owned and lived in throughout a community, including the level of formality and incorporation.

In Harding Park, HOAs make up all of the communities in our study area. Inherent to this ownership structure is the co-ownership of some sites and structures. It also creates forums that allow for community-wide decision-making and vitality. We met David, an undergraduate student at Columbia University who grew up in the neighborhood, and told us that HOAs are the largest community actors in the area, hosting political forum events, neighborhood meetings, block parties, elections, and providing the community with services that range from security, sewage repairs, and snow removal. Gus Dinolis, President of the Waterfront Garden HOA, noted that while his informal HOA in Clason Point consists of more renters, he receives and provides support to other HOAs when necessary, and attends

Clason Point

Mix of multi-family homes

Castle Hill

Cookie-cutter multi-family homes in the HOA

the Harding Park HOA's monthly meetings when serious neighborhood matters need to be addressed collectively amongst various HOAs

This is in contrast to Ocean Breeze, which is the only one of our case study neighborhoods to receive a buyout post-Hurricane Sandy. One reason for this may be Ocean Breeze's ownership structure – mostly single-family owner-occupied housing prior to the buyouts. The legacy of the buyouts complicates this, which we saw when speaking with a renter in Ocean Breeze during our site visit. In addition, our many attempts to get in contact with the civic association are representative of the interests of homeowners in Ocean Breeze and indicate that the organization has been inactive since after the buyouts. So, while most of the homes are owned privately, much of the vacant land is owned by the state and city – leading to a patchwork of buyouts and rebuilds and a neighborhood in limbo.

Harding Park

Bungalows on a private street in the HOA

Shorehaven

Condo row houses in the gated HOA property

UNIQUE BUILT ENVIRONMENT CONDITIONS

Unique built environment conditions refer to aspects created by housing injustice and urban planning that increase or decrease the likelihood of disaster, natural hazard, and flooding vulnerability. These include factors like the cumulative need for maintenance, below floodplain occupancy, and capital improvement advantage. As urban planners striving towards reparation and creating a more just built environment, this category is deeply important in building better strategies in our neighborhoods.

One key example of unique built environment conditions is Hollis' high rate of basement apartment dwellers, who have co-vulnerabilities for disasters and buyouts. Basement apartment dwellers, who live in units that cannot be rented or occupied per city and state standards around minimum requirements for light, air, sanitation, and egress, are more vulnerable to the horizontal and vertical challenges of flooding. For example, subgrade housing construction conditions lead to improper sealing between the base of the wall and footings or cracks in the basement floor, causing hydrostatic pressure to force water through. Or, because basement apartments are not legal, residents are structurally denied proper tenant protections.

DISPLACEMENT RISK

The risk of displacement that communities currently face is important, especially as the city continues to undergo socioeconomic changes. This typology combines factors that create varying levels of displacement risk across our studio's neighborhoods, such as population vulnerability, housing conditions, and market pressures like gentrification. Understanding the level of risk involves both qualitative and quantitative data, which can be aided by tools like the City's new Equitable Development Data Explorer.

Edgemere faces severe threats of displacement, which are exacerbated by the risk of flooding from sea level rise and storms. The Equitable Development Data Explorer indicates that displacement for Far Rockaway, Breezy Point, and Broad Channel is intermediate, but these are three very different neighborhoods, and the data likely masks a deeper threat of displacement in low-income communities of color like Edgemere and Far Rockaway. In the aftermath of Hurricane Sandy, the Rockaways counterintuitively faced more development pressure, as federal money poured in to rebuild homes and developers capitalized on the opportunity. Today, if you walk west of Edgemere, you encounter Arverne by the Sea, a gleaming new development that has sprung up in the decade since Sandy. There are fears that another storm could lead to similar results in Edgemere.

In Harding Park, according to the Equitable Development Data Explorer, the risk of displacement is intermediate. About half of the population has an annual income below 200 percent of the federal poverty rate and 98 percent of the population is non-White. However, it's important to note that Harding Park is not adjacent to neighborhoods in the Bronx that are currently facing high levels of market pressure. Speaking to residents in the Harding Park area also gave us the impression that, while property values are going up and certain demographics such as the Bangladeshi population are rising in what is a predominantly Latinx area, gentrification and displacement are not major concerns at this time. Izzy Morales, President of the Castle Hill Homeowners Association, told us that he is disappointed in the City's coastal resiliency efforts because he feels that the City mostly prioritizes Manhattan, excluding the Bronx from plans. As a Puerto Rican, Izzy feels that the City has done nothing for his community and for Latinx people in

general. Driving us around Castle Hill, Izzy showed us several areas of Pugsley Creek Park that were left contaminated for years, telling us that he is worried about the future of his grandchildren and whether they'll be able to safely stay in the neighborhood.

ORGANIZING BARRIERS

An important part of this studio has been understanding how communities can relate to the government in order to meet their needs. We've found that despite all of our neighborhoods having very urgent needs to adapt to climate change, they do not have equal access to programs, resources, and other necessities.

Hollis is a socially cohesive neighborhood with a robust Indo-Caribbean and Black organizing environment and service delivery, particularly with organizations like South Queens Women's March, Desis Rising Up & Moving (DRUM), and Jahajee Sisters. Both formally through these organizations and informally through community ties, Hollis has been able to successfully draw attention to environmental justice issues in the community. Despite this, the conditions for agitation in Hollis are seemingly less enabling than in other flood-prone communities, like Ocean Breeze on Staten Island. This type helps us to understand barriers that make it harder for neighborhoods like Hollis to advocate for their needs, despite the deaths of basement dwellers and repeated calls to action. In conversation with resident and friend Shivani, we were told about how the community came together in response to Tropical Storm Ida, both to deliver much-needed help for their neighbors and to agitate against the government for buyouts. Local organizers immediately set up resource distribution on the block and involved the whole community in the push for more allocation of funds. She told us that if there were not any deaths in the neighborhood, no one would have cared enough to show up, "it felt like officials only came for a performative press release."

Despite being a very different neighborhood, we received a similar sentiment from the community members who were in Ocean Breeze immediately after Hurricane Sandy; they felt like they had to fight the government every step of the way to become one of only three communities that successfully organized to receive home buyouts. Our studio wanted to examine what conditions led to this community being successful in organizing for buyouts, while a community like Hollis was not able to. Frank Moszczynski, head of the Ocean Breeze buyout committee, told us about how the community was able to successfully reinvigorate their civic association to aggressively lobby elected officials and government leaders. The organizing in Ocean Breeze looks a lot different than in Hollis – here their civic

association is composed of mostly white homeowners, volunteer firefighters, and lots of people born and raised not just in the United States but also in Ocean Breeze itself. Based on what we learned from Frank, while these factors didn't necessarily make it easier to organize, there were specific social factors, such as the existence of a previously organized civic association and long-term residents who knew and trusted one another as well as structural socioeconomic and racial factors, which made it so that the community did not face the political barriers that a place like Hollis has to organize around.

SUMMARY OF SCENARIOS

04

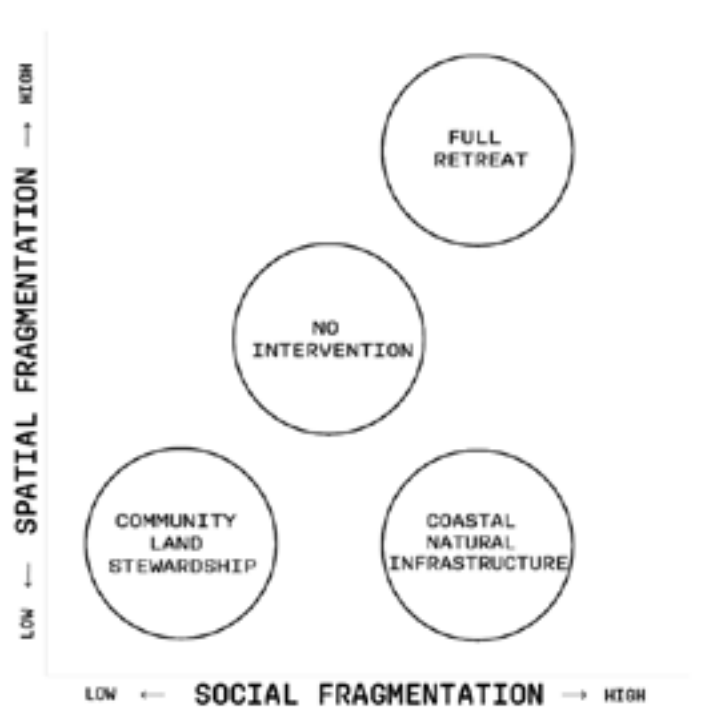
PROCESS OF TYPOLOGIES TO SCENARIOS

Using the typology matrix as well as continued engagement with our neighborhood sites, we completed an exercise where we investigated four different potential scenarios in each of our neighborhoods, in 5, 10, and 25 years. For example, what does increased investment in green infrastructure look like in Hollis in 10 years? What about in Harding Park? For the purpose of this exercise, we established that in 8 years, there would be a major shock that impacts all communities, albeit differently. In each neighborhood, we analyzed the pathways based on a set of questions, asking: how does this strategy implement social fragmentation and cohesion? How does this strategy implement spatial fragmentation and cohesion? What is the likelihood of this pathway occurring? How much does this pathway mitigate flooding and environmental risk? We then graphed the answers to these questions on two axes: social cohesion vs spatial cohesion, and likelihood vs mitigation.

EDGEMERE:

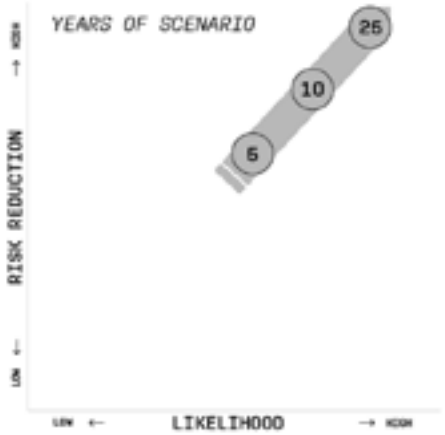
WHAT ARE THESE SCENARIOS?

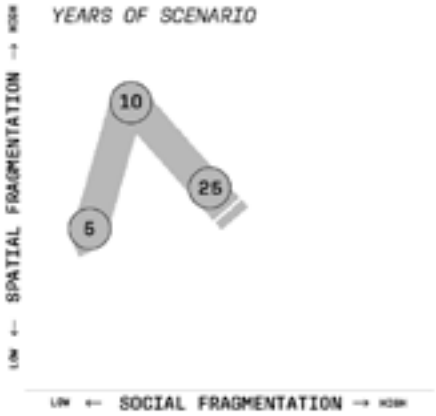
Edgemere evaluated **no intervention, community land stewardship,** and **coastal infrastructure.** The three scenarios are depicted in their relationship of the likelihood of occurrence and impact in regard to natural hazard risk reduction.



COMMUNITY LAND STEWARDSHIP

- Decreased social and spatial fragmentation
- High probability of occurrence





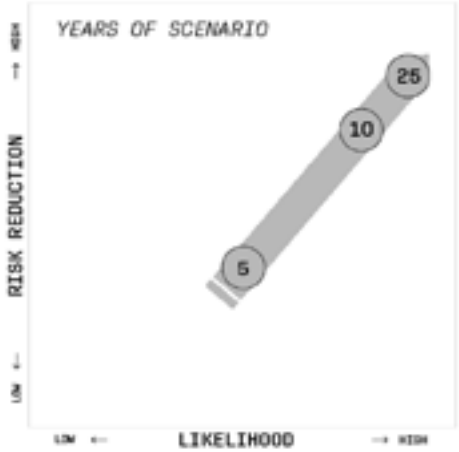
5 years

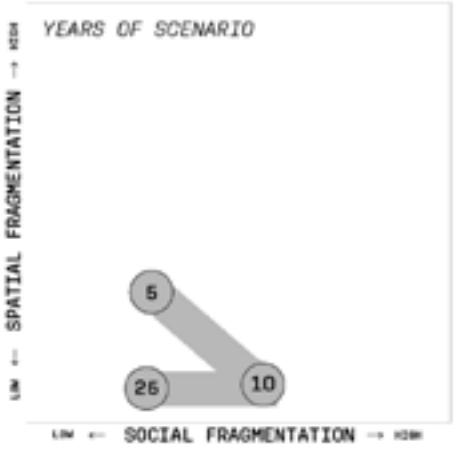
10 years

25 years

COASTAL INFRASTRUCTURE

- Increased social cohesion
- Decrease of environmental risks
- High probability of occurrence

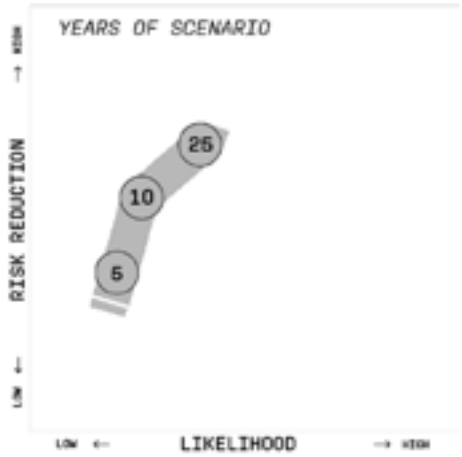


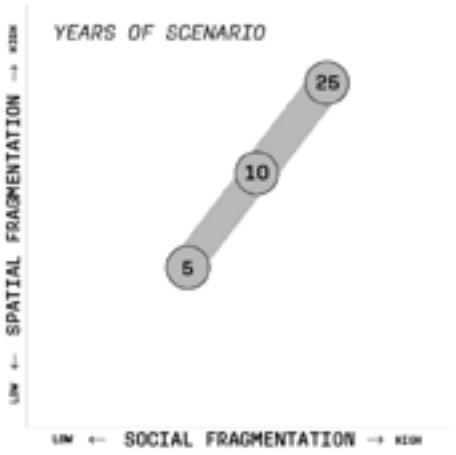


5 years 10 years 25 years

NO INTERVENTION

- Increased spatial and social fragmentation
- Low probability of occurrence, because the city is already investing in community land stewardship and coastal infrastructure.



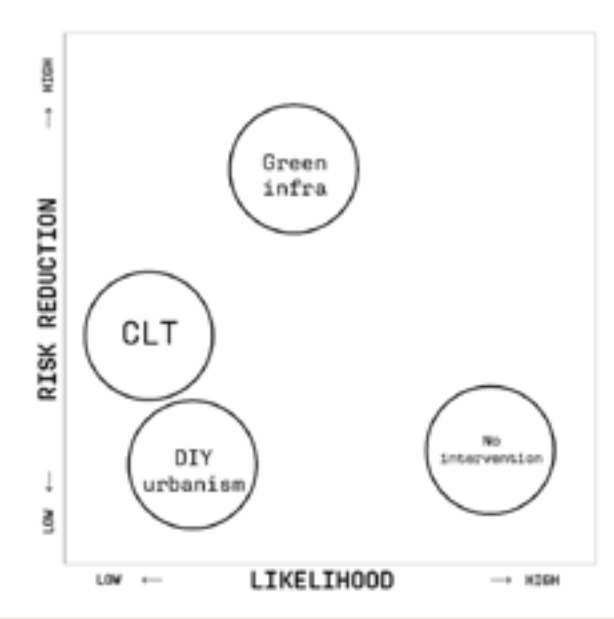


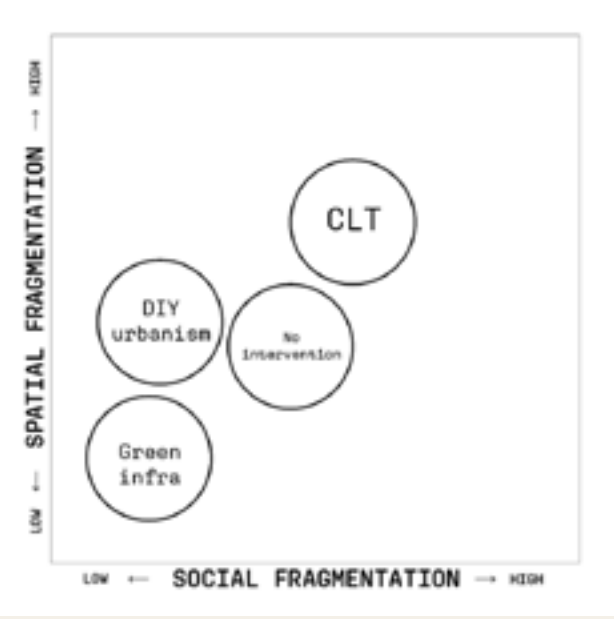
5 years 10 years 25 years

WHAT ARE THESE SCENARIOS?

HOLLIS:

Hollis evaluated **green infrastructure, DIY urbanism, community land trusts** and **public programming**, and **no intervention**. The four scenarios are depicted in their relationship of the likelihood of occurrence and impact in regard to natural hazard risk reduction.

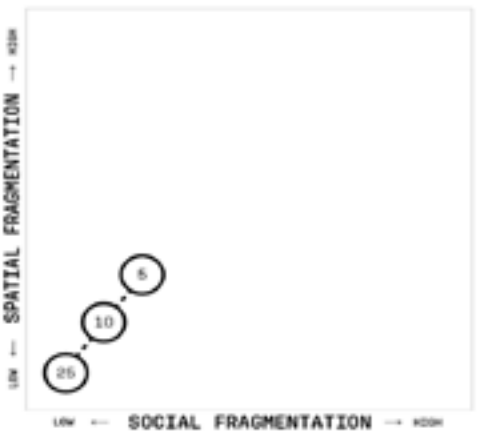


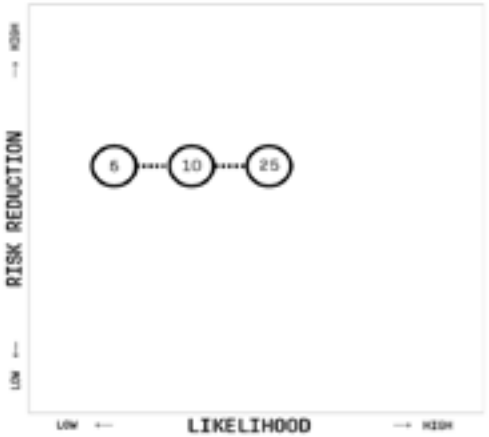


GREEN INFRASTRUCTURE

- The city's actions in upgrading Hollis's sewage system would retain the very strong social and spatial that exists in Hollis because no one would have to leave their community.

- When the City buys out homes and turns the space into a CLT, basement dwellers are bought out and receive minimal URA funds to move, which does nothing about the thousands of other basement dwellers that live in Hollis and are exposed to extreme risks of flooding and fear of reporting below grade conditions.





5 years

10 years

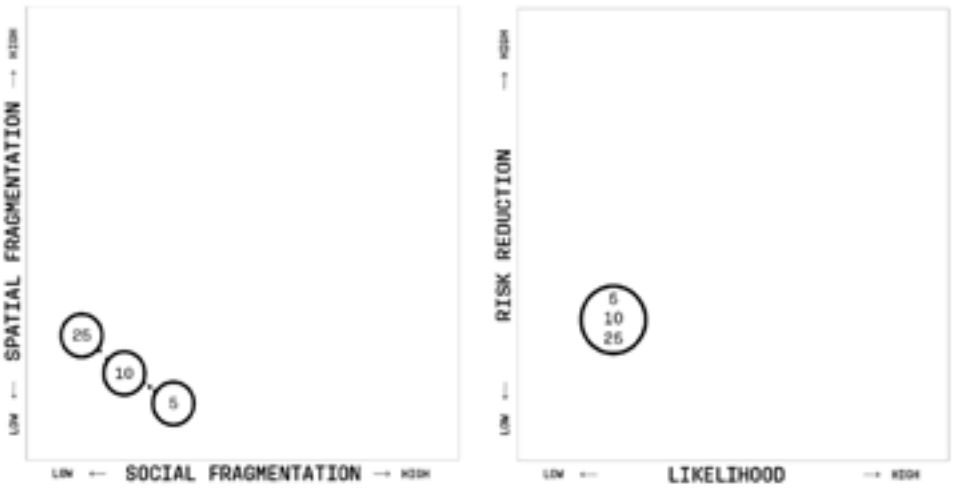
25 years

DIY URBANISM

- Informal basement apartment dwellers are still at risk, as this scenario does not account for the needs that would impact them unless the program explicitly gives funding to make housing upgrades in basements.

- DIY urbanism as a tactic allows for high levels of social cohesion because residents can (1) stay where they are, (2) are trusted to make decisions about how to mitigate their environmental risk, and (3) are given significant funding to do so.

- Although some people may have great mitigation strategies for their individual properties, the DIY projects would have little effect on community-level risks, such as risks posed by the bowl keeping environmental risk high.



PERMEABLE PAVEMENTS

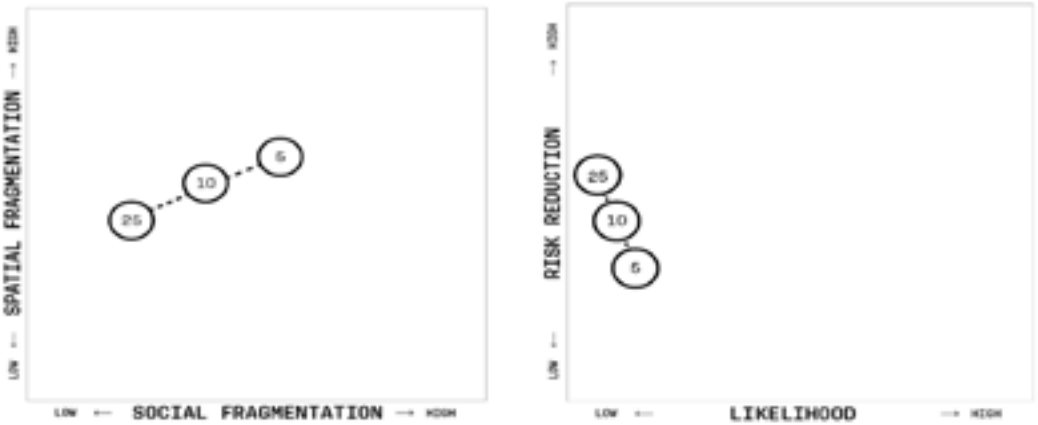
RAIN GARDENS

RAINWATER HARVESTING

COMMUNITY LAND TRUSTS

- This scenario ultimately increases spatial fragmentation, due to active community members leaving, and increases social fragmentation, due to new spatial conflicts that will arise with vacancies, the CLT, and community garden.

- In this scenario, environmental risk continues to aggregate for most community members. While buyouts address environmental risk for the 12 people who receive it, it prevents other community members from reaping the benefits.



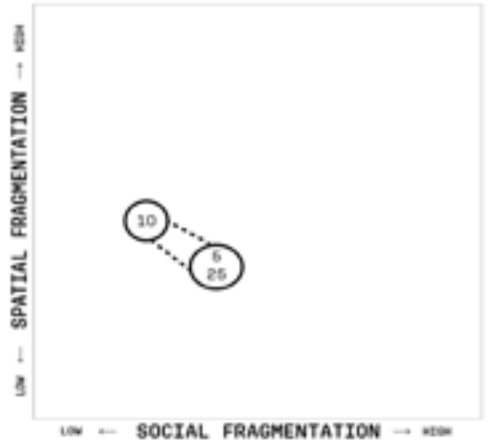
5 years 10 years 25 years

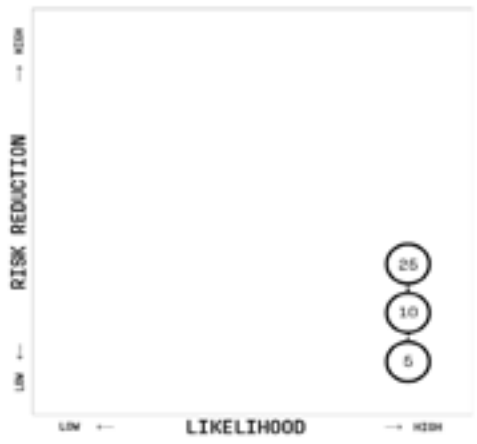
NO INTERVENTION

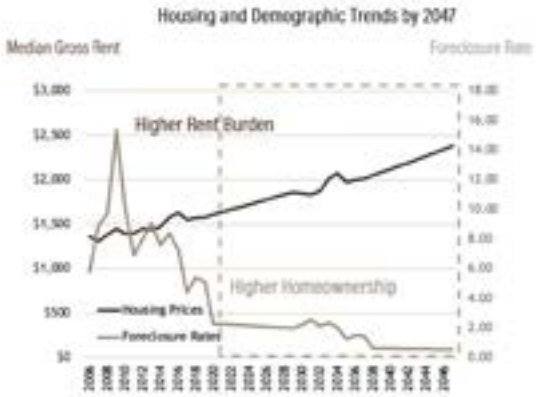
- In this scenario, Hollis' tight-knit community remains extremely socially cohesive, while remaining slightly spatially fragmented due to the increasing frequency of storms due to climate change.

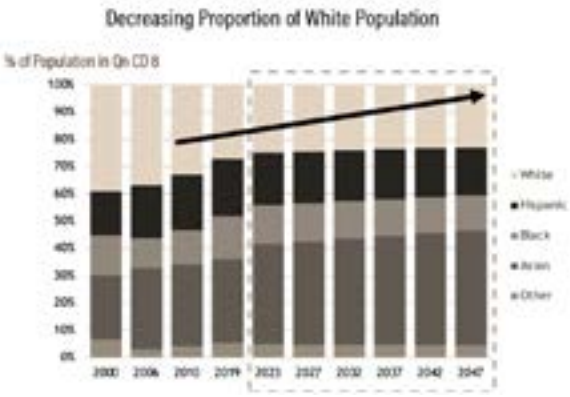
- Although no substantive changes are made, due to the unaffordability of housing, informal basement apartments continue to exist without proper protections. Furthermore, because most houses and buildings are older, absent legislative intervention, most houses remain at risk.

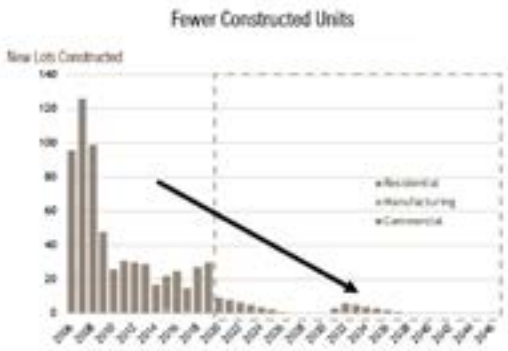
- Because no infrastructure projects have been undertaken, the same risks are present within Hollis due to its natural ecology.









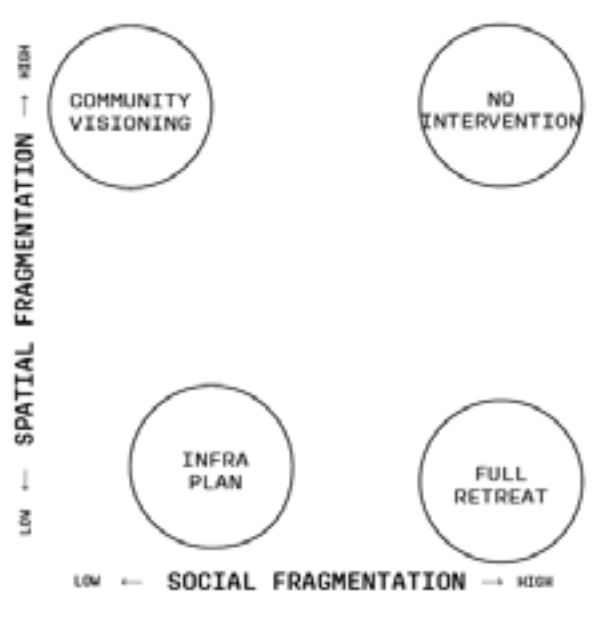


Source: Extreme Stormwater Projections, Map Pluto, Gothamist Article

OCEAN BREEZE:

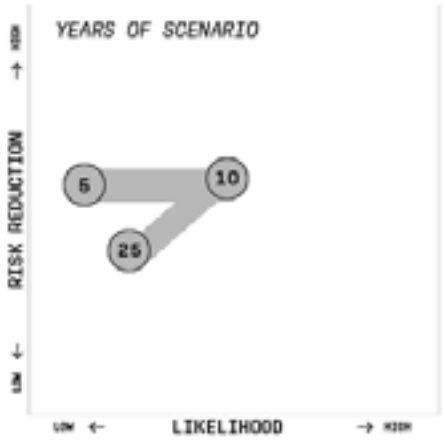
WHAT ARE THESE SCENARIOS?

Ocean Breeze evaluated **strong local organizing, full retreat, build it back,** and **no intervention**. The four scenarios are depicted in their relationship to the likelihood of occurrence and impact in regard to natural hazard risk reduction.



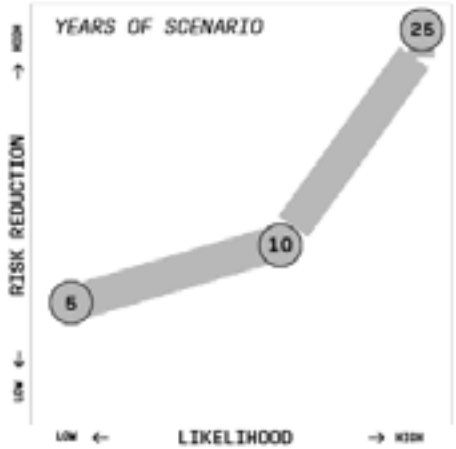
STRONG LOCAL ORGANIZING

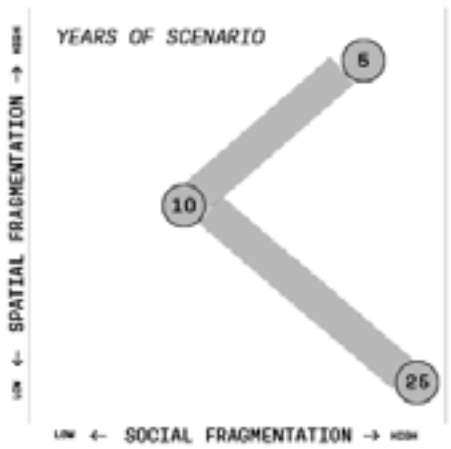
- Community-led visioning would require vast changes in the social cohesion of the community and is not likely in the next 5 years, but still remains a possibility as the social makeup of the community changes. This scenario would lead to high spatial fragmentation but low social fragmentation, as the community comes together to decide on strategies for vacant land management and the new realities facing Ocean Breeze.



FULL RETREAT

- Full managed retreat scenario means that all land in Ocean Breeze would be purchased and managed by the government, and all existing residents leave, which is a scenario that completely evaporates social cohesion while consolidating land through buyouts



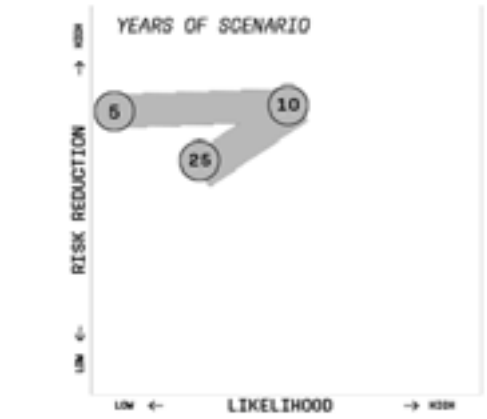


5 years

10 years

25 years

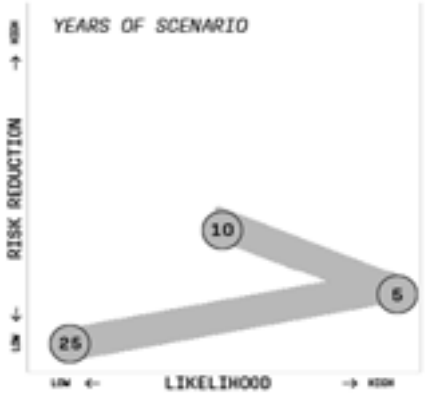
BUILD IT BACK

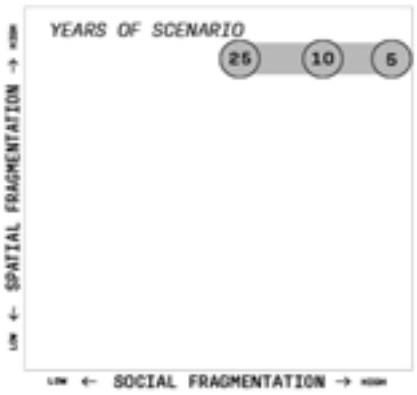


NO INTERVENTION

- With regards to social cohesion, some organizations, like Staten Island Youth Soccer, have shown an interest in stewarding land.

- Ecologically, the risks of coastal flooding due to climate change will continue to rise as mitigation efforts continue to be delayed.



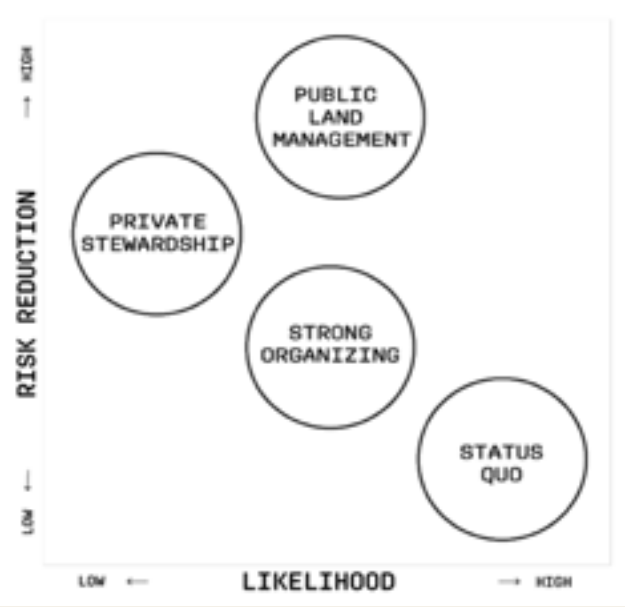


5 years 10 years 25 years

HARDING PARK:

WHAT ARE THESE SCENARIOS?

Harding Park evaluated **greater private stewardship, expanded and active public land management, strong local organizing,** and **no intervention**. The four scenarios are depicted in their relationship of the likelihood of occurrence and impact in regard to natural hazard risk reduction.



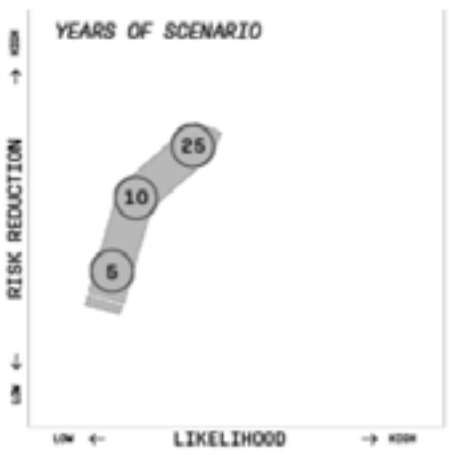
GREATER PRIVATE STEWARDSHIP

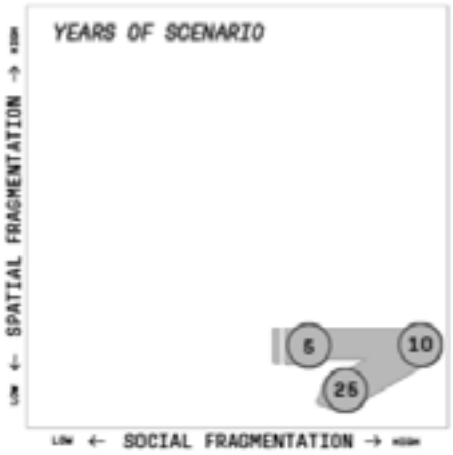
- With low social fragmentation, there is a chance for the area to have an increased number of occurrences of private stewardship of land owned by both public and private entities. Private land stewardship requires minimal barriers to social cohesion.

- This private management strategy takes would-be abandoned land and transforms it into a gathering place for the community, mending both the social and spatial fragmentation in the area.

- The relatively low social fragmentation of the area combined with the resources of the organizations allows for both the implementation of unique recreational and resiliency-based land uses.

- While private land stewardship of public land does not directly reduce environmental risk, it does help to reduce the negative externalities caused by vacancy when it comes to social and spatial fragmentation.





5 years

10 years

25 years

Examples: Greater Private Programming

RELIGIOUS SPACES

COMMUNITY GARDENS

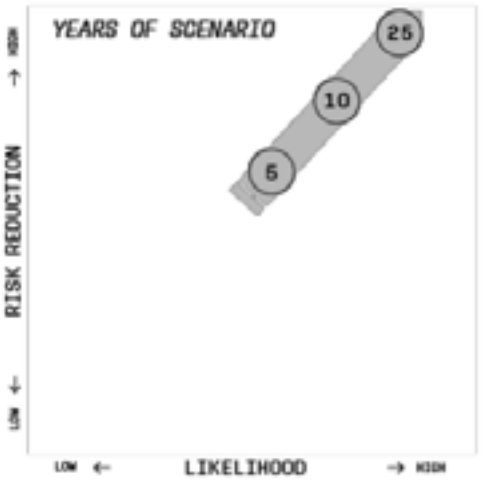
PRIVATE USE

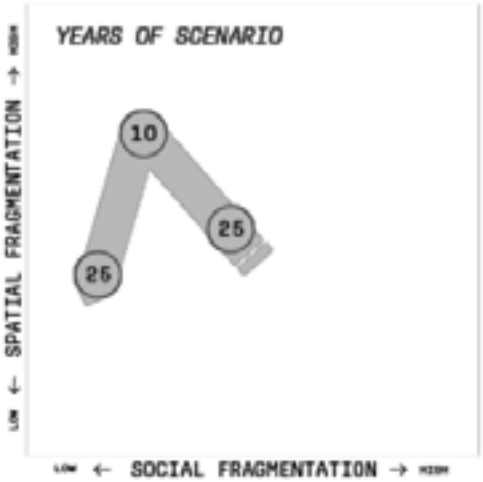
EXPANDED AND ACTIVE PUBLIC LAND MANAGEMENT

- This scenario would occur in a landscape of middling social and spatial fragmentation. Of note, this would go forward successfully if there was little organized objection by residents.

- In this scenario, individual ownership and management would be reduced, likely diminishing community ideals.

- On the flip side, these interventions would likely be the best venue for resiliency measures, particularly hard infrastructure, like floodwalls. A number of interventions could be located along the coastal parks, significantly reducing coastal storm surge risk.



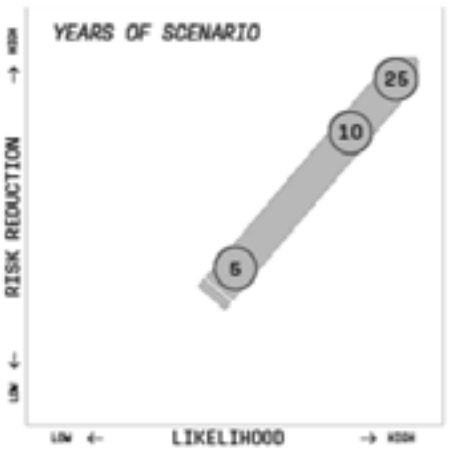


5 years 10 years 25 years

Example: Extension of Pugsley Creek Park

STRONG LOCAL ORGANIZING

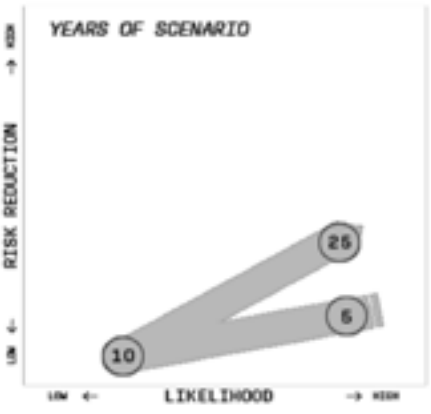
- With low social and spatial fragmentation and greater cohesion, stronger political influence and leadership on the part of elected officials and community organizers will be able to ensure necessary investments in the flood resiliency of Harding Park.

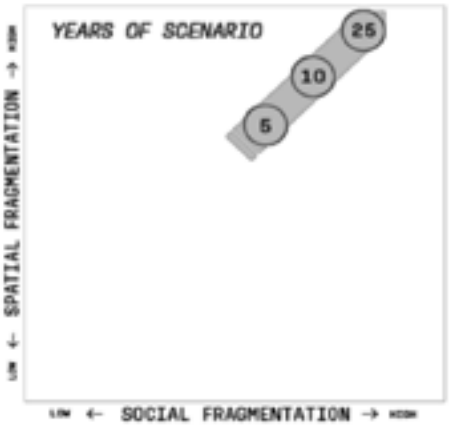


5 years | 10 years | 25 years

NO INTERVENTION

- Should things remain as is with no public or private interventions to the area's current stewardship of the land, the area will experience high social and spatial fragmentation.





PATHWAYS

05

BRIEF INTRO

We used our typology matrix to investigate different scenarios that may arise in our neighborhoods and developed pathways that respond to these scenarios. In these pathways, we explore how flooding harm may be mitigated through different strategies in addition to exploring the opportunities and challenges of land management on a community-by-community basis. We used these pathways as a starting point to envision how different New York City communities could adapt to an impetuously changing climate. These pathways are not prescriptive or exclusive policy recommendations, but are general explorations of the unique opportunities and challenges for land management found on a community-by-community basis.

NO INTERVENTION

No intervention occurs when the city fails to invest in additional resources or continues existing infrastructural upgrades and bandaids.

In Hollis, for example, non-intervention would compound the neighborhood's existing environmental risks. Hollis residents already face high barriers to community organization and are at high risk of dislocation and dispossession. A strategy of no intervention would increase overall risk exposure in Hollis over the next 25 years as the likelihood of 100-year storms increases. This tight-knit community would remain socially cohesive despite no intervention, especially in the face of another major storm. Flooding would increase spatial fragmentation with the inevitable relocation due to flood damage. However, the neighborhood likely would rebuild and reconstitute over time. Hollis does, however, face other negative long-term demographic changes. According to data from Furman and MapPluto, rents could nearly double in Hollis by 2047 as homeownership rates increase greatly and foreclosures cease. This is due to the fact that barely any new housing units are predicted to be built in Hollis over the next 25 years, creating upward pressure on local rents.

Likewise in Clason Point, Harding Park, and Castle Hill, without intervention, the flood risk and dislocation risk increase dramatically. All communities lie within the one percent storm floodplain and face significant risk increases without intervention. Likewise, in Edgemere, storm risk and fragmentation all rise under a no intervention strategy. In Ocean Breeze, stratification, already high due to post-buyout community dispersion, will remain high. Physical storm risk reduction also will decrease over time without intervention.

INFRASTRUCTURE INVESTMENT

We define the infrastructure investment pathway as where cities take an extremely involved approach to mitigating climate risks by heavily investing in capital projects. This may manifest itself in strategies to manage extreme stormwater and alleviates coastal storm and tidal risks, mostly to preserve the neighborhood area built environment in its current state with minimal changes despite increasing climate risks. Generally, these strategies require significant investment by the city government since they involve larger capital projects and complex coordination between agencies and community members to complete. This can include many different strategies to achieve this goal, for example, improved stormwater and sewage management systems that would make flooding less hazardous and prevent backups, pumping systems to push water out of communities for areas existing in low-lying areas that are at risk of ponding, investments in increasing the porosity of neighborhood surfaces through projects like bioswales, and seawalls to prevent coastal storm surge. In a community like Hollis, which exhibits a high risk for ponding, investing in pumping systems would allow residents to remain in the neighborhood with lower risks since the amount of water ponding would be reduced significantly. Sea walls are designed to maintain communities within the neighborhood albeit by preventing coastal flooding from reaching the communities in the first place. Installing more porous surfaces, whether through bioswales or green rooftops, is also designed to retain communities, since projects would relieve the burden on stormwater management systems and therefore reduce flooding risk in those communities. Lastly, upgrading stormwater management infrastructure (and therefore increasing capacity) allows residents to reside in their neighborhoods by reducing the risk of overflow in extreme storm events.

In a neighborhood like Hollis, investment in infrastructure is one of the best-case scenarios. Currently, Hollis and the entire New York City are marked by a

combined sewage system that easily becomes overwhelmed with large amounts of rainfall. This combined sewage overflow (CSO) puts residents and infrastructure at risk because floodwaters may pick up toxic hazards as runoff flows. Building a more reliable and extensive sewage system would allow for more preparedness against intense rainfall. The city's actions in upgrading Hollis's sewage system would retain the very strong social fabric that exists in Hollis because no one would have to leave their community. This community of immigrants' strong social cohesion would still exist, and community organizations would still have a strong presence with the ability to focus on more for their constituents other than basement apartment flooding and deaths. In addition to reimagining sewage to adapt for rainfall, Hollis's infrastructure, in general, would be updated to be more permeable. Hollis is currently lacking permeable surfaces that can absorb rain and stormwater flooding. Replacing concrete with grass whenever possible would tremendously improve surface flooding by allowing water to funnel through permeable surfaces. Many blocks in Hollis could greatly benefit from bioswales, especially those in the lowest lying areas.

This is what a lot of people in Hollis want. As described by community leaders like Pandit Ram Hardowar, the best case scenario would be if the city does not buy out houses or basement apartments, but rather deeply invest in sewage infrastructure and pumps. In a community like Hollis, introducing community driven bioswales that represent natural native ecology could be really exciting for community members to understand the land that was developed on, or even having plants that are native to the Caribbean could remind residents of their home countries and bring neighbors together to plant and maintain them. Talking to friends, family members, pandits, and aunties on the street, it was signaled that this strategy could alleviate some of the neighborhood concerns for the next major flood

Harding Park is another community that would benefit from updated sewerage to mitigate stormwater runoff from streets as the HOA's alleyways are unsewered. Coastal neighborhoods would benefit from infrastructure investments as well, particularly raising homes in Ocean Breeze or creating a seawall in Edgemere. This pathway has been attempted in New York City and the Army Corps of Engineers, although the government forces have not been apt at seeing projects to completion. The Department of Design and Construction and the Department of Environmental Protection also started a $24 million dollar initiative for infrastructure improvements. The city attempted to implement new flooding regulations and improve drainage systems and street conditions in Hollis and other parts of Southeast Queens. The program, the largest of its kind in the City, consists of 45 projects, including 10 that are substantially completed and 11 that are in active construction. The improvements intended to help the ponding that happens in this neighborhood after major floodings would alleviate the quality of life and safety concerns for Hollis residents. It was completed in the Summer of 2021 but still was not enough to prevent the catastrophic flooding that killed people in flooding issues later that year.

The New York City Department of Environmental Protection (DEP) also started an effort in 2017 to reduce flooding and upgrade infrastructure in Southeast Queens, Local Law 56. In their first year report, they highlighted a four-pronged approach to improving conditions

in Southeast Queens: construction of quick fixes, building neighborhood sewer projects, creating capacity for future further neighborhood sewer projects, and evaluating policies to reduce groundwater flooding. This plan would further involve the installation of targeted full-size sewers, trunk sewers, and green infrastructures such as rain gardens and green roofs. The plan also took a special account of Mayor de Blasio's 2017 feasibility study for a groundwater drainage project that offered recommendations for mitigation, however, the DEP said they would be pursuing an individualized approach by partnering with property owners to identify site-specific solutions. The full resiliency plans were due in 2020 but were delayed because of COVID-19-induced budget setbacks. The first item on the agenda's plan was to "inform the public about flood vulnerability from extreme rain", however despite the urgency, not even this was done in advance of the wrath of Ida.

COASTAL RESTORATION AND STEWARDSHIP

Coastal restoration and the stewardship of coastal lands by public agencies is a pathway that leads to ultimately returning the land to nature. This is a common strategy for reducing risk from coastal tidal flooding and storm surges and is most appropriate in communities that are facing moderate to high cumulative climate risk. The ideal site would be existing coastal public land, or land adjacent to or nearby existing publicly-stewarded land – in general, a community with existing open space and social infrastructure that could lead to the creation of park conservatories for the restoration and subsequent stewardship of coastal land with some additional storm surge infrastructure.

While Izzy Morales was driving us around Pugsley Creek in the Bronx, he told us about an alleged city interest in expanding the coastal trail of Pugsley Creek Park through land held by the NYC Department of Citywide Administrative Services (DCAS) on the coast of Clason Point. However, this would mean that the city would need to formally reclaim the land here – which is scattered with private boat docks and extended residential yards – and resolve existing water rights disputes. This project would involve a coastal restoration process along with the expansion of the amount of land that the city is responsible for stewarding. Much of the peninsula's coastal area is publicly-owned land, both the Department of Parks & Recreation and other non-parkland agencies. While there are three coastal public parks – Soundview Park, Clason Point Park, and Pugsley Creek Park – many swaths are maintained as non-public vacant land (as is some of the formerly industrial land on the southern tip of the peninsula) or are informally managed by private actors (i.e. Harding Park and the coastal section of Eastern Clason Point). However, the city may have an increasing interest in reactivating this existing land with various public open space strategies with resiliency objectives. In particular, there is alleged city interest in expanding the coastal trail of Pugsley Creek Park down

along the coast of Clason Point. However, this would mean that the city would need to formally reclaim the land here which is scattered with private boat docks and extended residential yards. This would even entail removing existing waterfront dock access from the GreenThumb community garden (Waterfront Garden).

Due to high capital costs, this pathway is more likely in communities that are able to advocate for funding due to either existing funding pathways, strong organizing, and/or high property or commercial valuations. Through sustained and transparent community leadership – perhaps through the early establishment of local "Friends of" and conservatory groups – we hope that these cases will minimize the effects of climate gentrification and actually facilitate stronger social, spatial, and political bonds in the community due to valued and shared space. Ultimately, this pathway would lead to a transformative change in at-risk coastal areas, while retaining a significant portion of current land use patterns and occupancy. And, it allows a community to live, work, and play without the undue burden of managing a significant barrier to climate hazards while still having rights to their space.

In this pathway, individual ownership and management would be reduced, likely diminishing community ideals. While public land stewardship is often perceived positively, nearby parks prove how there are often problems with mismanagement. Soundview Park has very slowly and unevenly developed over many years while Pugsley Creek Park has been the site of environmental remediation due to city dumping decades before. In some neighborhoods, this may also impact important social dimensions. While extended parkland in Clason Point would create more access, it would also remove an important community gathering point, the Waterfront Garden docks. Harding Park would be significantly impacted as much of their neighborhood identity is part of shared community spaces by the water.

COMMUNITY LAND TRUSTS AND COMMUNITY-MANAGED OPEN SPACES

Community-managed open spaces is a pathway that works well in neighborhoods with many community-based organizations and relatively high levels of social cohesion, because they require heavy lifting in terms of infrastructure and programming support. These open spaces could potentially, although minimally, reduce climate risks because they lead to greater permeability in areas suffering from a lack of green space, which would reduce flooding. In addition, community-managed open spaces could address social and spatial fragmentation through giving meaning and function to vacant lots. These spaces would allow for greater community organizing which can promote community-driven planning in underserved and underrepresented communities in New York, along with creating opportunities for information sharing, recreation, environmental education, and greater social cohesion. Examples of these possibilities include, but are not limited to, using these open spaces to inform residents of their rights, voter registration sign ups, and urban agricultural opportunities.

In order for this to occur, the City would need funding, like through a new Community Development Block Grant (CDBG). In many neighborhoods with strong social cohesion, the City might select an existing community based organization, like Chhaya CDC, to steward the Community Land Trust, host programming, and create other community open spaces, like community gardens. Despite these attempts at building community and collective organizing, this scenario ultimately increases spatial fragmentation, due to active community members leaving, and increases social fragmentation, due to new spatial conflicts that will arise with vacancies, the CLT, and community garden. In addition, while the buyout will resolve problems for these 12 homeowners, it does nothing to mitigate or adapt environmental risk for other residents, which will continue to exacerbate the environmental racism in Hollis.

Given the lack of community support around receiving buyouts, as revealed in interviews and conversations with Hollis residents, in this scenario it is likely that the City only buys out the 12 homes on 183rd and 90th Avenue that are already agitating for buyouts. This leads to increased spatial fragmentation: all 12 households are Indo-Caribbean and active members of Hollis' social fabric. To offset some spatial fragmentation, the City offers to help relocate community members within the city by connecting community members with housing mobility clinics, following the model of ENLACE. Much like in Edgemere, in this scenario, the City will host a visioning process and create a request for proposal for a Community Land Trust (CLT). In this scenario, an organization might be selected as the steward, even if they don't have experience running a land trust. While CLTs often are spaces for permanently affordable housing, the new Open Space Land Trust with a community garden which grows South Asian and Indo Caribbean vegetables and produce, like okra and karela.

While a CLT requires a base level of community organizing to create, which increases social cohesion and builds an organizing capacity within Hollis, in sum, the CLT creates additional neighborhood disturbances which erode social cohesion. To start, minimal new Open Space Land Trust's staff and volunteer infrastructure causes the community garden to be locked outside of M-F 9-5 hours, with some exceptions – parts of the community begin to feel isolated. The CLT also creates new community programming, partnering with community groups to host temporary programming in the space, like mutual aid, voter registration drives, know your rights training, housing mobility clinics, and basement tenant mobilization. Despite this, the CLT is not contiguous, and scattered within a residential neighborhood. Neighbors complain about increased traffic, lack of parking spaces, noise, and loitering. In addition, there is a loss of community in the streets with heavy buyouts – no more neighborhoods sitting on stoops, loss of some immigrant small businesses and hubs. In addition, the lack of organizational support for the CLT causes some neighbors to expand their houses and properties onto the vacant lots, leading to increased social fragmentation and distrust. However, it's important that such community-managed open space strategies be guided by principles of transparency and equity so as to avoid further social fragmentation..

In this pathway, environmental risk might continue to aggregate for most community members. While buyouts address environmental risk for the 12 people who receive it, it prevents other community members from reaping the benefits.

DIY URBANISM

The next pathway we analyzed is DIY grants from agencies like DEP or DOT for stewardship and programming, which provide communities and individual homeowners with funding to make incremental changes based on their lot-specific knowledge of flood risk; and other programmatic or service delivery needs. We were inspired to research this pathway after walking down 183rd in Hollis and coming across many DIY rain gardens with tires and other recycled material lining the block, or seeing lots on Beach 46th in Edgemere with benches and tables, homemade micro-filament recycling tubes for fishing, and signs about transformative justice that community members made. Instead of relying on the goodwill of community members, cities can give people funding to make this sustainable in the long term.

In this pathway, residents retain possession over their houses and land, piloting strategies like DIY rain gardens, stormwater planter boxes, culturally specific restaurants and food vendors, live arts performances, and programming that leads to transformative coalition building like mutual aid. Of course programs like this are imperfect and often unevenly applied. Existing comparative examples like New Orleans Gentilly Resilience District's Community Adaptation Grants or New York City's Green Infrastructure Grant

DIY Rain Gardens

DIY Rain Barrels

Community Plantings

CHILDCARE	ZINE WORKSHOPS	TOWN HALLS
KNOW-YOUR-RIGHTS	IMMIGRATION CLINICS	FITNESS CLASSES
MUTUAL AID	DISASTER PREPAREDNESS	PUBLIC EDUCATION
CULTURAL PROGRAMMING	VACCINATION CLINICS	VOTER REGISTRATION
FOOD DISTRIBUTION	AFTER-SCHOOL ACTIVITIES	LIVE MUSIC AND THEATER
PROTESTS	MEMORIALS	COMMUNITY VISIONING

Program are incredibly invasive, requiring everything from ensuring homes are up to code or drafting environmental impact statements. What does a program like this mean for someone who is undocumented, lives in a basement apartment, or just doesn't want the city in their backyard? For this program to succeed, particularly in places with high barriers to organizing, there must be low barriers to entry and really simple applications so that frontline communities are able to get access to the funding they need to create beautiful futures without fear of retribution.

Rather than investing in infrastructure that would temporarily or permanently displace residents throughout the construction process, DIY Urbanism is a strategic tool that allows communities to make incremental changes based on their site-specific knowledge of flood risk. By implementing a pilot program similar to the New Orleans Gentilly Resilience District's Community Adaptation Program, residents can not only retain possession of their houses and land but can also test and pilot cost-effective tools to manage stormwater runoff (that can be scaled citywide). In a scenario like this, residents can be offered anywhere from $10,000 to $50,000 to upgrade their homes to include creative solutions to mitigate stormwater, such as DIY rain gardens or rainwater harvesting, stormwater planter boxes, and permeable walkways and driveways.

There is a slippery relationship between participatory, community-led, grassroots processes like DIY urbanism and the neoliberal shirking of government onto individuals. In order to promote social cohesion in a program like this, the city must be extremely engaged in the community, creating an easy, language accessible application process, working with CBOs in the area to encourage applications, and knocking door to door along target homes or streets where flood risk is highest. Social cohesion could easily erode if the implementation process has embedded regulations that prevent people who live in the nexus of informality (citizenship, jobs, housing, etc) from getting services or assume applicants

will commit fraud. Such programs must allow informal basement apartment dwellers to get funding, undocumented residents to not fear the application process, or working-class residents to not be overwhelmed with paperwork.

Because of maintenance costs and manual labor, many residents of New York City, such as Hollis, currently have paved over backyards. This program would encourage residents to rip up their existing pavements and uniquely make it their own whilst creating more impervious surfaces. The success of DIY urbanism policies to mitigate stormwater flooding risks to basement apartments depends on how residents implement them. Many of the risks affect groups of homeowners, while DIY Urbanism projects targeted at individual homeowners would result in a patchwork of effects.

FULL BUYOUT AND RETREAT

Our final pathway is full retreat, a strategy in which the city and state center buyouts above all other forms of land management.

This strategy must be paired with a form of land management for vacant lots, but aspects like programming are less of a priority because people will not live in the area anymore. The clearest example of a neighborhood like this is Ocean Breeze, which received hundreds of buyouts post-Hurricane Sandy. The state, rather than trying to rebuild or transform Ocean Breeze, was convinced by homeowners that the best solution for a neighborhood facing constant climatic disaster was to simply pay the homeowners to leave, and give the land back to nature. In practice, these lots of former homes continue to lie vacant, neither fully returned to nature nor used for anything.

Informally, there is some indication that these parcels of land are used by those who remain and those in the surrounding area for storage and partying. Formally, however, they lie empty, mowed every now and then by a company subcontracted by the state, who owns the lots. Ocean Breeze is functionally no longer the neighborhood it was before Sandy, with its blocks mostly empty and most of its pre-Sandy residents moved further inland or out of state. This strategy completely erodes social and spatial fragmentation and is not desired by community members, the government, or our studio. Managed retreat raises tensions between those who get paid to leave and those who have no option but to stay. In addition, the voluntary nature of buyout programs means that it is very rare, nearly impossible, to get a community with every single resident being bought out. Practically, this means that the government still has to maintain critical infrastructure for those who choose to remain, and take care of the lots so as not to pose a danger or nuisance to those who remain.

This strategy is typically pursued with home buyouts, which can benefit homeowners tremendously but can often leave renters, and especially informal renters, exposed to the risk of not being able to find adequate housing. This strategy may be most appropriate for neighborhoods like the pre-Sandy East Shore of Staten Island, which face high levels of cumulative climate risk and have high levels of homeownership. A Full Buyout to Retreat strategy would need to be considered extremely carefully, and in tandem with other transformative policies, so as not to exacerbate social or spatial tensions. However, as climate change continues to make life more dangerous in coastal and flood-prone areas, it is a pathway that must be considered as an option, even if it is not one that is favored by those pursuing just climate adaptation. As NYCHA organizer Karen Blondel from Red Hook told us if people are asked to retreat, where are they supposed to go? Housing in New York City is unaffordable as is, do we want people to leave the city?

This area will be deemed too high at risk of flooding to maintain housing and continue to pursue a voluntary, but highly encouraged buyout strategy. In this scenario, the public sector will pay the landowners the value of their properties and take full control of the land tenure in Ocean Breeze. The full retreat scenario would mean demolishing all remaining houses, moving residents outside the buyout area, and turning Ocean Breeze into a nature-dominated, non-residential ecological reserve.

In this scenario, Ocean Breeze will no longer require complete urban or community planning, but simple ecological protection strategies and regulations. As existing residents and communities move out, a small group of temporary workers may move in with the transition, and would likely require new housing for both Ocean Breeze residents and workers inland from Hylan Boulevard.

The characteristics of the community under this scenario – mainly a small number of temporary residents – will be quite different from what they were before the full retreat. The number of public facilities, like schools, libraries, and community-based organizations, in this area will gradually diminish. Since there are no more people or houses in this scenario, there will be no substantial economic damage even if there is flooding. The flood risk index would drop sharply to negligible levels. At the same time, the vacant land can serve as effective flood storage areas and flood buffers for the inland areas and its natural resource value will become high. For long-term development and policy strategies, the area could be developed as a natural resource reserve or tourism area.

WHAT'S NEXT

06

BRIEF INTRO

Using our detailed approach to retreat and resurgence, the future of this project has been very carefully mapped out. Quite evidently, retreat or resurgence does not begin or stop on New York soil, hence our commitment and dedication to understanding the needs of climate vulnerable communities across America. Our studio members are in the process of distributing our reports and findings to communities in our areas of study, as well as those who wish to access our findings to inform their own studies. We hope that our findings may be useful for those considering resurgence or retreat in their respective areas, and for people looking for somewhere to start after facing unfortunate disasters. Most importantly, we hope that our neighborhood-specific, ethnographic research methods can be implemented by planners working in New York City neighborhoods and beyond to better understand the breadth of circumstances that can be used for natural disaster mitigation, and how deeply any plan curated will affect residents.

RECOMMENDATIONS

Instead of prescriptive policy recommendations for our neighborhoods, we're sharing three big takeaways that we learned from our research this semester:

STREAMLINE + SIMPLIFY GRANTS/ RESOURCES FOR COMMUNITY LAND STEWARDSHIP:

In our community research, we have identified that GreenThumb Community Garden's face severe funding challenges. These gardens are often operated primarily from donated funds. In areas with a high level of community cohesion and wealth this structure is functional, however, in areas such as Harding Park, The Waterfront Community Garden suffers from a general lack of investment from the surrounding community other than the primary operator. The Waterfront Garden primarily relies on out-of-pocket spending and favors from local political figures to remain in operation. In response to this, we propose the streamlining and expansion of access to grants and resources for community land stewardship. GreenThumb provides a spreadsheet of funders 'who sometimes fund community gardens', These grants are available on an inconsistent basis and host different requirements for eligibility and applications. Grant programs for community gardens should be expanded and streamlined to meet community members where they are.

LEGALIZE BASEMENT APARTMENTS:

We understand the horizontal and vertical challenges that basement apartment dwellers face in terms of flooding, fires, and other subgrade conditions. But, especially in the aftermath of Ida, we echo the calls of basement apartment and housing justice organizers across the city, like the NYC Base Campaign, demanding for the immediate legalization of basement apartments and cellars to protect residents against predatory landlords, enable tenants to access proper protections, and prevent homeowners from excessive penalties and

debt. While of course, the city should be investing into high quality and permanently affordable housing for all, in the meantime the city and state must legalize ADUs and should provide additional funding for (1) programs like the Basement Pilot Program to help bring basements up to code, and (2) language accessible Know-Your-Rights trainings and legal clinics for basement residents. Finally, any legalization of basement apartments should be paired with rent stabilization to ensure that basement apartment dwellers are not displaced.

START WITH COMMUNITY ENGAGEMENT:

We recommend that planners take community engagement as a core component of the work of climate adaptation planning, using it as both a starting point and a throughline for just, proactive, and effective climate adaptation strategy. In our project, we found that people living in the neighborhoods we were using as case studies already had the knowledge, expertise, and ideas that they are often insinuated to be lacking - what they need is a process from the city to turn this embodied knowledge into policy, and support from government in order to get the wider community involved. We recommend that the city takes a look at the success and challenges faced by a program like participatory budgeting, both in the US and beyond, to demonstrate how a proactive city process can be led, guided, and informed by the community. This is a scalable process that does not require the government to cede responsibility to Community Based Organizations - rather, it can be informed by principles of co-governance between government, CBOs, and other forms of civil society.

LIMITATIONS

Our research certainly is incomplete, and there are many avenues yet to be explored with this mixed-methods style of research. We also want to be critical of our role as researchers, as we want to reflect the non-value neutral nature of our work.

TIME

This time allocated for this project only lasted a single semester and, being students, our full attention was never just on this project. Between juggling other classes, work, studio assignments, family, and site visits, we were unable to do everything within this small time frame. If we had the opportunity to give this our undivided attention, we definitely would have wanted to do much more community engagement. The conversations we had were heart-wrenching, valuable, and truly unforgettable. Not only did it become the driving force for our studio, but easily the most memorable and meaningful. Given more time, our conversations would have lasted hours.

RESOURCES

To be able to have some specific resources would have broadened how much our group was able to do because, despite our passion and energy, we did not have the resources to fully implement this study. This also resulted in a smaller pool of participants than we would have hoped. Some resources we would have wished for include:

1. Compensation for participants: Speaking to people and organizations in these communities could be difficult if we had nothing to offer. Given any resources, we could have given our participants compensation or even just a token of appreciation for their time. We had no resources at all, and our conversations had to be with those who had the time to speak with us

which leaves out an entire population still unaccounted for.

2. Translators and Interpreters: Translators have the ability to do more multilingual research and community engagement, especially when a lot of the communities we explored had large immigrant populations.

DATA

When performing our quantitative analysis and understanding demographic and socioeconomic trends, current data might be misconstrued, unfactual, or lacking. Some data limitations include:

1. Informality: Especially when researching topics such as basement apartments which are illegal in New York City, there is no way to know an exact number; estimations exist but undermine the extent of what is truly happening.

2. Undefined: It's hard to generate demographic analysis in communities that are small or don't fit within predefined boundaries.

3. Aggregation: New York City tends to aggregate important community health data, such as displacement data in the Equitable Development Data Explorer. This tends to lump together very different neighborhoods like Edgemere and Breezy Point, which masks deep divisions in the unit of analysis.

CRITICAL REFLECTIONS

Throughout the course of this semester, we have tried to process and identify some of the lingering questions and deeply-held assumptions that grounded our work, such as:

1. Connections: As previously mentioned, many of the students working in this context are very well connected with these neighborhoods from living there, having family, or through other social and professional ties. Trust within these neighborhoods had previously been established. However, not everyone had existing ties in neighborhoods which made it difficult to establish new connections and thus gain trust. In addition, those of us with connections to neighborhoods had to be conscious of our positionality within these communities, and balance the roles between researchers and community members.

2. Individuals: Many of the folks that we spoke to do not reflect opinions shared by the entire community.

3. Our Client: Our client had predetermined which neighborhoods would be the case studies, and despite agitation, the location choice was not up to this studio. As our research continued, the clients were very involved in the process and gave their input along the way, limiting the extent of our critiques and directing how we wanted to go forward.

HOW CAN OTHER STUDIOS AND PROFESSIONALS MAKE THIS EVEN BETTER?

Respective of the limitations our studio may have endured, there is still much research that can be done on this front. Our research was limited to our four case studies, and despite our attempts, it does not reflect the entire city and individual community needs. To get a much better understanding of the scope, other studios can establish case studies from the very beginning so it's easier to headstart the community engagement process. Through our stakeholder mapping was effective, having community members or people familiar with the neighborhood would be crucial to identify important community actors at all scales.

Additionally, future studios should focus more specifically on one specific neighborhood, rather than attempting neighborhood-wide analyses of four different neighborhoods. There is much work to be done on a neighborhood by neighborhood basis, such as doing more site visits. A smaller scale analysis focusing more on individual lots in a neighborhood would be more effective in teasing out the tensions of a land management program than a studio designed for a New York City-scale scenario mapping. Having students with existing contacts in these neighborhoods would help alleviate some of the barriers between planners and individual community members, and was a key part of our studio's success. Additionally, there are so many more stories that we would have wanted to understand, but language became a barrier. Future studios should be given support for language access, especially if pursuing immigrant-heavy communities, which are more common than not in New York City.

Finally, while scenario planning may be standard practice in climate change adaptation and resiliency planning, we found that using it as a basis for determining pathways for real neighborhoods in New York was inappropriate and counterproductive. While we gained a useful analytical framework for how to consider social and spatial fragmentation, the top-down and abstracted nature of this exercise made it a poor fit for a methodology deeply focused on community engagement. We encourage climate planners in the future to critically examine methodologies that are reliant on our own partial understandings of how a neighborhood, city, or scenario will develop over a predetermined amount of years. This speculative exercise helped us identify more clearly the shortcomings in taking an abstracted approach, and informed our emphasis on community-based processes.

ADVOCACY TOOLKIT

Following the completion of our studio, our work will not end! Several of us plan to create an advocacy toolkit during summer 2022 to provide everyday New Yorkers, especially in our studio's neighborhoods, with accessible, easy-to-understand information, ideally translated into different languages, that will equip residents, community leaders and organizers with resources and strategies to effectively advocate for flood resilience and climate justice in their communities. This toolkit will be informed by further conversation with community leaders and organizers, and will ideally be co-created alongside them to be as useful as possible for those struggling for climate justice in New York.

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REFERENCES

Anguelovski, Isabelle, Linda Shi, Eric Chu, Daniel Gallagher, Kian Goh, Zachary Lamb, Kara Reeve, and Hannah Teicher. "Equity Impacts of Urban Land Use Planning for Climate Adaptation: Critical Perspectives from the Global North and South." Journal of Planning Education and Research 36, no. 3 (2016).

Berger, Joseph. "He's Advocate, Pal, and Boss, Too." The New York Times, February 15, 2006. https://www.nytimes.com/2006/02/15/nyregion/hes-advocate-pal-and-boss-too.html.

Binder, Sherri B. "Limbo: the unintended consequences of home buyout programmes on peripheral communities." Environmental Hazards 19, no 5 (2020): 488-507. https://doi.org/10.1080/17477891.2020.1714537

Braamskamp, Arjan. "Managed Retreat: A Rare and Paradoxical success, but Yielding a Dismal Prognosis." Environmental Management and Sustainable Development 7, no. 2 (2018): 108-136. https://www.macrothink.org/journal/index.php/emsd/article/view/12851/10177.

Brady, Alexander Foster. "Buyouts and Beyond: Politics, planning, and the future of Staten Island's East Shore after Superstorm Sandy." Master's thesis, Massachusetts Institute of Technology, 2015.

Bronx Council for Environmental Quality. "About." Bronx Council for Environmental Quality. Accessed March 2022. https://bceq.org/about/.

Bulkeley, Harriet A., Vanesa Castán Broto, and Gareth A.S. Edwards. "Experimentation and the Politics of Justice in Urban Climate Governance." In An Urban Politics of Climate Change: Experimentation and the Governing of Socio-technical Transitions. Routledge, 2015.

Castán Broto, Vanesa, Enora Robin, And Aidan While. (2020). "Introduction: Climate Urbanism—Towards a Research Agenda." In V. Castán Broto, E. Robin, & A. While (Eds.), Climate Urbanism: Towards a Critical Research Agenda. Palgrave Macmillan, 2020.

City of New York. New York City Charter. Cincinnati: American Legal Publishing Corporation, 2022. See esp., Chapter 8, section 197a-d. https://codelibrary.amlegal.com/codes/newyorkcity/latest/NYCcharter/.

Drake, Luke, and Laura J. Lawson. "Validating verdancy or vacancy? The relationship of community gardens and vacant lands in the U.S." Cities 40, (2014): 133-142.

Dundon, Leah A. and Mark Abkowitz. "Climate-induced managed retreat in the U.S.: A review of current research." Climate Risk Management 33, no. 100337 (2021).

Edgemere Commons. Coming to Edgemere 2020. Arker Companies, accessed February 2022. https://comingtoedgemere2020.com/.

Egerer, Monika and Madeleine Fairbairn. "Gated gardens: Effects of urbanization on community formation and commons management in community gardens." Geoforum 96 (2018): 61-69.
https://doi.org/10.1016/j.geoforum.2018.07.014.

Eizenberg, Efrat. "The Changing Meaning of Community Space: Two Models of NGO Management of Community Gardens in New York City." International Journal of Urban and
Regional Research 36, no. 1 (2012): 106-120. https://doi.org/10.1111/j.1468-2427.2011.01065.

Friends of Farias. "Greener Bronx." Amanda For The People. Friends of Farias. Accessed 2022. https://www.amandafarias.nyc/greener-bronx.

Goh, Kian. "Introduction: Climate Justice and Urban Futures." In Form and Flow: The Spatial Politics of Urban Resilience and Climate Justice. Cambridge, Massachusetts: The MIT Press, 2021.

Goodell, Jeff. "Climate Apartheid." In The Water Will Come: Rising Seas, Sinking Cities, and the Remaking of the Civilized World. Boston: Little, Brown and Company, 2017.

Goodspeed, Robert. Scenario Planning for Cities and Regions: Managing and Envisioning Uncertain Futures. Lincoln Institute of Land Policy, April 2020.

Honan, Katie. "Mayor's Map Showed Most of Ida's Victims Lived Where Rainfall Was Riskiest." The City, September 3, 2021. https://www.thecity.nyc/environment/2021/9/3/22656482/mayors-map-showed-ida victims-risk.

Keenan, Jesse M. "Types and forms of resilience in local planning in the U.S.: Who does what?" Environmental Science & Policy 88 (2018): 116-123.

Keenan, Jesse M., Thomas Hill, and Anurag Gumber. "Climate gentrification: From theory to empiricism in Miami-Dade County, Florida." Environmental Research Letters 13, no. 5 (2018).

Kimmelman, Michael. "What Does It Mean to Save a Neighborhood?" The New York Times, updated February 22, 2022. https://www.nytimes.com/2021/12/02/us/hurricane-sandy-lower-manhattan-nyc.html

Koslov, Liz. (2016). "The Case for Retreat." Public Culture 28, no. 2 (2016): 359-387. https://doi.org/10.1215/08992363-3427487

New York City City Planning Commission. "Resilient Houses and Open Space." Report, New York City, September 25, 2019. https://www1.nyc.gov/assets/planning/download/pdf/about/cpc/190397.pdf.

New York City Department of City Planning. "East Shore Neighborhoods Zoning." NYC Planning. Accessed February 2022. https://www1.nyc.gov/site/planning/plans/resilient-neighborhoods/east-shore-rezoning.page.

New York City Department of City Planning. NYC Comprehensive Waterfront Plan. Report, New York City, 2021. https://www.waterfrontplan.nyc

New York City Department of City Planning. "NYC's Floodplain by the Numbers." Report, New York City, October 2021. https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/resilient-neighborhoods/floodplain-by-numbers.pdf.

New York City Department of City Planning. "Old Howard Beach, Hamilton Beach and Broad Channel: Special Coastal Risk District." NYC Planning. Last updated October 2020. https://www1.nyc.gov/site/planning/plans/resilient-neighborhoods/old-howard-beach-hamilton-beach-broad-channel-rezoning.page.

New York City Department of City Planning. "Place-Based Community Brownfield Planning Foundation Report on Existing Conditions: Edgemere/Averne, Queens." New York City Mayor's Office of Environmental Remediation. Report, New York City, April 2016.

New York City Department of City Planning. "Queens Community District 8." Community District Profiles. https://communityprofiles.planning.nyc.gov/queens/8.

New York City Department of City Planning. "Resilient Neighborhoods: East Shore Neighborhoods." Report, New York City, April 2017. https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/resilient-neighborhoods/east-shore/summary-report-east-shore.pdf.

REFERENCES

New York City Department of City Planning. "Resilient Neighborhoods: Harding Park." Report, New York City, June 2016. https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/resilient-neighborhoods/harding-park/harding_park_report_102015.pdf.

New York City Department of City Planning. "Resilient Neighborhoods: Old Howard Beach, Hamilton Beach and Broad Channel." Report, New York City, December 2016. https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/resilient-neighborhoods/old-howard-hamilton/summary-report-old-howard-hamilton.pdf.

New York City Department of City Planning. "Zoning for Flood Resiliency." NYC Planning. Last updated May 2021. https://www1.nyc.gov/site/planning/plans/flood-resilience-zoning-text-update/flood-resilience-zoning-text-update.page.

New York City Department of City Planning & Housing Preservation and Development. Equitable Development Data Tool. Interactive map. Last modified April 2022. https://equitableexplorer.planninglabs.nyc/.

New York City Department of Design and Construction. "Southeast Queens Initiative Brings Infrastructure Upgrades to Hollis and Queens Village." NYC DDC. August 2019. https://www1.nyc.gov/site/ddc/about/ddc-stories/2019/stories-August2019-Webstory.page.

New York City Department of Environmental Protection. (2021, June 7) "City Delivers More Than Three Miles of New Sewers and Water Mains in Hollis and Queens Village." NYC Environmental Protection. June 7, 2021. https://www1.nyc.gov/site/dep/news/21-017/city-delivers-more-three-miles-new-sewers-water-mains-hollis-queens-village#/0.

New York City Department of Housing Preservation and Development. Resilient Edgemere. Accessed February 2022. https://resilientedgemere.com.

New York City Mayor's Office of Climate & Environmental Justice. New York City's Environmental Justice for All Report." Mayor's Office of Climate & Environmental Justice. Accessed March 2022. https://www1.nyc.gov/site/sustainability/our-programs/new-york-citys-environmental-justice-for-all-report.page.

New York City Mayor's Office of Climate Resiliency. "Neighborhood Coastal Flood Protection Project Planning Guidance (Version 1.0)." Report, New York City, December 2021. https://www1.nyc.gov/assets/orr/pdf/publications/Coastal-Protection-Guidance.pdf.

New York City Mayor's Office of Climate Resiliency. "What Happens with the Land After Residential Buyouts? Handout." Mayor's Office of Climate Resiliency & The Nature Conservancy. January 2021.

New York City Department of Parks and Recreation. "Harding Park Highlights." NYC Parks. Accessed February 2022. https://www.nycgovparks.org/parks/harding-park/history.

NYC Health. "Queens Community District 8: Hillcrest and Fresh Meadows." In Community Health Profiles 2015. New York City Department of Health and Mental Hygiene, 2015. https://www1.nyc.gov/assets/doh/downloads/pdf/data/2015chp-qn08.pdf.

O'Neill, Brian C., Elmar Kriegler, Kristie L. Ebi, Eric Kemp-Benedict, Keywan Riahi, Dale S.Rothman, Bas J. van Ruijven, Detlef P. van Vuuren, Joern Birkmann, Kasper Kok, Marc Levy and William Solecki. "The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century." Global Environmental Change 42 (2017): 169-180. https://doi.org/10.1016/j.gloenvcha.2015.01.004.

Pereira, Joseph, Michael P. McCabe, John Mollenkopf, Jamey Van Epps, Hely Zernich, Supurna Banerje and Ellen Howard-Cooper. "Patterns of Attrition and Retention in the Build It Back Program." Report. New York City: CUNY Graduate Center

& NYC Housing Recovery, 2019.

Queens Borough Board. "Expense and Capital Priorities Fiscal Year 2020." Report, New York City, 2020. https://www.queensbp.org/wp-content/uploads/2019/04/FY20-Borough-President-Response-to Preliminary-Budget.pdf.

RISE. "About." Rise (Rockaway Initiative for Sustainability and Equity), accessed February 2022. https://www.riserockaway.org/rise/about/.

Riverkeeper. "Bronx River." Riverkeeper, June 2020.
https://www.riverkeeper.org/water-quality/citizen-data/bronx-river/

Rizzi, Nicholas. "Home Buyout Program Expanded to Sandy-Damaged Ocean Breeze." New York, DNAinfo, 2013. https://www.dnainfo.com/new-york/20131118/ocean-breeze/home-buyout-program-expanded-sandy-damaged-ocean-breeze/.

Save the Sound. "Impact Map." Save the Sound. Accessed February 2022. https://www.savethesound.org/about-us/impact-map/.

Schlichting, Kara M. "Rethinking the Bronx's 'Soundview Slums': The Intersecting Histories of Large-Scale Waterfront Redevelopment and Community-Scaled Planning in an Era of Urban Renewal Environment." Journal of Planning History 16, no. 2 (2017): 112-138.

Schlosberg, David, Lisette B. Collins, and Simon Niemeyer. "Adaptation policy and community discourse: Risk, vulnerability, and just transformation." Environmental Politics 26, no. 3 (2017): 413-437.

Schuerman, Matthew. "Deadly Topography: The Staten Island Neighborhood Where 11 Died During Sandy." WNYC, February, 25, 2013.
https://www.wnyc.org/story/271288-tricked-topography-how-staten-island-neighborhood-became-so-dangerous-during-sandy/

SENSES. "Climate Change Scenarios." Senses Toolkit. SENSES Consortium, last modified 2020. https://climatescenarios.org/primer/.

Shi, Linda and Andrew M. Varuzzo. "Surging Seas, Rising Fiscal Stress: Exploring municipal fiscal vulnerability to climate change." Cities 100 (2020). https://doi.org/10.1016/j.cities.2020.102658.

TheRealDeal Staff. "State buy back program won't add new neighborhoods." TheRealDeal, April 11, 2014. https://therealdeal.com/2014/04/11/no-more-neighborhoods-will-be-added-to-buy-it-back-program/.

Tierney, Kevin Fox. The Social Roots of Risk: Producing Disasters, Promoting Resilience. Stanford, California: Stanford Business Books, 2014.

U.S. Army Corps of Engineers. "Staten Island, New York: Coastal Storm Management Project." Presentation, New York City, 2019. https://www.nan.usace.army.mil/Portals/37/docs/civilworks/projects/ny/coast/StatenIsland/SSSI%20BRIEFING%20-%20PUBLIC%20-%20NOV%2025%202019_2.pdf?ver=2019-11-26-160706-593.

Waterfront Alliance. "Our coalition." Rise to Resilience. Waterfront Alliance. Accessed February 2022. https://rise2resilience.org/our-coalition/.

Wisner, Ben, Piers Blaikie, Terry Cannon and Ian Davis. "The Disaster Pressure and Release Model." In At risk: Natural hazards, people's vulnerability and disasters (2nd edition), 49-86. Routledge, 2004.

REFERENCES

DATA USED

First Street Foundation. Flood Factor. Interactive Map. Accessed March 2022. https://floodfactor.com/.

New York City Department of City Planning. 2020 Census Tracts (Clipped to Shoreline). Shapefile. Last modified February 2022. https://www1.nyc.gov/site/planning/data-maps/open-data/census-download-metadata.page.

New York City Department of City Planning. 2020 Census Tracts (Water Areas Included). Shapefile. Last modified February 2022.
https://www1.nyc.gov/site/planning/data-maps/open-data/census-download-metadata.page.

New York City Department of City Planning. Borough Boundaries (Clipped to Shoreline). Shapefile. Last modified February 2022. https://www1.nyc.gov/site/planning/data-maps/open-data/districts-download-metadata.page.

New York City Department of City Planning. MapPluto - Shoreline Clipped. Shapefile. Last modified December 2021. https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-pluto-mappluto.page#mappluto.

New York City Department of City Planning. NYC Waterfront Access Map (WAM). Shapefile. Accessed February 2022. https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-waterfront.page.

New York City Department of City Planning. WRP Coastal Zone Boundary. Shapefile. Last modified July 2016. https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-wrp.page.

New York City Department of City Planning & Housing Preservation and Development. Equitable Development Data Tool. Interactive map. Last modified April 2022. https://equitableexplorer.planninglabs.nyc/.

New York City Department of Environmental Protection. NYC Stormwater Flood Map - Extreme Flood. Shapefile. Last modified June 2021. https://data.cityofnewyork.us/City-Government/NYC-Stormwater-Flood-Map-Extreme-Flood/w8eg-8ha6.

New York City Department of Environmental Protection. NYC Stormwater Flood Map - Moderate Flood. Shapefile. Last modified June 2021. https://data.cityofnewyork.us/City-Government/NYC-Stormwater-Flood-Map-Moderate-Flood/5rzh-cyqd.

New York City Department of Housing Preservation & Development. "Area Median Income." Dataset. Last modified 2022. https://www1.nyc.gov/site/hpd/services-and-information/area-median-income.page.

New York City Department of Information Technology & Telecommunications. Open Space (Parks). Shapefile. Last modified September 2018. https://data.cityofnewyork.us/Recreation/Open-Space-Parks-/g84h-jbjm.

New York City Department of Small Business Services. Sandy Inundation Zone. Shapefile. Last modified September 2018. https://data.cityofnewyork.us/Environment/Sandy-Inundation-Zone/uyj8-7rv5.

New York City Housing Authority. "NYCHA Development Interactive Map." Interactive map. Accessed February 2022.
https://nycha.maps.arcgis.com/apps/webappviewer/index.html?
id=41c6ff5e73ec459092e982060b7cf1a1

New York City Mayor's Office of Climate and Sustainability. Sea Level Rise Maps (2020s 100-year Floodplain). Shapefile.

Last modified September 2021.
https://data.cityofnewyork.us/Environment/Sea-Level-Rise-Maps-2020s-100-year-Floodplain-/ezfn-5dsb.

New York City Mayor's Office of Climate and Sustainability. Sea Level Rise Maps (2020s 100-year Floodplain). Shapefile. Last modified September 2021.
https://data.cityofnewyork.us/Environment/Sea-Level-Rise-Maps-2050s-500-year-Floodplain-/qwca-zqw3.

New York City Mayor's Office of Climate and Sustainability. Sea Level Rise Maps (2050s 500-year Floodplain). Shapefile. Last modified September 2021.
https://data.cityofnewyork.us/Environment/Sea-Level-Rise-Maps-2050s-100-year-Floodplain-/hbw8-2bah.

United States Census Bureau. "Explore Census Data." Data sets. Accessed February 2022. https://data.census.gov/cedsci/

APPENDIX: SCENARIO BUILDING

HARDING PARK

INTRODUCTION:

As a group, we have evaluated the most likely major scenarios to occur in the greater Harding Park area within the next five years. These scenarios, based on shared socioeconomic pathways (SSPs), are greater private stewardship, expanded and active public land management, strong local organizing, and no change to the status quo. In the figure to the right, the four scenarios are depicted in their relationship of the likelihood of occurrence (left to right) and impact in regard to natural hazard risk reduction (bottom to top).

SCENARIO: GREATER PRIVATE STEWARDSHIP

With low social fragmentation, there is a chance for the area to have an increased number of occurrences of private stewardship of land owned by both public and private entities. Private land stewardship requires minimal barriers to social cohesion. In the case of Clason Point, some barriers would be the level of cooperation between the various homeowner's associations, an increase in private renters, and a reduction in family households.

Private land stewardship allows for community members to manage and maintain open space rather than the City. In Harding Park, private stewardship manifests in the form of the city allowing residents to manage vacant lots on the waterfront near their homes. This private management strategy takes would-be abandoned land and transforms it into a gathering place for the community, mending both the social and spatial fragmentation in the area.

In the Harding Park/Clason Point area, most privately managed open space is owned by the city. As the threat of flooding increases and pressures are placed on homeowners more and more properties will vacate over the coming years. Private land stewardship allows for community members to retain "ownership" of the properties that are vacated. In scenarios where private land stewardship does not take place, vacated lots often are fenced off causing greater fragmentation in the area.

In regard to impacts on the social fabric, private land stewardship in the form of the management of vacated lots or community gardens can serve as a gathering place for the residents of Clason Point. The homeowners' associations in Clason Point pose a unique opportunity for private land stewardship. The relatively low social fragmentation of the area combined with the resources of the organizations allows for both the implementation of unique recreational and resiliency-based land uses.

While private land stewardship of public land does not directly reduce environmental risk, it does help to reduce the negative externalities caused by vacancy when it comes to social and spatial fragmentation. Stewardship will ultimately be required in the event of government buyouts in the area. In cases where the land managed is privately owned, increased stewardship could manifest itself in the form of stormwater resiliency efforts.

SCENARIO: EXPANDED AND ACTIVE PUBLIC LAND MANAGEMENT

Much of the peninsula's coastal area is publicly-owned land, both the Department of Parks & Recreation and other non-parkland agencies. While there are three coastal public parks – Soundview Park, Clason Point Park, and Pugsley Creek Park – many swaths are maintained as non-public vacant land (as is some of the

formerly industrial land on the southern tip of the peninsula) or are informally managed by private actors (i.e. Harding Park and the coastal section of Eastern Clason Point). However, the city may have an increasing interest in reactivating this existing land with various public open space strategies with resiliency objectives. In particular, there is alleged city interest in expanding the coastal trail of Pugsley Creek Park down along the coast of Clason Point. However, this would mean that the city would need to formally reclaim the land here which is scattered with private boat docks and extended residential yards. This would even entail removing existing waterfront dock access from the GreenThumb community garden (Waterfront Garden).

This scenario would occur in a landscape of middling social and spatial fragmentation. Of note, this would go forward successfully if there was little organized objection by residents. This scenario would likely utilize new public stewardship strategies, likely more public parkland to connect with existing parks. A more unlikely scenario would be a coordinated buyout effort for a number of coastal homes which then may be absorbed into parks.

In this scenario, individual ownership and management would be reduced, likely diminishing community ideals. While public land stewardship is often perceived positively, nearby parks prove how there are often problems with mismanagement. Soundview Park has very slowly and unevenly developed over many years while Pugsley Creek Park has been the site of environmental remediation due to city dumping decades before. In some neighborhoods, this may also impact important social dimensions. While extended parkland in Clason Point would create more access, it would also remove an important community gathering point, the Waterfront Garden docks. Harding Park would be significantly impacted as much of their neighborhood identity is part of shared community spaces by the water.

On the flip side, these interventions would likely be the best venue for resiliency measures, particularly hard infrastructure, like floodwalls. A number of interventions could be located along the coastal parks, significantly reducing coastal storm surge risk.

SCENARIO: STRONG LOCAL ORGANIZING

In the next five years, strong local organizing might cause local organizations and groups to forge more partnerships and coalitions with environmentalist nonprofit organizations across the Bronx, such as the Bronx Council for Environmental Quality, The Point CDC, South Bronx Unite, and Bronx River Alliance. The Castle Hill HOA joined the Waterfront Alliance's Rise to Resilience Coalition several years ago and enjoys a positive working relationship with them. Increased flooding and alternative land management strategies such as community land trusts being championed by South Bronx Unite, local entities such as the Castle Hill HOA and Harding Park HOA will be interested in uniting with influential organizations throughout the Bronx to more effectively advocate for their flood and land use management interests.

With low social and spatial fragmentation and greater cohesion, stronger political influence and leadership on the part of elected officials and community organizers will be able to ensure necessary investments in the flood resiliency of Harding Park.

Despite promising signs brought on by new leadership in the Harding Park area, the likelihood of successful political influence and leadership in the Harding Park area remains moderate, making its impact moderate. This can be attributed to several things: It will take Harding Park more time than other more organized areas of the City to strengthen its organizing capacity due to HOAs representing the near entirety of the area's community advocates. Additionally, HOAs do not share a great degree of influence on City Hall as other advocacy entities, such as labor unions, enjoy. Increased political influence and leadership may come as a result of potential partnerships from the area's HOAs, which would be produced by stronger social cohesion and shared interests.

The ability to have a stronger level of political influence will allow the area to be prioritized for favorable legislation and budget allocations that will bring about investments necessary to mitigate climate risks.

SCENARIO: CONTINUATION OF CURRENT LAND MANAGEMENT STRATEGIES

Reports and community engagement suggested to us that there is little appetite for managed retreat and buyouts in the Harding Park area due to strong place-based attachment, less severe flooding events than other parts of the City, and lack of outreach done on the government's part to inform residents of the flood risks they bear and buyout options available. This community sentiment gives us reason to believe that the chance of the area maintaining its current state is highly likely.

Should things remain as is with no public or private interventions to the area's current stewardship of the land, the area will experience high social and spatial fragmentation. We notice that HOAs know of each other and communicate from time to time, but have different interests, different income levels, different levels of accessibility, and private ownership, creating a fragmented area to an extent, despite its strong Latinx identity and overall non-gentrifying, low to middle-income socioeconomic status.

Informal uses of land, such as privately maintained public spaces, are likely to remain in the next five years. However, with HOAs such as the Castle Hill HOA collaborating with environmental advocacy groups, we believe that with inevitable storms in the next five years, more HOAs will begin to hire more professionals working in the fields of planning and environmental conservation to educate their communities' residents on the risks and solutions they share.

With the area's many private sewer lines and streets, it will continue to be jeopardized by storms and lack of public management, which begs the question as to whether HOAs are obstacles to climate resiliency or not when it comes to the City government's ability to use its resources to effectuate managed retreat or other climate-resilient strategies. These factors, along with much of this coastal area's low-lying position in the 100-year floodplain and limited supply of coastal protection, leave the Harding Park area subject to great flood risks that could implicate people's homes, livelihoods, safety and health should a major flood event occur in what is identified by the City as an environmental justice community.

HOLLIS

INTRO

There are many opportunities for the City to push for substantive stormwater protections in the next five years. Four scenarios were considered, including: (1) No Intervention: no city buyout and no infrastructure investment; (2) CLT: buyout and community land trust with CBO stewardship; (3) Green Infrastructure: large investments in sewage infrastructure, pumps, and a bioswale; and (4) Gentilly-Style DIY Urbanism: $10,000 to $50,000 subsidies to individual homeowners to upgrade homes to mitigate stormwater flooding risk.

SCENARIO: NO INTERVENTION

Given the fraught experiences between Hollis' communities of color and New York City's government and infrastructure, the most likely scenario to take place within five years is the maintenance of the status quo, where trends remain largely static and environmental risks only worsen. In this scenario, Hollis' tight-knit community remains extremely socially cohesive, while remaining slightly spatially fragmented due to the increasing frequency of storms due to climate change.

In this scenario, the City remains removed from investments into Hollis and thus does not take action in response to resident demands for increased stormwater protection, legalization of basement apartments, or revised zoning to accommodate accessory dwelling units (ADUs), or buyouts. Although no substantive changes are made, due to the unaffordability of housing, informal basement apartments continue to exist without proper protections. Furthermore, because most houses and buildings are older, and there is a lack of legislative intervention, most houses remain at risk. Because of this, more frequent and severe storms pose risks to the Hollis community, and deaths continue more frequently due to climate change. This is evidenced by current trends in demographics and housing. If current trends are to continue as reported by Furman for Queens community district 8 and MapPLUTO, housing prices will continue to increase, foreclosure rates will continue to decrease, building construction will remain stagnant, and the proportion of the minority population will increase. This will lead to aging houses continuing to be owned by minorities, which will remain at risk of future floods.

Despite the city's inaction, Hollis, grounded in generations of immigration with a vibrant community, will continue to exist with high levels of social cohesion. This is evidenced by the strong organization capacity of the Hollis community, which will remain the same or strengthen given increasing environmental risks. Organizations such as Chayya and THE Basement Apartments SAFE For Everyone coalition will continue to organize, unfortunately without much response from the city.

Because no infrastructure projects have been undertaken, the same risks are present within Hollis due to its natural ecology. Without adequate infrastructure investments, these catastrophic events continue to happen to the detriment of Hollis residents, particularly occupants of informal basement apartments.

SCENARIO: BUYOUTS, CLTS, AND PROGRAMMING

In this scenario, the City receives a new Community Development Block Grant (CDBG) to recover from Hurricane Ida and allocates resources to buying out homes in Hollis. The City might select a community-based organization, like Chhaya CDC, to steward the Community Land Trust, host programming, and create a community garden. Despite these attempts at building community and collective organizing, this scenario ultimately increases spatial fragmentation, due to active community members leaving, and increases social fragmentation, due to new spatial conflicts that will arise with vacancies, the CLT, and the community garden. In addition, while the buyout will resolve problems for these 12 homeowners, it does nothing to mitigate or adapt environmental risk for other residents, which will continue to exacerbate the environmental racism in Hollis.

Given the lack of community support around receiving buyouts, as revealed in interviews and conversations with Hollis residents, in this scenario it is likely that the City only buys out the 12 homes on 183rd and 90th Avenue that are already agitating for buyouts. This leads to increased spatial fragmentation: all 12 households are Indo-Caribbean and active members of Hollis' social fabric. To offset some spatial fragmentation, the City offers to help relocate community members within Hollis and South Queens by connecting community members with housing mobility clinics, following the model of ENLACE. Much like in Edgemere, in this scenario, the City will host a visioning process and create a request for a proposal for a Community Land Trust (CLT). Given the intense well of organizing around basement apartments, in this scenario, an organization like Chhaya CDC might be selected as the steward, even if they don't have experience running a land trust. While CLTs often are spaces for permanently affordable housing, the new Open Space Land Trust with a community garden that grows South Asian and Indo Caribbean vegetables and produce, like okra and karela.

What happens to basement apartment dwellers when the City buys out homes and turns the space into a CLT? While the 12 (or more) basement dwellers are bought out and receive minimal URA funds to move, this does nothing about the thousands of other basement dwellers that live in Hollis.

While a CLT requires a base level of community organizing to create, which increases social cohesion and builds an organizing capacity within Hollis, in sum, the CLT creates additional neighborhood disturbances which erode social cohesion. To start, minimal new Open Space Land Trust's staff and volunteer infrastructure cause the community

garden to be locked outside of M-F 9-5 hours, with some exceptions – parts of the community begin to feel isolated. The CLT also creates new community programming, partnering with community groups like South Queens Women's March to host temporary programming in the space, like mutual aid, voter registration drives, know your rights trainings, housing mobility clinics, and basement tenant mobilization. The new Open Space Land Trust also uses its growing relationship with city infrastructure to partner with NYC DYCD's Summer Youth Employment Program to create a teen urban farmer program to grow culturally-significant produce, and get community buy-in for the CLT. Despite this, the CLT is not universally liked. Neighbors complain about increased traffic, lack of parking spaces, noise, and loitering. In addition, there is a loss of community in the streets with heavy buyouts – no more neighborhoods sitting on stoops, loss of some immigrant small businesses and hubs. In addition, the lack of organizational support for the CLT causes some neighbors to expand their houses and properties onto the vacant lots, leading to increased social fragmentation and distrust.

In this scenario, the environmental risk continues to aggregate for most community members. While buyouts address environmental risk for the 12 people who receive them, it prevents other community members from reaping the benefits. There is a minimal increase in permeable surfaces because of the more open landscape associated with the community land trust, but it is minimal.

SCENARIO: GREEN INFRASTRUCTURE

One of the best case scenarios as described by community leaders would be if the city does not buy out houses or basement apartments, but rather deeply invest in sewage infrastructure and pumps. Separating rainwater from the sewage system would help protect the underground pipes and drainage systems from being damaged and alleviates the burden of large quantities of stormwater. Currently, Hollis is marked by a combined sewage system that easily becomes overwhelmed with large amounts of rainfall. This combined sewage overflow (CSO) puts residents and infrastructure at risk because floodwaters may pick up toxic hazards as runoff flows. Building a more reliable and extensive sewage system would allow for more preparedness against intense rainfall. Though unlikely to actually happen, this solution would vastly reduce this neighborhood's fatal flooding risk while retaining the strong social cohesion of the Hollis community.

Given that infrastructure would benefit homeowners and general residents in Hollis, ownership wouldn't change. Ownership would still widely consist of minority communities This scenario would offer much safer living conditions for informal basement apartment dwellers. Basement apartment dwellers would still rely on their informal landlords for support and flood protection and hope that the infrastructure would be enough to prevent future fatal flooding.

What happens to basement apartment dwellers when the City buys out homes and turns the space into a CLT? While the 12 (or more) basement dwellers are bought out and receive minimal URA funds to move, this does nothing about the thousands of other basement dwellers that live in Hollis and are exposed to extreme risks of flooding and fear of reporting below grade conditions.

The city's actions in upgrading Hollis's sewage system would retain the very strong social fabric that exists in Hollis because no one would have to leave their community. In this community of immigrants, strong social cohesion would still exist, and community organizations would still have a strong presence with the ability to focus on more for their constituents other than basement apartment flooding and deaths. That being said, construction associated with paving and repaving streets would cause neighborhood disturbances and minimal social fragmentation. In a worst-case scenario, residents may have to briefly leave their homes or have to find parking on other blocks while sewage structures and bioswales are being built.

In addition to reimagining sewage to adapt for rainfall, Hollis's infrastructure, in general, would be updated to be more permeable. Hollis is currently lacking permeable surfaces that can absorb rain and stormwater flooding. Currently in New York City, developing a public space in certain neighborhoods can qualify for a zoning bonus (POPs). This idea can be further interpreted to instill a bonus for developing sidewalks with

permeable surfaces, such as permeable pavements which can help reduce runoff. In addition, permeable playgrounds could also be a positive addition to the community. These can even be implemented as water squares, such as the one in Hamburg, Germany with a sea-level promenade which can be a good park with surrounding floodable park stairs that allow for drainage to occur.

SCENARIO: DIY URBANISM

Rather than Hollis investing in infrastructure that would temporarily or permanently displace residents throughout the construction process, DIY Urbanism is a strategic tool that allows communities to make incremental changes based on their site-specific knowledge of flood risk. By implementing a pilot program similar to the New Orleans Gentilly Resilience District's Community Adaptation Program, residents can not only retain possession of their houses and land but can also test and pilot cost-effective tools to manage stormwater runoff (that can be scaled citywide). In a scenario like this, residents can be offered anywhere from $10,000 to $50,000 to upgrade their homes to include creative solutions to mitigate stormwater, such as DIY rain gardens or rainwater harvesting, stormwater planter boxes, and permeable walkways and driveways.

In this scenario, ownership would remain as the current population of mostly minorities that are currently living in these houses in Hollis. Informal basement apartment dwellers are still at risk, as this scenario does not account for the needs that would impact them unless the program explicitly gives funding to make housing upgrades in basements. In many cases, the incentives are offered directly to the homeowner and it would be up to their discretion to involve them in the decision-making process.

DIY urbanism as a tactic allows for high levels of social cohesion because residents can (1) stay where they are, (2) are trusted to make decisions about how to mitigate their environmental risk, and (3) are given significant funding to do so. At the same time, there is a slippery relationship between participatory, community-led, grassroots processes like DIY urbanism and the neoliberal shirking of government onto individuals. In order to promote social cohesion in a program like this, the city must be extremely engaged in the community, creating an easy, language accessible application process, working with CBOs in the area to encourage applications, and knocking door to door along target homes or streets where flood risk is highest. Social cohesion could easily erode if the implementation process has embedded regulations that prevent people who live in the nexus of informality (citizenship, jobs, housing, etc) from getting services or assume applicants will commit fraud. Such programs must allow informal basement apartment dwellers to get funding, undocumented residents to not fear the application process, or working-class residents to not be overwhelmed with paperwork.

Because of maintenance costs and manual labor, many residents currently have paved over backyards. This program would encourage residents to rip up their existing pavements and uniquely make them their own whilst creating more impervious surfaces. The success of DIY urbanism policies to mitigate stormwater flooding risks to basement apartments depends on how residents implement them. Many of the risks affect groups of homeowners, while DIY Urbanism projects targeted at individual homeowners would result in a patchwork of effects. Although some people may have great mitigation strategies for their individual properties, the DIY projects would have little effect on community-level risks, such as risks posed by the bowl. In sum, there would be no incentive to take collective action for the sake of Hollis.

OCEAN BREEZE

SCENARIO: NO INTERVENTION

Given the lack of a city plan for Ocean Breeze and the Eastern Shore of Staten Island the most likely scenario facing Ocean Breeze is no intervention, were bought out lots remain empty, houses raised during Build It Back remain owner-occupied, and the neighborhood trends towards higher levels of social and spatial fragmentation.

With regards to land tenure, private land interests will continue to consolidate land holdings in buyout areas, either by buying lots from other private owners or by buying lots back from the Housing Trust Fund Corporation (HTFC). While more research needs to be done as to the benefit of buying these lots back from the HTFC are, given restrictions on building, there are a few cases of homeowners buying the lot next door to their property for very cheap - perhaps indicating a desire to steward more land as they add to their property portfolio and increase property values. As housing prices in New York continue to rise and renting becomes more expensive, it may become more lucrative to rent these properties to other people rather than living in them.

With regards to social cohesion, some organizations, like Staten Island Youth Soccer, have shown an interest in stewarding the land. Most vacant land has been stewarded by the state government through the HTFC. Additionally, there is some civic involvement hinted at by one resident who claims that the "neighborhood president" sent a company to clean litter off the vacant lots, but thus far this president has not been identified, indicating a low level of visibility of this steward. Community institutions like churches have begun their own process of retreat, such as in the case of St. Margaret Mary Church, which no longer offers mass at its Midland Beach location, instead offering most services at its inland location, St. Christopher Roman Catholic Church. However, there is some indication that this may be also due to the demographic transition of the neighborhood, due to the apparent success of smaller neighborhood churches tailored to Latin American Pentecostal and Russian Orthodox communities. For the next 5 years, however, "Amazing Deli" is the only gathering place that still remains in Ocean Breeze.

Ecologically, the risks of coastal flooding due to climate change will continue to rise as mitigation efforts continue to be delayed. The buyouts and the raising of most houses have reduced the risk of flooding to some extent, but the bowl is dangerous during storms, especially if another hurricane hits New York. People may begin to build more of a relationship with the wildlife around them, positively or negatively, as animals continue to repopulate the area and wild turkeys, geese, foxes, turtles, seagulls, and rats take advantage of the new open space.

SCENARIO: BUILD IT BACK

This scenario imagines a full commitment to "Build It Back": rebuilding on destroyed lots to restore the housing stock to its original size. In this case, the land would remain tenured to the original owners with the intention of becoming a full-time residential community, either owner/occupied, long-term tenants or a summer resort community.

To accomplish this would require a policy U-Turn: instead of post-buyout mopping-up, the city will have to redirect resources towards infrastructure support. This would mean re-committing to and marrying both the requirements of Low-Density Infrastructure Development Plan and the Flood Resilience Zoning Text to create a community that both depends on cars and paved infrastructure for transportation and at the same time needs significant design interventions for flood resilience.

Given that this is a former buyout area, the risk of severe flooding is very high and will require a robust sea wall as well as inland flood control infrastructure. The city should start planning now for more elaborate inland water management systems including new sewer infrastructure and expanding the Blue Belt stormwater disposal network.

To protect against wind, water, and waves threatening Ocean Breeze, the city will have to initiate a plan for more robust and creative coastal defenses, including new storm barriers and a new levee system, perhaps expansive "super levees" that require significant quantities of landfill. The city also should initiate plans for creative floodwater control urban design projects found in other specially engineered "sponge cities," such as "living shorelines," "rainwater gardens," floodable parks, and other innovations already in use elsewhere in New York and other cities around the world. To accomplish this, the community will have to rebuild and expand the organizing capacity and civic institutions it used effectively to demand buyouts and expand its power given the potentially greater logistics and costs required to rebuild resiliently.

SCENARIO: FULL RETREAT

Full managed retreat scenario means that all land in Ocean Breeze would be purchased and managed by the government, and all existing residents leave, which is a scenario that completely evaporates social cohesion while consolidating land through a buyout. Given the lack of desire by residents or the government at this moment, this is a low probability scenario.

This area will be deemed too high at risk of flooding to maintain housing and continue to pursue a voluntary, but highly encouraged buyout strategy. In this scenario, the public sector will pay the landowners the value of their properties and take full control of the land tenure in Ocean Breeze. The full retreat scenario would mean demolishing all remaining houses, moving residents outside the buyout area, and turning Ocean Breeze into a nature-dominated, non-residential ecological reserve.

In this scenario, Ocean Breeze will no longer require complete urban or community planning, but simple ecological protection strategies and regulations. As existing residents and communities move out, a small group of temporary workers may move in with the transition, and would likely require new housing for both Ocean Breeze residents and workers inland from Hylan Boulevard.

The characteristics of the community under this scenario - mainly a small number of temporary residents - will be quite different from what they were before the full retreat. The number of public facilities, like schools, libraries, and community-based organizations, in this area will gradually diminish. Since there are no more people or houses in this scenario, there will be no substantial economic damage even if there is flooding. The flood risk index would drop sharply to negligible levels. At the same time, the vacant land can serve as effective flood storage areas and flood buffers for the inland areas and its natural resource value will become high. For long-term development and policy strategies, the area could be developed as a natural resource reserve or tourism area.

SCENARIO: COMMUNITY LED VISIONING

Community-led visioning would require vast changes in the social cohesion of the community and is not likely in the next 5 years, but still remains a possibility as the social makeup of the community changes. This scenario would lead to high spatial fragmentation but low social fragmentation, as the community comes together to decide on strategies for vacant land management and the new realities facing Ocean Breeze.

The enabling conditions for this scenario would be the continuing climate risk, paired with continued nuisance for homeowners from flooding and fires, as well as wild animals, and lack of services due to its relative remoteness.

Simply put, it would require the community to decide that the status quo cannot hold, and organize to reimagine Ocean Breeze as a community rather than a series of lots.

The likely impetus for this community-led visioning effort would be from renters who are moving into the area and less wealthy homeowners who still live there and are affected by the ecological fragmentation. This would be a rather monumental shift from representing the interests of established homeowners during buyouts who were looking mostly to recoup the value of their properties and would be much more difficult politically to advocate for.

This kind of visioning would require a community-led organizing effort to push for a unified plan for Ocean Breeze. The city would also have to indicate some willingness to work with the community on zoning amendments, specifically around low-density growth management areas, which require very specific housing construction and limit the creativity of privately owned lots. There would also need to be a change to how state-bought lots could be used, depending on the needs the community has identified, and what they desire to see from their community.

The ultimate vision of this scenario would be for the community to become partners in the stewardship of the land, through strategies such as land banking, community land trusts, and public management of new parkland. In addition, it would require a reimagining of Ocean Breeze's relationship to the land and water, as it seems to be attracting people who want to be in a more quiet area, in close proximity to nature and the water.

EDGEMERE

INTRODUCTION

As a part of our scenario-building exercise for Edgemere, we imagined a number of future possibilities for the neighborhood, including (1) community land stewardship, (1) natural coastal infrastructure and (3) full retreat.

SCENARIO: COMMUNITY LAND STEWARDSHIP

In this scenario, Edgemere residents would band together and pursue strategies that allow for community land stewardship. Some of these initiatives may include a Community Land Trust, Land Banks, and Community Investment Trusts, allowing Edgemere's residents to decide the fate of their neighborhood through collective decision-making.

Within the short term, a Community Land Trust may be established. This is a private, non-profit organization that would promote sustainable development, promote affordable housing, and offer opportunities to remedy historical inequities. In Edgemere, this may manifest in adapting vacant lots into community spaces, with places to sit and congregate. Community organizing also may result in a shuttle to and from Manhattan, allowing residents to more easily and frequently travel through the peninsula.

Within the medium, a Community Investment Trust could be established, allowing residents to grow their wealth in assets through a community ownership model. Perhaps residents would decide to develop a flood-resilient community center, pedestrian friendly infrastructure, recreational spaces, co-working spaces, and boardwalk access to the beach. With a flood in 8 years, there may be displacement under this scenario, forcing residents to re-organize and re-prioritize investments for the future.

When thinking long-term about this scenario, Edgemere residents may establish further infrastructural developments. This could include flood-resilient affordable housing, greenhouses, increased retail spaces, and coastal infrastructure projects.

SCENARIO: NATURAL COASTAL INFRASTRUCTURE

In this scenario, Edgemere would require high capital cost investments in infrastructure that mediates ocean (and maybe stormwater/pluvial; in the case of Edgemere) flooding effects by lowering wave height, decreasing erosion rates, and/or slowing, storing and absorbing water.

Landscape-scale planning for at-risk coastal communities such as Edgemere, is necessary to make the community more resilient in the face of sea level rise and storm generated flooding. Similar to the proposed land uses in the Resilient Edgemere Plan but with open space and more natural infrastructures such as vegetated dunes, reefs, floodplains, wetlands and forests, this plan utilizes nature-based features that slow overland flow and encourage infiltration, reducing water velocity and lowering the peak of flood height. In this plan, we propose to bring buyouts to a halt and utilize vacant lands to develop this natural infrastructure. In this way, the proposal aims to preserve the current social fabric of Edgemere while providing incremental development in preservation of the neighborhood and preparing the neighborhood for larger scale infrastructure developments that can be implemented moving forward.

SCENARIO: FULL RETREAT

In this scenario, Edgemere would undergo continued buyouts until eventually all of the land is returned to nature and residents are moved into receiving communities. This strategy remedies land use patterns that put people and infrastructure at risk of climate induced hazards.

In the short-term, the government would need to begin deciding how to budget and allocate funding for relocation assistance and land management strategies. In these early stages there might be limited numbers of buyouts as residents are hesitant to leave their community.

Within the next few years, city officials will consider funding for investments in social services, infrastructure, and affordable housing in receiving communities. There will be significant social, emotional, and economic costs for residents who are displaced by retreat, necessitating significant governmental care and assistance.

In the long term, likely all of Edgemere's residents will be moved out of harm's way and into receiving communities. The land will be returned to nature and native flora and fauna will flourish. Former Edgemere residents will still face significant economic and social challenges, as they are displaced and forced to forge new community ties.

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