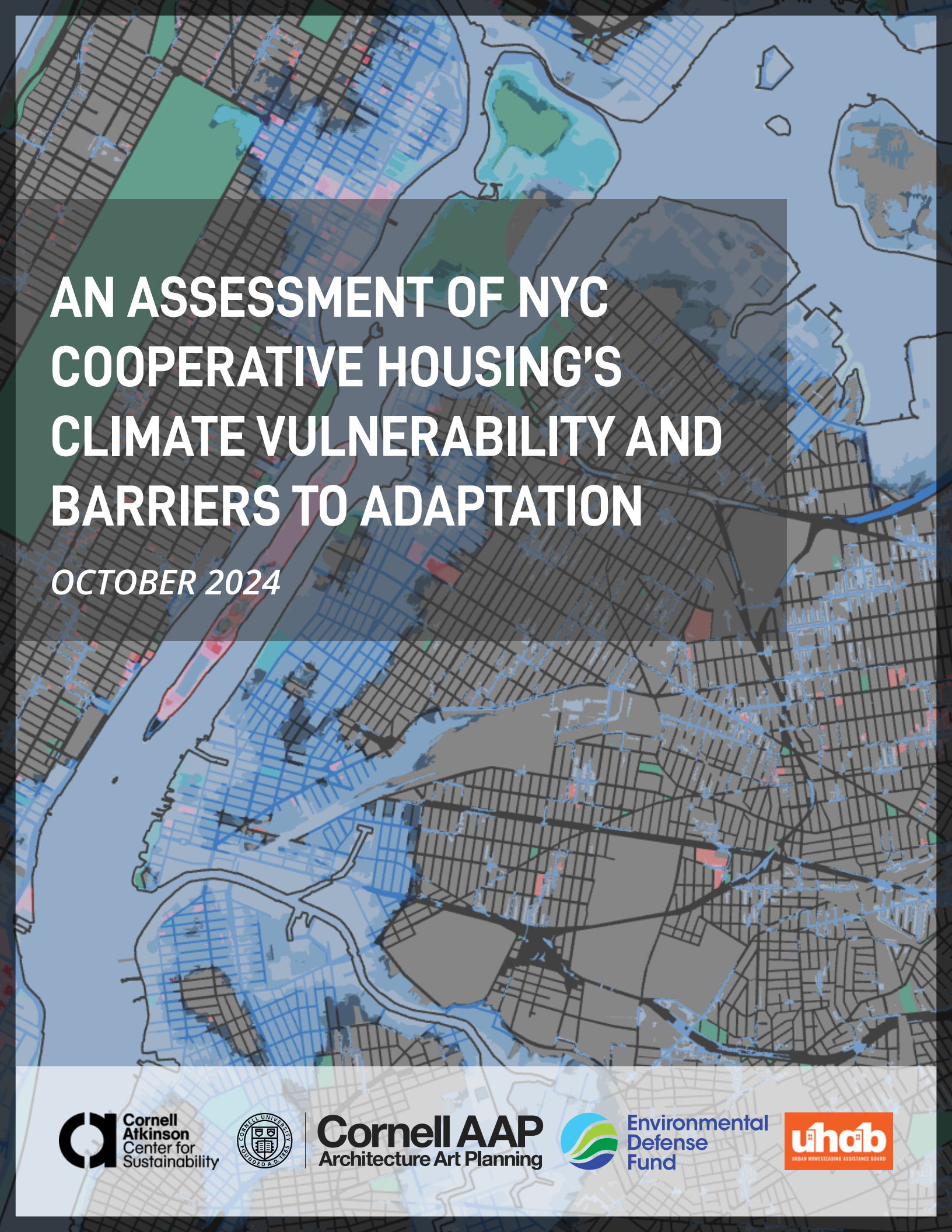

AN ASSESSMENT OF NYC COOPERATIVE HOUSING'S CLIMATE VULNERABILITY AND BARRIERS TO ADAPTATION

OCTOBER 2024

Cornell Atkinson Center for Sustainability

Cornell AAP Architecture Art Planning

Environmental Defense Fund

uhab Urban Homesteading Assistance Board

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ACRONYMS AND ABBREVIATIONS

ANCP	Affordable Neighborhood Cooperative Programs
AMI	Area Median Income
BRIC	Building Resilient Infrastructure and Communities Program
CDBG-DR	Community Development Block Grant - Disaster Recovery Program
CDBG-MIT	Community Development Block Grant - Mitigation Program
Condo	Condominium
Co-op	Cooperative Housing
DEP	NYC Department of Environmental Protection
EPA	Environmental Protection Agency
EWP	Emergency Watershed Protection Program
FEMA	U.S. Federal Emergency Management Agency
FLIP	Fire and Liability Insurance Program
FMA	Flood Mitigation Assistance program
HDFC	Housing Development Fund Corporation
HMA	Hazard Mitigation Assistance Program
HMGP	Hazard Mitigation Grant Program
HPD	NYC Department of Housing Preservation and Development
HUD	U.S. Department of Housing and Urban Development
IA	Individual Assistance Program
IRA	Inflation Reduction Act
LEC	Limited Equity Cooperative
PFIRM	Preliminary Flood Insurance Rate Map
PLUTO	Primary Land Use Tax Lot Output Database
MMHW	Monthly Mean High Water
NFIP	National Flood Insurance Program
NPCC	New York City Panel on Climate Change
NYC	New York City
NYCHA	NYC Housing Authority
NYS	New York State
RCBAP	Residential Condominium Building Association Policy
SBA	U.S. Small Business Administration
SFIP	Standard Flood Insurance Policy
TIL	Tenant Interim Lease Program
UHAB	Urban Homesteading Assistance Board
USDA	U.S. Department of Agriculture

EXECUTIVE SUMMARY

A central pillar of climate justice is ensuring that everyone has access to housing that is affordable, accessible, and climate adapted. In New York City (NYC), multi-family cooperative housing (co-ops) provides a critical pathway to affordable homeownership. Co-ops comprise over 12% of the city's housing stock, a larger share than any other city in the country (NYC Department of Finance, 2024). Co-ops are the dominant form of multi-family homeownership in NYC and are nearly twice as prevalent as condo ownership. Limited equity, Mitchell Lama, and other affordability-protected co-ops also provide an opportunity to take collective action by giving residents control over housing policies, conditions, and operations.

Like many other forms of housing in New York, co-ops face significant impacts from climate change. But co-ops and other private multi-family buildings see little of the growing policy and funding support that helps adapt public and single-family housing to climate change. Little research has examined the specific needs and experiences of residents in co-ops in trying to respond to climate impacts like extreme heat and flooding. In the absence of this information, climate adaptation policy and funding sources in NYC are unlikely to help build the capacity of co-op residents to adapt to climate change.

This report addresses this gap by assessing the impacts of climate change on permanently affordable co-ops in NYC, extent of adaptation planning among co-ops, and barriers to action, especially in policy and funding. We also consider opportunities and barriers for co-ops to incorporate green infrastructure approaches in their response to climate change. The report aims to educate residents, advocates, city agencies, and policymakers in the hopes of promulgating more responsive and equitable policies and programs. Our findings are also relevant to other types of cooperative housing, such as condos, community land trusts, and resident owned cooperatives. The report presents its assessment over four sections:

- **Understanding the landscape of co-ops in NYC** defines co-ops and limited equity co-ops. This section explains their development and place in NYC's housing stock.
- **Mapping co-op exposure to extreme flood and heat** identifies where the most climate exposed co-ops are located and the extent of impact by hazard type. This section identifies all co-ops in the city, maps their flood and heat risk, and identifies those that are likely to have both affordable units and climate exposure.

- **Evaluating co-op climate impacts and responses** shares the results of the first-ever survey of the impacts of climate change on co-ops in NYC, which we conducted in 2023. The survey tried to contact all 1,188 co-ops that have affordable units and are located in a flood risk zone in the city. We received responses from 115 co-ops, home to 14,516 units.
- **Climate policies and funding for housing cooperatives** reviews co-op eligibility for policies and programs for energy efficiency, resiliency, and green infrastructure at the local, state, and federal levels.

CHALLENGES FACING CO-OP COMMUNITIES

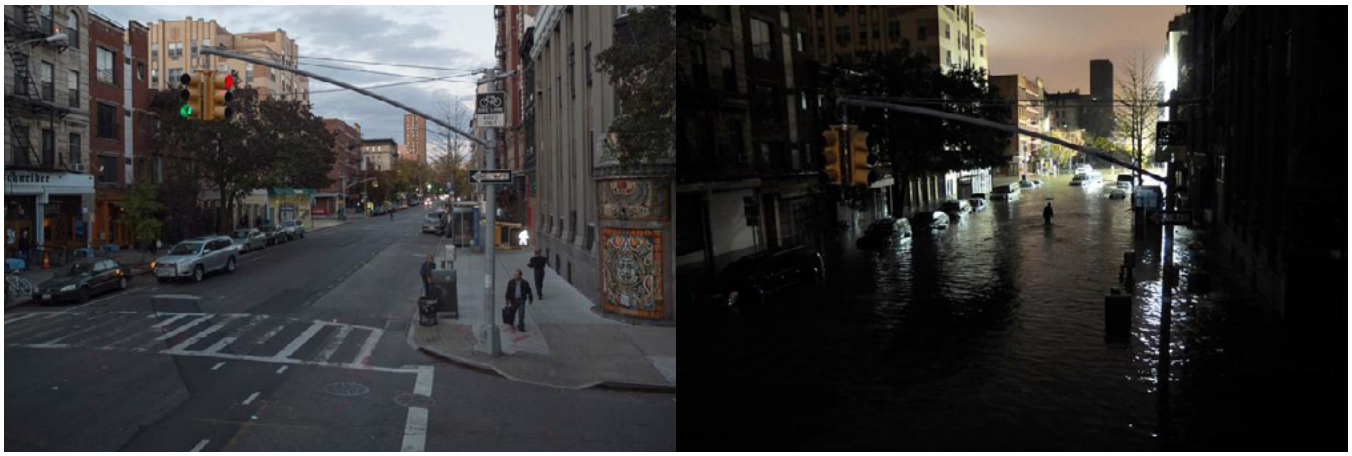
This research shows that co-ops are significantly at risk of flooding but lack access to most public climate adaptation and disaster recovery insurance, funding, and financing. This presents an enormous gap and opportunity for equitable actions at scale to adapt affordable co-ops to climate impacts. Understanding how to best equip co-ops for recovery, adaptation, and mitigation challenges is a crucial part of ensuring the NYC housing stock is resilient for coming generations.

Affordable co-ops in NYC are highly exposed to the risks of flooding. Our mapping analysis shows that 36% (or 2,040 properties) out of 5,649 affordable co-op buildings[1] have some form of flood risk. Co-ops with the highest levels of flood risk are clustered in a few neighborhoods: the Lower East Side, West Village, East Harlem, Brighton Beach, Coney Island, the Rockaways, East New York, Williamsburg, and Jamaica. Aside from these neighborhoods, most co-ops in NYC face rainfall-based flooding as a primary hazard, rather than storm surge, tidal flooding, or sea level rise. This suggests that in-situ adaptations – such as elevating utilities, retrofitting or elevating buildings, removing basement dwellings, and improving area drainage – can be an effective way to preserve affordable co-op housing over the next fifty years.

Most co-ops have experienced climate impacts, especially in common spaces. Around 70% of surveyed co-ops have been affected by flooding, wind damage, power failure due to extreme weather, or extreme temperatures. Some 5% of co-ops reported residents experiencing illness, injury, or death due to climate-related events. Half of co-ops reported experiencing minor to severe impacts due to Hurricanes Ida, Sandy, and Irene, or the heatwaves in the summers of 2006 and 2011. Impacts from Ida and Sandy were the most severe, resulting in significant flood damage to basements, boiler rooms, and electrical systems. In some cases, this led to structural damage and ongoing maintenance concerns. Over half (58%) of all co-ops reported impacts to the shared parts of the building, such as lobbies,

1 Some co-ops may have a few affordable units in a mostly market-rate building. It is difficult to identify all such buildings. We identified co-ops that potentially have affordable units by including all those that are tax exempt in NYC public records.

basements, elevators, parking, utilities, plumbing, foundation, and walls. By contrast, 25% reported damages to individual units and 38% saw increased stress on co-op boards' finance, as well as their ability to agree on response strategies.



Before and after photos showing the impact of Hurricane Sandy, as seen from a co-op in lower Manhattan (Source: UHAB)

Federal policies mostly exclude co-ops from many sources of adaptation funding and technical assistance. The Stafford Disaster Relief and Emergency Assistance Act of 1988 (Stafford Act), which governs how the Federal Emergency Management Agency (FEMA) provides disaster assistance and now climate adaptation funding, does not mention or define cooperative housing. FEMA has interpreted this omission to mean that entities such as condos and co-ops are treated as businesses, rather than residences, making them ineligible to directly receive most forms of post-disaster aid. Many other federal and state programs, such as those funded by the Department of Housing and Urban Development (HUD), do not explicitly exclude co-ops, but are often limited to housing with fewer than four or five units, thereby implicitly excluding most co-ops.

> *"FEMA LIKELY WOULD OPPOSE STRONGLY ANY SUCH AMENDMENTS THAT WOULD AUTHORIZE ASSISTANCE TO HOUSING CO-OPS AND CONDO ASSOCIATIONS."*
>
> *— A 2016 FEMA REPORT*

National flood insurance does not adequately protect co-ops. Only 16.9% of 2,040 flood vulnerable co-ops with affordability protections that we mapped are located in the preliminary Flood Insurance Rate Maps (pFIRMs). Residents of these buildings likely have little awareness of their risk of flooding. Only 41% of our 115 survey respondents said they carry flood insurance. Around 44% of these carried private insurance, 16% carried the Fire and Liability Insurance Program offered by

UHAB for eligible affordable co-ops, and 2% carried NFIP. The NFIP does not have a specialized program that supports the unique ownership structure of co-ops. Co-ops that do purchase NFIP can receive up to $100,000 of contents coverage for the individual unit and $250,000 for the common areas of the building after an arduous application process.

Few co-ops have received public assistance to support their adaptation actions. Given that they are ineligible for most assistance programs or don't have enough knowledge to apply, few co-ops have benefited from public funding. Our survey found that many co-ops discovered after Hurricanes Sandy and Ida that their reserves are inadequate for extreme flooding damages, making government aid essential for rebuilding. However, among our survey respondents, just 11% received federal, state, or local funding for repairs, and 14% relied on bank loans, likely due to both a lack of awareness about programs and program restrictions. Instead, 47% of co-ops tapped into building reserves and 17% increased their assessments to residents, potentially impacting fixed income and economically vulnerable residents.

Co-ops are less exposed to extreme heat than floods, but most programs fund energy efficiency rather than flood resilience. Most co-ops we mapped are in areas that are only slightly warmer than the city average. However, most environmental funding available to multi-family co-ops address energy efficiency, weatherization, and renewable energy, while few support flood risk, which affects more co-ops. This highlights a mismatch between resilience funding and needs on the ground.

As a result of limited awareness and technical and funding resources, co-ops are not prioritizing or implementing adaptation efforts, despite experienced impacts. Top co-op priorities include maintaining the building for safety, preserving affordability, stewardship of co-op financial resources, and responding to and managing city regulations. Climate action is among the lowest of priorities. Approximately 65% of survey respondents say residents do not ever or only occasionally bring up climate change as it relates to their operations. Accordingly, most co-ops have not yet implemented adaptation actions. Among the two dozen surveyed co-ops that have implemented adaptation efforts, the most prevalent actions are related to disaster preparedness, greening outdoor spaces, and flood proofing the building.

POLICY IMPLICATIONS AND RECOMMENDATIONS

This research shows that affordable co-ops are at risk and acting almost entirely with their own funding, since most co-ops cannot access public flood risk reduction programs. Programmatic silos – in affordable housing, retrofits, energy efficiency, decarbonization, disaster recovery, and green infrastructure – also inhibit a holistic approach. Based on this research and the experiences of the Urban Homesteading Assistance Board (UHAB) with co-op policy advocacy, we suggest the following priority actions to improve the resilience of co-ops in NYC. As academic and advocacy organizations, we intentionally do not prescribe who should implement each action, but instead share these recommendations with federal, state, local, utility, and co-op stakeholders to facilitate their engagement.

Inform co-op residents of their exposure to flooding and extreme heat and of their ability to access flood insurance through UHAB's FLIP. According to our survey, many residents are not aware of their flood risk, unless they had previously experienced an impact. Many are also not aware of the different causes of flooding. We are sharing information from this report at a launch event and a digital website so that residents can search for their properties and become educated about the risks they face. As part of this awareness raising campaign, UHAB can also highlight its Fire and Liability Insurance Program, which covers flood damage.

Integrate adaptation considerations into programs for decarbonization and energy efficiency. Federal and state funding for energy efficiency, weatherization, and renewable energy is increasing. This type of federal funding is the most inclusive of cooperative housing and can help make co-ops more resilient to extreme heat events, for instance by changing oil furnaces to gas or electric ones and upgrading to more energy efficient windows and doors. These federal funding assistance programs and incentives should also be extended to support proactive pluvial flood resilience such as roof and façade improvements to prevent seepage. This in turn will help buildings become more energy efficient and prepare them to install other measures like solar and heat pumps. State and local programs like the New York State Resilient Retrofits program and NYC HomeFix program do support resilience measures, but limited funding support and lack of awareness present challenges in scaling. There is a need for program integration so that co-ops can simultaneously upgrade both their resilience and efficiency.

Expand flood insurance to co-op common areas through collaboration with network and membership co-op support organizations. Expanding insurance policies can be a critical first step to financial security, since most co-ops lack flood insurance or are ineligible for flood insurance for common areas of the property. In the near term, this can entail more outreach and communications from UHAB to affected properties that we identified to inform boards of their specific flood risks. In the longer term, this entails conversations between New York City and State officials, FEMA, and private flood insurance providers to modify existing policies to equalize co-op (and condo) access to standard residential flood insurance. With the country's highest number of co-ops, as well as many condo residents, New York State is well positioned to lead the advocacy for Congressional changes to federal legislation.

Advocate for amending the Stafford Act to include co-ops as a form of housing. New York representatives have twice tried to amend the Stafford Act to support co-ops and condominiums, but to no avail (FEMA, 2016).[2] While national policy reform is extremely challenging, this is ultimately the most fundamental step to giving co-ops equal access to flood insurance benefits, resiliency funding, and post-disaster assistance. Actions to help advance towards this long-term goal can include conversations with relevant FEMA staff, building relationships and opportunities for more informal, less statutory strategies, and creating long-term agency support for reform. Organizations like UHAB can also facilitate conversations between HUD and FEMA to foster cross-agency learning for how federal programs can serve co-ops.

Help interested co-ops enter into new regulatory agreements with the NYC Department of Housing Preservation and Development (HPD). By entering into new regulatory agreements that preserve affordability protections in the future, the city can provide additional funding for capital improvements. This can help preserve housing affordability and channel public funding into adaptation upgrades. Since many co-ops are hesitant to sign new regulatory agreements, other forms of low-interest loans could also be considered.

Work with city agencies to expand green infrastructure incentives and design and implement neighborhood-scale strategies, leveraging networks of co-ops. The most flood-prone co-ops are clustered in a few neighborhoods. Strategic city planning efforts in these neighborhoods can help achieve economies of scale across multiple large-scale multi-family properties to

2 This includes the Disaster Recovery Reform Act and request for legislation to address this issue (see p. 708 or H.R.302 – 115th Congress (2018): To provide protections for certain sports medicine professionals who provide certain medical services in a secondary State. (2018, September 24). https://docs.house.gov/billsthisweek/20180924/HR302-2.pdf

develop district-level stormwater flooding strategies, especially those that rely on nature-based solutions. Such strategies can also leverage co-op residents' control over decision-making and their vested interest in improving the resilience of their building and their collaborative governance structure. There may be opportunities to implement larger-scale green infrastructure projects across private co-ops and city-owned land, such as vacant land, infrastructure facilities, and "Blue Zones."[3] New efforts are needed to expand green infrastructure programs in general and make them more accessible to co-ops, for instance through technical assistance, grants, and tax abatements.

Invest in technical assistance to help multifamily buildings, including co-ops, adapt to climate change. Our survey revealed that even identifying the contact information for a relevant person is challenging for multi-family properties. Co-ops' unique governance structure especially requires specialized technical assistance to build capacity for effective decision-making on climate adaptation. Networked and membership organizations, like UHAB, Habitat for Humanity, Los Sures, St. Nick's Alliance, and Banana Kelly, are essential for providing this liaison and assistance role at scale and with depth. Federal agencies like FEMA, HUD, and SBA, state agencies and utilities like HCR and NYSERDA, and local agencies and organizations like HPD and MOCEJ can better invest in and support such organizations.

3 The New York Botanical Garden has mapped Blue Zones that shows areas that once flooded, flood now, are predicted to flood in the future, and have a high percentage of city-owned land. For more information on this program, see https://www.nybg.org/plant-research-and-conservation/science-programs/center-for-conservation-strategy/urban-conservation.

1 CO-OP LANDSCAPE IN NEW YORK CITY

1.1 OVERVIEW

Research consistently shows that housing cooperatives, especially limited equity cooperatives (LECs), offer a way to promote housing affordability, stability, and democratic control of housing by residents. Unlike rental housing, co-ops give residents control over housing and assurance from eviction and displacement due to uncontrollable or unexpected rent-hikes in hot housing markets (Saegert & Benitez, 2005). Participation in co-op management and governance also builds a sense of community and collaboration that can translate into other spheres, including a sense of inclusion and care of the surrounding neighborhood (Saegert & Winkel, 1996, 1998).

However, while housing cooperatives are widespread in some European countries, cooperatives comprise only 0.83% of housing in the United States as of 2021 (United States Census Bureau, 2021). The total U.S. historical production of limited and zero equity cooperative units is around 425,000 (UHAB, 2016). Of the 300,000 LECs studied out of this 425,000, only half are still limited equity as of 2016 (UHAB, 2016). Even so, LECs far outnumber the roughly 40,000 units of housing provided by some 300 community land trusts, another commonly touted strategy to preserve affordable home ownership (Wang et al., 2023).

This section briefly introduces the concept of housing co-ops and the types of financial support for affordable co-ops in NYC (climate policies are addressed in Section 4: Review of Public Climate Funding Support for Housing Cooperatives). We show how LECs are an important source of affordable housing, especially in NYC, and how declining support for co-ops are challenging their ability to preserve affordability and adapt to climate change.

1.2 UNDERSTANDING THE CO-OP MODEL

In a housing cooperative, a cooperative collectively owns the building and leases out the units. Co-op unit owners purchase shares of the co-op corporation rather than real property. Once residents have purchased the necessary shares, they receive a proprietary lease for their unit. If a co-op resident wants to sell their shares and transfer the lease, the co-op board of directors must approve of the prospective buyer (Binder, 2001). Co-op unit owners make all payments – including mortgage, property taxes, and monthly assessments – to the co-op

corporation (Schill, Voicu & Miller, 2007). The monthly assessments go towards operations, maintenance, repairs, and reserves for the building. The pooled funds can enable collective action and help sustain housing affordability over time. This structure is distinct from condos, where residents individually own their units and cooperatively manage shared elements.[4] It is also different from community land trusts, where land is collectively owned in a trust and resale value is limited.

Co-ops have an elected board of directors that enforces bylaws and defines the balance of rights and responsibilities, prevents abuse, and ensures that residents have a say in decisions about the community (Kennedy, 2002). Boards can decide the cost of the assessment, budget allocations, maintenance, renovations, resident dynamics, and residential character, to name a few. Boards must also ensure adequate funds are retained for emergencies as well as routine maintenance and capital improvements.

Co-ops offer affordable and stable housing, which leads to high resident satisfaction, keeps neighborhoods steady during tough economic times, and helps keep housing affordable in expensive markets (Saegert & Benítez, 2005). Residents can use the co-op's shared assets to pay for large improvements, while also getting individual loans for their own units. By participating in management, residents help lower costs and share financial risks, which helps maintain long-term affordability and allows them to benefit from tax deductions (Saegert & Benítez, 2005).

1.3 LIMITED EQUITY COOPERATIVES (LECS): A UNIQUE HOUSING TYPOLOGY

Limited equity cooperatives are a specific form of co-op housing that preserves housing affordability through income restrictions, owner-occupancy requirements, limits on resale value, and market rate conversion regulations that lower returns on investment (NYC HPD, n.d.-a.; Sazama, 2000; State of New York Real Estate Finance Bureau, 2015). For example, when an LEC shareholder wishes to sell their share and move out, the maximum resale value is determined by a formula that limits the list price of the share. Prospective residents of an LEC must purchase a share from a previous member and be approved by the co-op's board subject to the co-op's rules, as well as state and local regulations (Davis, 2006). Because LECs follow strict definitions of affordable housing, residents cannot earn more than 165% of the area median income (AMI), with most buildings restricting income to

4 Cooperatives (co-ops) and condominiums (condos) are the most common forms of collectively owned housing in the United States. While residents of both co-ops and condos buy separate units within a larger, collectively maintained multi-family building, the management structure for unit ownership and collective decision-making are different. In a condo, residents purchase the real property of their unit and pay a monthly fee to a condo association to cover the operating costs of common areas, such as the grounds, lobby, and utilities. Condo owners directly carry a mortgage through a bank and pay individual property taxes to the government on their unit.

120% of AMI. Many LECs have even more stringent income requirements to restrict occupancy (NYC HPD, n.d.-a). There are also non-LEC co-ops that may be affordable to moderate income households, depending on how they define affordability.

1.4 AFFORDABLE HOUSING CO-OPS IN NEW YORK CITY

New York City (NYC) has the country's densest concentration of housing co-ops, which comprised over 12% of the city's housing stock in 2024 (NYC Department of Finance, 2024). Early co-ops in NYC were created to benefit higher income individuals, providing many benefits of living in a nice building without a significant amount of individual responsibility for home-ownership (Schill, Voicu & Miller, 2007). In 1918, the first affordable housing cooperative for immigrant communities formed in Sunset Park, Brooklyn, and co-ops catering to a variety of income brackets continued to grow rapidly over the next several decades. By the 1970s, many landlords had abandoned tenant buildings due to a combination of white flight, racist housing policies, and public disinvestment, especially in minority-majority neighborhoods in South Bronx, Upper Manhattan, Central Brooklyn, and the Lower East Side (UHAB, 2024a). NYC acquired these abandoned buildings, becoming the city's biggest landlord by the late 1970s (Sheehan, 2022). In 1978, the NYC Department of Housing Preservation and Development (HPD) created the Tenant Interim Lease program (TIL), its first publicly supported co-op housing program (UHAB, 2024b). This program provided tenants with state and local tax incentives and mortgage abatements designed to promote housing affordability

Some co-ops will be protected from storm surge-based flooding by neighborhood-scale projects like the East Side Coastal Resiliency Project (under construction here in this photo). However, this project will not protect from rain-based flooding. (Source: EDF)

(Sazama, 2000). Between 1953-1985, United Housing Federation also brought together unions, private, and city and state funds to build large-scale co-ops, like Co-op City and Rochdale Village. In the 1980s, rising oil prices and an inability to raise rents due to rent stabilization regulations led more buildings to convert into co-ops (Goodman, 2000). This created most of the market-rate co-ops in NYC today, around 3,000 buildings containing 242,000 units (Peterson, 1988). As of 2016, there were roughly 110,000 units of LECs in NYC, split among different state and city programs (including Mitchell-Lama, Housing Development Fund Corporations (HDFCs)) (NYU Furman Center, 2016).

Nationwide, government support of and regulations governing LECs can significantly affect their success and operations. Throughout the 1980s and 90s, federal support for affordable housing declined and non-profits became increasingly important providers of financial support for LEC conversion and maintenance (Sazama, 2000).[5] Today, government funding support for LECs is highly localized, often coming through subsidized loans and homeowner assistance programs. In NYC, state, city, philanthropic funding, tax exemptions, and technical assistance have supported many co-op conversions. Many collaborate with UHAB, a non-profit membership organization that was created in 1973 to help co-op residents develop the tools to rehabilitate and maintain their co-ops. Other organizations that assist co-ops include Habitat for Humanity, Los Sures, St. Nick's Alliance, and Banana Kelly. The decentralized approach to LEC conversion and support – as well as a lack of federal funding – creates a reliance on non-profit and ad hoc funding mechanisms that limits the scale of LEC development (Sazama, 2000), as well as technical assistance for new challenges like climate change. The primary government programs are outlined below.

1. **Housing Development Fund Corporations (HDFCs).** One important source of LECs are HDFCs that get reduced real estate taxes in return for complying with guidelines for selling and renting units, including meeting low-income thresholds. This often comes in the form of resale price caps, income guidelines, and deed restrictions. These are supported by government and non-profit entities like HPD, UHAB, and NYC Housing Partnership (CurbedNY, n.d.; NYU Furman Center, 2024b; UHAB, 2016). NYC has over 25,000 co-op units in 1,191 HDFCs (UHAB, 2022a). Of these, 53% are in Manhattan, 28% in Brooklyn, 18% in the Bronx, and 1% in Queens. None are on Staten Island (UHAB, 2024a). Over the years, multiple programs have helped create HDFCs in NYC, including:

5 Inconsistent or declining financial public support, coupled with hot real estate markets, can incentivize LEC conversion or resale at market rates. Moreover, there is often limited support for co-op member education and training that would support long-term leadership and commitment to collective governance and housing affordability (Saegert & Benitez, 2005).

- **Tenant Interim Lease (TIL) Program.** This now defunct program began helping tenants convert city-owned buildings into co-ops in 1978. Tenants had to participate in training (e.g., through UHAB) on building management as part of the transition process. Once units were consistently occupied and the operating expenses stabilized, the building would be transferred from HPD for a nominal price (NYU Furman Center, 2024a). At the beginning of the program, this price was $250, a price which has since gone up. If the building management was deemed successful after a trial period, it would become an HDFC (Sheehan, 2022).
- **Affordable Neighborhood Cooperative Program (ANCP).** This successor program to TIL rehabilitates distressed properties by securing an Article XI tax exemption of up to 40 years to keep the property affordable. During construction, the nonprofit Restoring Communities acts as title holder of the buildings and supports HPD in overseeing developer performance and timely project completion (NYC HPD, n.d.-c). Very few buildings at the time of writing have become HDFCs through this program.
- **Open Door Program.** This funds new construction of affordable to moderate co-op and condo buildings, as well as the construction of one- to three-family homes (NYC HPD, n.d.-d). Units are sold to residents who agree to owner-occupy the unit for the duration of the regulatory period (usually thirty years, during which the unit should stay affordable in return for government funding). Residents could transfer out of these programs, but new residents are required to meet the same income guidelines outlined by HPD. For these HDFCs, buyers of new or re-sold units must also meet the same specific income bracket requirements (NYU Furman Center, 2024c).

2. **Mitchell-Lama Co-ops** were created by a New York State funded program that began in 1955, focused on creating rental and co-op units that were affordable for middle-income residents (NYC HPD, n.d.-e). These co-ops are actually a zero-equity model and produce no profit. Specificaly targeting middle-income residents, this kind of co-op can often times be as or more affordable than most HDFC co-ops at present because of their unique equity structure. Well-known Mitchell Lama co-ops include Co-op City and River Terrace. This program still provides housing for middle-income individuals in communities across the state, including NYC (NYS HCR, n.d.). This program has “subsidized the construction of 269 developments” resulting in over 105,000 apartments (NYU Furman Center, 2024d).

2 MAPPING CO-OP EXPOSURE TO FLOODING AND EXTREME HEAT

2.1 OVERVIEW

No studies have examined the specific climate risks that co-ops face. In response, we mapped the location of co-ops with affordability protections along with their exposure to flood risks (tidal, stormwater, storm surge, and rainfall) and extreme heat. Out of the many co-op properties we found in NYC, we focused on 5,649 properties with affordability protections, including HDFCs as well as co-ops with tax-exempt status, such as Mitchell-Lamas, in the hopes of identifying more co-ops with affordability protections in NYC. It is unclear how many of the actual units in these buildings have affordability protections. While we do not have access to individual property socio-economic data, the units we studied tend to be in census tracts with lower median household incomes, older buildings, and lower gross rents compared to tax-exempt coops.

Our analysis, detailed below, finds that 36% of all co-op buildings with affordability protections in NYC have some form of flood risk. Although many of these co-ops are exposed to multiple forms of flooding, most are exposed to rain/stormwater-based flooding (79.6%) rather than tidal flooding (45.7%) due to their location. Only 16.9% of co-ops fall within the pFIRM boundaries for the National Flood Insurance Program, suggesting that many may not be aware of their potential flood risk, despite new state flood disclosure laws. Co-ops where 75-100% of the property falls within a map of tidal, stormwater, storm surge, and/or rainfall-based flood risk are concentrated in a few neighborhoods: Lower East Side, West Village, East Harlem, Brighton Beach, Coney Island, the Rockaways, East New York, Williamsburg, and Jamaica. Co-ops are not significantly more exposed to extreme temperatures, compared to non-co-ops (only 0.33°F greater than the city's average temperature). Co-ops with flood risks are slightly more exposed to heat than the city average (by 0.82°F) than co-ops without flood risks (0.14°F), but these are minor differences compared to the overall range within the city (from -8°F to 8°F).

These findings have important policy implications. First, most co-ops can likely adapt in place since the primary flood risk is rain/stormwater flooding, and few are likely to need to relocate due to rising sea levels. Strategies such as moving utilities from the basement or first floor and removing basement or first floor residential units require agreement among co-op boards and can also significantly impact overall finances. These changes require dedicated technical assistance and financial supports that are different from landlord or city-owned affordable

housing. However, as discussed in the policy chapter, most public funding for which co-ops are eligible focus on energy efficiency and decarbonization. This gap in funding support could potentially be remedied by requiring or incentivizing energy efficiency and decarbonization funding to address flood risks.

2.2 METHODS OF MAPPING AFFORDABLE CO-OPS IN NYC

We measured the vulnerability of co-ops to flooding in NYC by compiling and overlaying maps of co-ops and the extent of different flood risks. To identify coops that are more likely to be home to lower-income residents, we relied on three datasets: New York City's Primary Land Use Tax Lot Output (PLUTO) database, managed by the NYC Department of City Planning; the New York University Furman Center's Subsidized Housing Database, that contains information on subsidies and tax abatements, as well as the NYC Department of Finance's Property Exemption Detail database, which includes information on porperties' exemptions and abatement status. The PLUTO database contains extensive land use and geographic data at the tax lot level. This, combined with the Furman Center's Subsidized Housing Database which includes detailed property-level housing subsidy and/or tax exemption information, allowed us to identify additional properties with HPD subsidies or various other tax exemptions. Finally, we collaborated with UHAB to obtain additional address and contact information about their members' properties. Table 1 explains the different types of co-ops and the sources of data. Using the PLUTO database, we mapped the locations of each property and connected them with additional spatial information on flood risks, socio-economic, and neighborhood characteristics.

TABLE 1: DATA SOURCES FOR NYC CO-OPS WITH AFFORDABILITY PROTECTIONS

Category	Description
Tax Exempt Co-ops	Cooperative housing where one or more units qualifies for a tax exemption (Includes Mitchell-Lama).
HPD Subsidized Co-ops	Cooperative housing that receives subsidy* assistance from HPD.
HPD Supported HDFCs	HDFCs that receive some assistance or participate in a subsidy program through HPD.

* Examples of subsidies include: the 420-c & 421-a Tax Incentive Programs, Low-Income Housing Tax Credit (LIHTC), HPD's Third Party Transfer Program (TPT), Multifamily Preservation Loan Program (MPLP), and the Low-Income Affordable Marketplace Program (LAMP).

(For additional information on these subsidies, please visit: https://furmancenter.org/coredata/userguide/dictionary)

2.3 METHODS OF MAPPING CO-OP FLOOD AND HEAT RISKS

To comprehensively assess co-ops' exposure to flood risk, we compiled maps of flooding due to rainfall, tidal flooding, storm surge, and sea level rise. Table 2 lists the different flood map layers and Figure 1 shows the spatial extents of these different types of flooding.

First, we included maps of historic (experienced) flood risk, in the form of Hurricane Sandy's inundation extents. Maps of past floods are notoriously difficult to obtain. This was the only one available due to the importance of the event and subsequent efforts to map it, but it only shows historic flooding due to a single coastal storm surge event rather than the impacts of rainfall-based flooding. Second, we mapped "current" day flood risks using the pFIRM maps issued by FEMA in 2015. These maps aim to comprehensively assess flood risks from a variety of causes given contemporary infrastructure and land use condtions, but they do not account for climate change. Third, we included maps of areas that in the future will have 0.2% and 1% chance of flooding in 2050 and 2100 (the so-called 500-year and 100-year floods, respectively). These account for the impacts of climate change

TABLE 2: DATA SOURCES FOR DIFFERENT TYPES OF FLOODING IN NYC

Flood Map	Description	Source
Historic Flooding	Hurricane Sandy Inundation Extent (2011)	Dept of Small Business Services
Current FEMA Flood Insurance Maps	Preliminary Flood Insurance Rate Maps (pFIRM) (2015)	FEMA
Sea Level Rise (SLR) + Tidal Flooding	Monthly Mean High Water + SLR 2050	Mayor's Office of Climate and Environmental Justice (MOCEJ) and the New York Panel on Climate Change (NPCC)
	Monthly Mean High Water + SLR 2100	
Future Floodplain including Sea Level Rise (SLR)	SLR 2050 + 100-year Floodplain (1% Annual Chance)	
	SLR 2050 + 500-year Floodplain (0.2% Annual Chance)	
	SLR 2100 + 100-year Floodplain (1% Annual Chance)	
	SLR 2100 + 500-year Floodplain (0.2% Annual Chance)	
Stormwater Flooding (Precipitation + SLR)	NYC Stormwater Flood Map - Extreme Flood with 2080 SLR	Dept of Environmental Protection (DEP)

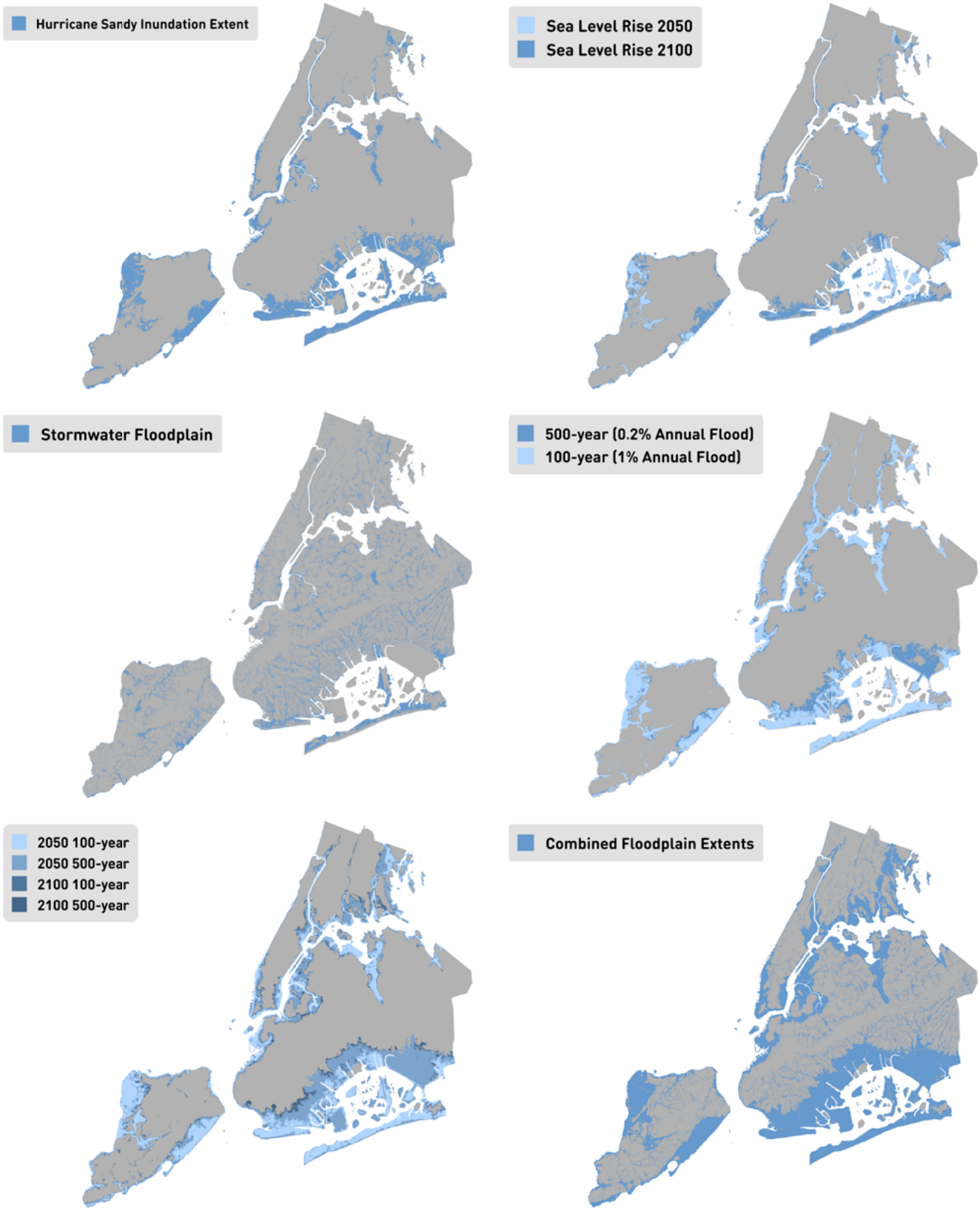


Figure 1: *Individual and Combined Floodplain Maps*

increasing the frequency and severity of precipitation in those years as well as sea level rise. Finally, we included a map of stormwater-based flooding in 2080 due to intense rainfall, inadequate drainage, as well as sea level rise. We combined these different maps to create a single aggregated map of areas in NYC that have or could have flooding by 2100 due to a variety of causes. We then overlaid maps of co-ops and flood risks to identify the extent and locations of co-op housing with affordability protections that are vulnerable to flooding.

In order to analyze co-ops exposure to extreme heat, we utilized the NYC Council Data Operations Unit's Heat Inequality Map. This map draws on the US Geological Survey's Landsat 8 satellite's dataset of June to September temperatures between 2020-2022. It maps the relative temperatures of different parts of the city by comparing their deviation from the city's average temperature over this time. We overlaid the maps of co-ops to assess the extent to which co-ops are located in areas with extreme heat exposure.

Finally, we drew on U.S. Census data to examine factors such as structure age, home value, rental prices, occupancy status, median household income, and race and ethnicity status. All data is from the American Community Survey's most recent available data, 2015-2020, at the level of the census tract. These census indicators were aggregated to the level of individual properties, to help identify the possible socio-economic characteristics of co-op residents. Identifying these characteristics was done to identify possible concentrations of flood and/or heat risk on particular social or economic groups.

2.4 EXTENSIVE AND CONCENTRATED FLOOD RISKS

Our analysis shows that over one-third of all co-ops in NYC are at risk of flooding. Figure 2 shows the location of co-ops on the combined flood risk map. As Table 3 details, of the 5,649 co-ops in NYC with affordability protections, 2,040 sit within at least one of the flood risk maps. Of these, roughly 17% are located within FEMA's pFIRM flood risk zones.

Most co-ops are affected by pluvial flooding caused by rainfall and inadequate drainage, as well as storm surge exacerbated by sea level rise. Few are affected by chronic, tidal flooding exacerbated by sea level rise. Table 4 shows the number and percentage of co-ops, respectively, that are affected by different types

TABLE 3: FLOOD VULNERABLE CO-OPS IN NYC

	Total	At-Risk	% At-Risk
Total Co-ops with Affordability Protections	**5,649**	**2,040**	**36%**

of flood risks. Table 5 shows the number and percentage of co-ops that face compounding types of flood risk. Most co-ops we studied are exposed to only a single type of flooding (about 56-59%), while the rest are exposed to two to nine other floodplain extents. The strong and singular impact of stormwater flooding on co-ops underscores the need for stormwater management improvements in neighborhoods with high concentrations of housing and to elevate utilities and improve drainage infrastructure. For co-ops primarily experiencing this type of flooding, property relocation through buyouts may not be necessary.

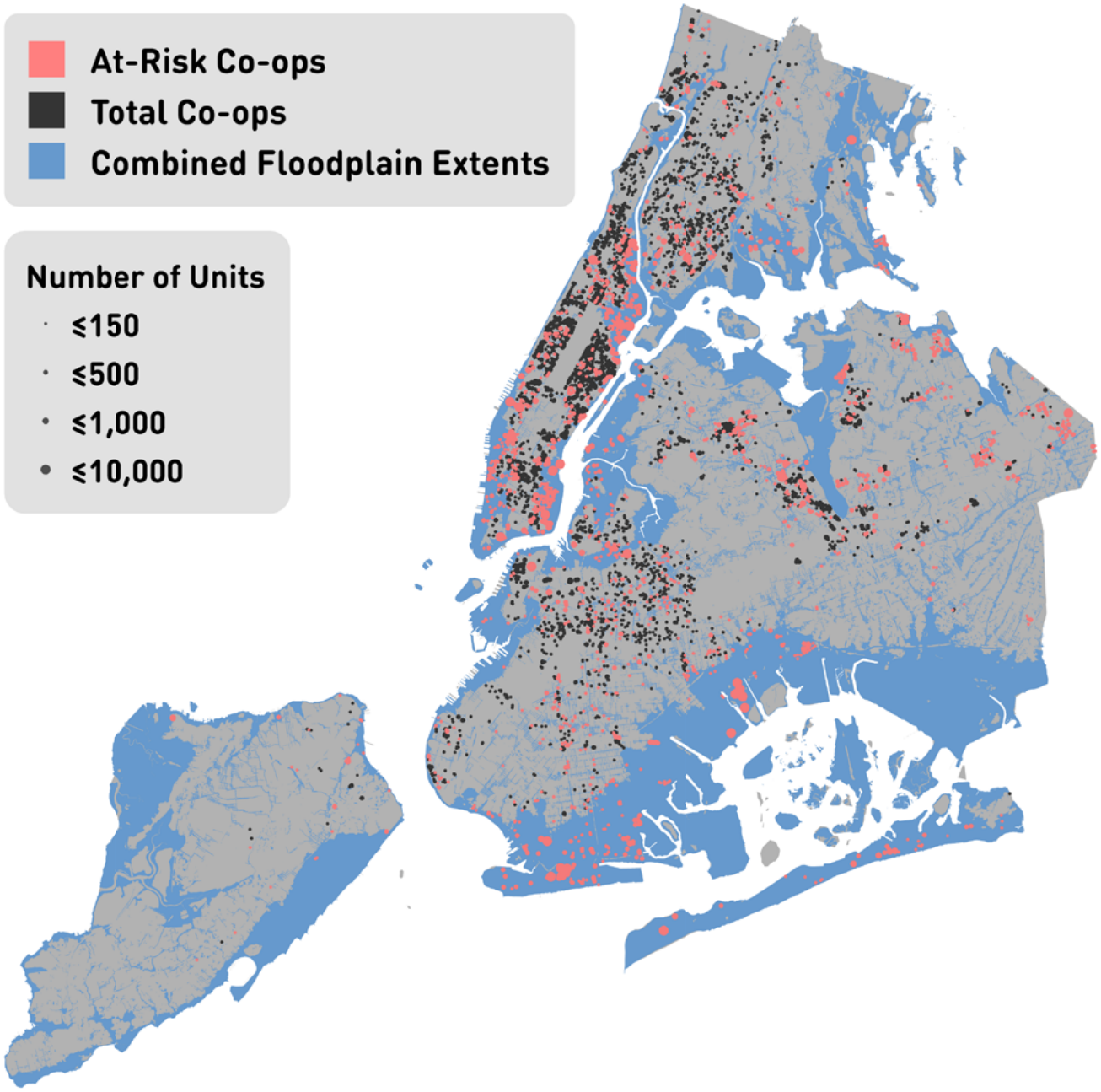


Figure 2: *Map of Co-ops in NYC and Their Vulnerability to Flooding*

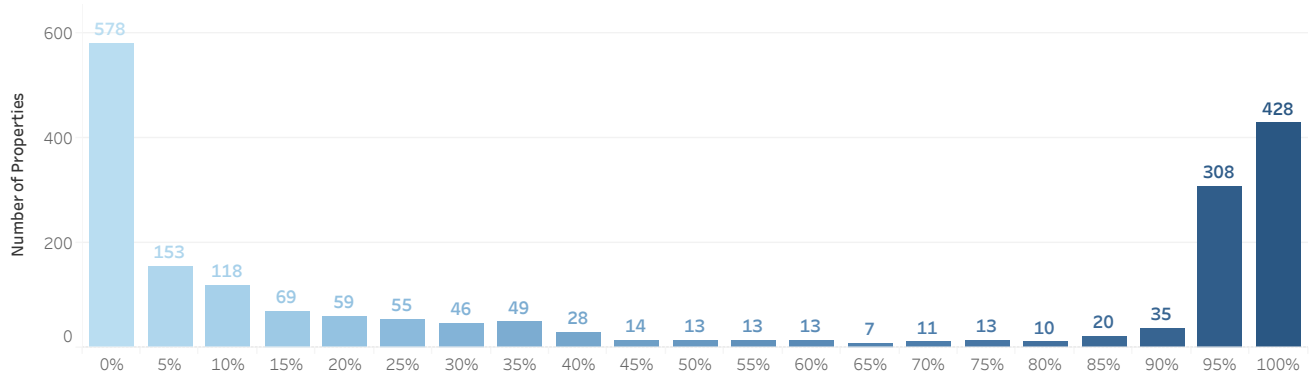


Figure 3: *The Number of Co-ops by the Percentage of their Property that Intersects with the Combined Flood Risk Map*

For two-thirds of co-ops in our analysis, only a small portion of their property intersects with the combined flood map. As Figure 3 shows, however, about 35% of co-ops with affordability protections have 75-100% of their properties lying in a flood risk area. This is likely an underestimation of actual risk.[6] Figure 4 shows the locations of these extremely at-risk co-ops, which are concentrated in the Lower East Side, West Village, East Harlem, Brighton Beach, Coney Island, the Rockaways, East New York, Williamsburg, and Jamaica. The median household income of these neighborhoods ranges from some of the poorest in the city to some of the wealthiest (see Figure 5). The severity of flood risks in these areas helps concentrate the geographies where improvements are urgently needed. At the same time, the concentration of co-ops could also provide economies of scale and multi-property collaborative design improvements, including for green infrastructure.

In general, at-risk affordable co-ops tend to be in census tracts with lower average incomes and lower rent prices, as shown in Table 6. These characteristics are mixed when comparing race and ethnicity. Race and ethnicity characteristics vary slightly (Table 7). Asian residents appear to have slightly more risk, while those identifying as Hispanic have slightly less. It is important to note that these neighborhood level socio-economic characteristics may not directly translate into individual co-op property conditions.

6 DEP's stormwater flood map excludes the building footprint shapes, which means spatial analysis that intersects co-op building footprints with the stormwater flood map likely underestimates the actual percentage of inundation. Likely many of those with 0% of the property area inundated fall within this category.

TABLE 4: NUMBER AND PERCENTAGE OF CO-OPS LOCATED WITHIN ONE OR MORE FLOOD MAP EXTENT

Flood Map Extents	Preliminary Flood Insurance Rate Maps (pFIRM) (2015)	Monthly Mean High Water + SLR 2050	Monthly Mean High Water + SLR 2100	SLR 2050 + 100-year Floodplain (1% Annual Chance)	SLR 2050 + 500-year Floodplain (0.2% Annual Chance)	SLR 2100 + 100-year Floodplain (1% Annual Chance)	SLR 2100 + 500-year Floodplain (0.2% Annual Chance)	Hurricane Sandy Inundation Extent (2011)	NYC Stormwater Flood Map - Extreme Flood with 2080 SLR	Total Properties At-Risk
# of Properties	344	35	196	589	740	933	799	356	1623	2040
Percent of Total	16.9%	1.7%	9.6%	28.9%	36.3%	45.7%	39.2%	17.5%	79.6%	100%

TABLE 5: THE NUMBER AND PERCENTAGE OF CONCURRENT FLOOD RISK EXTENTS THAT CO-OPS FACE

Number of Concurrent Hazards	1	2	3	4	5	6	7	8	9	Total
# of Properties	1198	83	105	180	104	96	98	150	26	2040
Percent of Total	58.7%	4.1%	5.1%	8.8%	5.1%	4.7%	4.8%	7.4%	1.3%	100%

TABLE 6: INCOME AND HOUSING CHARACTERISTICS OF CO-OP NEIGHBORHOODS, BY FLOOD RISK (Note: All indicators are at the census tract level)

	Median Household Income	Per Capita Income	Median Year Structure Built	Median Gross Rent	Median Home Value
At Risk	$70,124	$51,523	1963	$1,430	$519,183
Not at Risk	$83,083	$63,823	1965	$1,611	$628,165

TABLE 7: RACE AND ETHNICITY CHARACTERISTICS OF CO-OP NEIGHBORHOODS, BY FLOOD RISK (Note: All indicators are at the census tract level)

	Asian	Black	Hispanic	Native American	White
At Risk	13.4%	20.7%	23.5%	0.36%	49.1%
Not at Risk	9.6%	21.1%	27.9%	0.42%	49.2%

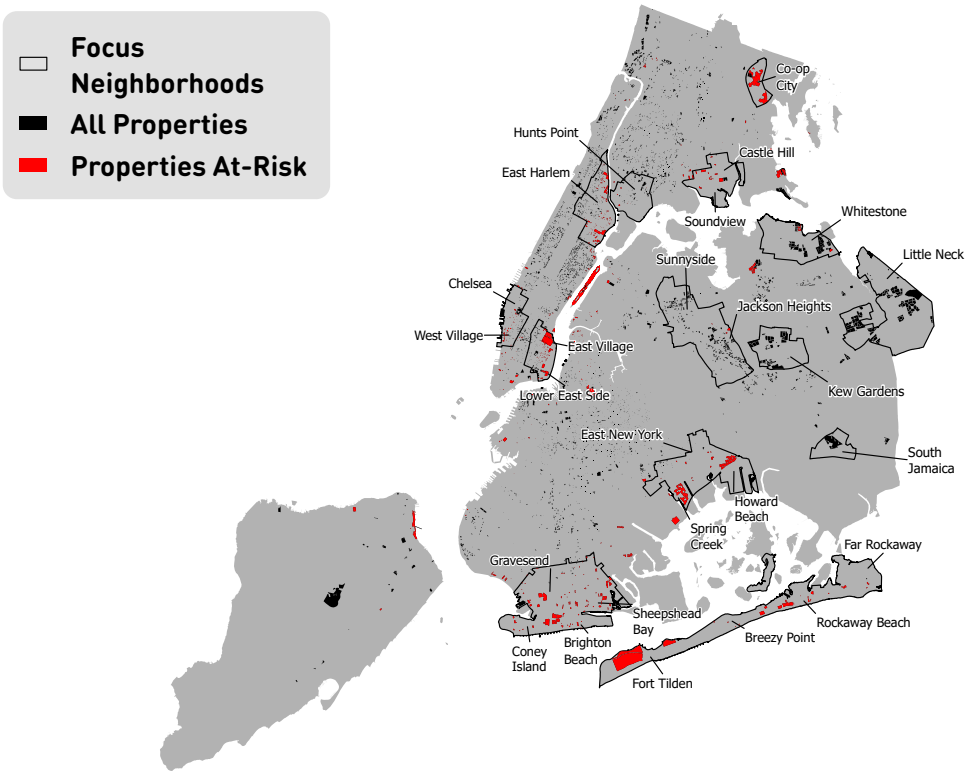


Figure 4: *Neighborhoods with Clusters of Co-ops with High Flood Risk (75%+ of Property is in Combined Flood Risk Map)*

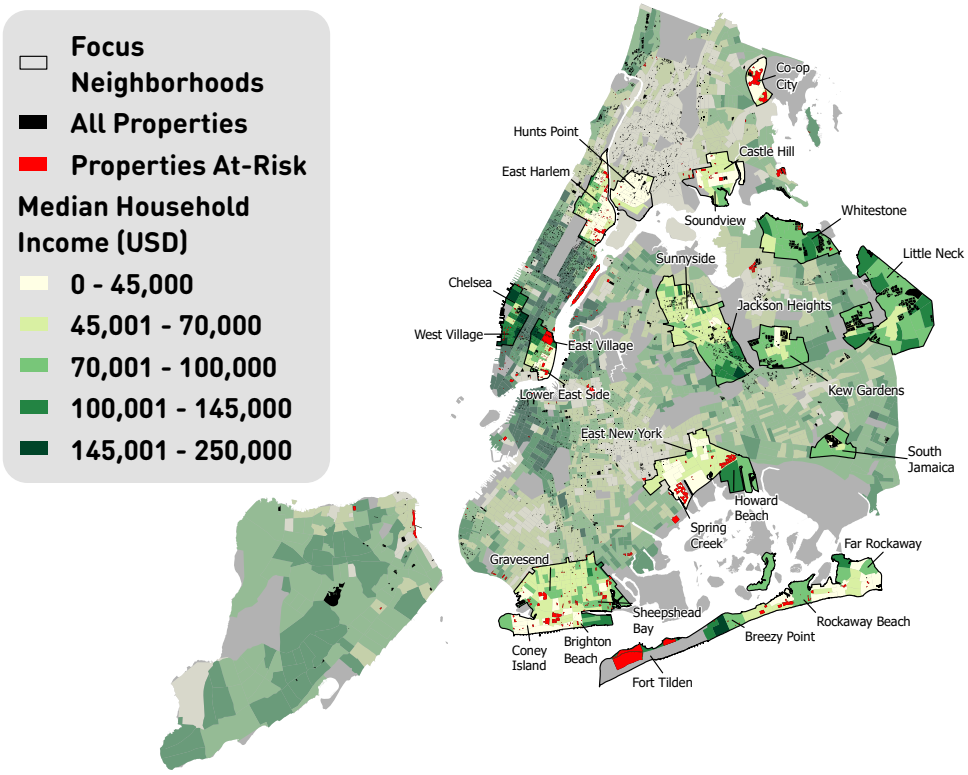


Figure 5: *Neighborhoods with Clusters of Co-ops with High Flood Risk, by Census Tract Median Household Income*

2.5 LIMITED HEAT RISKS

Our analysis finds that co-ops in NYC face less severe risks from extreme heat. Figure 6 shows a map of the temperature extremes in the city and how much different neighborhoods deviate from the city's average summertime temperatures, from as much as -8°F below average to 8°F above average. Neighborhoods with below average temperatures are typically near city parks, like Central Park, Riverside Park, Inwood, Riverdale, and Kingsbridge near Van Cortlandt Park, where trees and coastal breezes help to reduce ambient temperatures. Neighborhoods with above average temperatures typically have fewer trees, are far from parks, are further inland, and have a high level of impermeable surface cover. Inland neighborhoods in various parts of Brooklyn, Queens, and the Bronx typically have extremely high heat stress relative to the rest of the city.

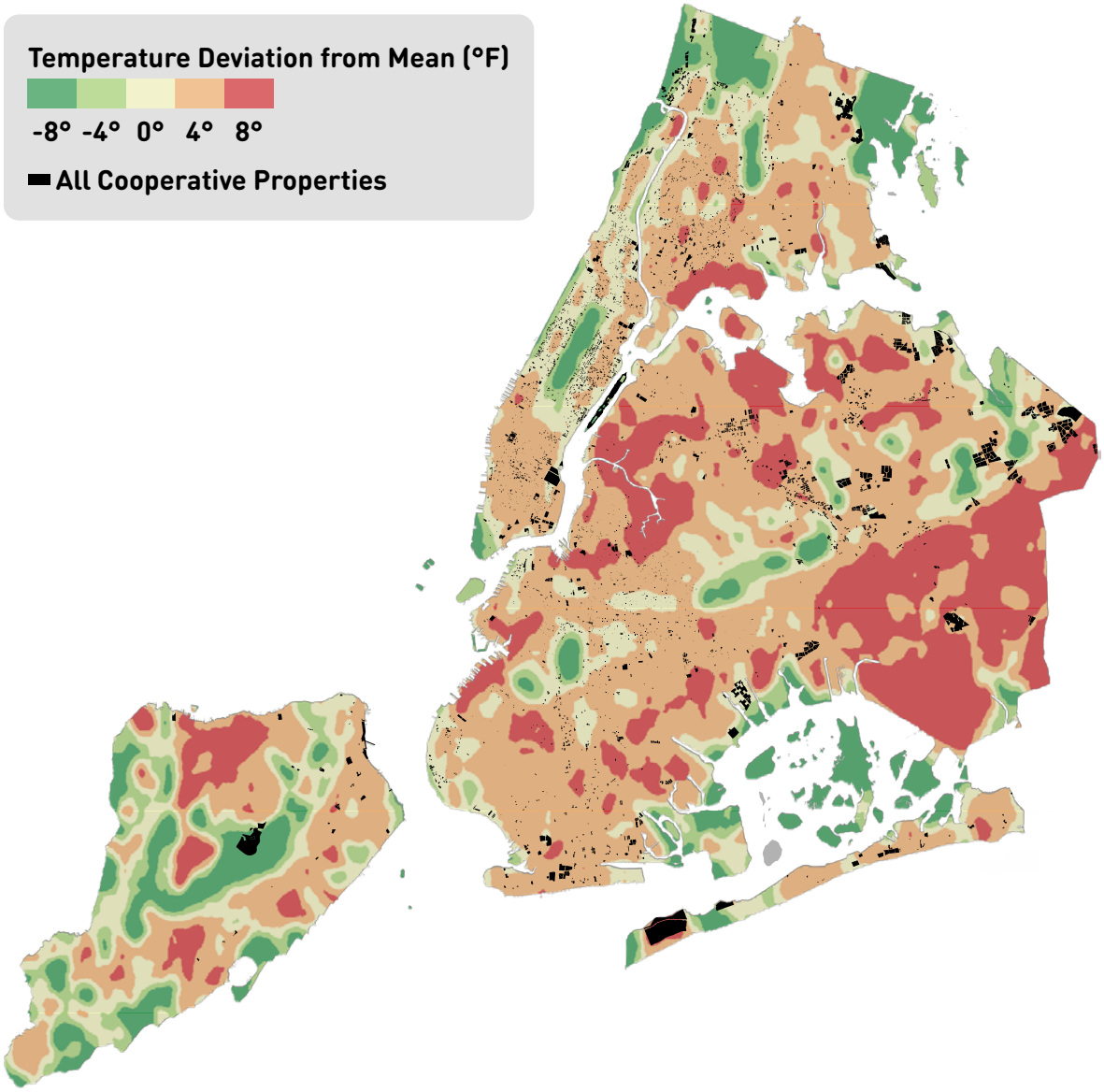


Figure 6: *Map of Co-ops in NYC and Their Exposure to Extreme Heat*

On average, co-ops that we studied are 0.33°F above the city's summertime average temperature. As shown in Table 8, this ranges from 0.14°F above average for co-ops that have no flood risks, and 0.82°F above average for co-ops with extremely high flood risks. These figures indicate that co-ops with affordability protections, on average and at a coarse level of analysis, are not disproportionately at risk of extreme heat. Since properties with high flood risk also have comparatively higher heat exposure, integrated climate mitigation and adaptation strategies may be particularly effective. This could include, for instance, green roofs that absorb rain and reduce temperatures, and energy efficiency upgrades from oil to electric heating that also moves utilities from the basement to higher floors.

TABLE 8: RELATIVE HEAT DEVIATION OF CO-OPS BY THEIR FLOOD RISK

Flood Risk	Average Temperature Deviation from Mean (°F)
Not At-Risk	0.14°
At-Risk	0.82°
All Cooperatives	0.33°

3 EVALUATING CO-OP CLIMATE IMPACTS AND RESPONSES

3.1 OVERVIEW

Despite the risk exposure that co-ops face, little is known about their actual experiences with climate mitigation, climate and disaster impacts, and barriers and progress towards adaptation. Single-family homes and, increasingly, rental multifamily housing, have benefited from numerous disaster, energy, and climate programs as well as research on resident experiences and the impacts of government programs. After Hurricane Sandy, NYCHA also received $3.2 billion in federal funding – the largest FEMA grant in history – to rebuild and improve public housing (APTIM, 2024). In this landscape, co-ops have been overlooked because they are not deeply low-income (since residents have enough assets to purchase a residence) and they lack a single organizational liaison (like NYCHA or a landlord).

In response, during 2023 we conducted the first-ever survey of co-op experiences with climate change in NYC to learn about co-op experiences with climate impacts, priorities, and responses. The survey aimed to identify practical insights and feedback from co-ops about how to enhance the resilience of co-op communities facing flood and climate-related impacts. We found that most co-ops have experienced climate impacts, but do not prioritize climate mitigation or adaptation. Common areas in co-ops have been more damaged by flood events than individual areas, but a minority have flood insurance and very few received public assistance for disaster recovery. The sections below describe the methods used in the survey, including the significant challenges of identifying contacts and communicating with co-op residents, the major themes and tensions, and the clear policy gaps indicated by the co-op respondents.

3.2 METHODS

The survey contained 19 questions that sought to understand:

- co-ops' number of units;
- residents' knowledge of their co-ops' flood risks;
- types of damages they have experienced due to climate change (including heat) and disaster events;
- types of actions they have taken on climate mitigation and adaptation;
- barriers they have experienced;
- resources they have received, used, or needed.

Questions used multiple-choice, select all that apply, matrix, and open-ended formats. The survey indicated that respondents would be entered into a raffle for a 10th generation iPad.

The survey was distributed in two different formats – first by postal mail as a paper survey (spring 2023) and then digitally (late summer/early fall 2023). The sampling pool of the paper survey included 1,188 co-ops that met two criteria. First, spatial mapping needed to indicate that the co-op had some kind of current or future flood risk (stormwater, tidal, floodplain, or storm surge) as explained in the previous section (see Figure 2). Second, they had to have units that are that considered affordable by inclusion in UHAB's list of HDFCs and other member co-ops and/or the NYC Department of Finance database of all tax-exempt co-operatives, which can indicate HDFC, Mitchell Lama, or other affordability protections. The survey therefore is broadly inclusive of co-operatives with affordability protections, from limited equity cooperatives to buildings where few units may have affordability protections.

The distribution of the paper survey involved four attempts at mail-based surveys targeting all 1,188 co-ops from April to September of 2023. In collaboration with the Cornell Center for Conservation Social Sciences, we were able to design, format, print, distribute, and track the surveys. The four-part outreach of the paper surveys involved sending the full survey (in English and Spanish), sending a reminder postcard, sending the full survey a second time, followed by a second postcard. However, the first wave of distribution resulted in 606 returned surveys due to undeliverable addresses. For multi-family buildings, addresses that did not contain a clear recipient with a specific unit number resulted in the postal service being unable to deliver the mail. To address this issue, we used the HPD online database of NYC co-ops to search for the names of the co-op governing board officers, along with their addresses. Often, officers listed were management agencies. In the case that all three addresses for these titles were the same, we assumed that the management agent filled out the form and that the address listed was that of the management agent. We corrected our database to reflect the name and address of the management agent. If varying addresses were listed, the address of the head officer (or officer) was used. However, this information was not available for all the co-ops we sought to contact. When this was the case, we indicated "Superintendent, President of the Board, or Resident" along with an apartment number. For management agencies that were responsible for multiple co-ops, we also looked up their contact information to update the address and to call or email them about the survey. Ultimately, 582 paper surveys appear to have been delivered, of which we received 66 responses, resulting in a response rate of 11.3%.

To boost the response rate, we then developed a digital version of the survey in Qualtrics including two additional languages: Simplified Chinese (Mandarin) and

Bengali. The survey, which ran from August to September of 2023, was sent to 710 contacts in 124 co-op buildings for whom we had email addresses through UHAB: first with an alert in a UHAB newsletter that the survey would be coming, followed by an invitation to the survey, virtual office hours on Zoom for those who needed help completing it, and a reminder email. In addition, we called members for whom we had a phone number to tell them about the survey and remind them to take it. We heard from some members that multiple people worked on it together to complete relevant parts about which they were knowledgeable. We received 49 responses on the paper survey, and a 40% response rate on the email survey.

In total, we received a 16% survey response rate (out of a combined 706 co-ops surveyed through delivered paper and electronic surveys). The high percentage of undeliverable mail, difficulty in identifying the correct current responsible representative, and low response rate reflects the difficulty of reaching residents living in multifamily housing. This also indicates the barriers to basic communication and outreach with this dispersed community and the need to support mobilization and engagement efforts as a basic starting point of technical assistance and funding support.

TABLE 9: SURVEY RESPONSE RATES

	PAPER SURVEY	WEB SURVEY
Sample Pool	1188	124
Sample Pool Source	Spatial Analysis	UHAB Members
Time Period	April-June 2023	Aug.-Sept. 2023
Languages	2	4
Delivered*	582	124
Responses	66	49
Response Rate	11.3%	40%

All survey responses received were high quality, with completed answers for most questions. Depending on the respondent, their length of residency, and involvement in board meetings, they may not accurately know or represent the actual or complete conditions of the co-op's experiences. The categorical and Likert responses were enumerated as dummy variables and Likert scales in Excel and Stata. We developed basic summary statistics and charts for each question, visual analysis, and built pivot tables of comparing actions based on whether co-ops had affordable units, awareness of impacts, and funding support. We also organized qualitative responses to open-ended questions into thematic groups.

3.3 RESULTS

The 115 responding co-ops together contain 14,516 units of housing, with the average co-op having 125 units of housing. Respondents were located across the city, and most were superintendents, presidents or secretaries of the board, or management agency staff. Survey respondents have lived from 2 to 79 years in their co-op, with an average of 24 years. The length of their tenure and their role within the co-op directly affects input on the survey.

3.3.1 CO-OPS ARE NOT VERY AWARE OF CLIMATE RISKS AND DO NOT PRIORITIZE CLIMATE MITIGATION OR ADAPTATION

Respondents have only partial awareness of their climate risks, although people were more likely to be aware of these risks if they had experienced an impact through an acute event. Most respondents (59%) are aware that their building is vulnerable to flooding. But 23% said they believe their building is not vulnerable to flooding, despite mapped exposure to flooding being a requirement for inclusion in the survey, and 18% said they did not know (Figure 7). This potentially reflects a limited awareness by respondents, since almost all co-ops receiving the survey sit in at least one kind of flood map whether historic, current, or future.

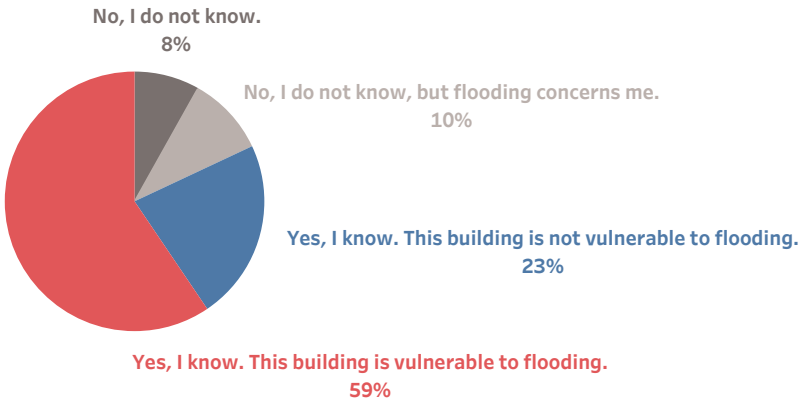


Figure 7: *Percentage of Co-ops Aware of Flood Risk*

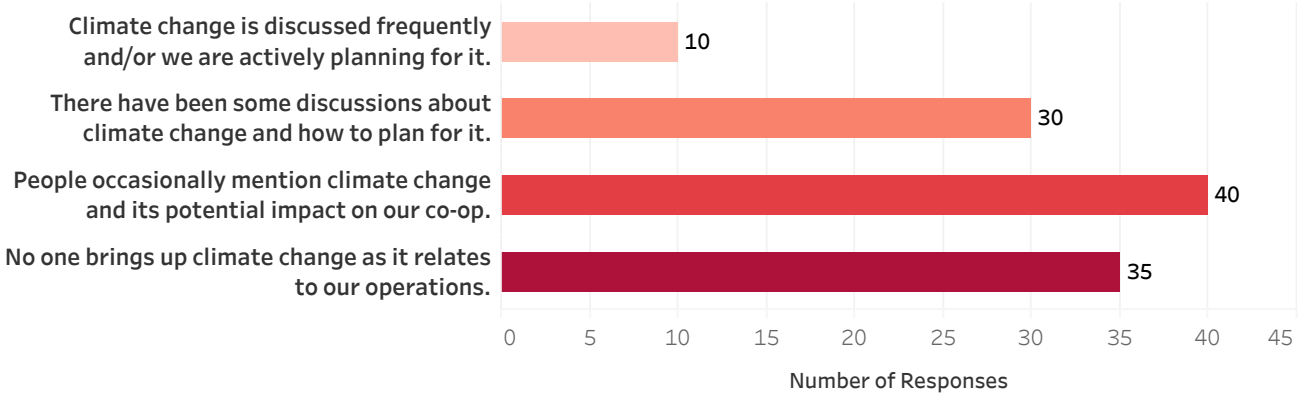


Figure 8: *Number of Co-ops Discussing Climate Change*

Reflecting these perspectives or experiences, co-ops are not prioritizing this challenge (Figure 8). When asked how often climate change is referenced by residents and/or board members as an issue that the co-op should address, 30% of respondents said no one brings it up, 35% said people occasionally mention it, 26% said they have had some discussions, and only 9% said it is discussed frequently.

Climate action was among the lowest priorities, along with advocacy for supportive co-op policies and attracting new residents (Figure 9). The top co-op priority indicated by respondents is maintaining the building for safety, followed by preserving affordability, stewardship of co-op financial resources, and responding to and managing city regulations.

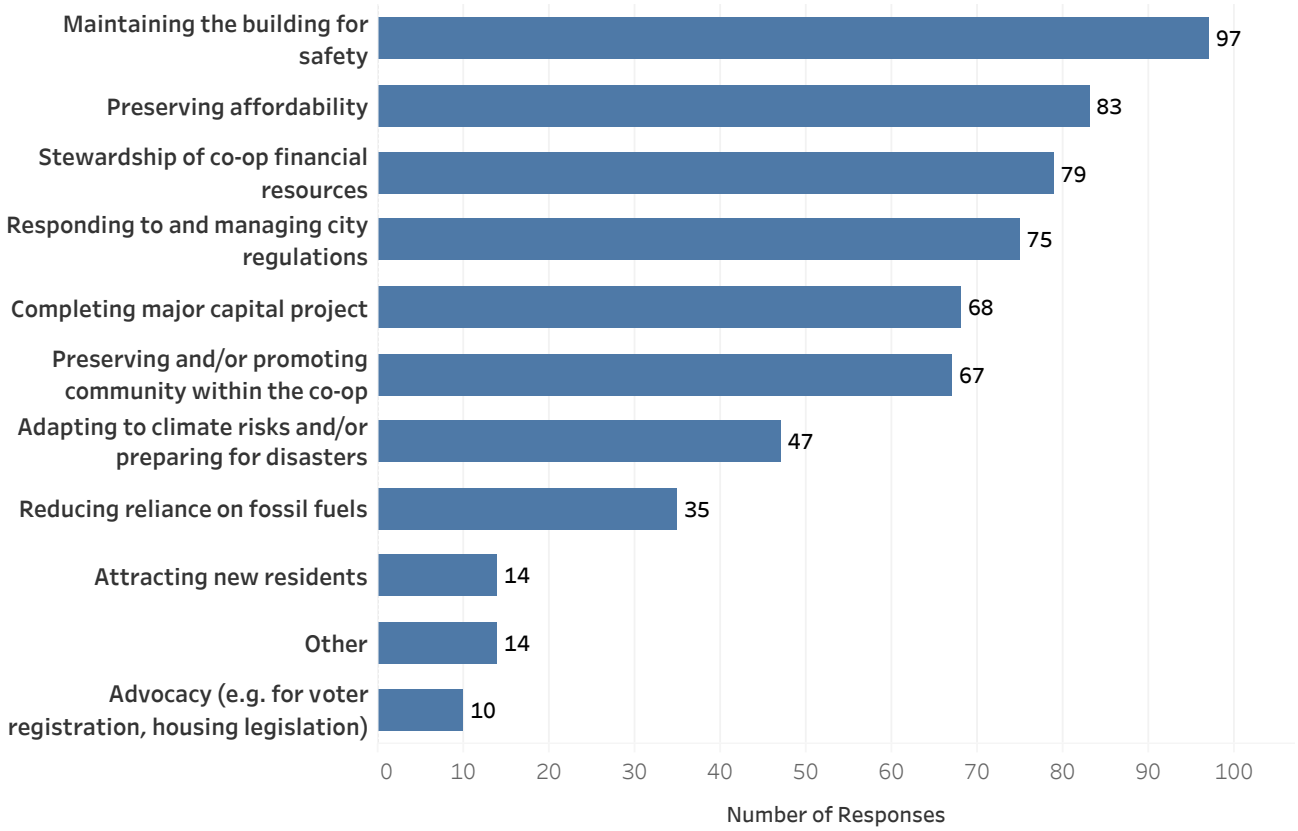


Figure 9: *Issues Considered a Major Issue by Surveyed Co-ops*

3.3.2 MOST CO-OPS HAVE EXPERIENCED CLIMATE IMPACTS

Nevertheless, the impact of climate-related incidents on co-op communities is evident, Figure 10 shows that 64% of co-ops reported experiencing adverse climate effects, taking the form of flooding (44%), wind damage (6%), power failure (39%), and extreme temperatures (11%). In addition, 35% of co-ops have been affected by Hurricane Ida (2021), 57% by Hurricane Sandy (2012), 27% by Hurricane Irene (2011), 24% by the 2011 heatwave, and 19% by the 2006 heatwave (Figure 11). Figure 13 shows the severity of impacts from these events for co-ops. 5% percent of co-ops reported residents experiencing illness, injury, or death due to climate-related events.

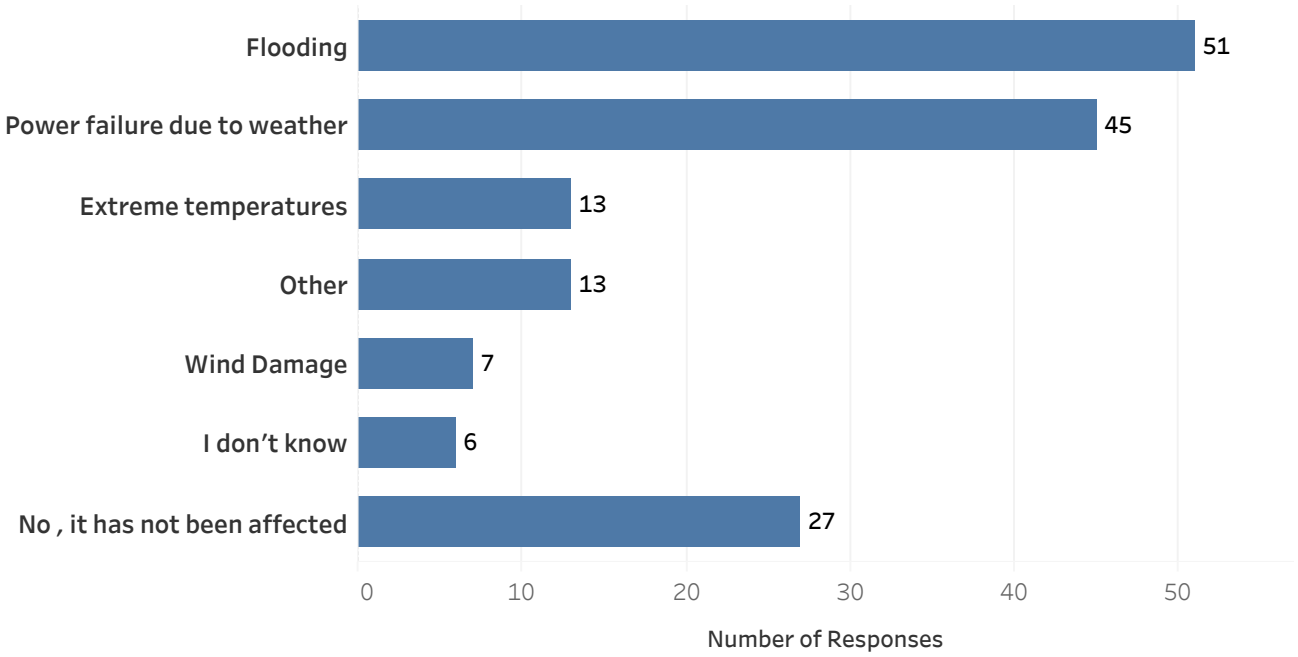


Figure 10: *Co-ops Experiencing Adverse Climate Impacts*

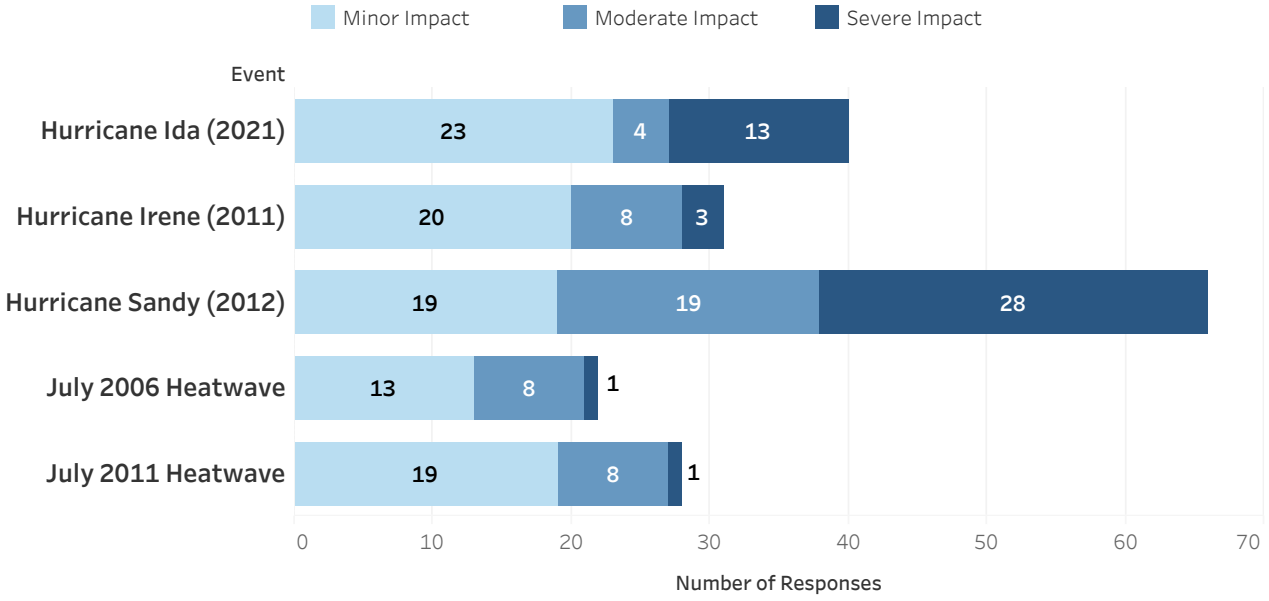


Figure 11: *Number of Co-ops Impacted by Major Climate Events*

Written responses highlight the extensive damage faced by co-ops due to severe weather events, particularly Hurricanes Sandy and Ida. Basements, boiler rooms, and electrical systems suffered significant flooding and damage, with some instances resulting in the destruction of essential equipment such as boilers, pumps, and electrical systems. The impact extends beyond property damage to include loss of power, interruption of services, and disruption of daily life for residents. Coastal erosion, sand deposits, and sewer clogging issues exacerbate the situation, leading to structural damage and ongoing maintenance concerns.

Despite efforts to mitigate risks through infrastructure upgrades and plumbing improvements, respondents noted a struggle in dealing with climate impacts, underscoring the need for comprehensive resilience measures and support from local authorities to address vulnerabilities and enhance preparedness for future events.

3.3.3 DAMAGE TO SHARED CO-OP AREAS IS MORE COMMON THAN INDIVIDUAL UNITS

Like many buildings in NYC, co-op ground-floors and subterranean floors are most susceptible to flood damage. Basements can contain both residential units as well as critical building systems, such as HVAC, mechanical, electrical, and plumbing systems, while inundated ground floors can impact residential units, as well disrupt building ingress/egress and elevator functionality in the lobby. Even buildings that are not in the floodplain face risks, as climate change is increasing instances of pluvial flooding from heavy rainfall.

As seen in Figure 13, 58% of co-ops experienced damage to the cooperative spaces (e.g., lobby, elevator, hallway, mailroom, basement, laundry room, parking, outdoor), utilities (electrical, plumbing, HVAC, boiler, Wi-Fi), structural elements (façade, foundation, exterior walls, columns), as well as other shared co-op spaces. By contrast, 25% reported damages to individual units and personal property, while 38% saw increased stress on co-op boards' finance and their ability to agree on response strategies.

3.3.4 A MINORITY OF CO-OPS CARRY FLOOD INSURANCE

Holding flood insurance is one important step towards adaptation; however, only 41% of respondents say their building carries a current flood insurance policy. Some 38% of respondents are uncertain about their co-ops' current insurance status against flooding, and 21% say that their building lacks current insurance coverage for flooding, exposing them to financial vulnerabilities in the face of climate-induced damages. Most respondents saying they had insurance get their coverage from private insurers (56%), followed by UHAB's bulk purchasing program for HDFCs, Fire and Liability Insurance Plan (FLIP)[7] (19%), while NFIP and other providers made up only 25% combined.

7 UHAB partners with insurance brokers to secure quality coverage. It provides flood insurance at no additional cost to the program package for those buildings who are required to hold flood coverage. FLIP has traditionally covered more than half of the HDFC community for over 20 years, however the current hard insurance market has lowered that number to about 35% of the community.

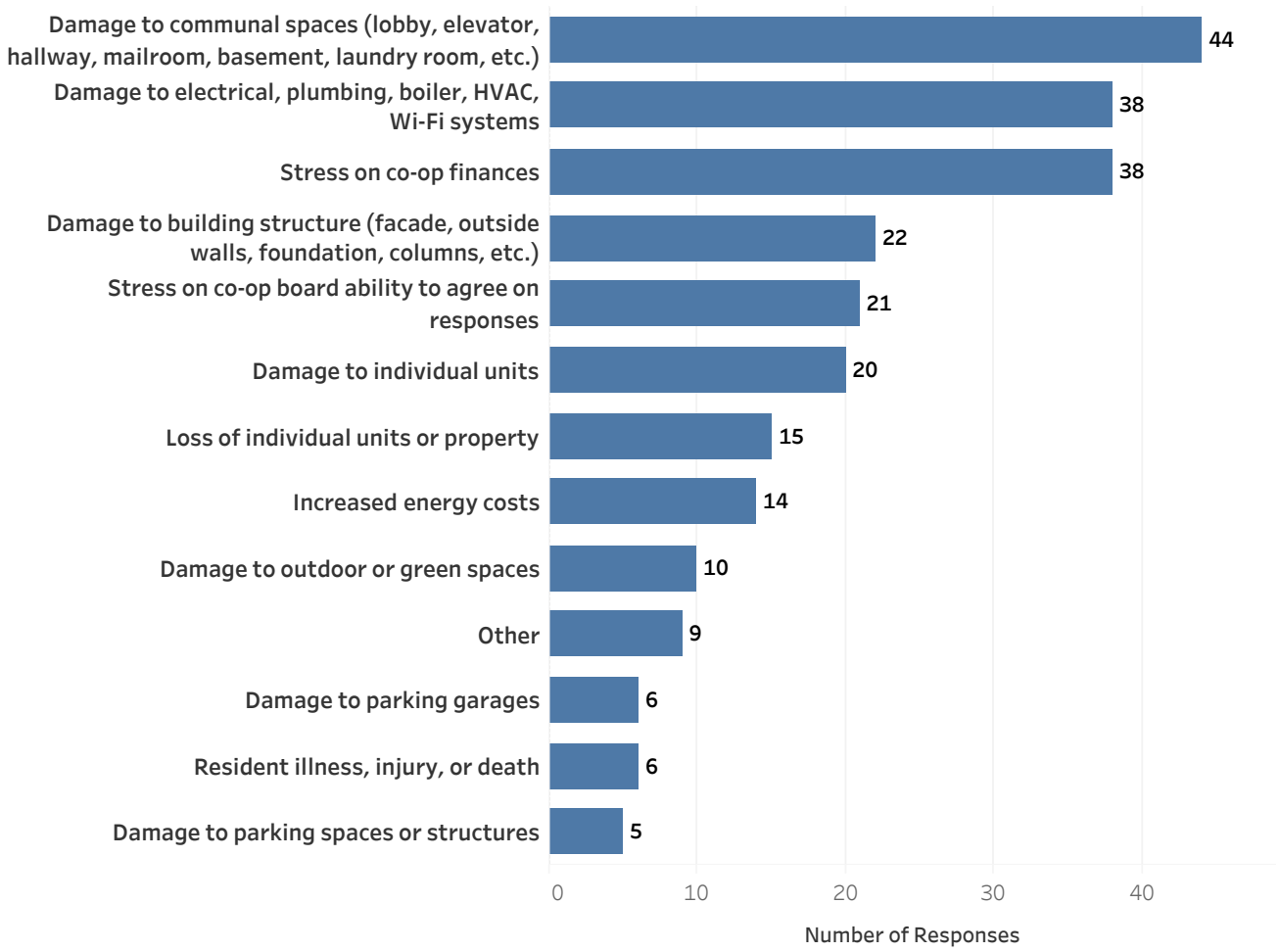


Figure 13: *Number of Co-ops Experiencing Climate Change Impacts*

3.3.5 LIMITED CLIMATE ACTION, BUT PROGRESS ON GREENING AND DISASTER PREPAREDNESS

Most co-ops have yet to consider or plan for actions that would improve disaster preparedness, resilience, and adaptive capacity. However, as Figure 14 shows, over 20 co-ops have completed or are in the process of completing diverse adaptation actions.[8] The most popular action were greening outdoor spaces (which can reduce heat and improve stormwater absorption), flood, wind, or fireproofing the building. Various activities around disaster risk reduction include, setting aside reserves, administering disaster recovery funds, and implementing disaster preparedness. A few co-ops have also improved water efficiency and conservation, moved infrastructure from the basement or roof, and connected residents with peers for disaster recovery support. Over half of co-ops have considered purchasing or

8 There were more non-responses for these less popular actions, which likely suggests that they were not being considered.

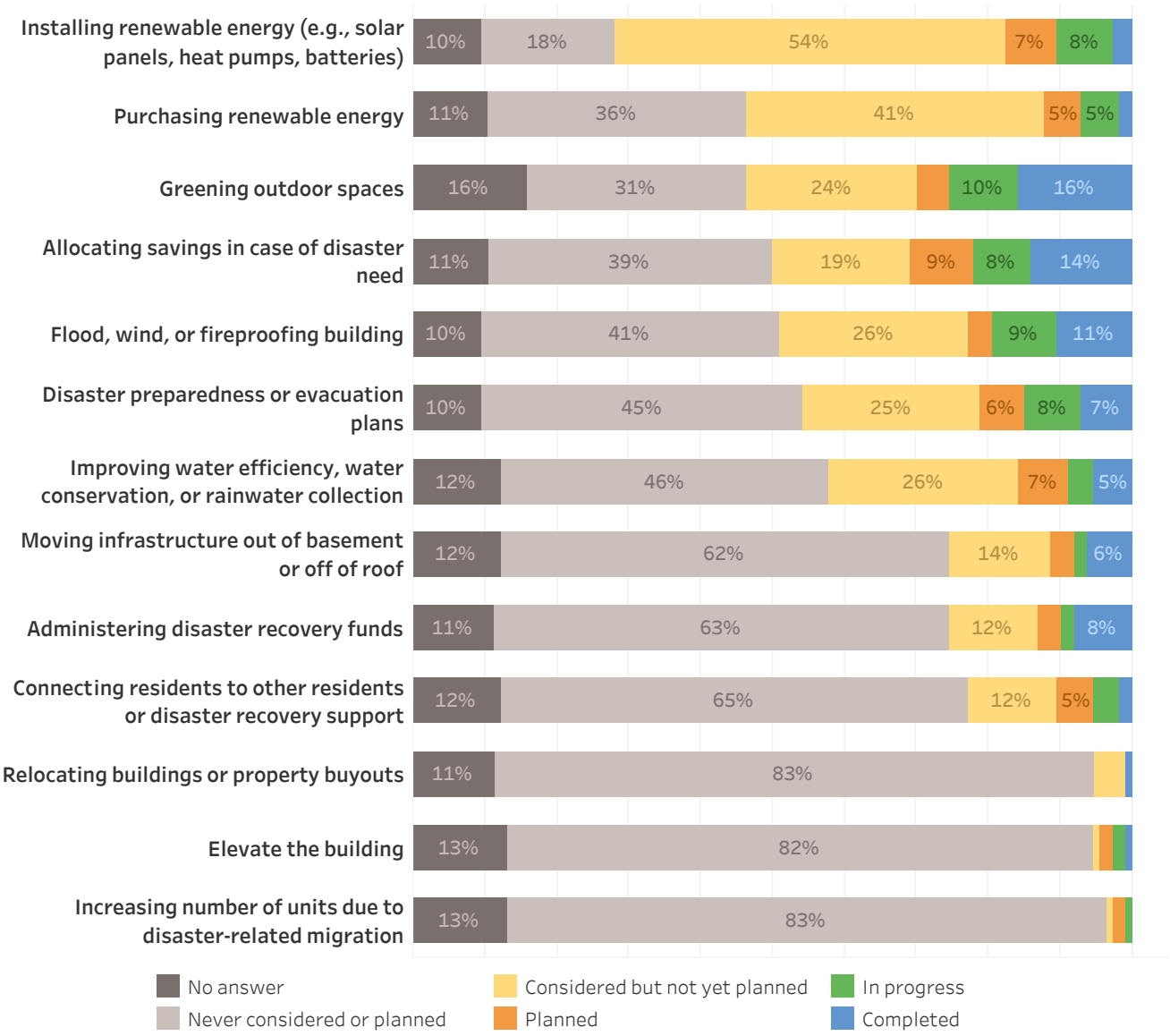


Figure 14: *Co-op Adaptation Actions, by State of Completion*

installing renewable energy, but very few have successfully done so. Among the least common actions were structural changes like relocating residents, elevating the building, or adding more units.

3.3.5 LACK OF PUBLIC FUNDING SUPPORT ADDS TO STRESSES ON CO-OP FINANCES

Overall, co-ops received little to no external financial support implementing the activities initiated above. Half felt that climate impacts put stress on co-op finances, 28% felt stress on co-op board ability to agree on responses, and 19% reported increased energy costs (Figure 13). Among those co-ops that do report taking action on climate mitigation, adaptation, or recovery-related work, just 11%

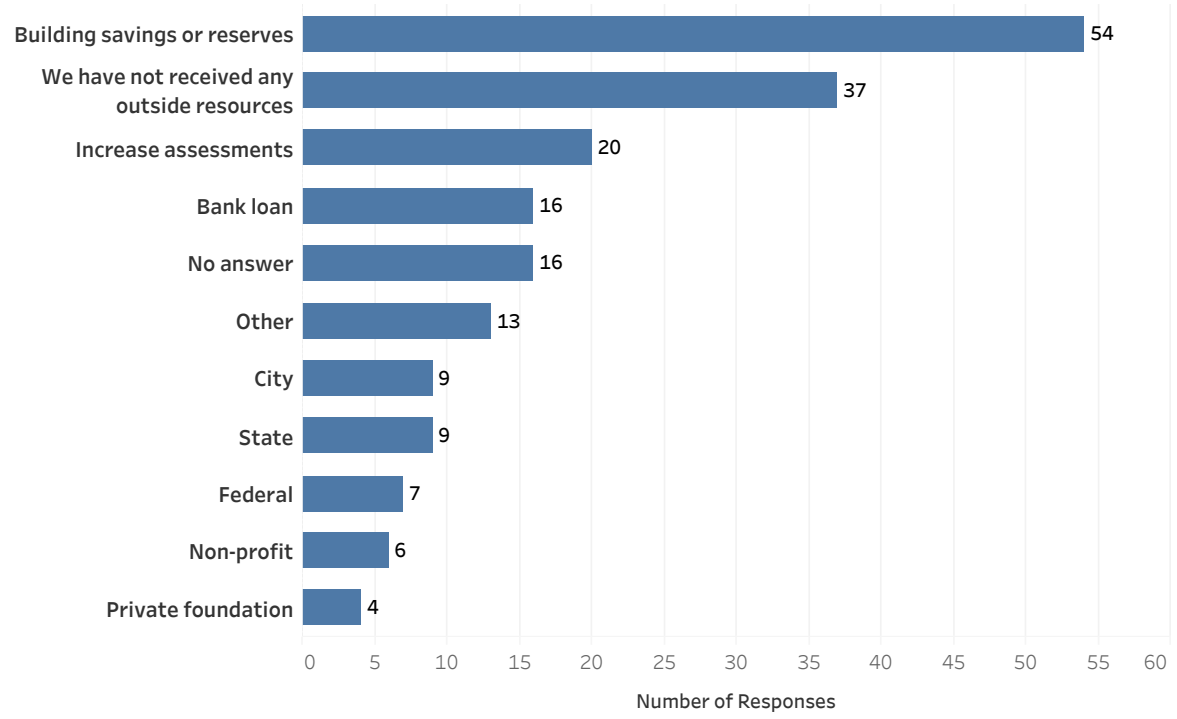


Figure 15: *Source of Funding for Co-op Investments*

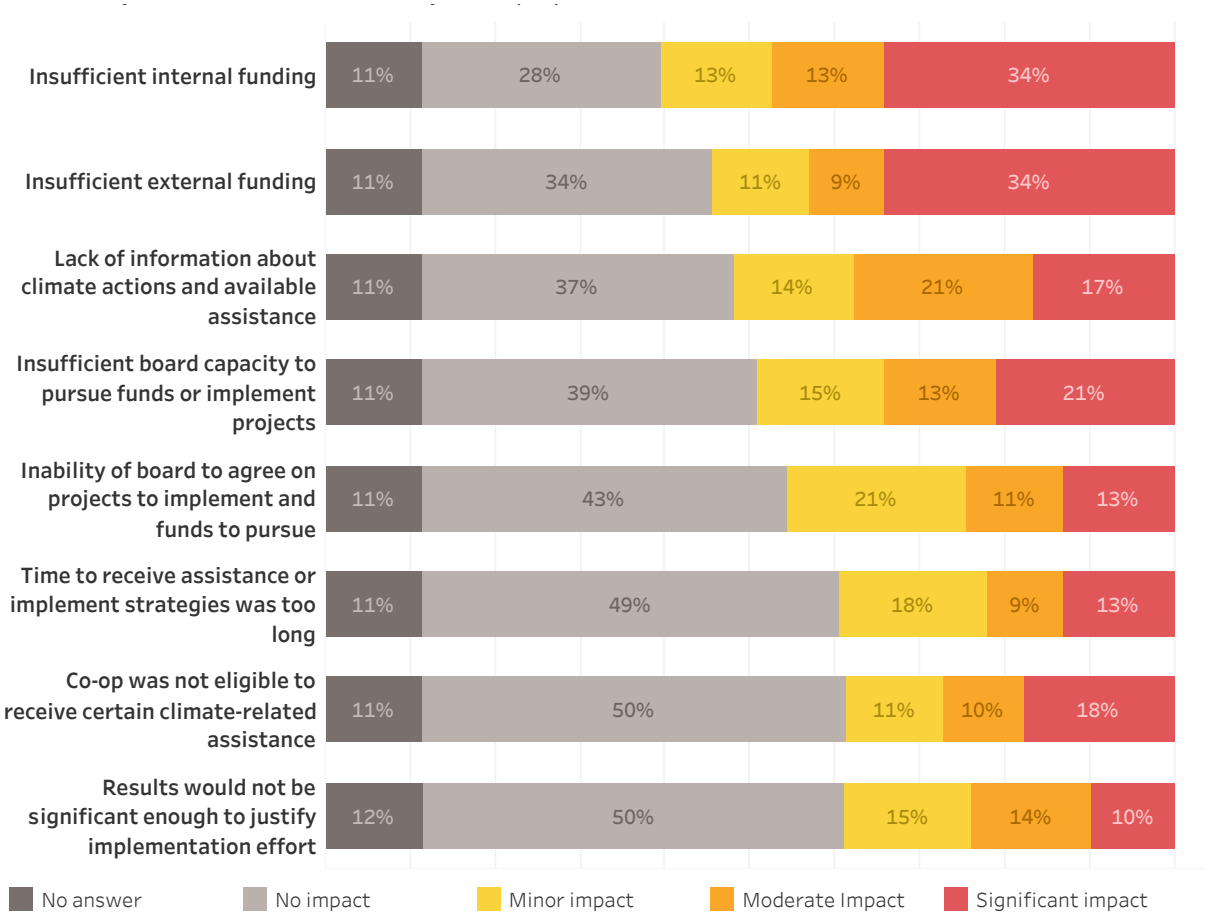


Figure 16: *Barriers to Climate Action Experienced by Co-ops*

have received any kind of federal, state, or local funding. By contrast, 47% drew on building savings or reserves, 17% increased their assessments, and 14% received a bank loan (Figure 15).

When asked what resources co-ops need to reduce energy costs and emissions and enhance resilience to weather-related impacts, responses revealed a diverse range of needs and challenges (Figure 16). Several expressed interest in implementing renewable energy solutions, such as solar panels, but highlighted barriers including high upfront costs and limited funding availability. Others emphasized a need for better access to information, financial support, and professional guidance to navigate the complexities of energy-efficient upgrades and adaptation measures. Concerns over aging infrastructure, financial constraints, and limited resources underscore the urgency for comprehensive assistance programs tailored to smaller co-ops, including clearer guidance on available funding options, technical expertise, and streamlined processes for project implementation.

4 REVIEW OF PUBLIC CLIMATE FUNDING SUPPORT FOR CO-OPS

4.1 OVERVIEW

Co-ops, condos, and other collectively owned forms of housing are often sidelined in their access to and prioritization by public and private funding support. In response, we sought to review the extent to which federal, state, and local programs for housing resiliency and decarbonization support co-op housing. In this section, we reviewed three major sources of funding:

1. **Flood Resiliency and Disaster Recovery Programs** that help after a disaster event or promote pre-disaster risk reduction, preparedness, and anticipatory adaptation.
2. **Energy Efficiency Programs** that provide and promote energy efficiency, weatherization, upgrading utilities, and installing geothermal or solar energy.
3. **Green Infrastructure Programs** that help residents install green infrastructure and nature-based solutions that help them adapt to climate impacts, reduce stormwater runoff, and reduce heat gain.

As the survey data shows, very few residents have had access to public funding for climate adaptation and decarbonization efforts. Our policy scan (see Table 12) corroborates this, since only a small number of programs explicitly support co-ops and other forms of cooperatively owned housing. Much of this is due to the omission of cooperatives from the Stafford Act, a federal policy that establishes the process for declaring disasters and determines federal disaster response efforts. This restricts funding for co-ops by FEMA, the largest source of federal support for climate-related disasters. Programs funded by HUD and state energy efficiency programs are more inclusive of co-ops, suggesting that it is possible to design programs to meet this housing typology. However, even where co-ops are nominally eligible for flood resiliency, energy efficiency, and green infrastructure funding, they are often still excluded because most programs are designed for single-family, duplex, or triplex housing while most co-ops have more than 4-5 units. While this review focuses on co-ops, many of these limitations are also relevant to condos, multifamily housing, community land trusts, and resident-owned cooperative mobile home parks. This highlights the need for comprehensively realigning programs to support housing that benefits lower-income and fixed-income residents.

TABLE 10: CO-OP ELIGIBILITY FOR GOVERNMENT PROGRAMS SUPPORTING CLIMATE ADAPTATION

	Program	Coop Eligibility
Flood Resiliency and Recovery	FEMA NFIP	Eligible for individual contents up to $100,000, but arduous process for common areas and limited to $250,000 per building, much less than coverage for condos
	FEMA Individual Assistance Program	Eligible, but only for areas within individual units
	FEMA Hazard Mitigation Grant Program	Eligible, but only for cooperatives with four units or less
	HUD Community Development Block Grant-Disaster Recovery	Eligible for funding allocated to state and local government agencies
	Small Business Administration Loan	Eligible for low-interest disaster loans for both physical damage and mitigation assistance
	NYS Climate Change Mitigation and Adaptation Retrofit Program	Eligible, but only for cooperatives with four units or less
	NYC HomeFix Program	Co-ops and condos are not eligible
Energy Efficiency	HUD Green and Resilient Retrofit Program	Eligible only if a HUD-assisted cooperative with other funding
	DOE Weatherization Assistance Program	Eligible, so long as meet income requirements
	Inflation Reduction Act – Tax Credit Programs	Eligible for tax credits
	New York State – Affordable Multifamily Energy Efficiency Program	Eligible for incentives based on energy savings
	New York State – FlexTech Program	Eligible for technical assistance energy studies
	New York State – Multifamily Performance Program	Eligible for energy savings projects. Incentives per unit range from $700 to $3,500
Green Infrastructure	HUD – CDBG and CDBG-DR	Eligible through funding awarded to NYC
	FEMA Hazard Mitigation Grant Program	Eligible, but only for cooperatives with four units or less
	New York State Green Innovation Grant Program	Eligible, but only for water infrastructure projects
	NYC Green Infrastructure Grant Program	Eligible, but there are extra steps that cooperatives must take

4.2 METHODS

In this section, we reviewed major programs and sources of funding. The programs we selected reflect scholarly research based on journal articles, internet searches of news, government websites, and advocacy organizations, as well as consulting subject matter experts. The review aimed to cover the major sources of funding, but we could not cover every funding program, especially given the wide array of programs addressing energy efficiency, weatherization, and renewables.

4.3 FLOOD RESILIENCY AND DISASTER RECOVERY PROGRAMS

The clearest example of the exclusion of co-ops from public assistance programs can be seen in the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, or the Stafford Act. The Stafford Act establishes the federal process for declaring disasters, determines disaster response efforts, and governs how FEMA operates (FEMA, 1988). The Stafford Act does not explicitly mention or define collectively owned housing. By default, FEMA has interpreted this omission to mean that entities such as condos and co-ops are treated as businesses, rather than residences, thus rendering them ineligible to directly receive most forms of post-disaster aid (Franchino, 2015; Finn & Marshall, 2018). This lack of access to disaster relief was apparent following Hurricane Sandy, when much of the structural damage from floods occurred on the first floor or basement level, which in co-ops is often dedicated to commonly owned areas and infrastructure. According to UHAB and corroborated by our survey results, without access to FEMA funding, co-op residents had to raise their own funding through small business loans, reserves, assessing shareholders, or increasing monthly dues.

In 2016, FEMA submitted a report to Congress, entitled “Individual Assistance for Housing Cooperatives and Condominium Associations,” outlining the aspects of condos and co-ops disaster assistance that are currently covered and not covered by the Stafford Act, and the barriers that must be addressed for FEMA to be granted authority to provide disaster aid to these housing types. Some of the barriers cited included the need to update FEMA’s application system, update site inspection processes and pricing, and determine standards that would prevent duplicate assistance from other sources. However, the closing language in this document heavily implies that FEMA is unsupportive of the integration of cooperative and collectively owned housing. It states, “Because of the policy and implementation concerns identified in this report, FEMA likely would oppose strongly any such amendments that would authorize assistance to housing co-ops and condo associations” (FEMA, 2016). The closing language also states that amending the Stafford Act would lead to “many timely and costly implementation

considerations" (FEMA, 2016). This exclusion of cooperative and collectively owned housing systematically affects FEMA funding for co-ops in its programs. While other federal and state sources of funding for adaptation do not exclude co-ops, they, nevertheless, are inaccessible to most multi-family housing, which includes most co-ops.

BOX 1: UNSUCCESSFUL EFFORTS TO AMEND THE STAFFORD ACT TO INCLUDE CO-OPS

There have been numerous attempts to reform the Stafford Act in the aftermath of Hurricane Sandy for the purpose of serving collectively owned housing. In 2015, Rep. Steve Israel (NY-D) introduced the Disaster Assistance Equity Act of 2015 (H. R. 3863), which sought to amend the Stafford Act "to provide assistance for common interest communities, condos, and housing co-ops damaged by a major disaster, and for other purposes." The bill did not pass. It was reintroduced in 2019 and 2021 by Rep. Jerrold Nadler (NY-D). His updated bill sought to add definitions of "residential common interest community," "condominium," and "housing cooperative," to the Stafford Act, as well as allow for the removal of debris and for essential common areas to be repaired in common interest communities under the Individuals & Households Program (Nadler, 2019). Both bills were referred to a subcommittee and never made further progress.

In 2018, the Disaster Recovery Reform Act (DRRA), which made numerous amendments to the Stafford Act, directed FEMA to submit a legislative proposal on how to support common areas of co-ops and condos (Webster & Lindsay, 2019). While this proposal was due in January of 2019, the DRRA Annual Report, published October of 2019, listed this deliverable as still "in progress" (FEMA, 2019), which is still its status as of the writing of this report.

4.3.1 FEDERAL PROGRAMS

At the federal level, FEMA's NFIP is the primary resource for homeowners and landlords to receive aid after a flood event. However, navigating NFIP can be particularly arduous for co-op residents. While condos and co-ops are eligible, purchasing flood insurance through NFIP is very complex for those residents of cooperatively owned housing since there are different coverage plans for buildings, individual units, and the contents of units.

While both condos and co-ops have cooperatively owned elements, condos benefit from greater federal support through FEMA's Residential Condominium Building Association Policy (RCBAP). This policy covers the entire condo building, including common areas and individual units, so long as the building is at least 75% residential (FEMA, 2021). Under the RCBAP, individual condo owners can also choose to insure their own unit through the Standard Flood Insurance Policy

(SFIP), which is the same policy that applies to single-family homes. While condos have access to this tailored form of coverage, many condo associations do not take advantage of it. This was the case for many buildings after Sandy: condo associations did not have RCBAP insurance but were also ineligible to receive disaster aid from other FEMA programs to repair common areas, leaving residents with significant financial burdens (Finn & Marshall, 2018).

Co-ops, however, are not eligible for coverage under RCBAP and can only obtain building coverage through NFIP's General Property Form, which covers residential buildings with five or more families (that are not condos) and non-residential buildings. This gap in coverage and exclusion from RCBAP puts co-ops at a notable disadvantage. While the maximum coverage available through the General Property Form is $250,000, the RCBAP instead covers full replacement costs of the building, or $250,000 per unit in the building, whichever amount is smaller (Finn & Marshall, 2018). Additionally, because cooperative residents own a share of the co-op corporation, rather than real property, they are not able to insure their own unit through the SFIP as condo owners can. Co-op residents can alternatively purchase $100,000 in "contents coverage" from the SFIP to restore damage firmly within their unit's walls (Kuhns, 2018 & Finn & Marshall, 2018). However, this does not cover damaged exterior or perimeter walls, ceilings, floors, electrical networks, plumbing, or windows that affect or are shared by multiple units. Rather, these components are all considered "property of the cooperative corporation, not individual shareholder/tenants that reside in affected units" (Finn & Marshall, 2018).

Construction debris within common areas of a NYC co-op damaged during Hurricane Sandy (Source: UHAB)

FEMA's Individual Assistance Program provides disaster relief for individual households, who can directly apply for aid after a Presidentially Declared Disaster (FEMA, 2021). Under the Individuals and Households Program, "owner-occupants" (individuals that both own and currently reside in the unit) of co-ops/condos are eligible to receive aid for items and areas that they are responsible for within their unit. This can include fixtures and installations, as well as plumbing and heating/cooling units from "the point of supply into the unit." Common areas or items that fall under the collective ownership of the co-op/condo are not eligible to receive aid from the Individuals & Households Program (FEMA, 2021).

FEMA's Hazard Mitigation Grant Program can allocate money to individual property owners to buy out their property after a Presidentially Declared Disaster if it meets certain criteria (Environmental Law Institute, n.d.). This program is limited to residences with no more than four units of housing, thereby excluding most multi-family housing. There are several co-ops in NYC that consist of single-family homes (e.g., Edgewater and Breezy Point) for which this program could be an option. There is no current ongoing buyout hazard mitigation programs hosted by New York State, although the development of one is underway, funded by the 2022 Clean Water, Clean Air, and Green Jobs Environmental Bond Act and likely other sources over time.

The HUD's Community Development Block Grant-Disaster Recovery (CDBG-DR) Program provides grant-based assistance to cities, counties, and states for long-term recovery support after Presidentially Declared Disasters. This program is authorized under the Housing and Community Development Act of 1974, not the Stafford Act, meaning that co-ops are eligible to receive funds that are allocated to state and local government agencies (Legal Aid Disaster Resource Center, 2020).

After Hurricane Sandy, New York created the Governor's Office for Storm Recovery (GOSR) to administer CDBG-DR funds. Recognizing the need to address condos and co-ops, this office created the NY Rising Condominium and Cooperative Program (Governor's Office of Storm Recovery, 2021). This program aided 21 cooperatives on Long Island in necessary repairs to communal structures exclusively between 2012 and 2016. It is considered successful given the substantial amount of funding it distributed to these neglected but numerous forms of housing. However, it was a one-time stopgap measure that does not address long-term co-op and condo flood risks and access to funding. Although most co-ops and condos are in NYC rather than New York State, the program served only the areas outside the five boroughs because NYC is an Entitlement Community that was ineligible for state CDBG-DR funds. The city received its own CDBG-DR funds but did not create a comparable condos and co-ops program.

The Small Business Administration (SBA) Loan provides low-interest disaster loans to homeowners and businesses for either Physical Damage Assistance or Mitigation Assistance (SBA, n.d.). Under Physical Damage Assistance loans, condo and co-op associations can receive a loan up to $2 million (US SBA, 2024a). Individual unit owners are also able to apply for physical damage loans. For Mitigation Assistance loans, SBA disaster loans can be increased by up to 20% to make building upgrades (US SBA, 2024b). The loan terms for both Mitigation Assistance loans and Physical Damage Assistance loans include: first payment deferred for 12 months, no interest accrual for the first 12 months and the interest rate will not exceed 4% (US SBA, 2024a, 2024b). While the SBA loan is a viable option for co-ops, the fact that it is a loan and not a grant can exacerbate financial stress. In the aftermath of Sandy, these loans typically did not provide enough funding for the repairs due to the high degree of damage and rebuilding costs for the area (Finn & Marshall, 2018).

4.3.2 STATE PROGRAM

At the state level, the New York State Division of Housing and Community Renewal (NYS HCR) has introduced a new Climate Change Mitigation and Adaptation Retrofit Program, or “Resilient Retrofits” Program. This will provide construction loans to eligible low to moderate-income homes at or below 120% of AMI. Eligible homes must be owner-occupied units in buildings in floodplains for retrofit activities. This includes closing off any living space below the base-flood elevation and raising mechanicals located in basements. This program is beneficial for lower-income families that are at risk of flooding, and condos and co-ops with four units or less are eligible to apply (NYS HCR, 2022b). However, there is funding to support only 180 homes statewide, and only serves to single-family homes or duplex/triplex residences. As loans, not grants, this program may also increase the financial burden for individual households.

4.3.3 LOCAL PROGRAM

The HomeFix Program offered by NYC HPD provides homeowners with low- to no-interest or even forgivable loans to help implement needed home repairs. It provides owners of one- to four-family homes in NYC with loans up to $60,000. However, co-ops and condos are not eligible (NYC HPD, n.d.-f).

4.4 ENERGY EFFICIENCY PROGRAMS

As a result of climate change, many co-ops are experiencing not only damage to their units due to floods, but also increased financial burdens due to energy costs caused by a sharp increase in extreme temperatures, especially in the summer. In both winter and summer conditions, financial burdens caused by energy cost can impact many households. In response, numerous federal, state, and local funds have emerged to promote energy efficiency and accelerate decarbonization. New York City's Local Law 97 also requires all buildings over 25,000 square feet to achieve zero emissions by 2050. While several important sources do not exclude co-ops, many important programs either exclude co-ops or make it difficult for them to apply.

4.4.1 FEDERAL PROGRAMS

Compared to those for climate adaptation, many more federal programs, funds, and offices support climate mitigation efforts, including energy efficiency improvements, weatherization, renewable energy, and electrification. Many of the new federal funding programs for energy efficiency were allocated through the Inflation Reduction Act, American Rescue Plan, and the Bipartisan Infrastructure Law. While many of these programs do not explicitly exclude co-ops, the eligibility requirements of many programs nevertheless can make it difficult for co-ops to participate. There are also federal programs that allocate funding for cooperatives to implement infrastructure projects that reduce carbon emissions and improve utility efficiency. Since there are so many, we highlight programs that assist affordable housing cooperatives with energy efficiency upgrades. At the time of writing, the deployment of new federal funding is still too recent to identify co-op eligibility.

HUD Green and Resilient Retrofit Program supports HUD-assisted multifamily housing with funding from the Inflation Reduction Act (US HUD, 2023a). Funding can be used to reduce carbon emissions, utility efficiency improvements, installing renewable energy, and enhancing property resilience (US HUD, 2023b). However, to qualify for this program, co-ops must be HUD-assisted multifamily housing, with additional capital resources. This requirement disqualifies most LECs in NYC, since they were created with city funding support.

The Weatherization Assistance Program, funded by the Department of Energy and administered by New York State's Division of Homes and Community Renewal is the "largest residential energy conservation program" in the United States (NYS HCR, 2022a). The program assists low-income households by improving the energy efficiency of individual units and resulting in substantially lower energy costs

for households. Qualifying expenses under the program include weatherization services like window and door upgrades, sealing, and insulation, as well as energy efficiency services like energy audits, HVAC repairs and replacement, and upgrades to more efficient and safer systems. Households are eligible if they are at or below 200% of the federal poverty level or they are receiving other aid programs UHAB, 2022a). Income documentation must be provided for 66% of households within the cooperative (UHAB, 2022a).

4.4.2 STATE PROGRAMS

The Affordable Multifamily Energy Efficiency Program, funded through the New York State Energy Research and Development Authority (NYSERDA) and joint NYS utility companies, provides incentives for energy efficiency to affordable multifamily buildings of five or more units (NYSERDA, 2024b). Applicable funding includes incentives for up to $2,000 per unit in the building. Funding can be applied towards the cost of lighting fixtures, aerators, air sealing, boiler replacement and more.

NYSERDA's FlexTech is a technical assistance program that provides eligible customers with a cost-share program to "produce an objective, site-specific, and targeted study on how best to implement clean energy and/or energy efficiency technologies" (NYSERDA, 2024c). This program completes energy studies of individual buildings that effectively examine the building's systems and overall energy efficiency. The program focuses on improvements that significantly reduce heating and cooling expenses. Eligibility includes multifamily buildings within the NYC Metro area, and all must pay into the System Benefits Charge, also known as the Clean Energy Fund, in their utility bill (UHAB, 2022b). The cost share of this program can cover up to 50% of energy study costs and up to 75% if at least one measure is installed after the energy study is produced. Costs are paid directly to energy study providers by building owners and ultimately reimbursed upon work being completed in a timely manner, usually a limit of 1-2 years (UHAB, 2022b). Buildings of any size are eligible.

NYSERDA's Multifamily Performance Program seeks to help "developers, building owners, and their representatives to plan and implement innovative, deep energy savings projects within existing affordable multifamily buildings" (NYSERDA, 2024d). This program helps increase occupant comfort and reduce long-term energy costs. The incentives offered per unit range from $700 up to $3,500 for multi-family building owners. Funding can be used to "obtain a comprehensive energy audit and to install cost-effective measures that will improve the energy performance of their buildings by at least 15% over current levels" (Association for Energy Affordability, 2024). Those who are eligible for these programs are

building owners of multifamily cooperatives, and there are additional incentives available for affordable housing projects (UHAB, 2022b). Through the Multifamily Performance Program there is a large energy potential for larger-sized buildings, and there is a possibility for 15% or more energy savings for individual units.

4.5 GREEN INFRASTRUCTURE PROGRAMS

Green infrastructure complements gray infrastructure. Traditional gray infrastructure includes civil engineering pipes and tunnels that do not clean stormwater runoff but move it to filtration facilities (EPA, 2017). Co-ops can help reduce stormwater pollution and harmful runoff by implementing green infrastructure on their properties. Many federal, state, and local policies and programs help private landowners purchase and install green infrastructure, regardless of housing type, as explained below.

4.5.1 FEDERAL PROGRAMS

HUD's CDBG program awards funding for green infrastructure projects for state and local projects. The program has three defined objectives: "principally benefit low- and moderate-income (LMI) persons; aid in the prevention or elimination of slums or blight; or meet an urgent need by addressing conditions that pose a serious and immediate threat to the health and safety of residents" (Congressional Research Service, 2021). The program awards 70% of its funding to entitlement communities like NYC (Congressional Research Service, 2021). Co-ops are eligible for this program. HUD's Disaster Recovery (explained above) also allocates funding to green infrastructure projects.

FEMA's Hazard Mitigation Grant Program awards funding directly to state, local, tribal, and territorial governments following Presidentially Declared Disasters. This funding is not awarded directly to private unit owners or businesses but can be awarded to a community on behalf of these individuals (FEMA, n.d.). Funding for green infrastructure can be awarded for "flood mitigation projects, including acquisition and relocation of flood-prone properties and soil stabilization projects like the installation of vegetative buffer strips" (EPA, 2017). In NYC, this funding has been used in response to Hurricane Sandy projects in Queens and buyout programs including buyouts at Oakwood Beach after Hurricane Sandy. Funding for this program is authorized through the Stafford Act (Georgetown Climate Center, 2020), making co-ops ineligible.

Aerial view of Le Havre Co-op and the East River in Queens, NY demonstrating its proximity to the shoreline (Source: Bobby Gellert, 2021)

4.5.2 STATE PROGRAMS

Starting in 2024, Governor Kathy Hochul announced statewide allocated funding through the Green Innovation Grant Program for "critical water infrastructure projects" (NYS EFC, 2024). To qualify for funding, projects had to fall into a project priority area, of which green infrastructure is one. Co-ops are eligible for this program.

4.5.3 LOCAL PROGRAMS

The Green Infrastructure Grant Program offered by NYC DEP gives private property owners funding to install green roofs. The program requires two agreements that 1) outline the funding responsibilities between the city and the property owner, and 2) requires the property owner to maintain the green roof for 20 years. While there are additional steps that co-ops (and condos) must take to be able to fulfill these agreements, they are eligible to apply to the program (DEP, 2020).

Rainproof New York is a public-private partnership between Rebuild by Design, One Architecture and Urbanism, NYC MOCEJ, NYC DEP, and NYC Housing Recovery

Operations (MOCEJ, 2024). This initiative seeks to address the occurrence of more severe and heavy rainfall in NYC. Increased severity of rainfall directly impacts many New Yorkers, and this program will directly fund innovative solutions to the incorporation of natural features and amenities to manage stormwater (MOCEJ, 2024). Rainproof had a comprehensive planning process January to June 2024 to imagine an equitable buyout program for NYC and build capacity across sectors of society to respond to heavier rainfall. Although it provides a set of recommendations (Rebuild by Design, 2024a) and equity principles (Rebuild by Design, 2024b), it does not yet fund specific projects.

5 CONCLUSION

Uniquely in NYC, co-ops represent an eighth of the city's housing. Affordable coops are a critical source of stable, resident-controlled, community-based form of housing. Yet, despite their prevalence and importance, housing co-ops have received limited research, public attention, and funding support to increase their efficiency and resilience to flood and heat extremes, especially relative to other forms of subsidized and naturally affordable housing.

Our research shows that co-ops are disproportionately at risk of flooding and excluded from major sources of public funding by virtue of their multi-family and cooperative structure. Co-ops have experienced significant impacts from flooding and increased temperatures. Yet, comparatively few co-ops carry flood insurance or are taking action on climate mitigation and adaptation. Few are even discussing the issue seriously despite many having experienced flood or heat impacts. Among those impacted by disasters, the vast majority have received no public resources to support with rebuilding or resiliency improvements, even though two-thirds of respondents were in co-ops with affordability protections and regulations.

Our policy review reveals how co-ops cannot access the most important government programs for climate resiliency funding because of their cooperative ownership structure, nor can they access some energy efficiency programs due to their multifamily size. Differences among federal programs that draw on different statutory language and among state and local policies also contribute to significant variations in co-ops program eligibility. For instance, while FEMA will not fund the collectively owned portions of cooperatives, HUD programs and state/local derivatives will. Most HUD, state, and local programs are focused on resilience from a heat and energy efficiency perspective, with limited support for flood risk reduction and adaptation. Boundaries between New York State programs and New York City programs have also prevented co-ops in NYC from accessing more localized support systems. Integrated and inclusive policy reforms at all levels of government would better enable this important source of affordable housing to adapt to climate change.

This research also points to the need to provide co-ops with tailored supports given their unique ownership and multifamily status. Beyond funding deficits, co-ops also noted the extent to which disasters affected co-op decision-making processes and their ability to agree on how to respond. This points to the need for adapting technical support to include internal decision-making and governance processes that are difficult or altogether absent in other forms of housing.

Doing so requires investing in technical assistance providers and organizational mobilizers to develop the necessary communication channels with co-op board members.

These actions are not impossible, but they do require greater attention and resources being dedicated to this sector of housing. Numerous housing nonprofit and advocacy groups already exist and offer important services and outreach programs to affordable co-ops. The city has numerous standing programs that financially support co-ops. Federal and state energy efficiency programs demonstrate that they are capable to working with co-ops, despite their more complex ownership structure. These can, with effort, be modified to help co-ops adapt to a changing climate.

With greater support, co-ops also offer the potential to become an important model of transformative climate adaptation. Cooperative housing has been demonstrated to help residents shape their own future and avoid gentrification and displacement. Whereas the concept of “community” can often be amorphous, co-ops have a formal organizational structure with a decision-making framework, legal status, and fiduciary powers. Many co-ops are large in size and co-located near each other, creating opportunities for economies of scale in capacity building, purchasing, and project implementation. Their clustered geographies also offer opportunities to anchor and connect co-ops through district-scale green infrastructure strategies to absorb rain and heat. For too long, co-ops have been perceived as a burden that deviates from the norm of public and private housing. Moving forward, federal, state, city, nonprofit, and academic organizations have an opportunity to see co-ops as seeds of transformation and learning that can strengthen the city’s overall adaptation to climate change.

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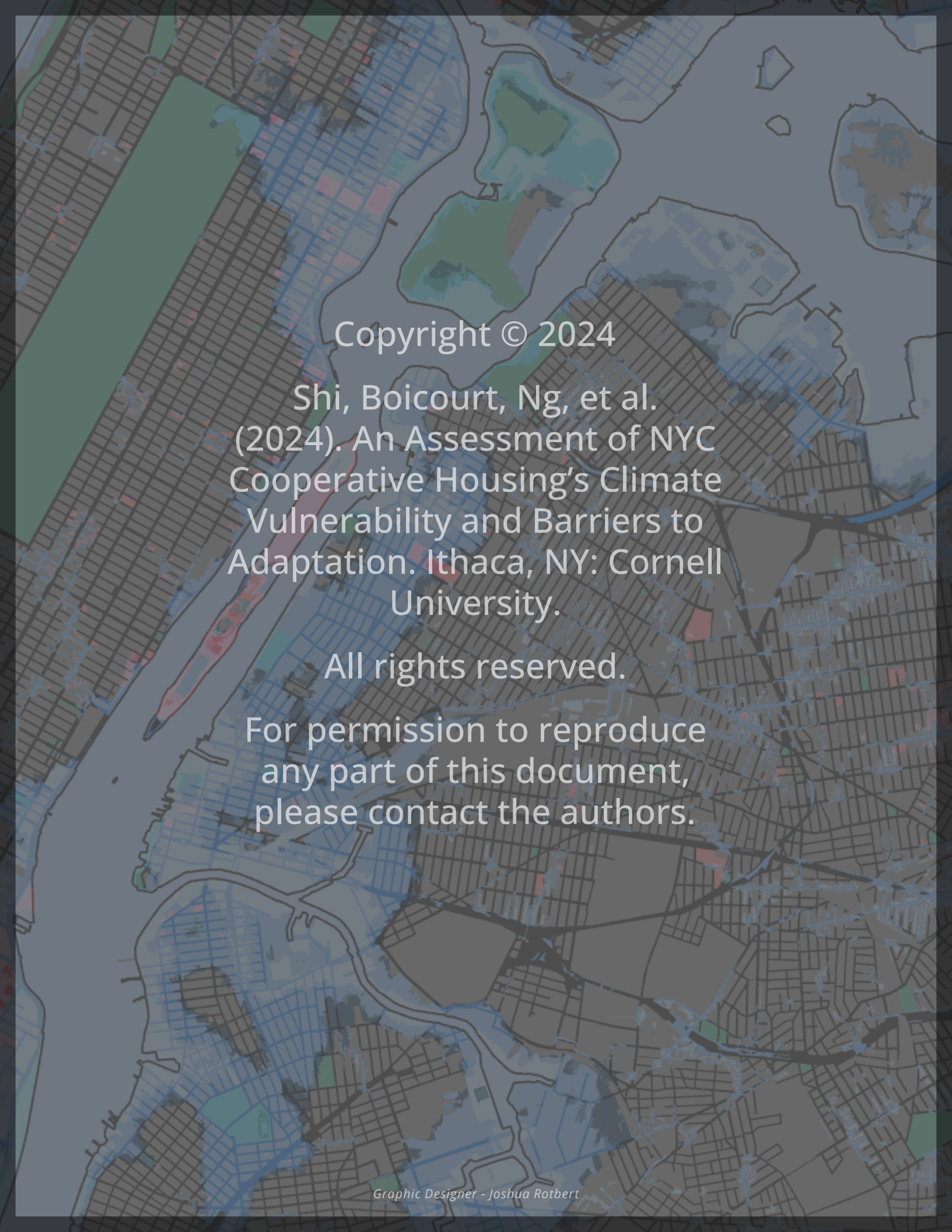

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