

Multifamily Flood Insurance Affordability Study

Final Report
April 2016

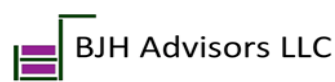


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Study Overview

Study Background

In light of recent reforms to the National Flood Insurance Program (NFIP) and increasing flood risk due to extreme weather events and sea level rise, understanding the landscape of flood insurance for multifamily and mixed-use buildings is crucial to developing meaningful policy recommendations and preserving the affordability and stability of New York City's waterfront neighborhoods. Buildings with Federally-backed mortgages in high-risk flood areas per the 2007 Flood Insurance Rate Map (abbreviated as FIRM, the most-recently adopted FEMA boundary that defines flood insurance purchase requirements) are required to have flood insurance. Insurance is available through the NFIP, managed by FEMA, and in some cases, through private excess and surplus line carriers (private coverage). New York City's first FIRMS were adopted in 1983¹ and the majority (85%) of buildings in the high-risk areas of the 2007 FIRM were constructed prior to 1983, and known as the pre-FIRM.² If these structures hold NFIP, they have benefitted from long-standing subsidies associated with the program.

Legislation known as the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) sought to strengthen the NFIP's financial standing by introducing a schedule to reduce subsidies and move insurance rates towards more risk-based pricing, increasing flood insurance premiums and fees. Though these changes were modified by the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA), policyholders still face increases in rates and fees of up to 18% or 25%, depending on a property's classification as a residential or business property, until they reach the actuarial rate, and may be subject to additional fees.³

This report discusses multifamily (MF) and mixed-use (MX) structures, those with five or more residential units and less than 25% commercial space and buildings with five or more residential units and over 25% commercial space, respectively. In addition to the high-risk areas of the 2007 FIRM, analysis was performed for the high-risk areas of the 2013 Preliminary Flood Insurance Rate Map (2013 Preliminary FIRM), for which the City of New York has filed an appeal with FEMA to reexamine the proposed new boundaries and floodplain designations, and the City's projected 2020s 100-year floodplain. While this analysis focuses on near-term changes, these risks will continue to grow in the future. Because the 2013 Preliminary FIRM is still under review, HR&A has used the high-risk 2007 FIRM floodplain designations in all analysis. The high-risk areas (A and V zones) are commonly referred to as the Special Flood Hazard Area (SFHA), or areas with a 1% chance of a flood event in any given year (also known as the 100-year floodplain).⁴

Scope of Work

STUDY OBJECTIVES

Three key objectives guided the study's work:

- 1 Quantify the **universe of multifamily and mixed-use buildings in the current and future high-risk floodplain areas**
- 2 Determine **current take-up rates and level of flood insurance coverage by building typology**, for both NFIP policies and private insurance
- 3 Understand **potential rising costs and perceptions around future flood risk and attitudes toward investing in mitigation**



ANALYSIS & OUTREACH

The team used two key tools to analyze the flood insurance landscape for multifamily and mixed-use buildings:

- HR&A created a series of datasets to identify multifamily and mixed-use buildings in current and projected high-risk floodplains using publicly available property data, described in greater detail in the appendix, and NFIP policyholder and claims data provided to the New York City Mayor's Office of Recovery and Resilience (ORR) by FEMA. This data was used to determine buildings and units in the floodplain, take-up rates, and costs related to NFIP.
- The team created a survey, with input from property owners, managers, and industry practitioners, that was distributed via email, online posting, and direct phone calls to property owners, managers, and insurance brokers. A low response rate and lack of understanding around basic flood insurance information revealed a need for greater clarity and guidance for MF and MX building owners and managers concerning flood insurance requirements and coverage options.



RECOMMENDATIONS

The team then formulated recommended policy actions that address key findings, including a need for greater clarity and transparency in flood insurance offerings, a framework for partial flood risk mitigation, and coordination with the private market.

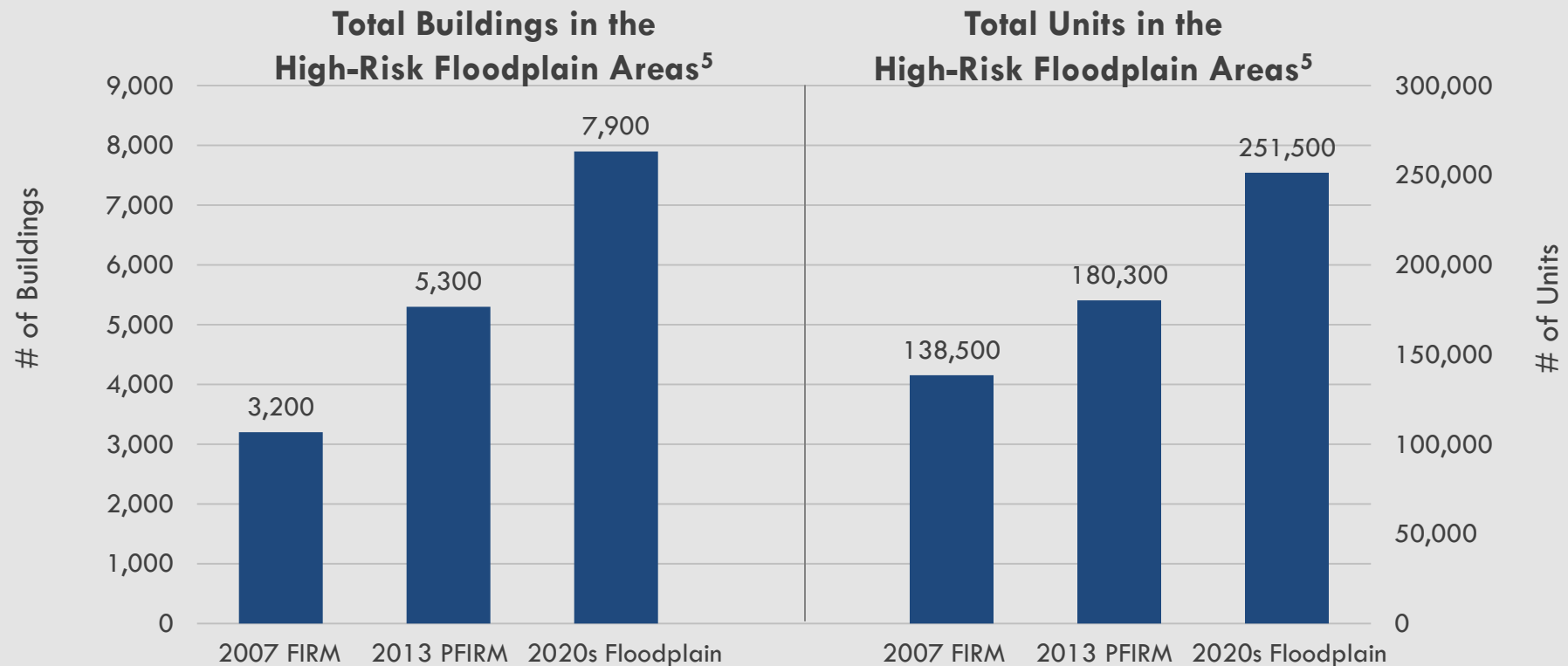
Multifamily and Mixed-Use Buildings in the Floodplain



Quantify the universe of multifamily and mixed-use buildings in the floodplain.

FINDINGS

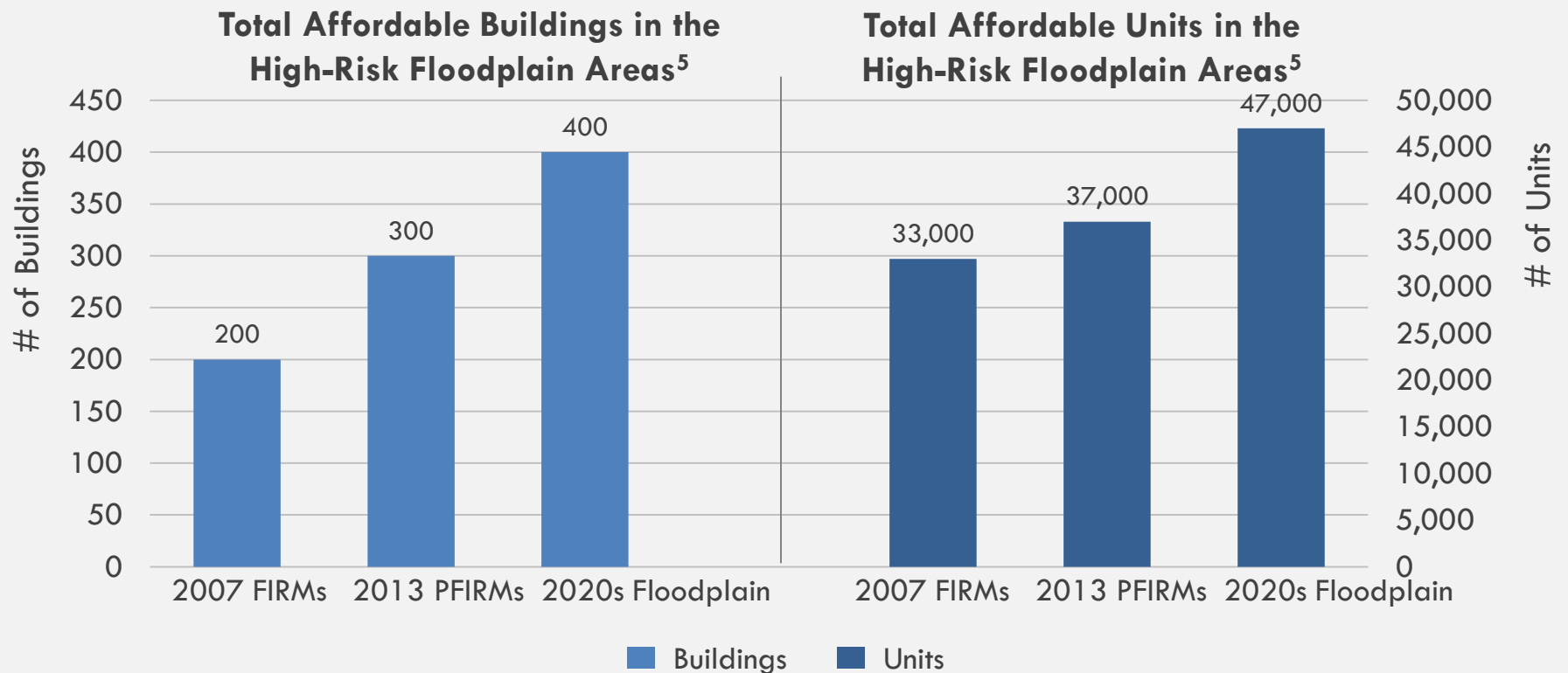
The high-risk areas of the 2007 FIRM include nearly 3,200 MF and MX buildings (8% of the total) with 140,000 residential units (81% of total units), and 80,000 units regulated for affordability or rent stabilization.^{5,7} The high-risk areas of the 2013 proposed Preliminary FIRM and 100-year floodplain projection for 2020 include additional buildings that face risk of damage from flooding events and may face rising premiums or new purchase requirements.^{5,7}



Spotlight on Flood Insurance & Affordable Housing

Approximately 30% of multifamily and mixed-use buildings in all versions of the high-risk floodplain contain buildings with regulated housing units.⁵

- The high-risk area of the 2007 FIRM area contains **80,000** units of regulated housing, including **33,000** units in buildings that have received City, State, and Federal subsidies for affordable housing.^{5,9} 4% of the buildings with affordable subsidy are in small buildings with less than 20 units.
- The high-risk area of the 2013 Preliminary FIRM contains **108,000** units of regulated housing, including almost **37,000** units in buildings that have received City, State, and Federal subsidies for affordable housing.^{5,9} 10% of the buildings with affordable subsidy are in small buildings with less than 20 units.



Current Take-Up Rates and Coverage Levels



Determine current take-up rates, coverage levels, and type of flood insurance by building typology, for both NFIP policies and private insurance.

FINDINGS

In 2014, within the high-risk areas of the 2007 FIRM, approximately 42% of MF and MX buildings hold NFIP policies. The average annual premium for buildings in high-risk areas is \$3,760 per building for \$282,000 in coverage.⁶ 67% of buildings with NFIP in the high-risk area of the 2007 FIRM are pre-FIRM structures and will be subject to steep rate increases.

Presently, in the high-risk areas of the 2013 Preliminary FIRM, 32% of buildings have NFIP policies. The Preliminary FIRM expands the floodplain area, which would lead to reclassification of some properties in moderate-risk zones to high-risk zones. The average annual premium for buildings in current high-risk zones (per 2007 FIRM-based designation) is \$4,000 per building for \$300,000 in coverage, while the average for current moderate-risk zones (per 2007 FIRM-based designation) is \$950 per building in premiums for \$263,000 in coverage.^{4,6} If the 2013 Preliminary FIRM is adopted, many of the buildings that are currently in the moderate-risk zones could become high-risk areas within the new floodplain, thereby facing significantly higher premiums as FEMA adjusts rates to reflect risk-based pricing. While this report does not specifically examine the impact of “grandfathering” policies, this policy may mitigate cost increases if it remains in place.

Take-up rates for private coverage are unknown.

- Private flood insurance coverage is not publicly-tracked by policyholder, and many survey respondents did not know whether their flood insurance policies included private coverage, NFIP coverage, or both.
- Private insurers, who can select the geographies for which they provide coverage, may avoid doing business in high-risk areas, especially following a major loss event.

Current Take-Up Rates and Coverage Levels



Determine current take-up rates, coverage levels, and type of flood insurance by building typology, for both NFIP policies and private insurance.

FINDINGS

Outreach performed in mid-2015 via email to over 1,000 recipients, phone calls to 488 owners and managers, and approximately 30 brokers (referred by owners), returned responses for 62 buildings. The low response rate and the responses themselves revealed a lack of clear, consistent information concerning flood risk, flood insurance purchase requirements, product offerings, and product limitations available to building owners and managers.

- Materials and resources from NFIP defining policy options and purchase requirements for various types of MF and MX buildings (such as condominiums vs. cooperatives, or first vs. tenth floor) are extremely limited, and there are few to no outreach programs specifically for MF and MX buildings for flood insurance.
- In most cases, respondents lacked the information to answer all questions in the survey. For instance, of 62 survey responses, only 18 were able or willing to identify the type of insurance held (NFIP or private coverage).
- Private market offerings are varied and complex, and many owners surveyed were not engaged in comprehensive risk management for flood risk. For those that did have a policy, their policies may not have been adequately tailored to their building size, type, and level of risk.

Current Take-Up Rates and Coverage Levels



Determine current take-up rates, coverage levels, and type of flood insurance by building typology, for both NFIP policies and private insurance.

FINDINGS

While rates are presently relatively affordable to owners, they are slated to increase steeply, presenting a potential challenge for some building owners, noted below.

- Expansion of the high-risk floodplain areas may reassign up to 2,100 buildings in low- to moderate-risk zones to higher-risk zones, leading to increased premiums, and will require many of these buildings to purchase coverage. Up to 630 regulated buildings could be required to purchase coverage, depending on mortgage restrictions.^{5,9}
- Though some buildings may benefit from grandfathering rules that limit increases, premiums for MF and MX buildings in the high-risk floodplain areas are subject to increases of up to 18%, and in some cases up to 25%, per year, depending on the age and portion of structures considered to be residential use, as a result of the Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) and the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA).³
- There is a lack of clear guidance for reducing insurance costs through credits for partial flood risk mitigation, aside from elevation, which is physically infeasible for many attached and multi-unit buildings.
- Coverage, both in the amount and type offered, is limited for MF and MX buildings, particularly for NFIP policies. NFIP offers coverage for building structures and contents, but it leaves potentially significant costs uncovered, including operating losses during and after a flood.
- Additionally, though total coverage offered has increased from \$250,000 to \$500,000 for buildings classified as coops and multifamily residential structures, this may not fully cover large properties. This is supported by analysis of Hurricane Sandy claims, which revealed that the cost of damage incurred by MF and MX buildings was not covered by claims payments to the same extent as one and two-family homes.
- For smaller MF and MX buildings, standard rate increases may create a greater burden, either directly on property owners, or on tenants whose portion of the cost is spread over fewer units than for tenants of large buildings.

All analysis performed on the 2013 Preliminary FIRM uses currently-approved floodplain designations.

Spotlight on Flood Insurance & Affordable Housing

In 2014, only 20% of affordable buildings in the high-risk areas of the 2007 FIRM had NFIP.^{6,9}

- While these buildings may also hold private coverage, these results are specific to NFIP policies.
- Affordable buildings holding NFIP policies in the high-risk areas of the 2007 FIRM pay average premiums of \$2,740 per building for an average of \$426,000 in coverage.⁶
- 90% of affordable buildings in the high-risk areas of the 2007 FIRM with NFIP coverage were constructed prior to 1983. Because these buildings were not subject to elevation requirements during construction, they may face higher increases in premiums.¹

45% of affordable buildings in the high-risk areas of the 2013 Preliminary FIRM have NFIP.⁵

- Affordable buildings holding NFIP policies in the 2013 Preliminary FIRM pay average premiums of \$2,980 per building for an average of \$375,000 in coverage in high-risk zones (as designated by the 2007 FIRM), and an average of \$920 in premiums for an average of \$338,000 in coverage in moderate-risk zones (as designated by the 2007 FIRM).^{5,8}
- Lack of insurance makes the uninsured buildings in the high-risk areas of the FIRM and 2013 Preliminary FIRM extremely financially vulnerable to flood damage and more likely to experience slow recovery after storm events.
- Even buildings that have an NFIP policy are likely to be significantly underinsured, as owners of coops and multifamily residential rental structures can only purchase NFIP coverage up to \$500,000 for the building (structure), which in many cases may not reflect the full future risk.

Affordable housing assets may be more deeply affected by rising flood insurance costs.

- Significant premium increases as BW-12 and HFIAA take effect, with no set differentiation in premiums based on building size or type, will potentially put a greater burden on pre-FIRM affordable buildings, especially smaller structures.
- Owners cannot raise rents to cover increased costs (aside from regulated rent increases or increases for specific capital improvements). Tenants may face reduced quality of life if costs are covered through reduction in building services.

**Analysis does not include private policies, which may provide increased coverage. Findings on private coverage were unclear. All analysis performed on the Preliminary FIRM uses currently-approved floodplain designations.*

Rising Costs and Perceptions on Mitigation



Understand potential rising costs and building owners' and managers' perceptions around bearing risk vs. purchase of insurance vs. investing in mitigation.

FINDINGS

NFIP premiums have risen due to increased maximum coverage limits, and costs, including premiums and fees. Premiums will continue to rise due to reductions in Federal subsidies and increasing risk.

- In the high-risk areas of the 2013 Preliminary FIRM, despite rising costs, the number of MF and MX buildings holding NFIP policies increased by 15% in the current high-risk zones and 150% in the current low- and moderate-risk zones since Hurricane Sandy.^{4,6}
- From 2011 to 2014, average coverage levels amongst NFIP policyholders increased by 20% in high-risk zones and 10% in moderate-risk zones in the 2013 Preliminary FIRM (as designated by the 2007 FIRM), aligning with the increase in per-building maximum coverage limits from \$250,000 to \$500,000 for coops and multifamily residential rental structures. Average premiums increased by 43% in high-risk zones and 80% in moderate-risk zones (as designated by the 2007 FIRM) during this time.⁶
- As of April 2015, these increases are being compounded by subsidy reductions as a result of Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) and the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA), for which pre-FIRM multifamily and mixed-use buildings may be subject to increases of up to 25% per year.³ Currently, 67% of structures in high-risk zones of the 2007 FIRM are pre-FIRM structures.⁶
- Increased fees, including the HFIAA surcharge and Reserve Fund Assessment, amongst others, may also drive costs up substantially. These costs may be compounded for coop buildings in which each unit may hold a separate policy.
- Costs for private coverage are highly variable, as most are based on individual buildings' probable maximum loss, and policies are assessed on a case-by-case basis.

All analysis performed on the 2013 Preliminary FIRM uses currently-approved floodplain designations.

Rising Costs and Perceptions on Mitigation



Understand potential rising costs and building owners' and managers' perceptions around bearing risk vs. purchase of insurance vs. investing in mitigation.

FINDINGS

A standard set of reductions or credits to premiums based on partial mitigation is not recognized by the NFIP or private insurance industry.

- While FEMA is tasked with creation of guidance on partial mitigation by Section 26 of the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA), no system of credits for these measures currently exists.
- Within the private market, mitigation such as elevation of critical systems may reduce barriers to securing flood insurance coverage, but associated costs are often prohibitive and recognition is not standardized.
- Based on outreach and survey responses, owners did not consider reduced insurance costs as a motivation for performing mitigation due to both cost and uncertainty regarding the impact of mitigation measures on premiums.
- A broker noted that uncertainty about the potential for mitigation to result in credits and changing mitigation standards (for example, due to changes in floodplain designation) may be a deterrent to owners considering this investment.

Policy Recommendations for the City of New York

Key findings led to recommendations that emphasize a need for clear resources on flood insurance coverage for multifamily and mixed-use buildings, advocacy to FEMA for creation of a partial mitigation framework and revisiting coverage options, and coordination with the private insurance market.

FINDINGS

Outreach revealed a lack of clear, standardized information on NFIP specific to MF and MX structures available to building owners and managers.

Approximately 42% of MF and MX buildings in the high-risk areas of the 2007 FIRM hold NFIP policies. NFIP costs have increased along with increased coverage and fees due to legislative changes. A standard set of reductions or credits to premiums based on partial mitigation is not recognized.

Take-up rates for private coverage are unclear. Costs for private coverage are highly variable, as is the coverage provided.



RECOMMENDATIONS

Owners, Managers, and Brokers

- A. Develop education resources for owners and managers of multifamily and mixed-use buildings related to risk, ownership type (cooperatives vs. condominiums), and unit placement (1st vs. 10th floor, for instance), and regulation.
- B. Track NFIP flood insurance take-up and coverage, and perform outreach to ensure coverage.

FEMA

- A. Encourage FEMA to provide better information and guidance for multifamily and mixed-use buildings and provide transparent data on coverage and policies.
- B. Advocate for appropriate levels and categories of coverage for multifamily and mixed-use buildings.
- C. Advocate for the development of a partial mitigation framework for multifamily and mixed-use structures.

Private Insurers

- A. Convene private flood insurance stakeholders and explore greater coordination.
- B. Align incentives for mitigation between NFIP and private coverage.

Study Organization & Methodology

Findings

Recommendations

Appendix

Project Context

Understanding the impact of increases to National Flood Insurance (NFIP) rates due to Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12), changes to FEMA's Flood Insurance Rate Maps, and growing density along the waterfront is critical for developing meaningful policy recommendations to preserve affordability and neighborhood stability. As introduced in the BW-12, NFIP rates began a steep incline as subsidies were, in some cases, immediately repealed for many of the pre-FIRM structures in the high-risk flood areas.¹⁰ In 2014, HFIAA modified provisions of BW-12 to slow the increase in rates with a cap of 18% on residential structures and 25% on business structures, severe repetitive loss properties, substantially improved/damaged properties, and non-primary residences, plus additional fees.

In late 2013, the RAND Corporation published "Flood Insurance in New York City Following Hurricane Sandy," a City-commissioned report that provides a comprehensive picture of the flood insurance landscape for one-to-four family properties after the storm. For multifamily and mixed-use buildings, the report includes a recommendation for further study of the long-term effects of rising flood insurance costs on these structures. As a result, the New York City Economic Development Corporation (NYCEDC), acting on behalf of the Mayor's Office of Recovery and Resiliency (ORR), commissioned another study to examine the state of flood insurance coverage for multifamily residential and mixed-use buildings in the floodplain through a survey of these buildings and industry outreach.

In late 2014, HR&A Advisors, Inc. (HR&A) began work with a team including Enterprise Community Partners, Inc., Arup, BJH Advisors, and industry expert Steven Sachs to perform data analysis, administer a multi-pronged survey that sheds light on the unique challenges faced by owners and operators of multifamily structures, and perform industry outreach to understand the impact of flood insurance reform on these buildings.

Project Team

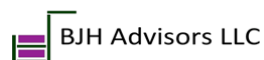
The project team brought together experts in insurance, housing, and survey and database management to conduct this study. Our team included:



HR&A Advisors A New York City-based real estate and economic development advisory firm with deep experience in resiliency planning. HR&A served as project manager for this study.



Enterprise Community Partners, Inc. Specialists in affordable housing development and advocacy, who are deeply engaged in post-Sandy policy research and bring a broad network of affordable housing partners to this project's outreach process.



BJH Advisors LLC An economic development and real estate advisory firm with experience conducting and managing survey processes and complex policy analysis.

ARUP

Arup An engineering firm with a focus on coastal resiliency and long-range planning.



Steven Sachs of **Willis Group** Acting as an industry advisor, Steven Sachs provided insight into the private insurance market and trends within the industry.

Study Organization

Study objectives guided research and analysis to answer key questions about the flood insurance landscape. These answers, along with additional findings, guide the report's policy recommendations.

STUDY OBJECTIVES

Quantify the **universe of multifamily and mixed-use buildings in the floodplain**

Determine **current take-up rates and levels of flood insurance coverage by building typology**, for both NFIP policies and private insurance

Understand **potential rising costs and perceptions around bearing risk vs. purchase of insurance vs. current and future premiums for MF and MX structures and the impact of investing in mitigation**



FINDINGS

Analyze and communicate owners' rates, coverage, and take-up rates

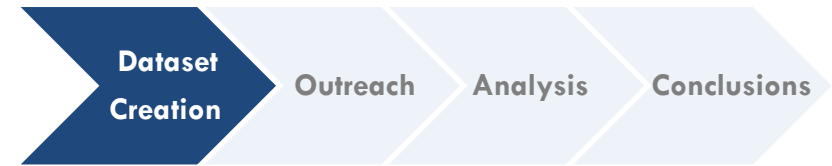
Report on owners' perception of risk and attitudes toward mitigation



RECOMMENDATIONS

Synthesize analysis and recommend appropriate policies to minimize impacts on housing affordability and address applicability of NFIP regulations for multifamily and mixed-use housing

Project Methodology: Dataset Creation



HR&A created a series of datasets to identify multifamily and mixed-use buildings in the 2007 floodplain, the 2013 preliminary floodplain, and the 2020s projected floodplain, and analyzed NFIP policyholder and claims data provided by FEMA via ORR. The datasets support analysis of the number and type of buildings and units within the floodplains.

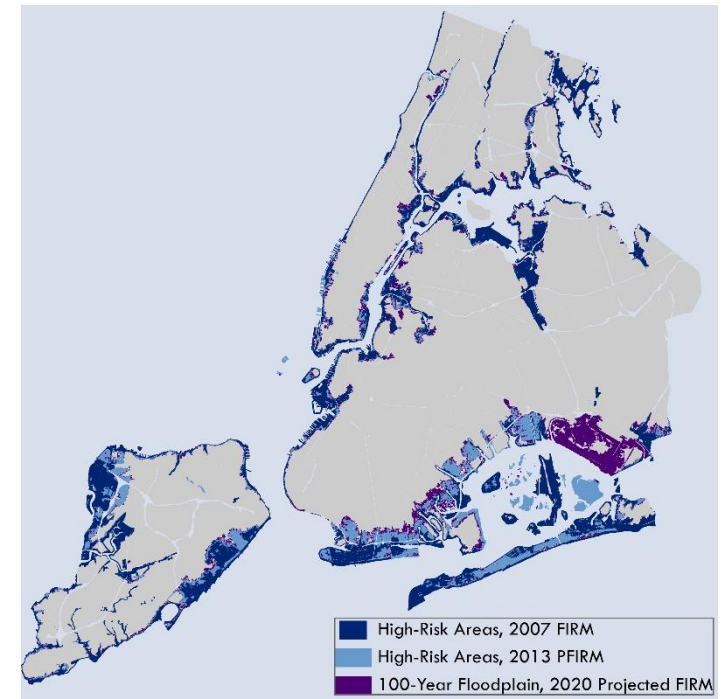
Floodplain areas were provided by the Mayor’s Office of Recovery and Resiliency (ORR). The dataset includes:

- High-risk areas of the 2007 Flood Insurance Rate Map (FIRM).
- High-risk areas of FEMA’s proposed 2013 Preliminary FIRM. New York City filed an appeal of the 2013 Preliminary FIRM in June 2015.
- 2020s projected 100-year floodplain that was created by the CUNY Institute for Sustainable Cities for “*A Stronger, More Resilient New York.*”

Additional data contains information about physical building characteristics and affordability. HR&A joined:

- Publicly-available 2014 PLUTO data files
- SHIP data on affordable housing characteristics compiled by the Furman Center
- Public Housing property data provided by New York City Housing Authority (NYCHA)
- Rent stabilized buildings from the Rent Guidelines Board
- FEMA’s NFIP claims and policyholder datasets. Additional information is provided in Appendix 3.

New York City High-Risk Floodplain Areas



Project Methodology: Outreach



The outreach process started with individual and small-group conversations with property owners and managers, insurance industry practitioners, and flood insurance experts. The objectives of this outreach were:

- To make owners and managers aware of this study, and introduce the survey concept;
- To understand which positions within real estate organizations held information about flood insurance policies;
- To begin collecting information about flood insurance policies, including premiums and coverage, changes to policies, and perceptions around mitigation to shape survey questions and inform early impressions of the anticipated results.

Outreach efforts included more than 10 individual building or portfolio owner and manager conversations, a presentation and small group discussions with Enterprise’s Learning Collaborative for Multifamily Housing Resilience, a group of affordable housing portfolio owners focused on recovery and resiliency, and additional discussions with insurance brokers and insurance industry experts.

Outreach also overlapped closely with the survey execution, which included broad outreach:

- Three professional multifamily housing networks and real estate industry organizations sent the survey to over 1,000 recipients (combined) in an online format.
- The team placed 488 phone calls to owners and managers selected from the universe of multifamily and mixed-use buildings in the 2007 FIRM.

Project Methodology:

Survey Execution & Response



The team conducted a survey of multifamily and mixed-use building owners to uncover information about specific policies, NFIP and private flood insurance coverage levels, rising premium rates, and perceptions of mitigation. The team **received responses for 62 buildings**, many of which were incomplete. In most cases, respondents lacked the information to answer some or all questions. Response rates for a sample of questions within the survey’s four topic areas are described below. When information was available, the team followed up with the brokers writing the buildings’ insurance policies for verification.

Given low response rates, the team used responses to supplement analysis on our overall dataset and FEMA claims data, but not to describe trends across the universe of multifamily and mixed-use buildings.

Survey Response Rate Highlights by Topic Area

Topic area	Response Rate (Out of 62 Responses)
Sandy damage	<ul style="list-style-type: none">• 40 responses on whether damage occurred• 15 responses on nature of damage
Mitigation	<ul style="list-style-type: none">• 19 responses on mitigation• 2 respondents had performed mitigation and provided details
Claims and coverage before Sandy	<ul style="list-style-type: none">• 27 responses on whether or not coverage was held before Hurricane Sandy• 18 responses on type of coverage• 18 responses on whether a claim was filed after Hurricane Sandy
Changes to flood insurance policies	<ul style="list-style-type: none">• 19 responses on renewals since Hurricane Sandy• 18 responses on whether rates had changed since Hurricane Sandy• 18 responses on how to manage rising costs

Source: HR&A survey of multifamily and mixed-use owners, managers, and brokers; Response rate reflects the number of responses to specific questions, removing questions that received no response or were not reached in the course of the survey.

Understanding Flood Insurance for Multifamily and Mixed Use Residential Buildings

Buildings with Federally-backed mortgages in the high-risk flood areas of the 2007 FIRM are required to have flood insurance. Insurance is available for multifamily and mixed-use buildings through the Federal National Flood Insurance Program (NFIP) and in some cases, through private excess and surplus line carriers.

Private insurers calculate probable maximum loss by building to recommend coverage and identify appropriate risk premiums, whereas FEMA uses limited building characteristics to determine premiums. Policy structure, risk calculation, coverage, and rate varies widely by provider and property.

Program	Coverage (Structure/Contents)	Costs	Providers
National Flood Insurance Program (NFIP)	<p>RCBAP (residential condos): \$250,000/\$100,000 per unit</p> <p>General property form (commercial condos, coops, MF/MX rentals): \$500,000/\$500,000 per building</p> <p>Individual dwelling unit (condo unit only): \$250,000/\$100,000 per unit</p> <p>Business Interruption Coverage: None</p> <p>Basement Coverage: None below Design Flood Elevation (DFE)¹⁵</p>	<p>Cost: Low-Medium</p> <p>Standardized Rates: Yes</p> <p>Value Method: Actual Cash Value (Replacement Cost for RCBAP policies only)</p>	<p>Coverage written by insurance companies that have signed an arrangement with FEMA to service the program or NFIP Direct Servicing Agents.</p>
Private Flood Coverage & Commercial Property Insurance with Riders	<p>Max Building Coverage: Up to probable maximum loss</p> <p>Max Contents Coverage: Up to probable maximum loss</p> <p>Business Interruption Coverage: Available</p> <p>Basement Coverage: Available</p>	<p>Cost: Varied</p> <p>Standardized Rates: No</p> <p>Value Method: Actual Cash Value/Replacement Cost</p>	<p>Written by many nationally-active firms, including Aspen, Axis, and others</p>

Source: FEMA guidelines: [fema.gov/national-flood-insurance-program](https://www.fema.gov/national-flood-insurance-program), broker conversations, HR&A research

Study Organization & Methodology

Findings

Recommendations

Appendix

Key Findings

The team relied on analysis of the dataset constructed early in this study to draw conclusions across all multifamily and mixed-use buildings in the floodplain. Survey and interview responses supplement these conclusions.

1 The universe of multifamily and mixed-use buildings in the current and future high-risk areas of the floodplains:

- Contains over 80% of residential units in the high-risk areas of the 2007 FIRM, in 3,200 buildings.
- Is expanding as floodplain grows, and is expected to increase 65% from 3,200 to 5,300 buildings in high-risk areas of 2013 Preliminary FIRM, and to increase 150% to 7,900 buildings in the 100-year 2020s projected floodplain.
- Contains more than 30% regulated buildings, including affordable housing, buildings with rent stabilized and rent controlled units, and public housing, for whom rising insurance costs may be a particular challenge.

2 Current take-up rates and flood insurance coverage by building typology:

- Approximately 42% of multifamily and mixed-use buildings in the high-risk areas 2007 FIRM hold NFIP policies but this drops to 32% in the high-risk areas of the 2013 Preliminary FIRM. Take-up rates for private policies are unclear, but building owners who purchase private insurance typically do so to supplement NFIP coverage.
- NFIP may not provide adequate coverage for large structures, given its \$500,000 structure limit.
- Outreach revealed a lack of clear, standardized information available for MF and MX buildings, as many respondents were not able to provide complete answers to a survey on basic flood insurance information.
- Broker feedback also indicated a lack of consistent guidance. One respondent noted: “FEMA often changes their mitigation standards such that after a mitigation measure is implemented it no longer meets FEMA's requirements.”

3 Within the high-risk area of the 2013 Preliminary FIRM, the average annual premium for MF and MX buildings' NFIP policies are:

- \$4,000 per building in premiums for \$300,000 in coverage, in high-risk areas (per current risk designations).
- \$950 per building in premiums for \$263,000 in coverage, in moderate-risk areas (per current risk designations).

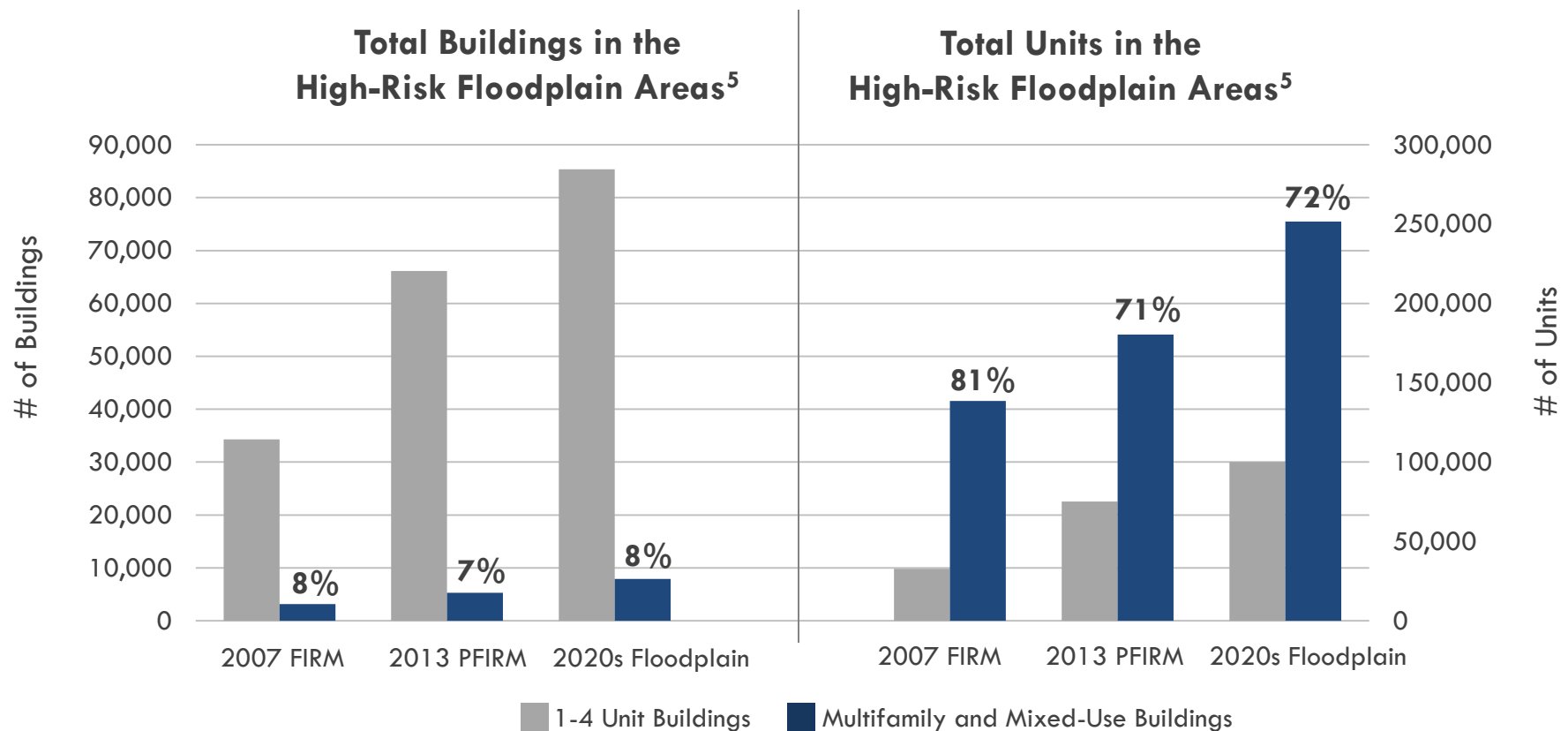
Reports of rising costs and perceptions around bearing risk vs. purchase of insurance vs. mitigation:

- Flood insurance costs are rising, due to increases in coverage, fees, and reductions in subsidy due to legislative changes.
- Despite premium increases, owners surveyed did not report reduced insurance rates as an incentive to mitigate.

Buildings & Residential Units in the Floodplain



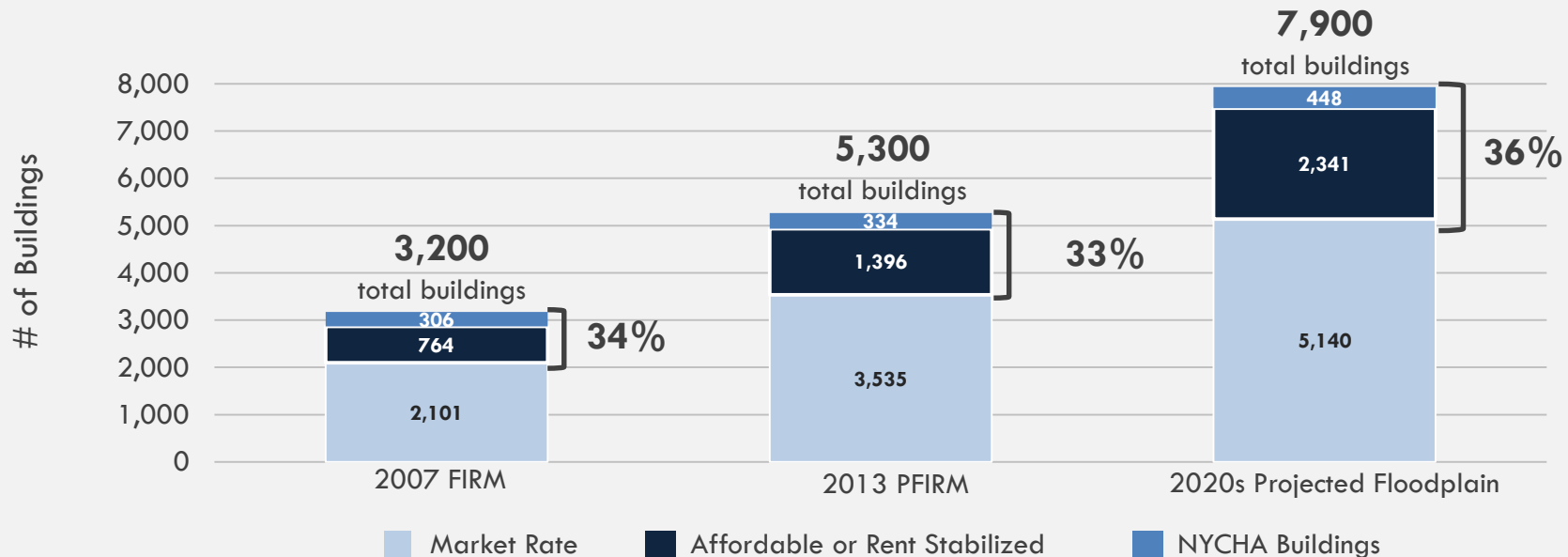
Though the majority of buildings in the high-risk areas of the floodplain are smaller structures, the majority of residential units in the high-risk areas of the floodplain are in mixed-use and multifamily buildings. In the high-risk 2007 FIRM areas, 80% of residential units are in MF and MX buildings, while 71% of units are in MF and MX buildings in the high-risk 2013 Preliminary FIRM areas. The number of multifamily and mixed-use units in the high-risk areas of the floodplain has increased by 30% from the 2007 FIRM to the 2013 Preliminary FIRM, and an additional 40% of the high-risk Preliminary FIRM units will be at risk under the 2020s projected floodplain.^{5,7}



Spotlight on Regulated Housing in the Floodplain

Over 30% of the multifamily and mixed-use buildings in high-risk areas 2007, 2013, and projected floodplains contain regulated units. 33% of these buildings in the Preliminary FIRM with NFIP are currently in high-risk A and AE zones and 95% of those are pre-FIRM structures (as designated by the 2007 FIRM).^{6,8,9} Owners of regulated buildings, including buildings with rent stabilized/rent controlled units and affordable units will not easily be able to pass the costs of rising flood insurance through to tenants in increased rents, and the government will likely bear the burden of increased costs for public housing units. This is particularly true in small buildings, including the nearly 50 buildings that have received affordable housing subsidies in the high-risk area of the 2013 Preliminary FIRM area. Many subsidies that support these units require flood insurance, forcing owners to accommodate costs in other ways, such as a reduction of services. For buildings with currently subsidized policies, NFIP costs are projected to increase significantly. The combined impact of increased premiums and the potential future impacts of being under-insured leave these buildings vulnerable after future flood events.

Multifamily and Mixed-Use Buildings in High-Risk Areas of the Floodplain⁵



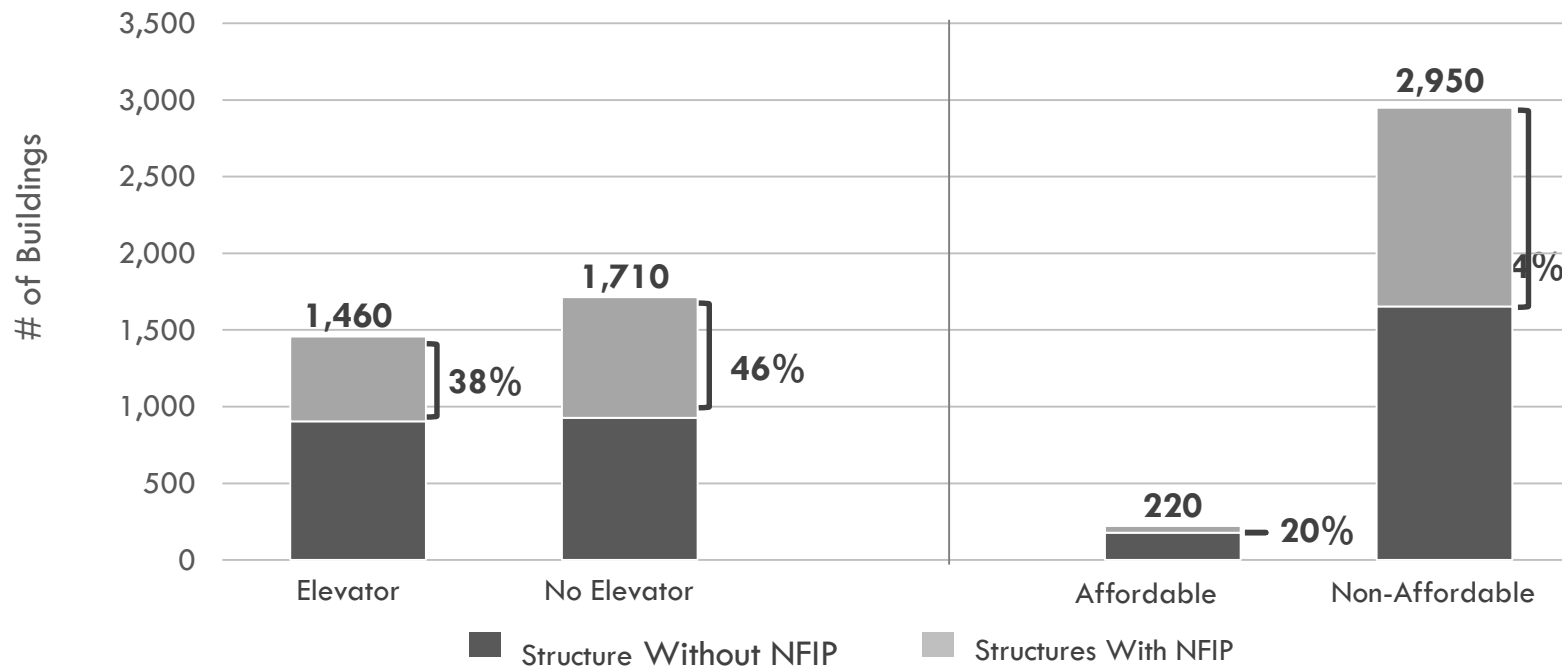
NFIP Take-Up Rates



In 2014, approximately 42% of multifamily and mixed-use buildings in the high-risk areas of the 2007 FIRM area had NFIP policies.⁶ In 2011, 37% of these buildings had NFIP policies. HR&A joined FEMA data on NFIP policyholders and claims submitted to the overall dataset to determine these rates. Notably:

- Smaller MF/MX buildings, defined as buildings without an elevator, are more likely to have NFIP than larger elevator buildings.⁶
- 80% of buildings with affordable units, which are often required to have flood insurance as a condition of receiving government subsidy, do not have NFIP.^{6,8}

2014 NFIP Policies as Percentage of Total Structures in High-Risk areas of the 2007 FIRM⁵



NFIP Coverage Levels



As of 2012, coop and multifamily rental building owners could purchase up to \$500,000 in property coverage for a single structure through NFIP. However, for properties within the high-risk areas of the 2007 FIRM, the average coverage is less than half of this maximum, while in the high-risk areas of the 2013 Preliminary FIRM, coverage is slightly higher at \$280,000.⁶ On the other hand, a residential condominium may be required to purchase coverage in an amount equal to \$250,000 in coverage multiplied by the total number of units in the building, potentially incurring a much more expensive policy and greater burden on owners.

For buildings with NFIP, coverage is not tied to building value or probable risk. Because many mortgage lenders only require maximum coverage under NFIP, building owners who purchase flood insurance only to fulfill lending requirements may not be adequately protected against flood risk given the \$500,000 NFIP policy limit for coops and multifamily rental buildings. Additionally, if small and large building owners are required to purchase the same coverage by a lender, without an assessment of building value or probable risk, this ensures that the cost per unit for smaller buildings is higher than in larger buildings.

Additionally, even with maximum coverage, NFIP is unlikely to fully address the recovery needs of multifamily and mixed-use buildings. Even small buildings that have adequate NFIP coverage for foundation and mechanicals may need additional insurance for damage NFIP does not cover. Analysis of NFIP claims for Hurricane Sandy in the Preliminary FIRM area show that FEMA only paid 66% of the assessed buildings and contents damages, leaving the owner liable for the remainder of building costs and costs not covered by NFIP, such as business interruption (see figure below). For larger structures especially, the NFIP coverage cap, which is not tied to maximum risk, may mean that some structures are underinsured.

Typical Sandy Claim for Multifamily and Mixed-Use NFIP Policyholders



Source: Average Sandy damage and claim payment per FEMA NFIP data, for MF and MX buildings

NFIP Coverage By Flood Risk and Building Size



Based on analysis of NFIP policyholders and policy information for 2011 and 2014 in the high-risk area of the 2013 preliminary FIRM, the team found that NFIP policy premiums vary by size of building and location within different flood risk zones without a consistent relationship. The tables compare premiums and coverage for policies held both in 2011 and 2014.⁶ Additional analysis is provided in Appendix 2.

2011-2014 MF and MX Premiums and Coverage, Current High-Risk Flood Zones

Units Typology	N	2011 Policies		2014 Policies		Compound Annual Growth Rate, 2011-2014	
		Premium	Coverage	Premium	Coverage	Premium	Coverage
5-19 Units	187	\$2,639	\$251,649	\$3,595	\$278,387	11%	3%
20-49 Units	35	\$2,266	\$235,979	\$3,976	\$339,659	21%	13%
50-99 Units	29	\$2,797	\$230,055	\$3,486	\$317,555	8%	11%
100-499 Units	45	\$1,930	\$242,817	\$3,030	\$310,285	16%	9%
500+ Units	18	\$2,141	\$250,000	\$3,607	\$314,815	19%	8%

2011-2014 MF and MX Premiums and Coverage, Current Moderate-Risk Flood Zones

Units Typology	N	2011 Policies		2014 Policies		Compound Annual Growth Rate, 2011-2014	
		Premium	Coverage	Premium	Coverage	Premium	Coverage
5-19 Units	51	\$840	\$205,506	\$1,805	\$219,890	29%	2%
20-49 Units	22	\$1,057	\$232,927	\$1,426	\$256,061	11%	3%
50-99 Units	13	\$2,586	\$288,461	\$3,995	\$295,280	16%	1%
100-499 Units	12	\$458	\$86,250	\$1,358	\$156,250	44%	22%
500+ Units	6	\$1,161	\$250,000	\$1,450	\$250,000	8%	0%

Source: HR&A analysis of FEMA policyholder and claims data, joined with NYC PLUTO data, SHIP data, and shapefiles for the high-risk zones of the 2007 FIRM, 2013 PFIRM, and 2020s projected floodplain, provided by ORR.

Rising Costs of NFIP Before Statutory Increases



Multifamily and mixed-use owners and managers have taken advantage of maximum coverage increases within NFIP. 32% of multifamily and mixed-use buildings with NFIP increased their coverage levels since Hurricane Sandy. While policyholders should be encouraged to expand coverage when needed, those in the high-risk areas of the 2013 Preliminary FIRM (as designated by the 2007 FIRM) saw premium increases of 38% between 2011 and 2014, compared to minimal increases in cost for policies that maintained coverage levels.⁶

Changes* to NFIP Premiums for Multifamily and Mixed-Use Policyholders, High-Risk Areas of the 2013 Preliminary FIRM (per 2007 FIRM designation)⁶

Coverage Following Hurricane Sandy	Average Premium, 2011	Average Premium, 2014	Average Coverage, 2011	Average Coverage, 2014	Change in Premium/Coverage Rate (2011-2014)
Increase in coverage	\$1,850	\$4,130	\$206,220	\$389,450	18% increase
No increase in coverage	\$2,310	\$2,650	\$265,190	\$265,190	14% increase

*Changes reflect information for policyholders who held their policy before Hurricane Sandy in 2011 to 2014, based on information in FEMA's NFIP policyholder dataset.

For both policyholders, the change in premium/coverage rate shows that premiums costs outpaced changes to coverage between 2011 and 2014. Regardless of their cause, cost increases:

- **Will be compounded by continuing rate increases** as subsidies begin to be repealed and fees are assessed.
- **Suggest a need for alternative strategies to reduce costs**, other than dropping coverage or re-allocating funds from operations or rents, such as credit for partial mitigation.

Rising Costs of NFIP After 2015



As of April 1, 2015, subsidized pre-FIRM NFIP policies can be increased at 18% to 25% per year, depending on a property's type and classification as residential or as a business property, until they reach the actuarial rate, and are subject to additional fees.² Pre-FIRM severe repetitive loss properties, substantially improved/substantially damaged properties, and non-primary residential properties are also subject to increases of up to 25% per year.²

Additional fees now include:

- An annual surcharge required by HFIAA, of \$25 for primary residences and single condominiums or apartments and \$250 for all other policies.
- Additional fees as part of the Reserve Fund assessment required by BW-12.
- The impact of increased fees may be compounded for buildings eligible for individual unit coverage.

Smaller buildings may be more negatively impacted by these rising costs if a greater share of costs are passed on to fewer tenants. Because NFIP premiums are not scaled to building value or risk, the net increase in costs will be similar for buildings of various sizes. For smaller buildings, the increase represents a larger portion of operating expenses. The regressive nature of NFIP ensures that larger buildings are better equipped to deal with increased cost, but they also face risk of under-insurance.

Only 18 survey respondents answered a question about how they plan to accommodate rising costs. Many of these responded that they have no plan to accommodate these costs, while others noted that they do not know as they cannot raise rents, or that they will pay “out of pocket.” One respondent suggested that they would set up an operating reserve from which to pay rising costs over time. **The overall lack of response to this question suggests an uncertainty in the market about how owners will face these costs, though whether and how costs may affect tenants' costs (whether they will be passed through) is unclear.**¹²

Private Insurance Take-Up Rates and Coverage Levels



As private flood insurance coverage is written mainly by excess and surplus line insurers, data on the take-up rates for private flood insurance in New York City are not tracked in a publicly-available form. Information about private coverage was gathered through survey responses and direct interviews with owners and insurance industry professionals. **Overall response rate was not robust enough to determine take-up rates across the universe of multifamily and mixed-use buildings, but did provide examples of how owners and managers use private insurance.**

Only 18 respondents answered a question on the type of policies they held. Of these respondents, 4 reported holding private flood insurance coverage prior to Hurricane Sandy.¹¹

Those who held private insurance coverage used this as a supplement to NFIP. This response aligns with feedback from insurance professionals regarding their consumers' decisions to purchase additional coverage above NFIP.

Based on these discussions, we understand:

- **Private insurance acts as a layer of coverage in addition to NFIP.** Private insurers may require a building to obtain an NFIP policy as the base layer of coverage. Private offerings provide additional coverage, and other types of coverage not provided by NFIP, including business interruption and basement damage.
- **Private policies may be less common in high-risk areas because insurers have flexibility to limit offerings geographically.** In general, the team heard that private insurers have more discretion on where and who to insure, do not utilize a standardized, data-driven process for underwriting properties in the floodplain, and may avoid repetitive loss properties.

Rising Costs in the Private Market



Survey responses and results from outreach were inconclusive with regard to rising rates and premiums within the private flood insurance market for the entire universe of multifamily and mixed-use buildings in New York City.

Sample responses varied from **“Not substantially”** to **“...rates went up to \$6,000 after Hurricane Sandy, then my broker helped me find a less expensive policy”** for a multi-family, market rate building with no elevator whose mortgage lender required a coverage increase from \$250,000 to \$500,000.

Interviewees within the insurance industry and managers of large real estate portfolios noted a decrease in insurers’ appetite for covering high-risk properties, rather than a steep increase in premiums, but also noted that the market has stabilized since Hurricane Sandy.¹⁰

Incentives to Mitigate



The primary mitigation strategy to reduce NFIP costs is elevation, which may be cost prohibitive or physically impossible for multifamily and mixed-use structures. As explained by the NYC Department of City Planning in *Designing for Flood Risk*, factors such as the level of the Design Flood Elevation (DFE) and the cost of flood-proofing impact mitigation feasibility. The private market may provide greater flexibility on a case-by-case basis. Survey results indicate that owners and managers are not focusing on mitigation as a strategy to reduce their premiums, which may be a rational strategy given mitigation costs relative to expected losses.

Private insurers' consideration of mitigation measures in assessing risk is unclear. Unlike NFIP, private insurers may accept other types of mitigation beyond elevation to reduce premiums. However, the acceptance of various mitigation measures is not standard across the industry and may be negotiated on a case-by-case basis. Brokers surveyed were not aware of a framework for mitigation credits.

Without a clear set of reductions and credits for partial mitigation, insurance costs are not a useful driver for incentivizing mitigation. Only 19 survey respondents answered questions regarding mitigation.¹¹

- One respondent reported that **they did not mitigate, and in fact replaced all equipment as it was before Hurricane Sandy** in order to collect on their flood insurance claim.
- Another respondent noted that they had mitigated by elevating some ground floor utilities, but **did not receive credit within their NFIP policy**. They did not know if they received credit within their private coverage.
- One broker cautioned that **existing residential buildings are not making changes to implement mitigation measures due to uncertainty** surrounding FEMA's accepted mitigation measures.

Strategies for Mitigation



As stated previously, elevation, the primary FEMA-recognized method of mitigation, is not feasible for many multifamily and mixed-use buildings. HFIAA requires FEMA to issue guidelines that provide alternative methods of mitigation efforts for buildings that cannot be elevated due to their structural characteristics.

FEMA's work should be expanded and leveraged to create a framework for providing credits to multifamily and mixed use building. Within this study, Arup has arranged a series of improvements by cost of implementation and potential impact to illustrate the potential range of strategies for consideration. Further detail on these strategies is included in the Resiliency Measures Appendix to this report.

Cost to Implement < \$50 K	Cost to Implement \$50 K - \$100 K	Cost to Implement > \$100 K
<ul style="list-style-type: none">• Provide hookups for temporary generators and boilers• Install backwater valves on storm and sanitary connections	<ul style="list-style-type: none">• Install natural gas emergency generator• Protect elevators• Install flood barriers at entrances	<ul style="list-style-type: none">• Dry flood-proof or wet flood-proof cellar• Relocate mechanical and electrical equipment to above-grade area• Fill in basement• Raise building above design flood elevation

Partial credit for mitigation should apply for both NFIP and private flood insurance. A common framework for understanding the risk reduction of mitigation would help to standardize credit rates across the public and private flood insurance sectors.

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Policy Recommendations

Implementation of the study's recommendations would continue to strengthen New York City's understanding of the flood insurance landscape. These include strong advocacy for FEMA to **reform flood insurance guidance and coverage offerings** for MF and MX buildings, **increased clarity and availability of information** to building owners and managers, and **the generation of innovative policies** to increase coverage and promote future resiliency.

FINDINGS

Outreach revealed a lack of clear, standardized information on NFIP specific to MF and MX structures available to building owners and managers.

Approximately 42% of MF and MX buildings in the high-risk areas of the 2007 FIRM hold NFIP policies. NFIP costs have increased along with increased coverage and fees due to legislative changes. A standard set of reductions or credits to premiums based on partial mitigation is not recognized.

Take-up rates for private coverage are unclear. Costs for private coverage are highly variable, as is the coverage provided.



RECOMMENDATIONS

Owners, Managers, and Brokers

- A. Develop education resources for owners and managers of multifamily and mixed-use buildings related to risk, ownership type (cooperatives vs. condominiums), unit placement (1st vs. 10th floor, for instance), and regulation.
- B. Track NFIP flood insurance take-up and coverage, and perform outreach to ensure coverage.

FEMA

- A. Encourage FEMA to provide better information and guidance for multifamily and mixed-use buildings and provide transparent data on coverage and policies.
- B. Advocate for appropriate levels and categories of coverage for multifamily and mixed-use buildings.
- C. Advocate for the development of a partial mitigation framework for multifamily and mixed-use structures.

Private Insurers

- A. Convene private flood insurance stakeholders and explore greater coordination.
- B. Align incentives for mitigation between NFIP and private coverage.

Resources for Multifamily and Mixed-Use Buildings (1 / 2)

Education would provide multifamily and mixed-use owners with a greater understanding of flood risk, insurance options, and effective mitigation techniques.

A

Develop education resources for owners and managers of multifamily and mixed-use buildings, and for the brokers who write these policies.

The City should create resources for owners and managers to support education delivered by trusted technical assistance organizations with strong ties to the multifamily and mixed-use building industry.

- Develop resources to provide information on flood insurance options and emphasize mitigation for different segments of the multifamily and mixed-use building typologies, including large buildings, small buildings, and regulated buildings. Key resources might include:
 - Information on tools for recovery, including flood insurance’s role in recovery.
 - Guidance on evaluating the appropriate level of insurance coverage.
 - Information on coverage options, within NFIP and the private market, including clear description of the value of each.

Particularly for owners and managers of smaller, affordable buildings, these resources coupled with a framework for credits for partial mitigation are key tools to manage rising flood insurance costs.

- Work with applicable industry stakeholders to provide technical assistance to owners and managers. Across different building types, there is no consistent person or role who controls flood insurance purchase decisions for properties they own or manage. Multifamily housing networks and technical assistance groups may be an effective distribution route and partnership for content delivery.

Data on Multifamily and Mixed-Use Policies (2/2)

Improving the availability of existing information concerning appropriate flood insurance coverage and purchase requirements would allow the City to track take-up rates over time while reducing risk for multifamily and mixed-use buildings.

B

Track NFIP flood insurance take-up and coverage, and perform outreach to ensure coverage.

The City should advocate for quality tracking of NFIP flood insurance coverage data and for an outreach program to ensure appropriate coverage of New York City's multifamily and mixed-use housing stock. Lenders may be a source of this information for current policies and recently-closed transactions, but an ongoing program to promote adequate, continued coverage, will support the City's efforts. This effort includes:

- **FEMA's responsibility for tracking and making high-quality data available** through regularly-collected information, such as rolling flood insurance into annual building registrations.
- **FEMA's or policy writers' responsibility for distributing renewal reminders and policy guidance**, potentially within other regularly-received materials, such as tax bills, to increase chances that it is received and viewed by the appropriate parties.

Coordination with FEMA on Changes to the NFIP (1 / 3)

Coordination with FEMA on flood insurance education will support closing the information gap owners of multifamily and mixed-use buildings currently face, and will ensure that information is accurate and clear.

A Encourage FEMA to provide resources for multifamily and mixed-use buildings.

FEMA should provide clear resources to help multifamily and mixed-use policyholders understand their requirements, expected premium increases, and risk-appropriate coverage levels.

- FEMA should provide clear information in technical bulletins and other resources that describes applicability of insurance resource to multifamily and mixed-use structures with residential or commercial NFIP policies.
- FEMA policyholders should have access to resources that describe appropriate coverage for their buildings based on probable maximum loss.
- FEMA should revisit distinctions in coverage, clarify guidelines, and streamline purchase requirements for various types of multifamily buildings by ownership. For example, the classification of condominium versus cooperative may not affect building structure or risk, but does affect the structure's eligibility for a single policy (cooperatives) or multiple policies purchased by owners of individual units (condominiums) through NFIP's Residential Condominium Building Association Policy (RCBAP). These distinctions, and their rationale, are not always clear to consumers. Clear guidance and rationale should be provided for renters and owners whether they live on the 1st floor or 10th floor.

Coordination with FEMA on Changes to the NFIP (2/3)

New York City should advocate for a tailored NFIP program for urban areas and multifamily and mixed-use structures, with coverage that is responsive to the needs of building stock common in these areas.

B Advocate for appropriate levels and categories of coverage from FEMA.

The City should also advocate for FEMA to continue to revise categories of coverage available to multifamily and mixed-use buildings.

- FEMA should offer coverage for multifamily and mixed-use buildings so that it reflects probable maximum loss of the building, regardless of ownership structure. The current maximum coverage of \$500,000 for coop and residential rental buildings and \$500,000 for contents of multifamily and commercial policies, respectively, is not sized to risk or value of properties. Similarly, residential condominiums purchasing \$250,000 of coverage per unit to reach their required coverage levels may be overburdened by the resulting coverage and associated premiums, rather than purchasing coverage appropriate to their risk.
- Coverage should also be made available for specific challenges or damages that may face multifamily and mixed-use buildings, including for basements and business interruption.

Coordination with FEMA on Changes to the NFIP (3/3)

This is a prime moment to call FEMA to action for multifamily and mixed-use buildings. New York City's advocacy efforts and technical expertise provides a strong foundation, and Federal legislation has called for FEMA to development of guidance on partial mitigation.

C Continue to advocate for FEMA's development of a partial mitigation framework.

FEMA should deliver their required work on mitigation, and local policy makers and technical experts in urban and urbanizing areas of the United States should review the guidelines to ensure applicability to multifamily and mixed-use structures.

- Section 26 of HFIAA requires FEMA to issue guidelines that provide alternative methods of mitigation efforts (other than elevation) for buildings that cannot be elevated due to their structural characteristics.
- This effort should specifically address multifamily and mixed-use buildings by:
 - Analyzing reasons for flooding of multifamily and mixed-use structures.
 - Quantifying credit levels or showing examples of building deploying various mitigation measures that are possible for multifamily and mixed-use buildings.
 - Defining a rating system that groups various structural and non-structural mitigation techniques in order to apply insurance credit. The rating system should be transparent and applicable to private market flood insurance.

Coordination with Private Market Insurers (1 / 2)

Greater understanding of the private flood insurance market is a necessity, both to gain a fuller picture of the structures at risk in New York City and to create opportunities for innovative thinking around broader risk-reduction strategies.

A Convene private flood insurance stakeholders and explore greater coordination.

The City should work with the New York State Department of Financial Services and private insurers to better understand the market and examine opportunities for future collaboration.

- Survey and outreach efforts revealed lack of transparency in the private flood insurance market. Convening stakeholders to gather and analyze information and experiences could shed additional light on industry constraints.
- Ongoing coordination may yield innovative market solutions, such as:
 - Pooled insurance policies for certain types of MF and MX buildings.
 - Use of flood insurance cost savings to fund major infrastructure and reduce flood risk.

Coordination with Private Market Insurers (2/2)

Coordination with private stakeholders in Federal advocacy efforts would expand flood insurance options for multifamily and mixed-use owners.

B

Align incentives for mitigation between NFIP and private coverage.

Based on FEMA's examination of partial mitigation, the City should advocate for the universal adoption of a common rating system for both NFIP and the private market.

As the City reviews FEMA's work on partial mitigation, it should work with private flood insurance stakeholders to provide feedback that would align with current private market practices to increase predictability for consumers, creating a scalable and replicable set of practices and ratings that can be a guide for other urban areas facing this challenge.

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Appendix 1: Policy Research

National Flood Insurance Policy (NFIP) Overview

NFIP is required for homes and commercial buildings in high-risk flood areas (100-year floodplain) with mortgages from Federally-regulated or insured lenders, and is available for homes and commercial buildings in low- to moderate-risk flood areas (500-year floodplain) and beyond. As the floodplain expands, more buildings will need to purchase NFIP. Both NFIP rates and fees are set to increase over the next five years.

NFIP Offerings¹²

Property Type	Maximum Coverage		Minimum Deductible Post-FIRM, Full Risk Rates		Maximum Deductible Post-FIRM, Full Risk Rates ¹³		Mandatory with Fed. Mortgage
	Building	Contents	Building	Contents	Building	Contents	
1-4 family dwelling	\$250,000	\$100,000	\$1,250	\$1,000	\$10,000	\$10,000	Yes
Multifamily (5+ units)	\$500,000	\$100,000	\$1,250	\$1,250	\$10,000	\$10,000	Yes
Condominium (Per unit, RCBAP)	\$250,000	\$100,000	\$1,250	\$1,250	\$25,000	\$25,000	Yes
Cooperative (Per building)	\$500,000	\$100,000	\$1,250	\$1,250	\$10,000	\$10,000	Yes
Commercial	\$500,000	\$500,000	\$1,250	\$1,250	\$50,000	\$50,000	Yes

*Both multifamily and condominium buildings with more than 25% non-residential square footage are classified as commercial structures. Multifamily and condominium buildings with less than 25% non-residential are considered residential in the multifamily class.

National Flood Insurance Policy (NFIP) Coverage

Who sells NFIP policies?

NFIP policies are underwritten by FEMA and FEMA sets the rates; however, the policies are sold through private insurance companies, known as Write Your Own (WYO) insurance companies. The NFIP also sells flood insurance through Direct Service Agents. The Write Your Own Program (WYO) allows private insurance companies to receive commission for policies they sell.

What does NFIP cost?

The average premium for multifamily and mixed-use buildings of the 2007 FIRM area is approximately \$3,760 in high-risk zones and \$1,650 in moderate-risk zones. FEMA will raise premiums to reflect actuarial risk at a rate of 18% for residential structures and 25% for commercial policies starting this year.

Building Coverage

- Building structure and foundation
- Critical systems such as electrical and plumbing systems, central air conditioning equipment, furnaces, ventilating equipment, pumps, and machinery for operating pumps

Contents Coverage

- Furniture and fixtures
- Machinery and equipment (critical)
- Personal property

Costs Not Covered by NFIP

- Financial losses caused by business interruption or loss of use of insured property
- Damage caused by mildew or mold that could have been avoided by the owner
- Damage caused by sewer or drain backup unless caused by a flood
- Contents within a basement or below-ground level
- Non-critical equipment

NFIP Information Constraints

Requirements for NFIP coverage and the rules and regulations governing multifamily and mixed-use structures remain unclear. The team found that guidance on mandatory purchase requirements and increased coverage were unclear across different types of multifamily and mixed-use structures (e.g. cooperatives vs. condominiums).

Purchase Requirements: FEMA does not provide information about buildings that are required to have flood insurance or why existing policies purchased insurance. Specifically, resources to better understand purchase requirements would include:

- Buildings that are required to have flood insurance because of their mortgages
- Buildings that are required to have flood insurance because of Federal funding (e.g. affordable housing subsidy)
- Information about why existing policyholders purchased NFIP

Coverage Recommendations: NFIP does not provide clear guidelines as to how much coverage is required and how this may be tied to assessed building value or otherwise measured. FEMA should specify:

- Probable maximum loss calculated with transparent underwriting criteria for existing policies
- Recommended coverage levels for existing policies and new policies upon entrance to program

Expected Premium and Fee Increases: Current policyholders and industry stakeholders have expressed uncertainty about premium increases in the wake of BW-12 and HFIAA. FEMA should identify:

- Expected full risk premium for existing and potential new policies. The current policyholder dataset has a significant amount of missing information on elevation, construction year (pre- or post-FIRM), and structural features that would allow a third party to estimate the risk premium based on the NFIP Flood Insurance Manual
- Projected cost of additional fees allowed by BW-12 and HFIAA

Data on Building Elevations: FEMA should explore low-cost ways to collect building elevation data on a large scale, potentially through other agencies.

Private Flood Insurance

Private flood insurance can be used by multifamily and mixed-use building owners to supplement coverage offered through NFIP. Excess and surplus line carriers who offer private coverage are non-admitted carriers in New York State, and have flexibility in how they offer coverage and to which parties.

What is the structure for private insurance?

Based on both survey results and interviews, owners and managers often reported purchasing a first line of coverage from NFIP and then additional coverage in the form of a private flood insurance policy or endorsement (or rider). Private policies provide: i) higher levels of coverage than NFIP, and ii) additional coverage that NFIP may lack, including business interruption.

Insurance industry professionals reported that private coverage can be obtained after the maximum amount of coverage is purchased from NFIP.

What does private flood insurance cost?

Industry professionals interviewed as part of this scope reported a wide range of costs for private coverage, reflective of a broad spectrum of coverage that may be provided. These costs are only reflective of the current point in the market, and are subject to variation. For instance, brokers provided feedback about comprehensive policies written for properties in high-risk areas costing as much as \$15,000 to \$25,000 annually per million dollars in coverage, while policies more similar in profile to NFIP (without business interruption coverage, for instance) can cost \$3,000 to \$3,500.

How has private coverage changed since Hurricane Sandy?

Insurance professionals noted that there had been a decrease in the private market's appetite to cover properties in the highest-risk areas after a major event, but also that the market has stabilized since Sandy.

Appendix 2: Floodplain Datasets

Methodology for Building the Floodplain Datasets

1. Cut PLUTO data by high-risk floodplain areas

HR&A Advisors (HR&A) created datasets of PLUTO lots in the high-risk areas of the 2007 FIRM, 2013 Preliminary FIRM, and the City's 2020s floodplain projection using ArcGIS Version 9.3. After the clip, records with floodplain area/original lot area < 10% were removed from the analysis.

2. Join auxiliary datasets

Beyond the information available in PLUTO, HR&A was interested in understanding other characteristics such as NYCHA ownership, buildings with affordable housing subsidies, buildings participating in Build it Back, rent stabilized buildings, and flood zone and base flood elevations. Datasets with this information were joined to the master PLUTO lot file by common BBLs (numerical combination of the borough, block, and lot codes) to overlay these building characteristics with the PLUTO lots.

3. Analyze data

HR&A performed data analysis in Microsoft Excel, focusing on determining the universe of multi-family and mixed-use buildings in the floodplain, their physical characteristics, and affordability restrictions.

4. Create survey sample

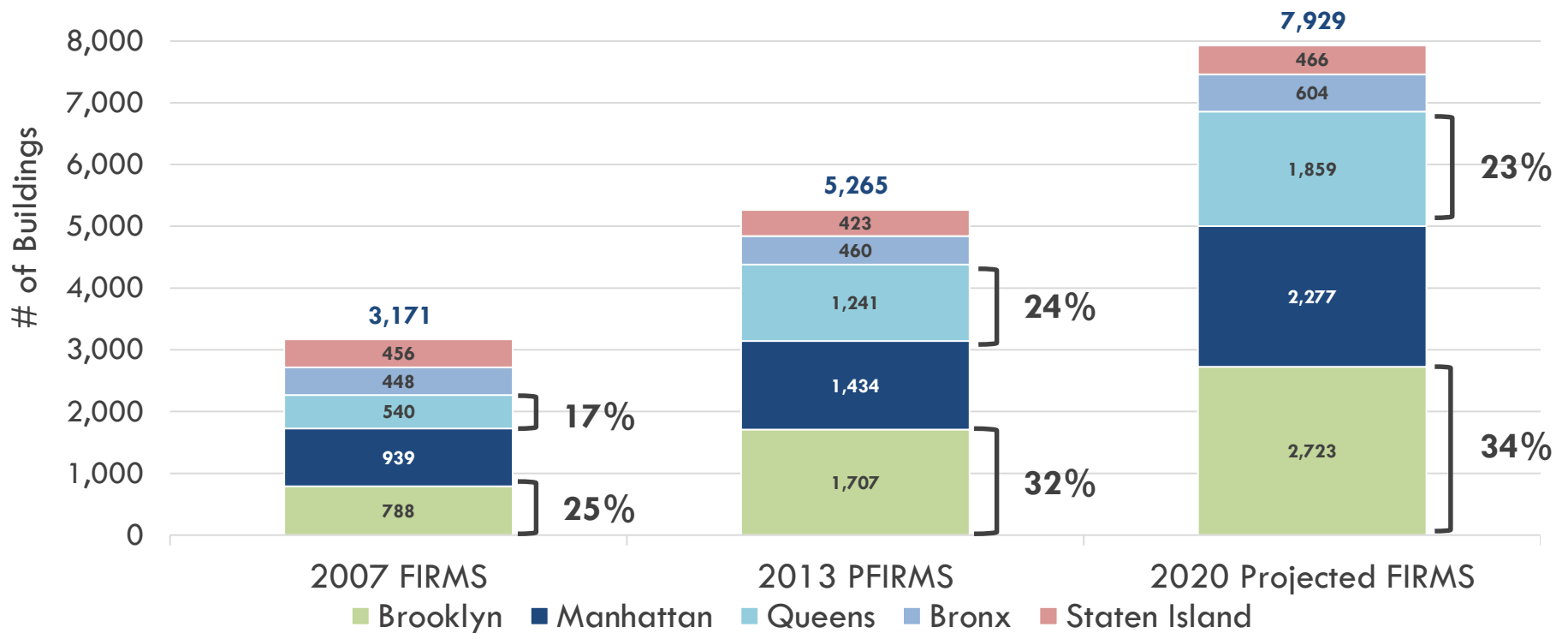
HR&A created typologies based on the building characteristics from buildings in the 2007 floodplain to maximize the number of survey respondents who may have been required to have flood insurance before and after Hurricane Sandy. New York City Department of Housing Preservation and Development (HPD) provided contact information for owners and managers of the buildings.

Key findings are described earlier in this report, while supplemental analysis is included in the following slides.

Multifamily & Mixed-Use Buildings in the Floodplain by Borough

The team analyzed the universe of multifamily and mixed-use buildings in the high-risk areas of the current and future FIRMs to understand where the largest portion of buildings will be affected by rising rates. Based on current projections for the increased floodplain, the largest increase in multifamily and mixed-use buildings in the floodplain will occur in Brooklyn and Queens.

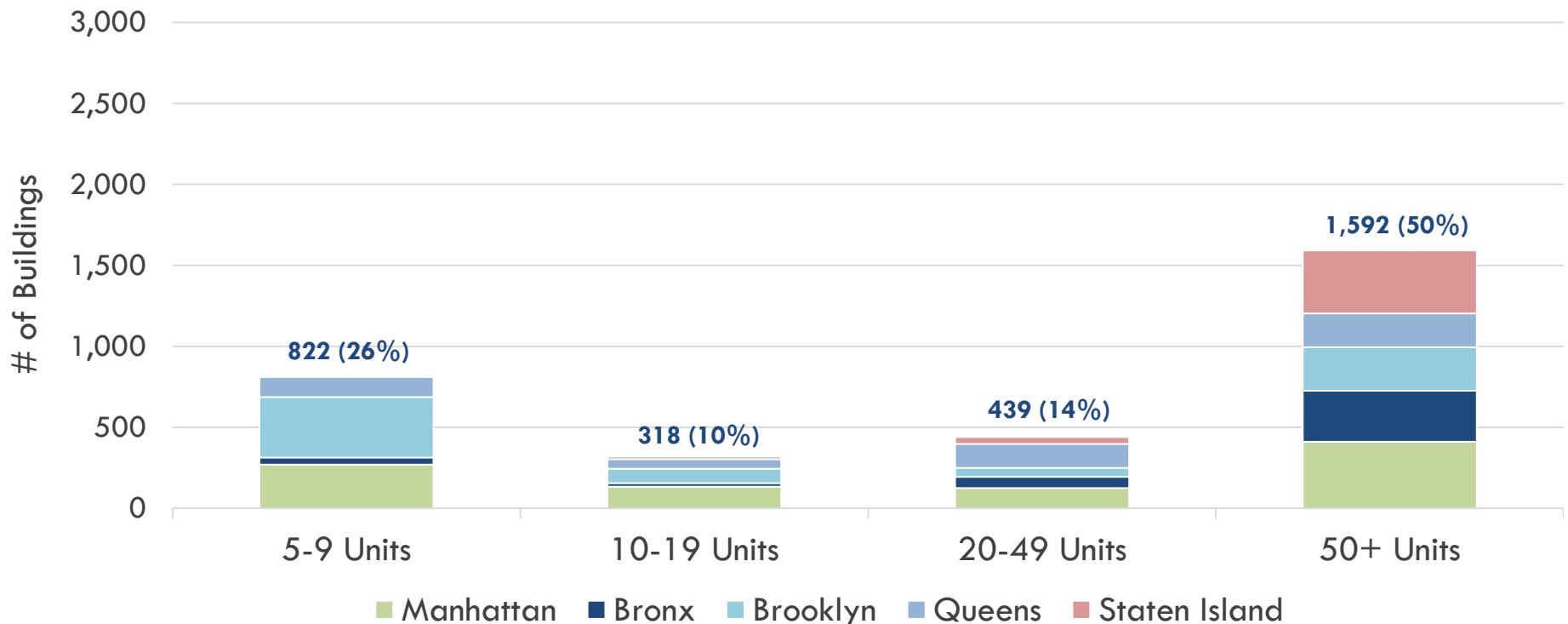
MF and MX Buildings in High-Risk Areas of the Floodplain, By Borough⁵



Multifamily & Mixed-Use Buildings in the Floodplain by Borough & Size

At present, 50% of MF and MX buildings in the high-risk areas of the FIRM contain less than 50 residential units. When flood insurance costs are distributed amongst building residents, tenants in smaller buildings take on a larger share of costs. Policy changes aimed at alleviating insurance cost burdens should recognize the disproportionate share of incremental costs that will be assumed by tenants of small buildings, particularly as flood risks expand and premiums continue to increase.

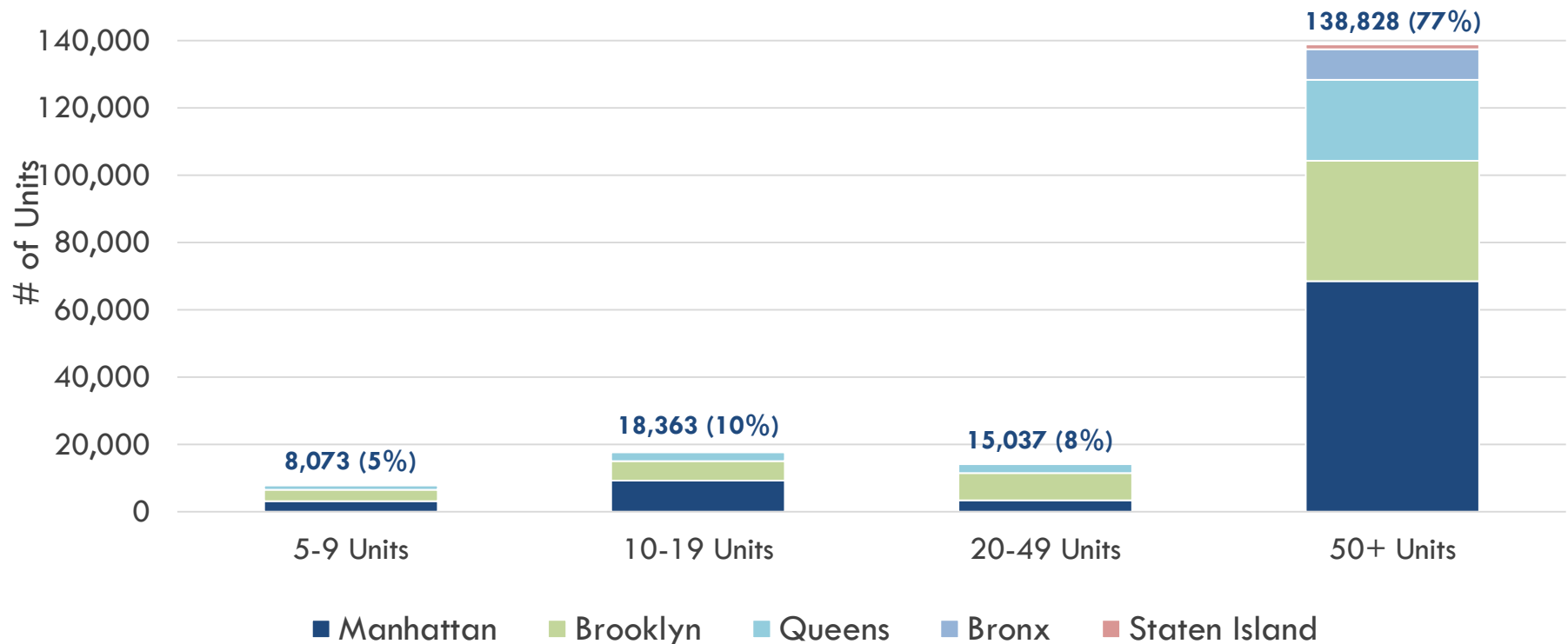
MF and MX Buildings in High-Risk Areas of the 2007 FIRM, By Size of Building⁵



Multifamily & Mixed-Use Units in the Floodplain by Borough & Size

Units are predominantly concentrated within buildings with over 100 total units, particularly in Manhattan. Many of these large developments are NYCHA-owned or campus-style developments including affordable units. Within large buildings, any costs passed through would be applied across a greater number of units.

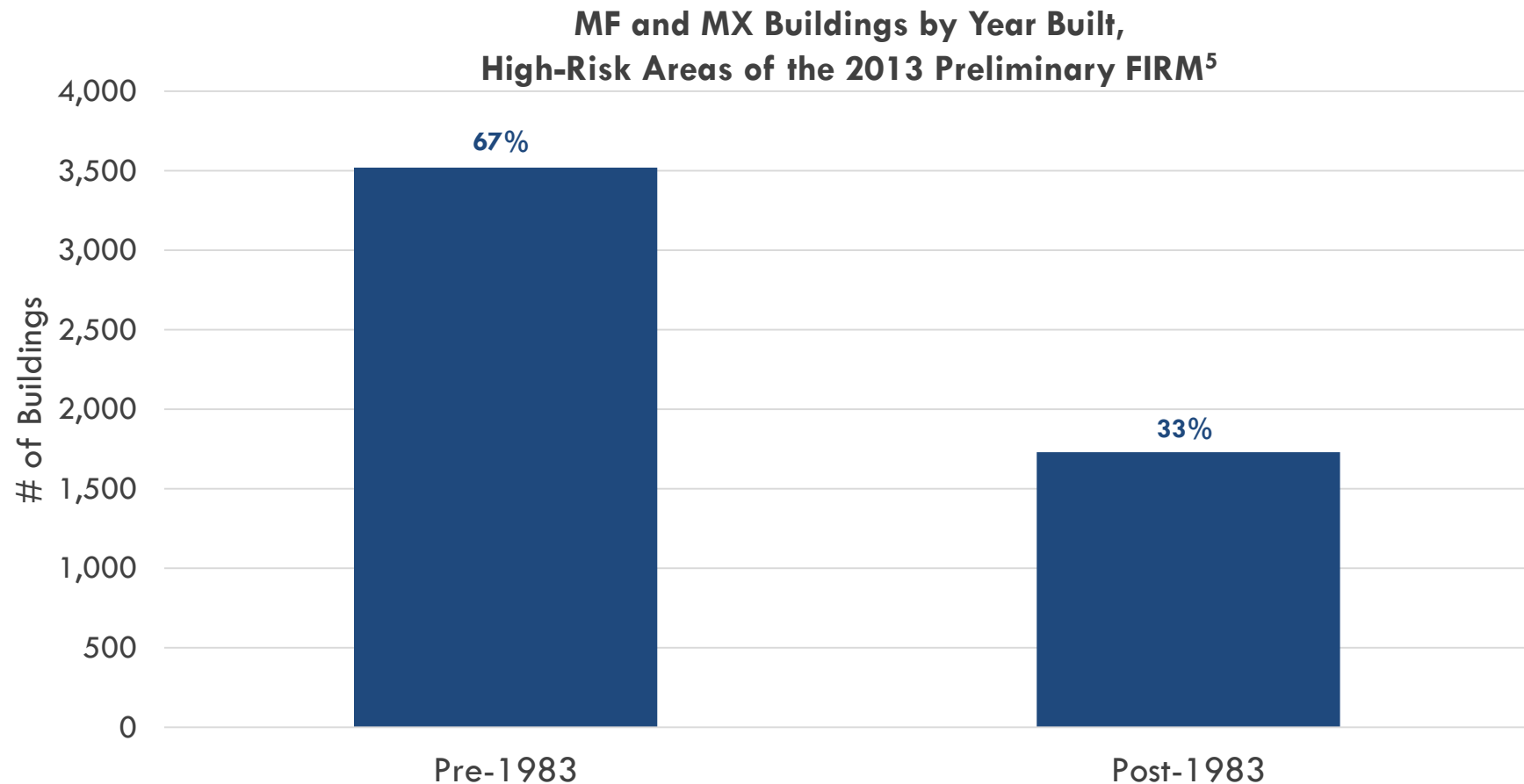
**Residential Units in the Floodplain by Size of MF and MX Building,
High-Risk Areas of the 2013 Preliminary FIRM⁵**



*% indicates total units within buildings of the size indicated on the horizontal axis

Multifamily & Mixed-Use Buildings Built Before and After 1983

Over two-thirds of multifamily and mixed-use buildings in the high-risk areas of the 2013 Preliminary FIRM were built before 1983, the year in which New York City adopted requirements for base flood elevation (BFE) within the building code. Residential buildings constructed prior to 1983 are less likely to be elevated and may face higher flood insurance costs due to greater risk.



Methodology for Examining Regulated Buildings

Information on buildings with regulated units, including affordable units, rent stabilized, and public housing units, is based on three datasets that were joined to the base PLUTO data by common BBLs.

- 1. Furman Center SHIP data** provided by the Moelis Institute for Affordable Housing Policy. HR&A considered all BBLs that had active affordable restrictions.
- 2. Rent stabilized building data** provided by the Rent Guidelines Board. HR&A created a dummy variable to capture all buildings with rent stabilized units. The actual number of stabilized units in each building was not publically accessible.
- 3. New York City Housing Authority (NYCHA) property data** provided by NYCHA. HR&A created a dummy variable for NYCHA records and joined by BBL.

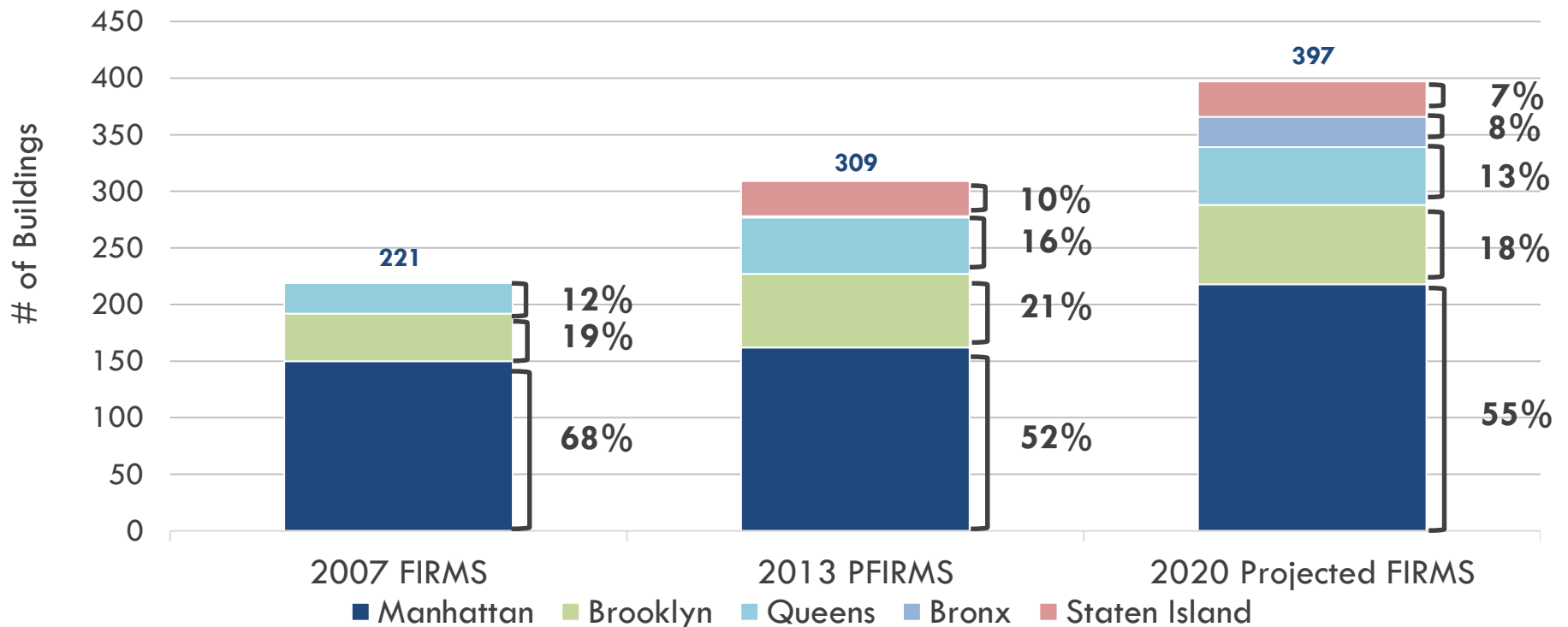
Joining each dataset to the master PLUTO file and clipping by the appropriate floodplain provided information on number of buildings, units, and building typology in each floodplain. Spatially joining the FEMA datasets provided data on NFIP coverage, premiums, and claims for the various types of regulated buildings.

While affordable buildings may not be owned by the City, regulatory agreements with City, State, and Federal agencies restrict owners from increasing rent. Because of rent restrictions, affordable owners may deal with increasing costs by reducing tenant or building services, which may negatively impact quality of life for vulnerable low-income tenants living in the buildings.

Regulated Buildings in the Floodplain by Borough

The team analyzed the universe of affordable multifamily and mixed-use buildings in the floodplain by borough to understand the concentration of at-risk affordable buildings across the City. The majority of affordable buildings are in Manhattan and Queens.

Affordable Buildings in the High-Risk Areas of Floodplain by Borough⁵



Appendix 3: FEMA NFIP Claims and Policyholder Data

FEMA Data Considerations

HR&A Advisors joined three FEMA datasets to the high-risk areas of the 2007 FIRM and 2013 Preliminary FIRM master layer to create a master database for analyzing the characteristics of buildings in the floodplain area. The master database provided information on all of the 2014 and 2011 policyholders in New York City and claims filed from 1983-2014 and was used to address the following questions:

- How many multifamily and mixed-use buildings in the floodplain have NFIP?
- How did the number of multifamily and mixed-use policyholders, cost of premiums, and amount and types of coverage change after Hurricane Sandy?
- What was the cost of damage and payout on claims filed by multifamily and mixed-use policyholders related to Hurricane Sandy?

The FEMA datasets did not contain coded information for the building, block, and lot (BBLs) of each record, so were joined spatially rather than through a common field of BBLs. The latitude and longitude reported in each dataset often did not align the record with the correct tax lot. Thus, the team geocoded the address field and joined each record to the closest tax lot within 15 feet. The geocoding process dropped records (see table below). For this reason, we use the results descriptively in terms of percentages of buildings rather than quantifying the exact number of buildings with policies.

FEMA Dataset	Successful Percentage of Geocoded Records
2014 Policyholders	77%
2011 Policyholders	78%
Claims Information for New York City	64%

NFIP Claims After Hurricane Sandy

In addition to analysis of take-up rates and coverage, NFIP data included important information about past claims. While this information does not speak to challenges associated with future rising costs, the results indicate that under-insured buildings and low payouts to multifamily and mixed-use buildings may also be of concern to the City, and put multifamily and mixed-use housing stock at risk of higher costs for damage and slower recovery.

As of February 2013, New York City home and building owners filed **16,264 claims** for losses related to Hurricane Sandy.¹⁴ Of claims by properties within the high-risk areas of the 2013 preliminary FIRM area, approximately 6% of the NFIP claims filed for Sandy damage were for multifamily or mixed-use buildings. While the average cost of damage to multifamily and mixed-use buildings was nearly four times as much as it was for one and two family homes, claims data indicated that NFIP was only able to cover 66% of the cost.

Hurricane Sandy NFIP Claims in the 2013 Preliminary FIRM Area⁶

Multifamily & Mixed-Use Buildings

\$190,550

Average Sandy
Damage

66%

Average Percent of
Damage Paid out
by NFIP Claim

One to Four Family Buildings

\$59,100

Average Sandy
Damage

100%

Average Percent of
Damage Paid out
by NFIP Claim

NFIP Coverage Levels

Less than half of multifamily and mixed-use buildings in the high-risk areas of the 2007 FIRM area have NFIP. Coverage is even more sparse in the 2013 Preliminary FIRM area. If adopted, the number of buildings with NFIP may increase as buildings with mortgages are required to purchase flood insurance.

Average building coverage in the high-risk 2007 FIRM areas is slightly more than half of this maximum of \$500,000. In the high-risk 2013 Preliminary FIRM areas, coverage is about marginally higher at \$287,900. The average premium in the high-risk areas of the 2007 FIRM is over 32% higher than the average premium in the high-risk areas of the 2013 Preliminary FIRM.⁶

Current Coverage and Premiums	High-Risk Areas of the 2007 FIRM	High-Risk Areas of the 2013 Preliminary FIRM
Average Premium, 2014	\$3,430	\$2,600
Average Building Coverage, 2014	\$280,000	\$287,900
Percent of MF and MX Buildings with NFIP	42%	32%

NFIP Coverage By Typology in Current High-Risk Flood Zones

Multifamily and mixed-use buildings in the **current A, AE, and A1-A50 zones, based on the 2007 FIRM**, have higher premiums than buildings in lower flood risk areas. The analysis below contains a summary of NFIP policyholder data for the buildings in each typology, but due to available data, meeting the appropriate sample size is not possible for all categories.

2011 Premiums and Coverage, High-Risk Flood Zones, High-Risk Areas of the Preliminary FIRM⁶

Units	Multifamily						Mixed-Use (Less than 75% Residential)					
	Market			Affordable			Market			Affordable		
	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage
5-19 Units	182	\$2,829	\$284,168	1	\$2,158	\$250,000	30	\$2,978	\$278,677	0	NA	NA
20-49 Units	34	\$1,609	\$217,849	0	NA	NA	7	\$4,664	\$142,857	0	NA	NA
50-99 Units	27	\$3,186	\$271,006	2	\$1,012	\$125,000	0	NA	NA	1	\$2,158	\$250,000
100-499 Units	35	\$8,315	\$398,056	13	\$1,414	\$288,369	2	\$1,044	\$169,200	0	NA	NA
500+ Units	16	\$2,259	\$268,750	3	\$2,905	\$250,000	0	NA	NA	0	NA	NA

2014 Premiums and Coverage, High-Risk Flood Zones, High-Risk Areas of the Preliminary FIRM⁶

Units	Multifamily						Mixed-Use (Less than 75% Residential)					
	Market			Affordable			Market			Affordable		
	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage
5-19 Units	220	\$4,044	\$283,672	2	\$3,262	\$300,000	33	\$4,107	\$287,648	0	NA	NA
20-49 Units	39	\$3,656	\$341,817	1	\$983	\$500,000	8	\$8,913	\$290,625	0	NA	NA
50-99 Units	27	\$3,888	\$344,092	1	NA	\$250,000	0	NA	NA	0	NA	NA
100-499 Units	36	\$3,970	\$300,669	15	\$2,421	\$405,002	3	\$1,437	\$167,000	0	NA	NA
500+ Units	17	\$3,705	\$308,824	4	\$5,412	\$268,750	0	NA	NA	0	NA	NA

NFIP Coverage By Typology in Current Moderate-Risk Flood Zones

Multifamily and mixed-use buildings located in the **current B,C, and X zones, based on the 2007 FIRM**, have lower premiums, but as the floodplain area expands, these buildings may be categorized as part of a higher risk zone, making them at risk of large increases in premium rates. As is the case in the prior slide, meeting the appropriate sample size to draw conclusions from this data is not possible in many categories.

2011 Premiums and Coverage, Moderate-Risk Flood Zones, High-Risk Areas of the Preliminary FIRM⁶

Units	Multifamily						Mixed-Use (Less than 75% Residential)					
	Market			Affordable			Market			Affordable		
	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage
	5-19 Units	70	\$595	\$222,092	0	NA	NA	2	\$2,008	\$137,500	0	NA
20-49 Units	26	\$884	\$236,551	1	\$345	\$250,000	0	NA	NA	0	NA	NA
50-99 Units	11	\$2,630	\$200,000	0	NA	NA	1	\$5,583	\$500,000	0	NA	NA
100-499 Units	10	\$505	\$116,000	2	\$961	\$125,000	0	NA	NA	1	\$380	\$250,000
500+ Units	6	\$1,097	\$208,333	1	\$388	\$250,000	0	NA	NA	0	NA	NA

2014 Premiums and Coverage, Moderate-Risk Flood Zones, High-Risk Areas of the Preliminary FIRM⁶

Units	Multifamily						Mixed-Use (Less than 75% Residential)					
	Market			Affordable			Market			Affordable		
	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage	N	Avg. Premium	Avg. Coverage
	5-19 Units	177	\$707	\$253,554	5	\$1,596	\$410,000	11	\$1,289	\$227,727	0	NA
20-49 Units	57	\$1,046	\$284,448	4	\$935	\$256,250	2	\$344	\$125,000	0	NA	NA
50-99 Units	35	\$1,857	\$310,286	1	\$1,281	\$250,000	0	NA	NA	2	\$452	\$375,000
100-499 Units	26	\$617	\$188,413	8	\$680	\$356,250	0	NA	NA	0	NA	NA
500+ Units	6	\$1,331	\$171,667	2	\$417	\$250,000	0	NA	NA	0	NA	NA

Direct Interview Example: Impact of Affordability

The survey effort targeted affordable buildings with and without an elevator to understand how perceptions of risk and rising flood insurance rates varied by building size. Unfortunately, the survey did not result in any completed responses from buildings without an elevator.

East Harlem Supportive Housing Affordable Multifamily Building

Building Description: ~40 units of supportive housing for families

Type of Policy: Private flood insurance. Respondent was unable to provide information on the premium of coverage.

Sandy Damage? Facade was cracked, and as a result there was wall damage, water damage, and damage to interior wall. Company was worried about the premium going up, so they covered costs themselves instead of making a claim.

Strategy to Deal with Rising Costs: “Don’t know”

Coney Island Senior Housing Affordable Multifamily Building

Building Description: ~80 units of senior housing

Type of Policy: NFIP - \$500K of building coverage with \$100K of contents coverage. Premium rate has not increased substantially.

Sandy Damage? Building had damage to first floor and filed claim on NFIP policy. The building received payout of close to coverage limit, which was \$250K at time of storm

Strategy to Deal with Rising Costs: Would set up an operating reserve budget subsidized by income from existing Section 8 award

Appendix 4: Outreach

Outreach

10+

HR&A held a series of focused conversations with individual representatives and small groups at the outset of the study. Discussions with multifamily and mixed-use building owners and managers were aimed at understanding which individuals within these organizations hold information about flood insurance, and establishing a baseline understanding of rates, coverage, and perceptions around mitigation. The team quickly came to understand that information about flood insurance policies resides with different individuals within each organization, or largely with insurance brokers. Given this early finding, we turned to broker and industry expert conversations as a key source of data collection. Brokers shared their experiences with multifamily properties, including a lack of regularity and predictability for rates for these properties. Enterprise's Learning Collaborative for Multifamily Housing Resilience members provided a first line of testing for the team's survey.

1,000+

Professional industry organizations supported distribution of the team's survey to multifamily and mixed-use building owners and managers. Three professional organizations distributed invitations to over 1,000 members to respond to the survey.

488

A second phase of survey implementation was completed by phone. The team called 488 multifamily and mixed-use building owners and managers to discuss the survey, and when possible, perform the survey by phone. Call recipients were generated through the team's database of multifamily and mixed-use buildings in the floodplain, and supplemented by contact information provided by HPD.

62

Despite robust outreach efforts, responses were received for only 62 buildings.

Acknowledgements

We are grateful to all survey respondents who provided their input and policy information during our survey outreach and industry professionals who provided input on the current state of the insurance industry.

In particular, we thank the members of Enterprise's Learning Collaborative for Multifamily Housing Resilience, who engaged in direct discussions about their policies and reviewed survey questions with the team. They include:

- Asian Americans for Equality (AAFE)
- Bailey House
- CAMBA Housing Ventures
- Carroll Gardens Association
- Community Investment Strategies (CIS)
- Fifth Avenue Committee (FAC)
- Jewish Association Serving the Aging (JASA)
- Jersey City Housing Authority
- Lower East Side People's Mutual Housing Association (LESPMHA)
- Lott CDC
- Services for the UnderServed (SUS)
- Triple C Housing

Appendix 5: Survey Methodology

Survey Methodology

Survey Design

The design of survey questions was a concentrated effort between the team and the Mayor's Office of Recovery and Resiliency (the Client). Agreed upon questions and survey design were intended to:

1. Maximize the frequency of survey responses;
2. Ensure consistency and comparability of replies;
3. Extract study-relevant data;
4. Reach a diverse cohort of multifamily owners/managers & insurance brokers.

The survey questions sought to capture data regarding multifamily building damage after Hurricane Sandy, the nature of flood insurance policies held by owners, mitigation efforts, along with changes to flood insurance policies and rates since Hurricane Sandy.

Outreach Process

The outreach process was conducted in three tiers:

Tier 1. The online format of the survey was first tested with a pilot group of users. The pilot group consisted of trusted working partners from a database provided by Enterprise Community Partners, Inc. Post-testing, on-line survey was sent to a listserv of property owners and managers compiled from Enterprise's contacts of multifamily owners and managers. Additionally, a group of partner organizations was engaged in order to reach a broad and diverse sample of multifamily building owners across the five boroughs.

Survey Methodology

Tier 2. Direct phone calls were made to property managers and owners. A call list was derived from the database of multifamily and mixed-use buildings in the floodplain, as described in Appendix 1. Additionally, a list of property manager and owner contacts who submitted applications to the NYC Build It Back program was obtained from the New York City Department of Housing Preservation and Development (HPD), and provided additional contacts for outreach and follow up.

Survey questions pertaining to building damage after Hurricane Sandy, the nature of flood insurance policies held by owners, mitigation efforts, and changes to flood insurance policies and rates since Hurricane Sandy were asked directly, with an emphasis on gathering insurance broker contact information for verification and additional information.

Direct phone outreach focused on obtaining a sample that represented a variety of building types, across all the boroughs. The sample call list maintained a weighted average of building typologies and locations across boroughs that was representative of the source database of contacts to ensure that the diversity of building typologies and locations across boroughs were preserved during the phone outreach process. Building typology mix included:

Building Typologies	
A Multifamily/Elevator/Market Rate	E Mixed-use/Elevator/Market Rate
B Multifamily/Elevator/Affordable	F Mixed-use/Elevator/Affordable
C Multifamily/No Elevator/Market Rate	G Mixed-use/No Elevator/Market Rate
D Multifamily/No Elevator/Affordable	H Mixed-use/No Elevator/Affordable

Survey Methodology

Tier 3. Direct phone calls were made to insurance brokers. Broker contacts were gathered through owner and manager outreach efforts, along with permission to contact said broker. Outreach focused on cross-checking information obtained from owner and manager outreach, along with gaining a more nuanced understanding of the overall flood insurance environment for multifamily buildings in New York City.

Analysis of Responses

While primary quantitative data obtained through survey efforts was not sufficient to produce a statistically significant sample, data did uncover trends in misinformation or lacking clarity around the challenges and opportunities facing property owners and managers with regard to their flood insurance policies. Qualitative data obtained through phone outreach and open-ended survey questions provided supplementary data that informed the recommendations of this report.

A summary of survey responses and information gathered during interviews follows, and a record of survey questions and response rate for each question is attached to the digital version of this report, along with the survey in its final format.

Survey Questions

Insurer/Broker Contact Information

- Please provide the following information for the company that currently provides flood insurance for the building:
- May we contact your broker to collect information about your policy?

Questions about Your Commercial Property Insurance Policy

- Did you have any damage to your building as a result of Hurricane Sandy?
- What was the nature of the damage?
- Did you make a property policy insurance claim for the building after Sandy?
- Did you collect on the property policy insurance claim after Sandy?
- How much (in dollars) of the claim was paid out?

Mitigation Questions

- Since Hurricane Sandy, have you performed any mitigation on the property?
- Which of the following apply?
 - Elevated critical systems (boiler, mechanicals, electrical, etc.)
 - Flood proofed critical equipment (through installation of submarine doors, flood gates, etc.)
 - Elevated a portion or all of your structure
 - Other

Survey Questions

Mitigation Questions (Continued)

- Has your insurance broker or company indicated that these strategies will result in a decrease in flood insurance costs?
- What will the building's new premium be?

Question about Your Flood Insurance Policy

- Did the building have a flood insurance policy in place before Sandy?
- What was your building's flood insurance policy before Sandy?
 - A National Flood Insurance Program (NFIP) policy
 - Private flood policy
 - Commercial property insurance (including riders)
 - Don't know
- Did the flood insurance claim for Sandy cover all of the building's losses due to the storm?
- If the flood insurance claim did not cover all the building's losses or the building did not make a flood insurance claim, how did the building fund the cost of Sandy repairs?

Survey Questions

Questions about Changes to Your Flood Insurance Policy

- Have you renewed the building's flood insurance policy since Hurricane Sandy?
- Has the building's flood insurance rates changed since Hurricane Sandy?
- If the building's flood insurance rates changed since Sandy, please tell us by how much.
- If the building's flood insurance coverage changed since Sandy, please tell us by how much. Specify dollar amount or note "I don't know". If coverage has not changed, leave this question blank.
- If flood insurance costs were to rise substantially, or continue to rise, how would the building cover this expense?
 - Increase rents/fees
 - Reduce building maintenance
 - Forgo planned capital improvements
 - Utilize outside sources of capital to cover cost
 - Other
 - Building could not cover increased cost

Survey Responses

Survey responses provided useful information, but also revealed a lack of clear, standard information on flood insurance for those managing risk for multifamily and mixed-use buildings.

Respondents struggled to answer survey questions for a variety of reasons. Out of 62 survey responses:

- Most were unsure what their building's flood insurance policy was before Hurricane Sandy, if there was a policy at all.
- 9 reported having NFIP, 4 reported having private coverage, 1 did not know as ownership had changed.

There was also a lack of information regarding property policy insurance claims after Sandy:

- 9 respondents reported making property policy insurance claims for the building after Sandy, while 8 reported that no claims were made.
- 9 respondents collected on property insurance claims, though 3 of these did not report making a claim to begin with.

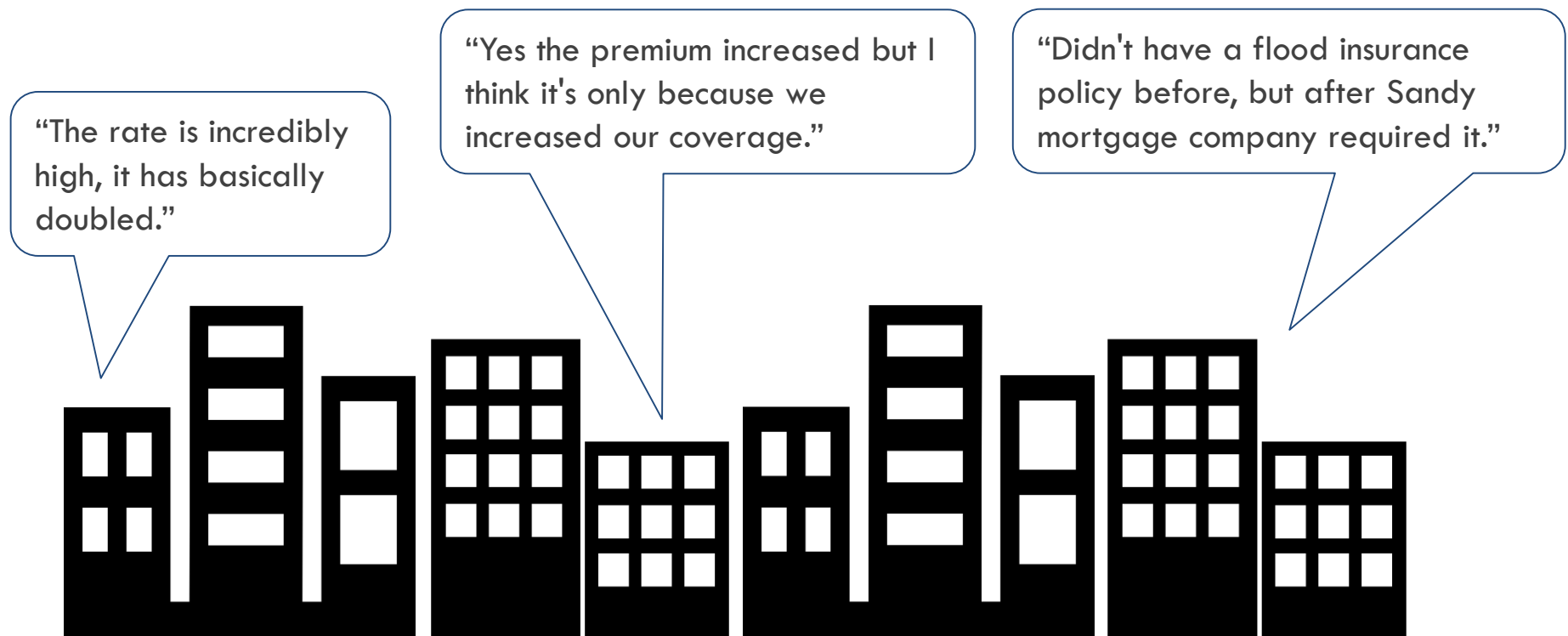
Most respondents did not provide information about changes to their coverage and rates. Of those who did:

- 5 respondents reported that the flood insurance claims did not cover all of the building's losses due to Sandy; 2 of these were unsure how far it fell short.
- 3 respondents needed to talk to their insurance agents for more information.

Survey Response Example: Rising Costs

Only 19 respondents definitively answered whether or not they renewed their flood insurance policies after Hurricane Sandy. Of those, 9 had renewed or purchased new policies.

The degree of cost increase varied, and some respondents noted that costs had increased as they increased coverage, though some did not know the source of their increase. The response rate was not robust enough to draw conclusions that could be applied to the entire building universe. Example responses include:



Appendix 6: Resiliency Measures

Physical Resiliency Measures

ARUP has developed a Resiliency Measures Matrix to understand mitigation by cost of implementation and contributions to resiliency, based on the characteristics of resilient design criteria noted earlier in this report. The matrix uses check marks to represent the level of improvement in resiliency provided by each measure. The qualitative scale is described below, and the full matrix of mitigation options is included on the following two pages:

- ✓ Minimum contribution to enhancing the building's resiliency to disruptions. Critical building systems are still vulnerable to outages during climate events or power outages. Does not allow the building to rebound quickly from disruptions.
- ✓ ✓ Mitigates damage to critical systems and the building structure but the building is still vulnerable to outages during climate events or power outages. Increases the building's ability to rebound from certain climate disruptions but does not address the vulnerability to power and heat outages.
- ✓ ✓ ✓ Protects critical building systems and allows critical systems to function in times of local disturbance and allows the building to rebound quickly from disruptions.

Physical Resiliency Measures

Description	Notes	Pros	Cons	Cost Range	Applicable Building Types	Contributes to Resiliency
Provide hookups for temporary generators and boilers	Provides convenient hookup connections for temporary generator and boiler to provide electric and heat in the event of a power outage or boiler failure	Quick connection for temporary power and heat Minimizes disruption and down time to building during a power outage or boiler failure	Cost Even with hookups, it can take time for mobile generators to arrive during or after emergencies	\$ - Operational & capital costs	All types	✓✓✓
Install backwater valves on storm and sanitary connections	Mitigates backflow of sewer into cellar, but leaves cellar prone to flooding from gaps in building structure.	Mitigate sewer backflow	Cellar still prone to flooding. Backflow preventers require maintenance	\$ - Operational & capital costs	All types	✓
Install outdoor natural gas emergency generator	Keeps essential building systems operational during a power outage	Allows tenants to occupy the building during a power outage	Noise from generator may be disruptive to tenants and neighbors Frequent maintenance and testing	\$\$ - Operational & capital costs	All types	✓✓✓
Protect Elevators	Install vents in elevator shaft to allow flood water to enter and exit Relocate elevator control above design flood elevation	Provides protection to elevator during flood Mitigates damage	Installation disruptive to elevator use	\$\$ - Capital costs	All types	✓
Install flood barriers at entrances	Mitigates flooding into the cellar from grade level	Mitigates flooding from street level	Costs Aesthetics Barriers must be manually installed before climate event	\$\$ - Operational & capital costs	All types	✓
Flood damage resistant materials	Replace materials below design flood elevation with flood resistant damage materials	Minimizes material replacement post flood	Costs	\$\$ - Capital costs	All types	✓

Physical Resiliency Measures

Description	Notes	Pros	Cons	Cost Range	Applicable Building Types	Contributes to Resiliency
Dry flood-proof safe room in cellar/basement for mechanical and electrical systems only	Provides flood protection for the mechanical and electrical equipment in the basement/cellar	Increased resiliency to flooding	Equipment located below base flood elevation	\$\$\$ - Capital costs	All types	✓✓✓
Dry flood-proof cellar	Dry flood-proof the entire basement	Increased resiliency to flooding	Equipment located below base flood elevation	\$\$\$ - Capital costs	All types	✓✓✓
Relocate mechanical and electrical equipment to new above-grade mechanical room	Would increase the resiliency of the heating and electrical infrastructure by moving the boiler and electrical service out of the cellar to the backyard and elevating equipment above the base flood elevation	Boiler and electrical equipment located above base flood elevation	Takes up usable space in backyard	\$\$\$ - Capital costs	All types	✓✓✓
Relocate Mechanical and Electrical Equipment to Roof	Would increase resiliency by locating equipment above base flood elevation	Boiler and electrical equipment located well above flood zone	Routing services up to roof would impact tenants. Removing heavy equipment off of roof would require a crane	\$\$\$ - Capital costs	All types	✓✓✓

Endnotes

Endnotes

1. The year in which FEMA released its first FIRMs for New York City, and the City began to deliberately incorporate resiliency measures into building code, per “A Stronger, More Resilient New York.”
2. City of New York, “A Stronger, More Resilient New York” (2013), p. 98
3. According to FEMA, a 25% increase applies to pre-FIRM business properties, defined as properties containing less than 75% residential uses within a structure containing other uses that was built prior to 1983. The 25% increase also applies to substantially damaged pre-FIRM properties, non-primary pre-FIRM residences, and severe repetitive loss pre-FIRM properties. Most post-FIRM policies, including business and residential, will be subject to an increase of up to 18%. However, post-FIRM properties also may face a 25% increase if they had been grandfathered into X zone rates when a map change occurred.
4. Floodplain designations, defined by FEMA, include:
 - High-risk areas, those in zones beginning with A or V, and commonly referred to as the Special Flood Hazard Area (SFHA), or areas with a 1% chance of a flood event in any given year (also known as the 100-year floodplain).
 - Moderate-risk areas, those zones designated as B, or X/shaded X (also known as the 500-year floodplain).
 - Minimal-risk zones, designated C or unshaded X.
5. HR&A floodplain dataset, created with NYC PLUTO data, SHIP data, and shapefiles for the high-risk areas of the 2007 FIRM, 2013 PFIRM, and 2020s projected floodplain, provided by ORR. Note that HR&A used the 2013 PFIRM prior to the 2015 update of these maps.
6. HR&A analysis of FEMA NFIP policyholder and claims data, provided by ORR. This data was joined to the HR&A floodplain dataset, created with NYC PLUTO data, SHIP data, and shapefiles for the 2007 FIRM, 2013 PFIRM, and 2020s projected floodplain, provided by ORR. Analysis utilized the 2013 Preliminary FIRM boundaries and current floodplain designations (as the 2013 Preliminary FIRM designations are under appeal by the City of New York).
7. Due to variations in the definition of multifamily and rounding procedure, figures throughout the report may vary slightly from those in “A Stronger, More Resilient New York,” where similar analysis was performed.
8. Affordable housing in the floodplain (including a breakdown by regulation) was studied in detail by the NYU Furman Center. NYU Furman Center, “The Price of Resilience: Can Multifamily Housing Afford to Adapt?” (2014).

Endnotes, Continued

9. “Regulated” buildings contain rent stabilized and controlled, affordable (receiving City, State, or Federal subsidy), or public housing units. “Affordable” buildings refer specifically to the buildings that have received City, State, or Federal subsidy related to affordable housing regulations.
10. The Biggert-Waters Flood Insurance Reform Act of 2012 (BW-12) immediately repealed subsidies for pre-FIRM severe repetitive loss properties, substantial improvement/substantial damage properties, and non-primary residential properties.
11. HR&A survey of multifamily and mixed-use owners, managers, and brokers; interviews with industry stakeholders
12. FEMA, “National Flood Insurance Program June 1, 2014, Program Changes: A Summary.” Web.
13. Reflected in April 2015 NFIP Flood Insurance Manual Change Package as maximum deductible for residential structures. May not be representative of all structures.
14. RAND, “Flood Insurance in New York City Following Hurricane Sandy” (2013), p. 22.
15. “Design Flood Elevation” (DFE) is the Base Flood Elevation (BFE) plus a mandated amount of additional height (freeboard) defined by the NYC Building Code. DFE is discussed in detail by the NYC Department of City Planning. NYU Department of City Planning, “Designing for Flood Risk” (2013).

Multifamily Flood Insurance Affordability Study

Final Report
April 2016

