



Insurance

We are all moved by natural disasters. We sympathize with those who fall victim to these dreaded events, we reach out with help and donations—and we hope that such catastrophes will not touch us directly. When they do, as New Yorkers recently learned with Sandy, these events can be devastating. Insurance can help provide people and businesses with financial protection against such catastrophes. Insurance also can benefit the city as a whole, reducing the need for government disaster assistance and minimizing the impact of shocks

that otherwise could undermine the stability of communities and the local economy.

Beyond the hardships that these catastrophes inflict, there are very real economic costs. Nationally, these costs have risen dramatically in recent years. In fact, 10 of the 12 most costly hurricanes in US insurance history occurred during the past decade—with uninsured losses even greater than insured losses for many of these disasters. Several factors have contributed to these rising costs. One is the

increase in the frequency and severity of extreme weather. Another is the growth of metropolitan centers; with more Americans living close together, when a disaster strikes, it affects more people. The increased costs of natural disasters are also due to the rise in the sheer number and value of properties in vulnerable areas.

Sandy likely will become the third most expensive hurricane in United States history in terms of losses covered by insurance (after Katrina in 2005 and Andrew in 1992). The storm is estimated to have caused a total of approximately \$19 billion in insured losses covered by private insurers and between \$12 and \$15 billion in insured losses covered by the National Flood Insurance Program (NFIP), a program managed by the Federal Emergency Management Agency (FEMA). (See chart: *Hurricanes With Highest Insured Losses in US History*)

Notwithstanding the high insured losses incurred during Sandy, in fact, thousands of New Yorkers whose homes and businesses were inundated by the storm did not have adequate flood coverage—or any coverage at all. In part, this was because many New Yorkers did not know they needed a separate policy for flood insurance, or simply chose not to insure against flood risks. For other owners, the problem was that they did not know that their properties were at risk. This was attributable to the fact that the Flood Insurance Rate Maps (FIRMs) in effect when Sandy struck (i.e., the maps created by FEMA to delineate areas at risk of flooding) were outdated. They not only had not been meaningfully revised since 1983, but they also significantly understated the flood risks in New York. In fact, more than half of all buildings in areas inundated by Sandy were outside of the 100-year floodplain—the area that has 1 percent or greater chance of flooding in any given year—indicated on these maps.

In addition to highlighting the importance of flood insurance, Sandy also brought to the forefront the impact that recent reforms to the NFIP will have on New Yorkers. These reforms, enacted by the Biggert-Waters Flood Insurance Reform Act of 2012 (Biggert-Waters), require changes to the NFIP that will strengthen the financial solvency of the program, which had been \$18 billion in debt to the US Treasury prior to Sandy. These changes will phase out the program's policyholder subsidies, which, in many cases, had kept premiums well below actuarial rates. As a result, rates will be rising for many policyholders throughout New York—something that would have occurred even without Sandy.

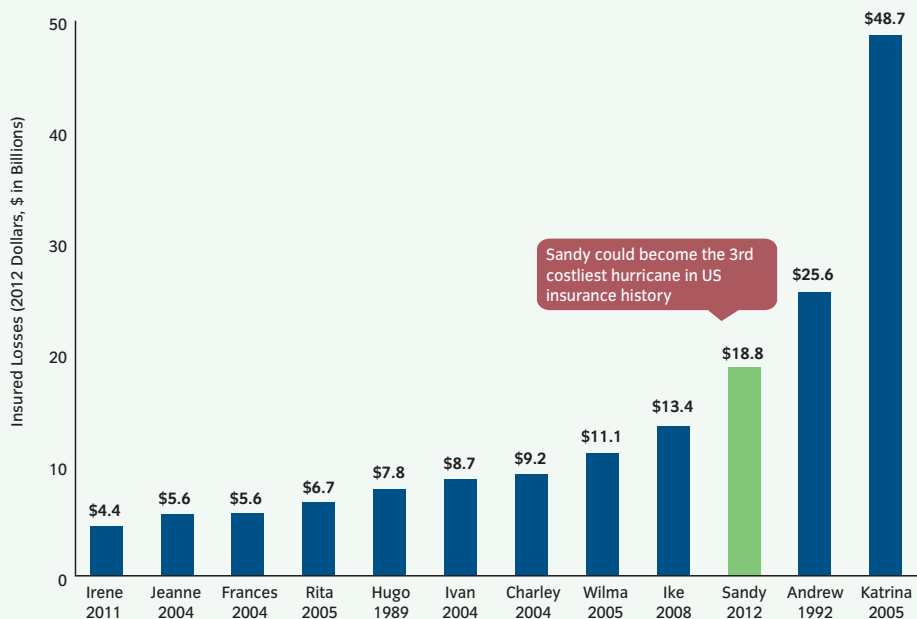
Compounding this is the fact that, after Sandy, FEMA released Preliminary Work Maps (PWMs)



Blackout in Manhattan

Credit: Dan Nguyen

Hurricanes With Highest Insured Losses in US History



Source: Insurance Information Institute

to provide more updated information on flood risk in New York City. The new maps show a significantly expanded 100-year floodplain compared with the 1983 maps, with approximately 32,000 more buildings in the floodplain (an increase of 91 percent). As these PWMs are turned into regulatory maps, it is likely that many more New Yorkers will be deemed to be exposed to flood risk, and, if they have Federally backed mortgages, they will be required to buy flood insurance—just as rates are increasing dramatically.

In keeping with the overarching goals of this report—which are to minimize loss and disruption from climate hazards and enable the city to bounce back quickly if damage is sustained—the City will propose several ways to address the insurance challenges described above. In doing so, the City will avoid falling into a common post-disaster trap: namely, calling for subsidized coverage, which may provide short-term benefits to the insured, but contributes to other adverse long-term consequences, including encouraging high-risk behavior. Instead, the City will propose a series of reforms to the NFIP that will encourage flood mitigation by, and offer commensurately lower premiums to, those who obtain flood insurance; create lower-cost flood insurance products for those who are vulnerable to flooding but are not required to obtain insurance; and advocate for the creation of premium assistance measures to help low-income New Yorkers afford flood insurance.

How the Insurance System Works

Insurance transfers risk from an individual policyholder to a larger risk-sharing pool. The insurance system is based on the principle of risk-based premiums: those with greater risk (i.e., those more likely to suffer damage and require a claims payment from an insurance provider) should pay higher premiums than those with less risk. Thus, an owner of a property in an area prone to floods and hurricanes should pay more for insurance than the owner of a property in an area with less risk. The reason insurance providers must charge risk-based rates is that these rates are necessary for providers to remain financially solvent and have sufficient resources to pay policyholder claims in the event of losses.

Because of the delicate balance that providers must strike, regulators oversee the licensing of insurance companies, monitor insurers' financial health and reporting, and review their market conduct. State governments are the primary regulators of insurance companies. In New York State, the Department of Financial Services is the primary regulatory body that oversees the

Sandy's Impacts Outside of the NFIP

Sandy is likely to have impacts on insurance coverage in New York beyond the National Flood Insurance Program (NFIP). However, those impacts are not expected to be nearly as dramatic as impacts to those who have, or soon will be required to have, policies through the NFIP. Accordingly, this chapter focuses primarily on the NFIP. The private insurance market is generally expected to remain stable for two reasons. First, while homeowners insurance rates may rise post-Sandy, rate increases in this market generally must be approved by State government insurance regulators, who work to ensure fair and reasonable pricing.

Second, in the commercial property insurance market, early analysis indicates that Sandy's impact is likely to be modest overall. A May 2013 report by the insurance brokerage firm Marsh found that rates in this market have remained relatively stable and competitive through the first quarter of 2013—even if providers were tightening some policy terms and conditions. According to early indications from Marsh, this stability generally continued through the second quarter of 2013. These observations are largely backed up by a recent study by Advisen, a global insurance data and analytics provider, which found that even though insured losses from Sandy were high, they were unlikely to lead to sharply higher premiums for a sustained period of time. According to Advisen, though it was possible that premiums would increase in the short term—especially for properties in flood-prone regions—the property-casualty insurance market remained abundantly capitalized, which likely would soften the future financial impact of Sandy over time.

Notwithstanding the foregoing, changes in the insurance market bear continued monitoring by the City. If, in the future, Sandy's impacts on this market appear to be more substantial than projected, the City should develop initiatives to address these impacts for the benefit of policyholders in the five boroughs.

insurance market, reviewing and approving rates for homeowners policies, for example. Under State law, New York City does not have the authority to regulate insurance companies.

Property insurance can provide protection for individuals and businesses against losses due to climate risks and other types of risks. Coverage generally is provided through package policies such as standard homeowners and commercial property policies, which include coverage for a variety of perils, or causes of loss, such as hailstorms, fire, and theft. However, coverage for flooding, like most other natural catastrophes, is generally excluded and must be purchased through a separate policy.

This is because catastrophic risk is different from other insured risks. First, catastrophic risk is low probability, or infrequent in occurrence. As a result, individuals and businesses generally choose not to purchase insurance for these risks. One of the reasons for this is that individuals tend to underestimate their vulnerability to catastrophic risks. In fact, while greater numbers of homeowners tend to buy catastrophic coverage such as flood insurance after a natural disaster—because of their heightened awareness of risk—many of these same homeowners later let their policies lapse if they have not made a claim. This is even true for those who are required by law to have coverage, such as those with Federally backed mortgages. Whereas lenders rigorously enforce purchase requirements for homeowners insurance, many

have been less vigilant about enforcing requirements for catastrophic risks like floods. (See sidebar: *Risk Perception and Demand for Catastrophic Insurance*)

Risk Perception and Demand for Catastrophic Insurance

Recent studies by the Wharton Risk Management and Decision Processes Center at the University of Pennsylvania find that many residents in hazard-prone areas perceive the likelihood of suffering losses from natural hazards in a given year to be so low that they do not purchase insurance or take measures to protect their homes. After experiencing severe damage—at the point when they have a heightened awareness of the consequences of a disaster—they often purchase insurance. However, many let their policies lapse a few years later if they have not made a claim on their policy.

Rather than viewing insurance as a form of protection, there is a tendency to regard it as an investment. If one pays premiums for a few years and does not make a claim, the money spent on premiums is viewed as being a bad investment. In fact, not suffering a loss should be viewed as the most desirable outcome. The best return on an insurance policy is no return at all.

Catastrophic risk is different from other risks in yet another way: its impact is correlated with a geographic area. That is, when one policyholder is affected, it usually means others are too, since natural disasters tend to affect a large number of people in close proximity. Due to the extraordinarily high losses that can occur when disasters strike, insurers require high premiums for catastrophe insurance, further dissuading potential policyholders. Consequently, premiums for a flood insurance policy can, in some cases, cost more than a homeowners policy that covers a whole range of perils.

Government-Provided Catastrophe Insurance

To promote broader catastrophe coverage at lower rates, the government often steps in to provide insurance directly. Several states that face hurricane risks, for example, have established their own catastrophe insurance programs. In most cases, these programs are designed to be “insurers of last resort”—to offer coverage to those unable to obtain policies in the private market. Many of these state-run pools are established after a disaster, as demand for coverage grows and as private coverage becomes less available or more expensive.

This was true in Florida in 1992 after Hurricane Andrew led to an unprecedented volume of claims. In response, many insurance companies raised rates sharply, canceled, or declined to renew policies, or simply withdrew from the Florida market altogether. A state-run insurer of last resort, which evolved to become Citizens Property Insurance Corporation, eventually was established to provide affordable coverage to homeowners and businesses. After years of offering subsidized rates, Citizens is now the largest property insurer in Florida, with reserves that many experts believe to be insufficient to pay claims in the event of another disaster.

The Texas Windstorm Insurance Underwriting Association, created in the 1970s, is another state program that did not collect adequate premiums to cover the actual risk of damage. After two hurricanes in 2008, it has liabilities that exceed assets by nearly \$200 million, as of the writing of this report—and its board recently considered placing the program into receivership.

As demonstrated above, government insurance programs are frequently under intense pressure to offer subsidized premiums, which often leads to financial insolvency. These subsidized programs also have created other undesirable consequences. For example, government-sponsored insurers with inadequate capital resources must, when disaster strikes, seek state backing, which diverts funds from other priorities such as education and public safety. This need to tap public coffers is common among state-run programs, which often insure properties that cannot get coverage elsewhere—since they generally are forbidden to deny coverage to high-risk properties. As a result, their overall insurance pools are comprised of policyholders with both higher risk and higher probability of loss.

These programs also have had another unfortunate consequence. Namely, by subsidizing the cost of insurance, they have, in effect, encouraged people—who do not have to bear the true costs of the risks they choose to take—to build and live in areas susceptible to natural catastrophes.

National Flood Insurance Program

Prior to the creation of the NFIP in 1968, the Federal government’s involvement in flood protection focused on making investments in structural flood-control projects, such as dams

and levees, and providing post-disaster assistance to flood victims. Eventually, in recognition of increasing flood losses and Federal disaster-relief costs, and because private insurers were unwilling to offer coverage, Congress created the NFIP.

In establishing the NFIP, Congress reasoned that the Federal government was a suitable insurance provider because it could pool risk broadly across the entire country. At the same time, Congress believed that the NFIP could be used to reduce future flood damages through state and community floodplain-management regulations, thus eventually reducing Federal spending on disaster assistance.

Today, FEMA, through its administration of the NFIP, sets insurance premiums and establishes minimum building standards on the basis of the Flood Insurance Rate Maps (FIRMs) that it produces. These maps delineate the geographic boundary of the floodplain in different regions, including the 100-year floodplain (the area with a 1 percent or greater chance of flooding in any given year) and the 500-year floodplain (the area with a 0.2 percent or greater chance of flooding each year). The FIRMs also show the height to which the floodwaters from a 100-year storm could rise, which is known as the Base Flood Elevation (BFE).

NFIP policies are available to property owners in participating communities. As a condition of participation, these communities must adopt FEMA’s flood-resistant construction requirements or more stringent local standards as part of their local building codes (see Chapter 4, *Buildings*). As a participating community, New York City incorporated FEMA’s required construction standards into its building code in 1983. Pursuant to this, new buildings in the 100-year floodplain must be built at or above the BFE in the five boroughs.

Residential policyholders can obtain coverage through the NFIP for up to \$250,000 for their homes, with separate policies for contents available for up to \$100,000. Policies for non-residential policyholders cover up to \$500,000 for buildings and up to \$500,000 for contents. In both cases, although policies cover basic electrical and mechanical equipment, such as central air conditioners, furnaces, and hot water heaters located in basements, NFIP policies generally do not cover personal property that is located in basements. (See chart: *National Flood Insurance Program Coverage Limits*)

Because of the limited coverage the NFIP provides, the program primarily attracts homeowners and some small businesses. Larger businesses, by contrast, tend to buy insurance



Flood damage in New Dorp Beach, Staten Island

Credit: John De Guzman

National Flood Insurance Program Coverage Limits	
Policy Type	Maximum Coverage
Building Coverage	
Single-family dwelling	\$250,000
Two- to four-family dwelling	\$250,000
Multi-family ("Other Residential")	\$250,000
Commercial ("Non-Residential")	\$500,000
Contents Coverage	
Residential	\$100,000
Commercial	\$500,000

Source: FEMA

through the private market. These companies typically have comprehensive insurance policies that bundle together property, business interruption, liability, and other coverage into a single policy, which, in areas at risk of flooding, typically includes flood coverage.

Historically, the NFIP has offered subsidized premiums to many policyholders. For example, for properties built before the issuance of FIRMs, a subsidized "pre-FIRM" rate was originally created to encourage broader

participation in the NFIP. The program also allowed "grandfathering" provisions so that properties that were mapped into higher risk areas on subsequent flood maps were able to keep their former, subsidized rates. FEMA estimates that roughly 20 percent of all policyholders in the program pay subsidized rates today. For some properties, these rates may be only half of the actuarial rates.

Reform of the National Flood Insurance Program

While serving the important policy goals of providing flood insurance and encouraging safer construction in floodplains, the NFIP faces some of the same challenges that many other government-sponsored catastrophe insurance programs face. For example, originally intended to be self-supporting, the NFIP has required multiple infusions of tax dollars to stay afloat, in part due to the program's subsidized premiums. It also, though, has suffered from the significant cost of paying claims time and again on properties with repetitive flooding. These properties represent only 1 percent of NFIP policies but account for 25 to 30 percent of claims historically paid by the program. Unlike private insurers, however, by law, the NFIP generally has not been allowed to deny insurance to these high-risk properties, despite the significant drain on resources that they represent.

In 2012, because of the financial difficulties of the NFIP, Congress passed the Biggert-Waters Flood Insurance Reform Act, renewing the program through 2017 but requiring significant changes to it. These changes include an elimination of subsidies on new or lapsed policies and a phase-out for subsidies on other

policies. The biggest rate increases may occur in areas affected by changes in FEMA flood maps. In areas where FIRMs are not changed, rates on existing policies for second homes, businesses, and properties suffering repetitive losses will increase by 25 percent per year until they reach their full actuarial rates. For all other properties, the rate of increase will be capped at 20 percent per year. Meanwhile, in areas where new FIRMs are put in place by FEMA, subsidies will be phased out over five years. Under Biggert-Waters, penalties on banks also will be raised to increase the likelihood that they will enforce mandatory purchase requirements associated with Federally backed mortgages. (See chart: *Summary of Changes to NFIP Premiums Required by Biggert-Waters*)

Looking to the future, the impact of Biggert-Waters will be particularly severe for policyholders in New York who live in buildings constructed before the City first adopted FEMA's FIRMs in 1983 and who, therefore, were entitled to heavily subsidized premiums. Approximately 75 percent of the nearly 26,000 NFIP policies in effect during Sandy were eligible for these lower rates. Subsidies will phase out for these policyholders over five years after FEMA's new FIRMs become effective, likely in 2015. Starting in 2015, new policyholders likely will have to pay full-risk rates immediately.

What Happened During Sandy

Sandy highlighted New York City's vulnerability to flooding. However, the storm also served as a reminder of the importance of flood insurance for homeowners and businesses alike.

Summary of Changes to NFIP Premiums Required by Biggert-Waters		
Date of Implementation	What Will Happen	Who is Affected
January 1, 2013	<ul style="list-style-type: none"> 25% premium increase per year until premiums reflect full-risk rates 	<ul style="list-style-type: none"> Homeowners with subsidized insurance rates on second homes or other non-primary residences
October 1, 2013	<ul style="list-style-type: none"> 25% premium increase per year until premiums reflect full-risk rates 	<ul style="list-style-type: none"> Owners of business properties with subsidized premiums Owners of properties with severe repetitive loss (cumulative NFIP claims payments exceeding the fair market value of the property)
October 1, 2013	<ul style="list-style-type: none"> Up to 20% premium increase per year 	<ul style="list-style-type: none"> All policyholders not subject to other phase-outs
Late 2014	<ul style="list-style-type: none"> 5 year phase-out of subsidies on existing policies Immediate requirement to pay full-risk rate for new or lapsed policies 	<ul style="list-style-type: none"> All policyholders affected by map changes (FEMA's revised Flood Insurance Rate Maps are expected for New York City in 2015)

Source: FEMA

While approximately 95 percent of New York City homeowners have homeowners insurance, the majority did not have separate flood policies when Sandy struck. Thousands of insured property owners thus were faced with the sobering fact that they had no coverage for the flood damage their properties sustained. In fact, the City estimates that less than 20 percent of residential buildings in areas inundated by Sandy had coverage through the NFIP. The numbers are believed to have been even lower for businesses; approximately 26,400 businesses with fewer than 50 employees were in the Sandy inundation zone in New York, but only 1,400 commercial NFIP policies were in effect when Sandy hit.

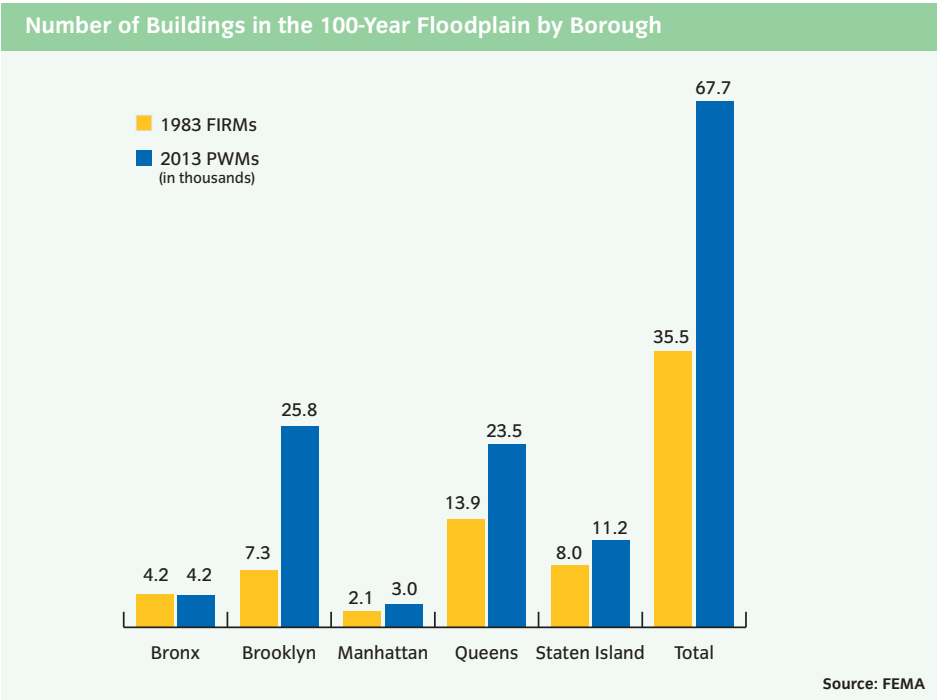
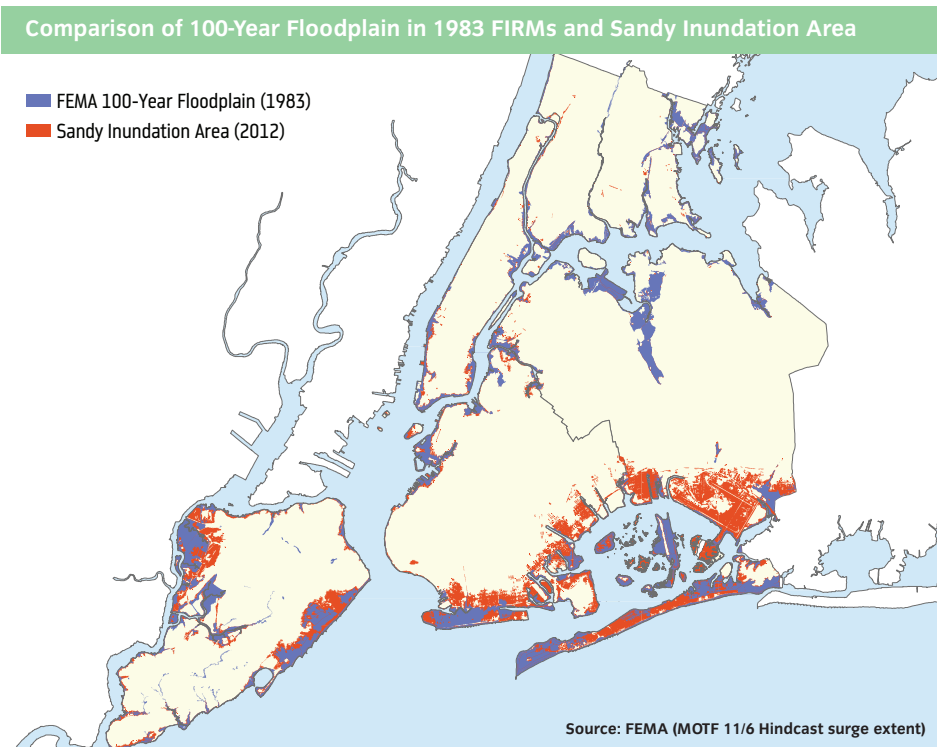
Even for property owners with NFIP policies, in many cases, those policies covered only a portion of what homeowners needed to pay for repairs. For example, for many property owners, most of their damage occurred in basements, for which NFIP policies provide only minimal coverage.

Another insurance complication for many New Yorkers post-Sandy was that they were required to hold multiple policies covering multiple risks, including general property and casualty policies, along with their NFIP policies. After the storm, claims adjusters had to determine the cause of—and thus the policy that would pay for—each policyholder’s losses, a process that was frequently time-consuming.

Additionally, once claims were adjusted, policyholders did not always receive immediate payment, primarily because many policies had standard clauses directing insurers to issue payments to mortgage lenders, rather than to policyholders directly. Banks then needed to endorse checks before funds could be released to policyholders, often requiring proof that repairs had been made before doing so. Following Sandy, State regulators intervened in many cases to expedite the release of claims payments by banks to policyholders.

Sandy exposed other insurance-related issues in New York. For example, many businesses experienced losses from business interruption relating to power and transit outages. However, in most cases, even if they had business interruption policies, they were not covered unless they had flood insurance policies as well.

Yet another issue was that many of those who experienced flood-related losses were required to have flood insurance, but did not actually have policies. In fact, the City estimates that approximately one-third of homeowners in the 1983 floodplain who had Federally backed mortgages, and thus were supposed to have flood insurance, did not have policies in force



when Sandy hit, reflecting a combination of lax compliance by homeowners and lax enforcement by many banks.

These figures, while daunting, may somewhat misstate the problem in New York. This is because the mandatory purchase requirement can apply differently to multifamily buildings. Generally, for condominiums and cooperatives, individual unit or apartment owners may not be required to hold a separate flood insurance policy if the building association has purchased

a policy with sufficient coverage. The required level of coverage for a building depends upon factors including the outstanding balance of the building’s mortgage, the replacement value of the building, and the number of units. If the building has met the required coverage levels, individual unit owners are, in most cases, considered in compliance with the purchase requirement. Accordingly, some of the low flood insurance penetration in New York may be attributable to this aspect of the NFIP.

There are multiple reasons for the low penetration of flood insurance in New York. In some cases, New Yorkers simply chose not to buy flood insurance because, as noted earlier, people tend to underestimate the risk of low-probability events. They also typically misjudge the economic impact of suffering flood damage. When faced with a bill of approximately \$1,000 per year for a flood policy—the average NFIP premium paid on 1- to 4-family residential policies in New York City pre-Sandy—many New Yorkers ended up choosing to spend their money elsewhere.

Other policyholders, meanwhile, previously had coverage, but then allowed their insurance policies to lapse. This can happen easily, since NFIP policies, like homeowners policies, are one-year contracts. A recent study found that new NFIP policies are typically held for just two to four years, with 20 to 30 percent of policies dropped after only one year. This, again, is at least in part attributable to lax mortgage enforcement by banks, which seem to have enforced mandatory flood insurance purchase requirements at the time mortgages were issued, but then did not monitor compliance thereafter.

The final reason for New York's low penetration rate is that many impacted New Yorkers were neither aware of their risks nor required to buy flood insurance because they lived in areas outside the boundaries of the floodplain on FEMA's 1983 maps. This was true for half of all buildings and half of all residential units in areas inundated by Sandy. (See map: *Comparison of 100-Year Floodplain in 1983 FIRMs and Sandy Inundation Area*)

What Could Happen in the Future

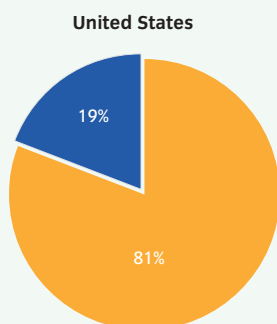
After Sandy, FEMA released advisory maps to portray current flood risks more accurately. Those maps have been replaced by the recently released PWMs. These new maps do not have an immediate impact on flood insurance requirements. However, the final Flood Insurance Rate Maps, likely to go into effect in 2015, are expected to be consistent with the PWMs and will trigger insurance purchase requirements for many New Yorkers.

According to the PWMs, the number of buildings in New York City's 100-year floodplain is nearly double the number in the 1983 FIRMs. An estimated 85 percent of these buildings are "pre-FIRM"—i.e., constructed before November

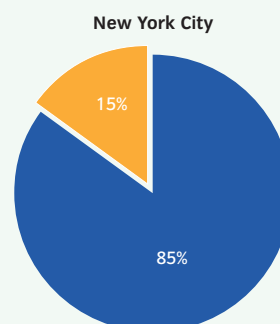
1983—and thus pre-date the building code requirements that mandate construction at or above the Base Flood Elevation. In comparison, only 19 percent of the 5.5 million properties insured by the NFIP policies nationwide are "pre-FIRM." This contrast highlights one of the ways in which the urban character and older building stock of New York City differs dramatically from most other regions that participate in the NFIP—to the detriment of New York policyholders (see Chapter 4). (See chart: *Number of Buildings in the 100-Year Floodplain by Borough*; See chart: *National Flood Insurance Program Coverage by Age of Buildings*)

Though owners of these properties are, as of the writing of this report, still eligible to buy subsidized NFIP policies, as a result of Biggert-Waters, their rates will begin to increase. Once

National Flood Insurance Program Coverage by Age of Buildings



Total: 5.5M NFIP Policies Nationwide



Total: 67.7K Buildings in the 2013 PWMs 100-Year Floodplain

■ Built November 1983 or after ■ Built before November 1983

Source: FEMA

Insurance Premiums Under the National Flood Insurance Program

PREMIUM AT 4 FEET BELOW
BASE FLOOD ELEVATION

\$9,500/year



PREMIUM AT
BASE FLOOD ELEVATION

\$1,410/year



PREMIUM AT 3 FEET ABOVE
BASE FLOOD ELEVATION

\$427/year



Rates per FEMA flood insurance manual, October 1, 2012, for a \$250,000 building coverage policy (does not include contents) on a single-family structure located in a high to moderate risk zone.

Source: FEMA

the final FIRMs are in effect, all policies will be charged risk-based rates, either immediately or through a phasing-out of subsidies, which could result in a steep rise in insurance premiums on these properties.

Under the NFIP, FEMA traditionally has set risk-based rates by evaluating the distance between a property's lowest floor and the BFE. This is because a building below expected flood levels is generally assumed to be at greater risk. Rates rise steeply for buildings the farther the lowest occupied floor is below the BFE. (See graphic: *Insurance Premiums Under the National Flood Insurance Program*)

The PWMs show Base Flood Elevations throughout the five boroughs to be increasing by one to four feet in most areas, with variation from neighborhood to neighborhood. Accordingly, even many properties that comply with today's BFE will soon be one to four feet below the revised BFE. An illustration of how these changes will impact different areas can be seen in the estimated changes in the five communities on which this report focuses. (See table: *Estimated Range of Base Flood Elevation Increases: SIRR Communities*)

Looking at an individual case highlights the full impact of all of the changes relating to NFIP that New Yorkers soon will be facing. Consider the owner of a single-family home in Tottenville in Staten Island that has its lowest floor at the same level as the current Base Flood Elevation. As of the writing of this report, this homeowner would pay about \$1,400 per year for the maximum \$250,000 coverage. However, if the information in the Preliminary Work Maps, showing the BFE increasing by almost four feet for this area, carries through to the final Flood Insurance Rate Maps, then the premium on that property likely will jump to \$9,500 once the new FIRMs are in effect. The same would be true for an owner of a similar property in Breezy Point in Queens, for which the PWMs also show a four foot increase in the BFE. To put this in perspective, if the owner of the home in the Tottenville example were earning the median annual household income in this area—which, at \$80,000 is significantly higher than the median household income for New York City as a whole—once the new rates go into effect, the owner would be required to spend a staggering 12 percent of his or her household income on flood insurance.

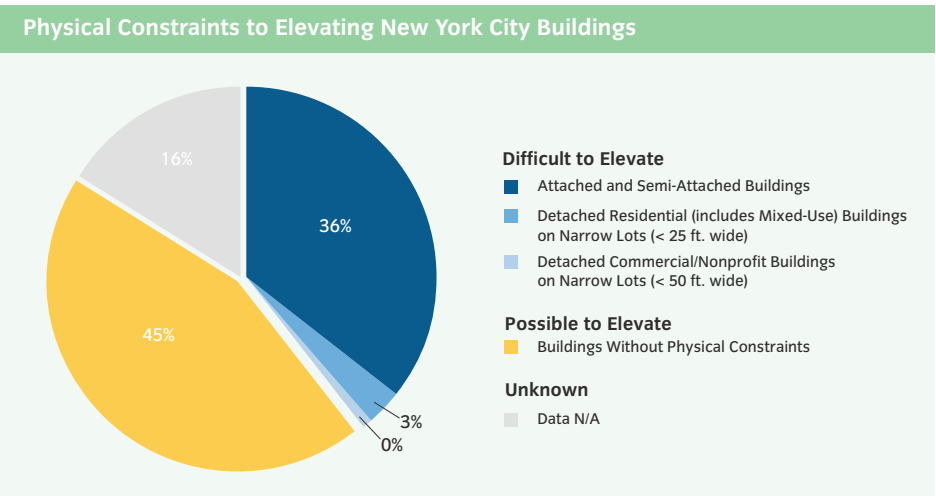
Overall, the projected added costs in flood insurance likely will decrease the value of properties in the floodplain citywide, since prospective buyers presumably will factor future insurance costs into the price they are willing to pay for these properties. In addition, as a result of these added insurance costs,

property owners who are not required by law to carry flood insurance likely will opt out of coverage altogether.

In theory, it should be possible to construct or retrofit buildings in ways that reduce the risk of damage and, in turn, to reduce the cost of insurance under the NFIP. However, in practice, the NFIP provides few incentives for property owners to protect their buildings from flood damage and reduce their premiums, other than by elevating their buildings—actually lifting

structures above the BFE. While that option may be possible for some structures—such as small wood-frame structures common in other parts of the country—it simply is not feasible in many areas of New York City, especially where much of the building stock consists of attached and semi-attached buildings and multi-story structures. Other features such as narrow lots and the use of construction materials such as masonry and concrete can also make elevation of buildings difficult (see Chapter 4). In New York, approximately 26,300 buildings in the

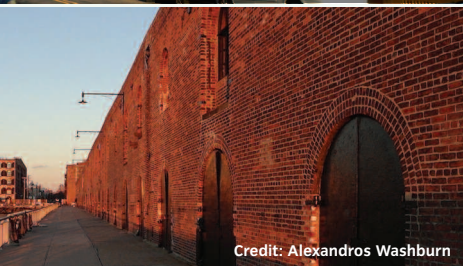
Estimated Range of Base Flood Elevation Increases: SIRR Communities	
Community	Range of BFE Increase (in feet)
Brooklyn-Queens Waterfront	1.0 - 3.0
East and South Shore, Staten Island	2.0 - 4.0
South Queens	1.0 - 4.0
Southern Manhattan	1.0 - 3.0
Southern Brooklyn	2.0 - 3.0



Credit: Wikimedia/Jim Henderson



Credit: DOB/Samantha Modell



Credit: Alexandros Washburn



Credit: Wikimedia/Beyond My Ken



Residential home in New Jersey, compliant with FEMA standards

Credit: Wendell A. Davis, Jr./FEMA

Policy Options to Address Insurance Affordability

With premiums in some areas likely to increase significantly as a result of the Biggert-Waters Act, low-income residents may not be able to afford insurance. Two approaches to addressing this issue are described below.

One approach would be a national voucher program. This would be consistent with Biggert-Waters, which specifically authorizes a FEMA-National Academy of Sciences study of affordability that is to explore, among other approaches, a means-tested flood insurance voucher program for low-income residents currently residing in flood-prone areas. A voucher program could work as follows: A low-income homeowner would receive a voucher worth, for example, \$200. That homeowner then would be required to use this voucher to purchase flood insurance. If the homeowner's risk-based premium were \$1,000, the homeowner could use his or her voucher to pay for \$200 of this premium, resulting in out-of-pocket expenses of \$800 (\$1,000 minus \$200).

A second, complementary tool for reducing the cost of insurance is mitigation. If a homeowner invests in a mitigation measure that reduces annual expected losses by, for example, \$300, then his or her premium should, in theory, decrease by this amount, whether or not the homeowner received a voucher. The decrease in premium would be based on the expected lower claim payments from future flood damage as a result of the mitigation measure implemented. In the homeowner in the first example receives a \$200 voucher and invests in mitigation, that individual would pay a premium of \$500 (\$800 minus \$300). If the applicable house were sold, the property should command a higher price as a result of this improvement, and the new owner would benefit from a more resilient structure.

A challenge to the latter strategy of premium reduction (i.e., mitigation) is how to finance the required upfront cost of this mitigation. This could be addressed by a home-improvement loan to cover the costs of mitigation investments. In many cases, the reduction in premiums resulting from mitigation investments should be greater than the costs of home improvement loans that would help pay for them. For example, returning to the aforementioned homeowner, if he or she were to obtain a home-improvement loan to cover the cost of a mitigation investment and debt service on that loan were to cost \$100, then the homeowner's net cost would be \$800 (i.e., the \$1,000 base premium, minus \$300 in premium reduction due to the mitigation investment, plus \$100 to cover the cost of the home-improvement loan).

Source: Wharton Risk Management and Decision Processes Center

newly expanded floodplain have characteristics or site conditions that would make elevation enormously challenging, or even impossible. (See chart: *Physical Constraints to Elevating New York City Buildings*)

On top of this, elevation as a mitigation strategy creates another set of problems in an urban environment such as New York that it does not present elsewhere. By eliminating ground flood uses such as retail stores, elevation disrupts the fabric of neighborhoods, impedes important economic activity, makes services less accessible to residents, and potentially takes "eyes off the streets," posing possible public safety challenges as well.

New York City faces a range of climate risks as of the writing of this report and over the next several decades. These risks are expected to have impacts on buildings, and thus have implications for insurance coverage.

According to projections from the New York City Panel on Climate Change (NPCC), described in Chapter 2 (*Climate Analysis*), sea levels are forecast to rise through the 2020s and 2050s. During this period, the 100-year floodplain will expand and BFEs could increase. The number of buildings in the 100-year floodplain is forecast to rise to 88,700 by the 2020s and 114,000 buildings by the 2050s. If property owners in the new floodplain buy flood insurance in the same proportion as property owners in the current floodplain do, nearly 45,000 buildings would be uninsured in the 2020s and 60,000 would be uninsured in the 2050s.

While other types of climate risks could affect various types of insurance coverage in New York, the impact of sea level rise and greater frequency of the most intense coastal storms are expected to have the greatest impact on NFIP rates.

This chapter contains a series of initiatives that are designed to address important issues related to insurance. In many cases, these initiatives are both ready to proceed and have identified funding sources assigned to cover their costs. With respect to these initiatives, the City intends to proceed with them as quickly as practicable, upon the receipt of identified funding.

Meanwhile, in the case of certain other initiatives described in this chapter, though these initiatives may be ready to proceed, they still do not have specific sources of funding assigned to them. In Chapter 19 (*Funding*), the City describes additional funding sources, which, if secured, would be sufficient to fund the full first phase of projects and programs described in this document over a 10-year period. The City will work aggressively on securing this funding and any necessary third-party approvals required in connection therewith (i.e., from the Federal or State governments). However, until such time as these sources are secured, the City will only proceed with those initiatives for which it has adequate funding.

Strategy: Target affordability solutions to low-income policyholders

The combined impact of Biggert-Waters and the remapping of New York City's floodplain will result in significant increases in flood insurance premiums, which many New Yorkers, especially the city's most vulnerable populations—including those with low, or on fixed, incomes—will not be able to afford. These increases will pose serious challenges to the economic stability not only of neighborhoods in New York City but also of neighborhoods nationwide.

Initiative 1

Support Federal efforts to address affordability issues related to reform of the NFIP

Biggert-Waters requires FEMA and the National Academy of Sciences (NAS) to conduct a study of methods to help individuals to be able to afford risk-based premiums under the NFIP. According to the law, FEMA and NAS are to focus this study on targeted assistance, including means-tested vouchers, rather than generally subsidized rates.

The City will support these goals actively and will urge its Federal government partners to take swift action to comply with these Biggert-Waters

provisions. The study was slated for completion within 270 days of the enactment of Biggert-Waters, but that deadline has passed. FEMA and the NAS should, therefore, initiate the study immediately for completion no later than the first half of 2014, enacting the recommendations as quickly as possible thereafter.

The City will especially support Federal action aimed at addressing affordability for the city's (and country's) most vulnerable populations, such as low-income, owner-occupied households.

If no progress is made on addressing insurance affordability for vulnerable households by the time the new FIRMs are in effect, the City will consider taking its own actions to support these households. These actions might include establishing a fund to cost-share insurance premiums or policyholders' deductibles in the event of a loss. However, the City, unlike the Federal government, does not have the capacity to take broad action on this issue, and therefore strongly urges FEMA and NAS to take the necessary steps immediately.

Strategy: Define resiliency standards for existing buildings

Sandy highlighted the limited information currently available on risk-reduction techniques short of elevation, which is impractical, financially infeasible or physically impossible for building types common in New York City and other dense urban areas. This dearth of information complicates efforts by property owners seeking to invest in mitigation.

Initiative 2

Develop FEMA-endorsed flood protection standards and certifications for existing urban buildings

The City has developed a retrofit standard, referred to as the "Core Flood Resiliency Measures" (see Chapter 4). The City proposes that these measures be rolled out citywide. These measures incorporate building mitigation options that are physically and financially feasible for a wide range of urban building types. This standard focuses on resiliency measures that protect building systems and structural integrity and was developed, in part, based on post-Sandy damage assessments by FEMA.

The City will work with FEMA to develop a national flood-protection standard for urban buildings, to complement and augment the Core Flood Resiliency Measures and to supplement FEMA's preferred elevation approach. Because

many of New York City's building types and urban site conditions can be found in other dense, urban areas throughout the country, especially in the Northeast, this work will be widely applicable across the country. To this end, the Office of Long-Term Planning and Sustainability (OLTPS) will continue discussions that are already underway with FEMA, with the goal of achieving agreement on new standards by 2014.

Initiative 3

Call on FEMA to recognize mixed-use buildings as a distinct building category

Mixed-use buildings do not, as of the writing of this report, exist as a separate building class under the NFIP; if occupancy in a given building is more than 75 percent residential, it is considered a residential building. At less than 75 percent residential occupancy, the building is considered non-residential.

Under current FEMA regulations for the NFIP, non-residential buildings located in the 100-year floodplain are permitted to certify qualifying flood-proofing designs as an alternative to elevation to, or above, the BFE. Properties with approved flood-proofing certifications pay considerably lower insurance premiums than properties below the BFE. Because of FEMA's categorization, a building with ground floor retail and no residential units below the BFE that has more than 75 percent of its floor area above the ground floor would be classified as a residential building and, therefore, would not be eligible for a flood-proofing certification.

The City will work with FEMA to create a separate mixed-use building category, allowing these structures to be eligible for flood-proofing certifications, provided they do not have residential occupancy below the applicable BFE. OLTPS will continue discussions already underway with FEMA, with the goal of achieving agreement by 2014. In the PWMs, there are approximately 2,300 mixed-use buildings in New York City that would benefit from this change.

Strategy: Incorporate resiliency standards in insurance underwriting

Consistent with the principle of risk-based premiums, measures that reduce a property's risk of damage should be reflected in a commensurate reduction in the cost of insurance; this is because investments in mitigation have many long-term benefits, including protecting lives and reducing the risk of property losses. Insurers and lenders also benefit when policyholders

invest in mitigation by reducing their potential exposure to loss. However, based on the current NFIP rating system, insurance costs can be reduced significantly when a building is elevated above the BFE, but not if other mitigation measures are taken. Alternative mitigation methods that demonstrably reduce the risk of flood damage should also be integrated into the NFIP's insurance rating system.

Initiative 4

Call on FEMA to develop mitigation credits for resiliency measures

Mitigation is critical to strengthening the resiliency of the existing built environment. As previously discussed, for many building types in New York City and urban areas nationally, structural characteristics, site conditions, and cost pose a challenge to elevation. Fortunately, other mitigation options are available. The NFIP should encourage property owners to take effective and realistic actions to reduce risks. The City, therefore, will call on FEMA to develop a system of insurance premium credits under the NFIP, to offer risk-based incentives for investing in a range of mitigation measures.

OLTPS will work with FEMA to commission a study of mitigation measures to be considered for this program. The study, to include measures developed through Initiative 2, will analyze these measures and their impact on risk, assessing these impacts for a range of building types.

Working in partnership with FEMA, OLTPS will initiate the study in 2013 and oversee this effort; the study is expected to be completed by 2014. The City will call on FEMA to review and incorporate the study's findings into the underwriting of flood insurance as soon thereafter as possible.

Initiative 5

Study approaches for New York City to join FEMA's Community Rating System program

The National Flood Insurance Program's Community Rating System (CRS) is a voluntary incentive program that encourages community floodplain management activities that exceed the minimum NFIP requirements. For communities that are admitted into the CRS program, flood insurance premiums are discounted for all policyholders in these communities by at least 5 percent to reflect the overall reduced flood risk profile.

The City will evaluate New York's ability to gain admission to the CRS program, and the costs and benefits of doing so. While the opportunity

for discounted premiums for New Yorkers is compelling, joining the program may require the City to take legal or other remedial actions against property owners found to be in violation of building codes in the floodplain. A measured approach to understanding the City's potential obligations, and practical solutions to meeting those obligations, is therefore required. OLTPS and the Department of Buildings will complete this evaluation by the first half of 2014.

Strategy: Expand pricing options for policyholders

Flexible pricing options can encourage more people, especially those not required to carry insurance, to purchase coverage that suits their needs. A higher-deductible option is a commonly used tool in insurance pricing for reducing premium costs to policyholders while protecting against catastrophic losses. Higher deductibles are consistent with the principle of risk-based pricing and provide significant cost savings to policyholders who choose them. This approach is a common feature of catastrophe insurance policies, with, for example, most homeowners insurance policies in New York State including mandatory hurricane deductibles, often up to 5 percent of the insured value of a home.

Initiative 6

Call on FEMA to allow residential policyholders to select higher deductibles

Currently under the NFIP, deductibles up to \$50,000 are allowed for commercial policies, but residential policies are limited to a maximum deductible of \$5,000. Initial analyses indicate that if a \$10,000 deductible were available on residential policies, flood insurance premiums could be reduced by more than 30 percent, while a \$25,000 deductible could cut premiums in half. This option likely would be available only to property owners who do not have Federally backed mortgages, as these individuals are not subject to the regulatory regime applicable to such mortgages and thus have more flexibility. Even so, there is a potentially significant market for this product.

The City will work with FEMA to evaluate the higher-deductible option in order to understand precisely how deductibles would translate into premium reductions for various property types and to determine which property owners would be best served by higher deductibles.

In connection with the introduction of higher-deductible policies, the City will call for FEMA

to initiate a comprehensive policyholder education initiative that helps consumers choose a deductible level that they can afford while avoiding the potential for underinsurance in the event of a loss. OLTPS will continue discussions already underway with FEMA, with the goal of reaching agreement on new policy options with by 2014.

Strategy: Improve awareness and education about insurance

For insurance to play the appropriate role in providing individuals and businesses with financial protection from climate risks, consumers must be aware of both their risks and the coverage their insurance policies include or exclude. Issues of consumer awareness and education should be addressed at the points of sale and renewal, and throughout the life of an insurance contract. Insurers also should be aware of the extensive efforts the City is taking to minimize loss and disruption from climate hazards through the initiatives in this report. Doing so will foster a more robust insurance market for the benefit of all participants.

Initiative 7

Support the goals of the NYS 2100 Commission to protect New York State, consumers, and businesses

The NYS 2100 Commission was convened by Governor Cuomo in response to recent severe weather events experienced by New York State, including Sandy. The Commission's Insurance committee outlined a series of goals and strategies protecting consumers and businesses. The City will support the State in pursuing the Commission's goals, which include:

- promoting investments in mitigation;
- improving consumer awareness and education;
- preventing underinsurance for flood risk and covered perils;
- expanding coverage for business interruption;
- promoting a comprehensive insurance emergency measures act; and
- providing catastrophe response services.

Initiative 8

Call on New York State to improve policyholder awareness at the point of sale or renewal

Sandy demonstrated the importance of policyholder awareness, particularly relating to flood insurance, as well as the importance of easily understood insurance contracts. These issues should be addressed by New York State as the primary regulator of the insurance industry in

New York. The City, working through OLTPS, will collaborate with the New York State Department of Financial Services to evaluate opportunities to improve policyholder awareness, including through more meaningful disclosure at the points of sale and renewal. Among other things, the City and State should review the role that a variety of actors—including policyholders, insurers, brokers, and agents—can play in achieving this goal.

Initiative 9

Launch a consumer education campaign on flood insurance

The Preliminary Work Maps show an increase of approximately 32,000 buildings in the 100-year floodplain. Therefore, it is critically important that owners of these properties in particular understand their obligations and be aware that their standard homeowners policies do not generally provide flood coverage. The City will launch a consumer education campaign to achieve these ends. Communication channels may include subway advertisements, radio spots, and social media. The Department of Consumer Affairs will develop and launch this citywide campaign in 2014.

Initiative 10

Launch an engagement campaign targeting insurers

Insurers' perceptions of climate risks in New York City and their confidence in the City's adaptation strategies can influence the availability and pricing of insurance. The City will, therefore, launch an insurer engagement campaign to inform insurance providers about the comprehensive measures the City is taking both pursuant to this report and more generally to minimize loss and disruption from climate risks.

This campaign, which will be launched by OLTPS, will include information on coastal protection investments, building code changes, and initiatives that impact business continuity like infrastructure hardening and transportation resiliency. The target audience will include insurance company executives and underwriters, catastrophe modeling experts, and other stakeholders from leading commercial and homeowner insurance providers in New York. The objective of this campaign will be to convince these individuals and their companies to consider the City's strategies as they set rates in New York. OLTPS will hold the first forum with insurers in 2013 and continue industry engagement on an annual basis.



Volunteer working to rebuild property after Sandy in Red Hook, Brooklyn



Credit: Damon Winter/The New York Times