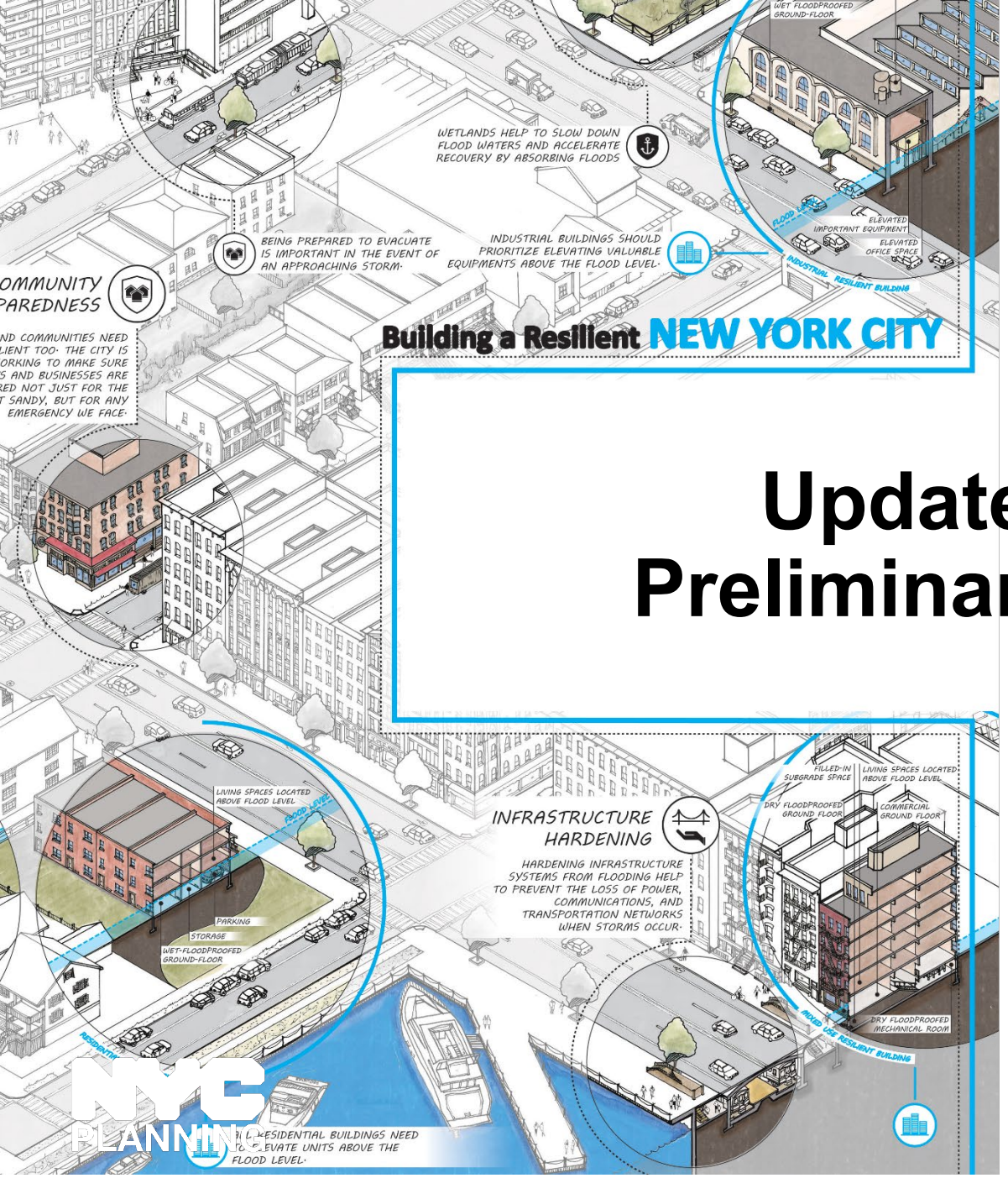
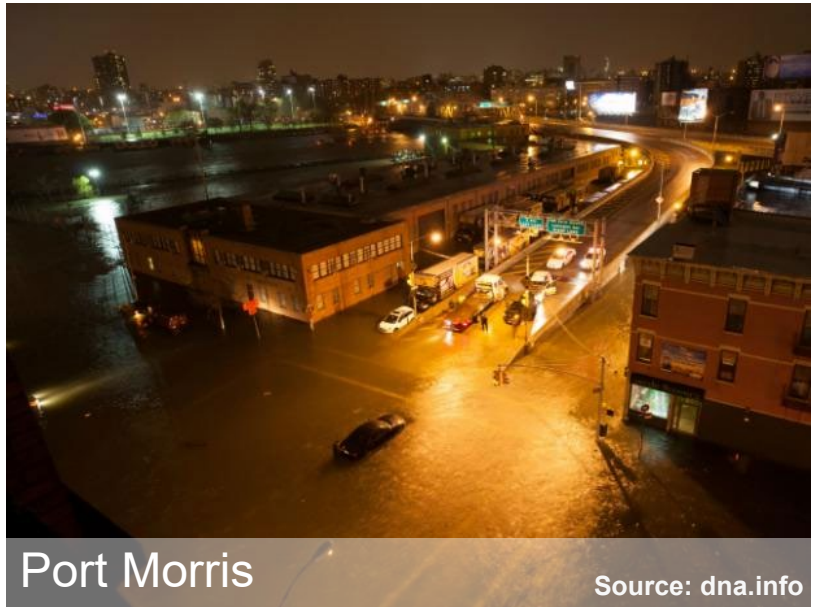


Zoning for Coastal Flood Resiliency

Update and Summary of Preliminary Recommendations

Update for the Bronx Community Board 7
Environmental Subcommittee
June 4th, 2019

Hurricane Sandy

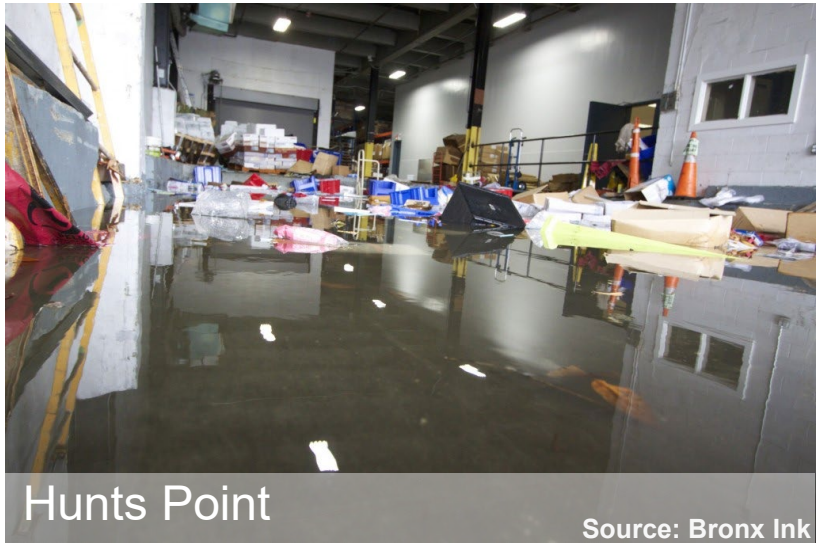


Port Morris

Source: dna.info

Harding Park

Source: Bronx Ink



Hunts Point

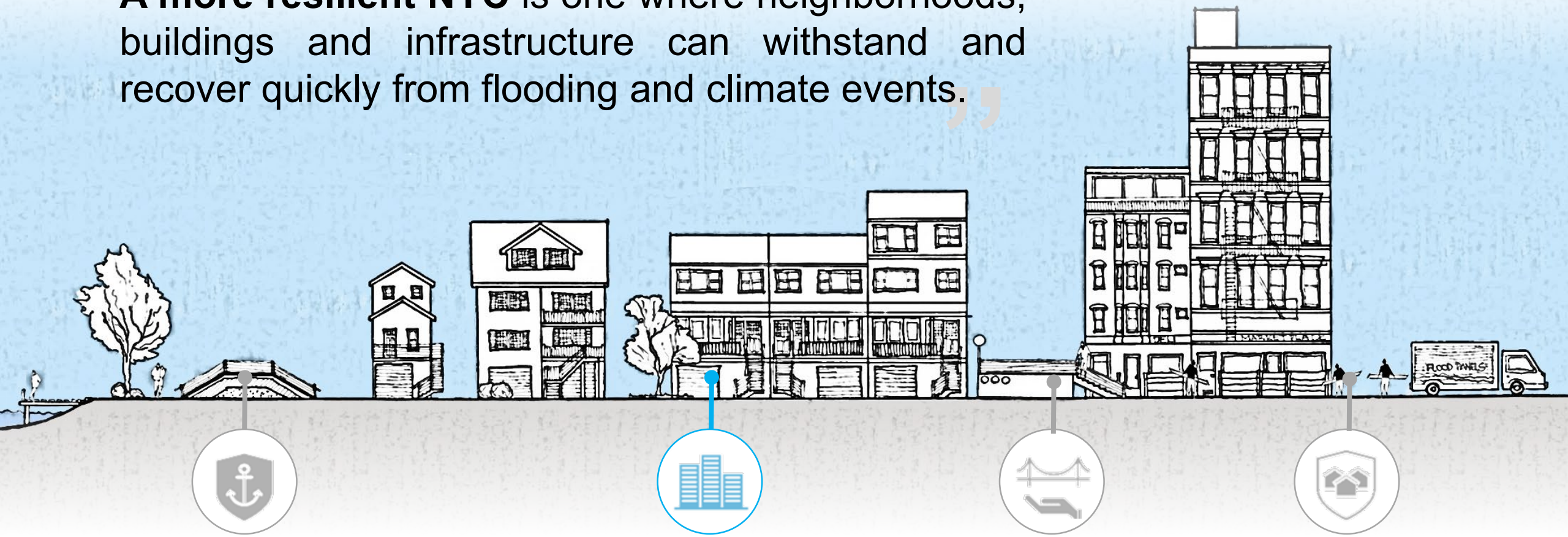
Source: Bronx Ink

Locust Point

Source: Daily News

#ONENYC

"**A more resilient NYC** is one where neighborhoods, buildings and infrastructure can withstand and recover quickly from flooding and climate events."



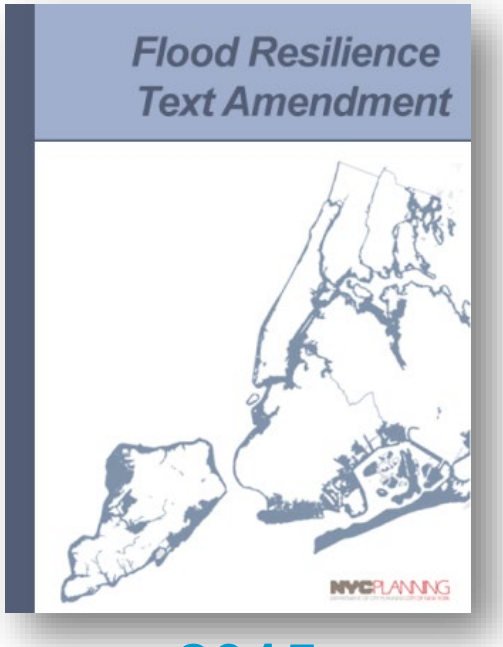
Coastal defenses
are strengthened as first line of defense against flooding and sea level rise

Buildings
are designed to withstand and recover from flooding

Infrastructure
is protected from climate hazards

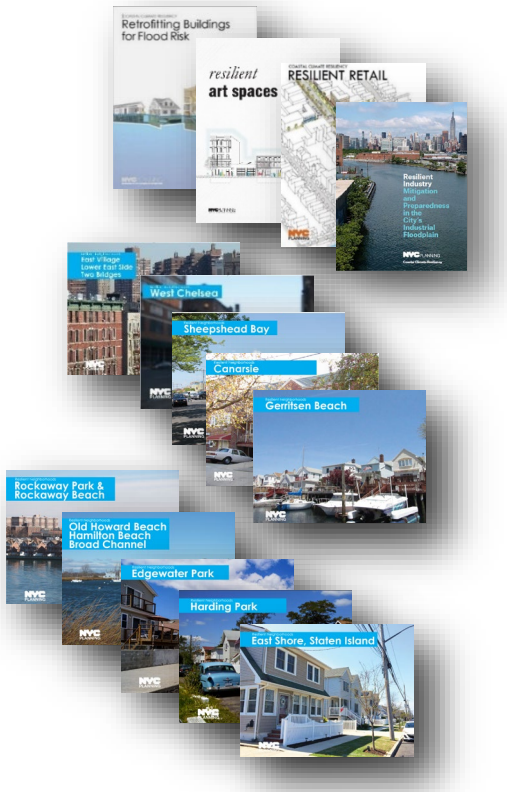
Residents and businesses
are prepared

DCP's work since Hurricane Sandy



2015

Flood Resilience Zoning Text Amendment:
Initial <u>temporary</u> regulations to facilitate recovery

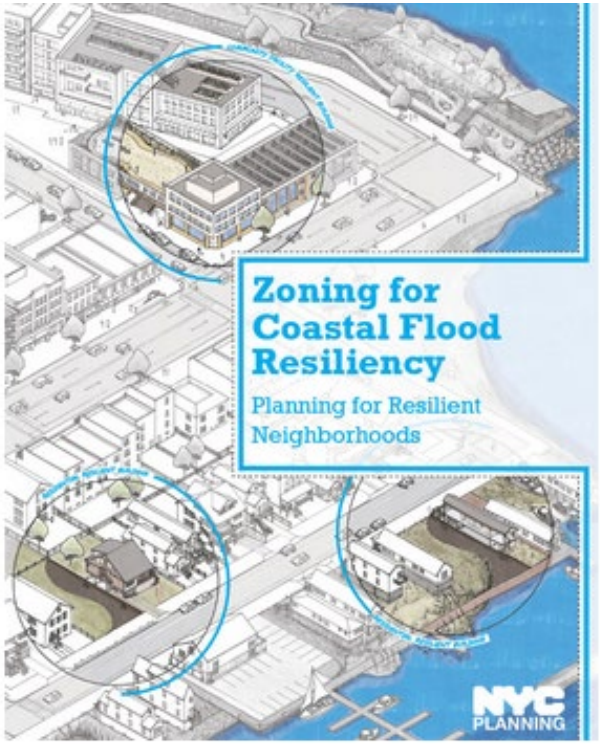


2014-2017

Citywide / Neighborhood Studies

2016-Present

Community Outreach



2019

Zoning for Coastal Flood Resiliency

NYC PLANNING

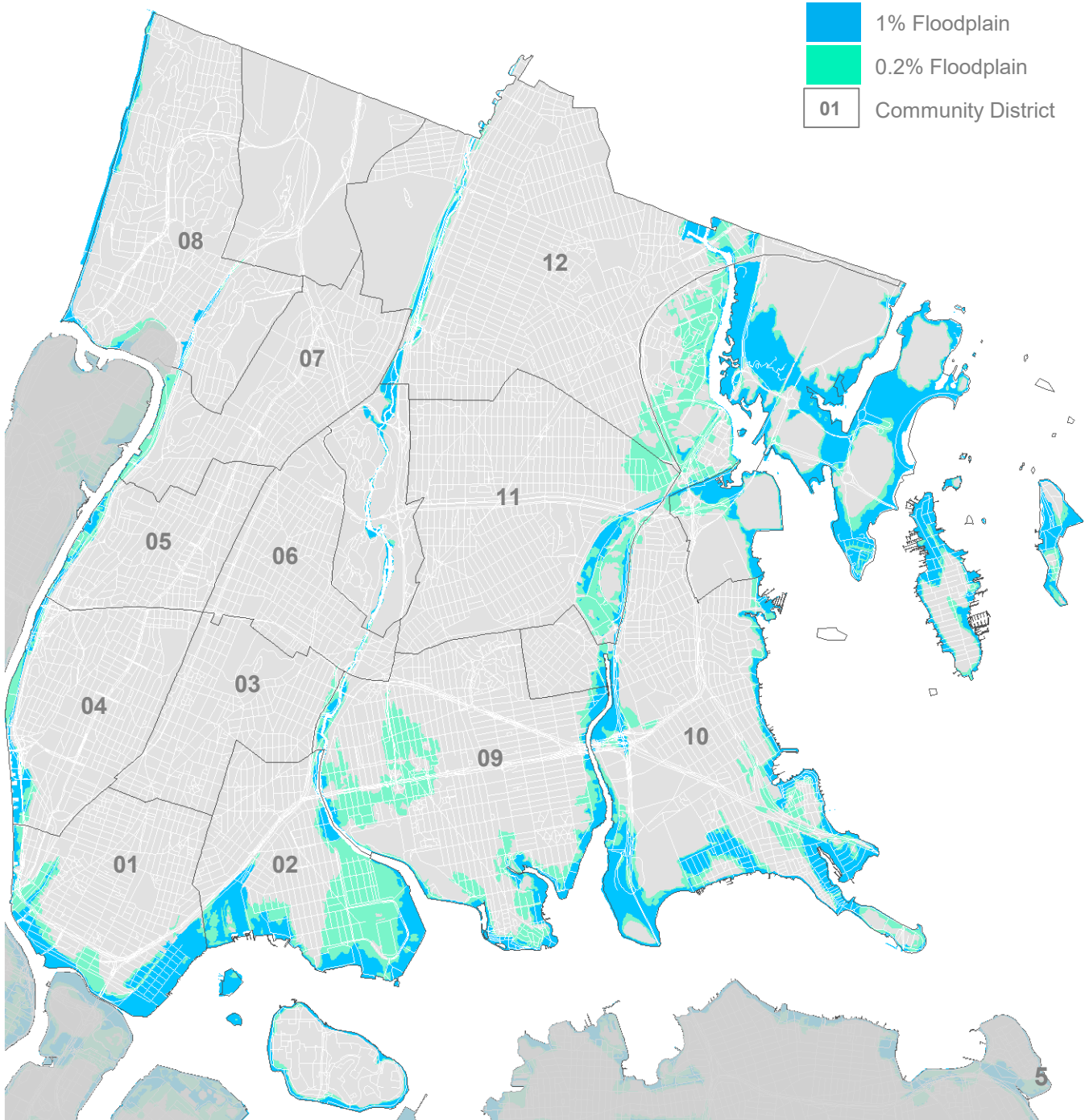
Flood Risk – Bronx

NYC	1% annual chance floodplain (FIRM+ PFIRM)	0.2% annual chance floodplain (FIRM+ PFIRM)	TOTAL
Total # of Lots	65,582	36,723	102,305

	1% annual chance floodplain (FIRM+PFIRM)	0.2% annual chance floodplain (FIRM+PFIRM)	TOTAL
Total # of Buildings	80,907	44,634	125,543

Bronx	1% annual chance floodplain (FIRM+ PFIRM)	0.2% annual chance floodplain (FIRM+ PFIRM)	TOTAL
Total # of Lots	3,536	3,389	6,925

	1% annual chance floodplain (FIRM+ PFIRM)	0.2% annual chance floodplain (FIRM+ PFIRM)	TOTAL
Total # of Buildings	6,055	3,922	9,977



NYC PLANNING

Building typologies


Residential-detached


Residential-attached and semi attached

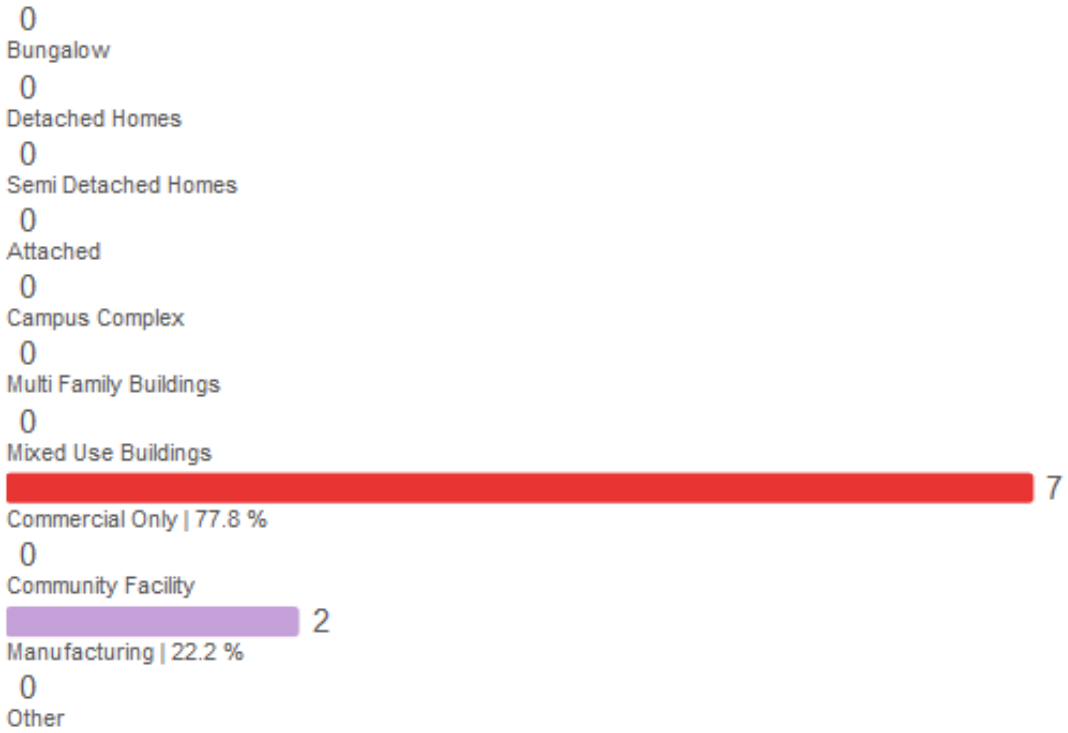

Residential-bungalow

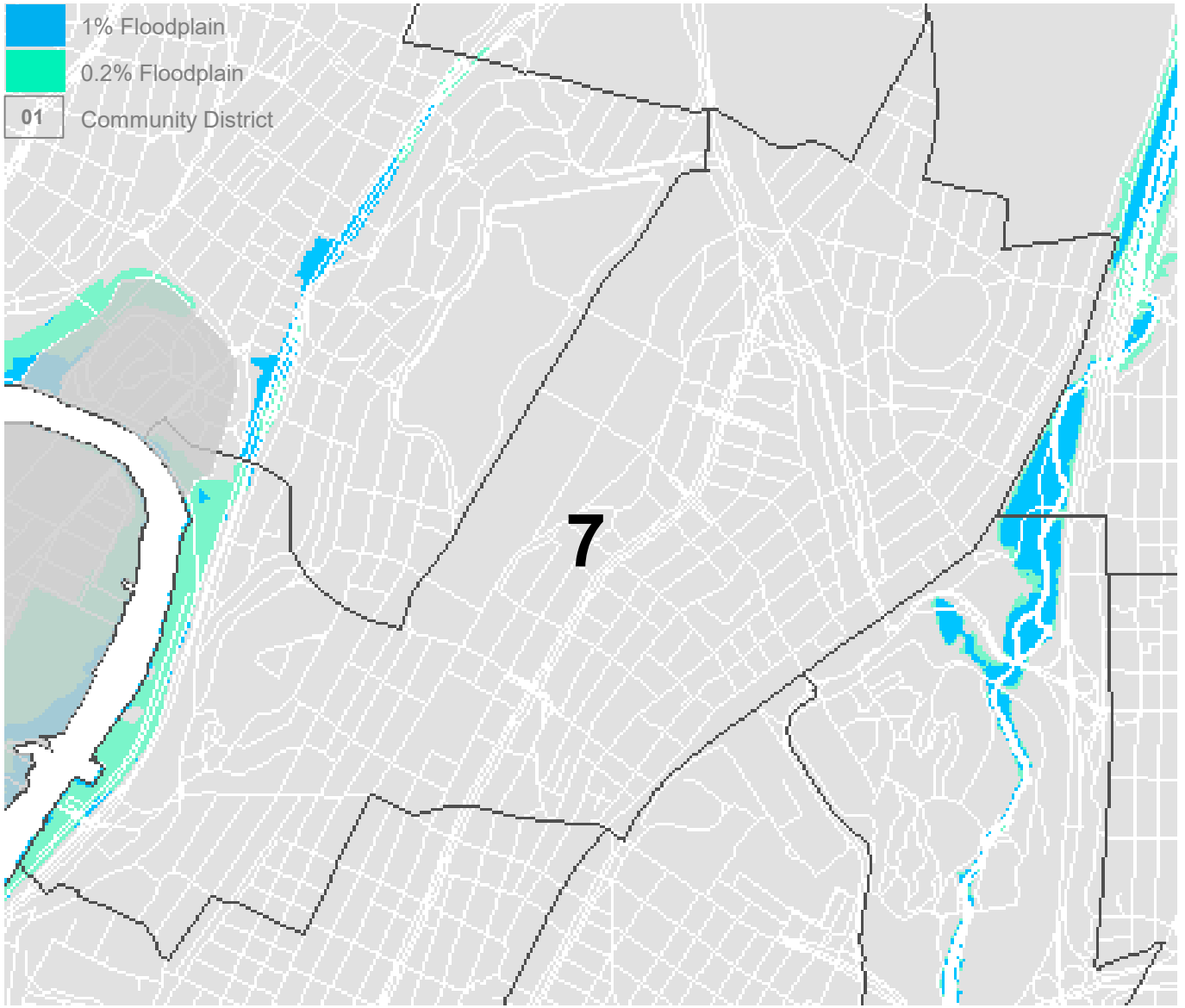
Industrial


Commercial and Mixed Use

Flood Risk – Bronx CD 7

9 buildings are in the 1% and 0.2% floodplain



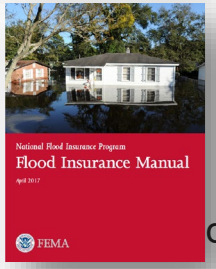


How are buildings in the floodplain regulated?

FEMA

Flood Insurance Rate Maps (FIRMs)

Determine **where floodplain regulations apply**



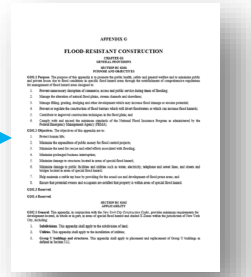
National Flood Insurance Program

Set up Insurance Rates depending on building elevation and other requirements

Construction Standards (ASCE 24)

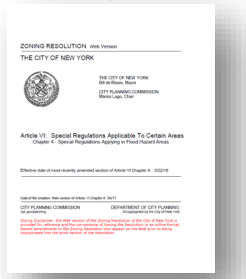
Design minimum construction requirements for flood hazard areas

NYC



Building Code (DOB)

Requires new buildings and substantial improvements to meet FEMA standards (Appendix G)



Zoning Resolution (DCP)

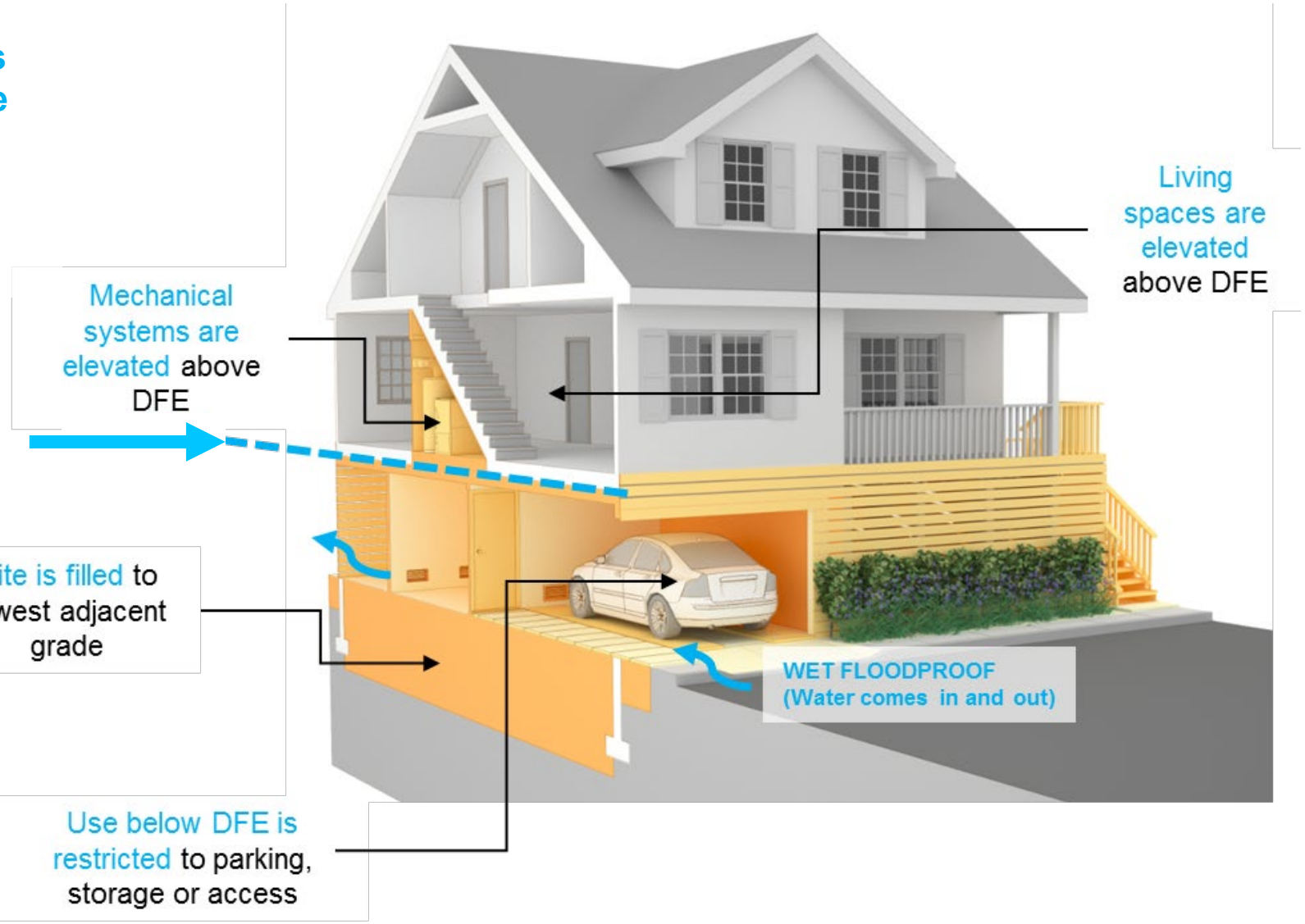
Zoning **accommodates** these regulations and improves neighborhood character

NYC PLANNING

Flood resilient construction
Required by DOB

Building Code (DOB)

Flood resilient construction standards require residential buildings to elevate the lowest floor used for living purposes, as well as mechanical equipment, above the Design Flood Elevation (DFE).



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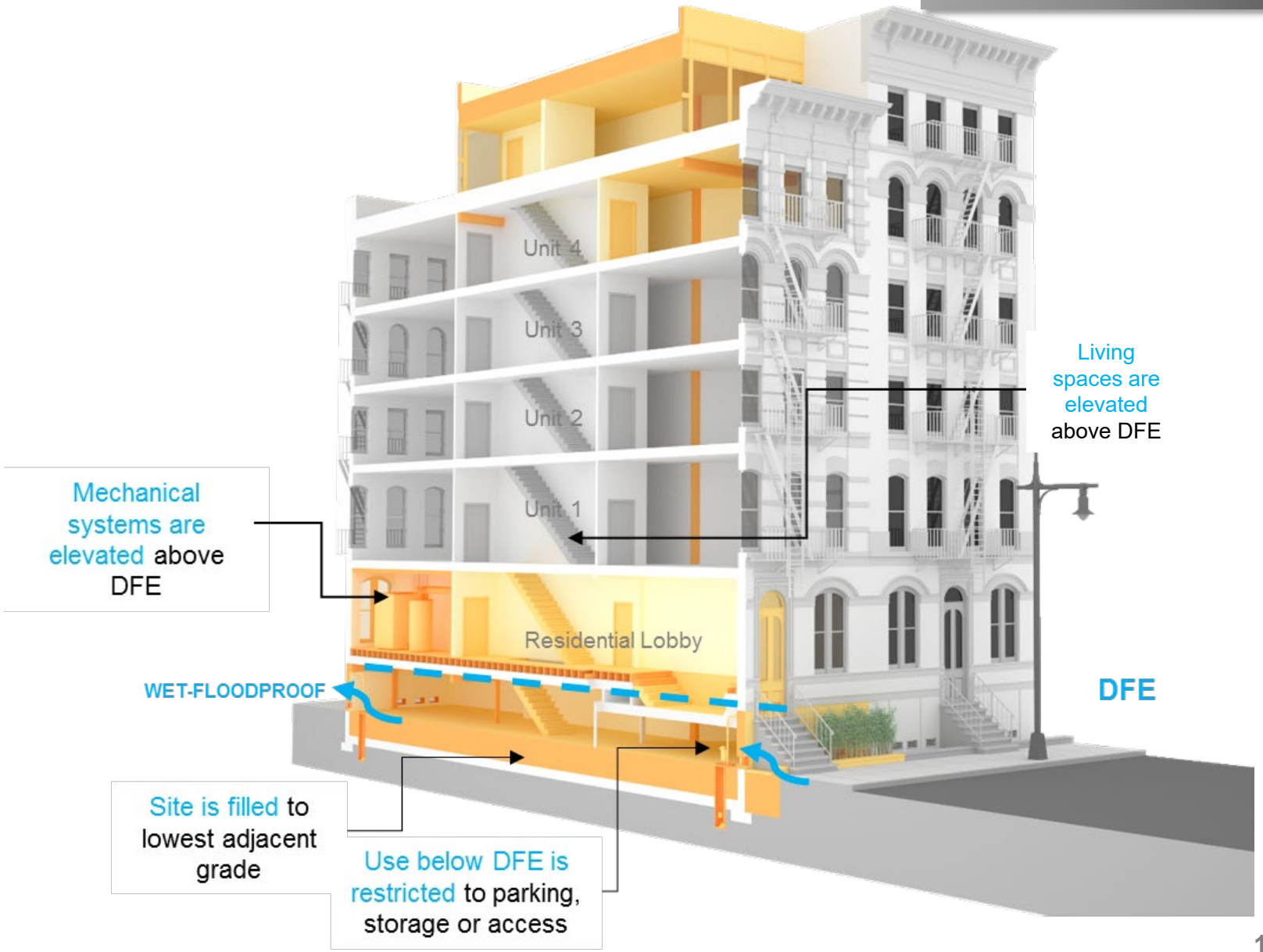
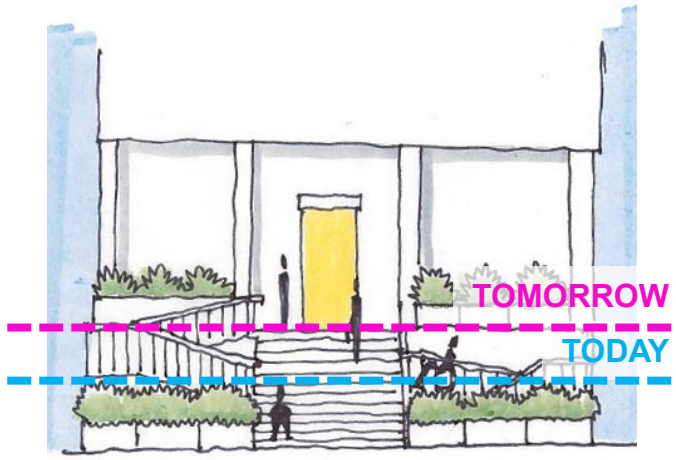


Zoning for Coastal Flood Resiliency
Overview of project's goals

Zoning for Coastal Flood Resiliency would provide building owners flexibility to design or otherwise retrofit their buildings to reduce damage from flooding, be resilient in the long-term, save on flood insurance costs, and expedite future-storm recovery.



1. Encourage resiliency throughout the city's current and future floodplains

2. Support long-term resilient design of all building types by offering flexibility in the zoning framework

3. Allow for adaptation over time through partial resiliency strategies

4. Facilitate future-storm recovery by removing regulatory obstacles

Zoning for Coastal Flood Resiliency

Applicability

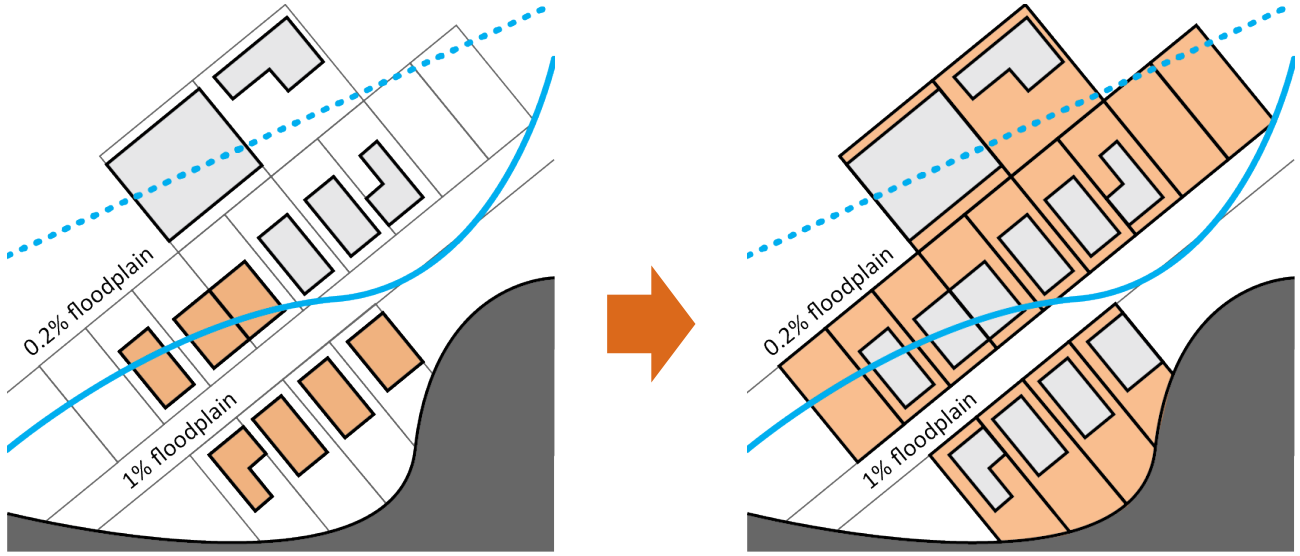
Applicability

1% floodplain + 0.2 % floodplain

- All provisions would be available to lots located within the 1% and 0.2% floodplains;
- Most rules would only be available if the building fully complies with *flood-resistant construction standards**;
- Extra allowances would be offered for partial strategies.

Citywide

- Power systems (emergency generators).
- Emergency provisions



Existing Rules: apply to buildings within the 1% floodplain

Proposed Rules: apply to lots within the 0.2% floodplain

**Flood-resistant construction standards:* building-code standards for buildings located in the 100yr floodplain, as set forth in Appendix G of NYC's Building Code

Zoning Recommendations
Building Envelope

To support long-term resilient design across all building types, Zoning for Coastal Flood Resiliency would modify height and yard requirements so building owners can: elevate living spaces above current risk levels, reduce flood insurance costs, relocate basements and cellars above risk levels, and better meet neighborhood context.

Height Allowances

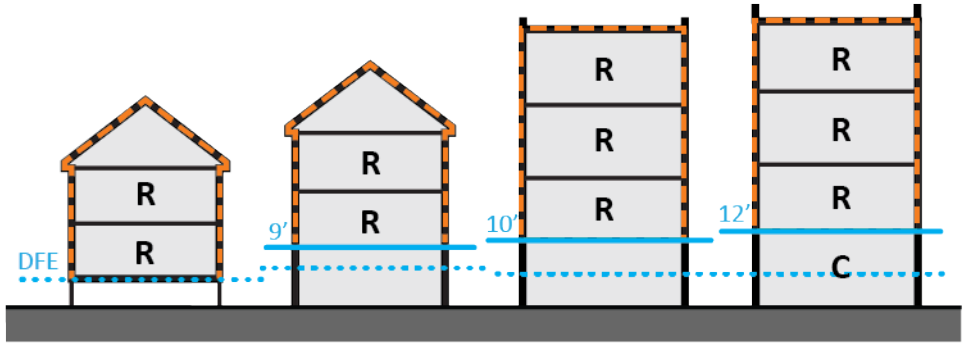
The zoning envelope can be measured from:

A Reference Plane located anywhere between the DFE and 10ft above grade (1% floodplain)

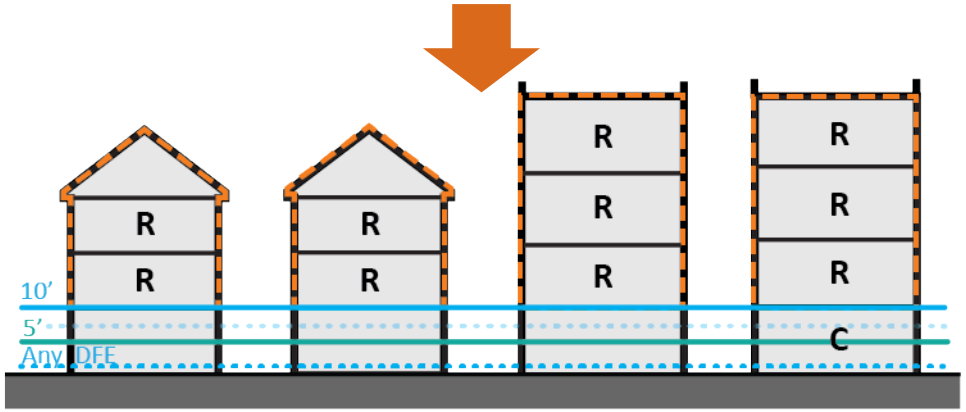
Or

A Reference Plane located anywhere between the grade and 5ft above grade (0.2% floodplain)

UPDATED FT1 ITEM



Existing Rules: DFE or a Reference Plane measured from 9', 10' or 12' depending on the building's use and zoning district



Proposed Rules: a Reference Plane available to all lots in the 1% and 0.2% floodplains

NYC PLANNING * Rules available if the building fully meets Appendix G of the Building Code

Zoning Recommendations
Building Envelope

To support long-term resilient design across all building types, Zoning for Coastal Flood Resiliency would modify height and yard requirements so building owners can: elevate living spaces above current risk levels, reduce flood insurance costs, relocate basements and cellars above risk levels, and better meet neighborhood context.

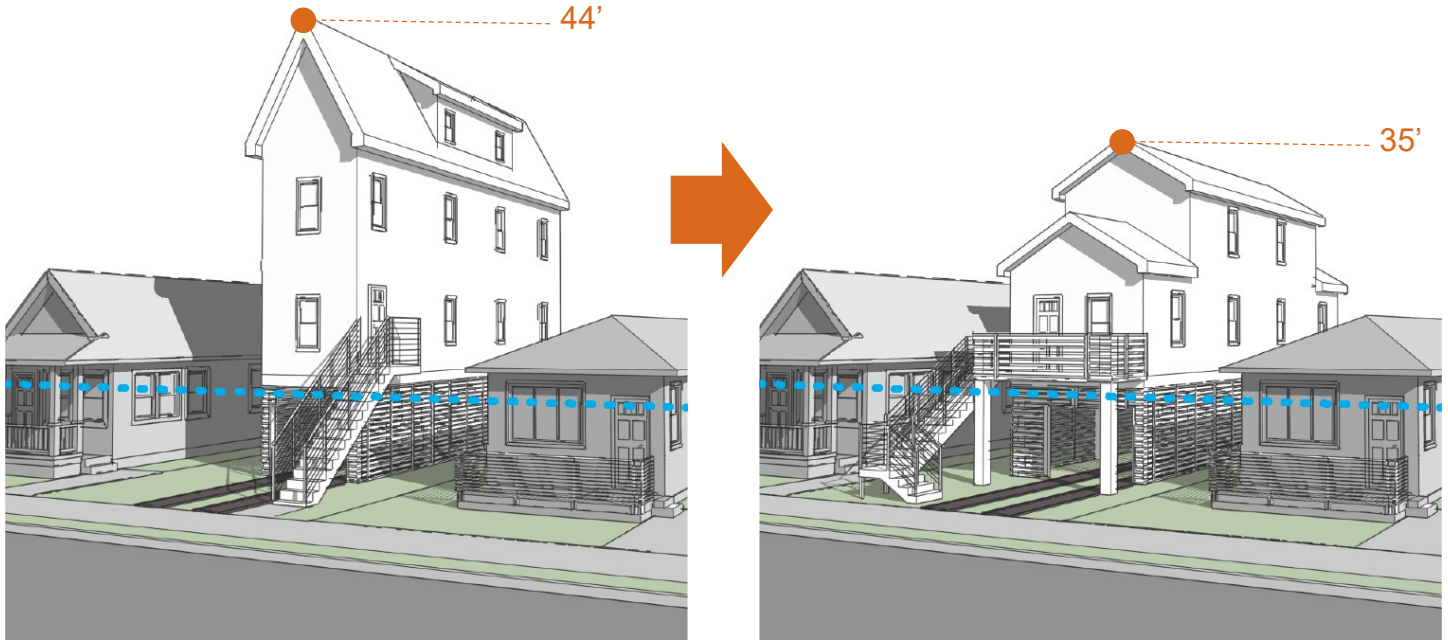
Cottage Envelope

Detached homes on small lots have the option to:

Reduce the front, rear or side-yards to construct, reconstruct, or retrofit existing buildings

However, yard flexibility comes with a shorter height requirement

UPDATED SRNR ITEM



Existing Rules: maximum height of 35’ as measured from the DFE or 9’ Reference Plane

Proposed Rules: maximum height of 25’ as measured from the DFE up to 10’ Reference Plane

NYC PLANNING * Rules available if the building fully meets Appendix G of the Building Code

Zoning Recommendations
Building Envelope

Building Envelope

To support long-term resilient design across all building types, Zoning for Coastal Flood Resiliency would modify height and yard requirements so building owners can: elevate living spaces above current risk levels, reduce flood insurance costs, relocate basements and cellars above risk levels, and better meet neighborhood context.

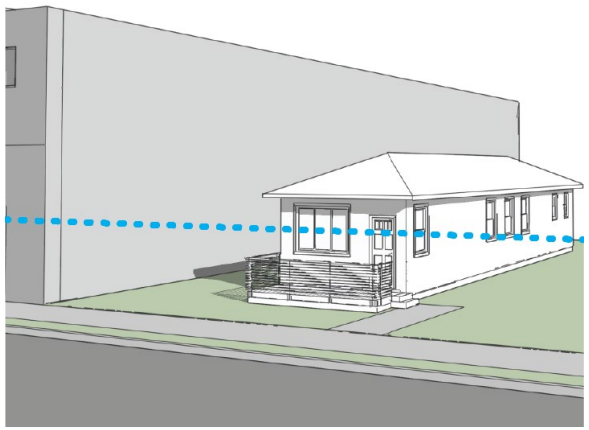
Flexibility to old buildings

Non-compliant buildings can increase non-compliances when retrofitted or rebuilt

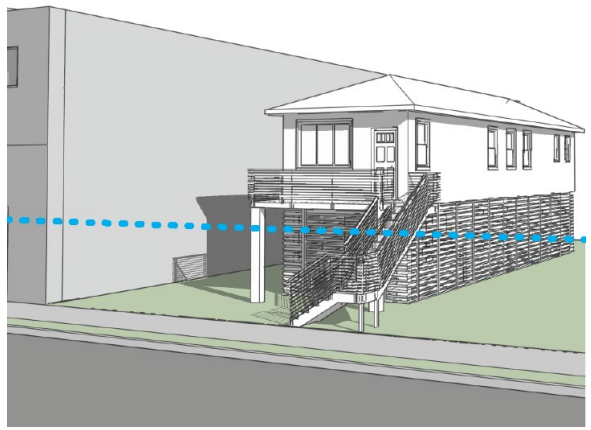
UPDATED
FT1/SRNR ITEM

Non-conforming buildings such as homes in Manufacturing Districts can be retrofitted or rebuilt (under certain circumstances)

NEW ITEM



Existing Rules: homes in M/C8 districts cannot be retrofitted or rebuilt



Proposed Rules: homes in M/C8 districts can be retrofitted or rebuilt

NYC PLANNING * Rules available if the building fully meets Appendix G of the Building Code

Zoning Recommendations
Building Design

Zoning for Coastal Flood Resiliency would also modify floor area, use regulations and design requirements so buildings are accessible to all, active uses remain at the sidewalk level with operation space that supports businesses, and ultimately, so neighborhoods continue to thrive with a vibrant streetscape.

Floor Area Exemptions

For active uses that are dry-floodproofed and kept at grade with transparency
(first 30ft from bldg street wall)

UPDATED
FT1 ITEM

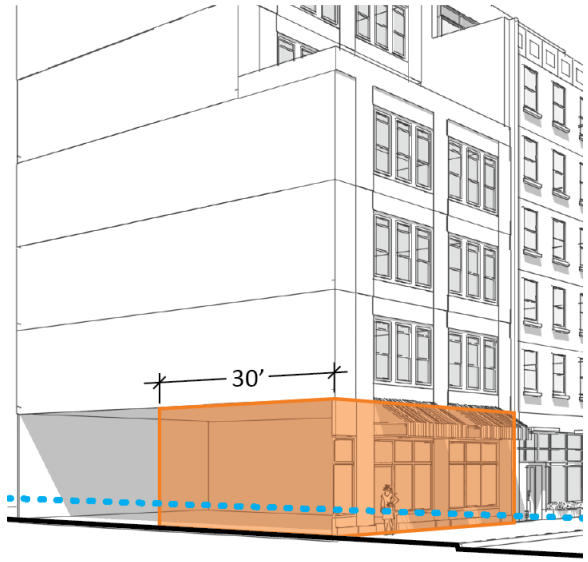
And for wet-flood proofed ground floors

UPDATED
FT1 ITEM

Or to provide internal access or mechanical equipment

UPDATED
FT1 ITEM

Existing Rules: entire ground-floor is exempted if > half of the floor-to-ceiling height is below the DFE



Proposed Rules: a portion of the ground-floor is exempted if meeting design reqs

NYC PLANNING * Rules available/required if the building fully meets Appendix G of the Building Code

Zoning Recommendations

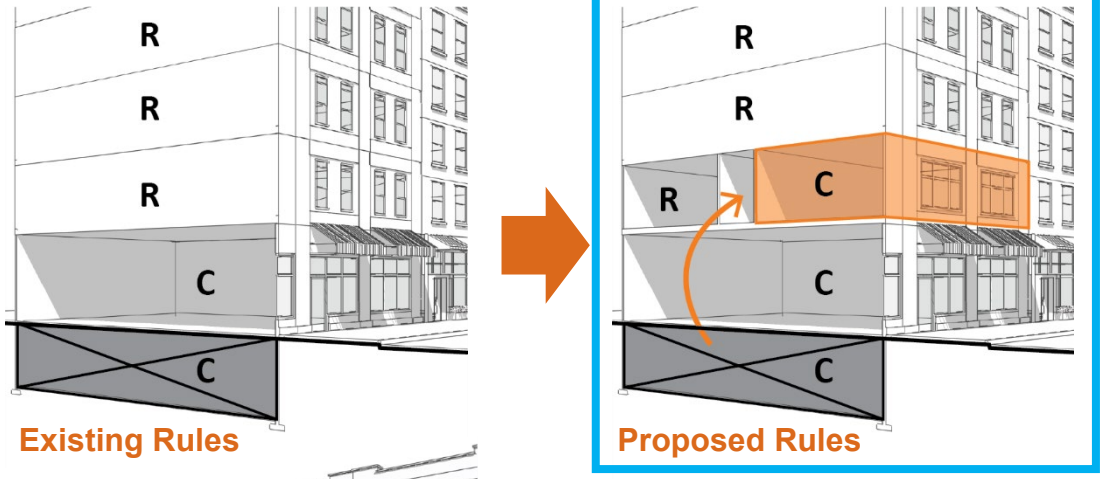
Building Design

Zoning for Coastal Flood Resiliency would also modify floor area, use regulations and design requirements so buildings are accessible to all, active uses remain at the sidewalk level with operation space that supports businesses, and ultimately, so neighborhoods continue to thrive with a vibrant streetscape.

Use Regulations

Mixed-use buildings can utilize the 2nd floor for commercial use

NEW ITEM



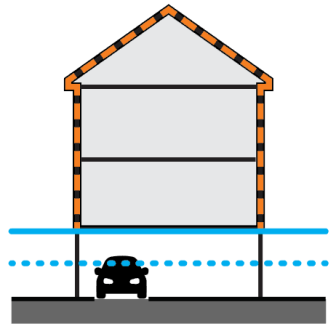
Existing Rules

Proposed Rules

Parking

Flexible curb-cut rules allow for parking below elevated homes

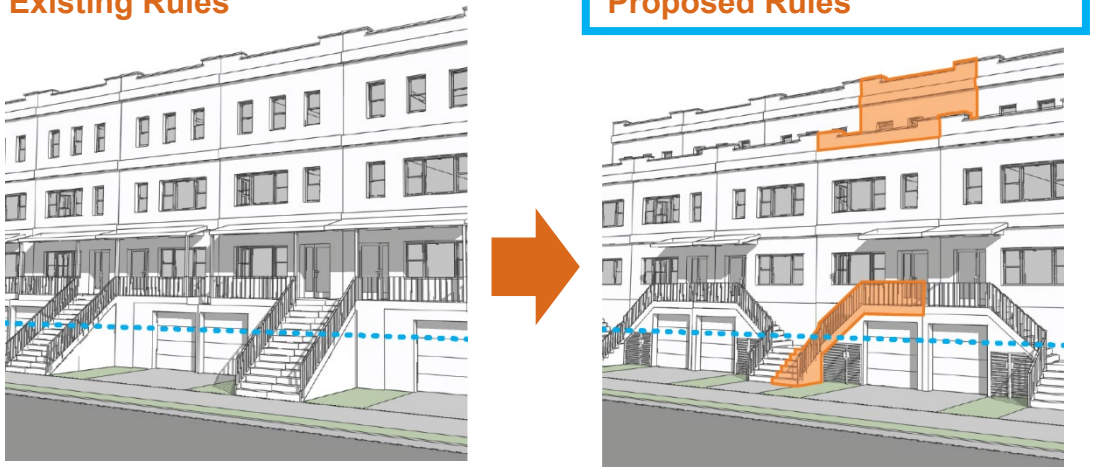
FT1 ITEM



Design Requirements

To mitigate height and blank walls

UPDATED FT1 ITEM



Existing Rules

Proposed Rules

* Rules available/required if the building fully meets Appendix G of the Building Code

Zoning Recommendations
Partial Resiliency Strategies

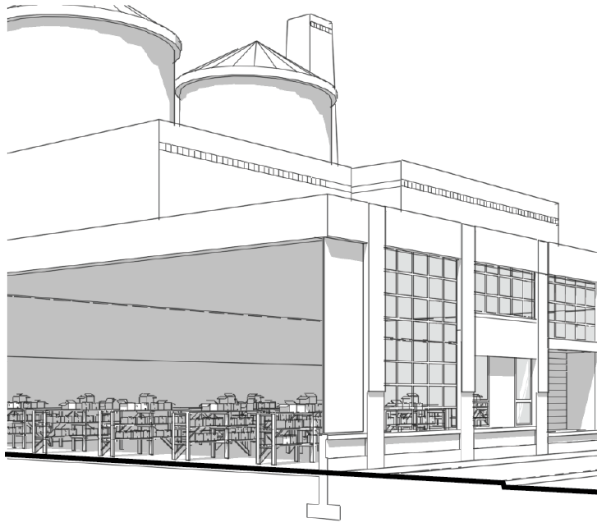
Partial Resiliency Strategies

To allow for adaptation over time through partial resiliency strategies, Zoning for Coastal Flood Resiliency would modify permitted obstruction rules to facilitate: the elevation of mechanical, electrical and plumbing equipment, including generators, above the flood level; and install flood barriers, retaining walls, and structured berms.

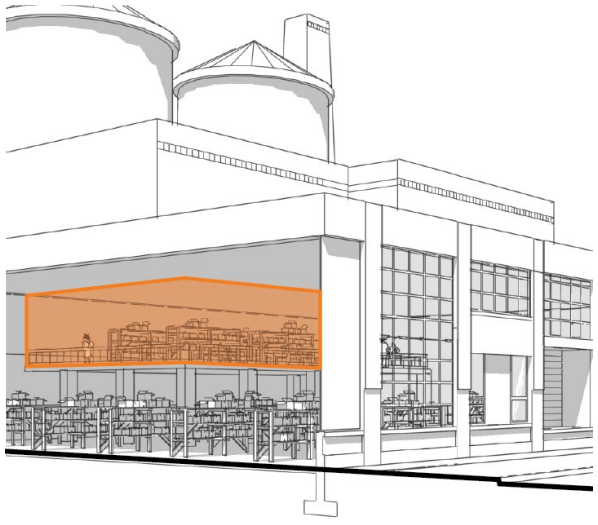
Floor Area Exemptions

Industrial buildings can create small mezzanine or 2nd floor to store important space/equipment

NEW ITEM



Existing Rules



Proposed Rules

NYC PLANNING * Rules available even if the building DOES NOT fully meets Appendix G of the Building Code

Zoning Recommendations
Partial Resiliency Strategies

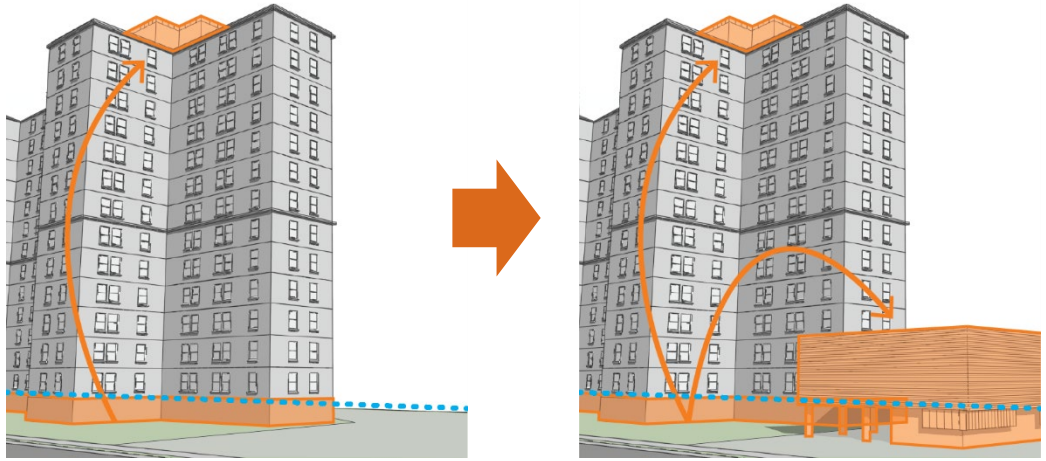
Partial Resiliency Strategies

To allow for adaptation over time through partial resiliency strategies, Zoning for Coastal Flood Resiliency would modify permitted obstruction rules to facilitate: the elevation of mechanical, electrical and plumbing equipment, including generators, above the flood level; and install flood barriers, retaining walls, and structured berms.

Permitted Obstructions

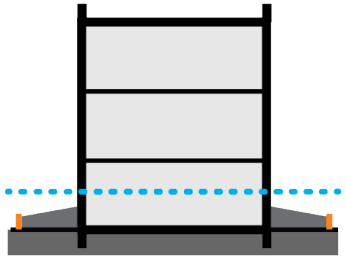
To relocate mechanical, electrical and plumbing equipment, and emergency generators

UPDATED
FT1 ITEM



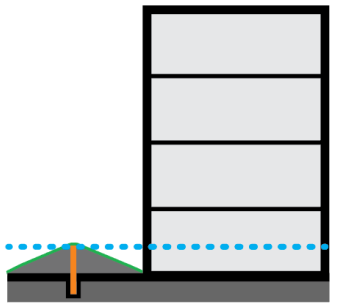
Or to build retaining walls and raise yards

FT1 ITEM



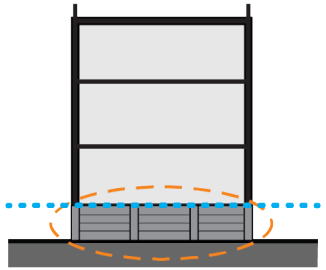
Or to build berms

NEW ITEM



Or deploy flood panels

FT1 ITEM



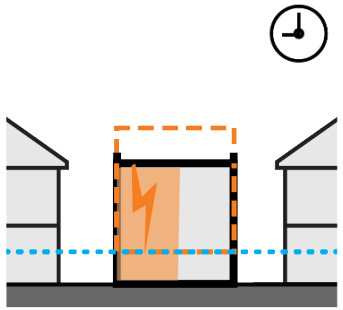
NYC PLANNING * Rules available even if the building DOES NOT fully meets Appendix G of the Building Code

Zoning Recommendations
Emergency Rules

To facilitate and expedite future-storm recovery, Zoning for Coastal Flood Resiliency would set up a framework that removes regulatory obstacles to allow the reconstruction of non-conforming uses and non-complying buildings that are damaged, and simplify the documentation process for obtaining permits from the Department of Buildings (DOB).

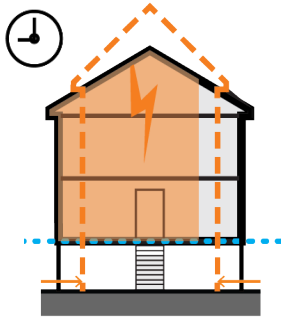
Reconstruction allowances

Substantially-damaged non-conforming buildings can rebuild to at least minimum resiliency standards



UPDATED SRNR ITEM

Substantially-damaged non-complying buildings can rebuild to at least minimum resiliency standards



UPDATED SRNR ITEM

Documentation process

Aerial photographs and tax bills can be used to establish the existence of a building// Survey prepared by a land surveyor may be used to document non-compliances

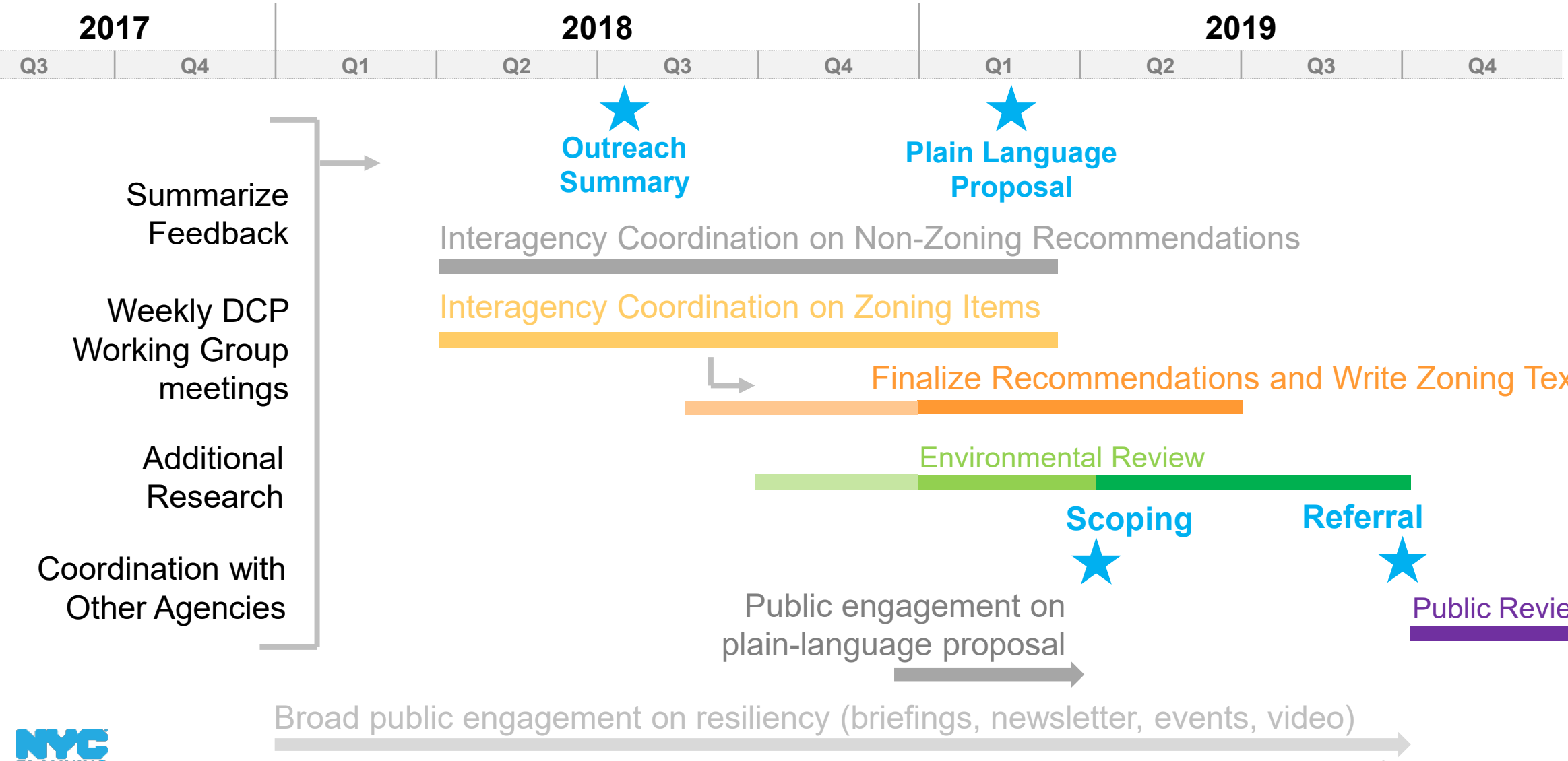
UPDATED SRNR ITEM

NYC PLANNING

* Rules available if the building fully meets Appendix G of the Building Code and there is a future storm

Zoning for Coastal Flood Resiliency Update

Project Timeline



** Timeline subject to change*

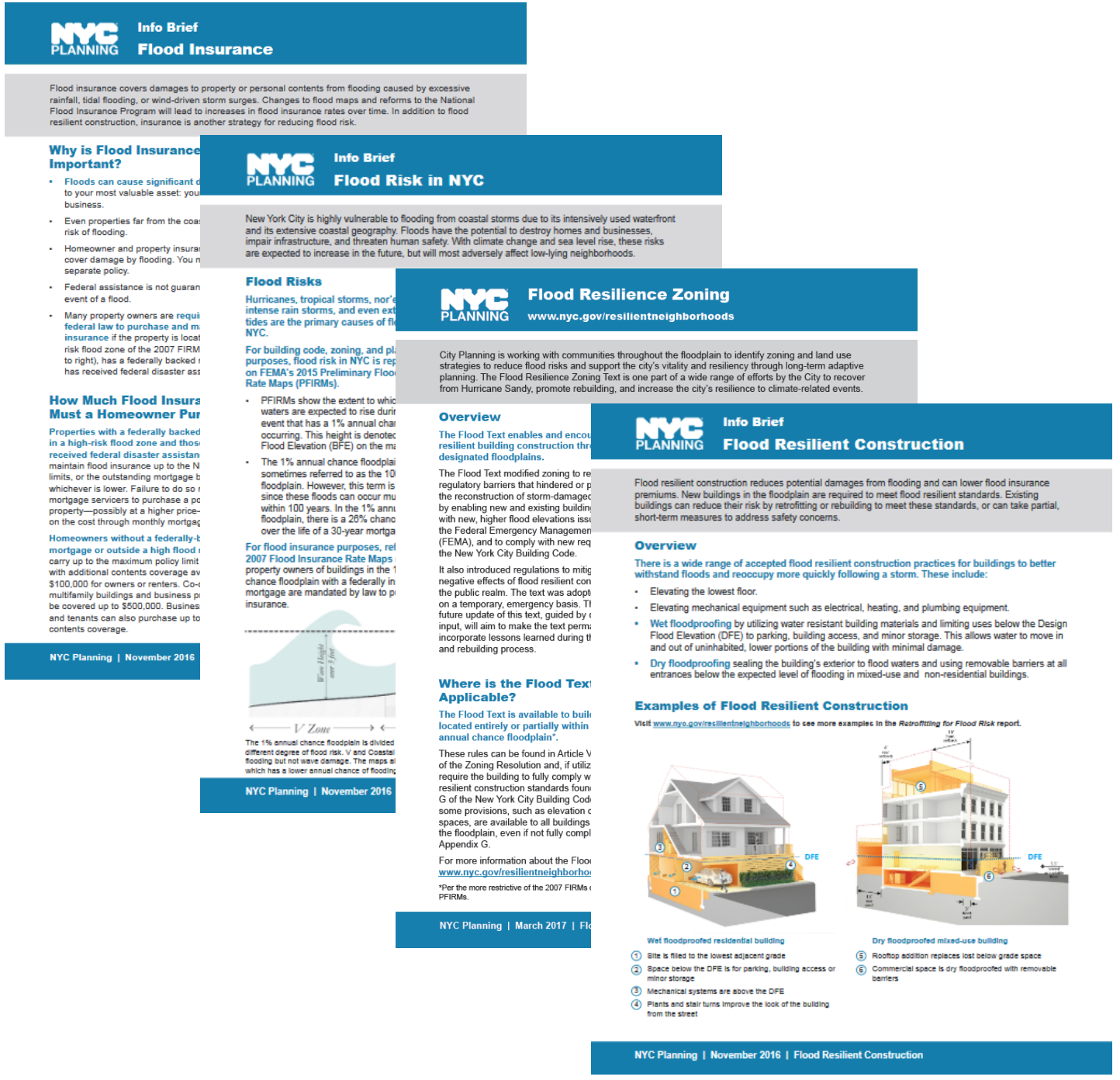
Resources

NYC Flood Hazard Mapper

www.nyc.gov/floodhazardmapper

Info briefs on Flood Resilience Zoning, Flood Risk, Flood Resilient Construction, and Flood Insurance

www.nyc.gov/resilientneighborhoods



NYC PLANNING
Info Brief
Flood Insurance

Flood insurance covers damages to property or personal contents from flooding caused by excessive rainfall, tidal flooding, or wind-driven storm surges. Changes to flood maps and reforms to the National Flood Insurance Program will lead to increases in flood insurance rates over time. In addition to flood resilient construction, insurance is another strategy for reducing flood risk.

Why is Flood Insurance Important?

- Floods can cause significant d to your most valuable asset: you business.
- Even properties far from the coas risk of flooding.
- Homeowner and property insura cover damage by flooding. You n separate policy.
- Federal assistance is not guaran event of a flood.
- Many property owners are requi federal law to purchase and m insurance if the property is locat risk flood zone of the 2007 FIRM to right), has a federally backed has received federal disaster ass

How Much Flood Insura Must a Homeowner Pur

Properties with a federally backed in a high-risk flood zone and thos received federal disaster assistan maintain flood insurance up to the N limits, or the outstanding mortgage b whichever is lower. Failure to do so mortgage servicers to purchase a po property—possibly at a higher price- on the cost through monthly mortgag

Homeowners without a federally-b mortgage or outside a high flood carry up to the maximum policy limit with additional contents coverage av $100,000 for owners or renters. Co- multifamily buildings and business p be covered up to $500,000. Busines and tenants can also purchase up to contents coverage.

NYC Planning | November 2016

NYC PLANNING
Info Brief
Flood Risk in NYC

New York City is highly vulnerable to flooding from coastal storms due to its intensively used waterfront and its extensive coastal geography. Floods have the potential to destroy homes and businesses, impair infrastructure, and threaten human safety. With climate change and sea level rise, these risks are expected to increase in the future, but will most adversely affect low-lying neighborhoods.

Flood Risks

Hurricanes, tropical storms, nor'e intense rain storms, and even ext tides are the primary causes of fl NYC.

For building code, zoning, and pl purposes, flood risk in NYC is rep on FEMA's 2015 Preliminary Floo Rate Maps (PFIRMs).

- PFIRMs show the extent to whic waters are expected to rise duri event that has a 1% annual cha occurring. This height is denotec Flood Elevation (BFE) on the ma
- The 1% annual chance floodpla sometimes referred to as the 10 floodplain. However, this term is since these floods can occur mu within 100 years. In the 1% annu floodplain, there is a 26% chanc over the life of a 30-year mortga

For flood insurance purposes, rel 2007 Flood Insurance Rate Maps property owners of buildings in the 1 chance floodplain with a federally in mortgage are mandated by law to p insurance.

The 1% annual chance floodplain is divided different degree of flood risk. V and Coastal flooding but not wave damage. The maps al which has a lower annual chance of flooding

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NYC PLANNING
Flood Resilience Zoning
www.nyc.gov/resilientneighborhoods

City Planning is working with communities throughout the floodplain to identify zoning and land use strategies to reduce flood risks and support the city's vitality and resiliency through long-term adaptive planning. The Flood Resilience Zoning Text is one part of a wide range of efforts by the City to recover from Hurricane Sandy, promote rebuilding, and increase the city's resilience to climate-related events.

Overview

The Flood Text enables and encou resilient building construction thr designated floodplains.

The Flood Text modified zoning to re regulatory barriers that hindered or p the reconstruction of storm-damaged by enabling new and existing buildin with new, higher flood elevations issu the Federal Emergency Managemen (FEMA), and to comply with new req the New York City Building Code.

It also introduced regulations to mitig negative effects of flood resilient con the public realm. The text was adopt on a temporary, emergency basis. Th future update of this text, guided by input, will aim to make the text perma incorporate lessons learned during th and rebuilding process.

Where is the Flood Text Applicable?

The Flood Text is available to build located entirely or partially within annual chance floodplain*.

These rules can be found in Article V of the Zoning Resolution and, if utiliz require the building to fully comply w resilient construction standards foun G of the New York City Building Cod some provisions, such as elevation d spaces, are available to all buildings the floodplain, even if not fully compl Appendix G.

For more information about the Floo www.nyc.gov/resilientneighborho

*Per the more restrictive of the 2007 FIRMs PFIRMs.

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Info Brief
Flood Resilient Construction

Flood resilient construction reduces potential damages from flooding and can lower flood insurance premiums. New buildings in the floodplain are required to meet flood resilient standards. Existing buildings can reduce their risk by retrofitting or rebuilding to meet these standards, or can take partial, short-term measures to address safety concerns.

Overview

There is a wide range of accepted flood resilient construction practices for buildings to better withstand floods and reoccupy more quickly following a storm. These include:

- Elevating the lowest floor.
- Elevating mechanical equipment such as electrical, heating, and plumbing equipment.
- Wet floodproofing by utilizing water resistant building materials and limiting uses below the Design Flood Elevation (DFE) to parking, building access, and minor storage. This allows water to move in and out of uninhabited, lower portions of the building with minimal damage.
- Dry floodproofing sealing the building's exterior to flood waters and using removable barriers at all entrances below the expected level of flooding in mixed-use and non-residential buildings.

Examples of Flood Resilient Construction

Visit www.nyc.gov/resilientneighborhoods to see more examples in the *Retrofitting for Flood Risk* report.

Wet floodproofed residential building

1. Site is filled to the lowest adjacent grade
2. Space below the DFE is for parking, building access or minor storage
3. Mechanical systems are above the DFE
4. Plants and stair turns improve the look of the building from the street

Dry floodproofed mixed-use building

5. Rooftop addition replaces lost below grade space
6. Commercial space is dry floodproofed with removable barriers

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