

Zoning for Coastal Flood Resiliency

Update and Summary of Preliminary Recommendations



Bronx Community Board 1, Economic Development, Land Use, and Housing Subcommittee

September 11th, 2019

Hurricane Sandy



Port Morris

Source: dna.info



City Island

Source: dna.info



Hunts Point

Source: Bronx Ink

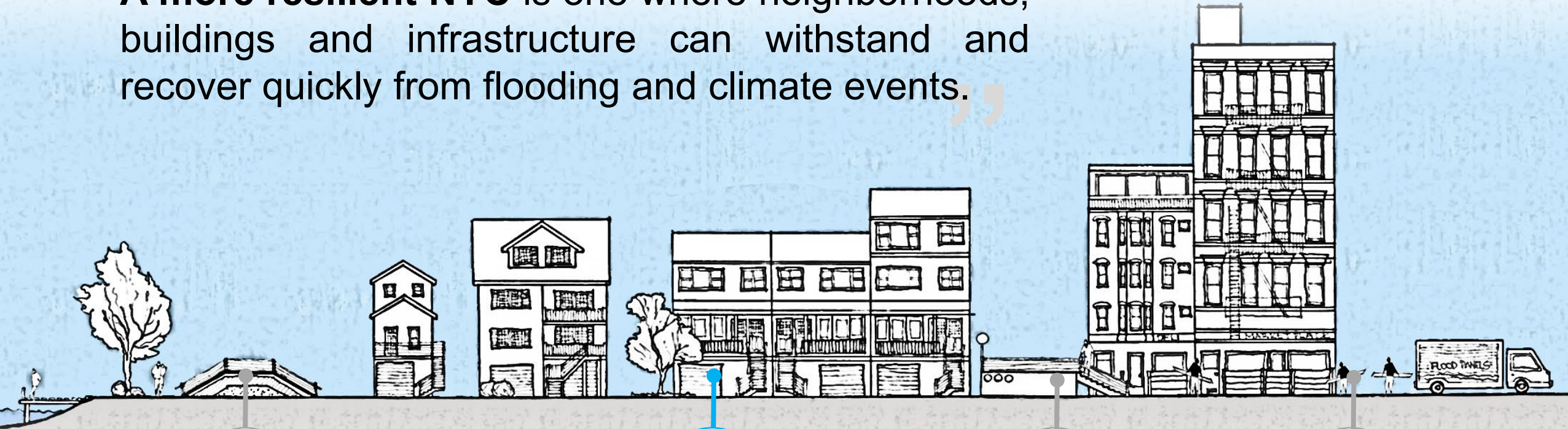


Locust Point

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

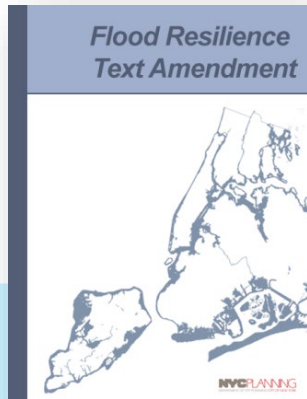
are prepared

Introduction

DCP's work since Hurricane Sandy

2012
Hurricane
Sandy

Zoning Text (emergency-basis)



2013
"Flood Text 1"
Temporary
Rules



2015
"Recovery Text"
Temporary
Rules

Research & Outreach Process

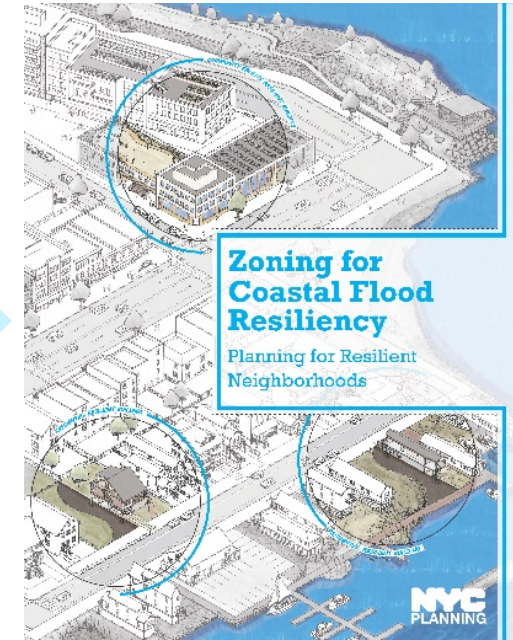


Citywide /
Neighborhood Studies
(2014-2017)



Community Outreach
+ Workshops
(2016-2018)

Proposal (permanent-basis)



Zoning for Coastal Flood
Resiliency
(2019)

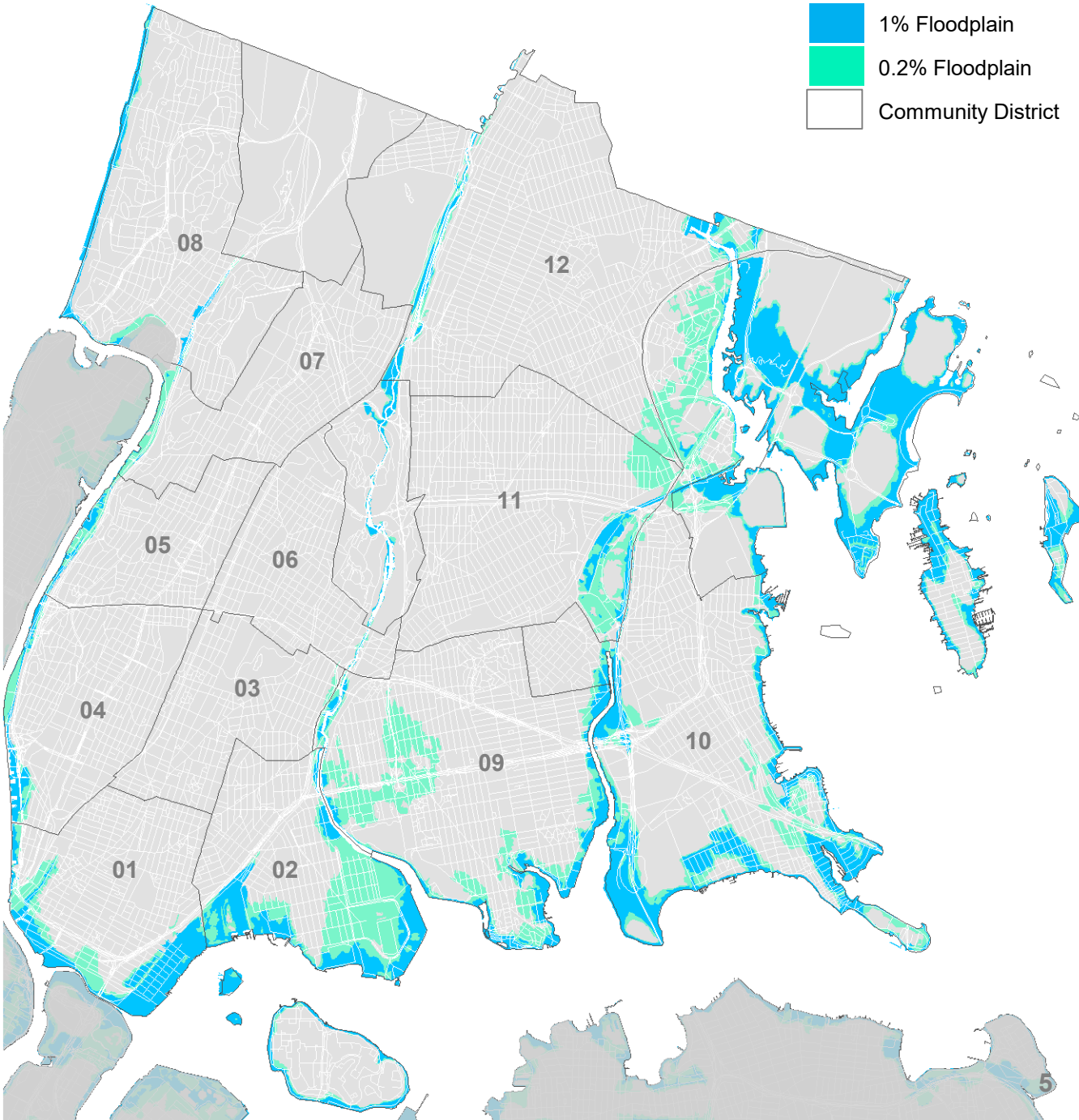
Flood Risk in the Bronx

NYC's flood risk is high.

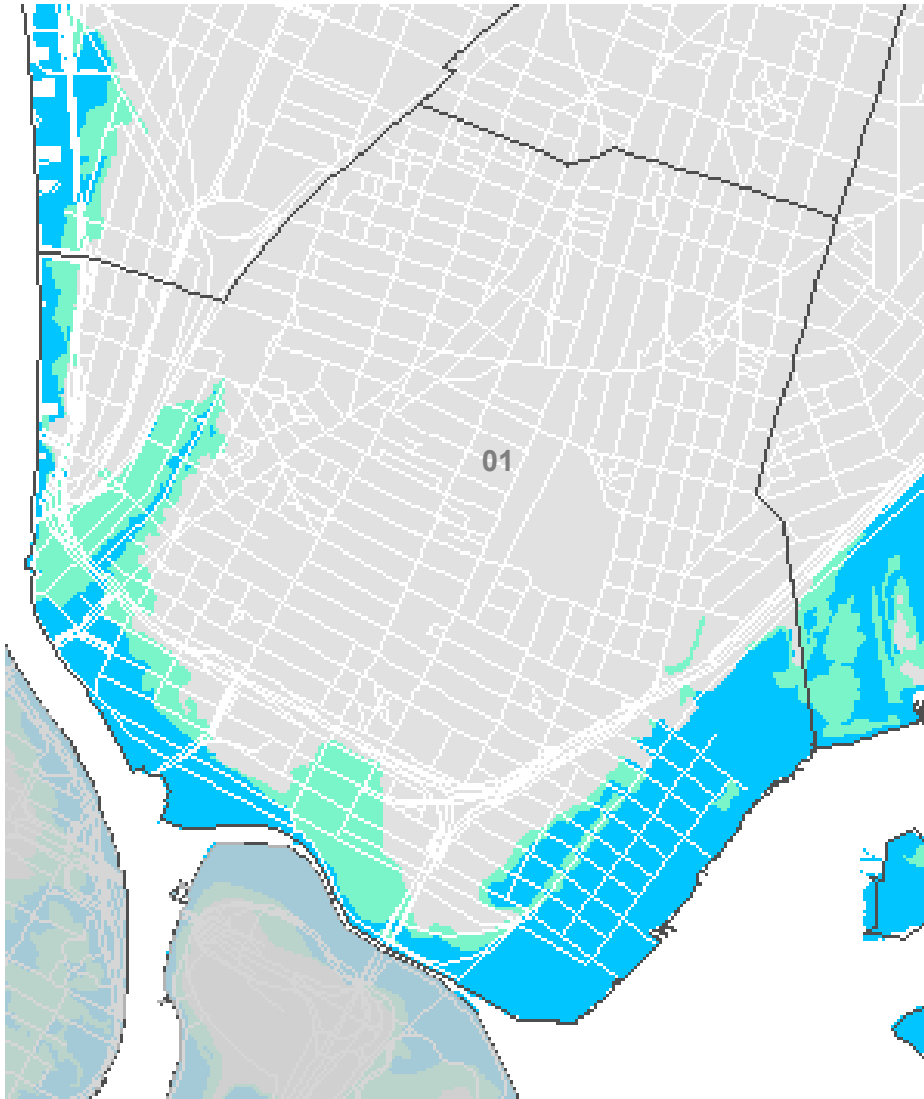
The floodplain affects a large geography and most community boards and council districts.

The vast majority of the floodplain is already developed.

| | 1% annual chance floodplain (high risk) | 0.2% annual chance floodplain (moderate risk) | TOTAL |
|--------------------------------------|---|---|---------|
| Citywide Total # of Lots | 65,582 | 36,723 | 102,305 |
| Bronx Total # of Lots | 3,536 | 3,389 | 6,925 |
| | 1% annual chance floodplain (high risk) | 0.2% annual chance floodplain (moderate risk) | TOTAL |
| Citywide Total # of Buildings | 80,907 | 44,636 | 125,539 |
| Bronx Total # of Buildings | 6,055 | 3,922 | 9,977 |



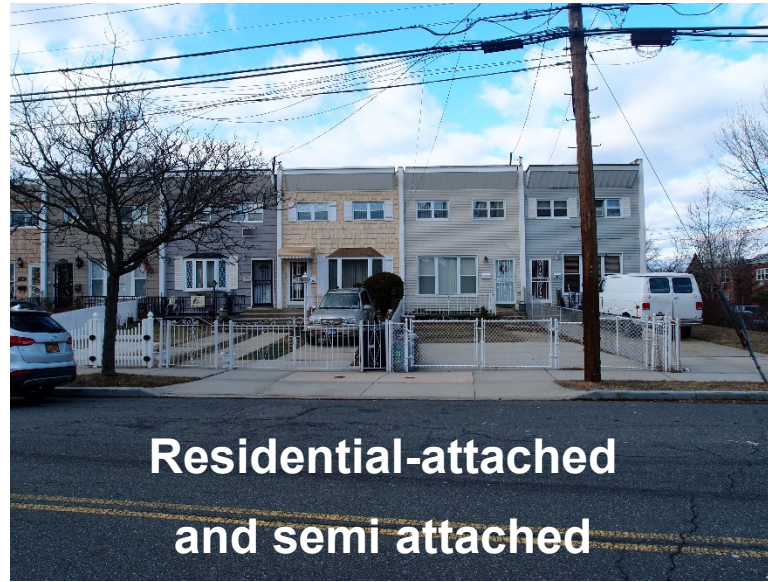
Flood Risk Bronx CD 1



 1% Annual Chance Floodplain (**High Risk**)

 0.2% Annual Chance Floodplain (**Moderate Risk**)

Building typologies in the Bronx floodplain



Flood Risk Bronx CD 1: Land Use

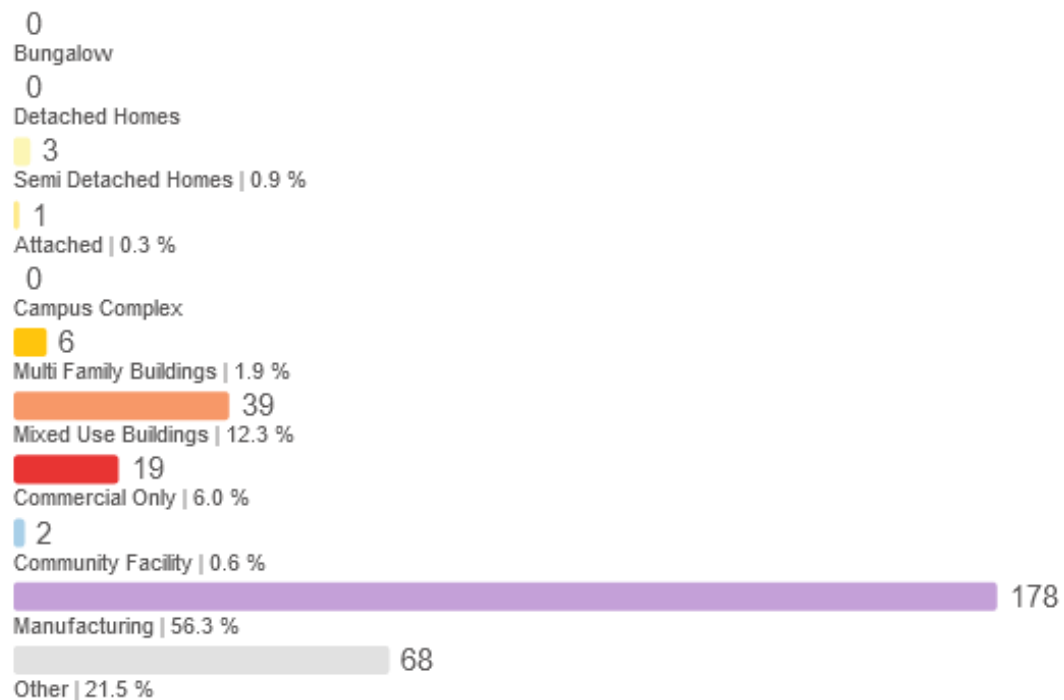
In both the high and moderate risk floodplains, the majority of land use is manufacturing, followed by multifamily residential, mixed use, and other.

Buildings in Floodplain ⓘ

High Risk

316

buildings are in the 1% Annual Chance floodplain

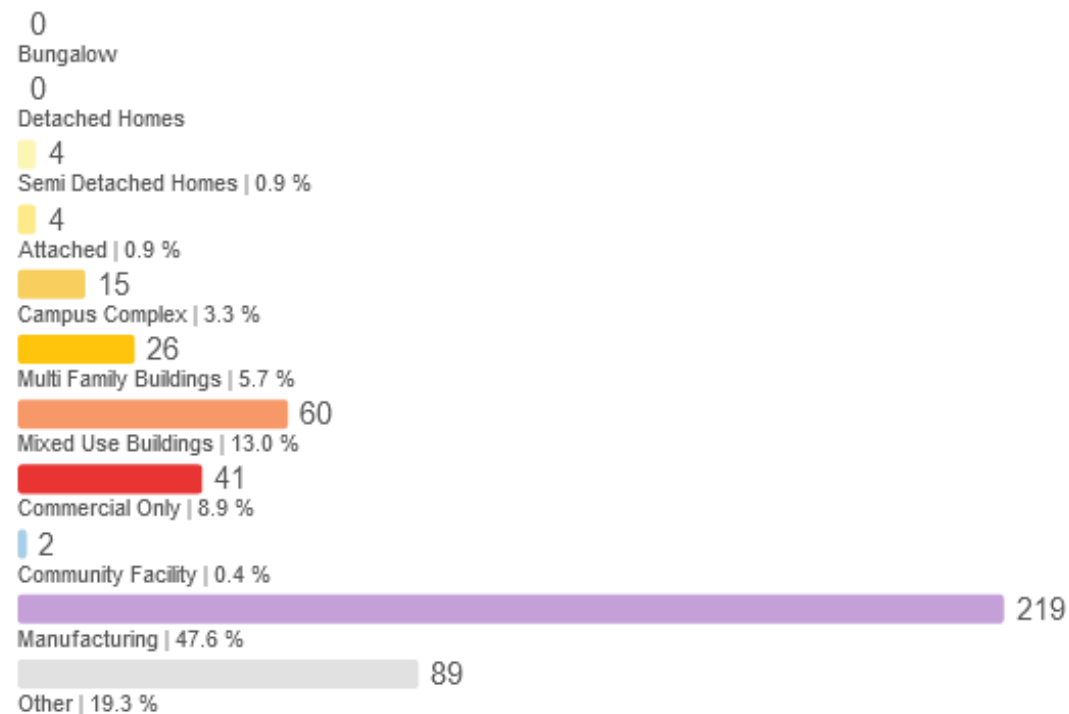


Buildings in Floodplain ⓘ

Moderate Risk

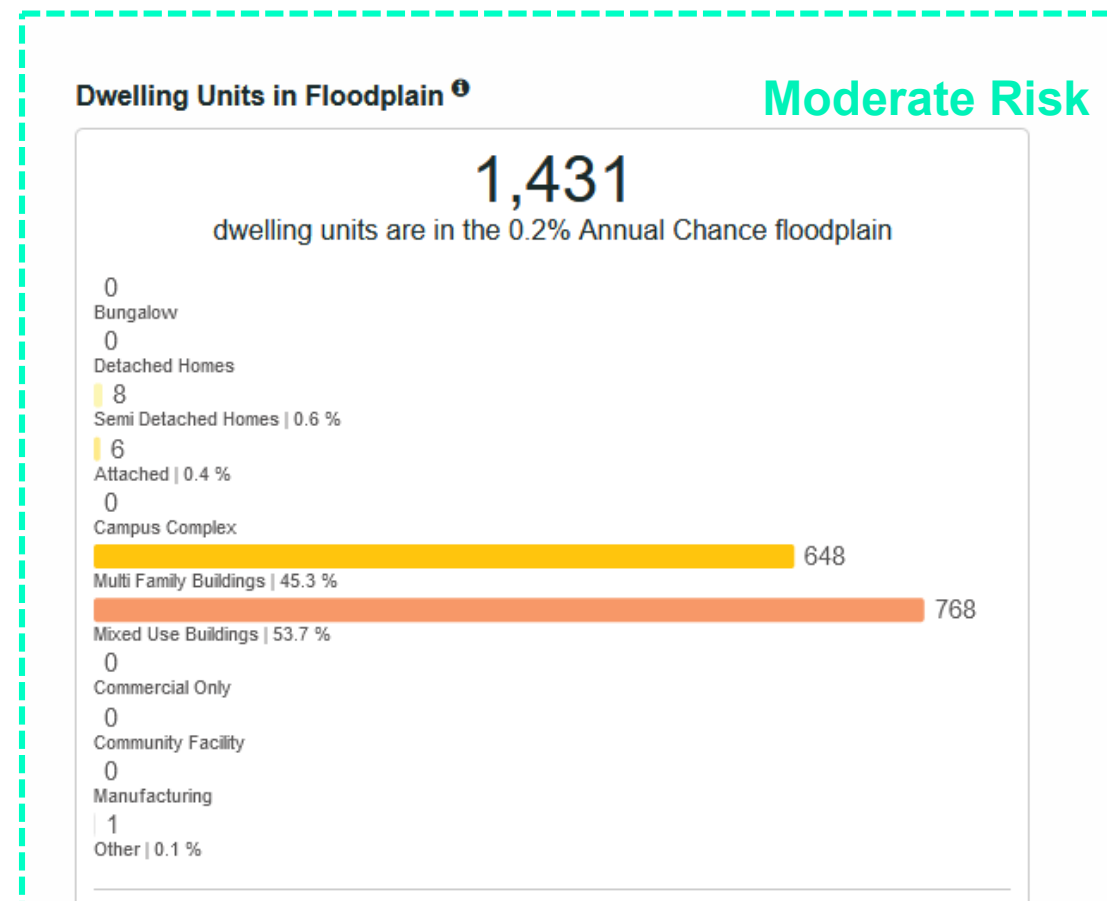
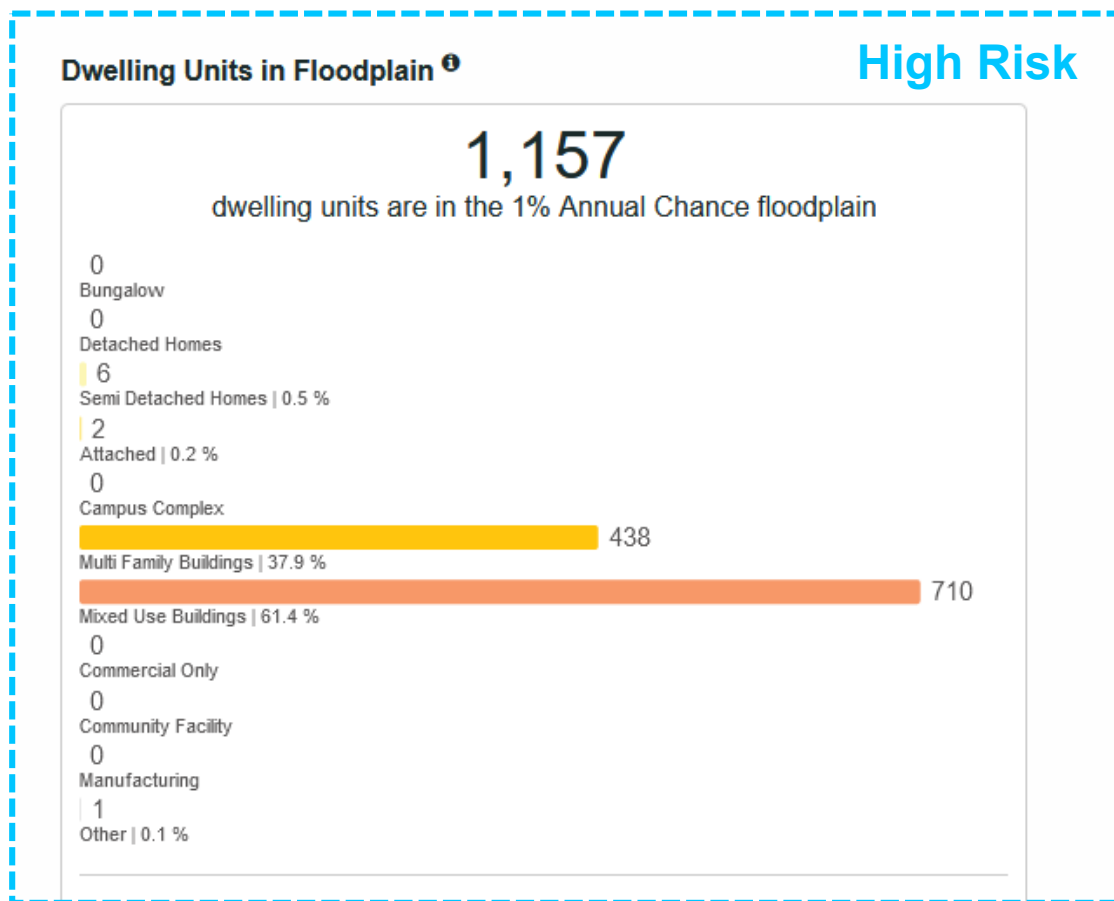
460

buildings are in the 0.2% Annual Chance floodplain



Flood Risk Bronx CD 1: Dwelling Units

In both the high and moderate risk floodplains, the majority of dwelling units are located in multifamily or mixed use buildings.



How are buildings in the floodplain regulated?

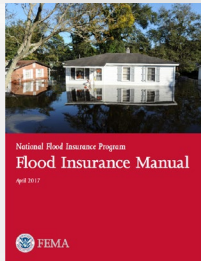


FEMA



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

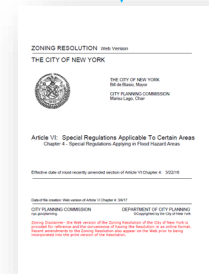
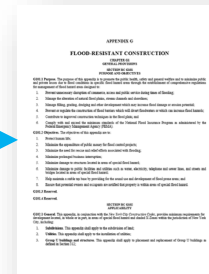
NYC

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

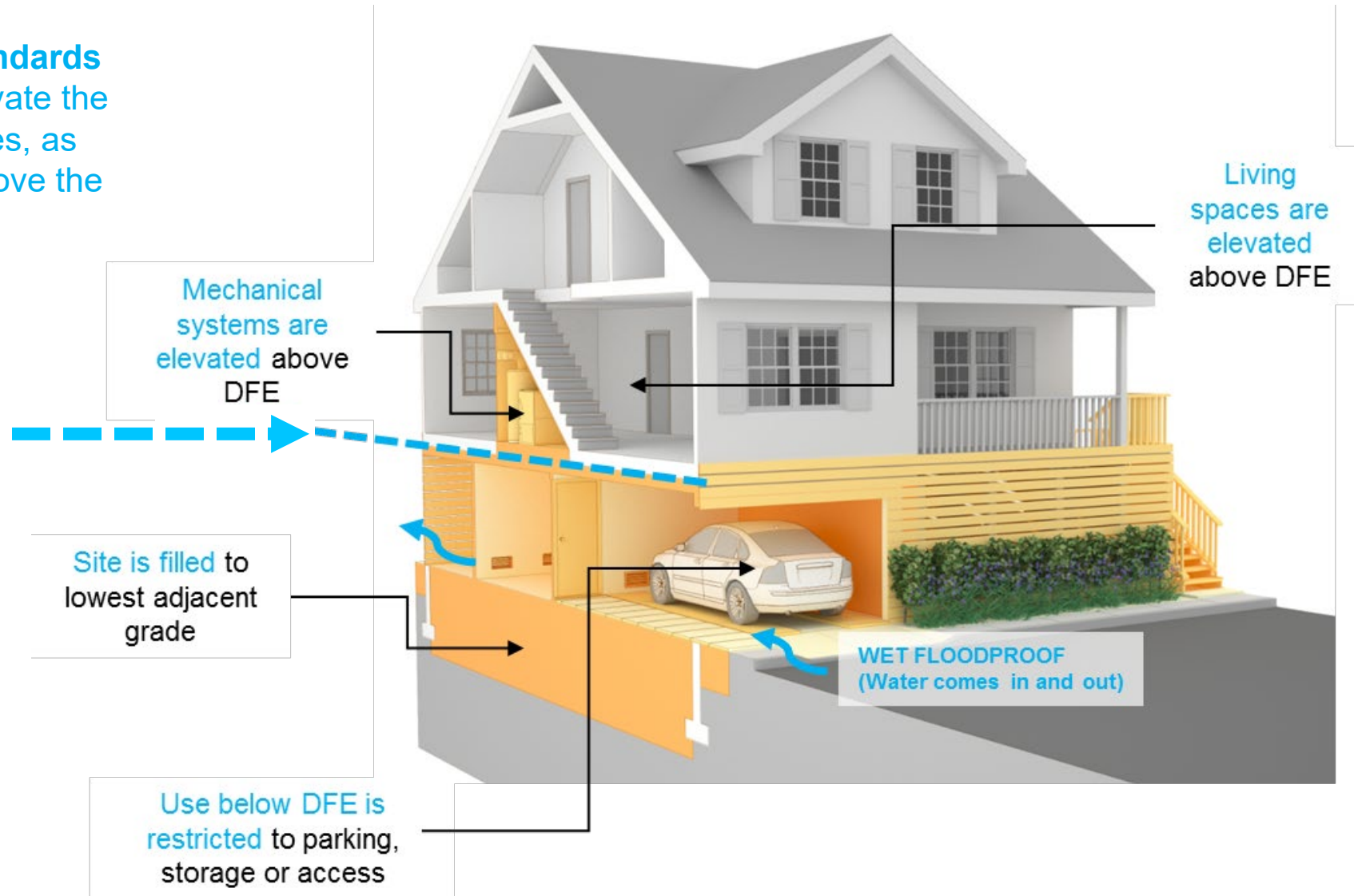


Flood resilient construction Required by DOB

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).

Design Flood Elevation (DFE)

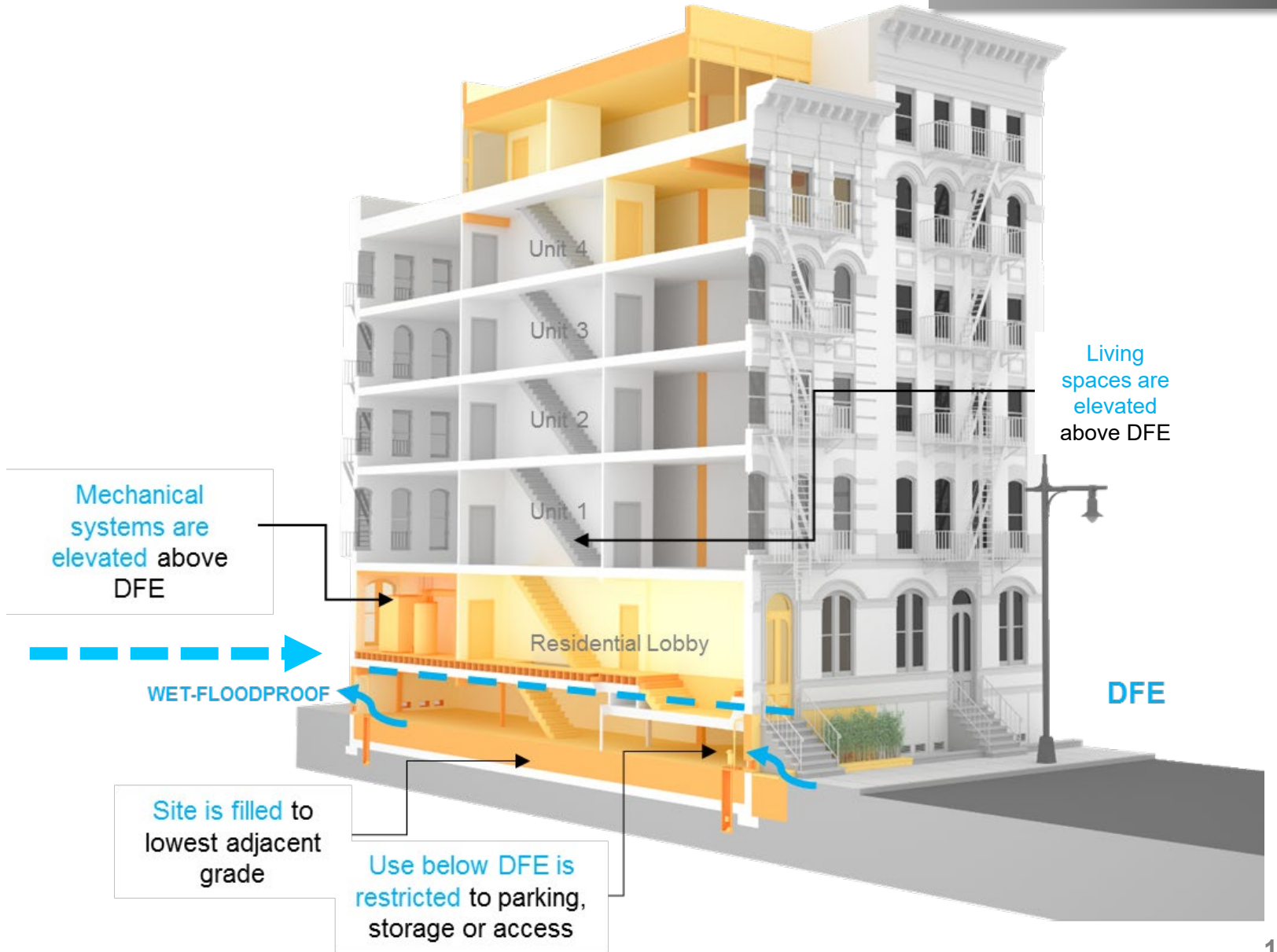


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Design Flood Elevation (DFE)



Zoning for Coastal Flood Resiliency

Overview of Goals

Goals:

1. Encourage resiliency throughout the current and future floodplains

2. Support long-term resilient design of all building types through flexibility in zoning

3. Allow for adaptation over time through incremental retrofits

4. Facilitate future storm recovery

Proposal:

Applicability

Building Envelope
Ground Floor Design

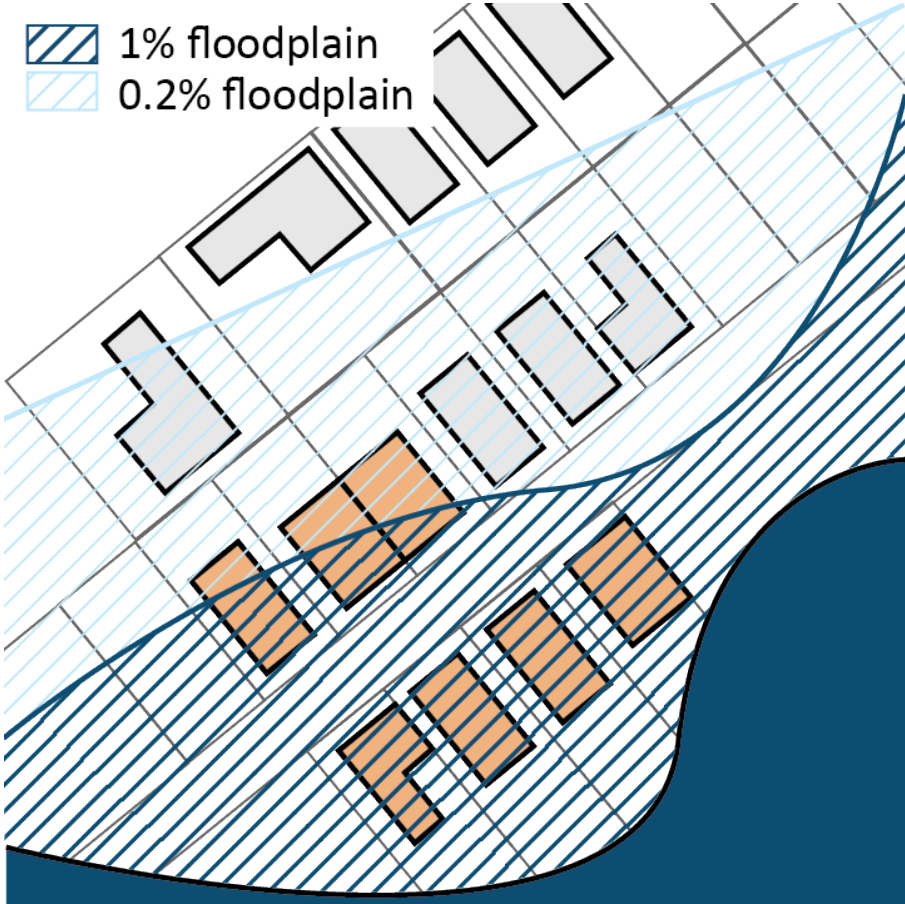
Partial Resiliency Strategies

Emergency Rules

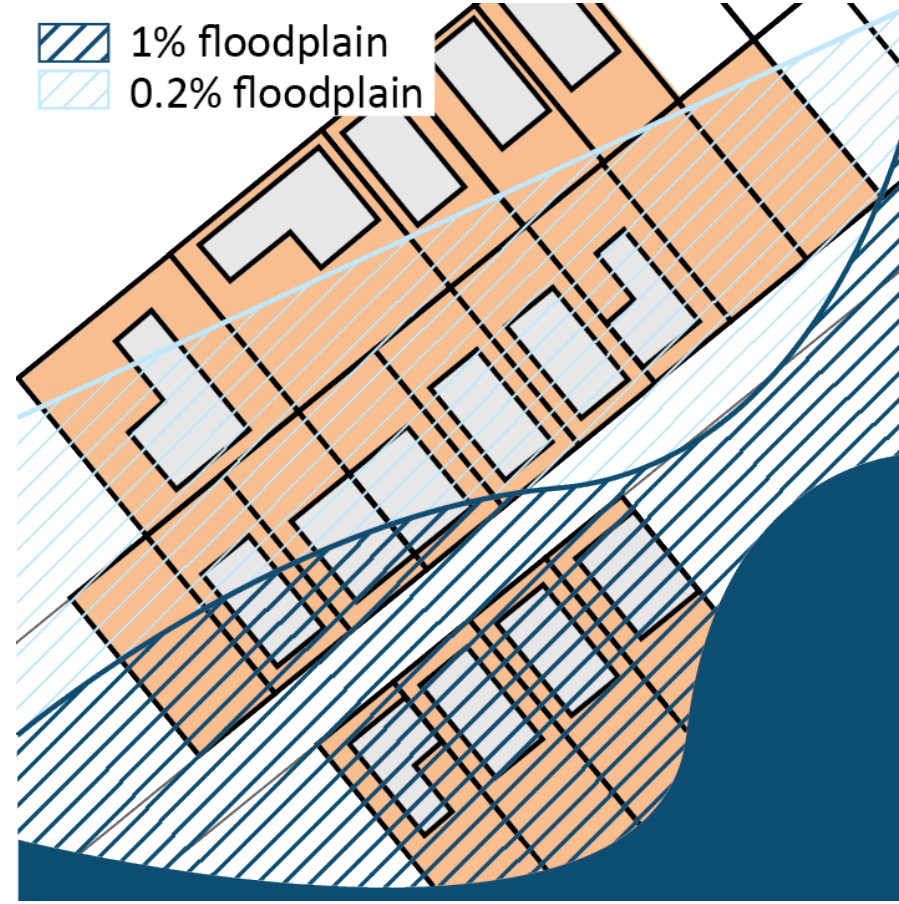
Applicability

General Applicability

Permanent regulations would facilitate buildings to **proactively** incorporate resiliency improvements to fully meet **or exceed** *flood-resistant construction standards* while maintaining the same allowable *Building Envelope*.



Existing Rules: apply to buildings within the 1% floodplain



Proposed Rules: apply to lots within the 0.2% floodplain

Updated Item

Zoning for Coastal Flood Resiliency

An enhanced Building Envelope

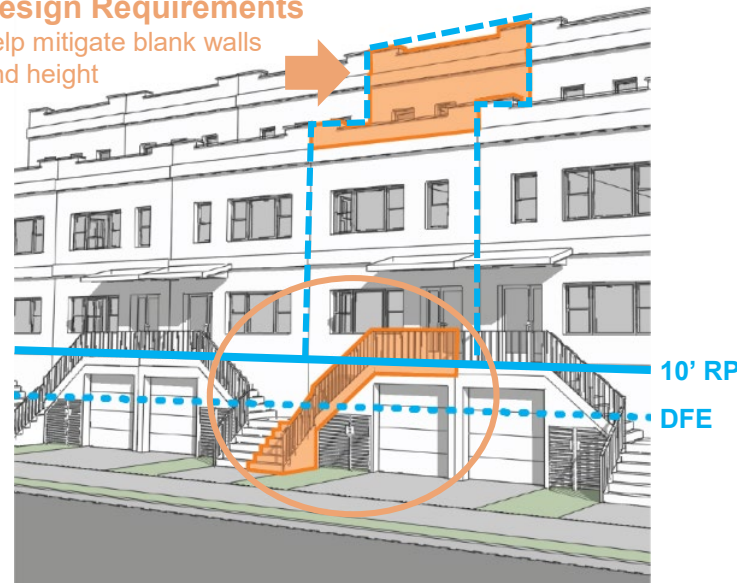
Allowances coupled with design requirements would allow building owners to accommodate sea level rise projections when designing new or retrofitting buildings, without creating negative impacts on the streetscape.

This would increase the building and its content's safety and allow flood insurance costs to be reduced.



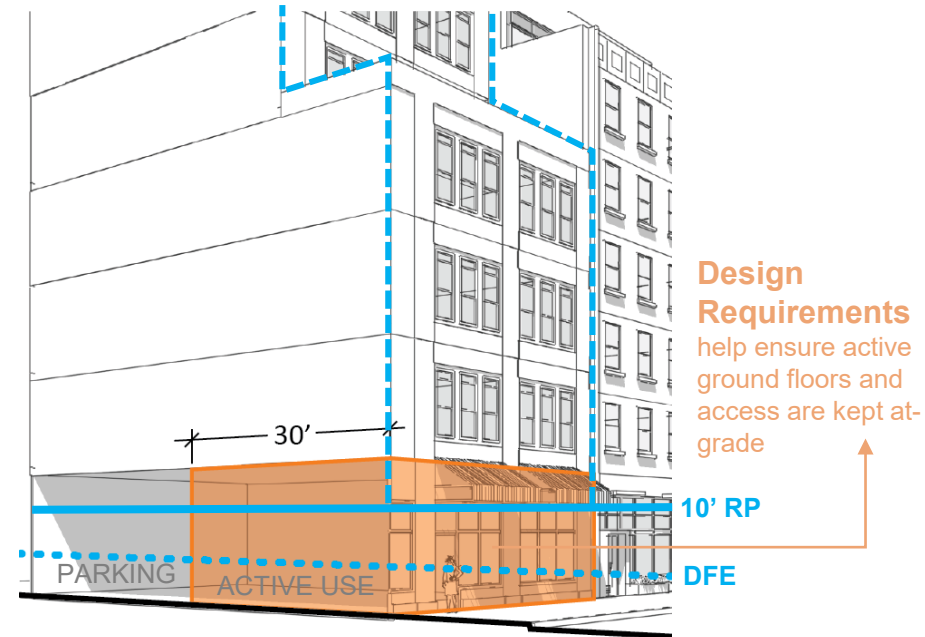
2. Support long-term resilient design of all building types through flexibility in zoning

Design Requirements
help mitigate blank walls
and height



Height Allowances

for all building-types by allowing the envelope to be measured from the DFE or a higher Reference Plane (10' or 5', depending if within 1% or 0.2% floodplain)



Floor Area Exemptions

for active uses (commercial and community facilities) that are dry-floodproofed and kept at grade, and any wet-floodproofed spaces

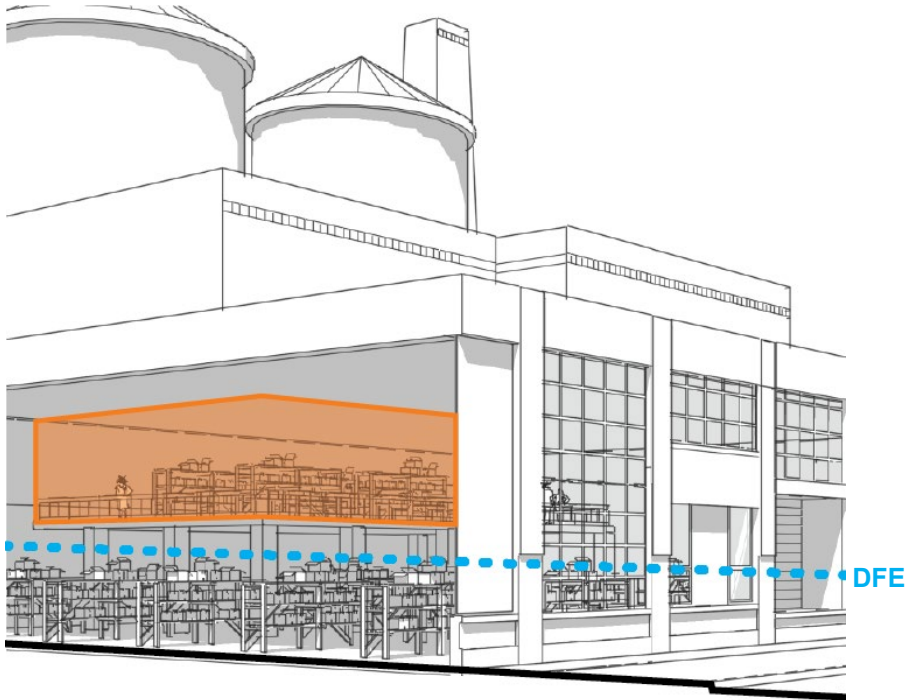
Zoning for Coastal Flood Resiliency

Alternatives for the relocation of important equipment

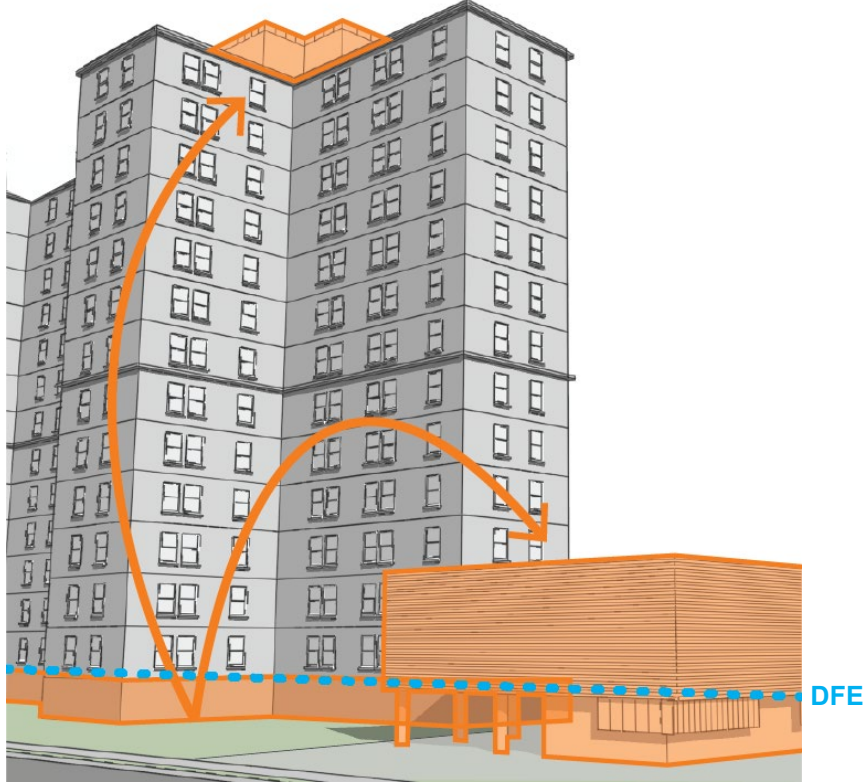
Building owners would have additional zoning flexibility to relocate mechanical, electrical and plumbing equipment or install back-up systems such as generators above areas at risk of being flooded, including on roofs or in new separate structures.



3. Allow for adaptation over time through incremental retrofits



Floor Area Exemptions for existing industrial buildings allow the creation of small mezzanine space or a 2nd floor to store important spaces/equipment



More flexible permitted obstructions provide more options for MEP to be relocated to either above the roof or within separate structures

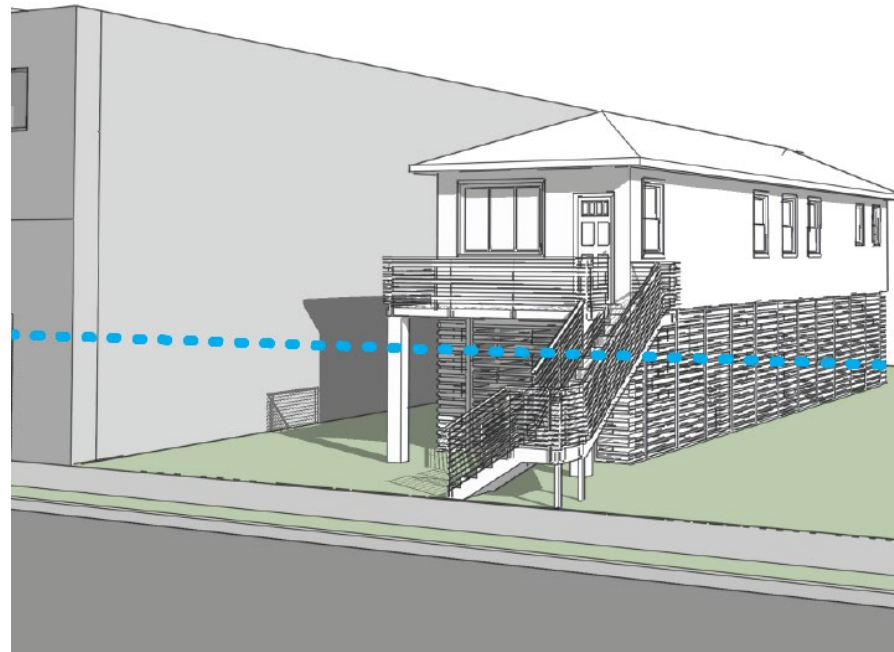
Zoning for Coastal Flood Resiliency

Future storm recovery

Rules that make it easier for damaged buildings to be reconstructed would be enabled in the event of a future disaster. This would allow residents and neighborhoods to recover faster and allow the City to more quickly offer disaster assistance to those who are impacted.

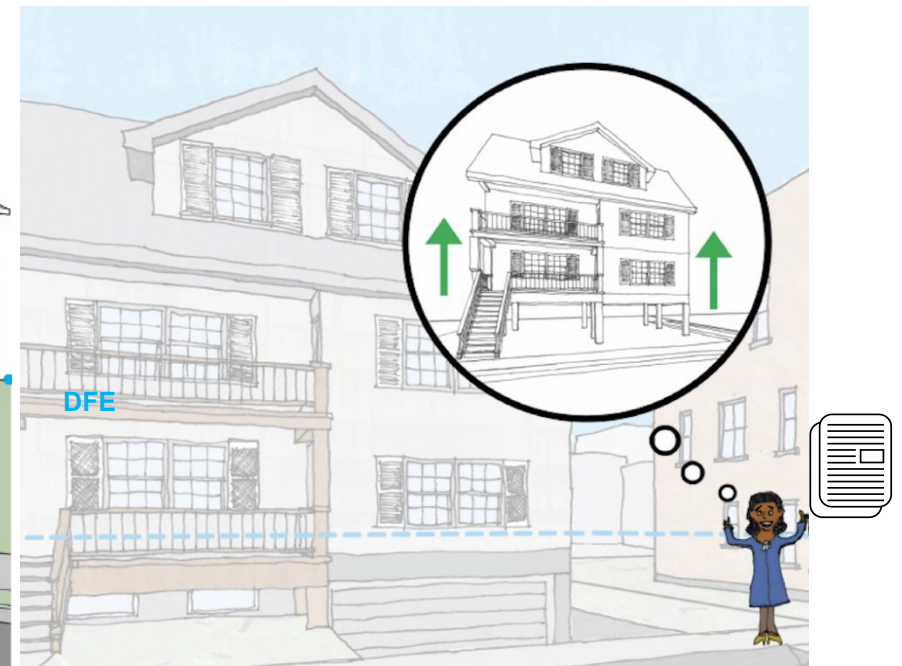


4. Facilitate future storm recovery



Reconstruction allowances

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



Documentation process

Aerial photographs/tax bills can be used to establish the existence of a building. A survey may be used to document non-compliances

Zoning for Coastal Flood Resiliency Update

Project Timeline



Resources

Flood Insurance information:
<https://www.floodhelpny.org/>

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

Community District Profiles:
<https://communityprofiles.planning.nyc.gov>

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.

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.

NYC PLANNING Info Brief
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.

NYC PLANNING 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
The Flood Text enables and encourages resilient building construction through designated floodplains.

The Flood Text modified zoning to regulate barriers that hindered or prevented the reconstruction of storm-damaged by enabling new and existing building with new, higher flood elevations issued by the Federal Emergency Management Agency (FEMA), and to comply with new requirements of the New York City Building Code.

It also introduced regulations to mitigate negative effects of flood resilient construction on the public realm. The text was adopted on a temporary, emergency basis. The future update of this text, guided by community input, will aim to make the text permanent and incorporate lessons learned during its implementation 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 utilized, require the building to fully comply with resilient construction standards found in the New York City Building Code. Some provisions, such as elevation certification, are available to all buildings in the floodplain, even if not fully compliant with Appendix G.

For more information about the Flood Resilient Construction standards, visit www.nyc.gov/resilientneighborhoods.

*Per the more restrictive of the 2007 FIRMs or PFIIRMs.

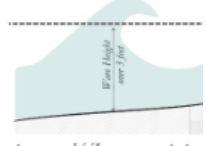
How Much Flood Insurance Must a Homeowner Purchase?
Properties with a federally backed mortgage in a high-risk flood zone and those that received federal disaster assistance must maintain flood insurance up to the limits of the outstanding mortgage balance, or the outstanding mortgage balance, whichever is lower. Failure to do so may result in mortgage servicers purchasing a policy for the homeowner at a higher price on the cost through monthly mortgage payments.

Homeowners without a federally-backed mortgage or outside a high-risk flood zone may purchase a policy up to the maximum policy limit with additional contents coverage up to \$100,000 for owners or renters. Co-owners of multifamily buildings and business properties can also purchase up to \$500,000. Business and tenants can also purchase up to \$500,000 in contents coverage.

NYC Planning | November 2016

NYC PLANNING Info Brief
Flood Resilient Construction

The 1% annual chance floodplain is divided into different degrees of flood risk: V and Coastal Flood Risk. The map shows the areas at which has a lower annual chance of flooding.



NYC Planning | November 2016

NYC PLANNING Info Brief
Flood Resilient Construction

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

NYC Planning | March 2017 | Flood Resilient Construction

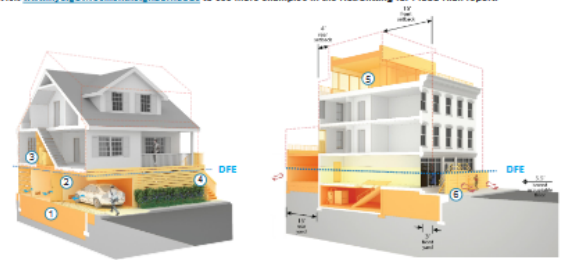
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Overview
There is a wide range of accepted flood resilient construction practices for buildings to better withstand floods and reoccupy more quickly following a storm. These include:

- 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.

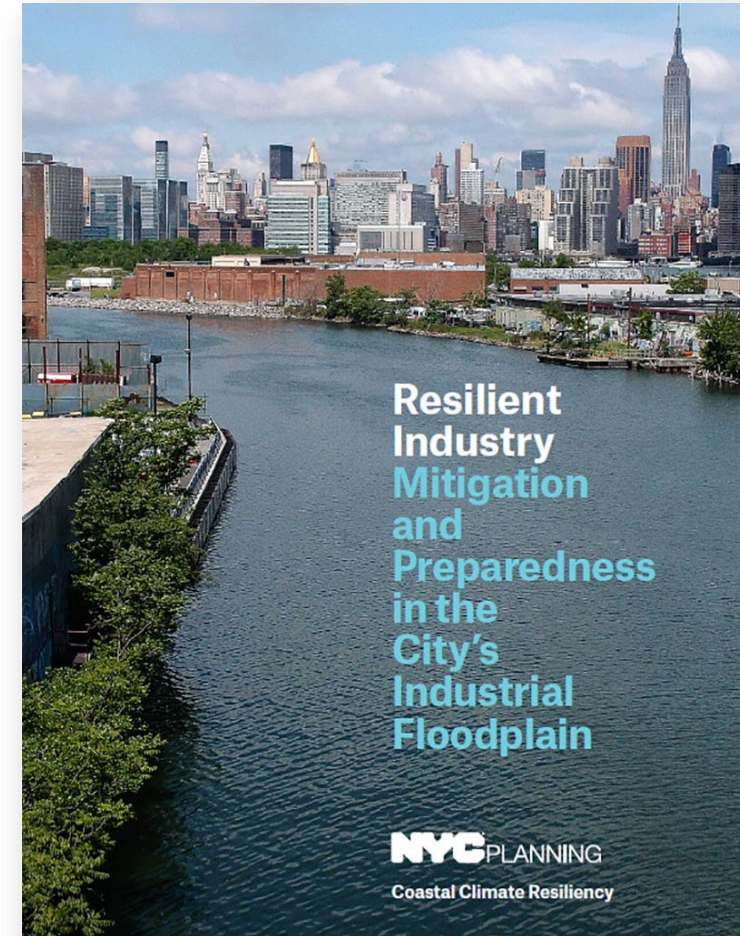


NYC Planning | November 2016 | Flood Resilient Construction

Resources Continued:

Resilient Industry Study

- Identify **emergency preparedness** guidelines for industrial businesses
- Promote **cost-effective physical and operational strategies** to protect businesses and the environment
- Identify **financial and insurance** challenges unique to businesses in industrial flood zones



www.nyc.gov/resilientindustry