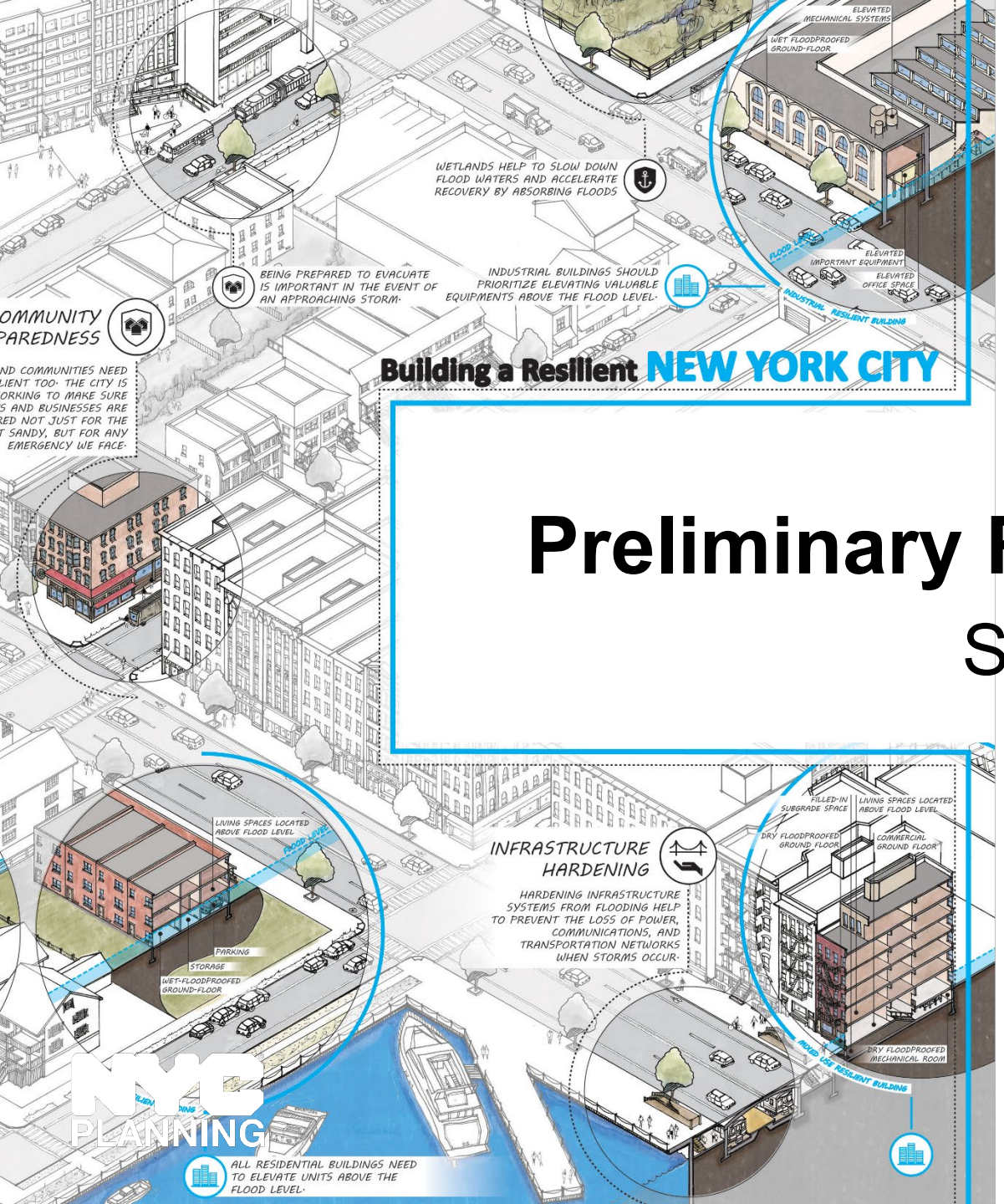


Zoning for Coastal Flood Resiliency

Preliminary Recommendations

Summary

NYC PLANNING

Today's Agenda

1. **Introduction |** Context

2. **Outreach Process |** Zoning issues identified by communities

3. **Preliminary Recommendations |** Summary

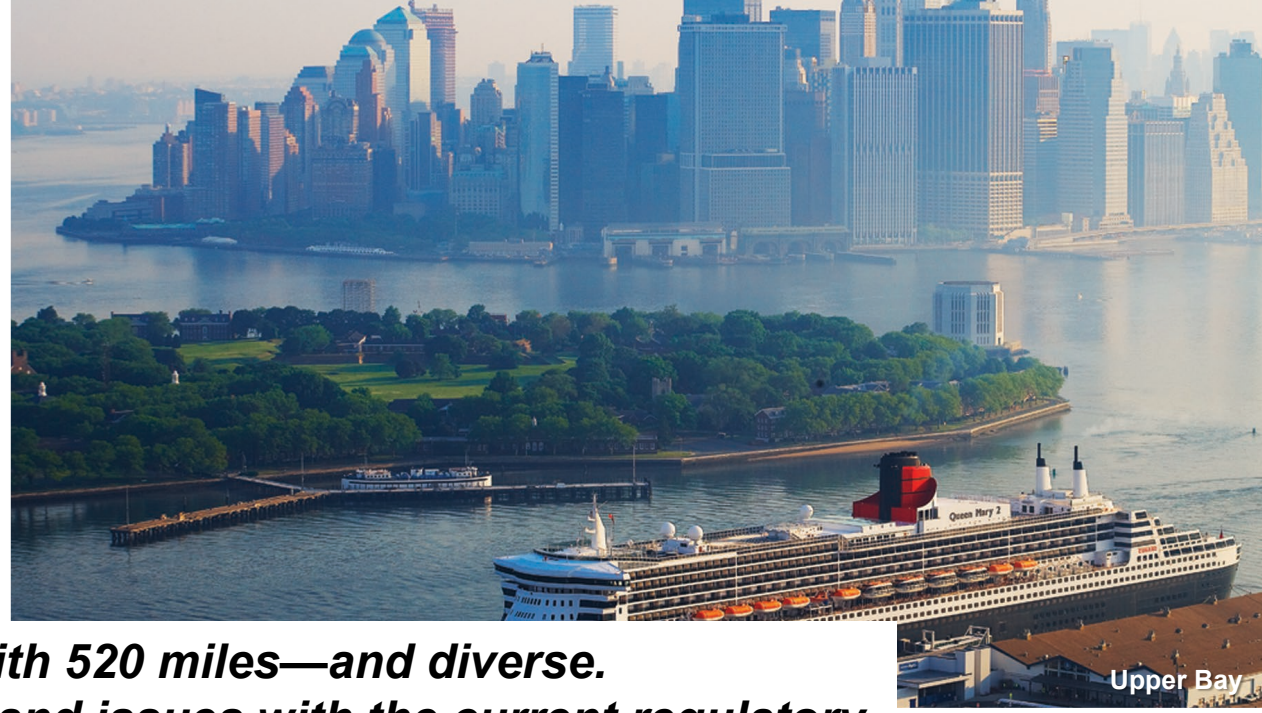
4. **Project Timeline & Outreach Resources**

Zoning for Coastal Flood Resiliency

1. Introduction

Context

Alley Pond Creek, Queens



Upper Bay

The waterfront is large—with 520 miles—and diverse. These areas face different flood risks and issues with the current regulatory framework, and require particular strategies to make them resilient.

Rockaways, Queens

Williamsburg, Brooklyn

FEMA Flood Map
Flood Risk in Queens

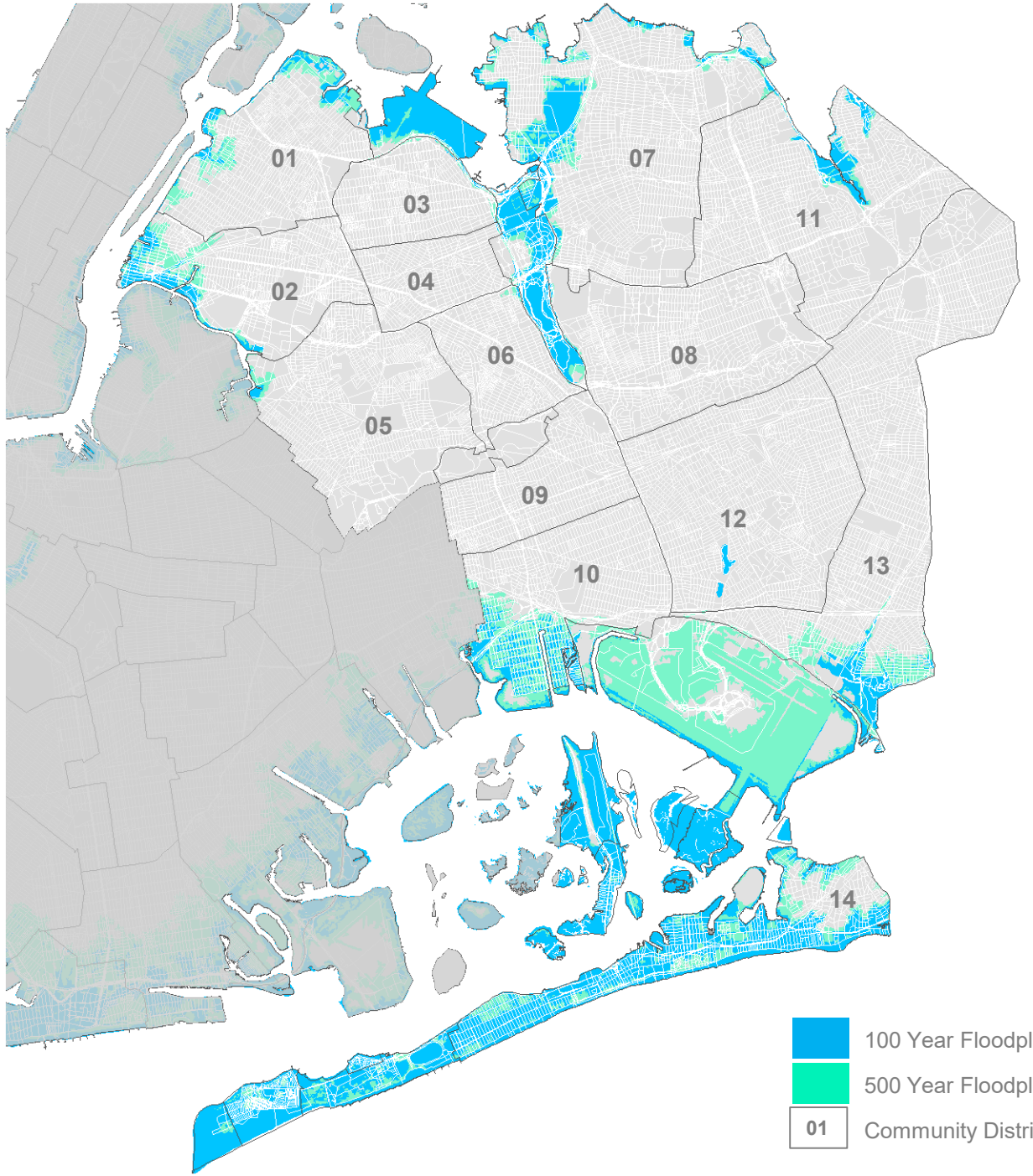
NYC's flood risk is high.

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

The vast majority of the floodplain is already developed.

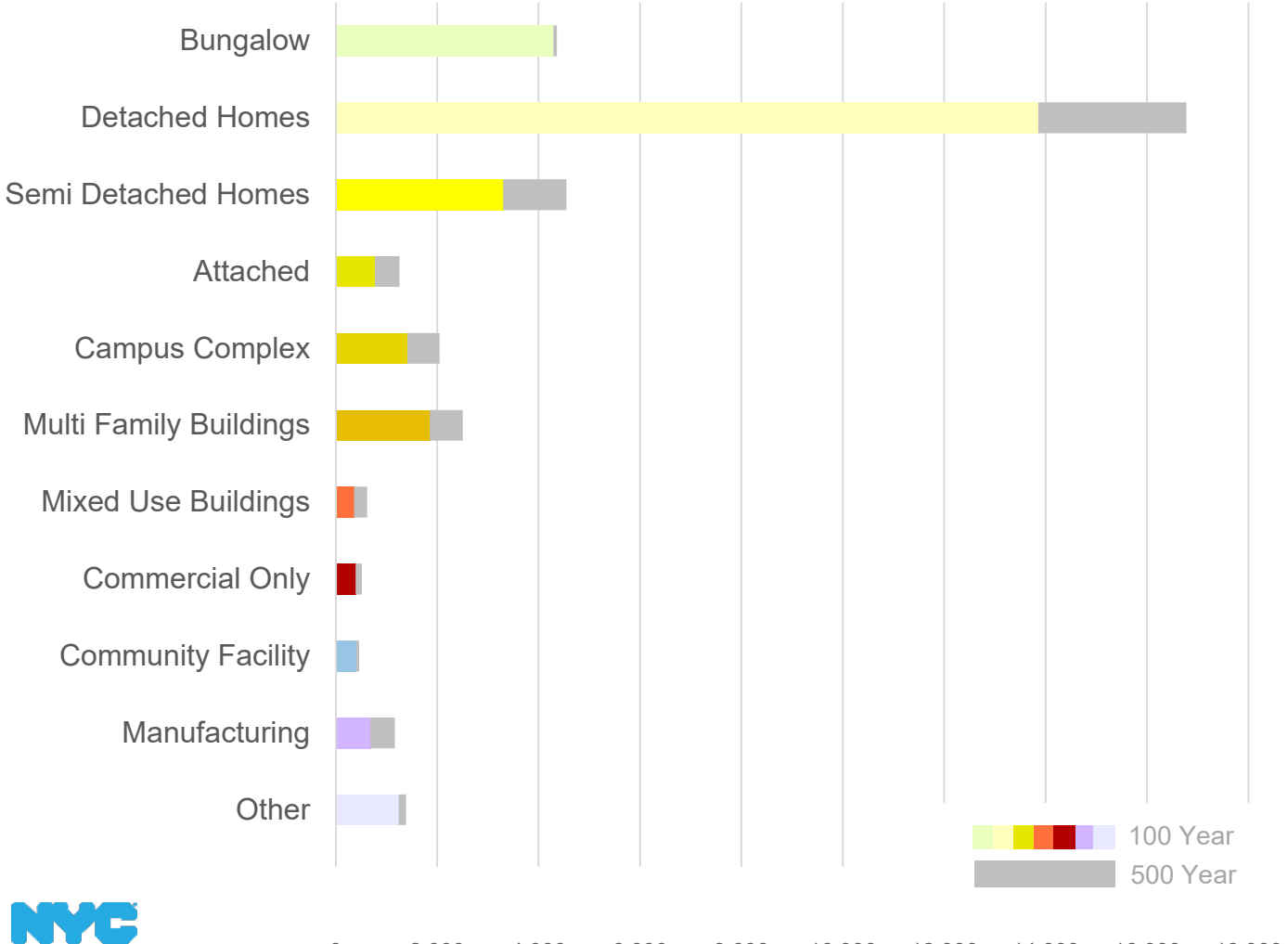
	1% annual chance floodplain (FIRM+ PFIRM)	0.2% annual chance floodplain (FIRM+ PFIRM)	TOTAL
Citywide Total # of Lots	**65,582**	**36,723**	**102,305**
Queens Total # of Lots	**20,723**	**5,666**	**26,389**

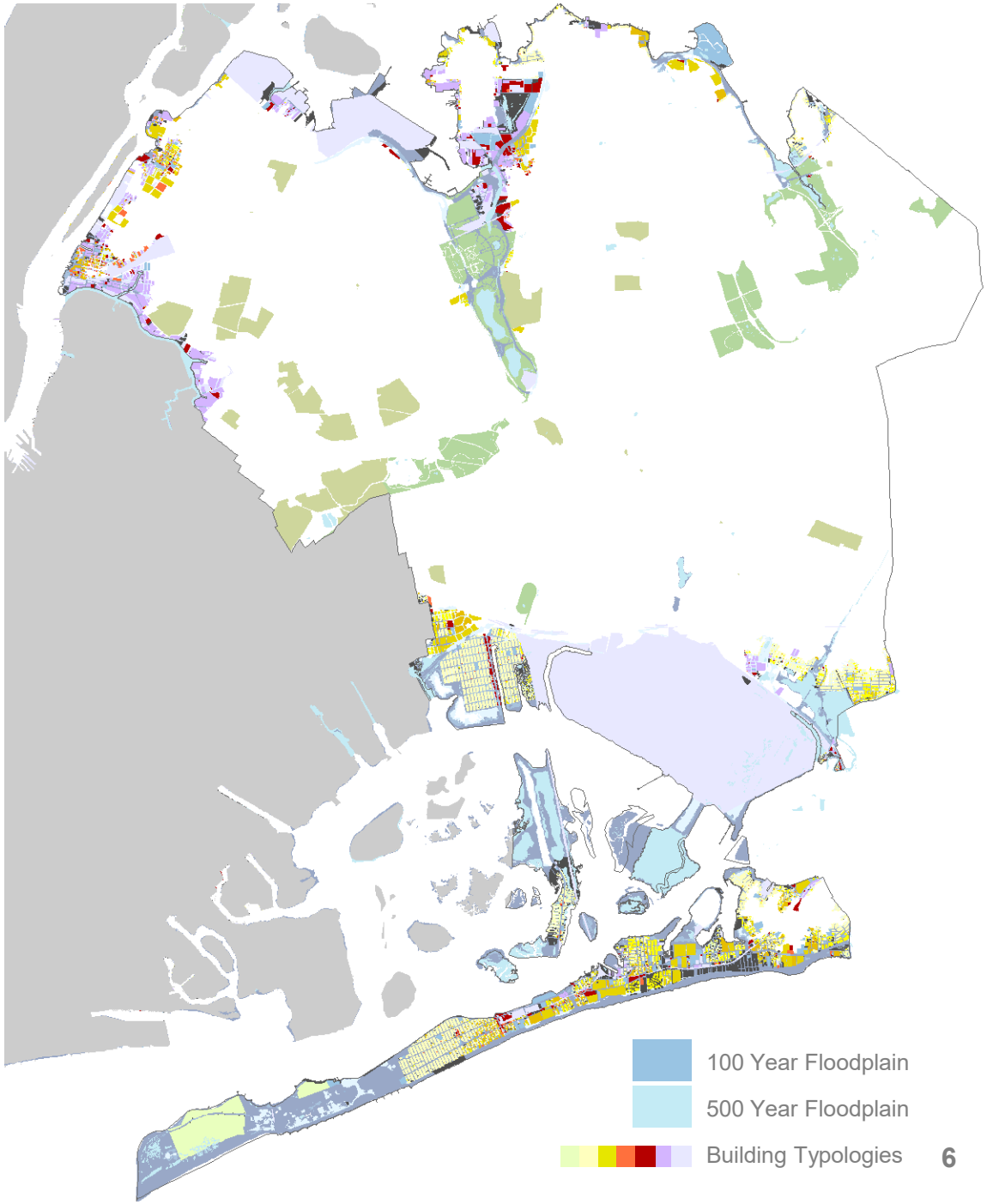
	1% annual chance floodplain (FIRM + PFIRM)	0.2% annual chance floodplain (FIRM+PFIRM)	TOTAL
Citywide Total # of Buildings	**80,907**	**44,636**	**125,539**
Queens Total # of Buildings	**28,566**	**7,078**	**35,644**



FEMA Flood Map
Flood Risk in Queens

Building Typology
NUMBER OF BUILDINGS





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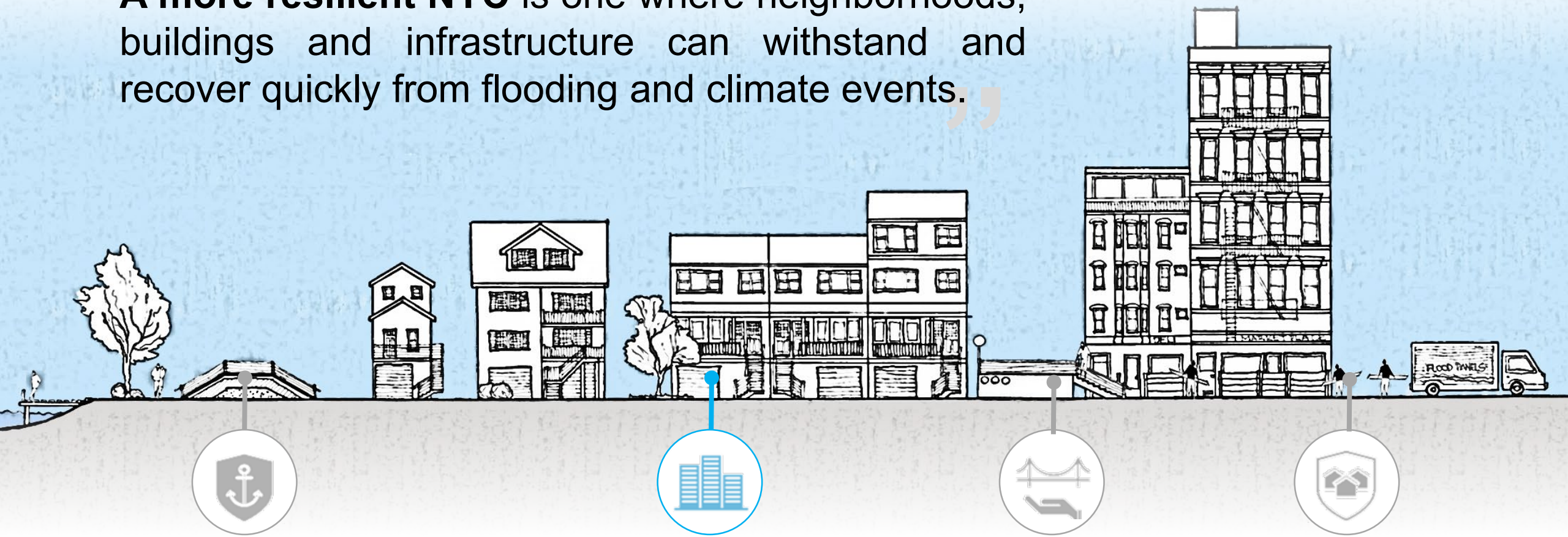
#ONENYC

"**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

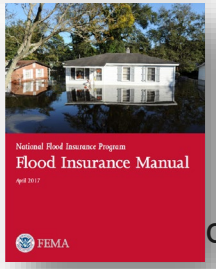
Residents and businesses
are prepared

How are buildings in the floodplain regulated?

FEMA

Flood Insurance Rate Maps (FIRMs)

Determine **<u>where floodplain regulations apply</u>**



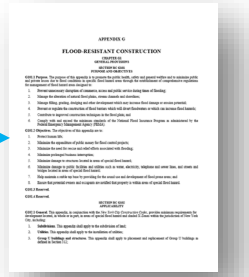
National Flood Insurance Program

<u>Set up Insurance Rates</u> depending on building elevation and other requirements

Construction Standards (ASCE 24)

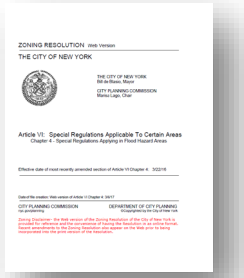
<u>Design minimum construction requirements</u> for flood hazard areas

NYC



Building Code (DOB)

<u>Requires</u> new buildings and substantial improvements to meet FEMA standards (Appendix G)



Zoning Resolution (DCP)

Zoning **<u>accommodates</u>** these regulations and improves neighborhood character

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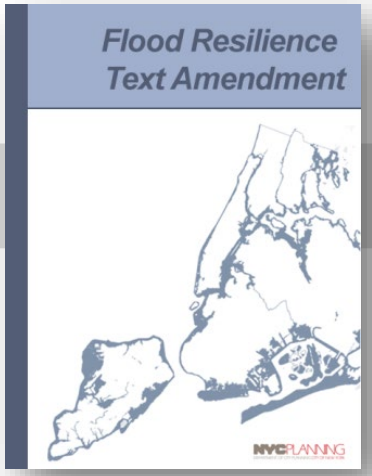
DCP's work since Sandy

Overview of Zoning Text Amendments

After Sandy, DCP issued 2 zoning text amendments that focused on facilitating Sandy's Recovery process

Post-Sandy

SHORT-TERM



2013 – FT1: Temporary provisions that **removed zoning barriers** to allow storm-damaged and new buildings to comply with higher flood elevations and resilient construction requirements (***expires 1 year after adoption of the new FIRMs***)

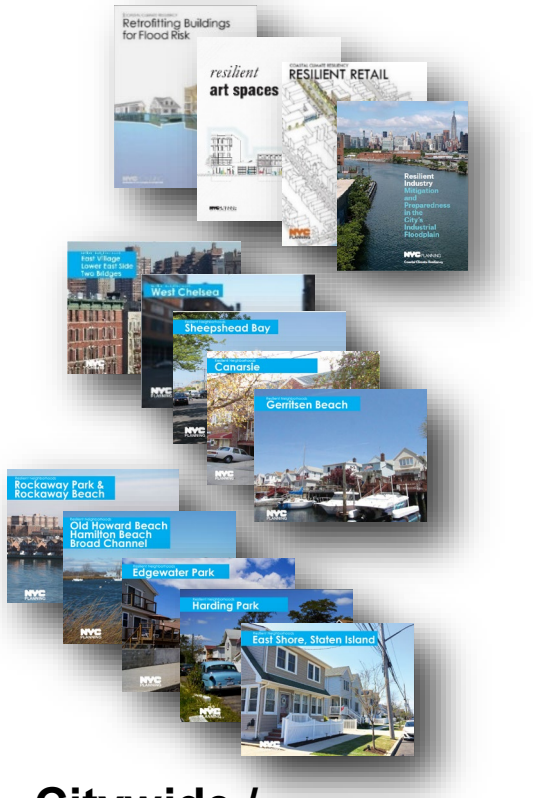
2015 – SRNR: **Simplified documentation requirements** and **removed additional zoning barriers** to give extra relief and accelerate post-Sandy recovery in certain areas that were heavily damaged by Sandy (***expires 2020***)

Facilitate
Sandy Recovery

2. Outreach Process

Zoning issues identified by communities

DCP's work since Sandy
Overview of Outreach



Citywide / Neighborhood Studies
(2014-2017)

Community Outreach
(2016-2018)
Workshops
Learn about other challenges communities faced

We have briefed **2,500** stakeholders at **138** events since August 2016.

- **10** Council Members
- **5** Borough Presidents & Borough Boards
- **35** Community Boards
- **16** Civic Associations
- **12** Non-Profits
- **15** Other Public Events
- **6** Architect Workshops
- **7** Community Workshops

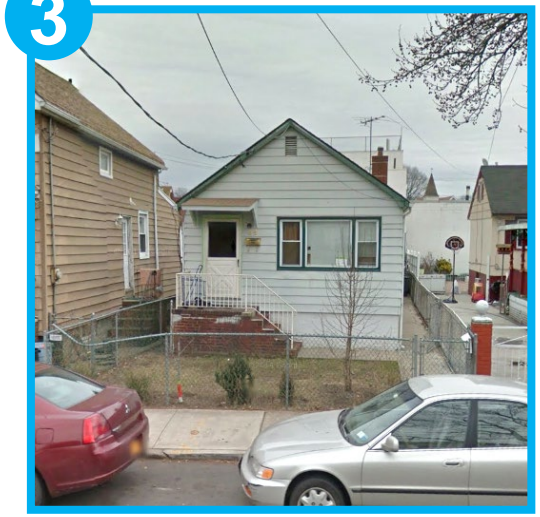
Overview of zoning issues identified by communities

From Community Outreach Summary document

1

2

3



4

5

6

1. More flexibility with height
2. Make the Cottage Envelope permanent
3. Allow homes in industrial areas to recover
4. Need better design controls
5. Keep active uses at the sidewalk level
6. More options for businesses to retrofit

Zoning for Coastal Flood Resiliency

3. Preliminary Recommendations

Summary

Land Use Planning in the Floodplain

Citywide vs. Local Approach

Zoning for Coastal Flood Resiliency

*Where flood **risk is exceptional**, including where sea level rise will lead to **future daily tidal flooding***

*Where **risk** from extreme events **can be managed** through infrastructure and **context can support growth***

Flood risk and Land Use Considerations

Limit Density

In some areas, there is a need to limit future density, as to decrease the exposure to damage and disruption.

Support Planned Density

Adjust zoning to allow all buildings to meet resiliency standards, by providing flexibility and removing zoning obstacles.

Zoning for Flood Resiliency (citywide)

Encourage Density

In other areas, the city can encourage new development, as to increase the resilient building stock.

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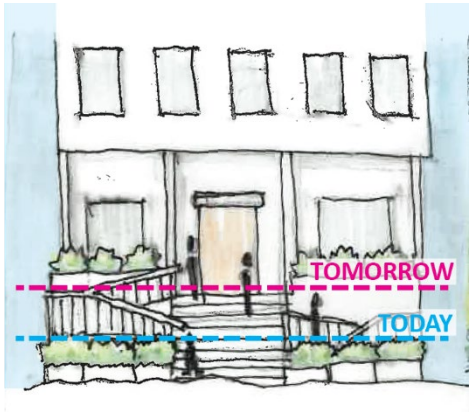
Zoning for Coastal Flood Resiliency

Overview of project's goals

Zoning for 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

Overview of project's goals

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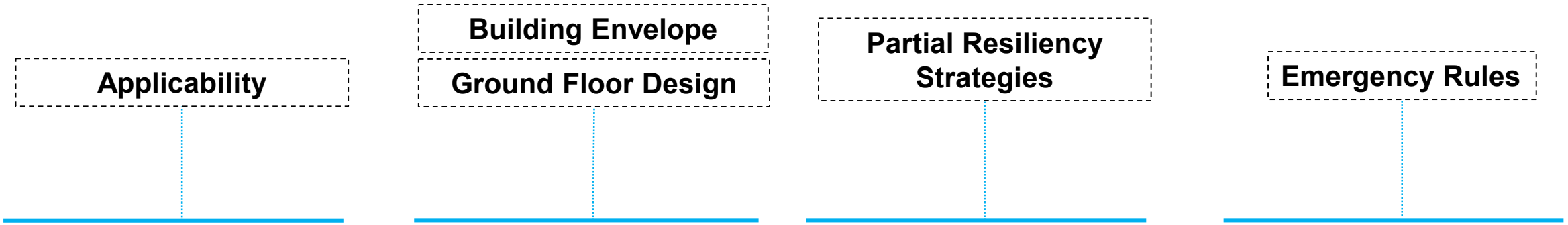

1. Encourage resiliency throughout the city's current and future floodplains

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

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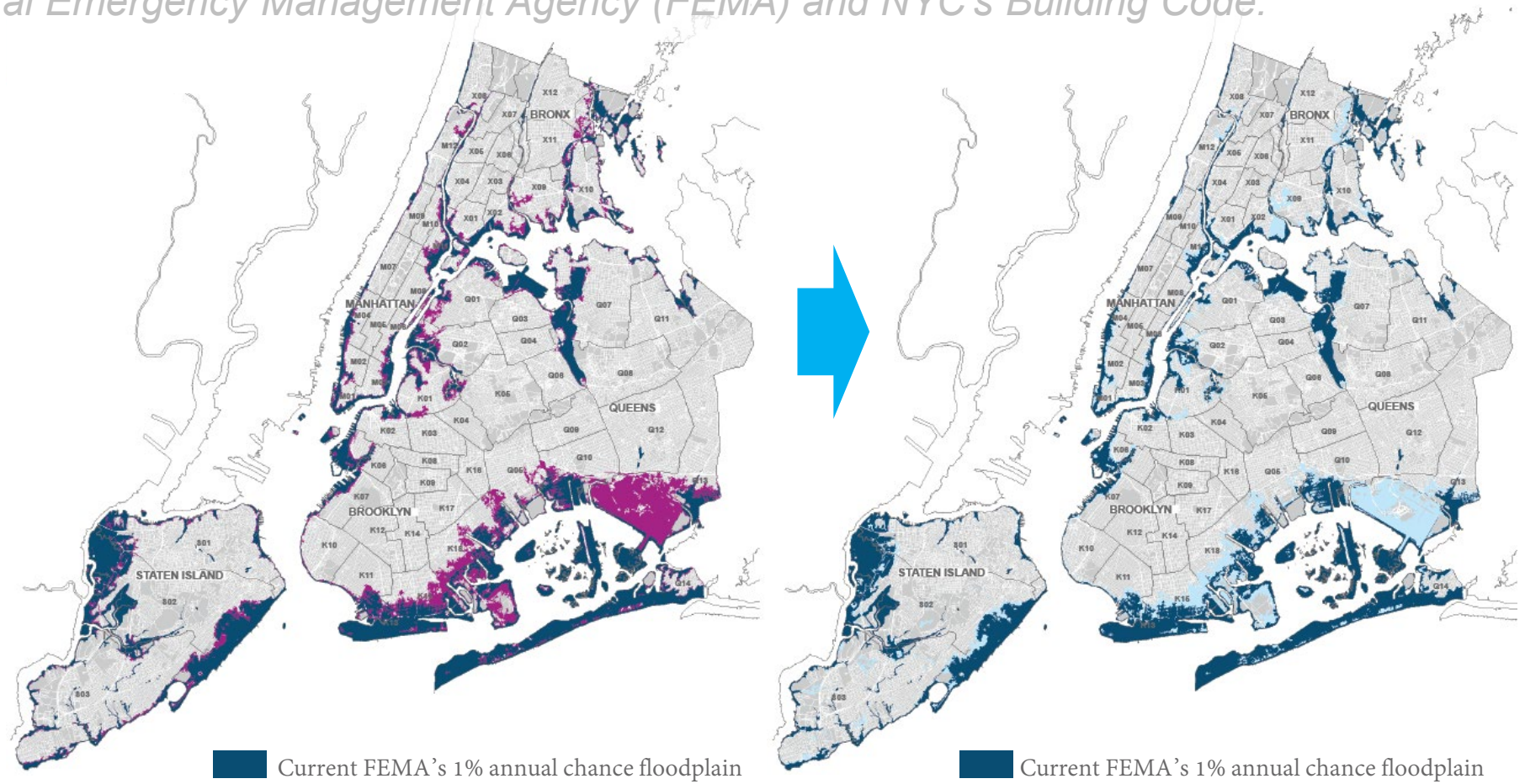
Zoning for Coastal Flood Resiliency

An expanded geography

Building owners in both the city's 1% and 0.2% annual chance floodplains would be able to invest in resiliency improvements to fully meet or exceed flood-resistant construction standards, even when these standards are not required by the Federal Emergency Management Agency (FEMA) and NYC's Building Code.

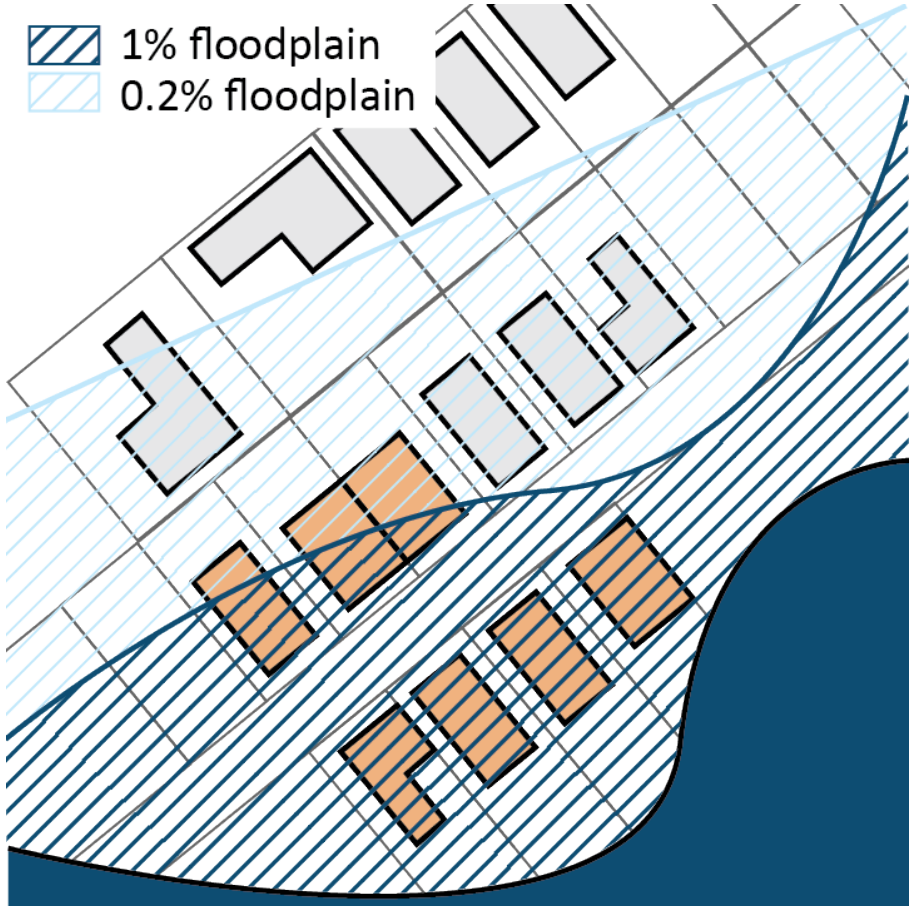
1. Encourage resiliency throughout the city's current and future floodplains



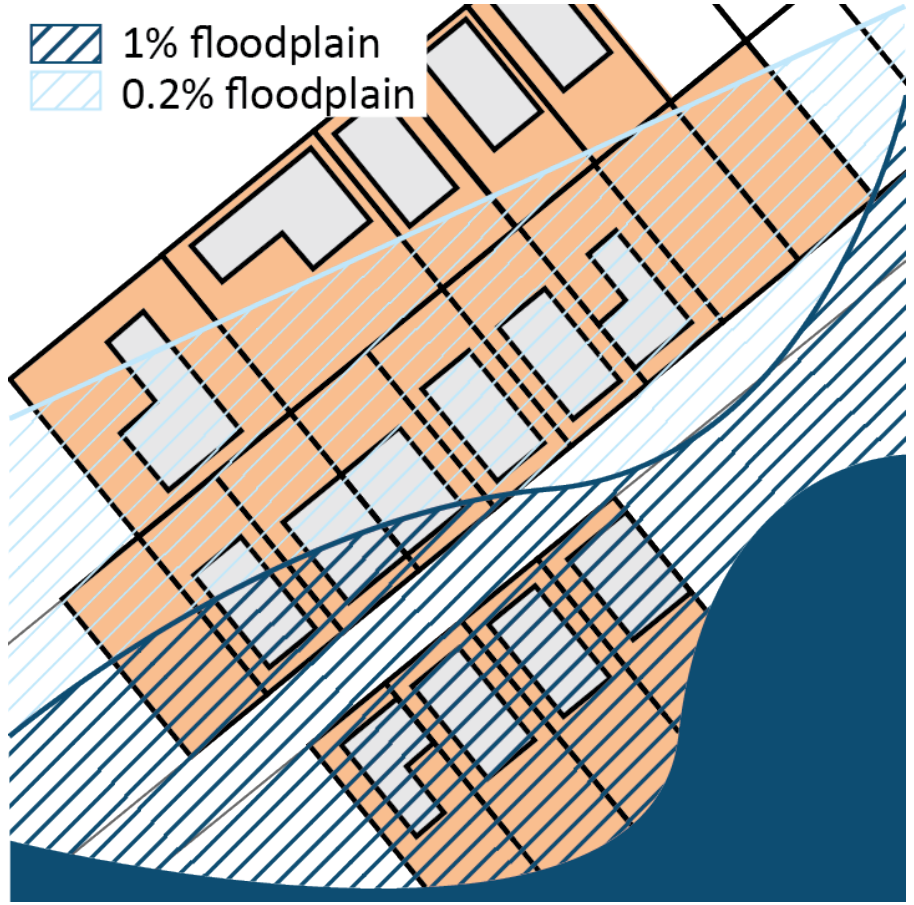
Applicability

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

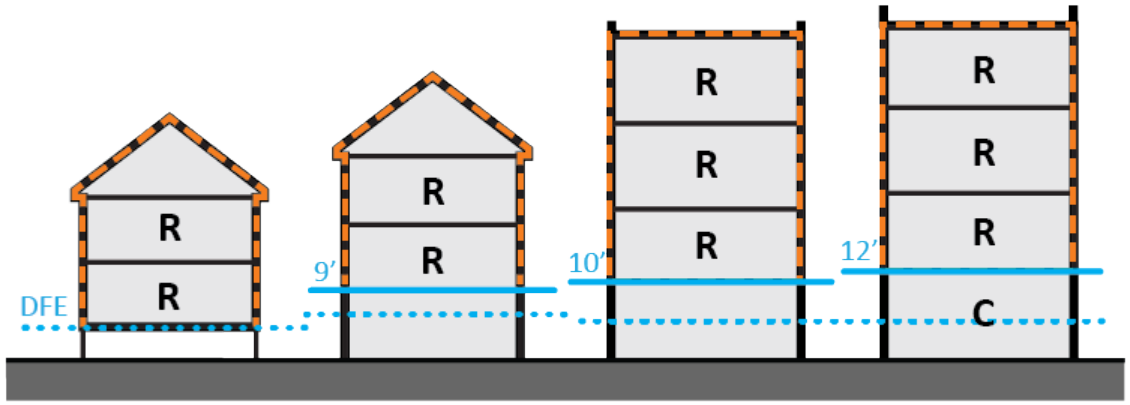
**Flood-resistant construction standards:* building-code standards for buildings located in the 100yr floodplain, as set forth in Appendix G of NYC's Building Code

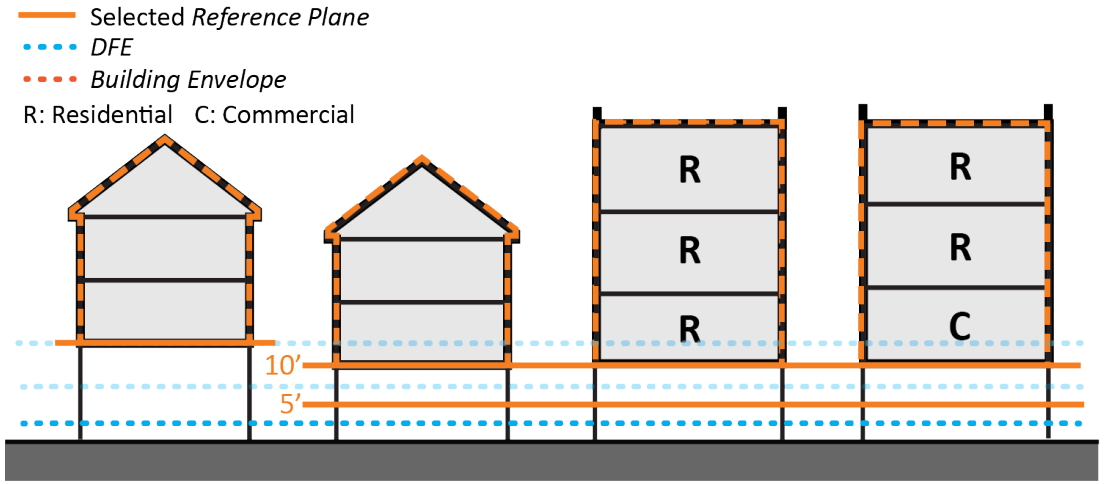
Updated Item

Building Envelope

Height Allowance

Optional height regulations would facilitate buildings to **incorporate sea level rise projections** when meeting *flood-resistant construction standards*, while improving the utility of spaces below the *DFE*.





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

Proposed Rules: DFE or a Reference Plane (up to 10' or 5') available to all lots in the 1% and 0.2% floodplains, respectively

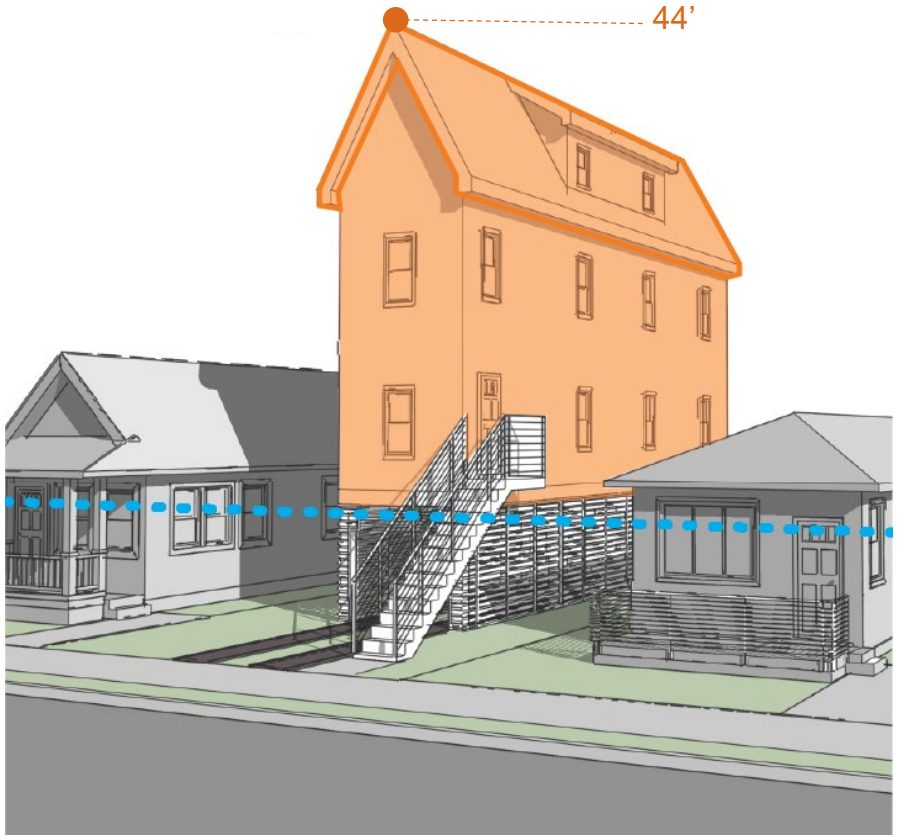
NYC PLANNING * Rules available if the building fully meets Appendix G of the Building Code

Updated Item

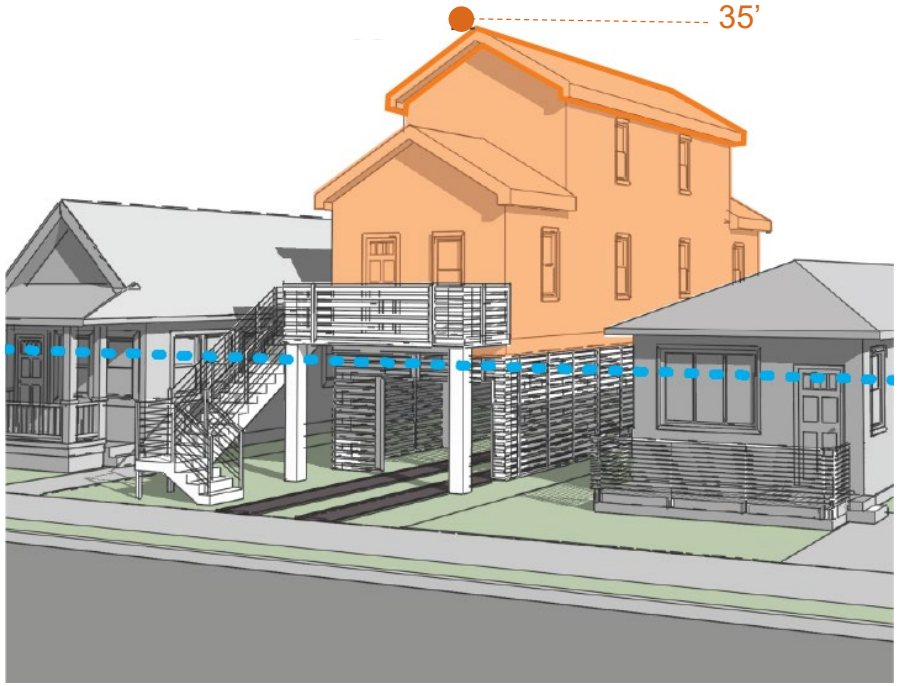
Building Envelope

Cottage Envelope

Optional *Building Envelope* would facilitate the **construction, reconstruction, and *retrofit*** of homes located on pre-existing substandard lots **in all areas**, and better reflect the scale of traditional cottage buildings.



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

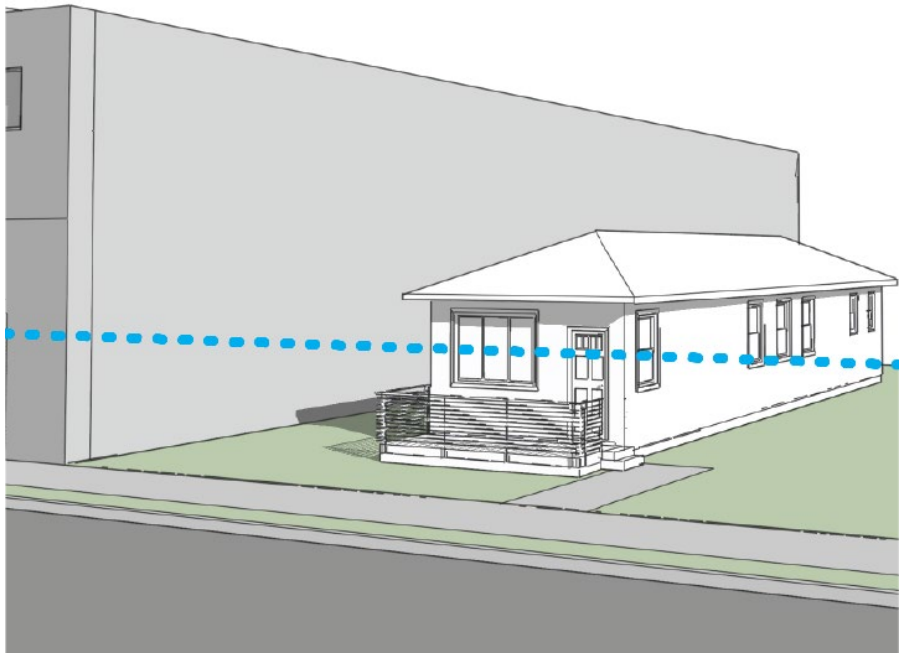
NYC PLANNING * Rules available if the building fully meets Appendix G of the Building Code

Updated Item

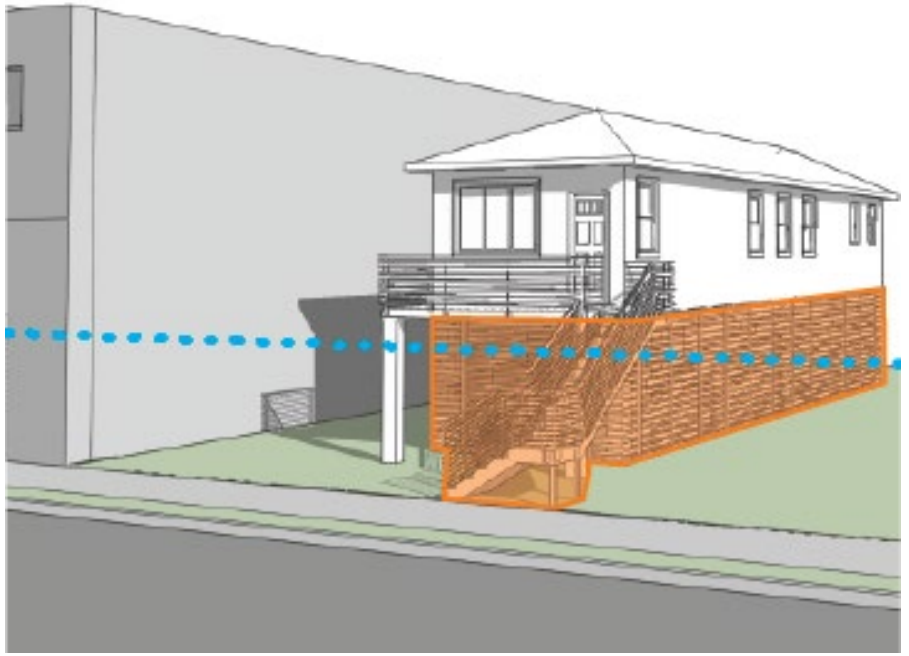
Building Envelope

Existing Buildings

Regulations would allow the reconstruction, enlargement or alteration of **a greater range of** existing non-complying and/or non-conforming buildings to meet **or exceed** *flood-resistant construction standards*.



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



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

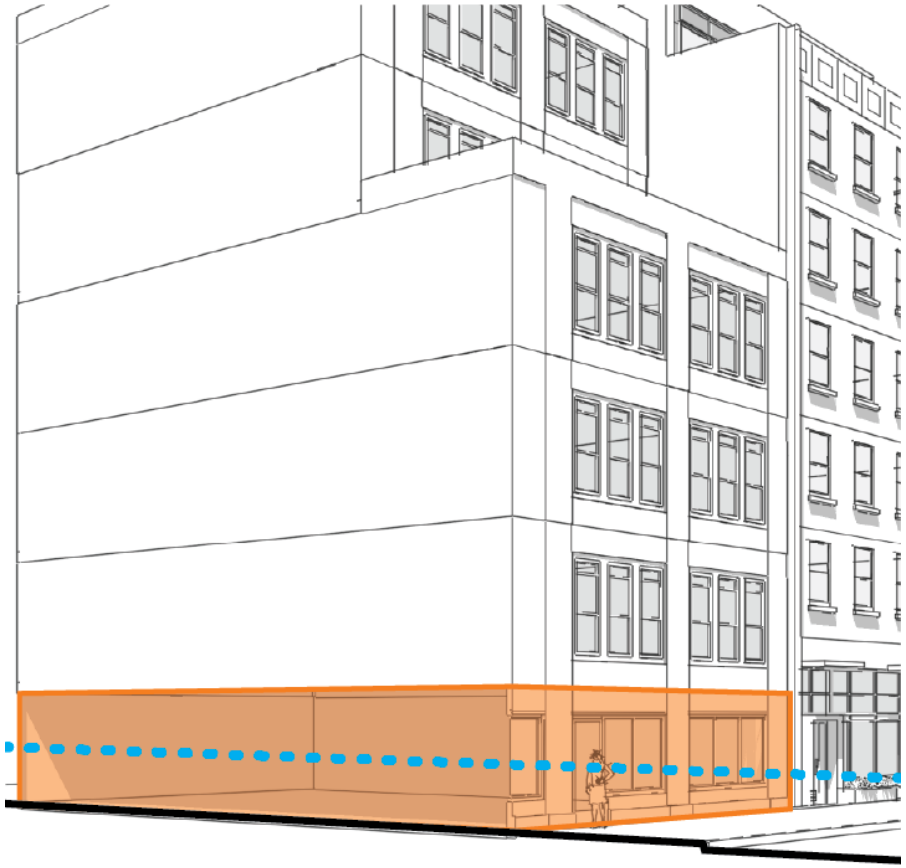
New Item

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

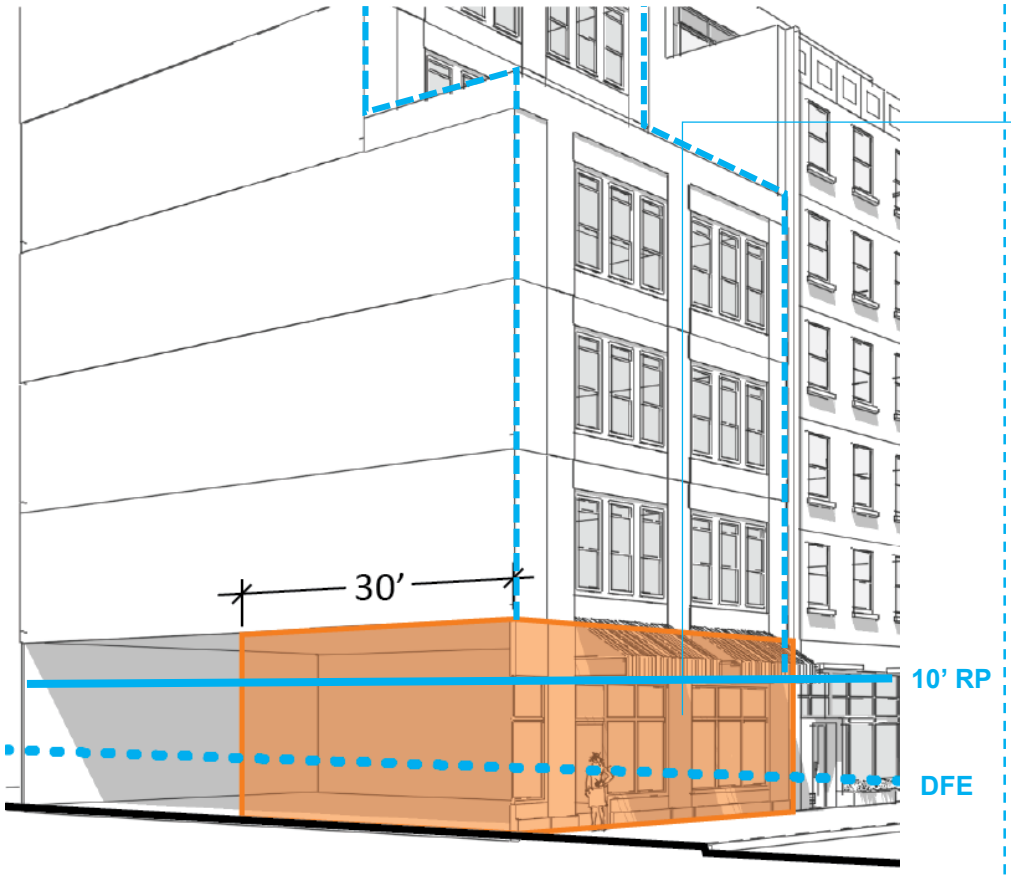
Building Design

Floor Area Exemptions

Floor Area regulations would exempt floor area to encourage new and existing buildings to meet **or exceed** *flood-resistant construction standards*, **while ensuring quality ground-floors that are kept at street level.**



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 requirements

Design Requirements
Require transparency and quality ground-floors

And for wet-flood proofed ground floors

Or to provide internal access or mechanical equipment

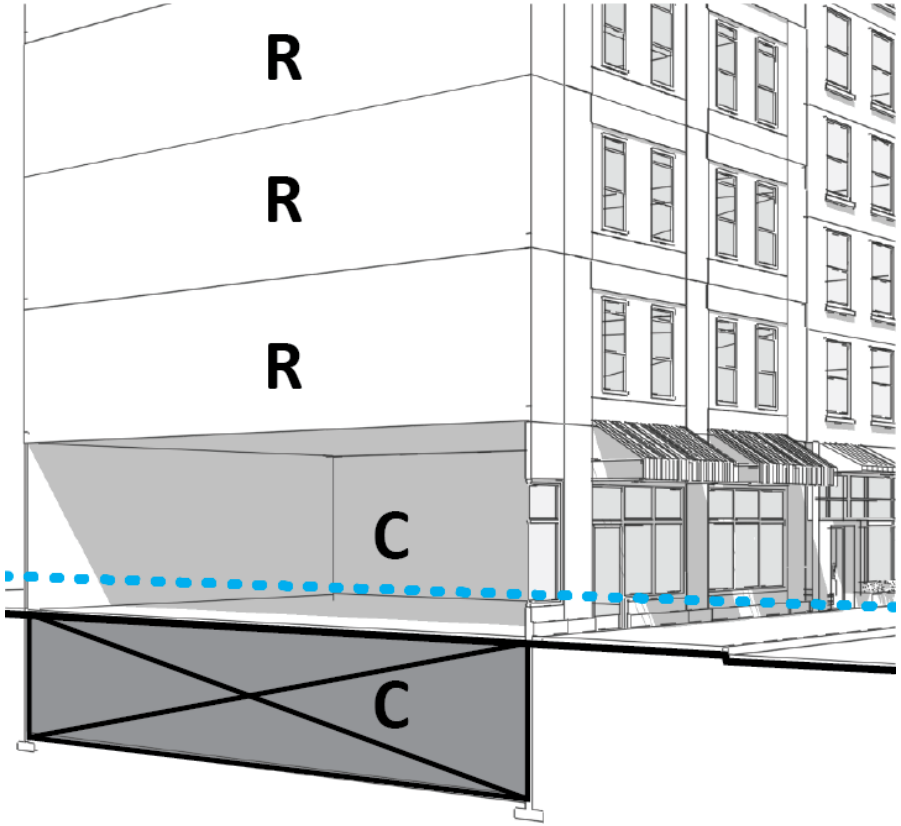
NYC PLANNING * Rules available if the building fully meets Appendix G of the Building Code

Updated Item

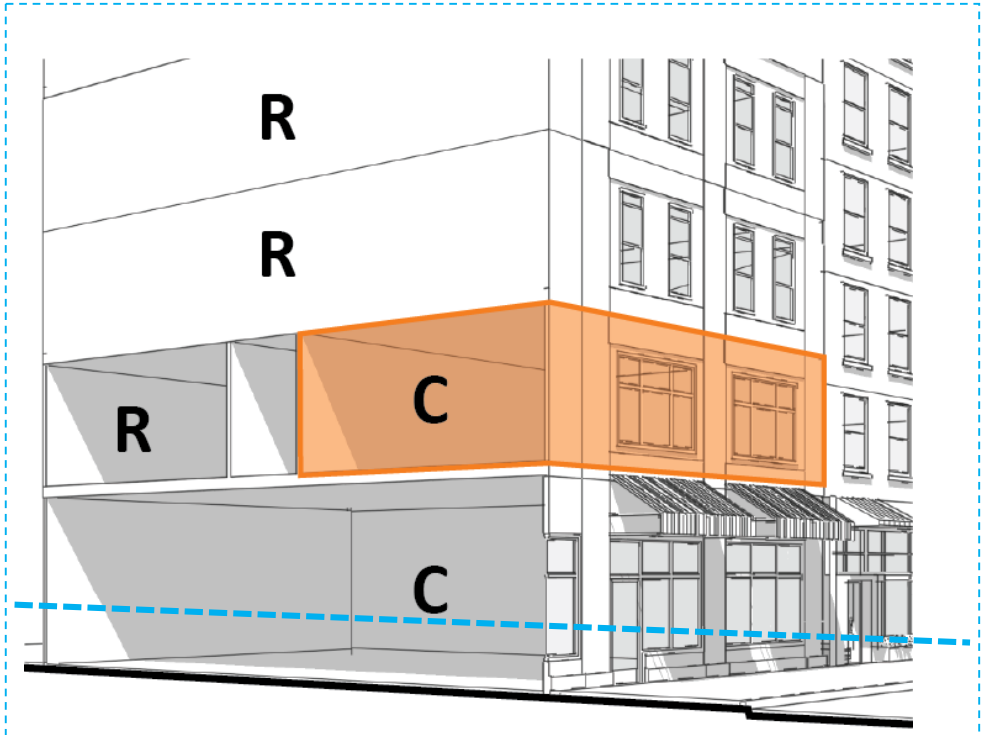
Building Design

Use Regulation

Supplemental use regulations would offer alternatives beyond dry-floodproofed cellars for businesses to locate commercial uses, especially accessory spaces



Existing Rules: : Commercial uses are limited to the ground-floor in mixed-use buildings in certain commercial corridors



Proposed Rules: : Commercial uses can be located within the second story in mixed-use buildings above the flood level in all commercial corridors

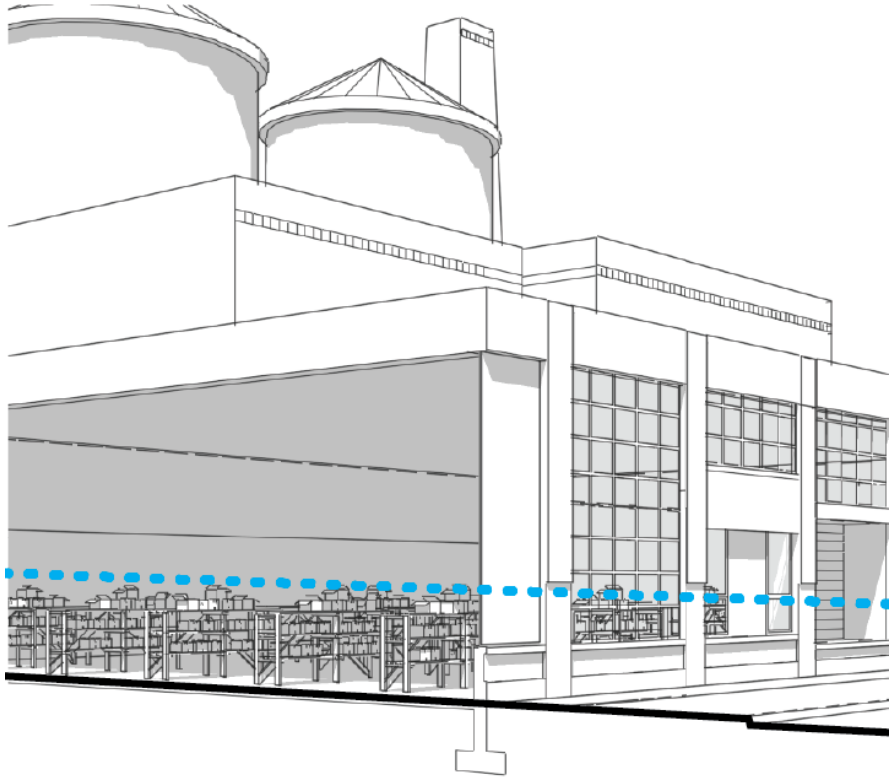
New Item

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

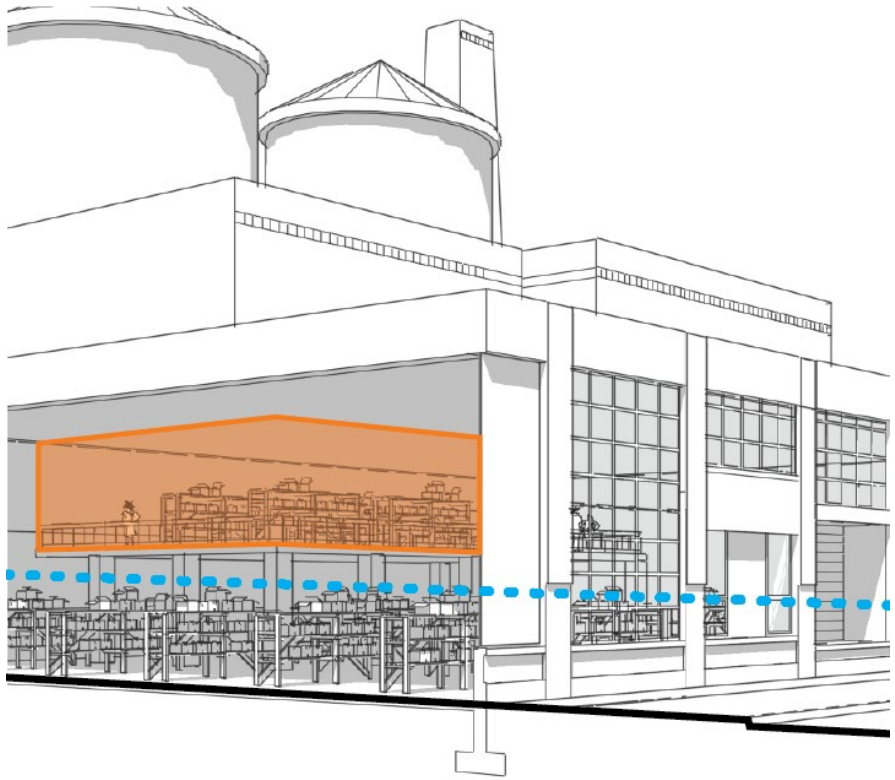
Partial Resiliency Strategies

Floor Area Exemption

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



Existing Rules: Existing industrial buildings may not have enough floor area to elevate important equipment/spaces



Proposed Rules: Floor area can be exempted to facilitate the placement of important equipment/spaces above the flood level within small mezzanines

New Item

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

Partial Resiliency Strategies

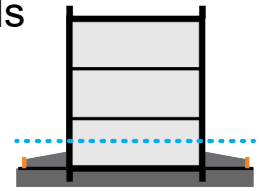
Mechanical Equipment

Permitted obstruction and floor area regulations would facilitate the placement of ***MEP*** **equipment** above the ***DFE***, including emergency generators within or outside of buildings, **including within separate *MEP* buildings.**

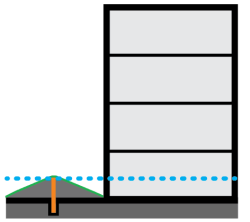
Existing Rules: Additional flexibility with permitted obstructions facilitate mechanical equipment to be relocated to the roof of buildings

Proposed Rules: Additional flexibility to facilitate mechanical, electrical and plumbing equipment to be placed on the roof or in a separate structure

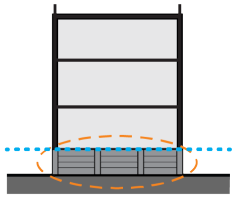
Or to build retaining walls and raise yards



Or to build berms



Or deploy flood panels

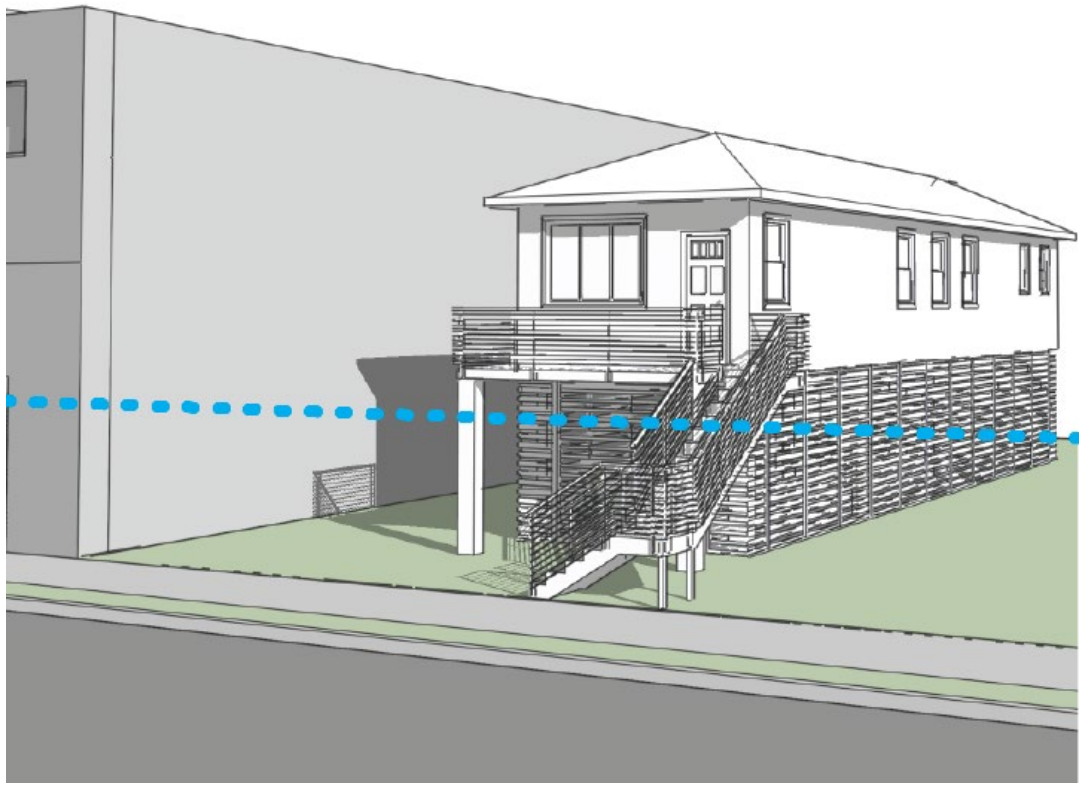


NYC PLANNING * Rules available even if the building DOES NOT fully meets Appendix G of the Building Code

Updated Item

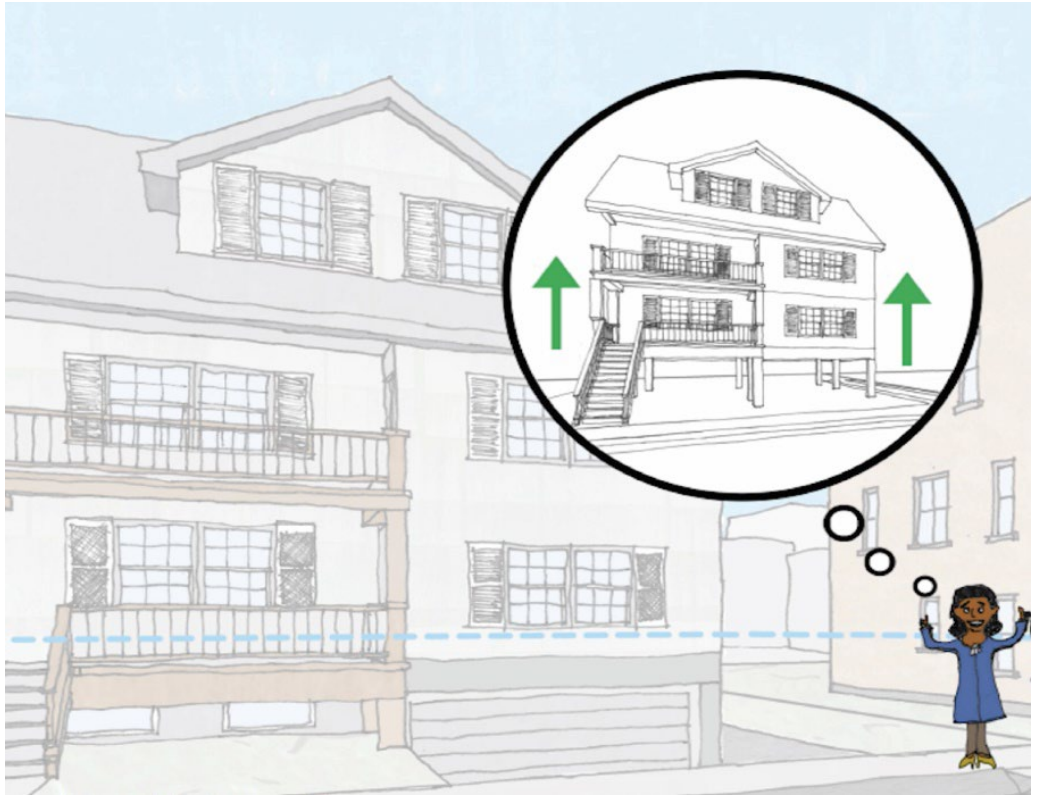
Emergency Rules

Regulations would facilitate the reconstruction of existing non-complying and/or non-conforming buildings that were **damaged by a future disaster in future recovery area**.



Reconstruction allowances

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



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

New Item

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

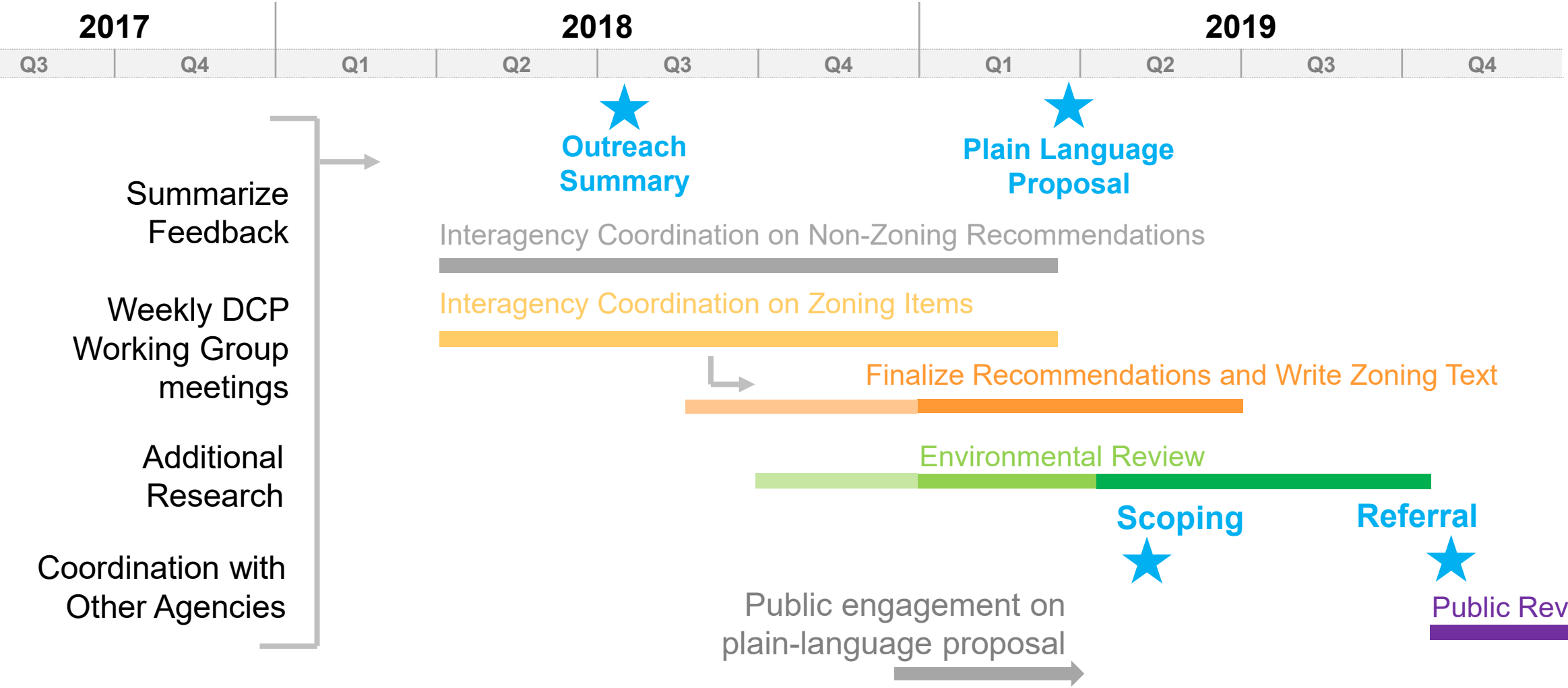
Zoning for Coastal Flood Resiliency

4. Project Timeline & Outreach Resources

Zoning for Coastal Flood Resilience Update (FT2)

Project Timeline

** Timeline subject to change*



Outreach 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.

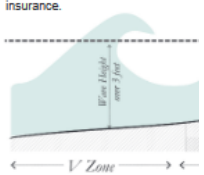
Flood Risks

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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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.

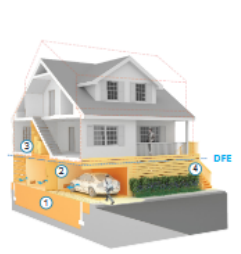
Overview

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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