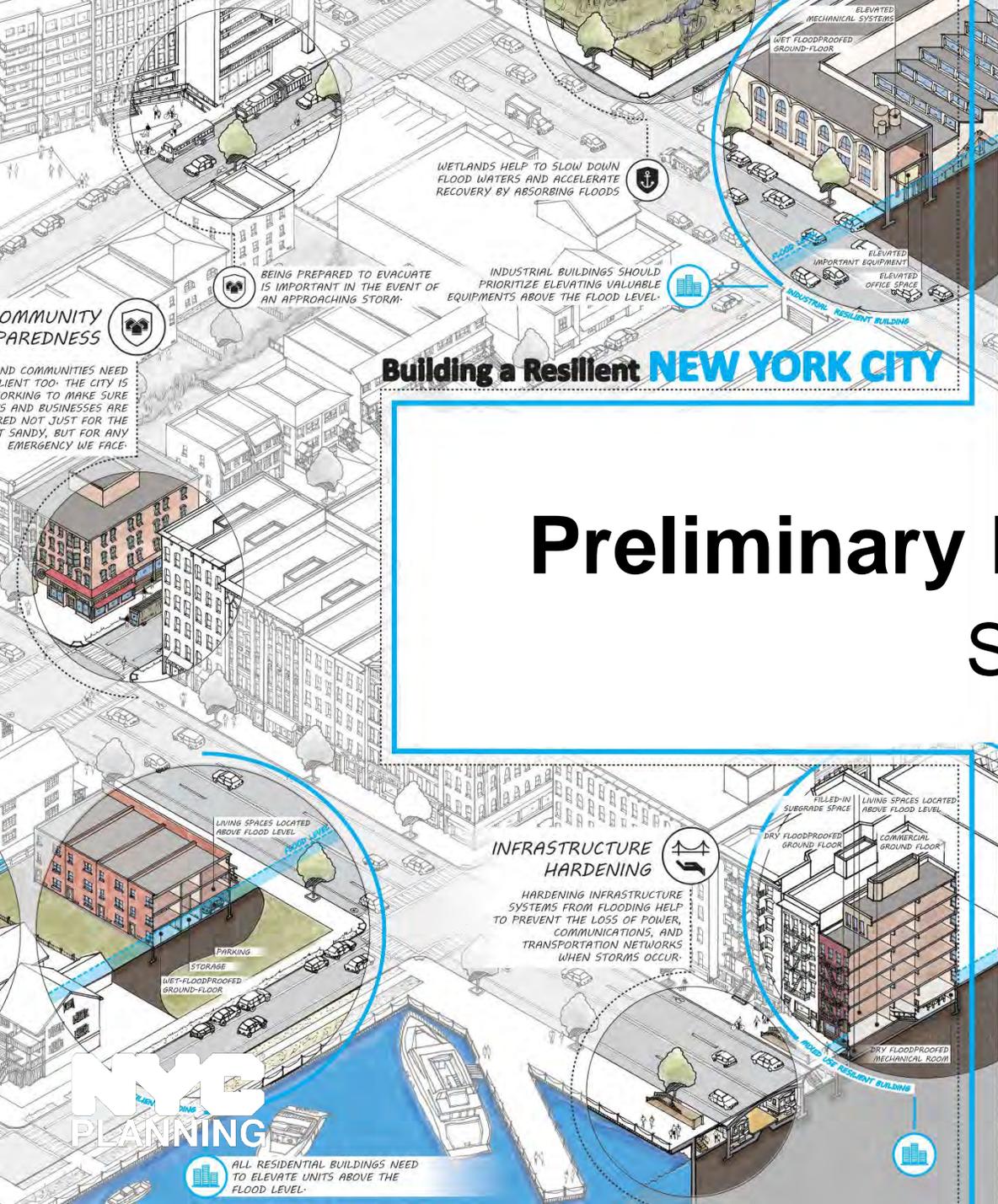


Zoning for Coastal Flood Resiliency

Preliminary Recommendations Summary

Brooklyn CB 13 Land Use & Resiliency Committee
June 4, 2019



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

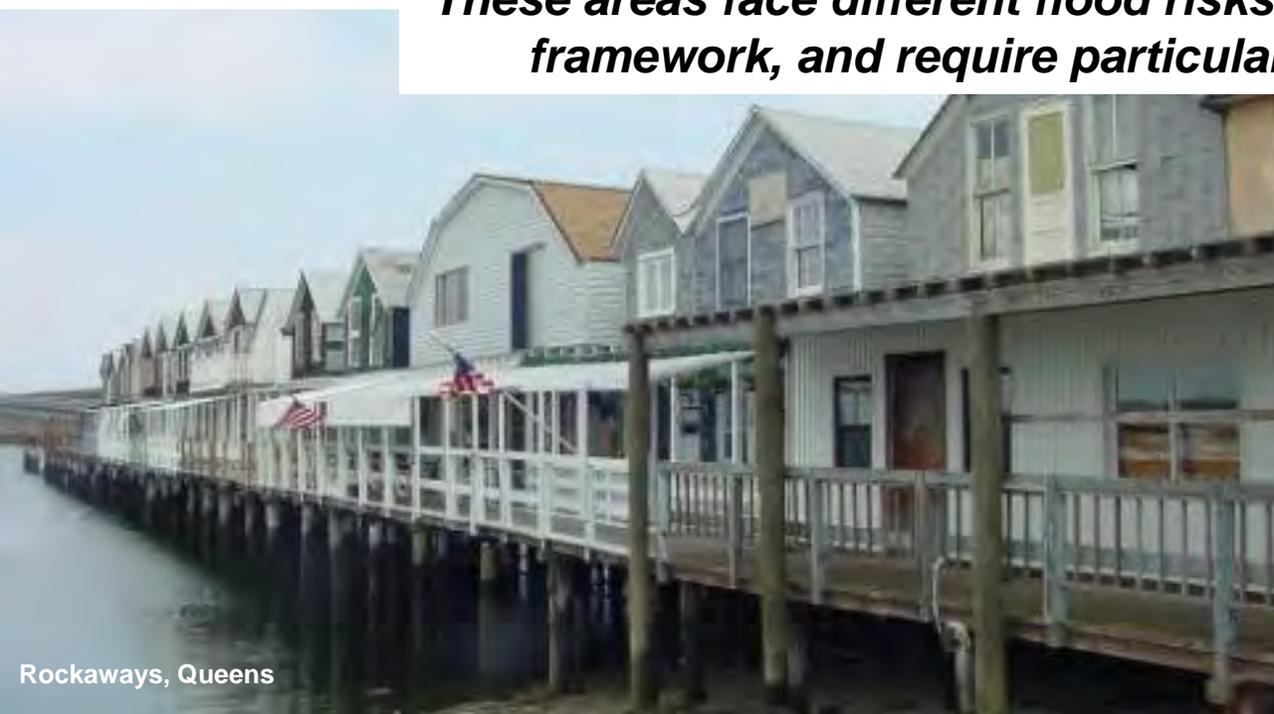


Alley Pond Creek, Queens



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 Brooklyn

NYC's flood risk is high.

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

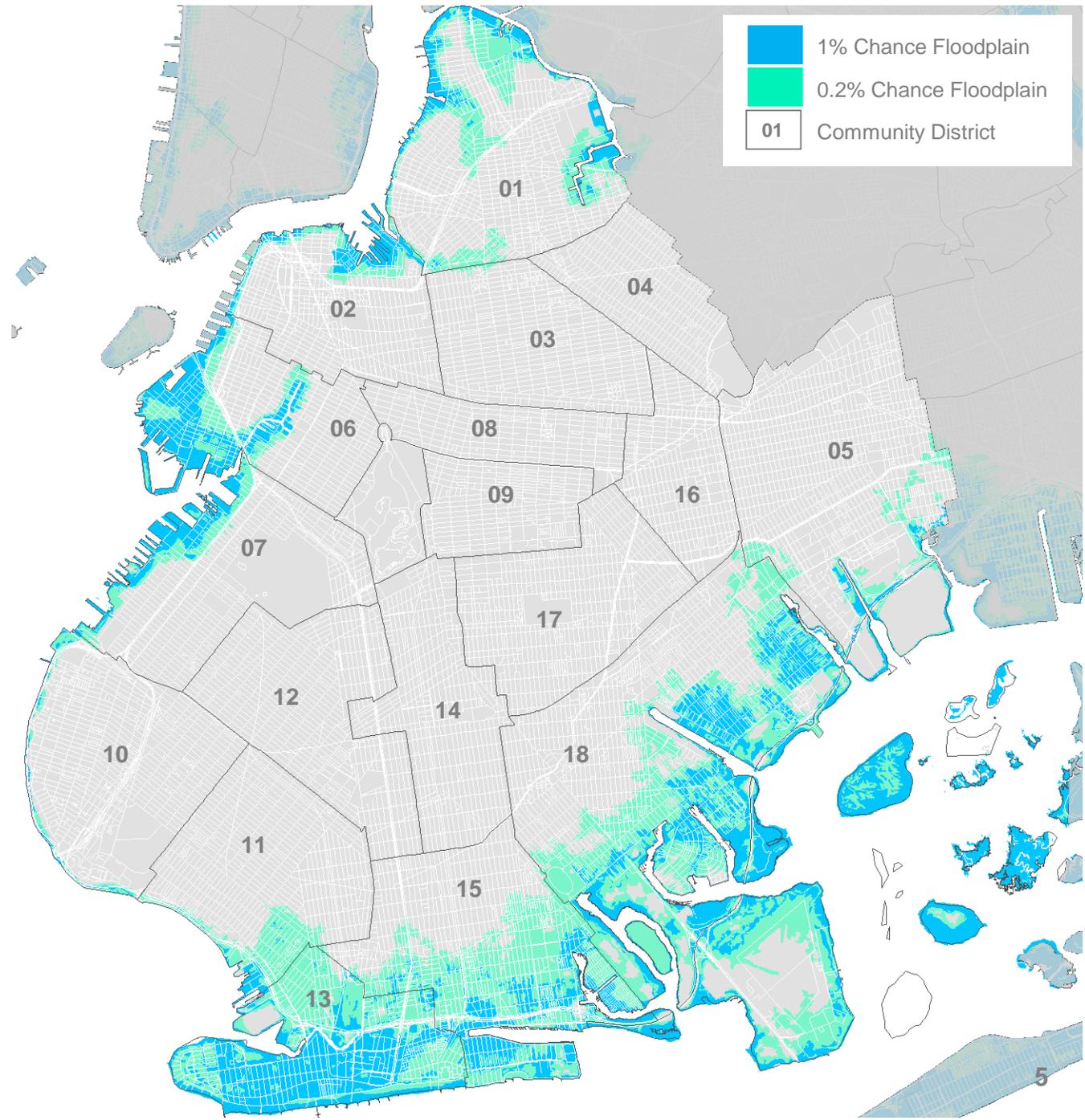
The vast majority of the floodplain is already developed.

1% annual chance floodplain (FIRM+ PFIRM)	0.2% annual chance floodplain (FIRM+ PFIRM)	TOTAL
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Citywide Total # of Lots	65,582	36,723	102,305
Brooklyn Total # of Lots	25,257	20,457	45,714

1% annual chance floodplain (FIRM + PFIRM)	0.2% annual chance floodplain (FIRM+PFIRM)	TOTAL
--	--	-------

Citywide Total # of Buildings	80,907	44,636	125,539
Brooklyn Total # of Buildings	29,549	25,115	54,664



- 1% Chance Floodplain
- 0.2% Chance Floodplain
- 01 Community District

How are buildings in the floodplain regulated?

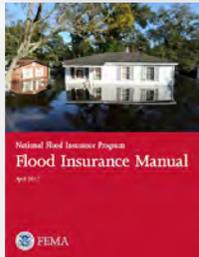


FEMA



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)

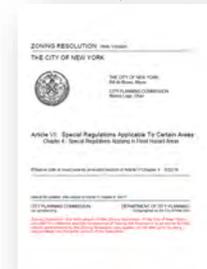
Design minimum construction requirements for flood hazard areas

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

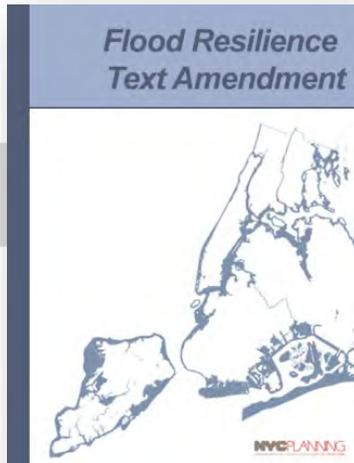
DCP's work since Sandy

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**

Zoning for Coastal Flood Resiliency

2. Outreach Process

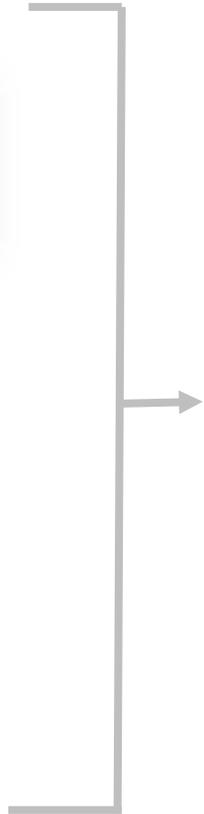
Zoning issues identified by communities

DCP's work since Sandy

Overview of Outreach



**Citywide /
Neighborhood
Studies**
(2014-2017)



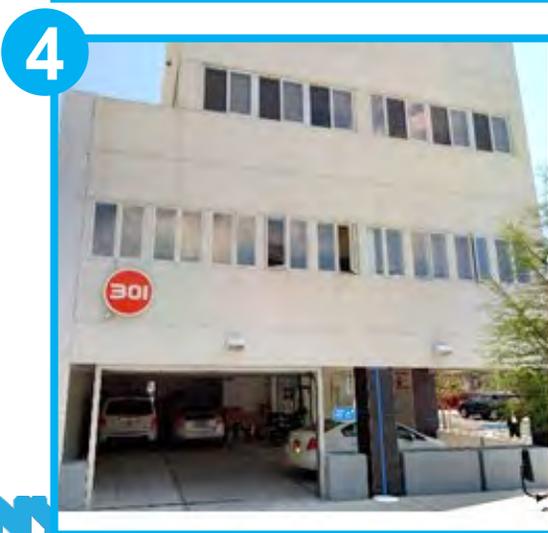
**Community Outreach
(2016-2018)
Workshops**
*Learn about other challenges
communities faced*

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. 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

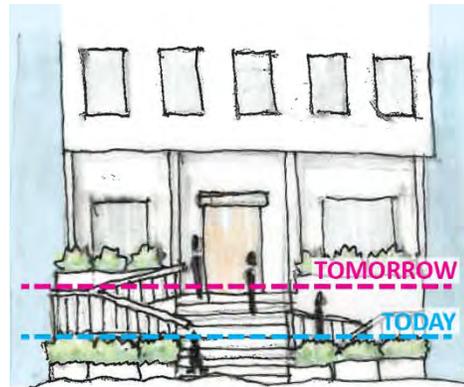
Zoning for Coastal Flood Resiliency

Overview of 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.



Encourage resiliency throughout the current and future floodplains



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



Allow for adaptation over time through incremental retrofits

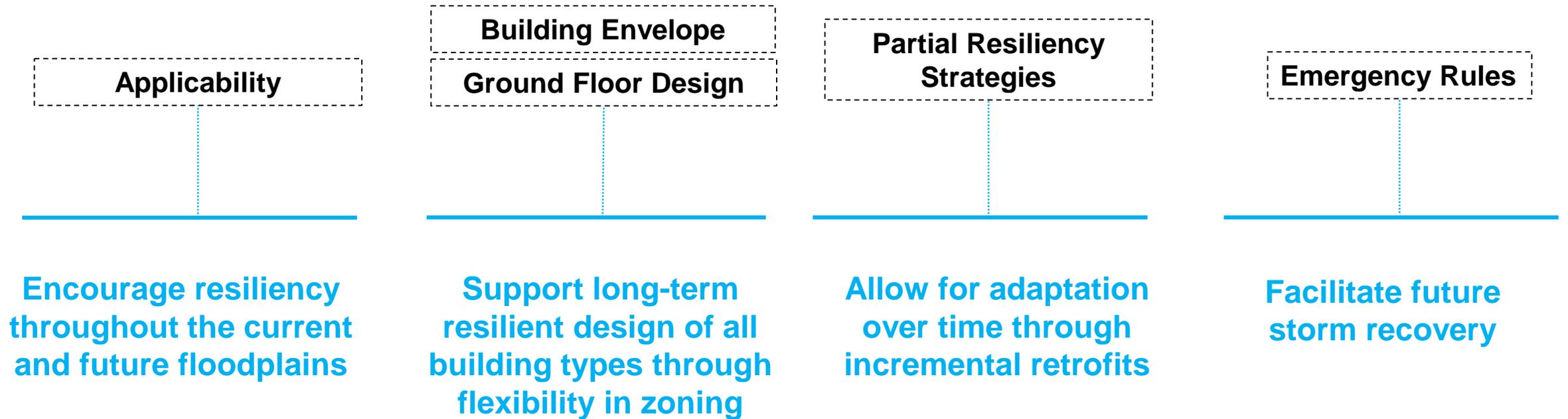


Facilitate future storm recovery

Zoning for Coastal Flood Resiliency

Overview of 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.



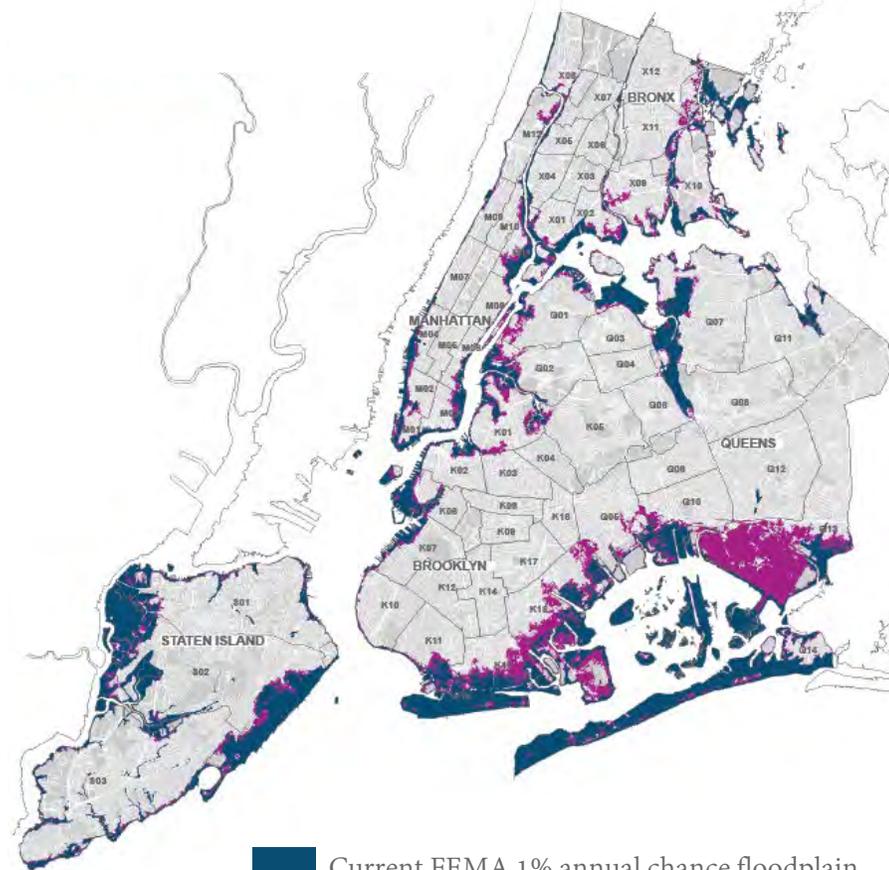
Zoning for Coastal Flood Resiliency

An expanded geography

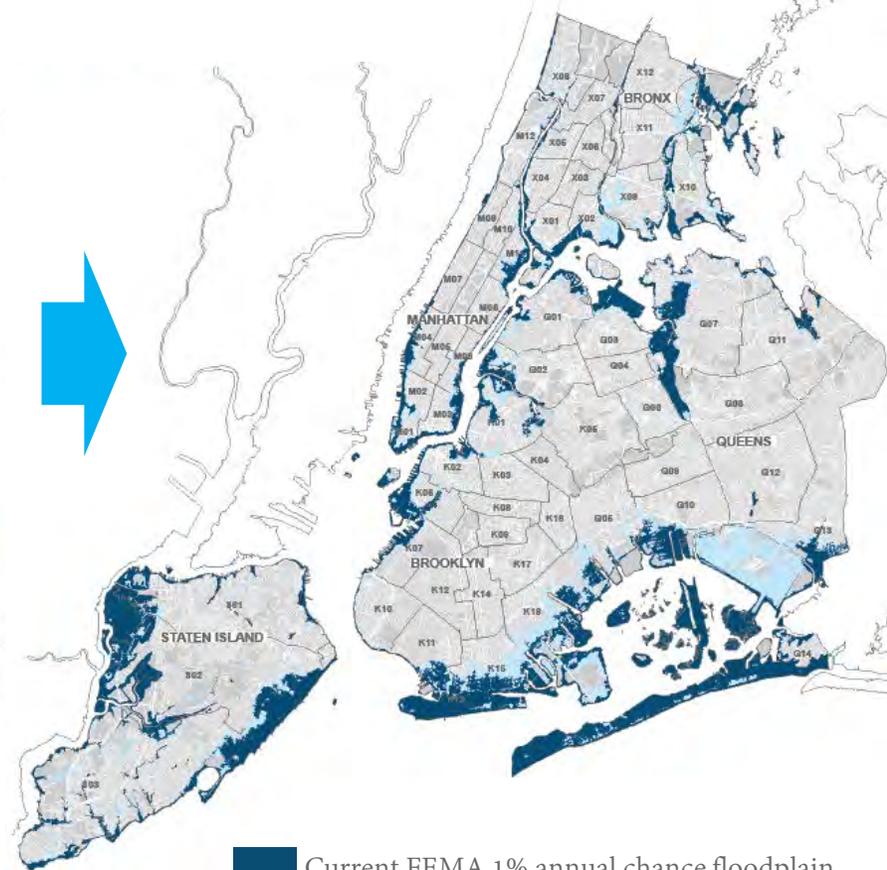
Building owners in both the city's 1% and 0.2% annual chance floodplains would be able to invest in resiliency improvements to fully meet or exceed flood-resistant construction standards, even when these standards are not required by the Federal Emergency Management Agency (FEMA) and NYC's Building Code.



Encourage resiliency throughout the current and future floodplains



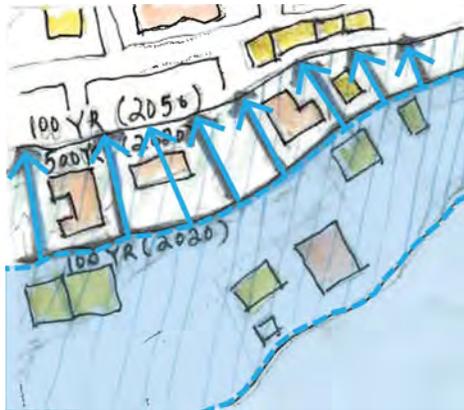
■ Current FEMA 1% annual chance floodplain
■ 2050s 1% annual chance floodplain



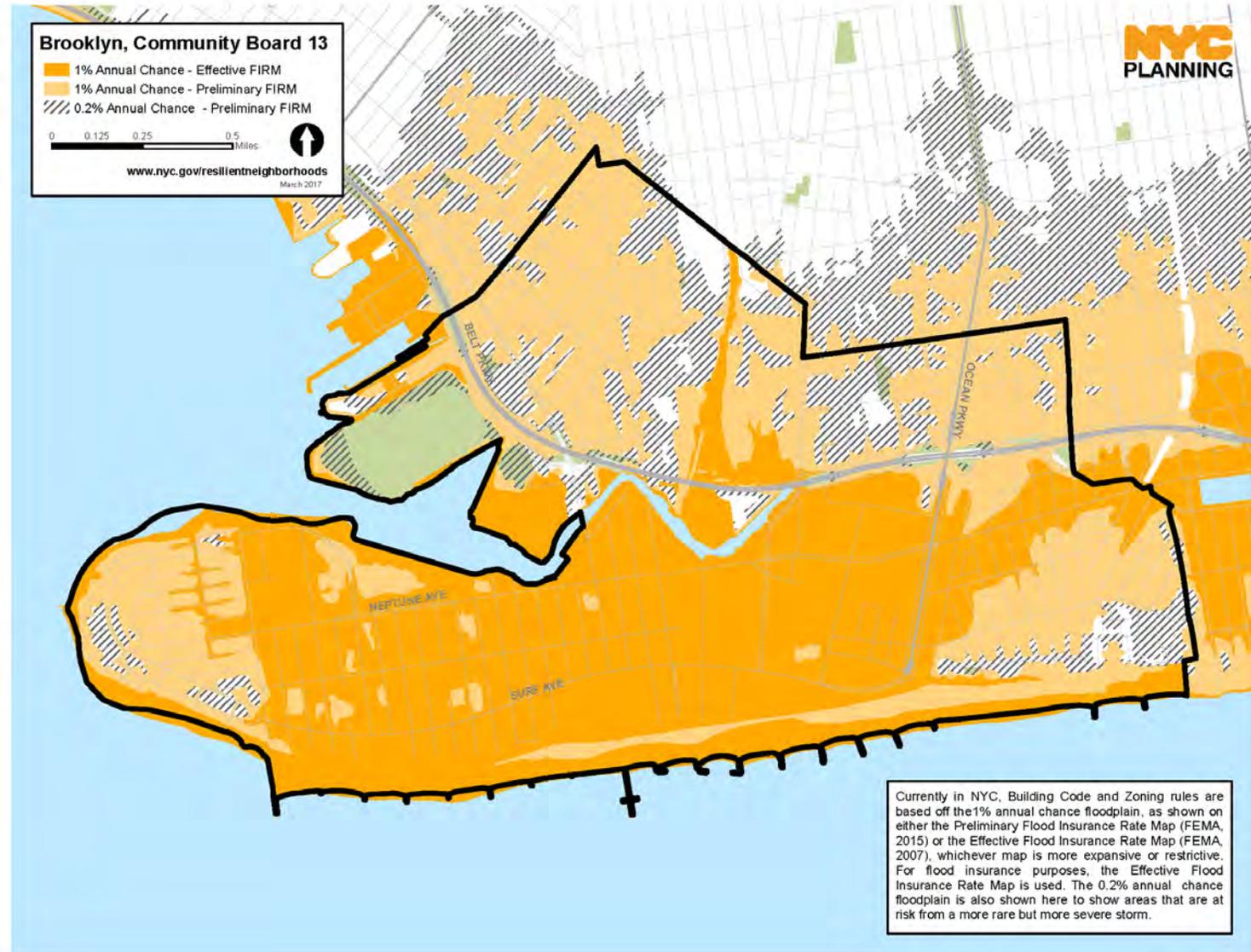
■ Current FEMA 1% annual chance floodplain
■ Current FEMA 0.2% annual chance floodplain

Zoning for Coastal Flood Resiliency

An expanded geography



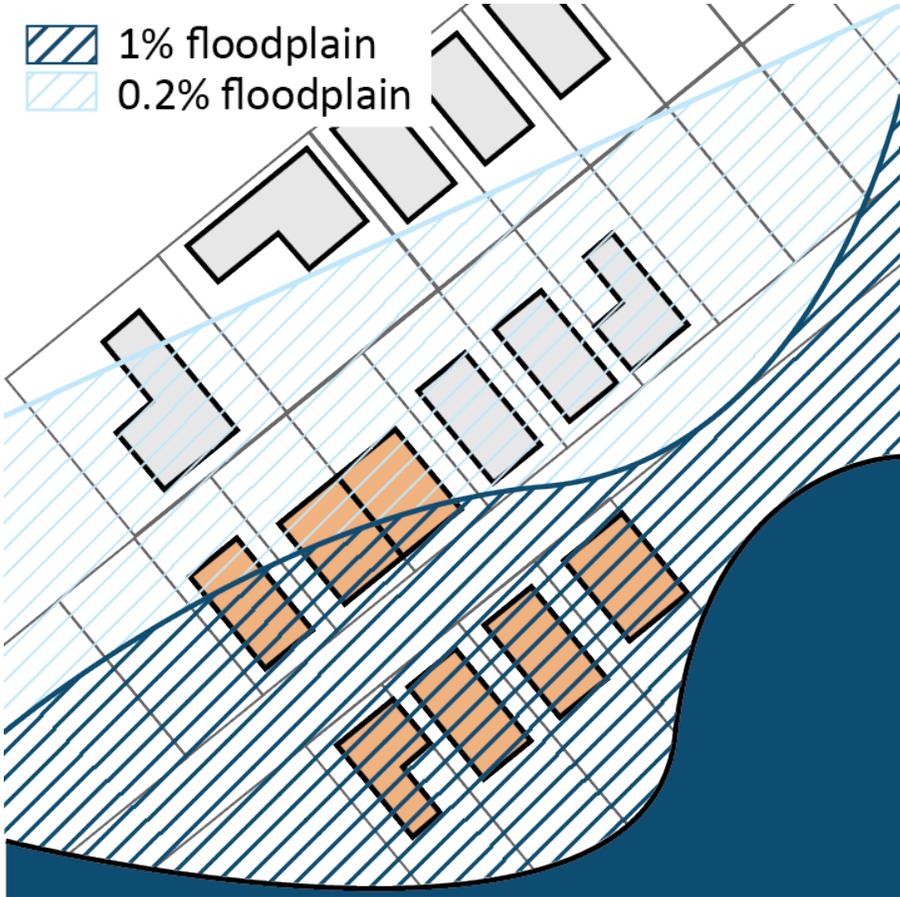
Encourage resiliency throughout the current and future floodplains



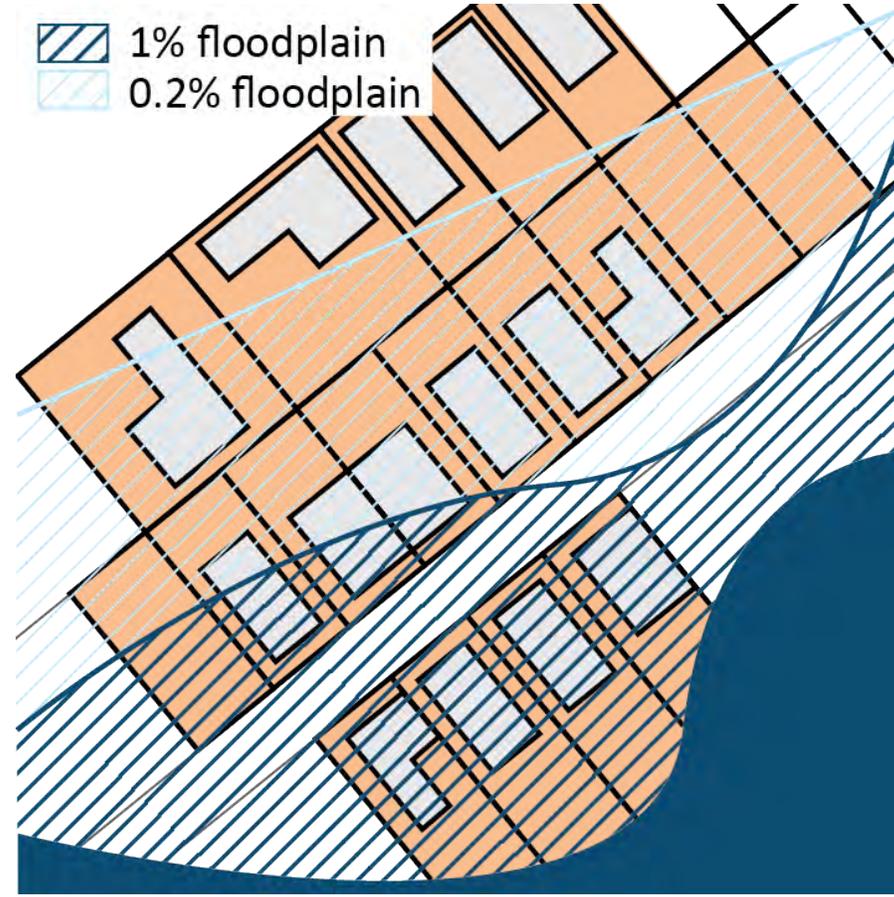
Applicability

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

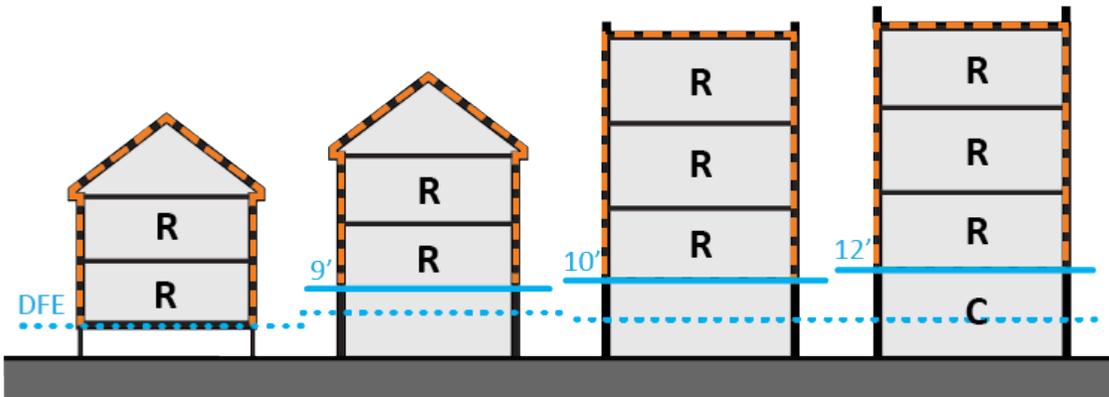


Proposed Rules: apply to lots within the 0.2% floodplain

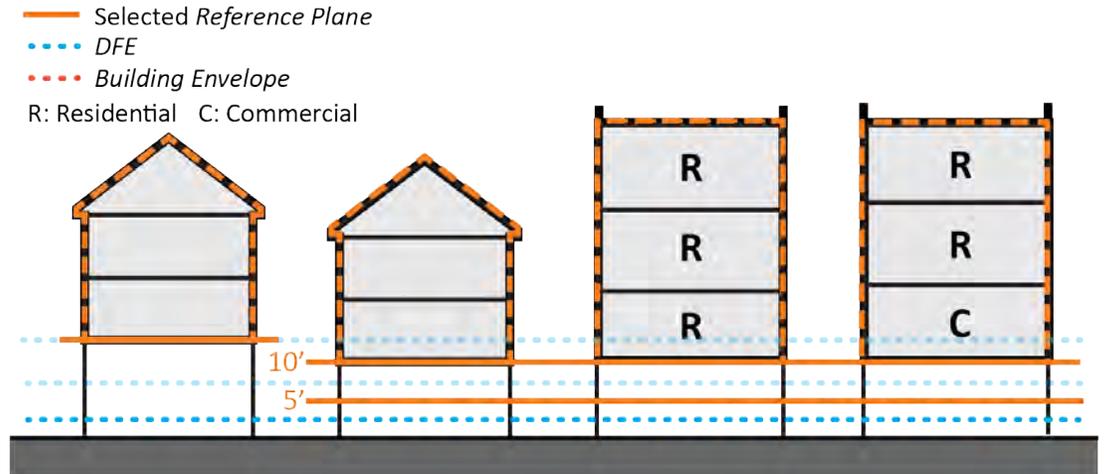
Building Envelope

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 of up to 10' in the 1% floodplain or 5' in the 0.2% floodplains

Updated Item

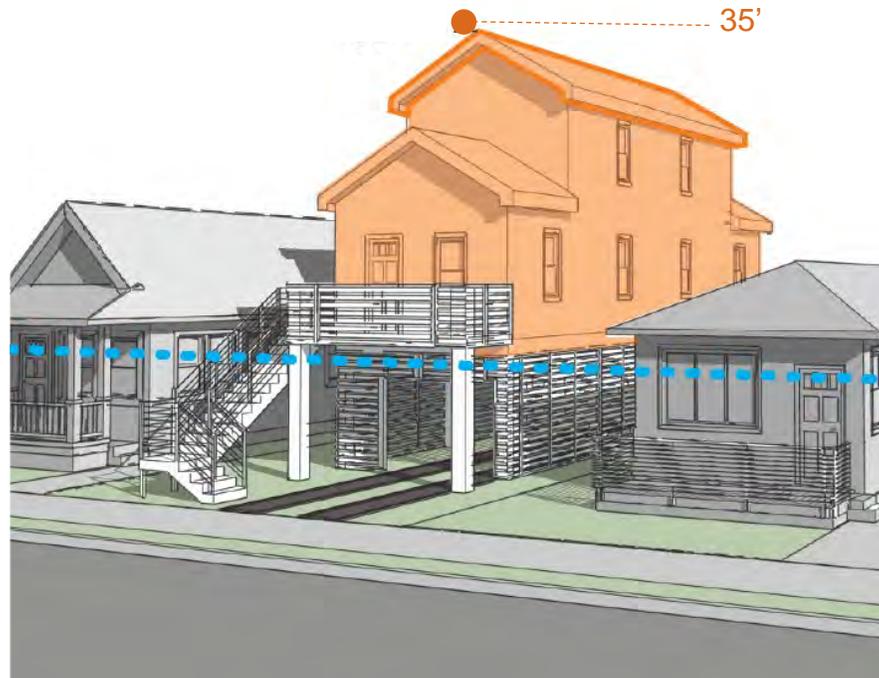
Building Envelope

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



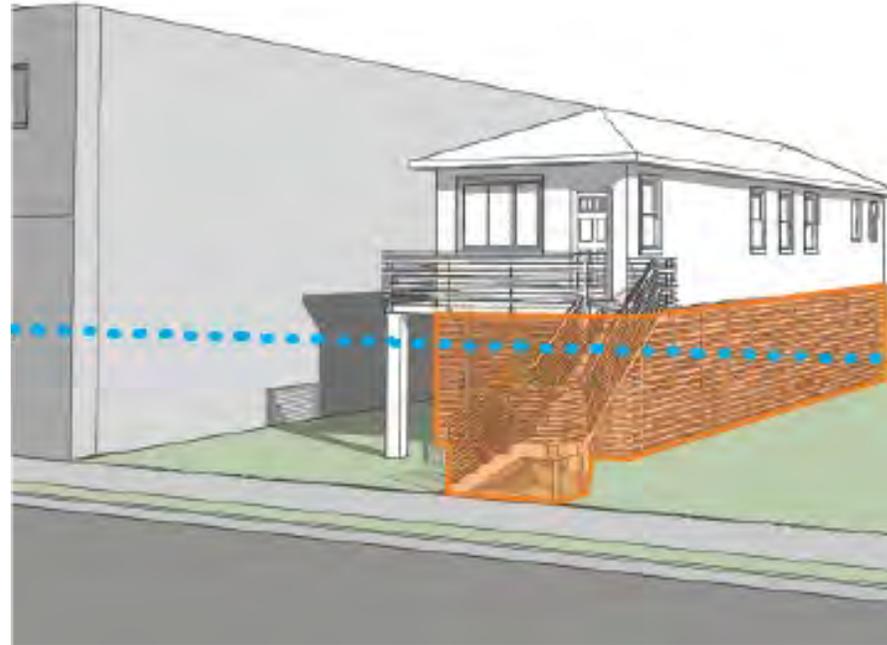
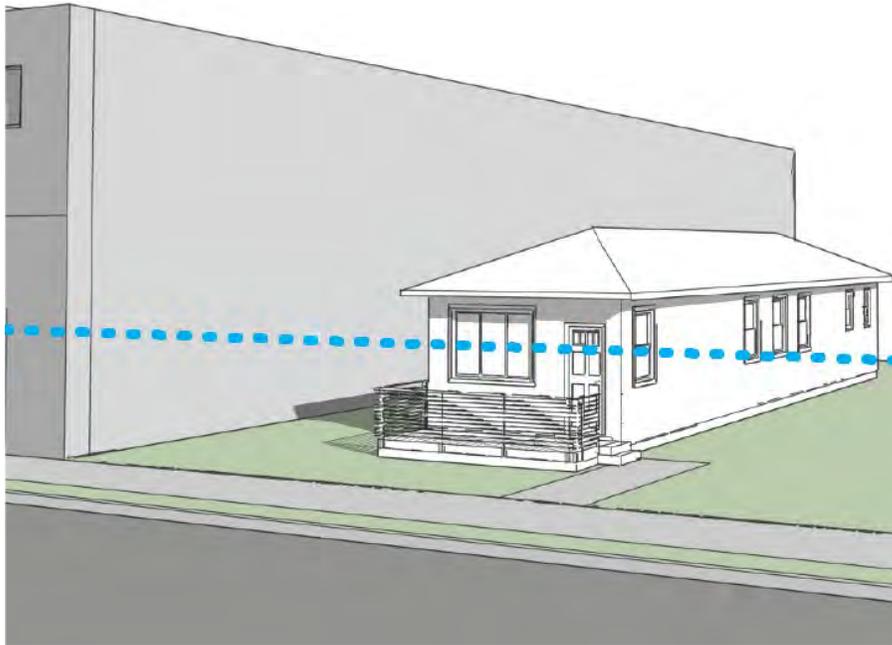
Proposed Rules: maximum height of 25' as measured from the DFE up to 10' Reference Plane

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

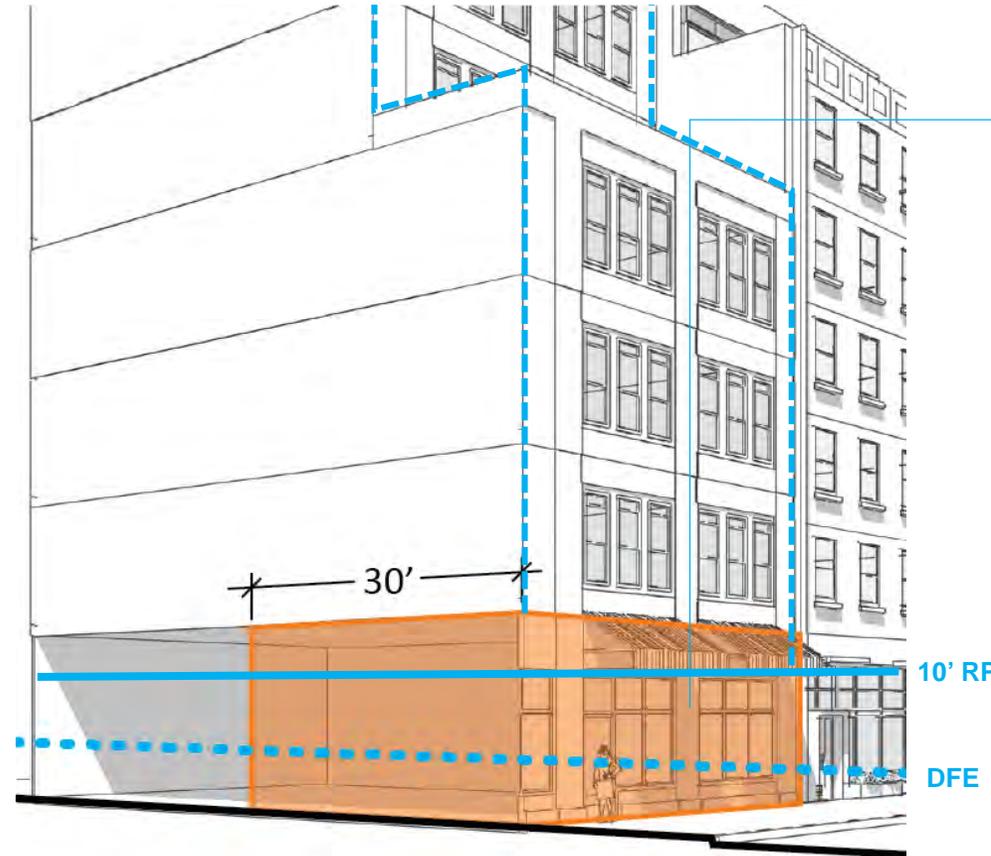
Building Design

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

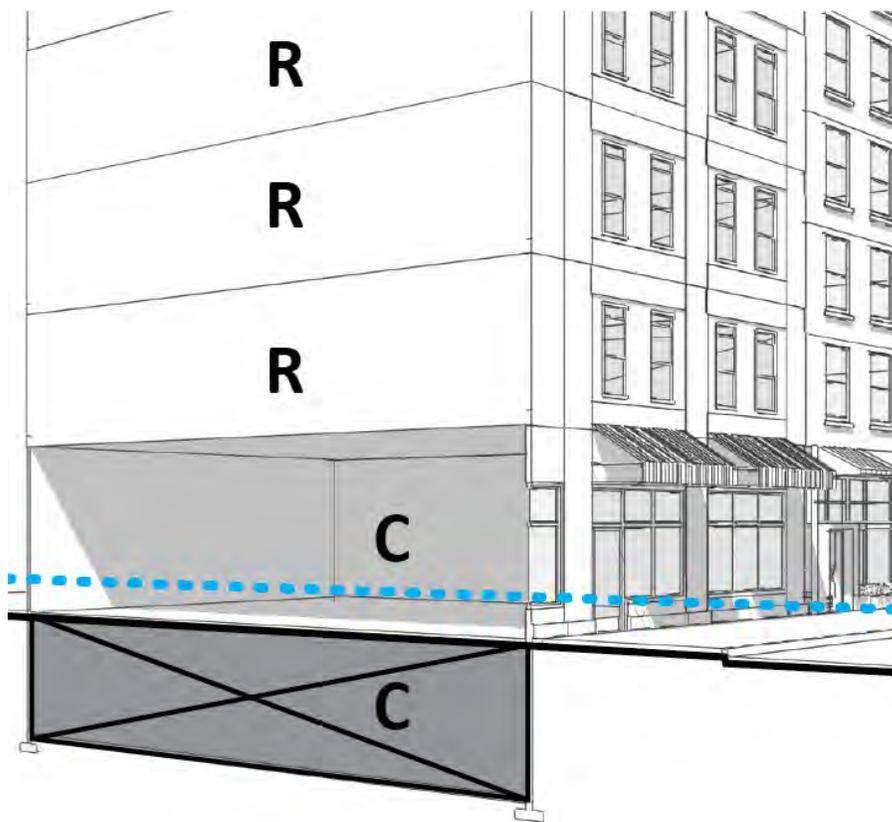
**And for wet-flood proofed ground floors
Or to provide internal access or mechanical equipment**

Updated Item

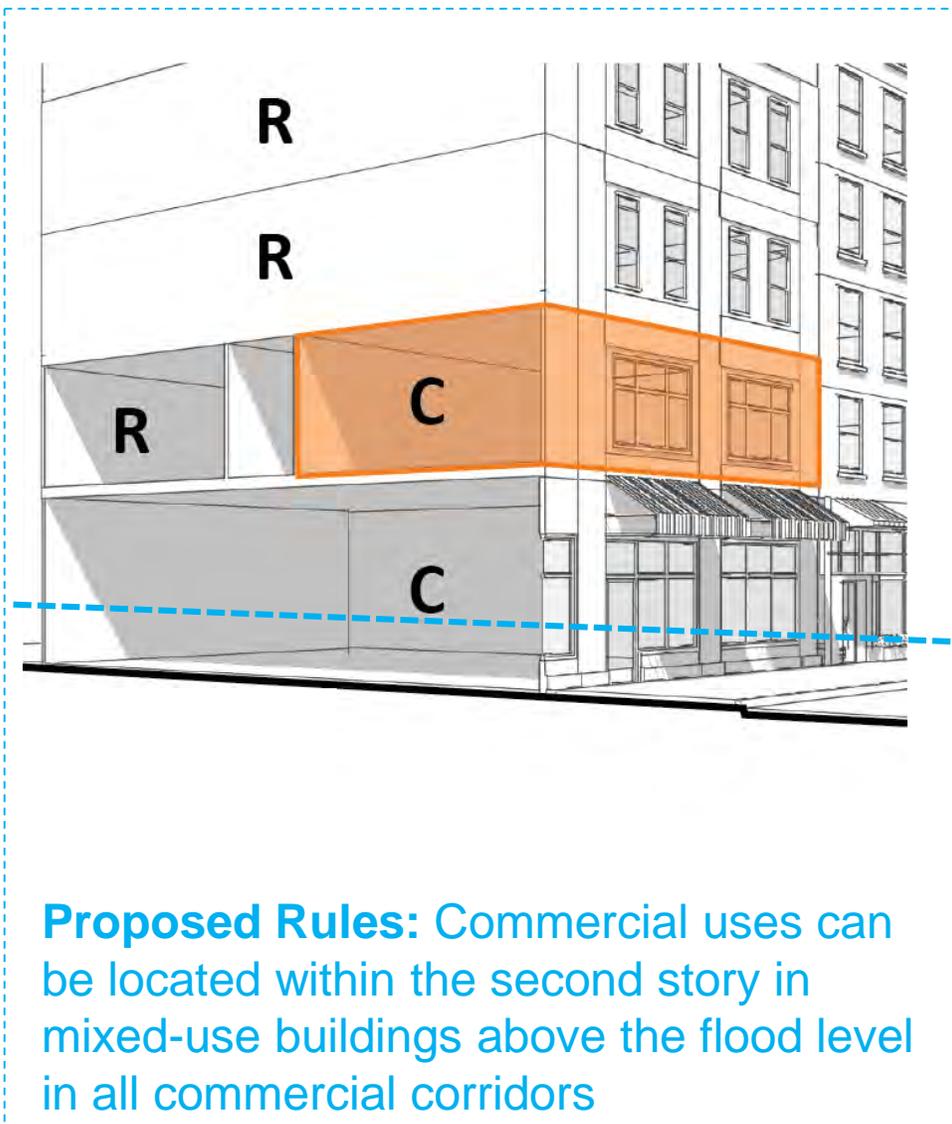
Building Design

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

Building Design

Streetscape Regulations

Streetscape regulations would promote walkability across the city's floodplain by ensuring an **accessible design that makes the streetscape more inviting while mitigating additional height.**



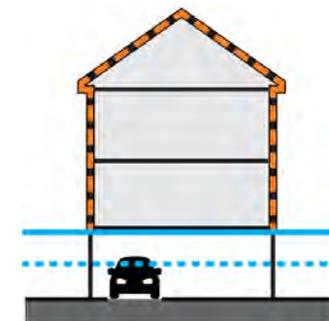
Existing Rules: Few design options to help mitigate potential blank walls



Proposed Rules: Wider range of design options to make the streetscape more inviting while mitigating additional height

Parking

Flexible curb-cut rules allow for parking below elevated homes (R1-R5)

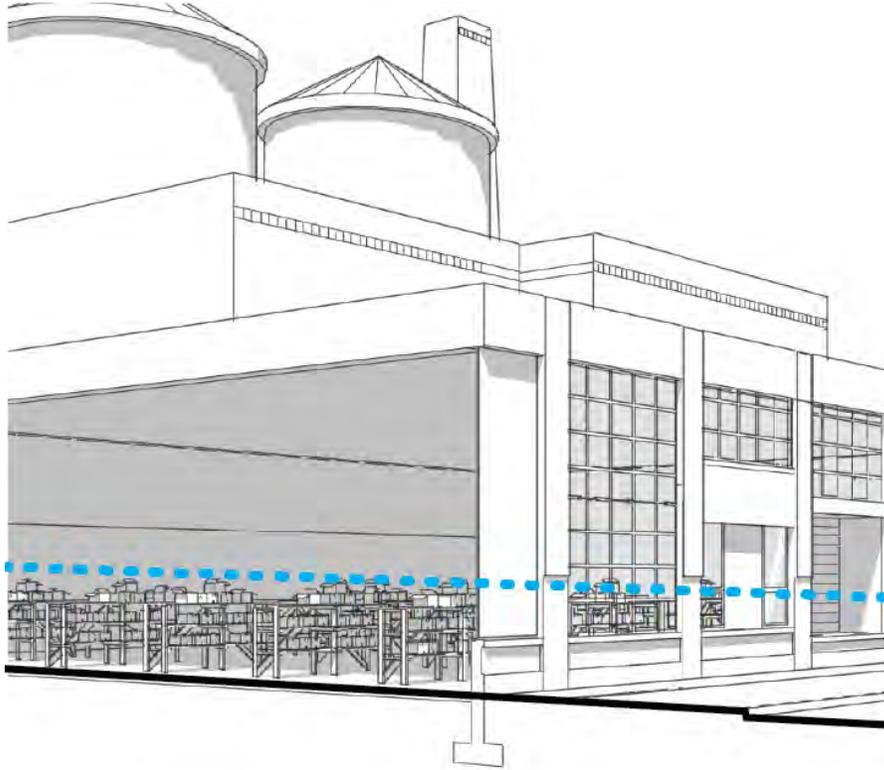


Updated Item

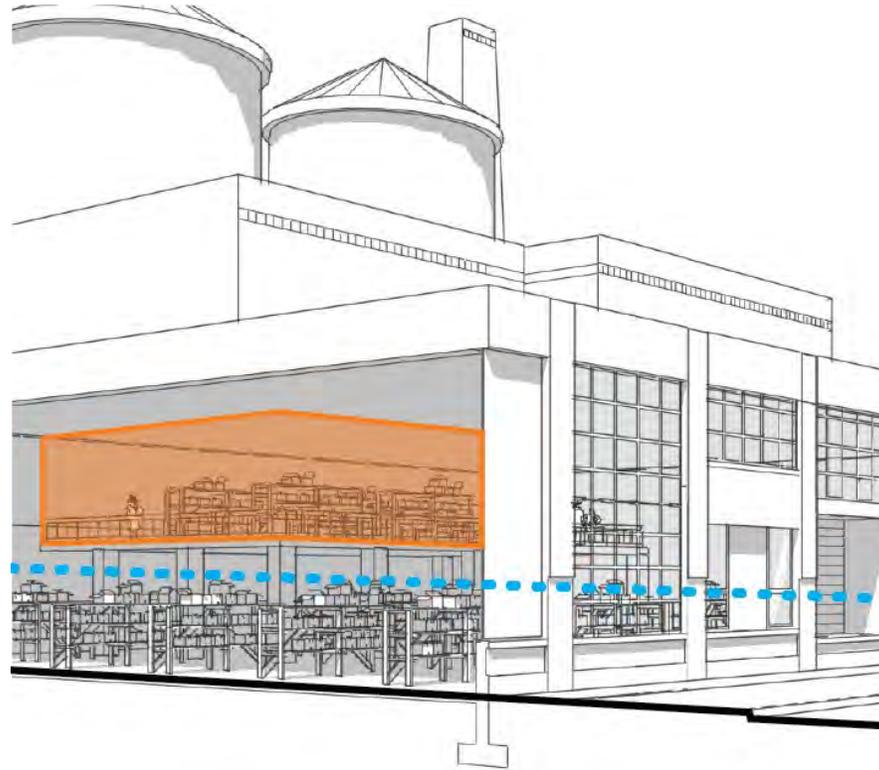
Partial Resiliency Strategies

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

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.**

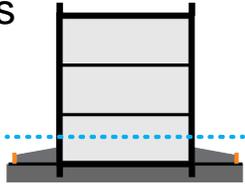


Existing Rules: Additional flexibility with permitted obstructions facilitate mechanical equipment to be relocated to the roof of buildings

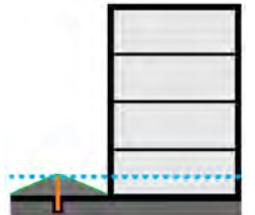


Proposed Rules: Additional flexibility to facilitate mechanical, electrical and plumbing equipment to be placed on the roof or in a separate structure

Or to build retaining walls and raise yards



Or to build berms



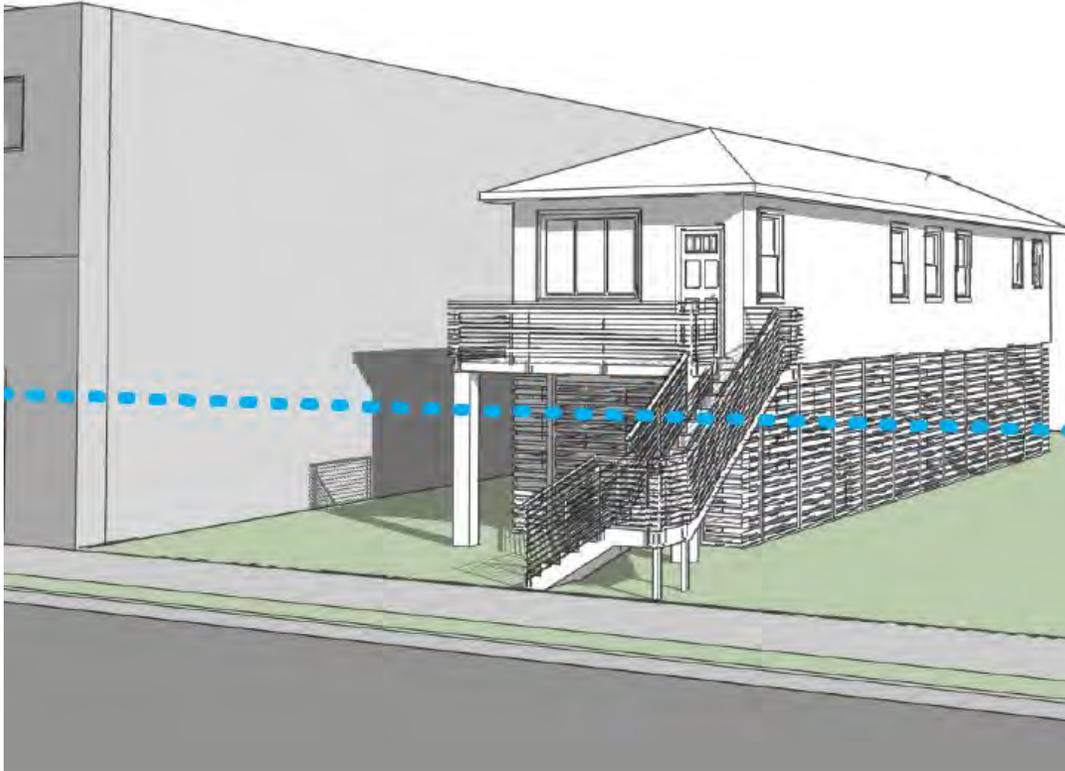
Or deploy flood panels



Updated Item

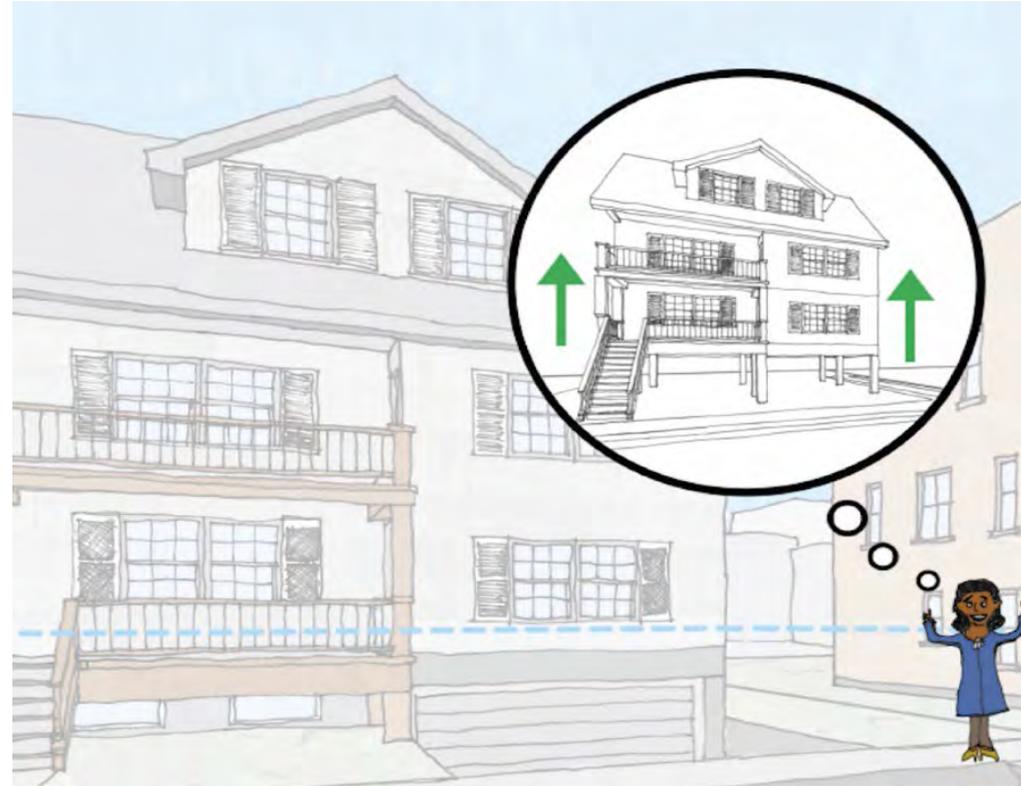
Emergency Rules

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

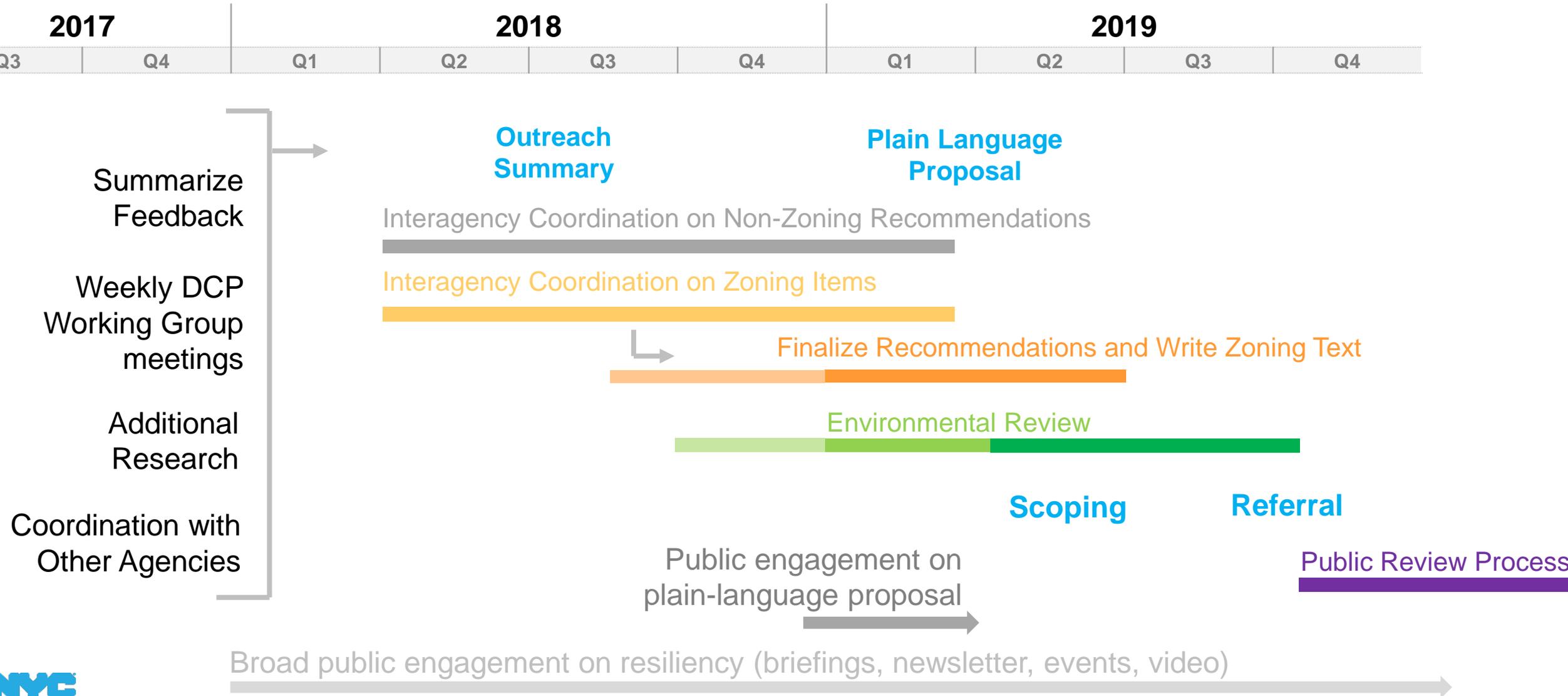
Zoning for Coastal Flood Resiliency

4. Project Timeline & Outreach Resources

Zoning for Coastal Flood Resilience 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

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cferrara@planning.nyc.gov

718-780-8280

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 Why is Flood Insurance Important?

- Floods can cause significant damage to your most valuable asset: your home or business.
- Even properties far from the coast may be at risk of flooding.
- Homeowner and property insurance do not cover damage by flooding. You must buy a separate policy.
- Federal assistance is not guaranteed in the event of a flood.
- Many property owners are required by federal law to purchase and maintain flood insurance if the property is located in a high-risk flood zone of the 2007 FIRMs (see map to right), has a federally backed mortgage, or has received federal disaster assistance.

How Much Flood Insurance Must a Homeowner Purchase?

Properties with a federally backed mortgage in a high-risk flood zone and those that have received federal disaster assistance must maintain flood insurance up to the NFIP coverage limits, or the outstanding mortgage balance, whichever is lower. Failure to do so may lead mortgage servicers to purchase a policy for the property—possibly at a higher price—and pass on the cost through monthly mortgage bills. Homeowners without a federally-backed mortgage or outside a high flood risk zone can carry up to the maximum policy limit of \$250,000 with additional contents coverage available up to \$100,000 for owners or renters. Co-ops, larger multifamily buildings and business properties can be covered up to \$500,000. Business owners and tenants can also purchase up to \$500,000 in contents coverage.

NYC Planning | November 2016 | Flood Insurance

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'easters, intense rain storms, and even extreme high tides are the primary causes of flooding in NYC. For building code, zoning, and planning purposes, flood risk in NYC is represented on FEMA's 2015 Preliminary Flood Insurance Rate Maps (PFIRMs).

- PFIRMs show the extent to which flood waters are expected to rise during a flood event that has a 1% annual chance of occurring. This height is denoted as the Base Flood Elevation (BFE) on the maps.
- The 1% annual chance floodplain is sometimes referred to as the 100-year floodplain. However, this term is misleading since these floods can occur multiple times within 100 years. In the 1% annual chance floodplain, there is a 26% chance of flooding over the life of a 30-year mortgage.

For flood insurance purposes, refer to FEMA's 2007 Flood Insurance Rate Maps (FIRMs). All property owners of buildings in the 1% annual chance floodplain with a federally insured mortgage are mandated by law to purchase flood insurance.



The 1% annual chance floodplain is divided into three areas of different degrees of flood risk: V and Coastal A Zones are vulnerable to flooding but not sea surges. The maps also show the C Zone which has a lower annual chance of flooding than the A Zone.

NYC Planning | November 2016 | Flood Risk in NYC

NYC PLANNING Flood Resilience Zoning

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 encourages flood resilient building construction throughout designated floodplains. The Flood Text modified zoning to remove regulatory barriers that hindered or prevented the reconstruction of storm-damaged properties by enabling new and existing buildings to comply with new, higher flood elevations issued by the Federal Emergency Management Agency (FEMA), and to comply with new requirements in the New York City Building Code.

It also introduced regulations to mitigate potential negative effects of flood resilient construction in the public realm. The text was adopted in 2013 on a temporary, emergency basis. Therefore a future update of the text, guided by community input, will aim to make the text permanent, and to incorporate lessons learned during the recovery and rebuilding process.

Where is the Flood Text Applicable?

The Flood Text is available to buildings located entirely or partially within the 1% annual chance floodplain. These rules can be found in Article VI, Chapter 4 of the Zoning Resolution and, if altered, typically require the building to fully comply with flood resilient construction standards found in Appendix G of the New York City Building Code. However, some provisions, such as elevation of mechanical spaces, are available to all buildings located in the floodplain, even if not fully compliant with Appendix G. For more information about the Flood Text, visit www.nyc.gov/resilientneighborhoods. *For the more restrictive of the 2007 FIRMs or 2015 PFIRMs.

NYC Planning | March 2017 | Flood Resilience

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

- There is a wide range of accepted flood resilient construction practices for buildings to better withstand floods and recover 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 tied 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 | November 2016 | Flood Resilient Construction