Flood Resilience Zoning

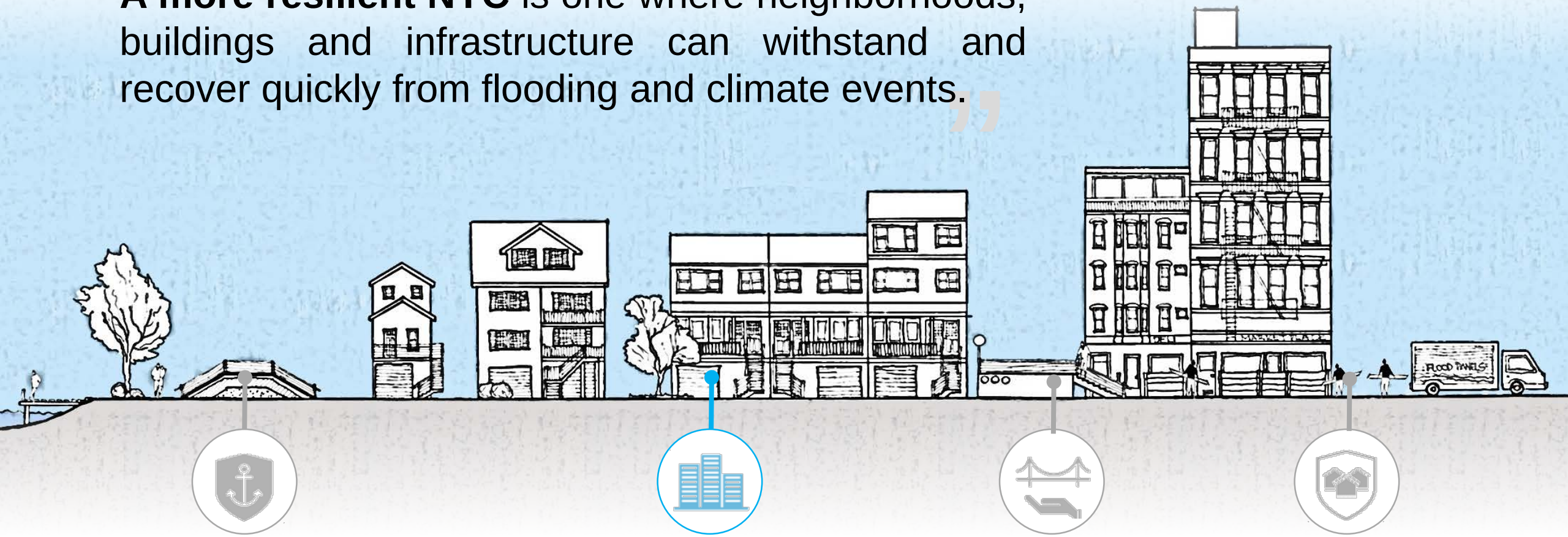
Queens Borough Board

May 15, 2017

NYC PLANNING

#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

FEMA Flood Map
Citywide Flood Risk

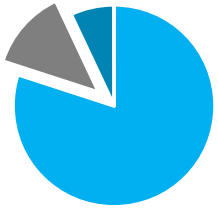
NYC's flood risk is high.

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

100 Year Floodplain
FEMA 2015 PFIRM

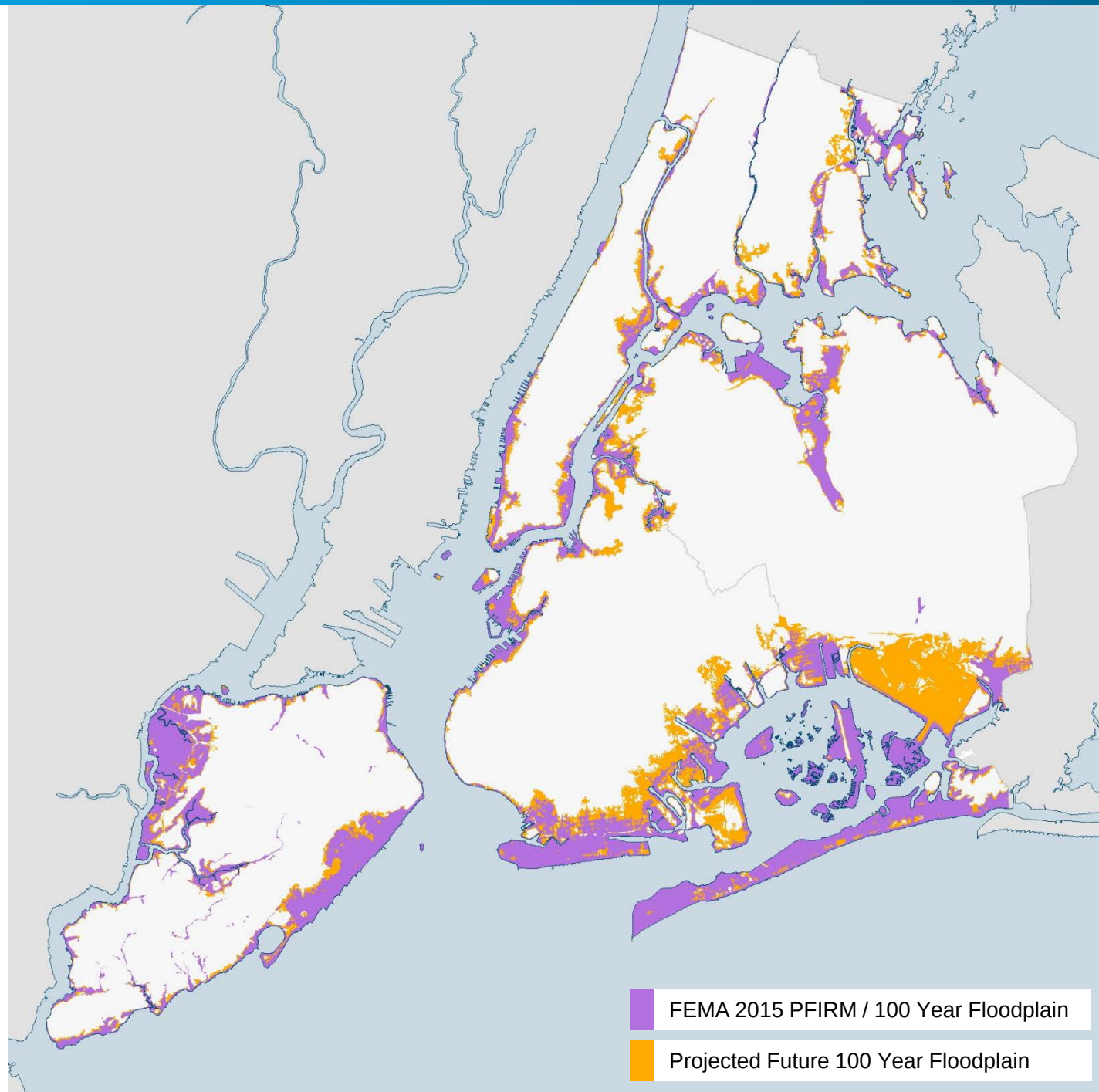
Population: **400,000**
Buildings: **71,500**

50 of 59 Community Boards
45 of 51 Council Districts



Buildings:
80% 1-4 units
7% 5+ units
13% nonresidential

Residential Units:
30% 1-4 units
70% 5+ units



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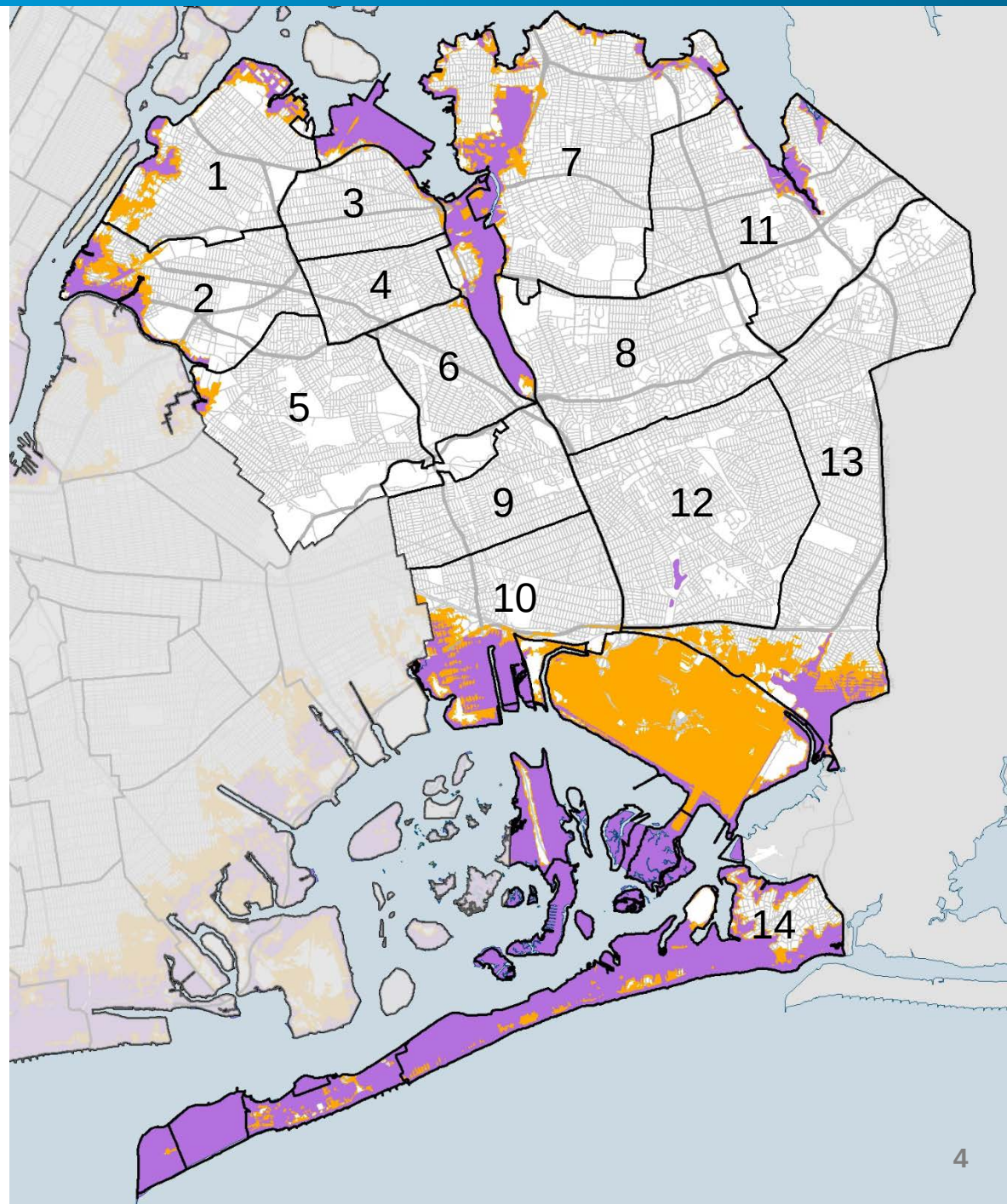
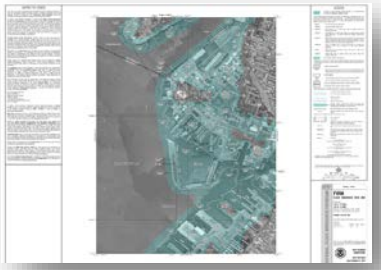
Future Flood Map
Flood Risk in Queens

	2015 PFIRMs	2050s Projected	
Population in Floodplain	99,100	167,200	***65%***
Buildings in Floodplain	25,200	35,600	***40%***



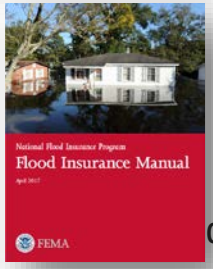
How are buildings in the floodplain regulated?

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

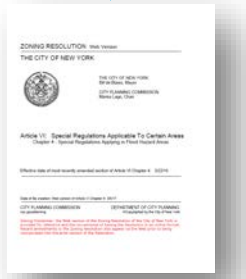
Construction Standards (ASCE 24)

Design minimum construction requirements for flood hazard areas

NYC

Building Code (DOB)

Requires new buildings and substantial improvements to meet FEMA standards



Zoning Resolution (DCP)

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

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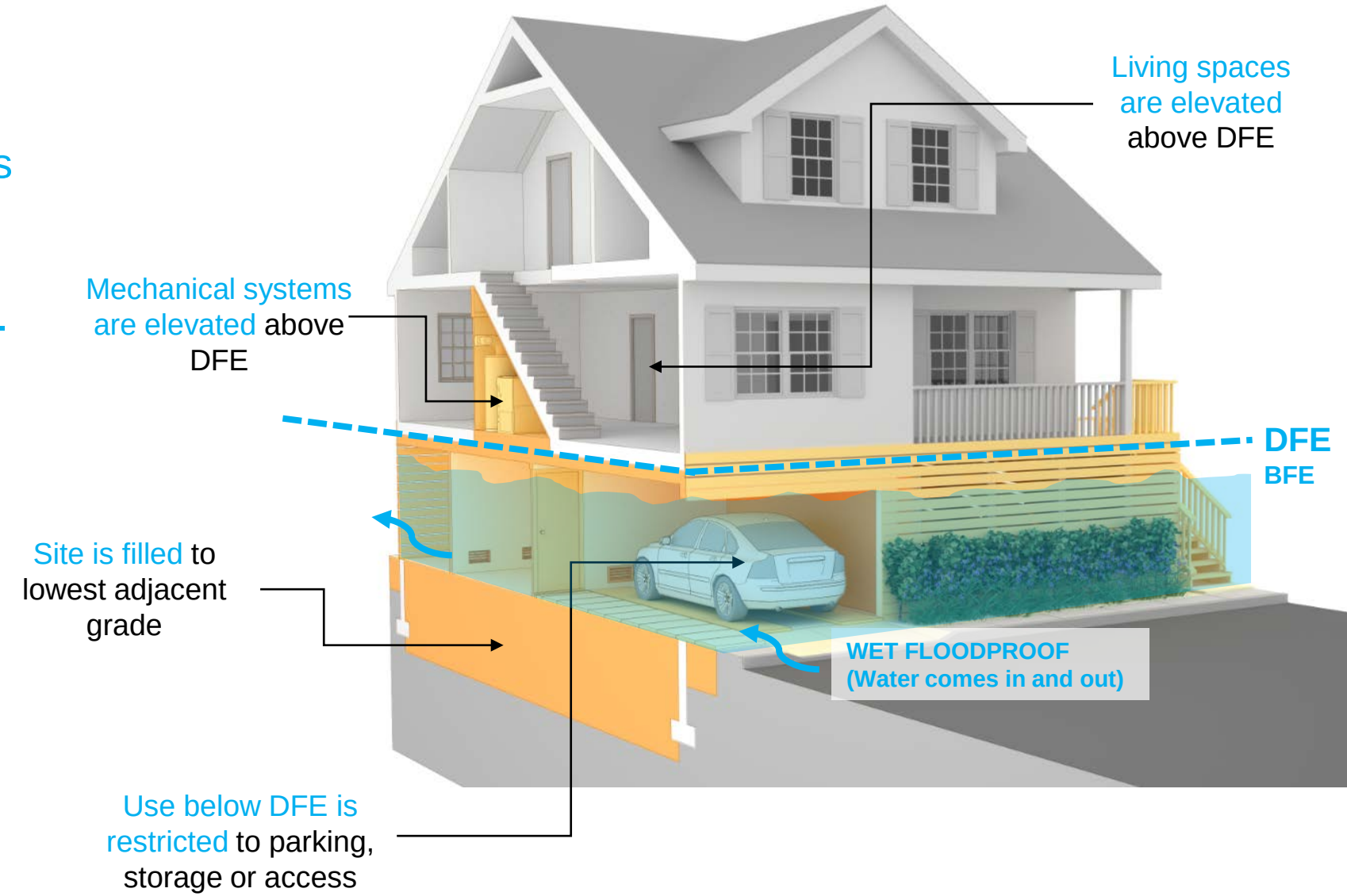
Flood resilient construction
Required by DOB

Flood resilient construction standards require certain buildings to elevate the lowest floor, as well as mechanical equipment, above the Design Flood Elevation (DFE).



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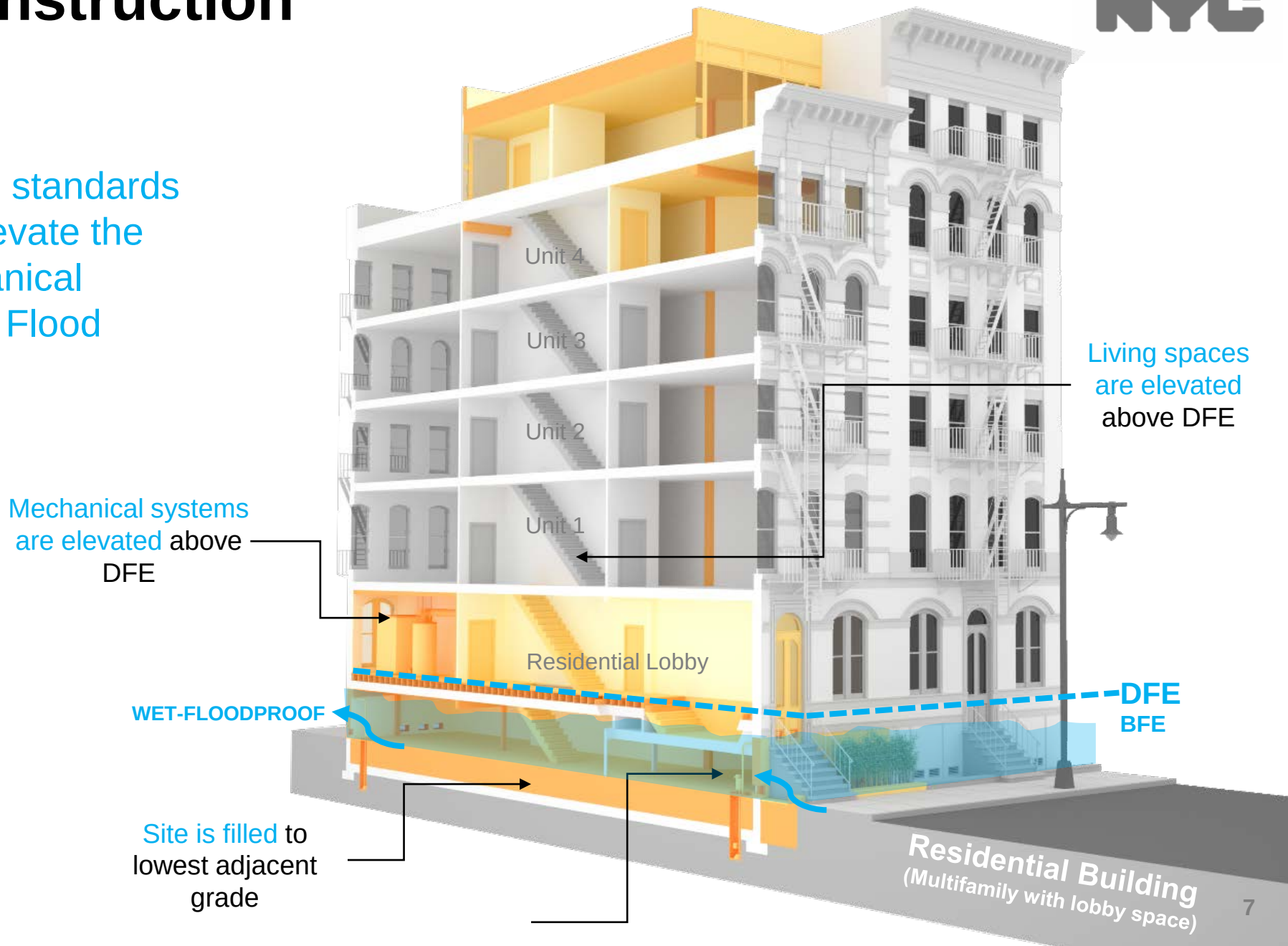

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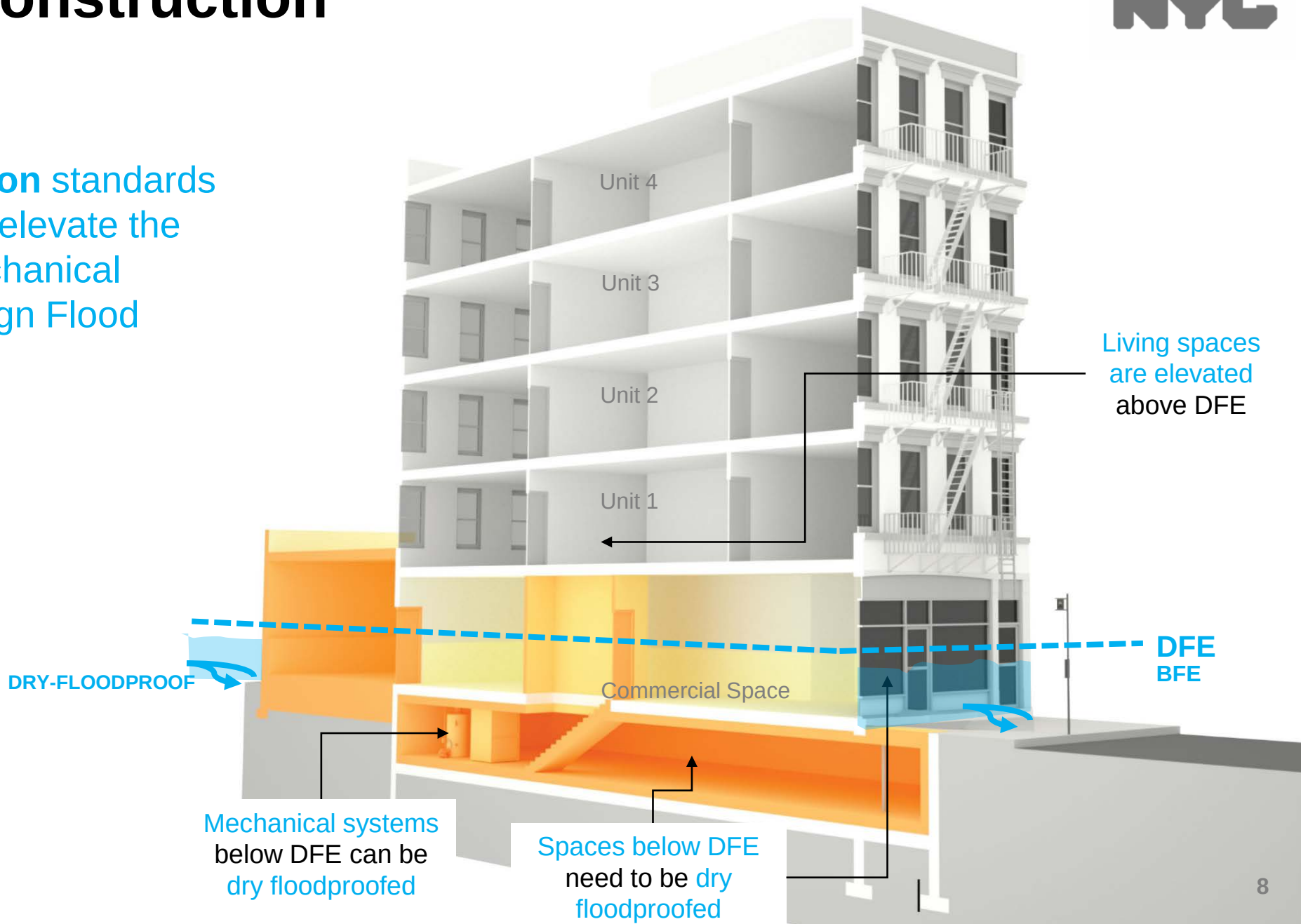
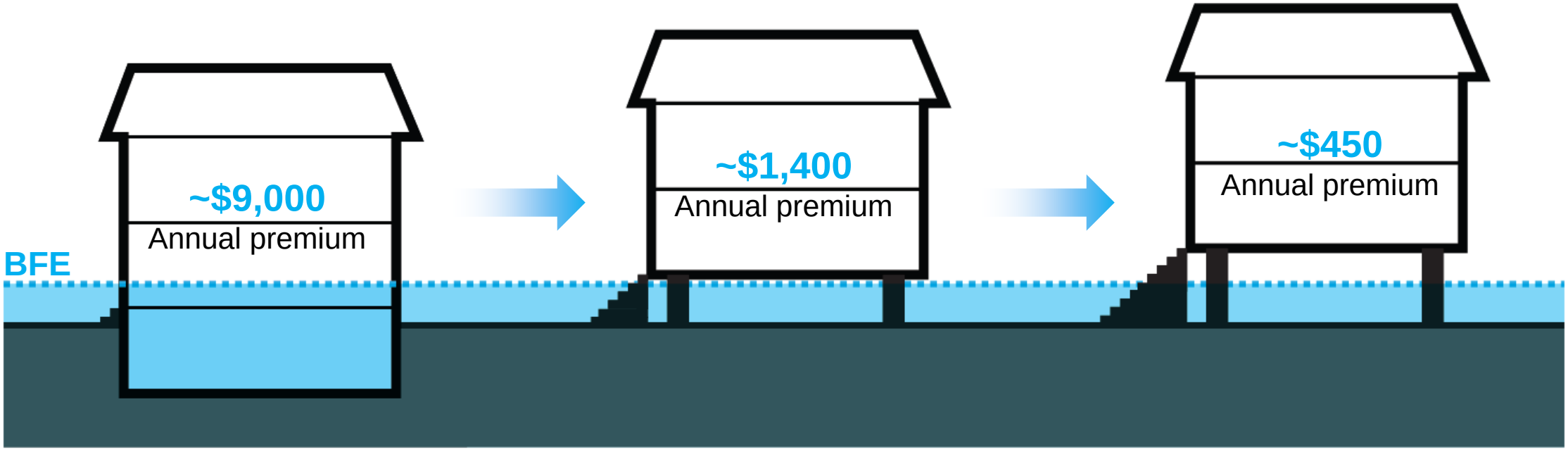


Flood insurance rates
Set by FEMA

Raising or retrofitting your building or home will reduce costs

FEMA's flood insurance premiums are lowest when the lowest inhabited floor (any area not used solely for storage, access or parking) is elevated above the **Base Flood Elevation (BFE).**



4 FEET OR MORE
BELOW BFE

AT
BFE

3 FEET OR MORE
ABOVE BFE

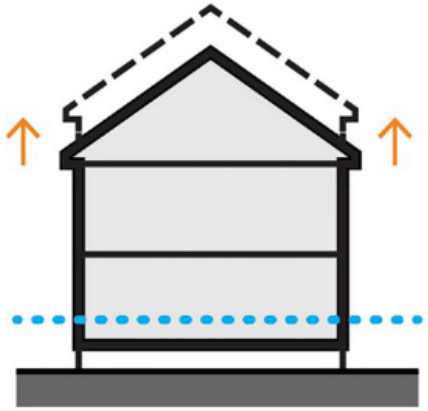
2013 Citywide Flood Text

Amended zoning in six key ways

1

Height

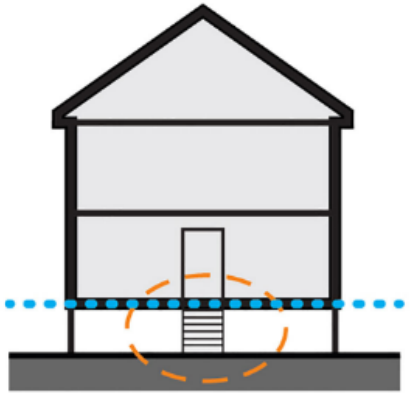
Measured from flood elevation



2

Access

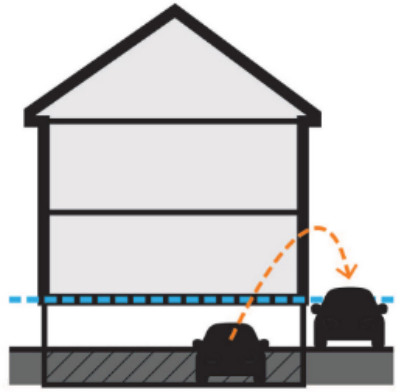
Flexibility for stairs, ramps, lifts



3

Parking

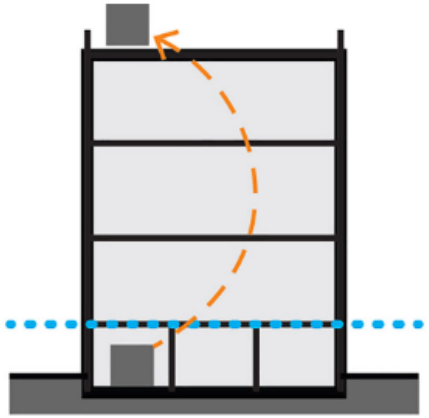
Flexibility to relocate parking



4

Systems

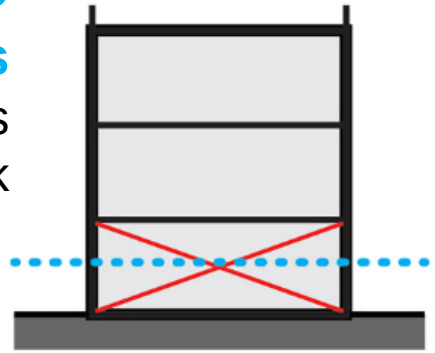
Flexibility to relocate/elevate



5

Ground Floors

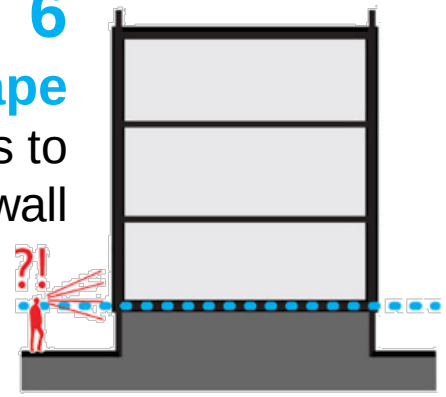
Account for costs of new flood risk



6

Streetscape

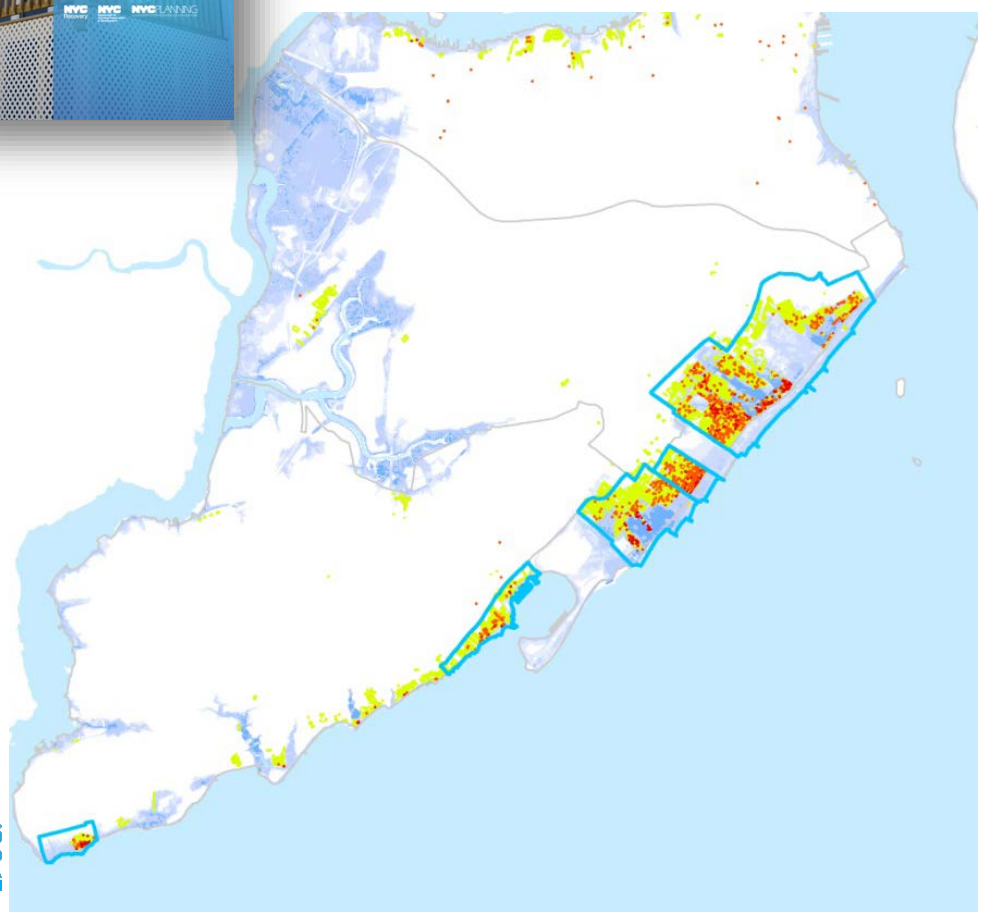
Require features to mitigate blank wall

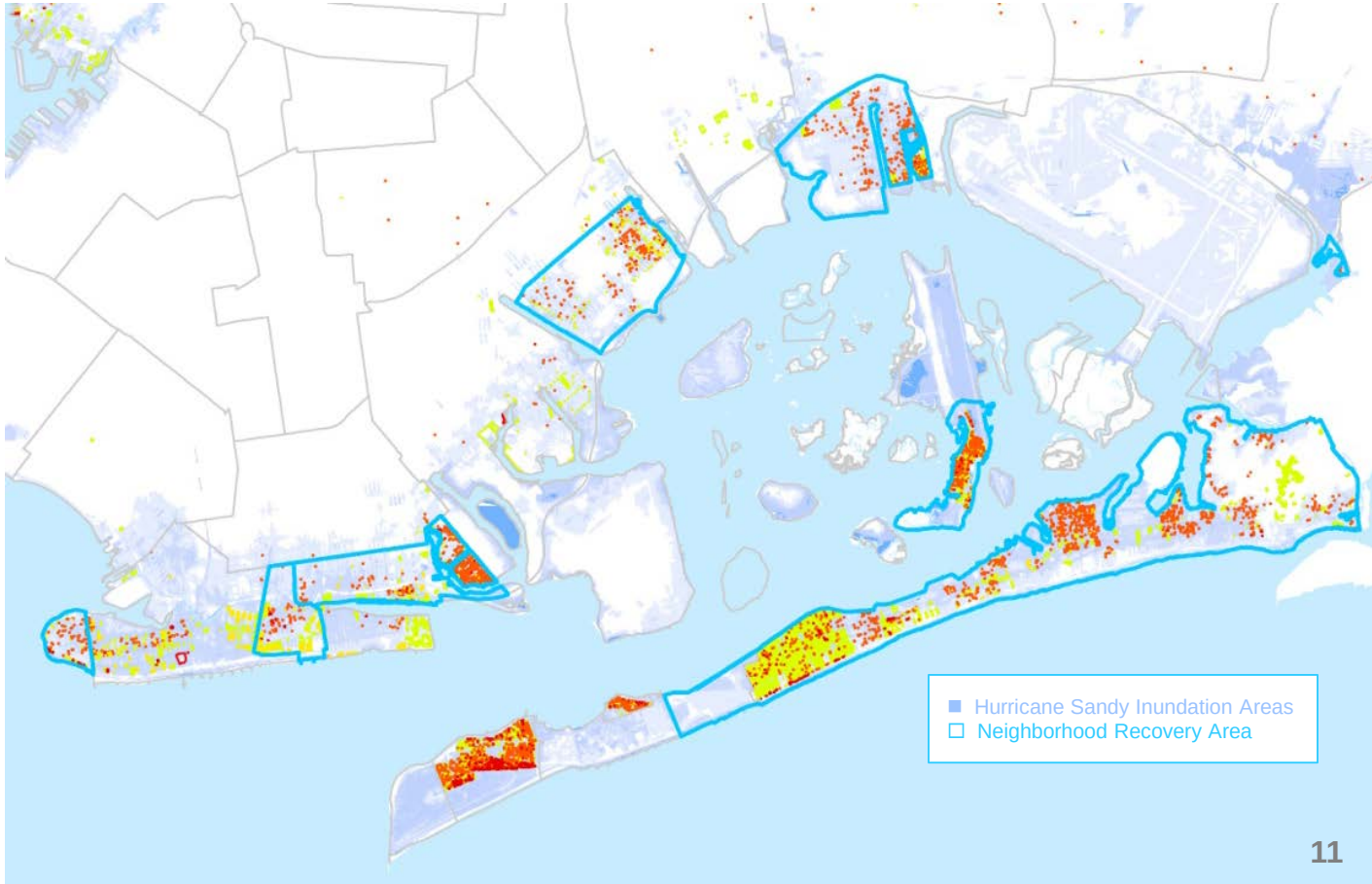


2015 Special Regulations

Accelerate recovery in Sandy-damaged neighborhoods

Temporary regulations, expiring in 2020, in limited areas of Brooklyn, Queens, and Staten Island





2015 Special Regulations

Accelerate recovery in Sandy-damaged neighborhoods

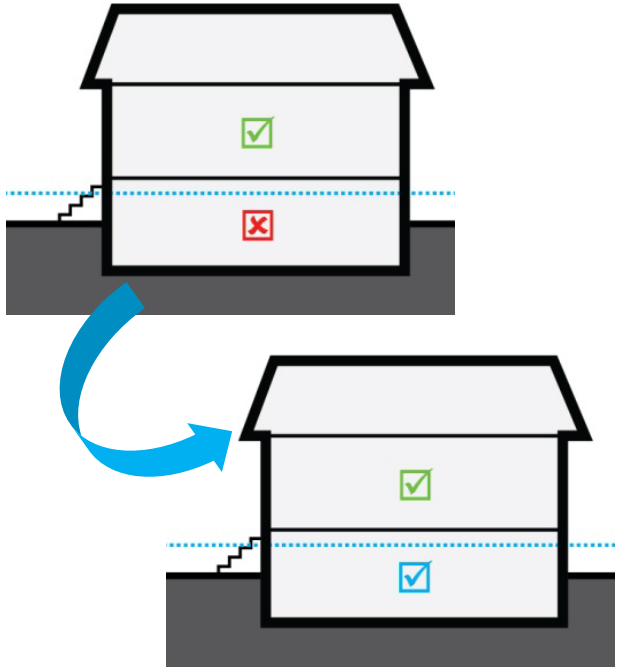
Provided new zoning solutions in three key areas:

Simplified process
for documenting old homes

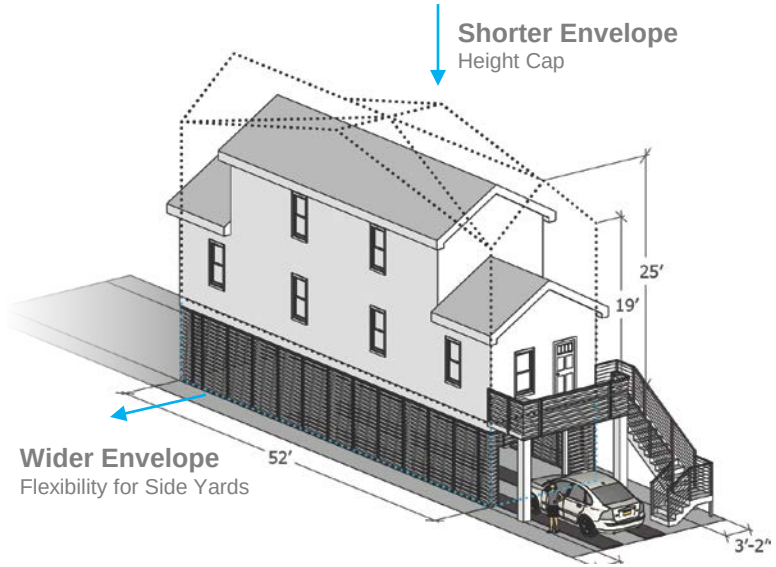
Home in Gerritsen Beach
© Google 2015

1931 Sanborn Map
Used with permission from
The Sanborn Library, LLC

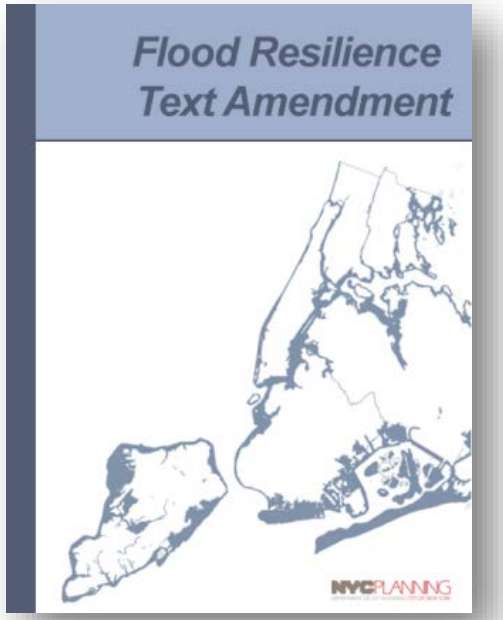
Removed disincentives
such as loss of basement space

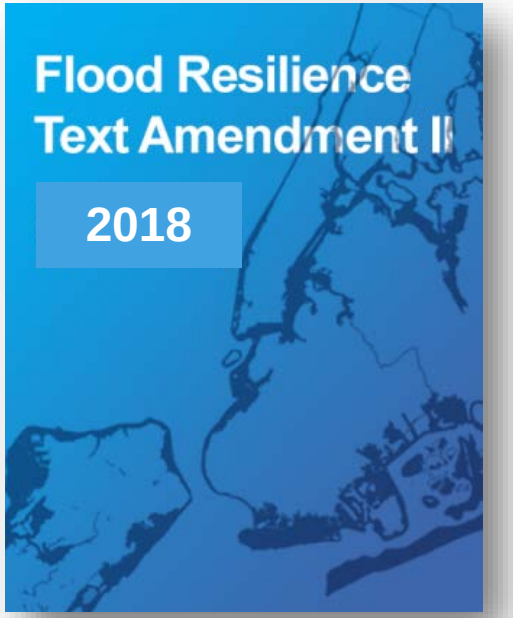


Established new envelope
for rebuilds on small existing lots



Flood Resilience Zoning
Projects at DCP





2013

“Flood Text”

initial <u>temporary</u> regulations to facilitate recovery

2018

“Flood Text Update”

improve upon, and make permanent, the Flood Text

Approach to Future Zoning + Land Use Strategies

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 local planning considerations

Limit

Zoning and other tools should limit exposure to damage and disruption by limiting the density future development.

Accommodate

Adjust zoning to allow buildings to retrofit, by providing flexibility and removing obstacles to resiliency investments.

Encourage

Encourage construction of new development built to a higher standard of flood protection.

Resilient Neighborhoods

Old Howard Beach, Hamilton Beach, and Broad Channel

Community Advisory Committee:

- Appointed by Councilmember Eric Ulrich and included representatives from:
  - Community Boards 10 and 14
  - Broad Channel Civic Association
  - New Hamilton Beach Civic Association
  - Howard Beach-Lindenwood Civic Association
  - Local business owners

Public Outreach Summary:

- 5 Community Advisory Committee Meetings
- 4 Community Board Meeting Presentations
- 4 Civic Association Meeting Presentations

Recommendations:

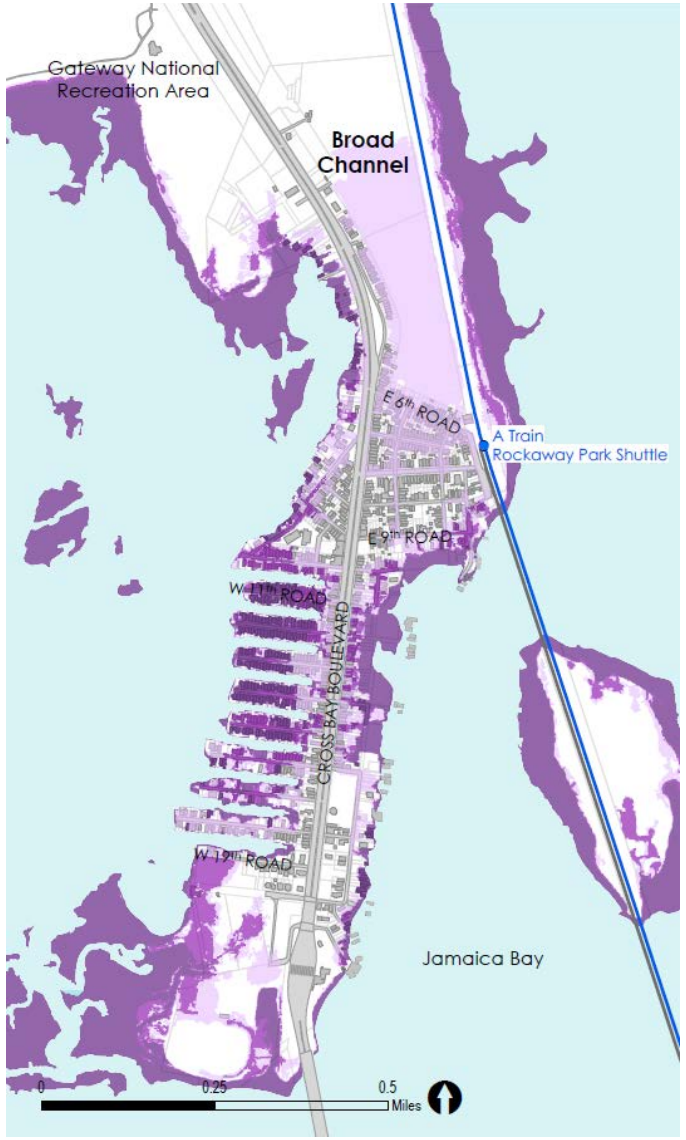
- Reflect neighborhood character in Old Howard Beach through a future rezoning
- Update zoning to make it easier for property owners to make resiliency investments to their buildings
- Advance coordinated infrastructure and coastal protection strategies
- Enact targeted zoning changes to reflect the unique character and long-term vulnerability of Hamilton Beach and Broad Channel

Resilient Neighborhoods
Broad Channel

Existing Zoning

R3-2
- Allows all residential building types
- 0.6 FAR (includes 0.1 attic allowance)
- 40’ min. lot width (D); 18’ min. lot width (SD, A)
- 5’ min. side yard width (D)
- 1 parking space required per unit

C1-2 Overlay
- Max. commercial FAR is1.0 when mapped in R3-2
- Permits local commercial uses
- Parking requirements vary by use, but typically one off-street parking space is required for every 300 sq ft of commercial floor area



2050s Sea Level Rise Projections

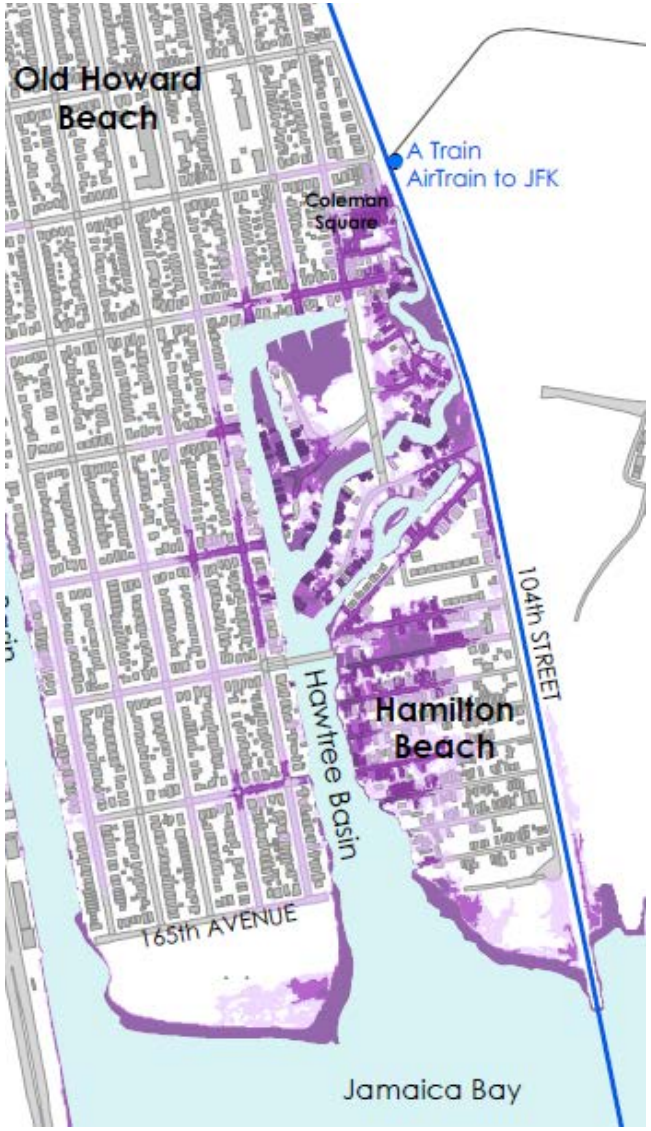
226 Buildings
MHHW + 11” (25th percentile projection)
368 Buildings
MHHW + 21” (75th percentile projection)
744 Buildings
MHHW + 30” (90th percentile projection)

Resilient Neighborhoods
Hamilton Beach

Existing Zoning

R3-1
- Allows one- and two-family detached and semi-detached residences
- 0.6 FAR (includes 0.1 attic allowance)
- 40’ min. lot width (D); 18’ min. lot width (SD, A)
- 5’ min. side yard width (D)
- 1 parking space required per unit

C1-2 Overlay
- Max. commercial FAR is 1.0 when mapped in R3-1
- Permits local commercial uses
- Parking requirements vary by use, but typically one off-street parking space is required for every 300 sq ft of commercial floor area

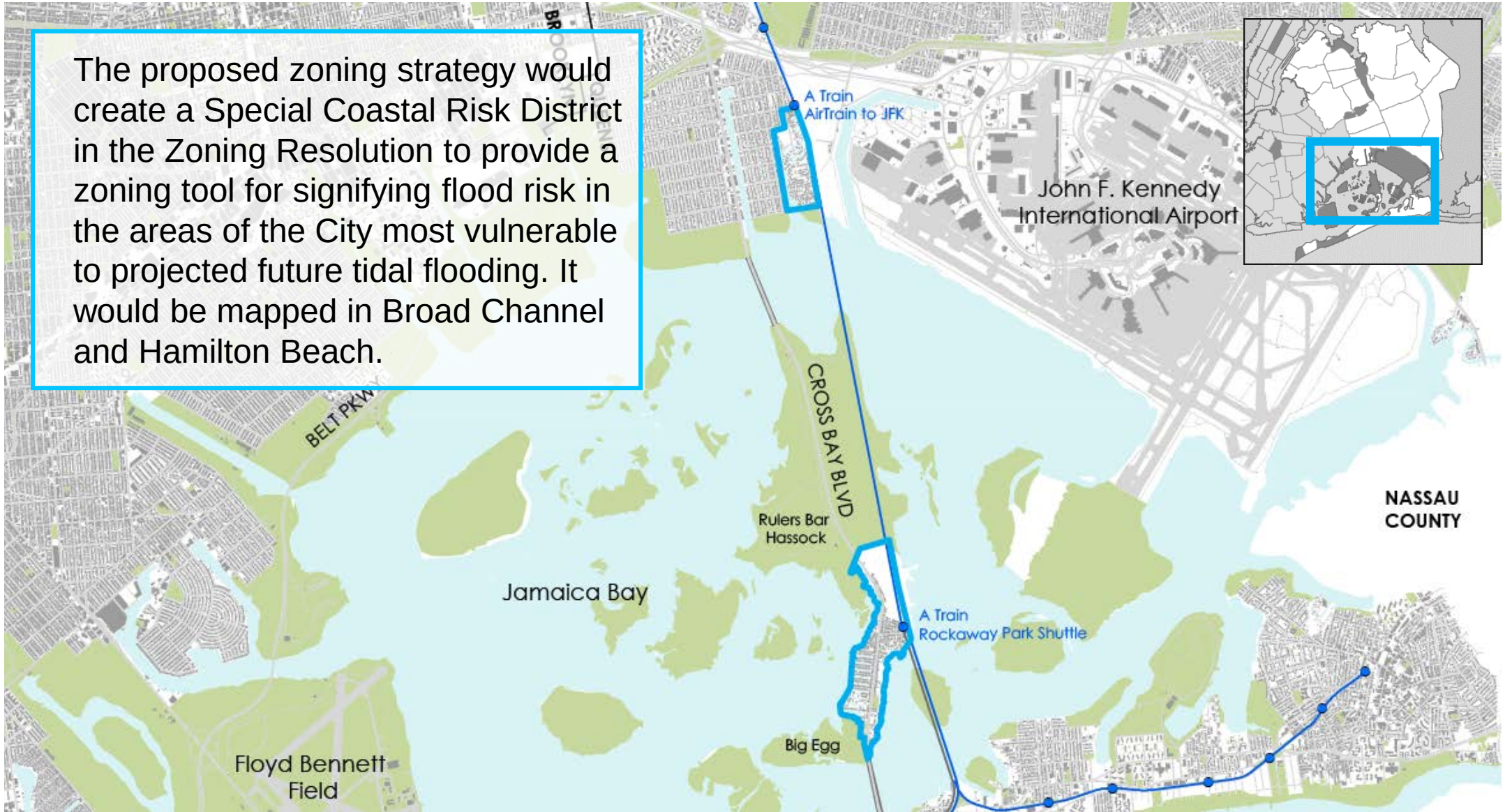


2050s Sea Level Rise Projections

65 Buildings
MHHW + 11” (25th percentile projection)
178 Buildings
MHHW + 21” (75th percentile projection)
310 Buildings
MHHW + 30” (90th percentile projection)

Special Coastal Risk District
Proposed Zoning Text Amendment

The proposed zoning strategy would create a Special Coastal Risk District in the Zoning Resolution to provide a zoning tool for signifying flood risk in the areas of the City most vulnerable to projected future tidal flooding. It would be mapped in Broad Channel and Hamilton Beach.



Broad Channel Rezoning
Proposed Zoning Text and Map Amendments

Special Coastal Risk District, Broad Channel Subdistrict
The Broad Channel Subdistrict would modify the underlying regulations of the proposed R3A and C3A districts to limit future residential development to single-family detached houses only. In addition, community facilities with sleeping or overnight accommodations would be prohibited.

Proposed R3-2 to R3A
R3A districts permit detached residential buildings, but would be modified by the Special District. The main changes to the underlying zoning from R3-2 to R3A are:

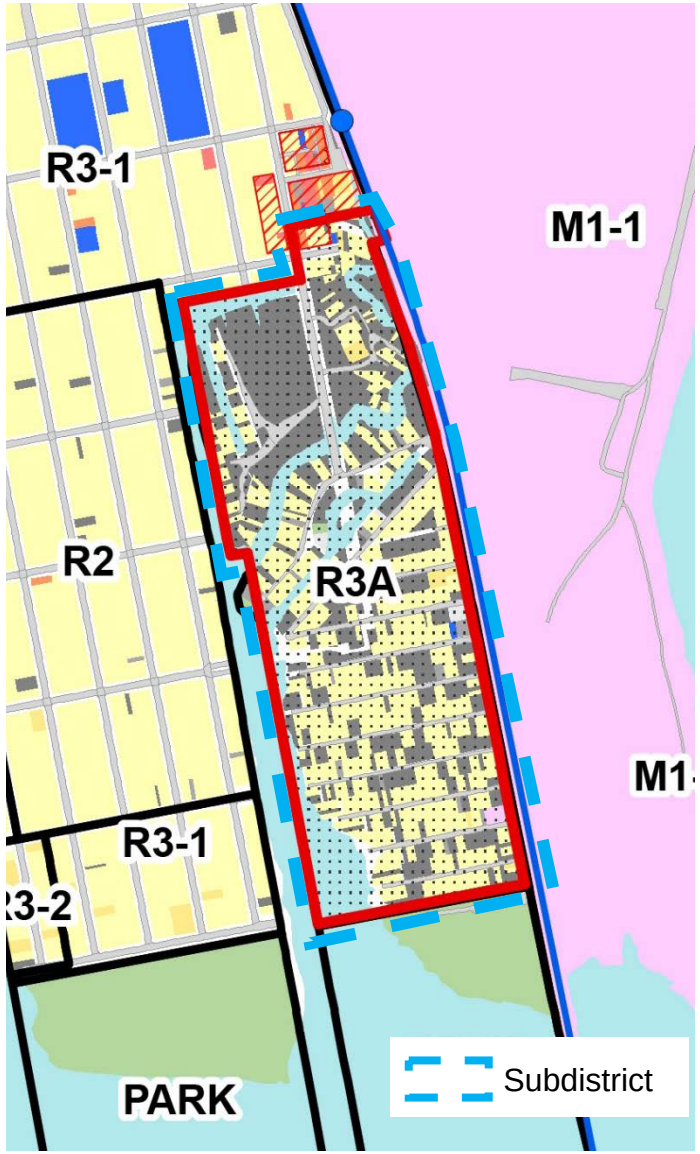
- 40’ min. lot width → 25’ min. lot width
- 5’ min. lot width → 4’ min. side yard width

Proposed R3-2 to C3A
C3A districts permit detached residential buildings and water-dependent uses, including marinas and boat storage facilities, but would be modified by the Special District.

Proposed C1-2 to C1-3
Updating the existing commercial overlay to C1-3 is proposed to slightly reduce the off-street parking requirement.

Hamilton Beach Rezoning

Proposed Zoning Text and Map Amendments



Special Coastal Risk District, Hamilton Beach Subdistrict
The Hamilton Beach Subdistrict would modify the underlying regulations of the proposed R3A district to limit future residential development to single-family detached houses, except on lots at least 40 feet wide where two-family detached residences would be permitted. In addition, community facilities with sleeping or overnight accommodations would be prohibited.

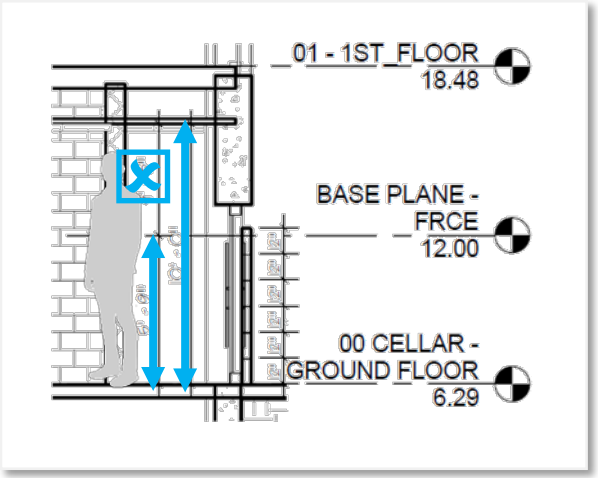
Proposed R3-1 to R3A
R3A districts permit detached residential buildings, but would be modified by the Special District. The main changes to the underlying zoning from R3-1 to R3A are:

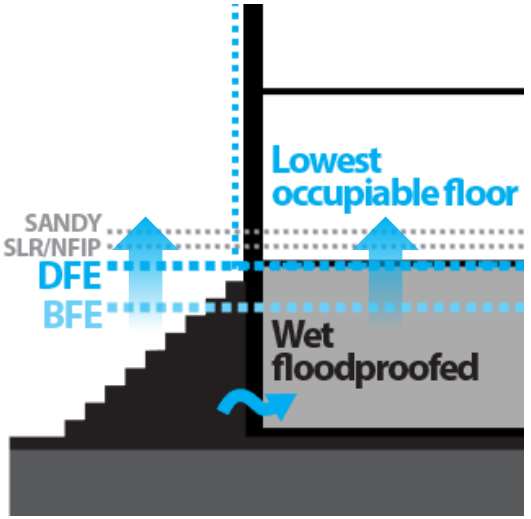
- 40’ min. lot width → 25’ min. lot width
- 5’ min. lot width → 4’ min. side yard width

Proposed C1-2 to C1-3
Updating the existing commercial overlay to C1-3 is proposed to slightly reduce the off-street parking requirement.

Flood Text Update

Need for a new citywide text amendment





1

Make the provisions of the current, temporary 2013 Flood Text **permanent**

2

Fix and **improve** provisions based on studies, lessons learned, and outreach

3

Begin to **promote** new development + proactive retrofitting to high resiliency standards

Lessons learned since 2013

Construction/retrofitting activity in the flood zone:

The zoning relief we provided may not be achieving our goal of increasing code-compliant, flood-resistant projects.

DOB Permit Filings

in the flood hazard area, 10/2013 – 1/26/2016

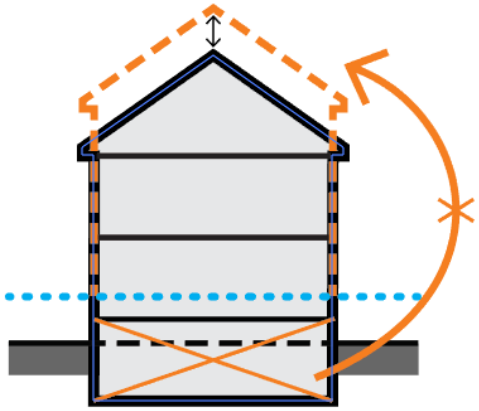
New Buildings	Major Alterations	Minor Alterations
NB	Alt-1	Alt-2
1,021	**1,090**	**15,573**
All 1,021 (100%) meet full resiliency standards	**Only 113 (10%) meet full resiliency standards**	**Only 532 (3%) meet full resiliency standards**
149 (14%) approved 451 (44%) underway 179 (17%) complete	36 (31%) approved 24 (21%) underway 0 (0%) complete	245 (46%) approved 122 (23%) underway 9 (1%) complete
25% rejected/pending	48% rejected/pending	30% rejected/pending

Flood Text II

Fix and improve provisions based on lessons learned

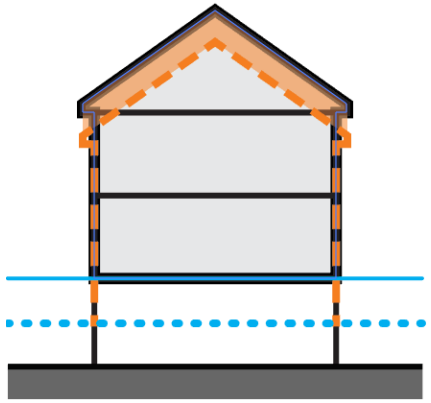
1 Height

Homeowners may face the loss of subgrade spaces when retrofitting



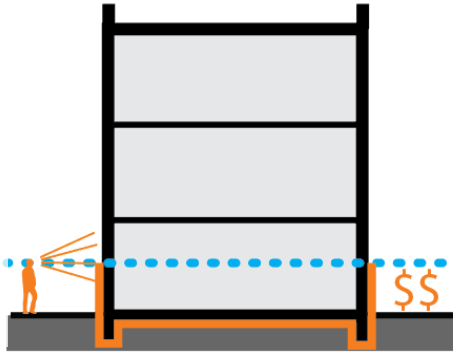
2 Height

Property owners may want to address future risk by over-elevating



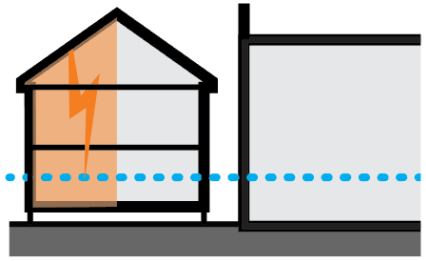
3 Ground Floors

Current incentives to keep active ground floors may not be enough



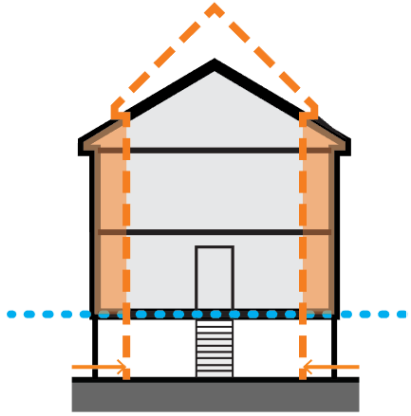
4 Homes in M Districts

Existing homes in M. Districts, if damaged, may not be able to rebuild



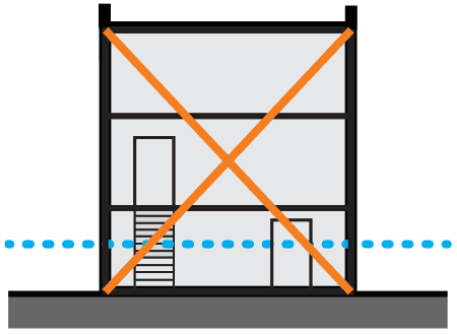
5 Old Homes in Small Lots

Old homes on small lots may need more flexibility to rebuild in the future



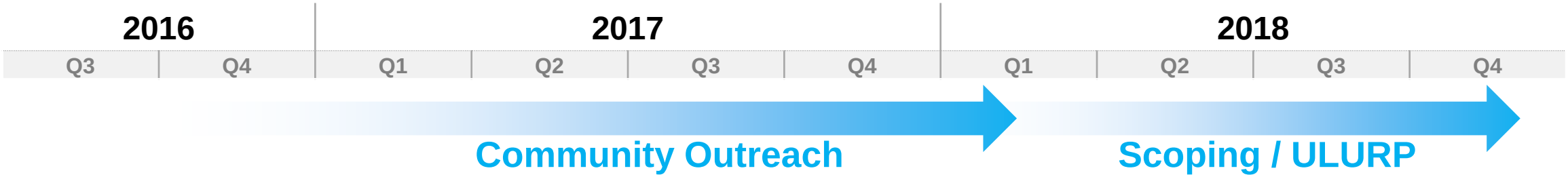
6 Highly Vulnerable Areas

Density may need to be limited in highly vulnerable areas



Flood Text Update
Outreach

DCP plans a robust public engagement process:



As part of this outreach process, DCP will:

- **Partner with stakeholders** to educate and promote awareness of flood risk and resiliency issues
- **Explain how zoning tools** relate to resiliency
- **Explore unique neighborhood issues** through in-depth public presentations and workshops
- Develop a proposal through an **iterative process** that is shaped by feedback

*** Schedule is tentative and 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.

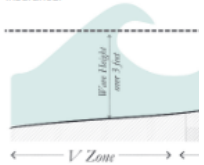
Flood Risks

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.

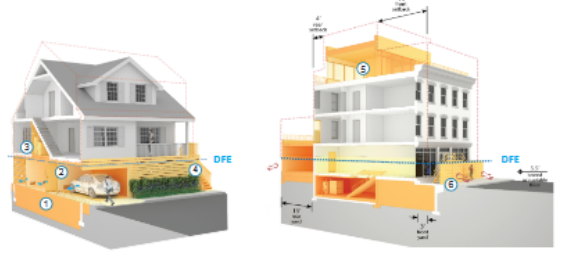
Overview

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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Thank you!

For more information, and to stay involved, email

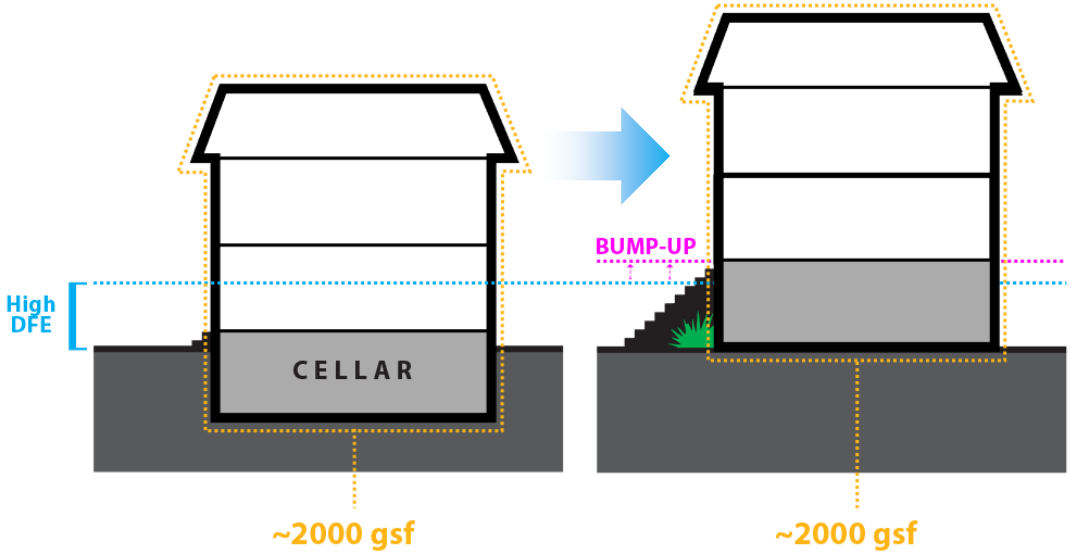
resilientneighborhoods@planning.nyc.gov

Flood Text II
Lesson learned: Cellar and Residential living space lost

EXAMPLE ISSUE

The 2013 Flood Text allowed for adjustment of “zoning envelopes” to facilitate the retrofitting and replacement of living space above the DFE, out of harm’s way, but this flexibility applies unevenly:

Case study 1: Replacement of ‘cellar’ story in a high-DFE retrofit



Case study 2: Loss of living space in a low-DFE retrofit