Flood Resilience Text Amendment II

Presentation to the AIA Queens

June 13, 2017

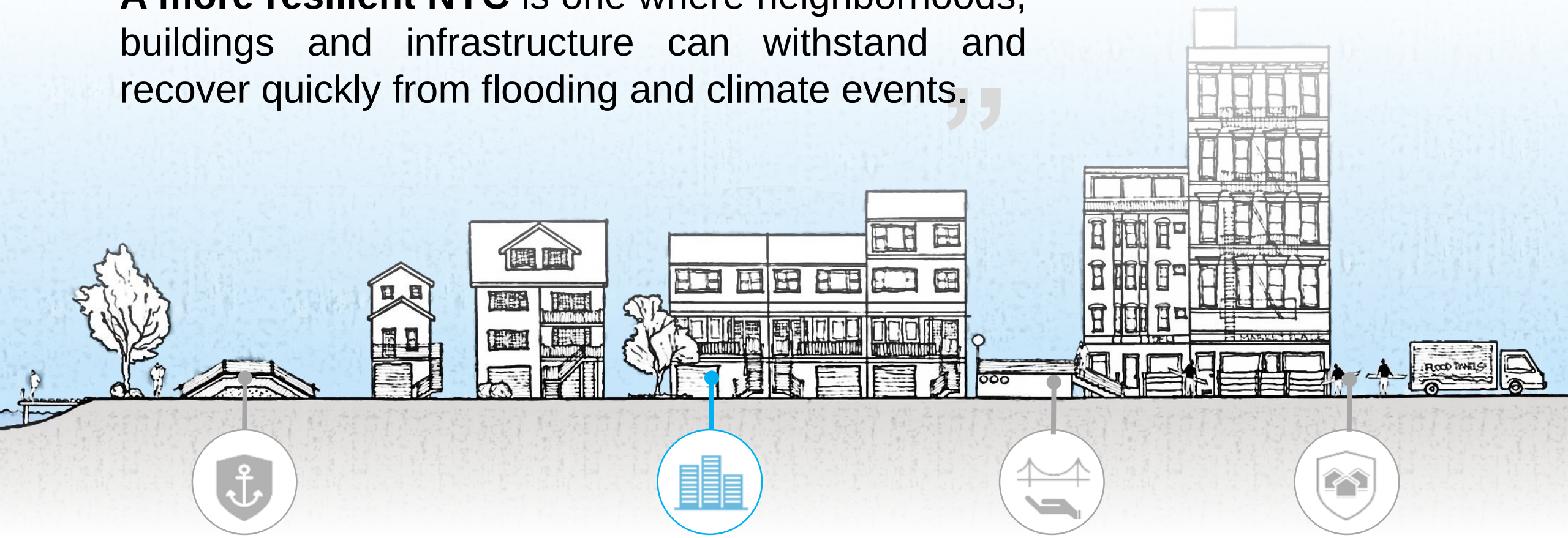
NYC PLANNING

Agenda

1. **Overview of DCP's resiliency work program**
2. **Discussion on Flood Text II**
   - Issues of height
   - Issues of floor area
   - Climate change preparedness
   - Bungalow typologies and small lots
   - Nonconforming Uses
3. **Open Discussion**

#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

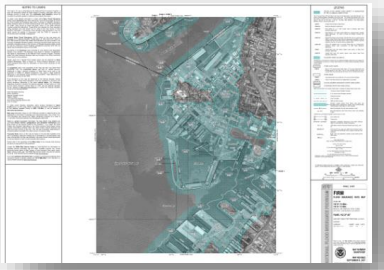
Buildings
are designed to withstand and recover from flooding

Infrastructure
is protected from climate hazards

Residents and businesses
are prepared

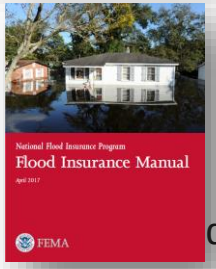
How are buildings in the floodplain regulated?

FEMA



Flood Insurance Rate Maps (FIRMs)

Determine **where floodplain regulations apply**



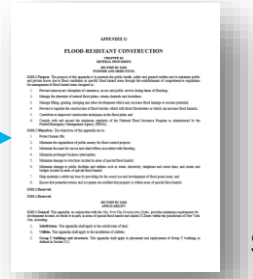
National Flood Insurance Program

Set up Insurance Rates depending on building elevation and other requirements

Construction Standards (ASCE 24)

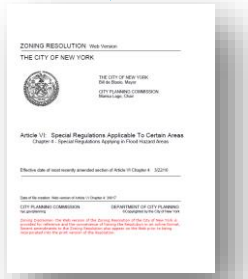
Design minimum construction requirements for flood hazard areas

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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FEMA Flood Map
Citywide Flood Risk

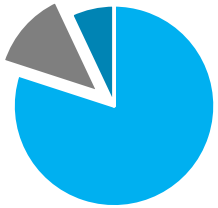
NYC's flood risk is high.

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

100 Year Floodplain
FEMA 2015 PFIRM

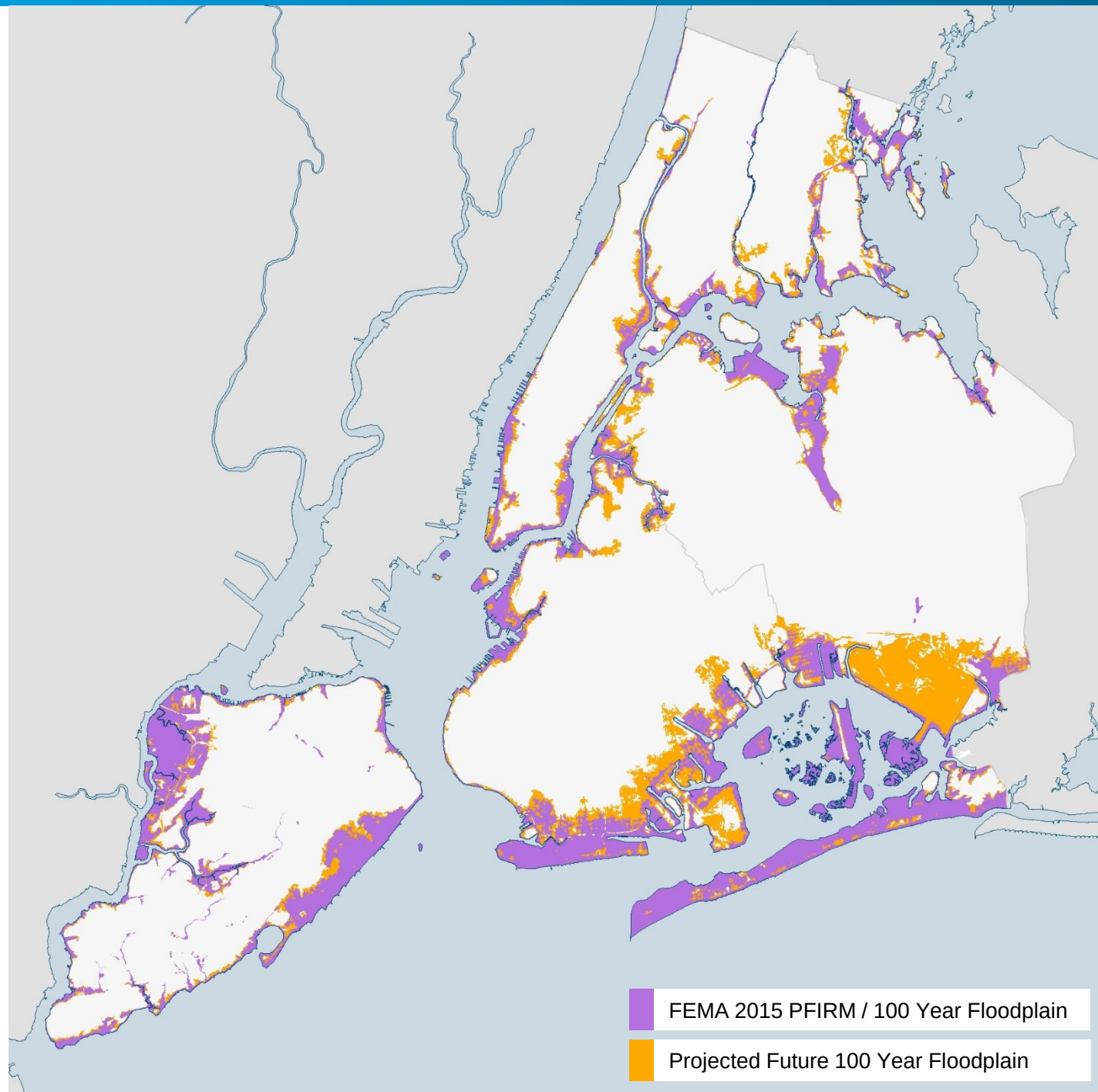
Population: **400,000**
Buildings: **71,500**

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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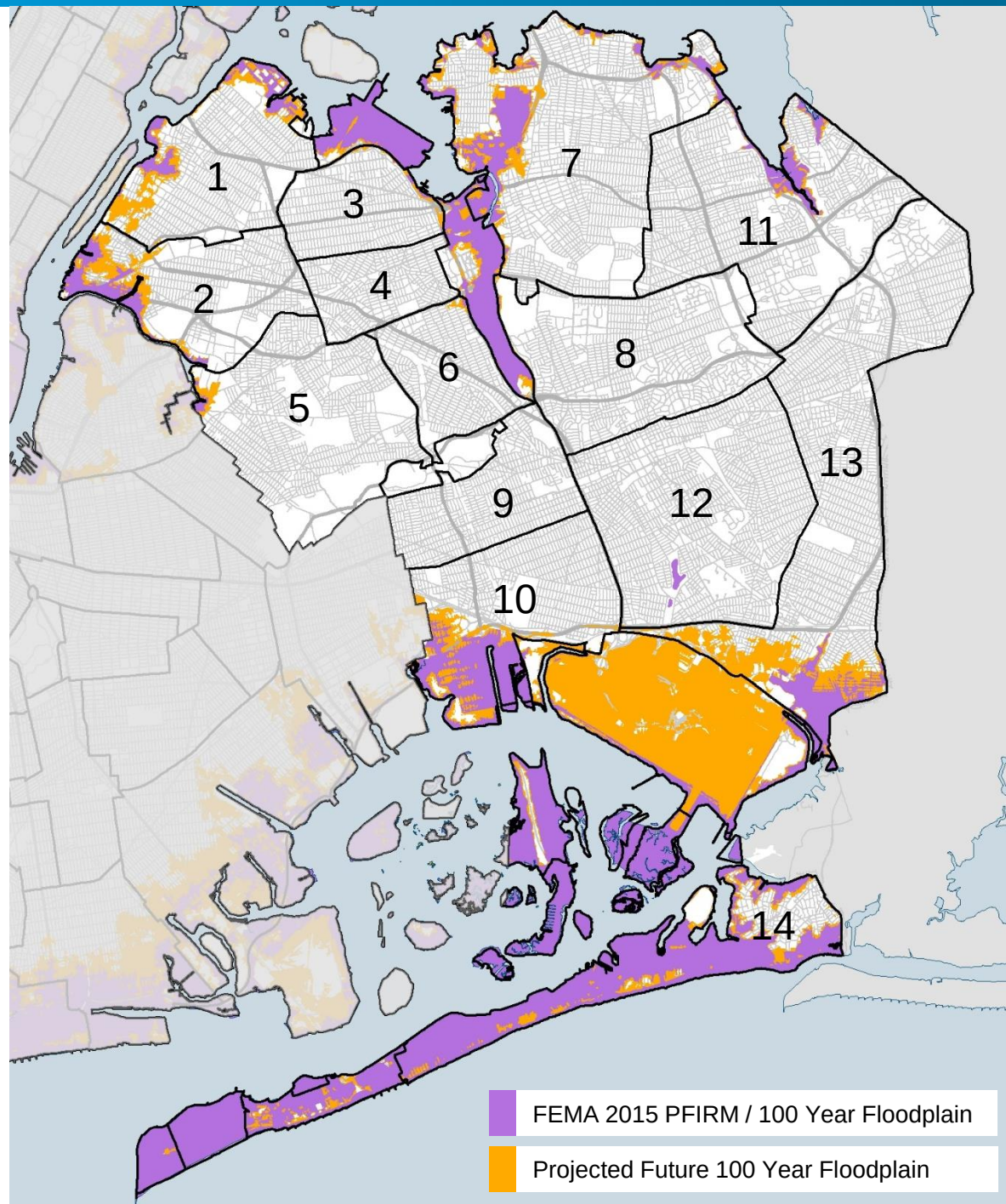
Future Flood Map
Flood Risk in Queens

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



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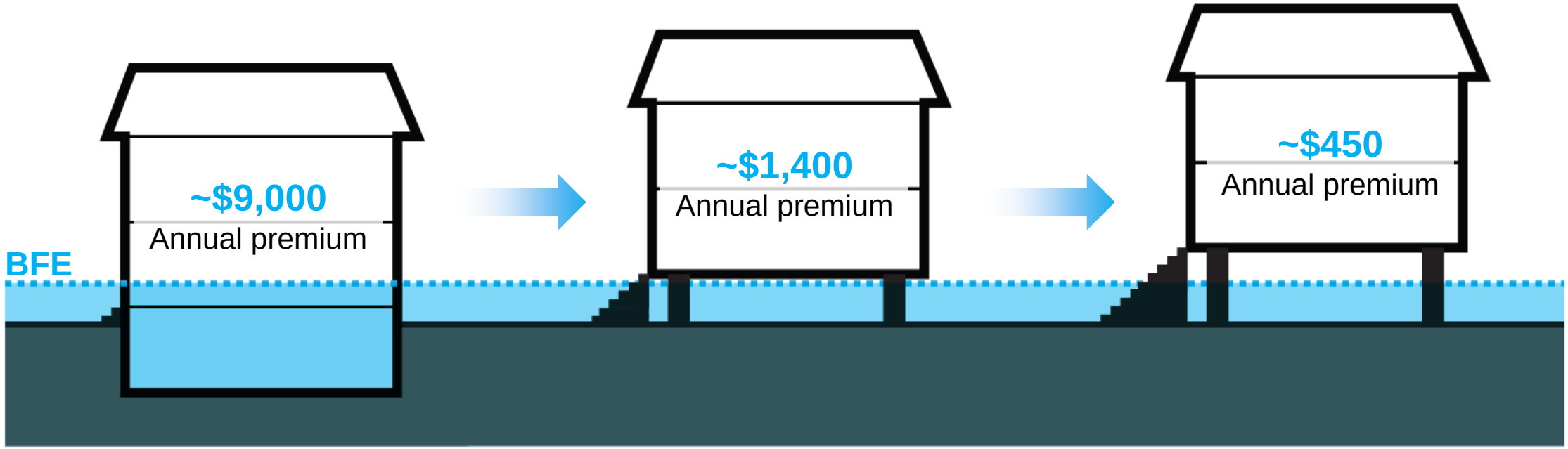
Flood insurance rates
Set by FEMA

Raising or retrofitting your 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).



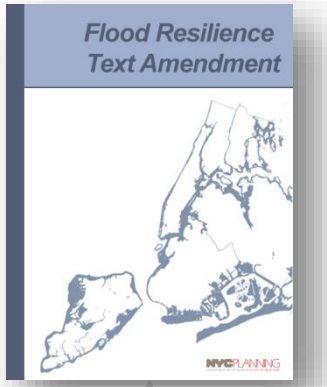
4 FEET OR MORE
BELOW BFE

AT
BFE

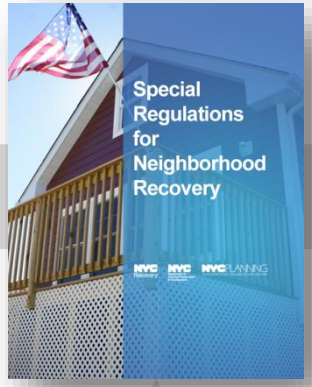
3 FEET OR MORE
ABOVE BFE

Resiliency planning at DCP

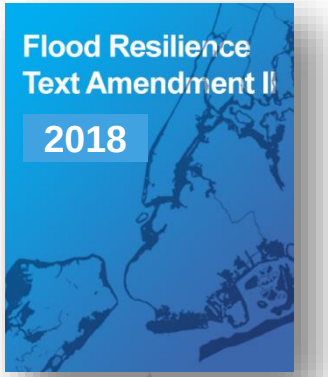
Flood Text (2013) initial, temporary regulations building off EO 230



SRNR (2015) provides additional zoning relief to expedite recovery

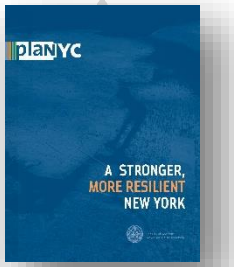


Flood Text II (2018) to be updated and made permanent



Executive Order 230 (2012) mayoral override of zoning

PFIRM + Freeboard (2012) DOB requires most restrictive map; additional elevation

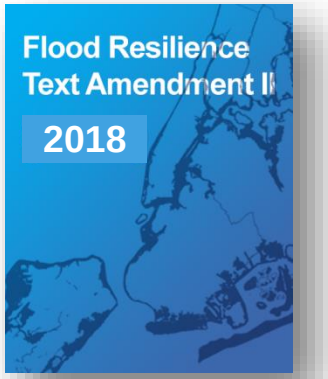


SIRR Report (2013) long-term, citywide resiliency framework

Build it Back (2015) lessons learned in rebuilding effort inform zoning changes

One New York (2015) moves from recovery to future resiliency

Neighborhood Studies (2014-17) will inform the text and local rezonings

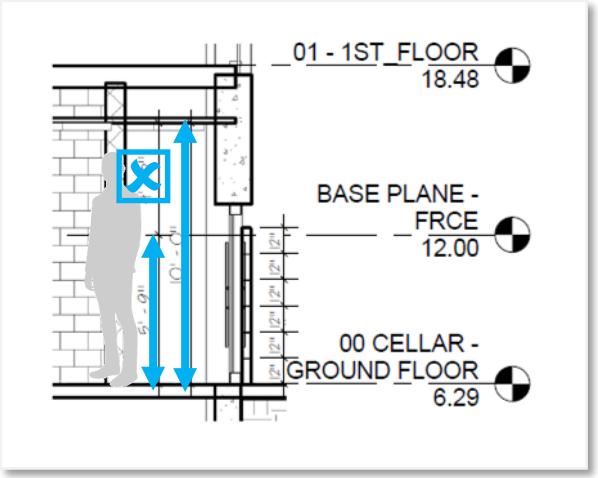


Flood Text II

Need for a new citywide text amendment:

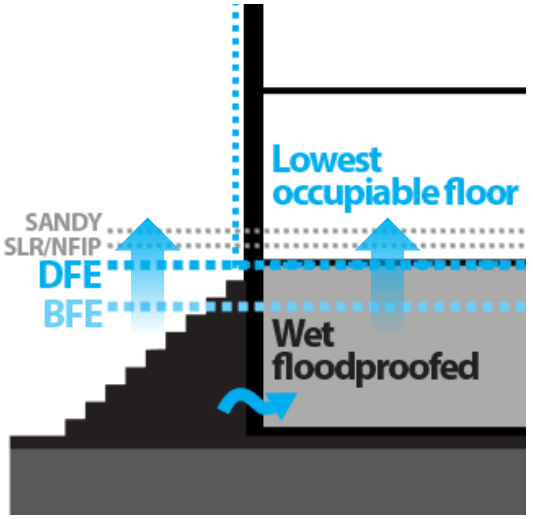
1

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



2

Fix and **improve** provisions based on studies and lessons learned in six key areas



3

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

Flood Text II

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 and infrastructure and context support growth.

Limit

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

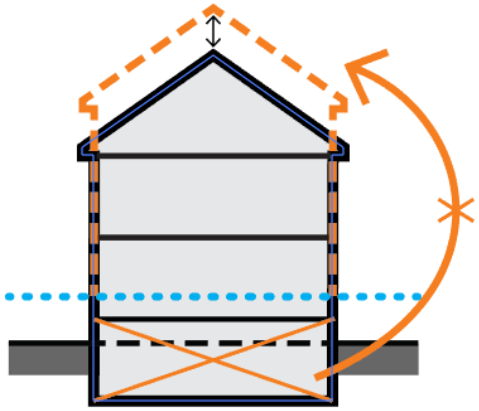
*stakeholder input factored into zoning and land-use strategy throughout

Flood Text II

Fix and improve provisions based on lessons learned

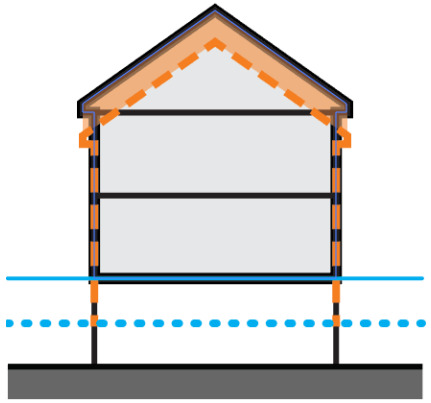
1
Height

Homeowners may face the loss of subgrade spaces when retrofitting



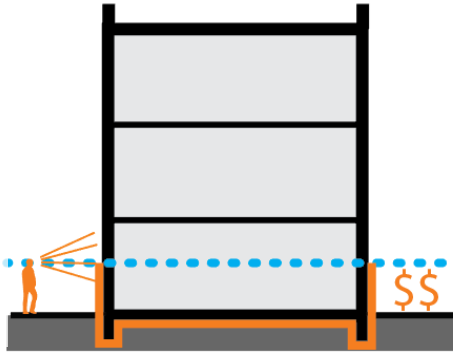
2
Height

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



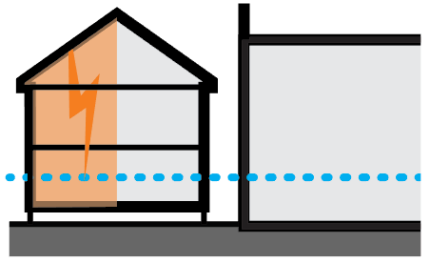
3
Ground Floors

Current incentives to keep active ground floors may not be enough



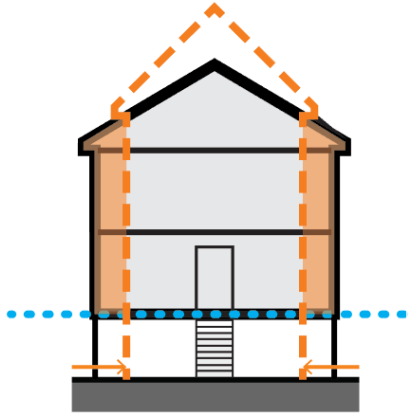
4
Homes in M Districts

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



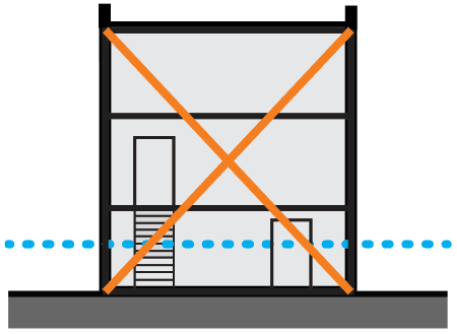
5
Old Homes in Small Lots

Old bungalow 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 II

Encourage resilient construction

Lessons learned about 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
100%	**10%**	**3%**
1,021 of 1,021	**113 of 1,090**	**532 of 15,573**
meet full resiliency standards	**meet full resiliency standards**	**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

Based on these filings, only 1,600 (2%) of the 71,000 buildings in the floodplain will be fully flood resilient.

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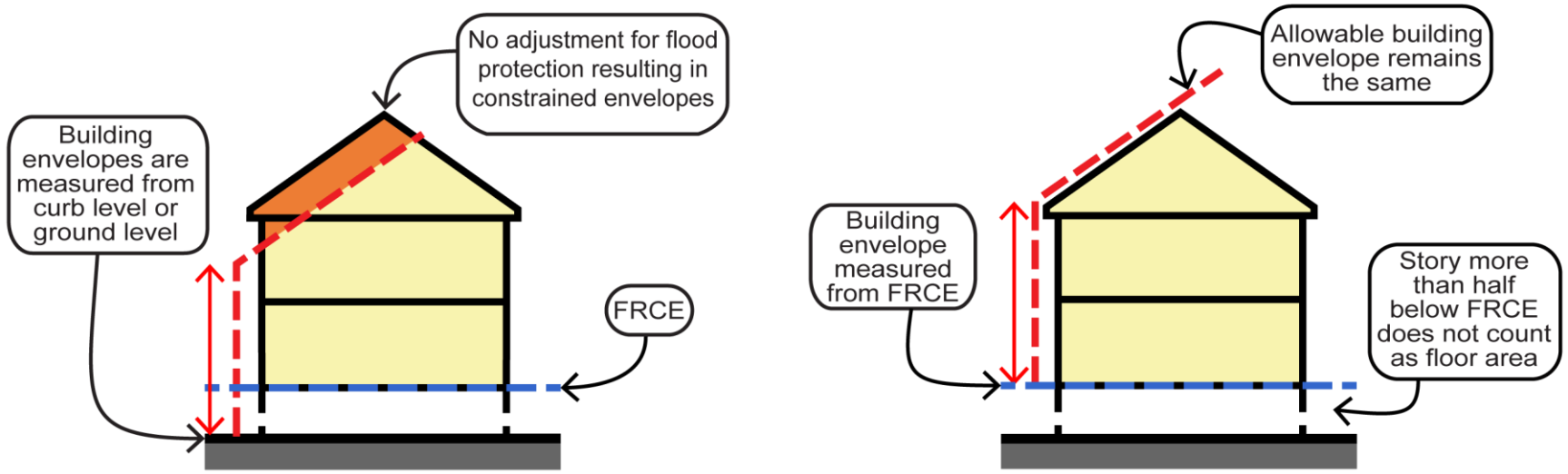
Height

The 2013 Flood Text allowed for zoning envelopes to be adjusted to the height of the flood elevation.



Where **flood elevations-above-grade are moderate**, additional height is given to ensure that large spaces beneath buildings can be utilized effectively:

1+2 Family Homes: **3'** (6' > 9')

Commercial Buildings: **7'** (5' > 12')

Multifamily: **5'** (5' > 10')

Height

The 2013 Flood Text allowed for zoning envelopes to be adjusted to the height of the flood elevation.

ISSUE

- Should apply more broadly to single-family homes
- Should apply more extensively to large building due to the unique access issues they face
- Does not address the loss of subgrade space (which is expensive to preserve in the flood zone)

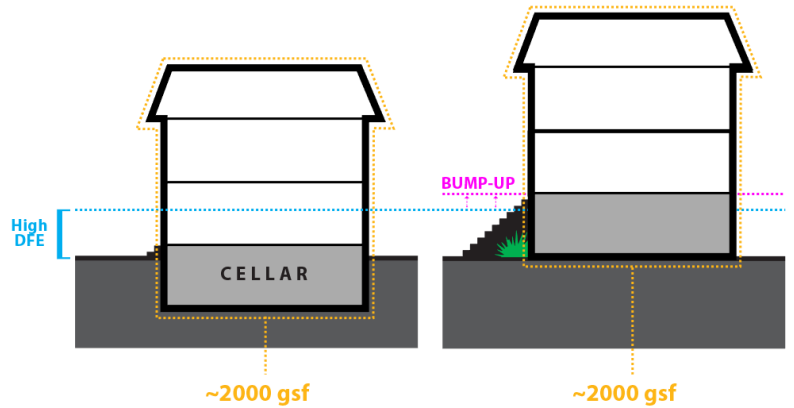


Fig 1. Replacement of 'cellar' story in a high-DFE retrofit

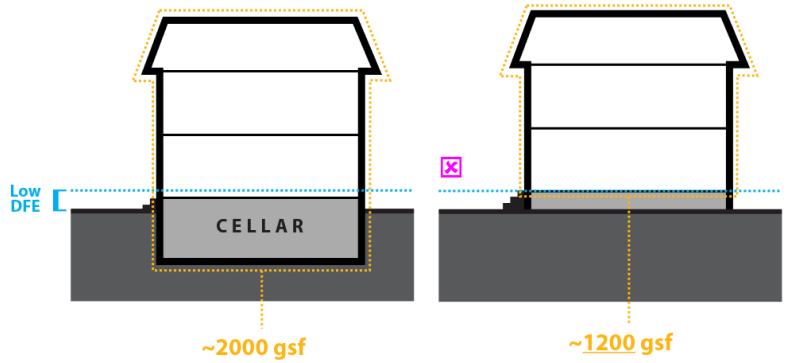


Fig 2. Loss of 33% of home in a low-DFE retrofit

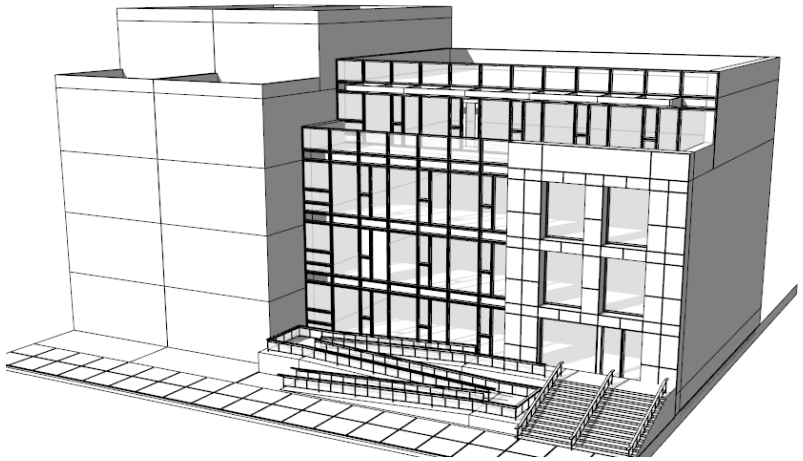
Height

The 2013 Flood Text allowed for zoning envelopes to be adjusted to the height of the flood elevation.

ISSUE

- Prevents certain access solutions in “packed” envelopes

Without
bump-up

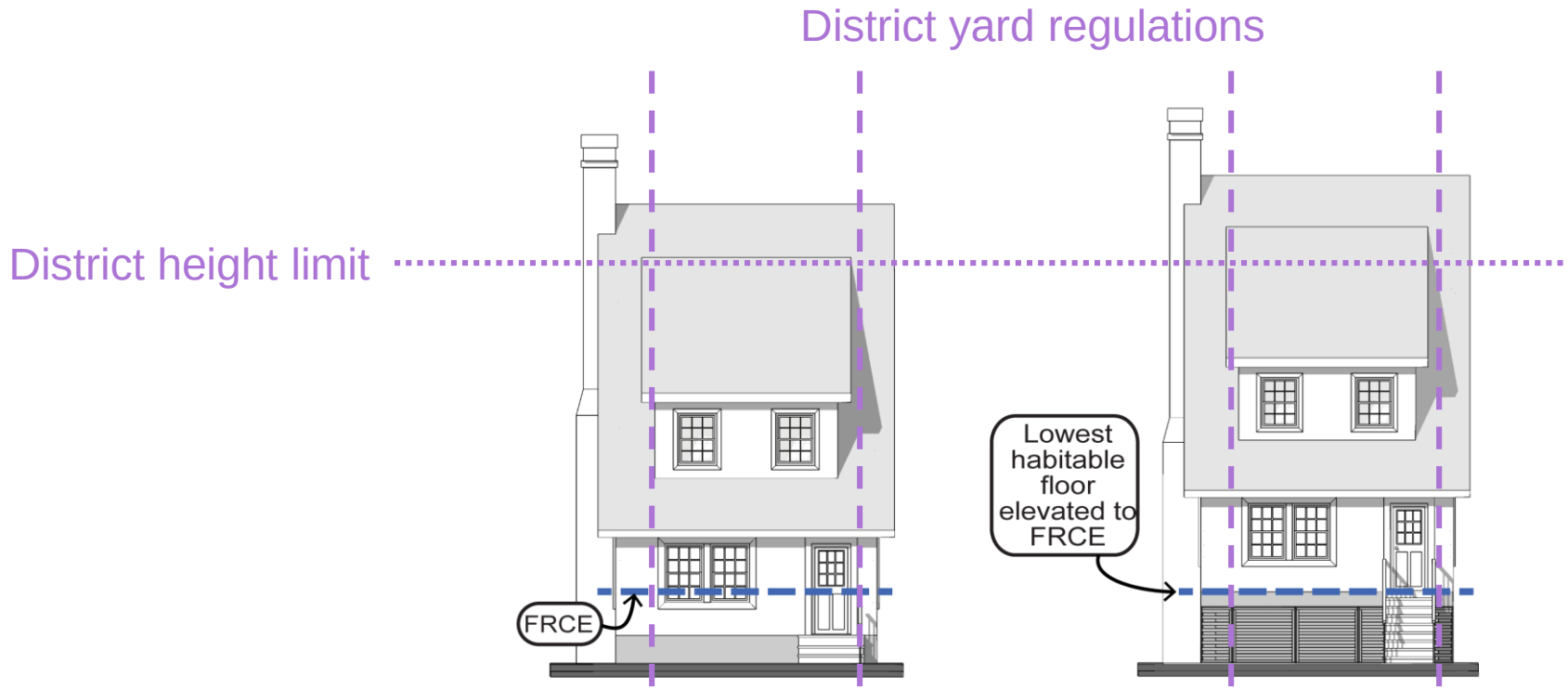


With
bump-up

Height

The 2013 Flood Text also allowed existing 1+2 family homes to be physically raised to the DFE.

- Even if these buildings were non-compliant, they were permitted to be raised regardless of height, yard, floor area, and other regulations.



Height

The 2013 Flood Text also allowed existing 1+2 family homes to be physically raised to the DFE.

ISSUE

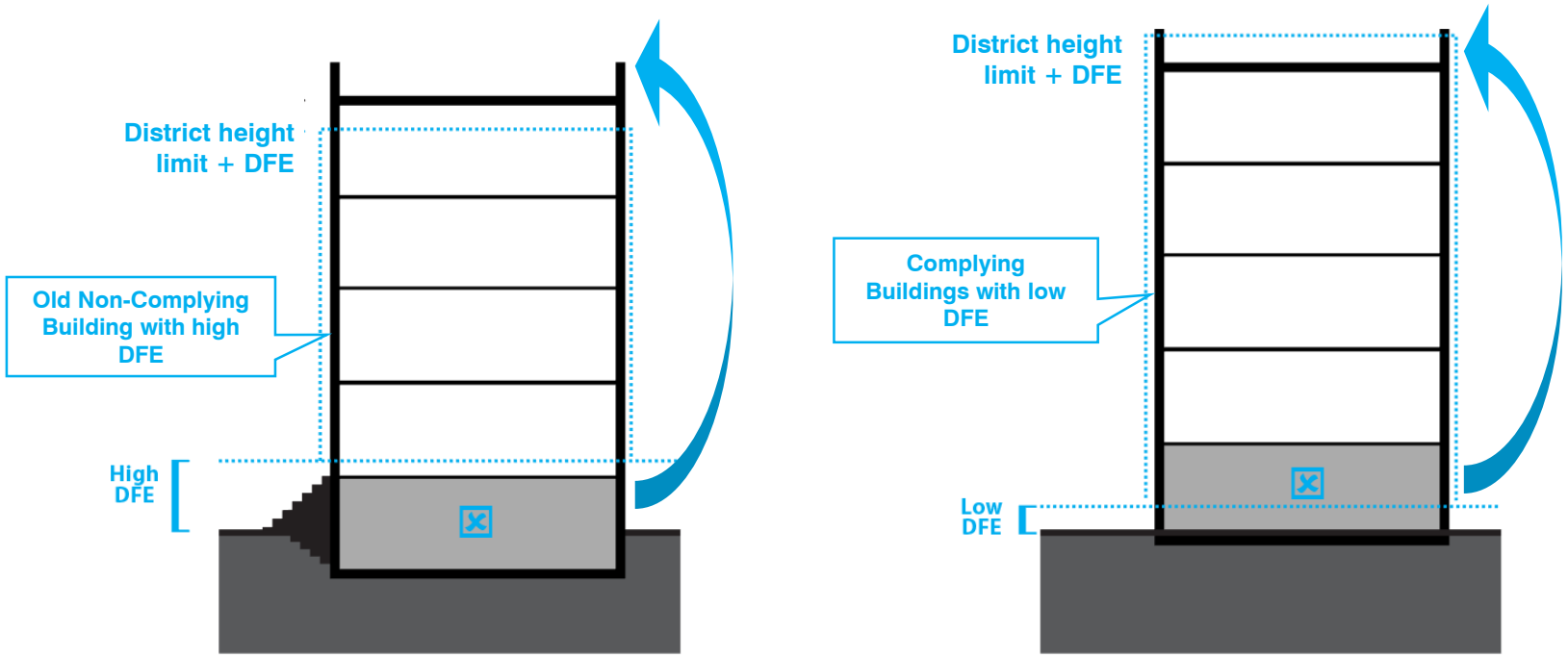
- Doesn't apply to **other building types**
  (3 family homes, larger multi-family buildings, non-residential buildings)
- Doesn't allow the **bump-up to apply**
  (the provisions are mutually exclusive)
- Doesn't allow elevation to any higher level (i.e., BFE+3)
- Doesn't provide a solution for **non-raisable building typologies**.
  (more on next slide)

Height

The 2013 Flood Text also allowed existing 1+2 family homes to be physically raised to the DFE.

ISSUE

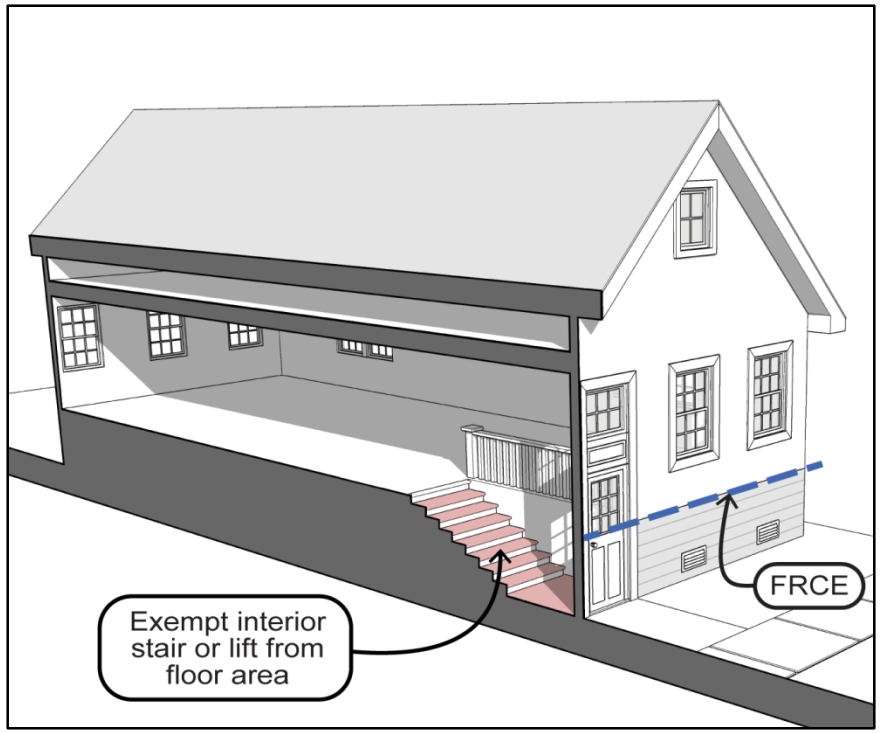
- Doesn't provide a solution for non-raisable building typologies.

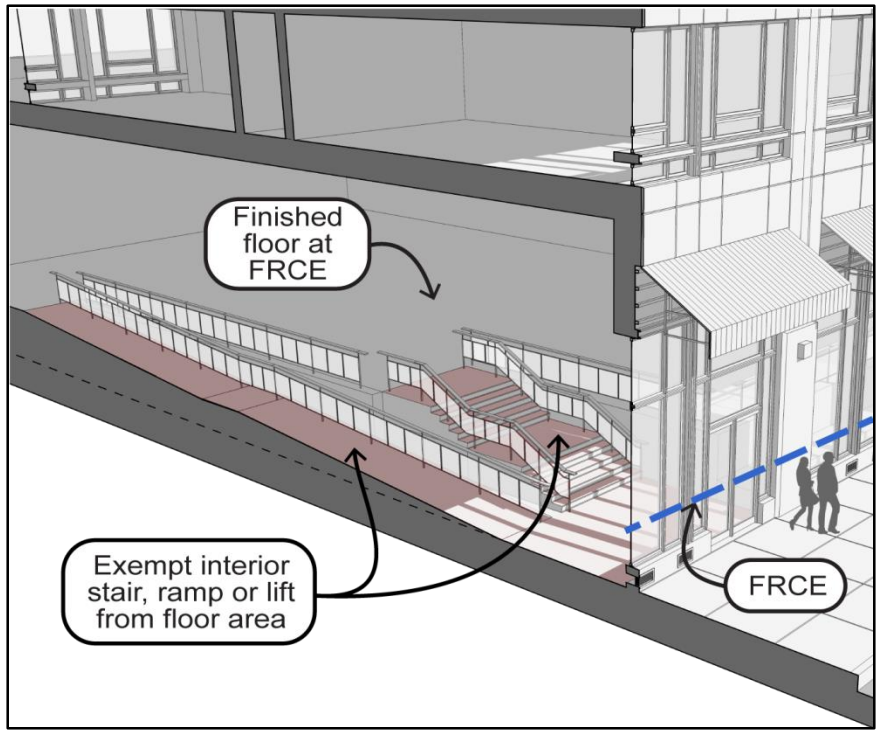


Floor Area

The 2013 Flood Text exempted resilient entryways from floor area

- Intended to ensure that compliance with new Appendix G requirements wouldn't constitute a penalty against development rights.



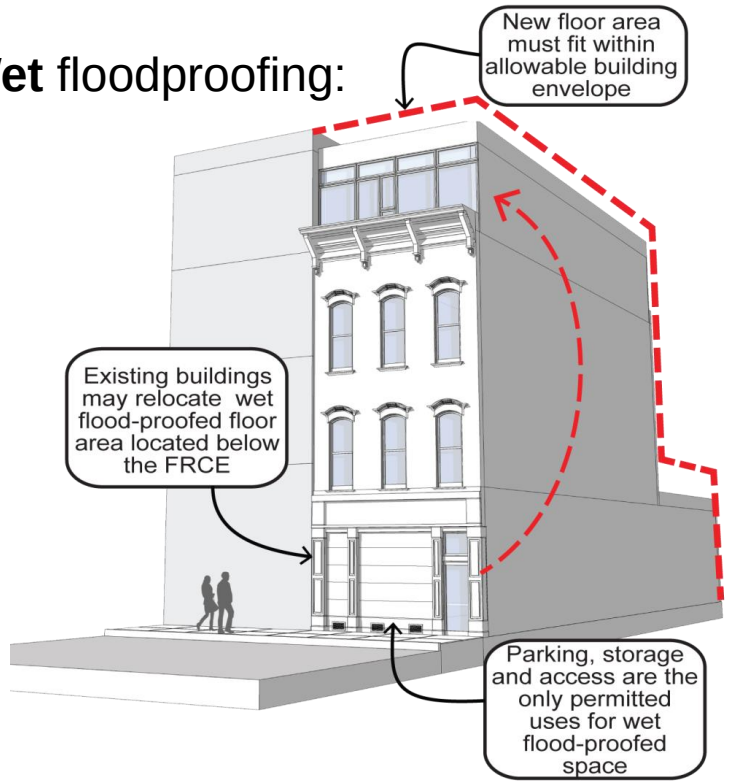


Floor Area

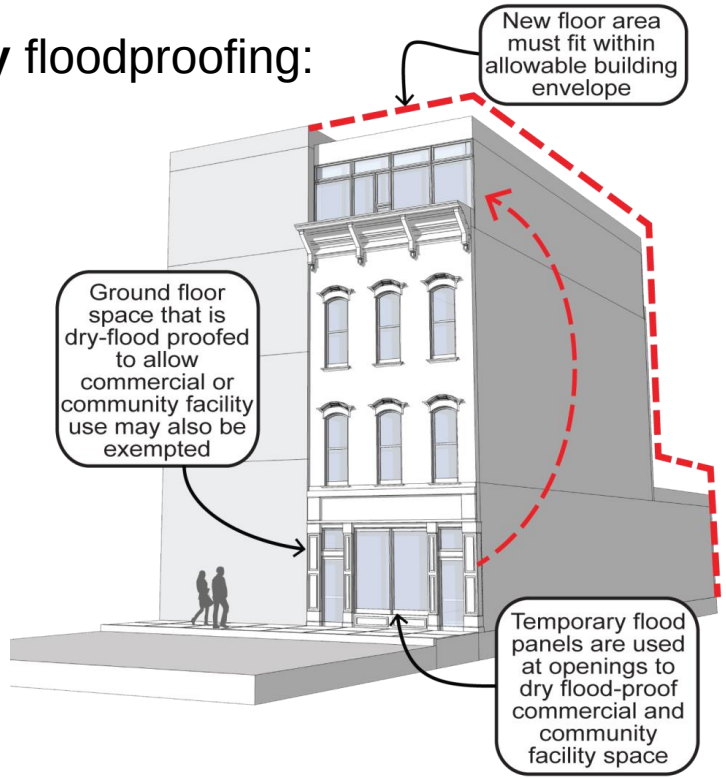
To incentivize the retrofitting of existing buildings, the 2013 Flood Text allowed any floodproofed space to be exempted from floor area

- This space could be relocated to a new addition atop the building, (provided there is sufficient room), helping to finance a retrofit project.

Wet floodproofing:



Dry floodproofing:



Floor Area

To incentivize the retrofitting of existing buildings, the 2013 Flood Text allowed any floodproofed space to be exempted from floor area

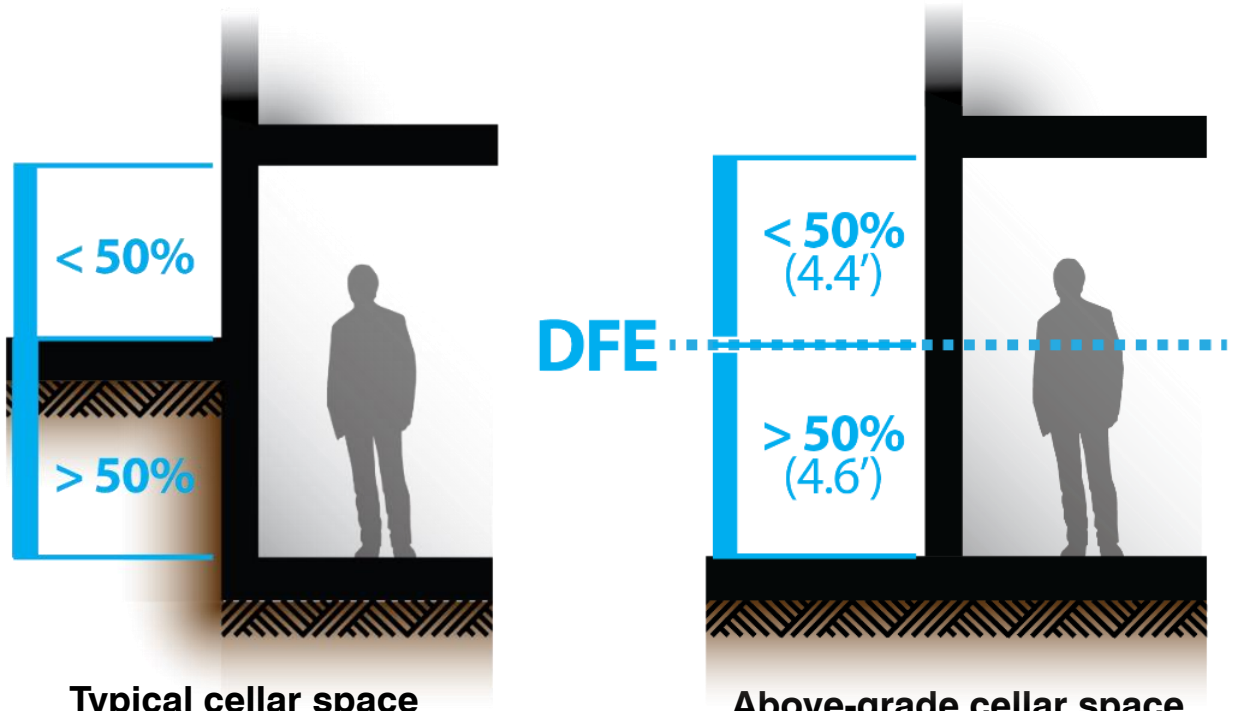
ISSUE

- Analysis of DOB permitting indicates this incentive **likely has not been used** since it was introduced.
- Restrictions accompanying this flexibility (only applies in certain districts, up to 10,000 sq. ft., C space cannot be replaced atop R, prohibition against creating new units, requirement to provide new parking spaces) may be too onerous.
- Only applies to existing buildings – not **new buildings**.

Floor Area

To incentivize the dry floodproofing of at-grade spaces the 2013 Flood Text redefined "cellar" to exempt at-grade stories in certain cases.

- Allowed up to an additional 1 FAR in areas where the flood elevation above grade is more than half of the floor-to-ceiling height.



Typical cellar space
(Exempt from floor area)

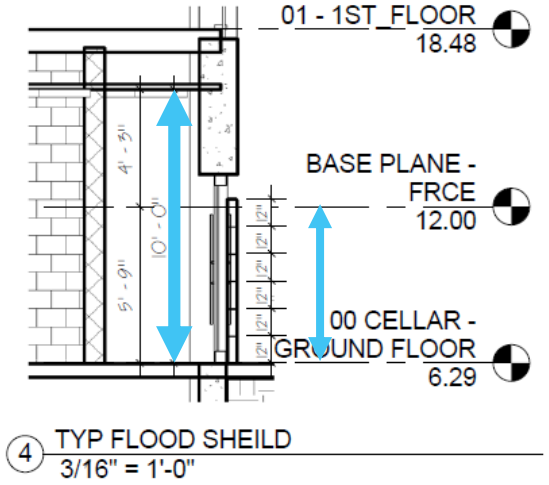
Above-grade cellar space
(In flood zones where DFE > 4.6')

Floor Area

To incentivize the dry-floodproofing of at-grade spaces the 2013 Flood Text redefined “cellar” to exempt at-grade stories in certain cases.

ISSUE

- Bad urban design outcomes due to “squishing” – dark, low-ceilinged establishments.
- Causes lower-grade commercial stock, limits the types of retail tenants and services that can locate in the building, such as restaurants.
- Doesn’t apply to [at least half] of the floodzone.
- Doesn’t create a zoning incentive to prefer **dry floodproofing** implementations over wet floodproofing (active over passive).



Example of ‘squished’ retail

Floor Area

To incentivize the floodproofing of at-grade spaces the 2013 Flood Text redefined “cellar” to exempt at-grade stories in certain cases.

ISSUE

- Ongoing uncertainty regarding acceptable dry floodproofing methods:

Non-NFIP compliant
(e.g. “Aquafence”; allowed for Pre-FIRM buildings)

Deployable floodgate
(currently allowed only at doors and operable windows)

Integrated floodproofing
(‘aquarium-grade’ glass for glazing or curtain-wall systems)

Floor Area

To incentivize the floodproofing of at-grade spaces the 2013 Flood Text redefined “cellar” to exempt at-grade stories in certain cases.

ISSUE

- Ongoing uncertainty regarding acceptable dry floodproofing methods:

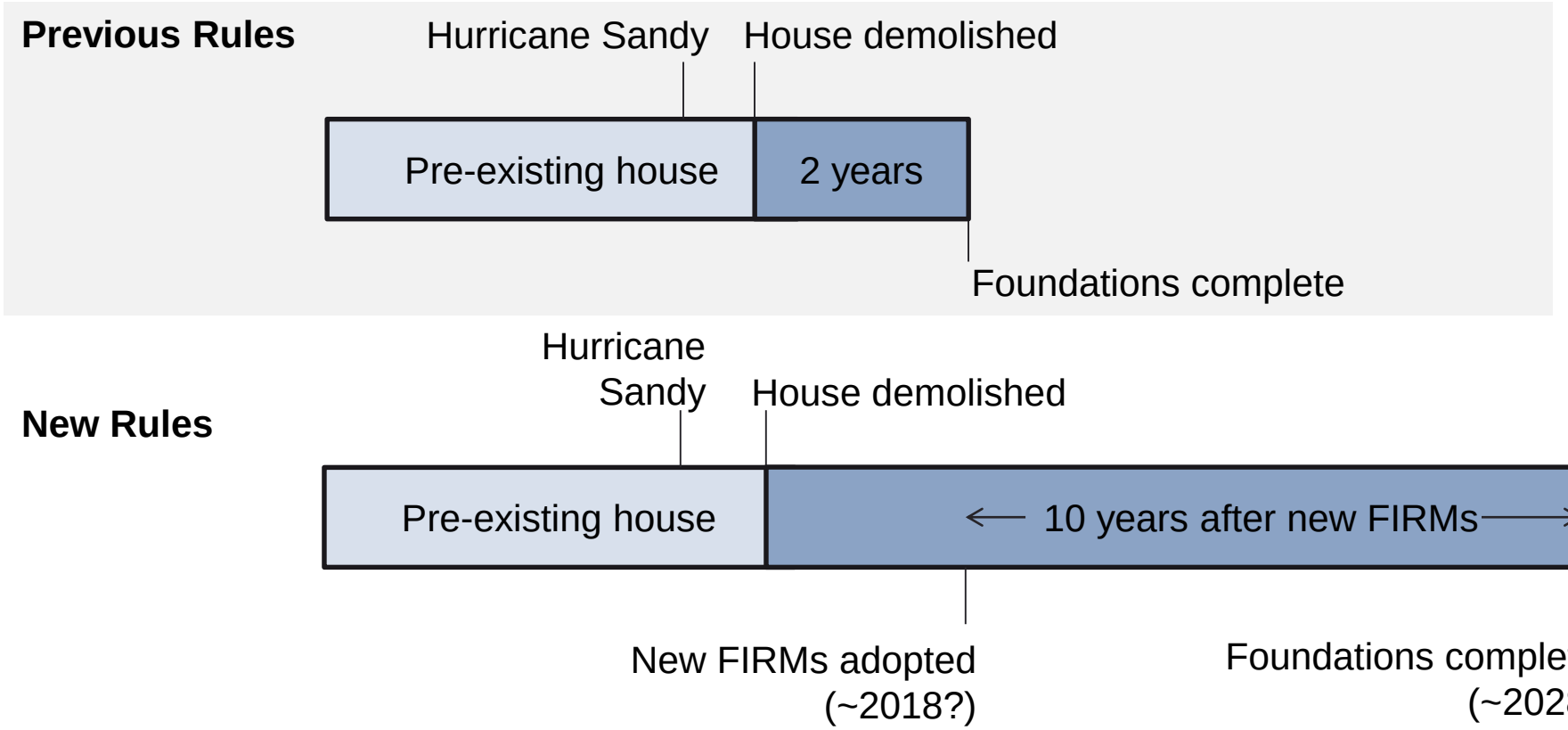
Deployable floodgate
(currently allowed only at doors and operable windows)

Deployable floodgate
(allowed at perimeter only for pre-FIRM buildings)

Grandfathering

To facilitate the recovery of non-conforming and non-complying homes, the 2013 Flood Text gave greater relief to these homes

- Non-conforming uses were allowed to remain even if they surpassed the damage and destruction thresholds, and given more time to do so:



Grandfathering

To facilitate the recovery of non-conforming and non-complying homes, the 2013 Flood Text gave greater relief to these homes

ISSUE

- **Over 500 residential buildings left out of 2013 relief:**
  1. **300** 1+2 Family Homes
  2. **200** Multifamily Buildings
- **Underlying Article V** rules always allow 1 +2 family homes to be rebuilt, regardless of level of damage**, except R in C8/M**
- **FT I** allowed any non-conforming building damaged >50% by Hurricane Sandy to rebuild, **except R in C8/M**

100y Flood Zone - PFIRMS (2015)

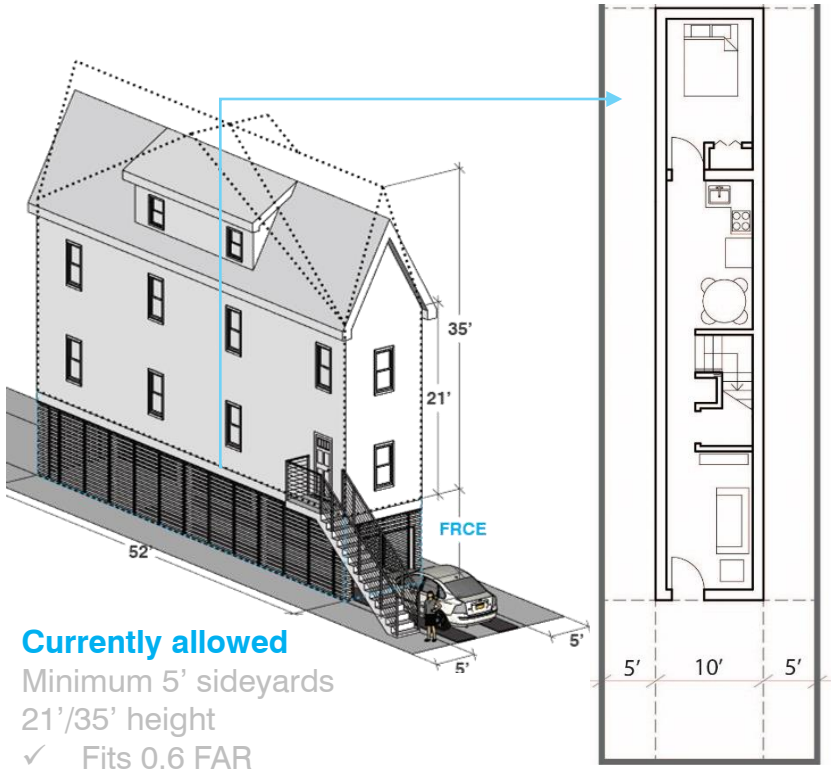
Non-Conforming Single-Two Family Lots

Non-Conforming Multi-family Lots

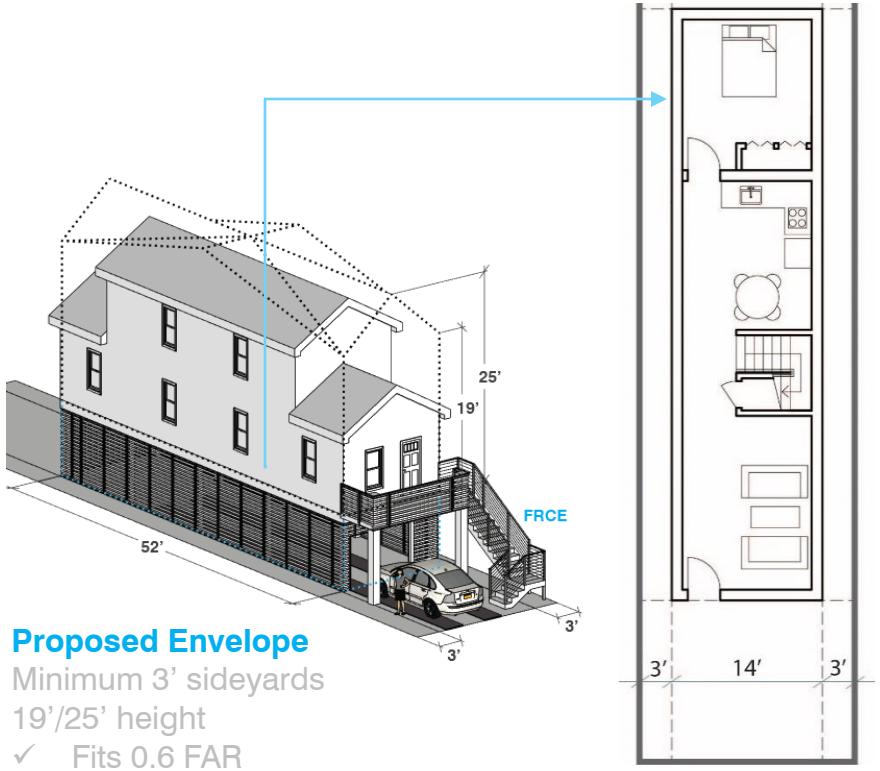
Cottage Envelope

To facilitate the reconstruction of the very small homes on small lots, the 2015 SRNR created a new contextual envelope.

- Shorter, but has a more rational layout



Currently allowed
Minimum 5' sideyards
21'/35' height
✓ Fits 0.6 FAR



Proposed Envelope
Minimum 3' sideyards
19'/25' height
✓ Fits 0.6 FAR

Cottage Envelope

To facilitate the reconstruction of the very small homes on small lots, the 2015 SRNR created a new contextual envelope.

ISSUE

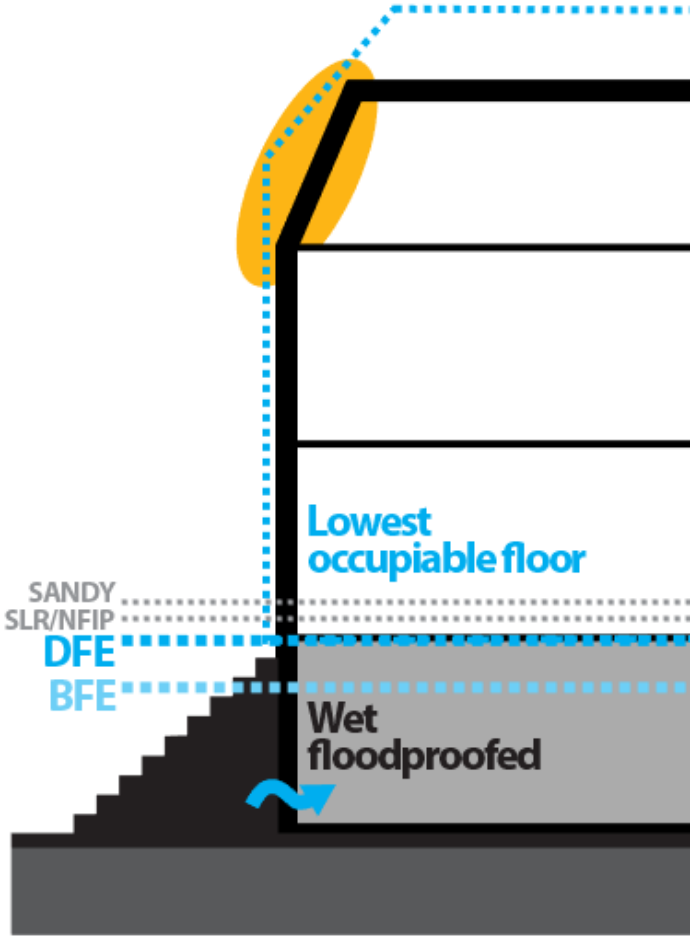
- Not available permanently (past 2022)
- Doesn’t apply outside of “Neighborhood Recovery Areas”
- Doesn’t prevent “candlesticks” on currently vacant lots

Future Flood Risk - Elevations

ISSUE

The current flood risk doesn't provide zoning relief for accommodating future flood risk

- **Zoning relief is "minimum necessary" to elevate only to the DFE – nothing higher**
- **Some building owners may want to take sea level rise, future flood heights, or more powerful storms (e.g., Hurricane Sandy) into account when building.**
- **Maximum NFIP premium reduction reached when house is BFE+2.5'**



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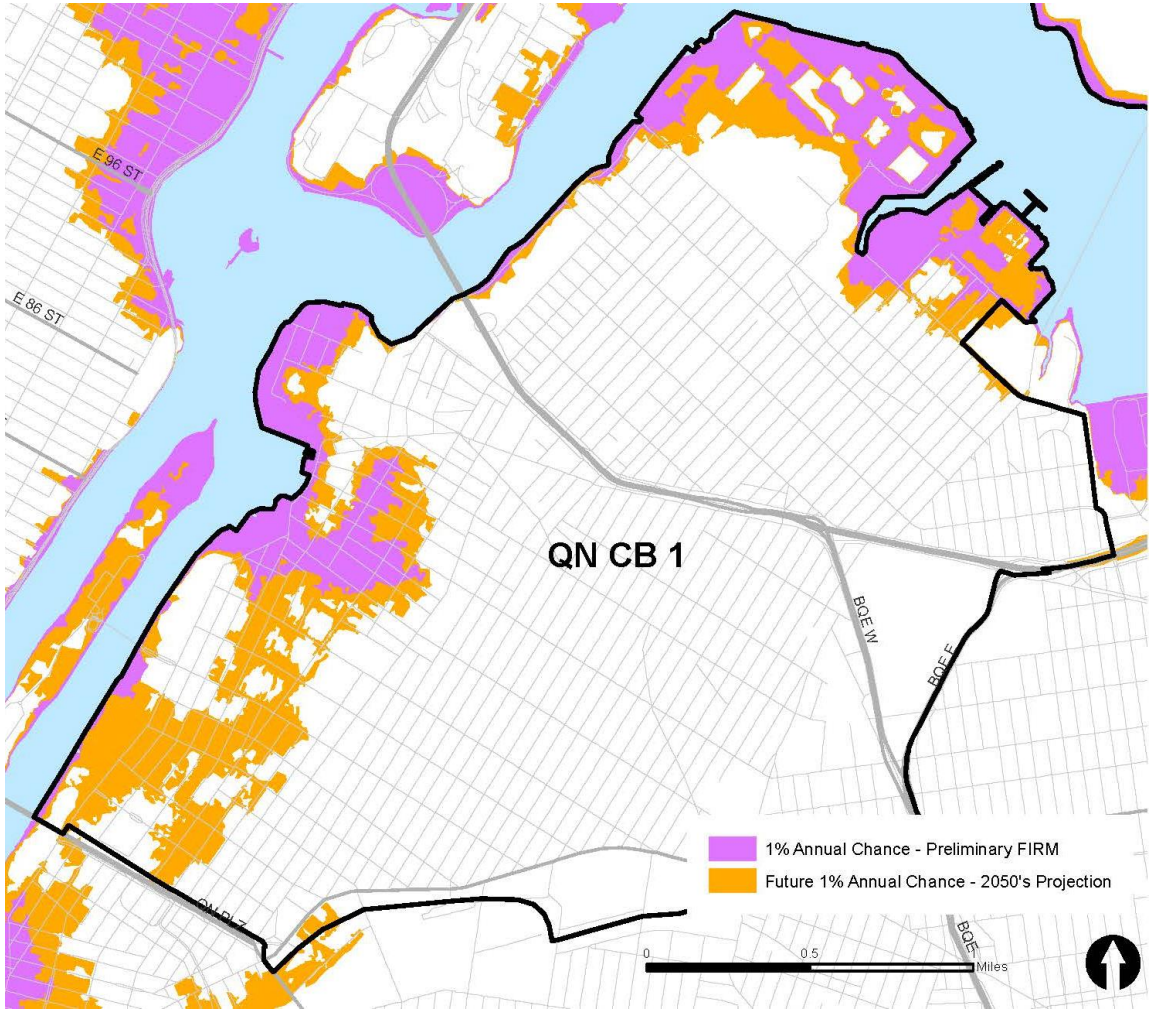
Future Flood Risk - Geography

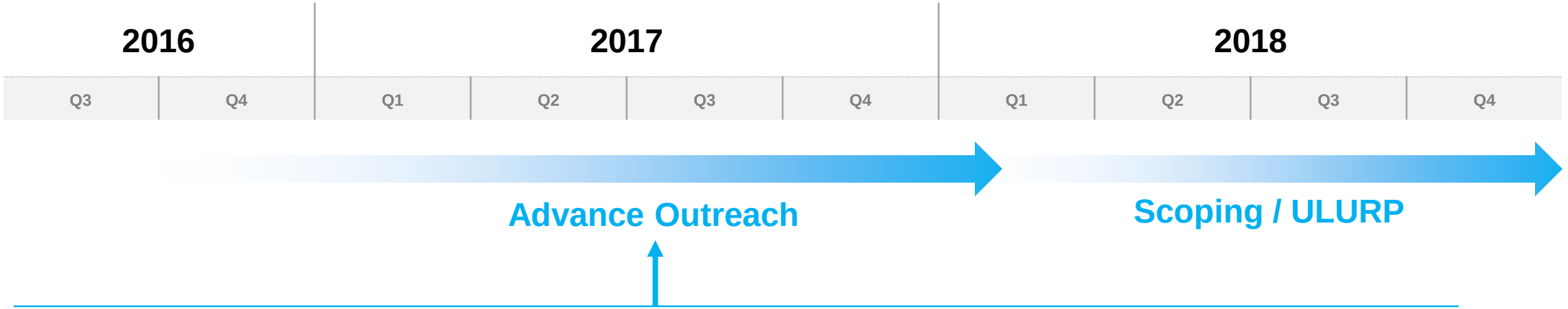
ISSUE

The current flood text doesn't provide zoning relief to the future floodplain

- Today's 500YR floodplain is roughly equivalent to 2050 100YR, and includes Sandy inundation area.
- Construction in this future floodplain has no special requirements or incentives.
- Close coordination is necessary to align zoning with FEMA "Climate Smart" maps.



Citywide Resiliency Outreach



Identify key stakeholders, including local and citywide organizations and elected officials.

Brief CBs and other groups on resiliency and zoning issues, prepare for more in-depth conversations.

Public presentations and workshops on the zoning issues and options for addressing them.

Public presentations on full draft proposal in advance of formal ULURP process

*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.

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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.

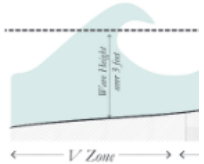
Flood Risks

Hurricanes, tropical storms, nor' 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 floodin

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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 Management (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 adopte 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 Code some provisions, such as elevation c spaces, are available to all buildings the floodplain, even if not fully compl Appendix G.

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

*Per the more restrictive of the 2007 FIRMs PFIRMs.

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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.

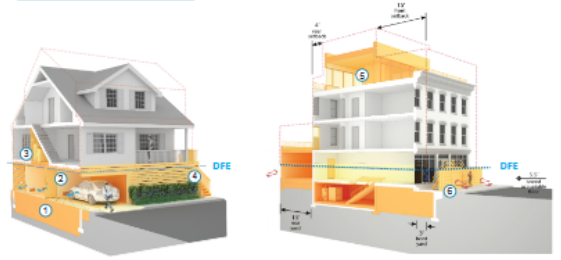
Overview

There is a wide range of accepted flood resilient construction practices for buildings to better withstand floods and 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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NYC PLANNING

Thank you!

For more information, and to stay involved, email
resilientneighborhoods@planning.nyc.gov

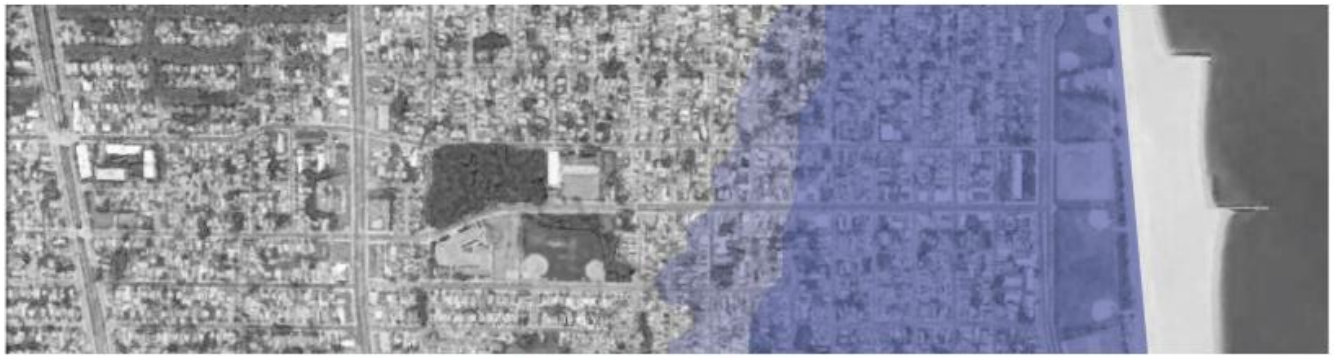
Please share examples of zoning issues with us!
For flood resilient zoning questions, email:

Nilus Klingel
nklingel@planning.nyc.gov
212-720-3268

Manuela Powidayko
mpowidayko@planning.nyc.gov
212-720-3344

Appendix

FIRM vs. PFIRM



?

FIRM
1983; digitized 2007
Currently used for
flood insurance purposes

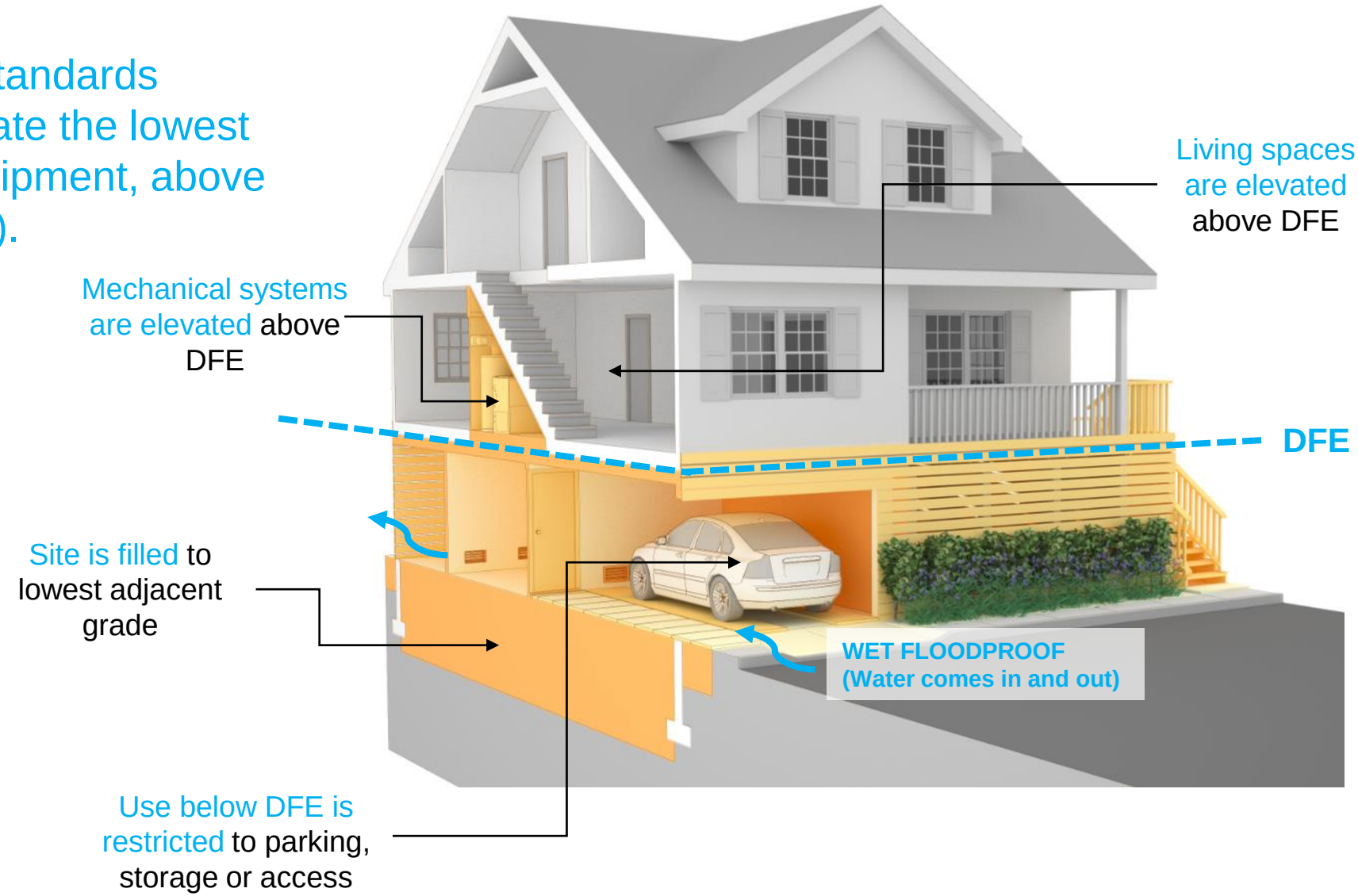
PFIRM
2013, revised 2015
Currently used for
building code purposes

Post-appeal PFIRM
Expected 2019+
Affected geography unknown

Not actual map – illustrative only

Flood-resistant 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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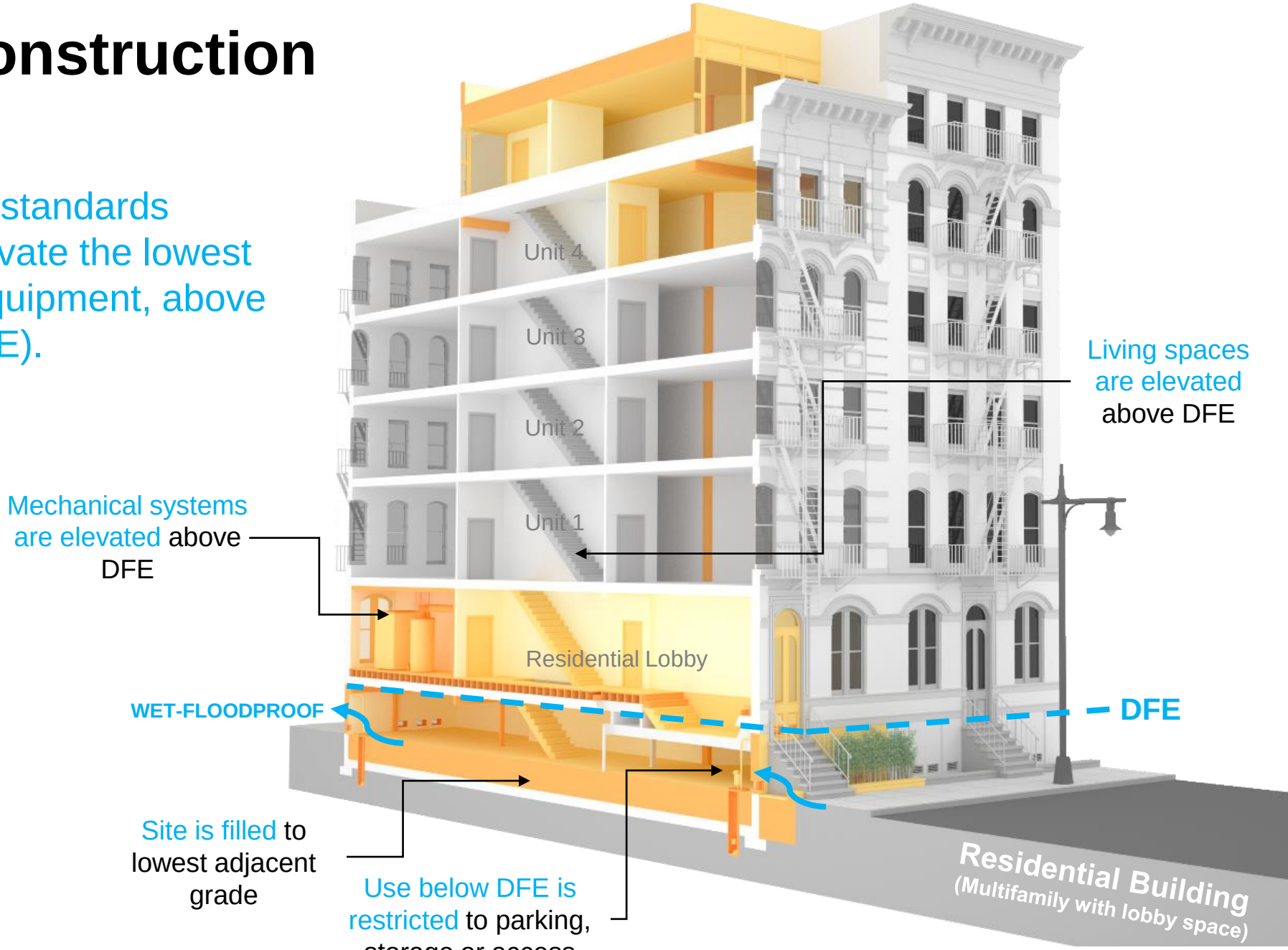
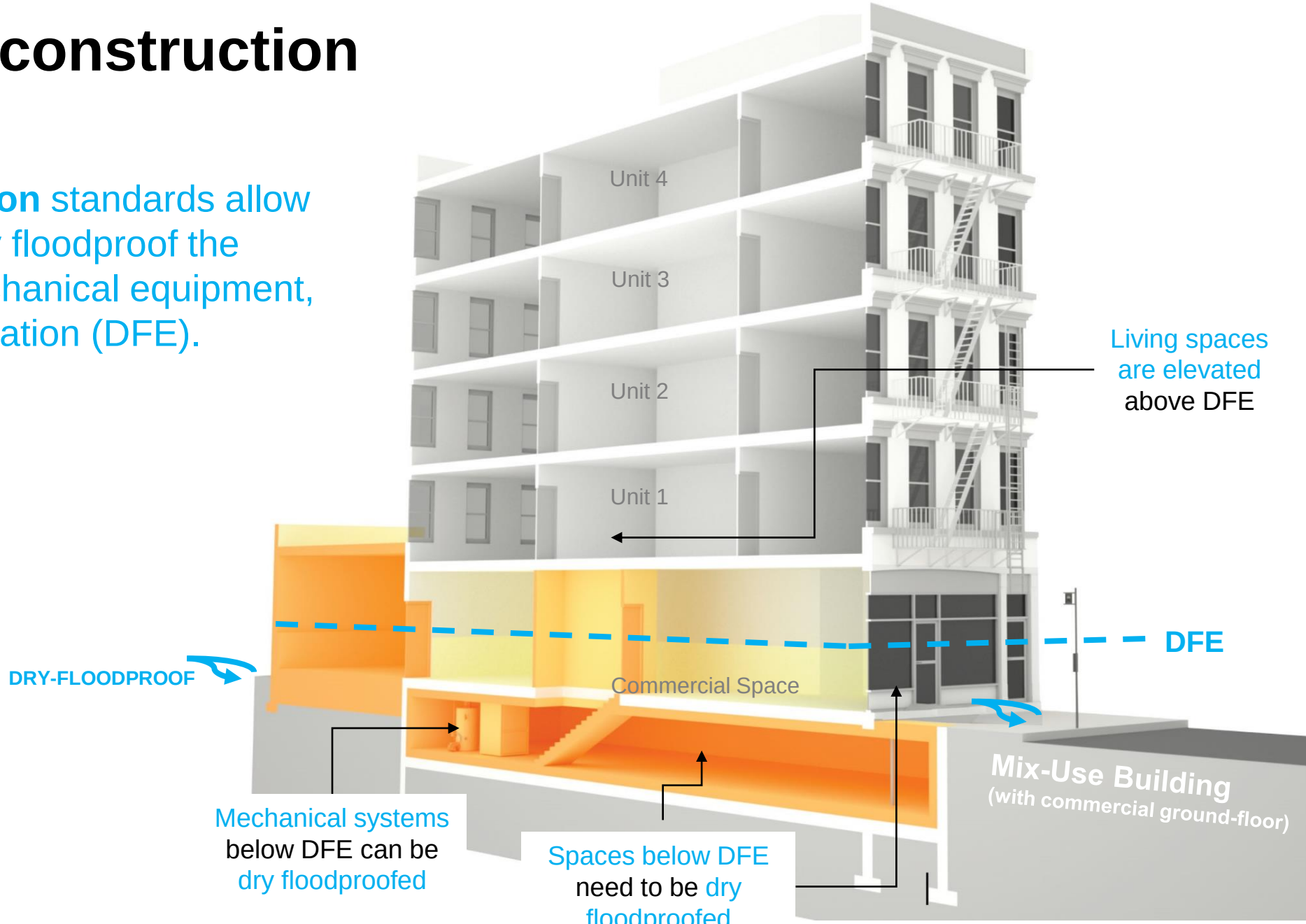
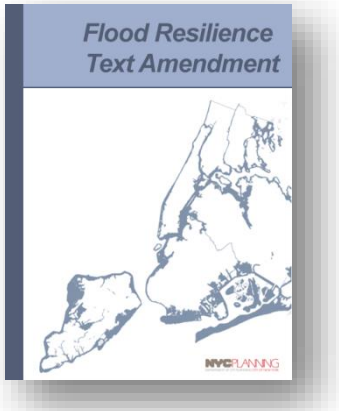


Flood-resistant construction
Required by DOB

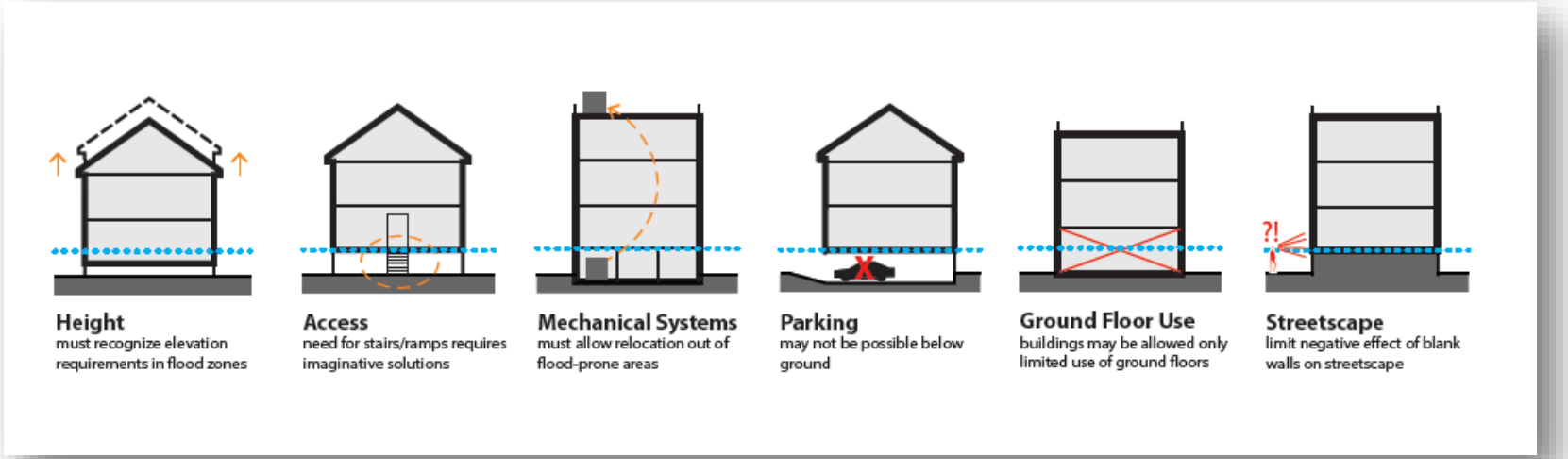
Flood resilient construction standards allow commercial buildings to dry floodproof the lowest floor, as well as mechanical equipment, below the design flood elevation (DFE).



2013 Citywide Flood Resilience Text Amendment



- **Intended to be updated based on lessons learned. Expires 1 year after adoption of PFIRMs.**
- **Height:** increases the height limit of all buildings in the floodplain by allowing height to be measured from the Design Flood Elevation (DFE), and in some cases, a higher reference point
- **Floor area:** allows discounting of floor space when lost in order to come into compliance with the latest building standards (raised entryways, mechanical space, floodproofed areas)
- **Retrofitting older buildings:** overrides typical zoning rules for non-complying and non-conforming buildings, giving them wide latitude to retrofit and rebuild.
- **Design standards:** requires elevated buildings to mitigate their impact on the streetscape



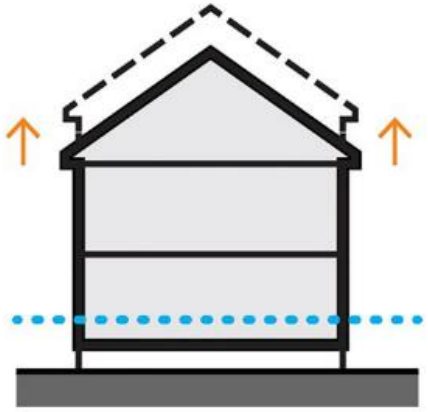
2013 Citywide Flood Text

Amended zoning in six key areas

1

Height

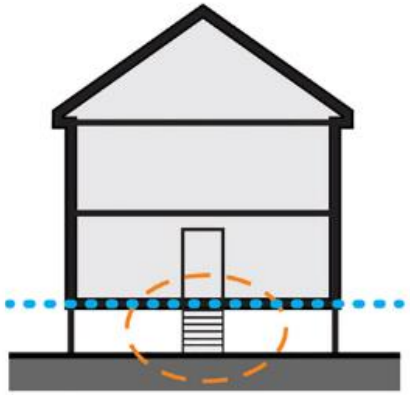
Measured from flood elevation



2

Access

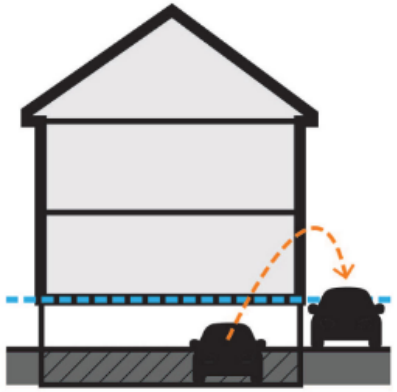
Flexibility for stairs, ramps, lifts



3

Parking

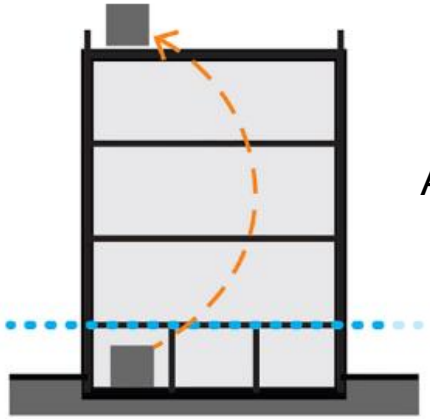
Flexibility to relocate parking



4

Systems

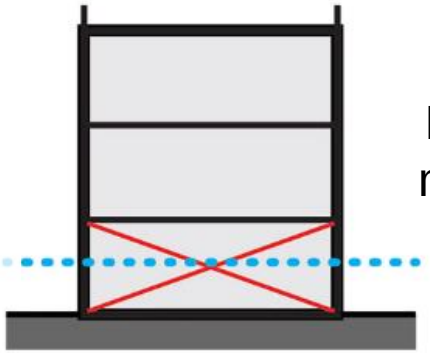
Flexibility to relocate/elevate



5

Ground Floors

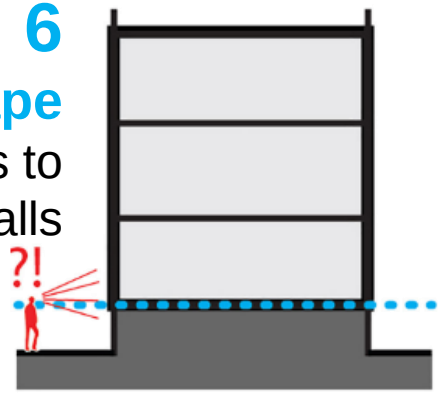
Account for limitations of ground-floor uses. Encourage active spaces at grade



6

Streetscape

Require features to mitigate blank walls



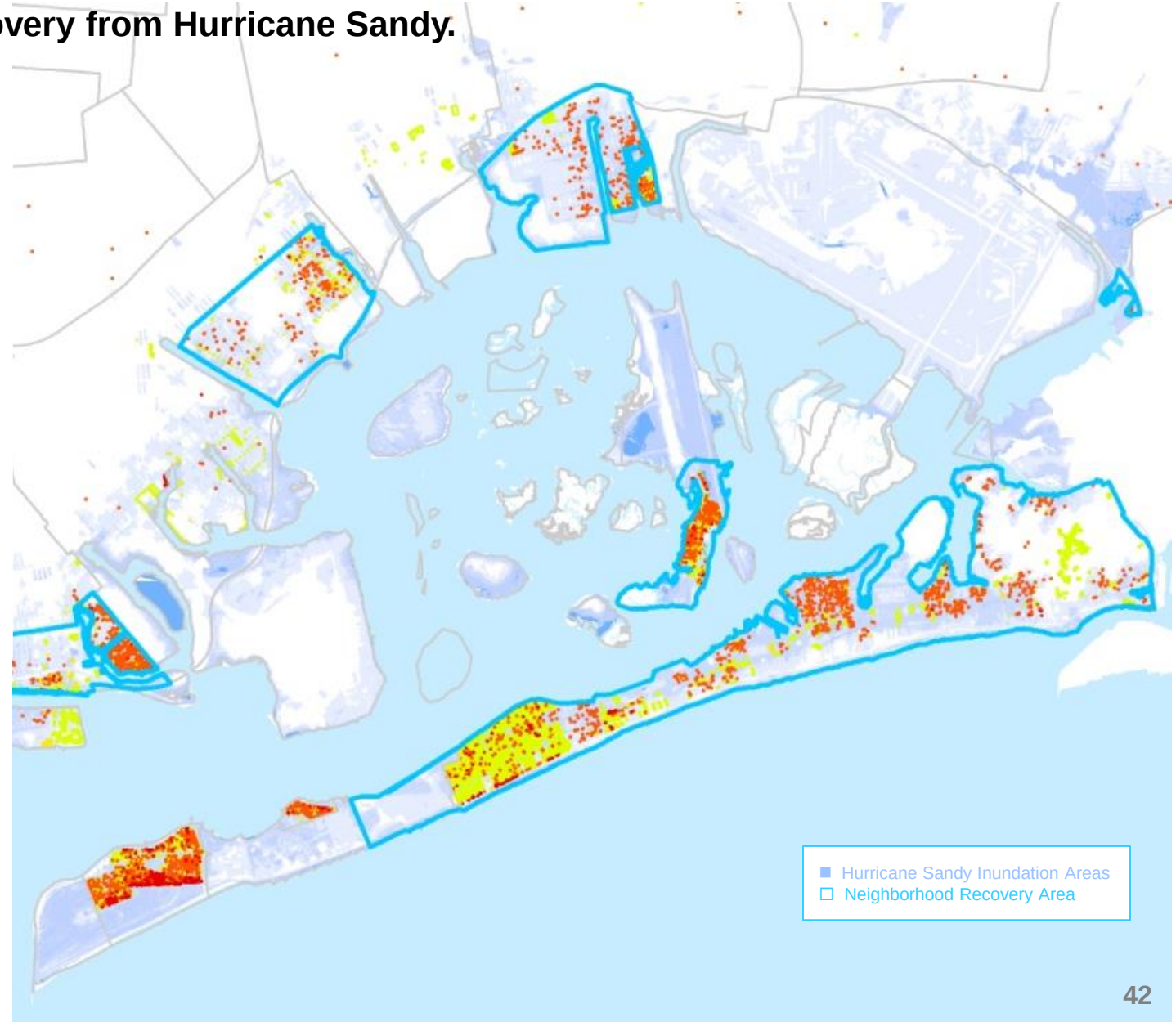
2015 Special Regulations for Neighborhood Recovery

Special rules to accelerate recovery from Hurricane Sandy.

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

In Queens:

- Old Howard Beach
- New Howard Beach
- Hamilton Beach
- Broad Channel
- Rockaways east of Riis



2015 Special Regulations

Accelerate recovery in Sandy-damaged neighborhoods

Provided new zoning solutions in three key areas:

Simplified process

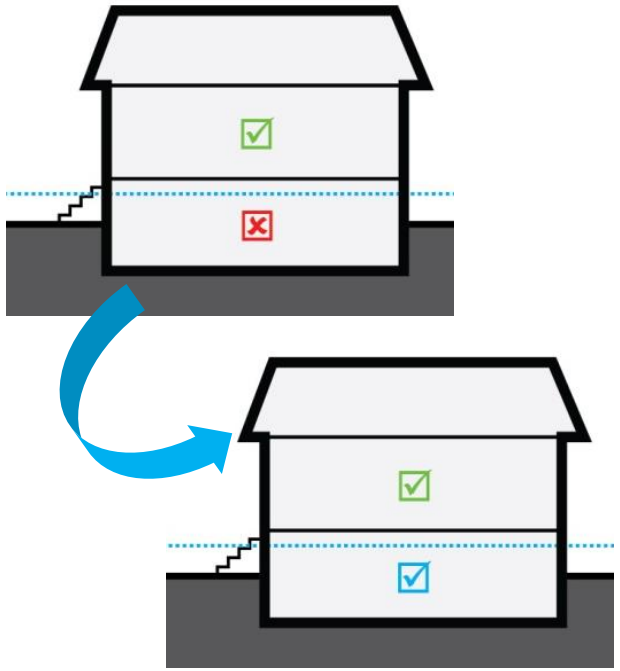
for documenting old homes

Home in Gerritsen Beach

1931 Sanborn Map

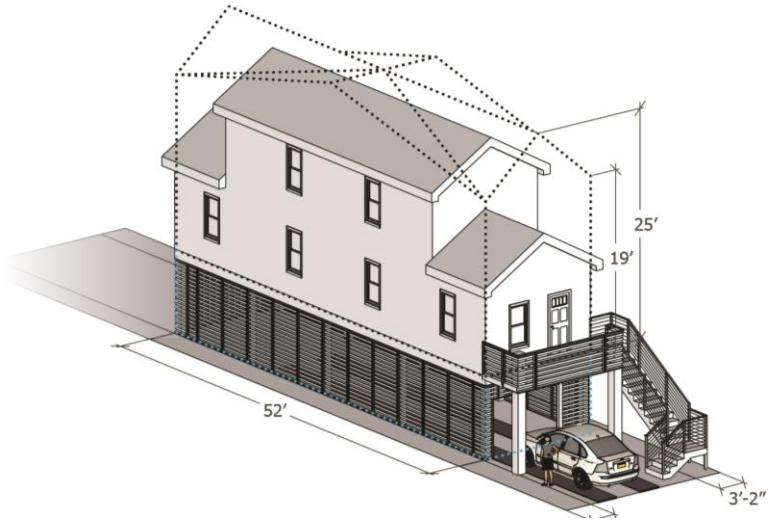
Removed disincentives

such as loss of basement space



Established new envelope

for rebuilds on small existing lots



(more on this later)