# Flood Resilience Text Amendment II

## Presentation to the AIA Brooklyn

April 19, 2017

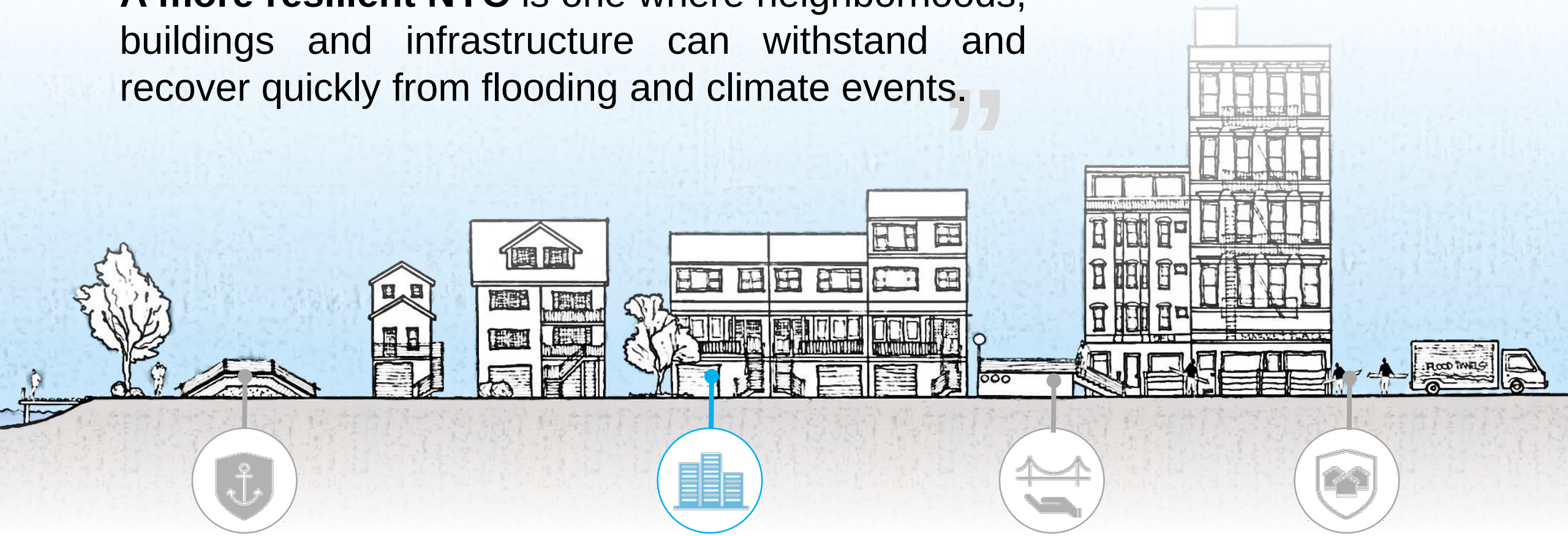
NYC PLANNING

# Agenda

1. **Recap 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

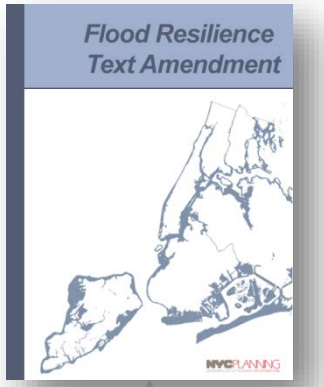
**Buildings**
are designed to withstand and recover from flooding

**Infrastructure**
is protected from climate hazards

**Residents and businesses**
are prepared

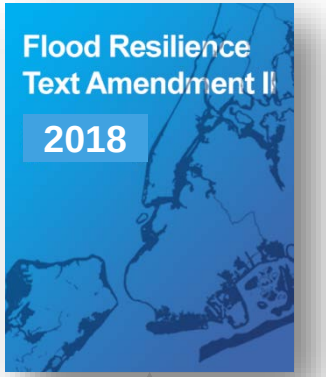
# Resiliency planning at DCP

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



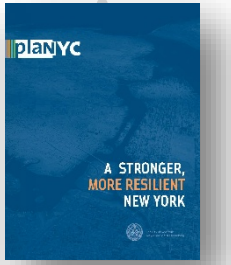

**SRNR** (2015) provides additional zoning relief to expedite recovery


**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



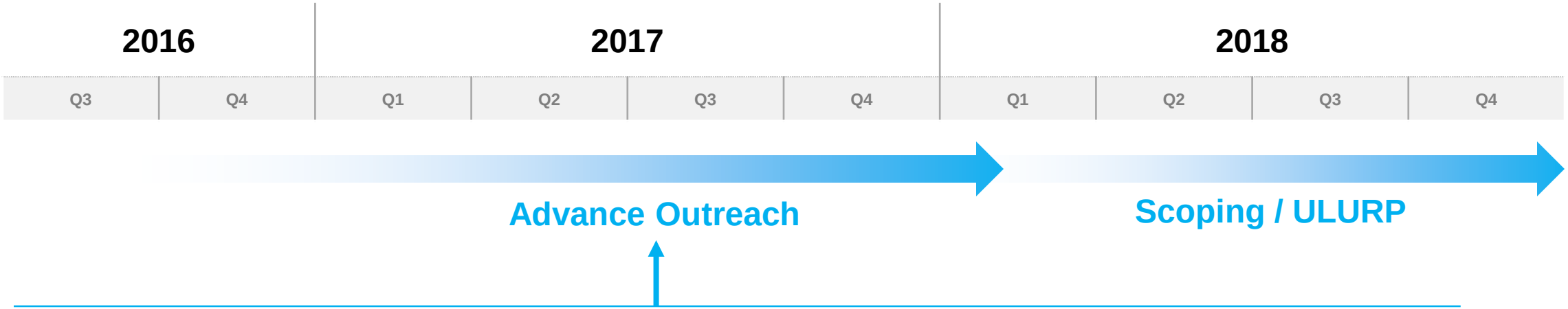

**SIRR Report** (2013) long-term, citywide resiliency framework


**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

# 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

# FEMA Flood Map
## Citywide Flood Risk

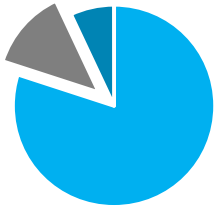
### NYC's flood risk is high.

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

**100 Year Floodplain**
FEMA 2013 PFIRM

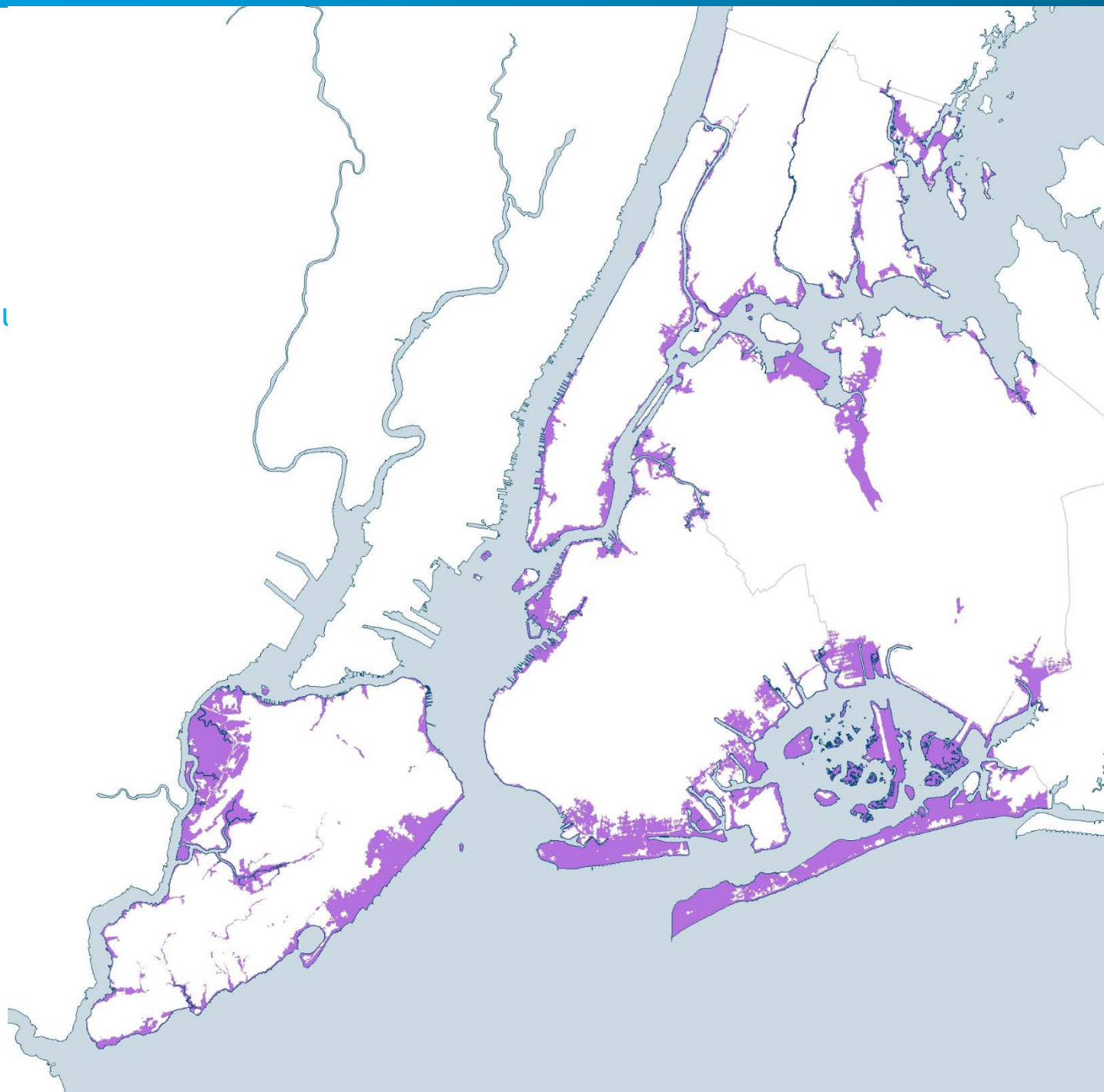
Population: **400,000**
Buildings: **71,500**

**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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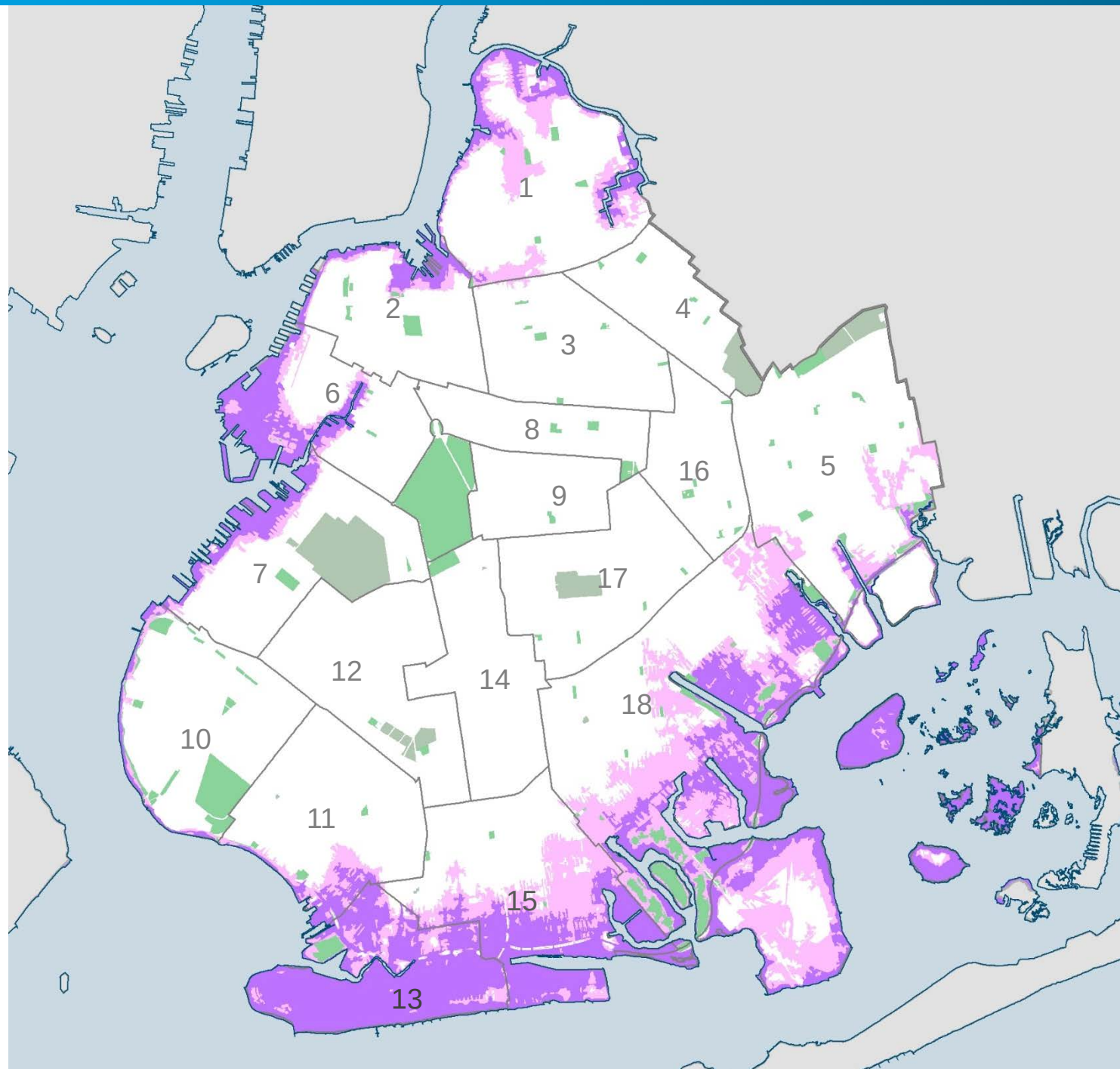
# FEMA Flood Map
## Flood Risk in Brooklyn

### 100 Year Floodplain
FEMA 2015 PFIRM

Population: **164,800**
*Projected by 2050s: 331,100*

Buildings: **26,900**
*Projected by 2050s: 51,600*

**11** of 18 Community Boards




FEMA 2015 PFIRM
100 Year Floodplain

Projected 2050s
100 Year Floodplain

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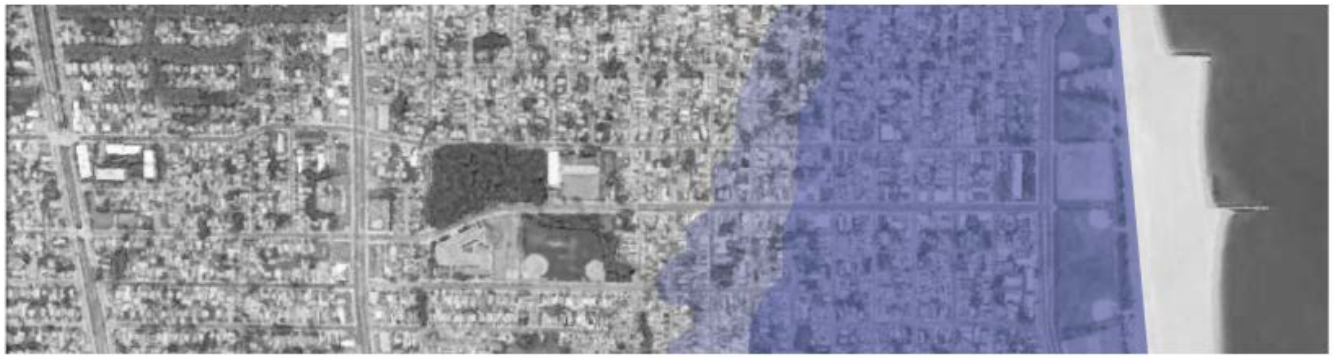
# FIRM vs. PFIRM



?

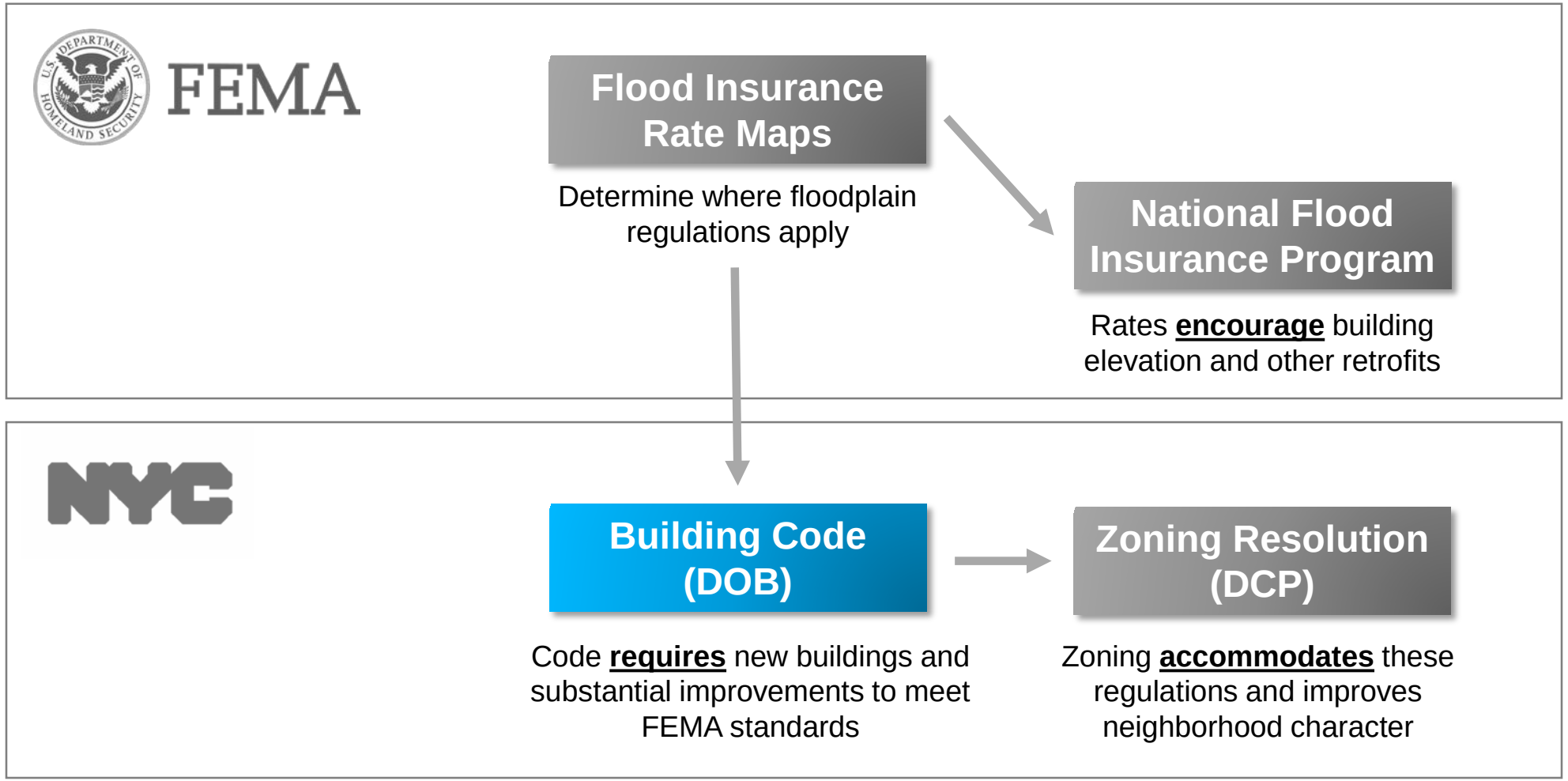
**FIRM**
1983; digitized 2007
Currently used for
flood insurance purposes

**PFIRM**
2013, revised 2015
Currently used for
building code purposes

**Post-appeal PFIRM**
Expected 2019+
Affected geography unknown

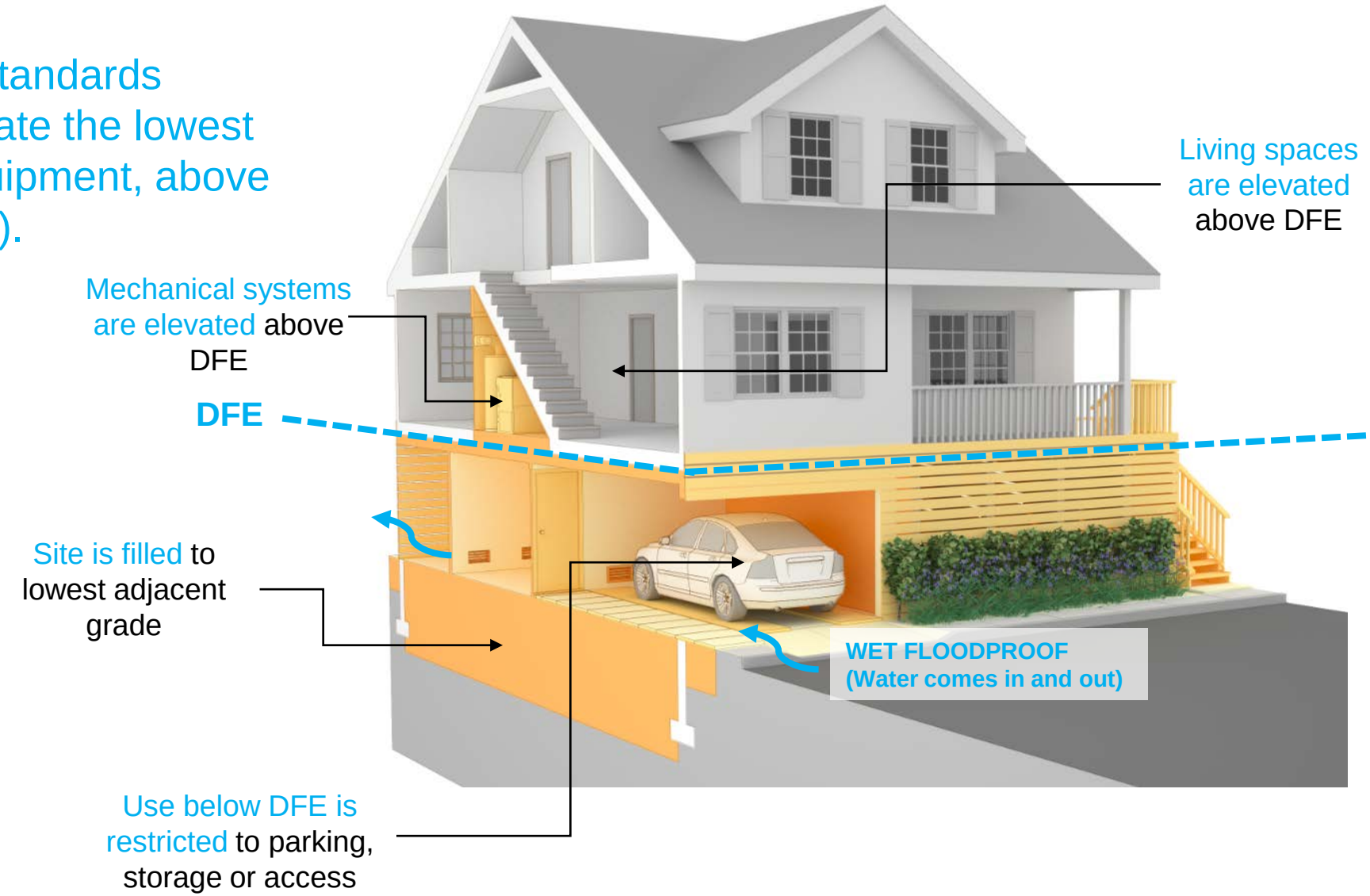
Not actual map – illustrative only

# How are buildings in the floodplain regulated?



# 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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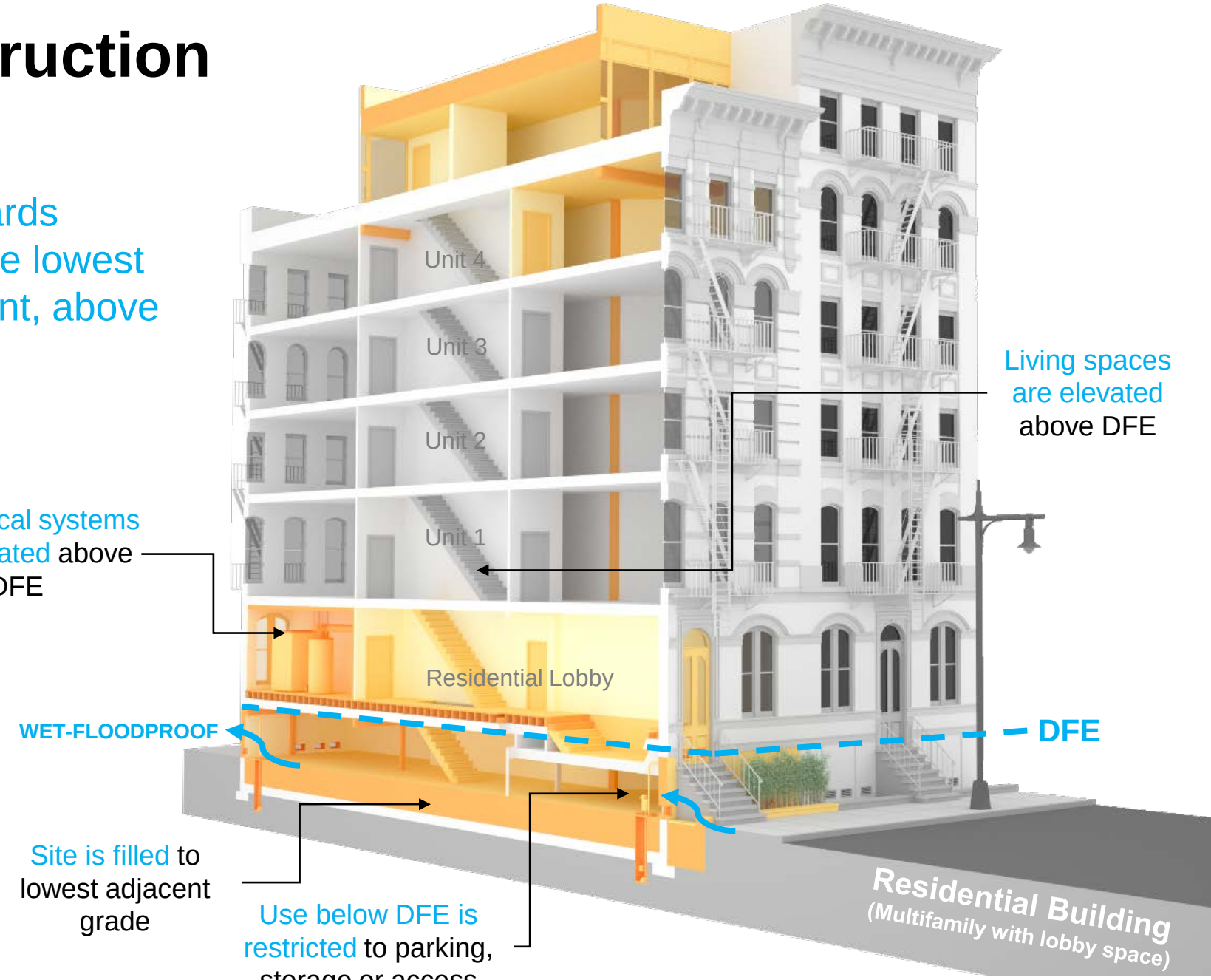
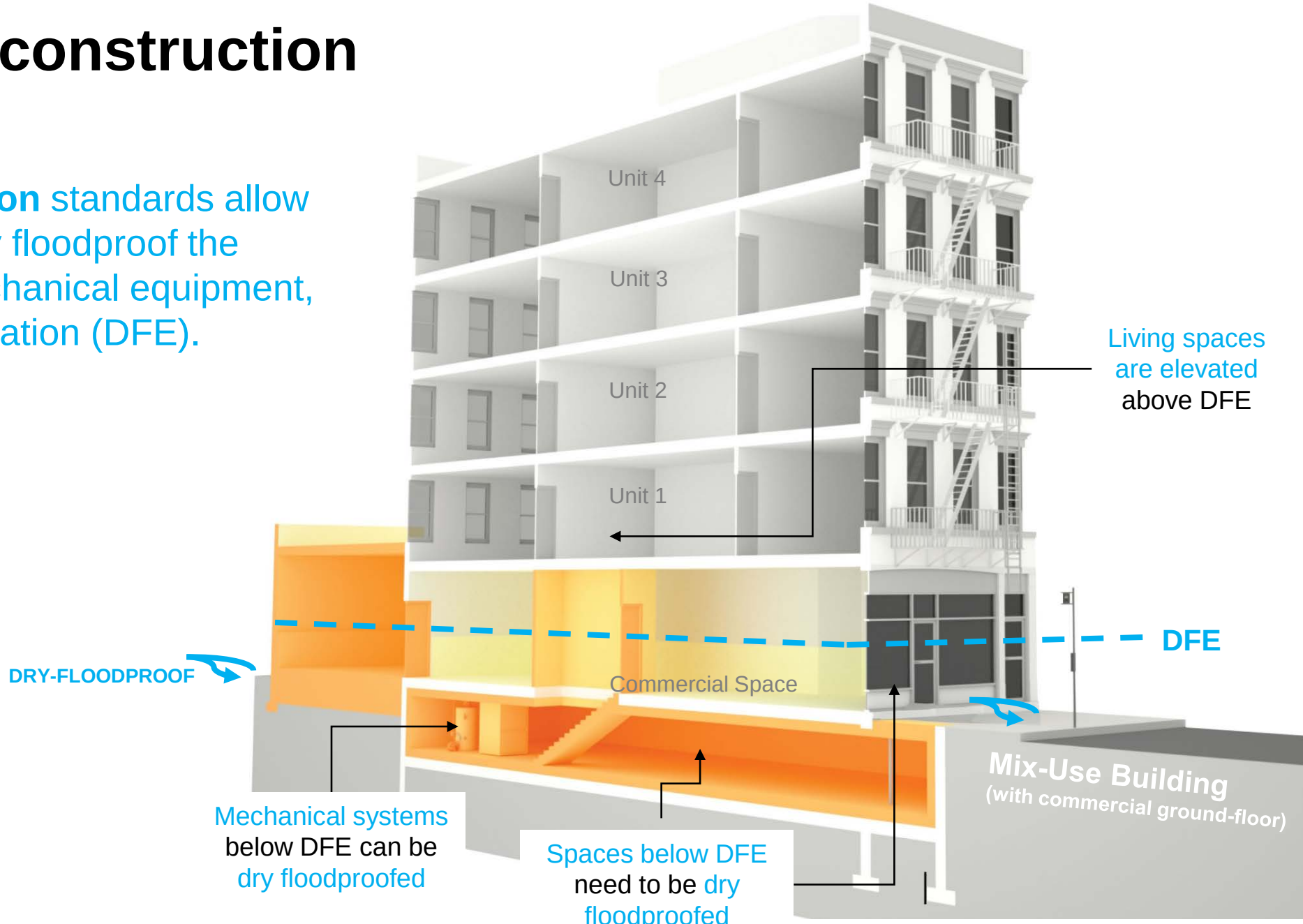


# Flood-resistant construction
## Required by DOB

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



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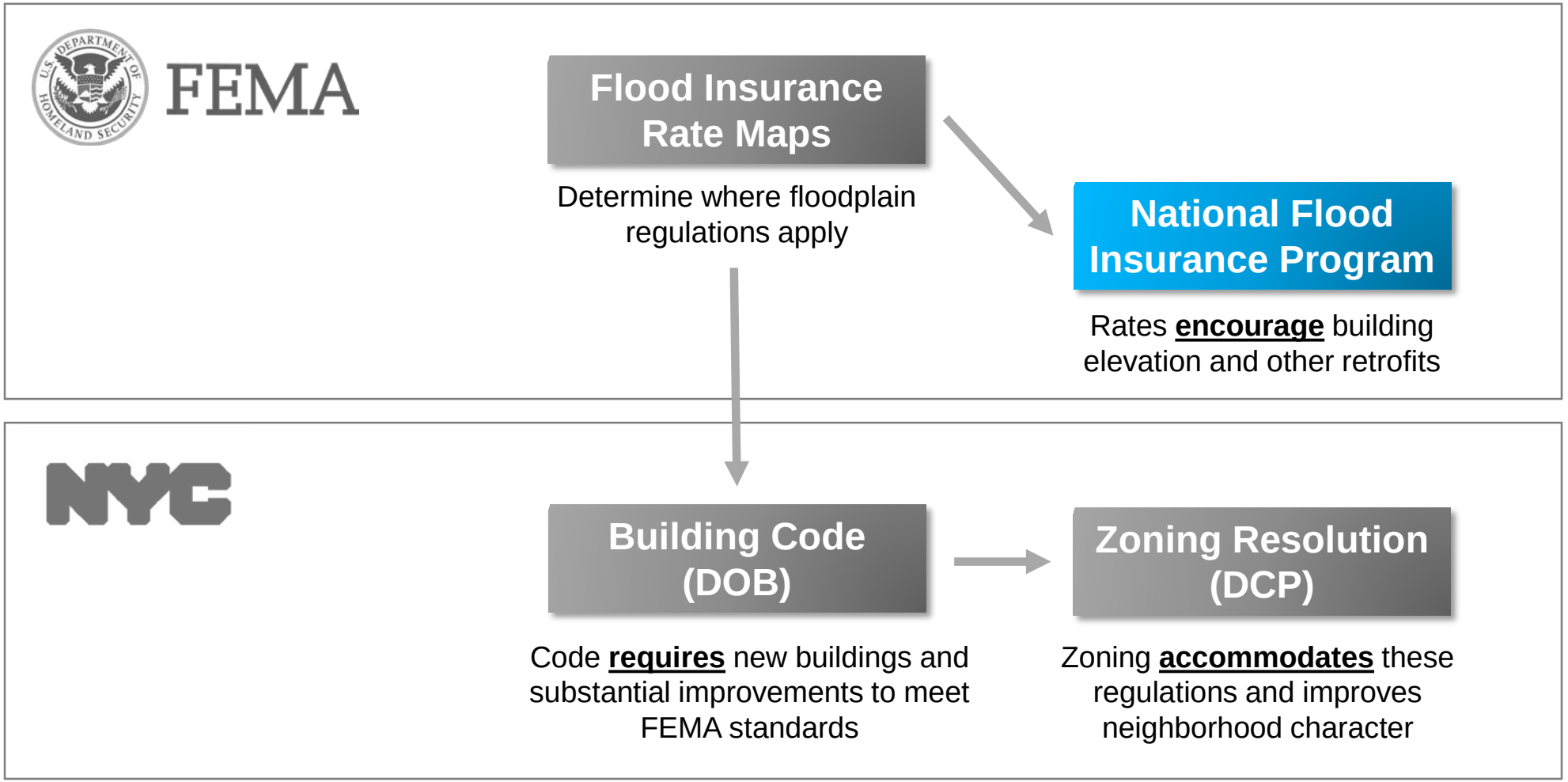
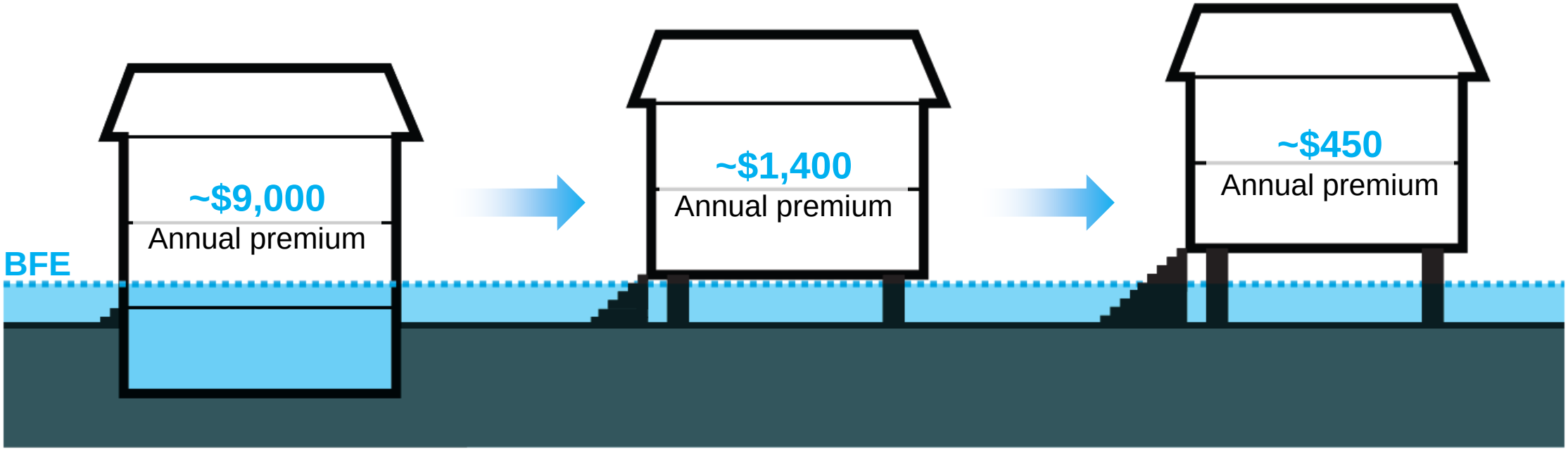


# Flood insurance rates
## Set by FEMA

### **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).

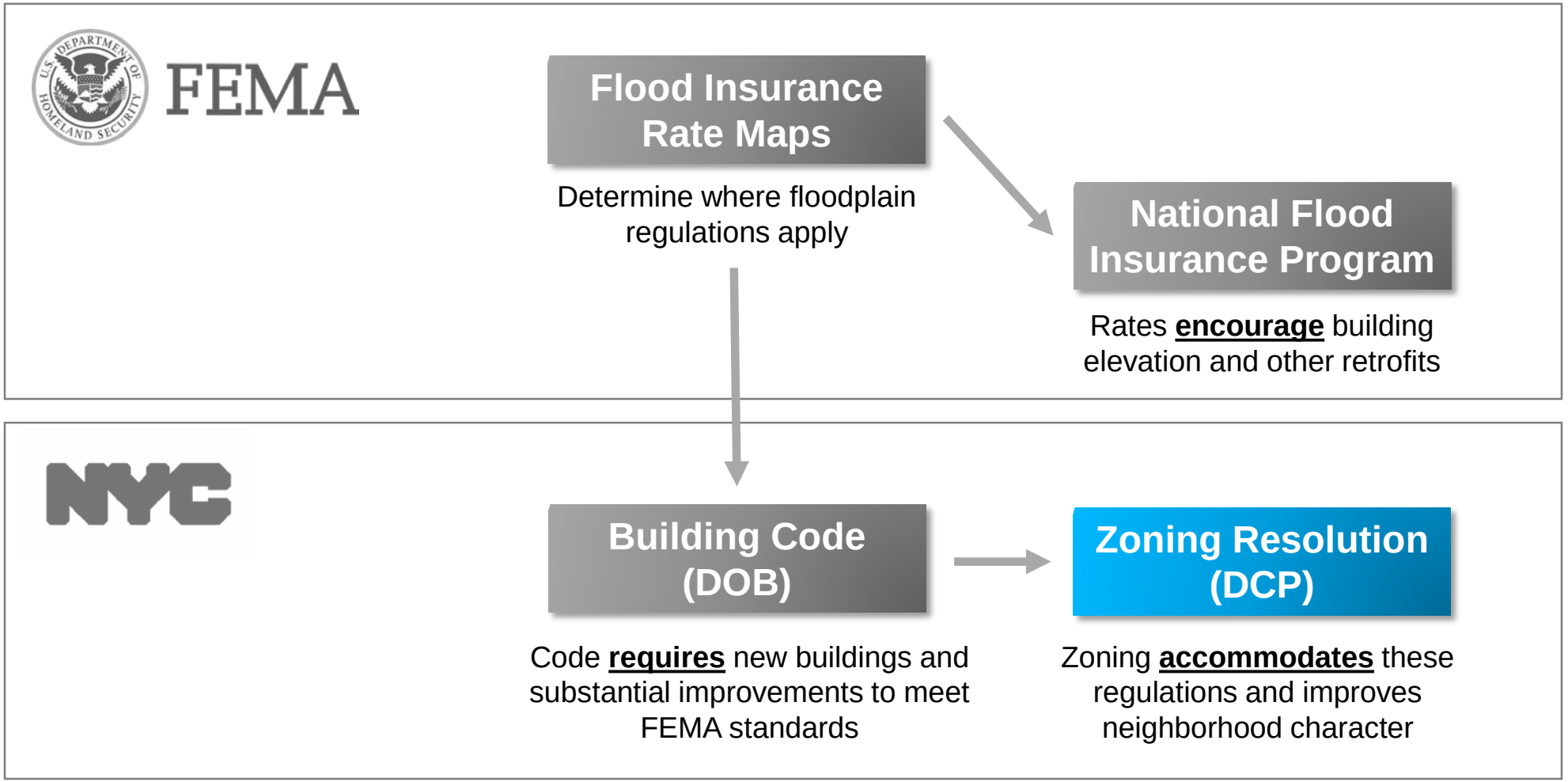



**4 FEET OR MORE**
BELOW BFE

**AT**
BFE

**3 FEET OR MORE**
ABOVE BFE

# How are buildings in the floodplain regulated?



# DCP’s 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 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

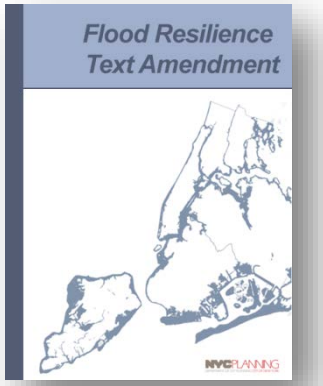
Adjust zoning to allow buildings to retrofit, by providing flexibility and removing obstacles to resiliency investments.

## Encourage

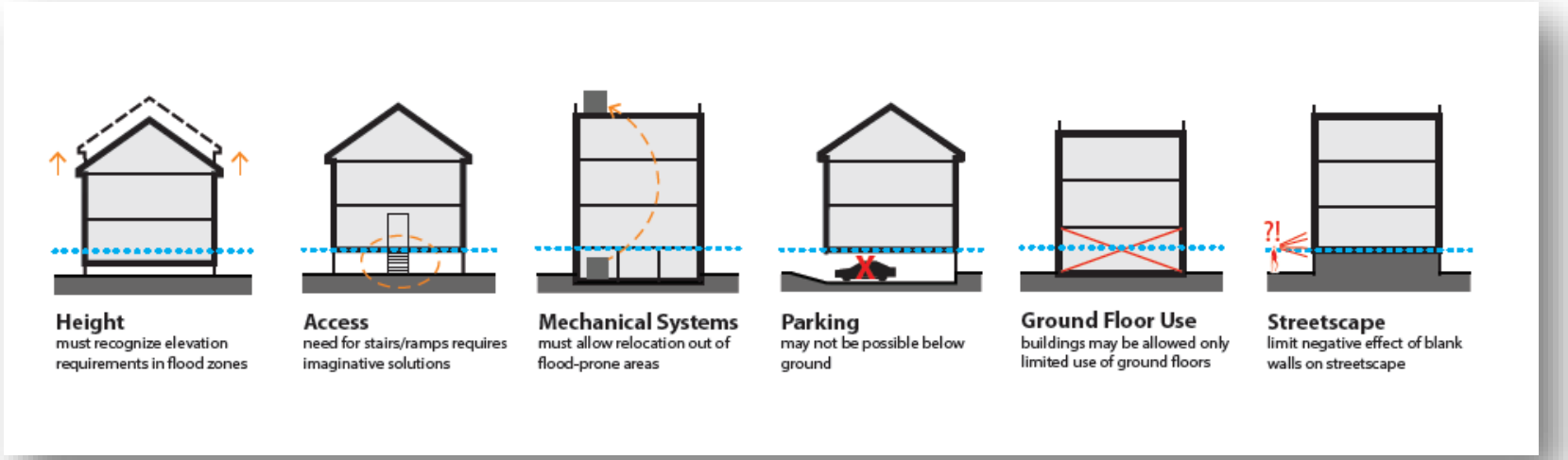
Encourage construction of new development built to a higher standard of flood protection.

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

# 2013 Citywide Flood Resilience Text Amendment



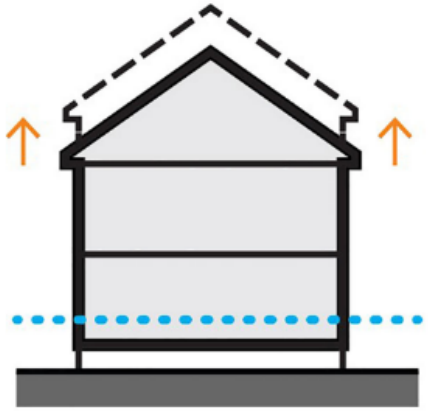

- **Intended to be updated based on lessons learned. Expires 1 year after adoption of PFIRMs.**
- **Height:** increases the height limit of all buildings in the floodplain by allowing height to be measured from the Design Flood Elevation (DFE), and in some cases, a higher reference point
- **Floor area:** 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



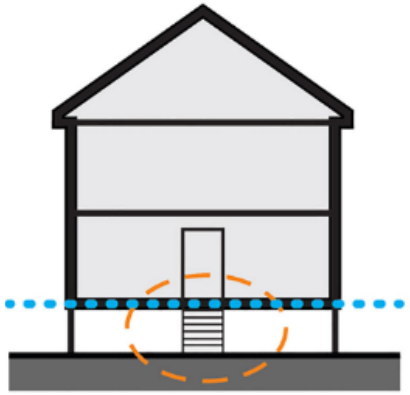
# 2013 Citywide Flood Text

## Amended zoning in six key areas

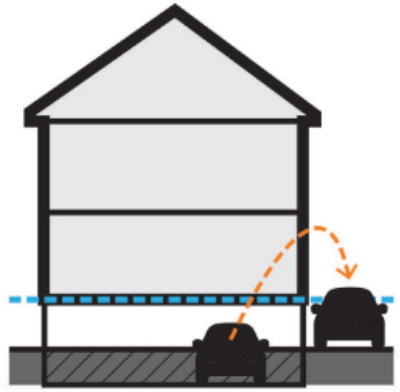
**1**
**Height**
Measured from flood elevation



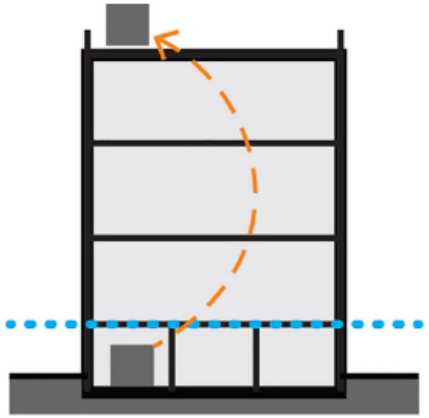
**2**
**Access**
Flexibility for stairs, ramps, lifts



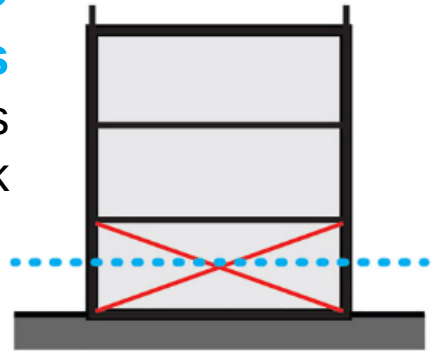
**3**
**Parking**
Flexibility to relocate parking



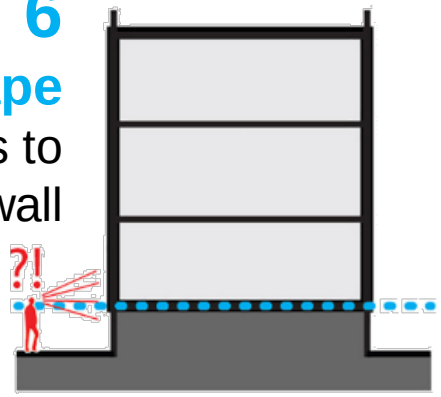
**4**
**Systems**
Flexibility to relocate/elevate



**5**
**Ground Floors**
Account for costs of new flood risk



**6**
**Streetscape**
Require features to mitigate blank wall

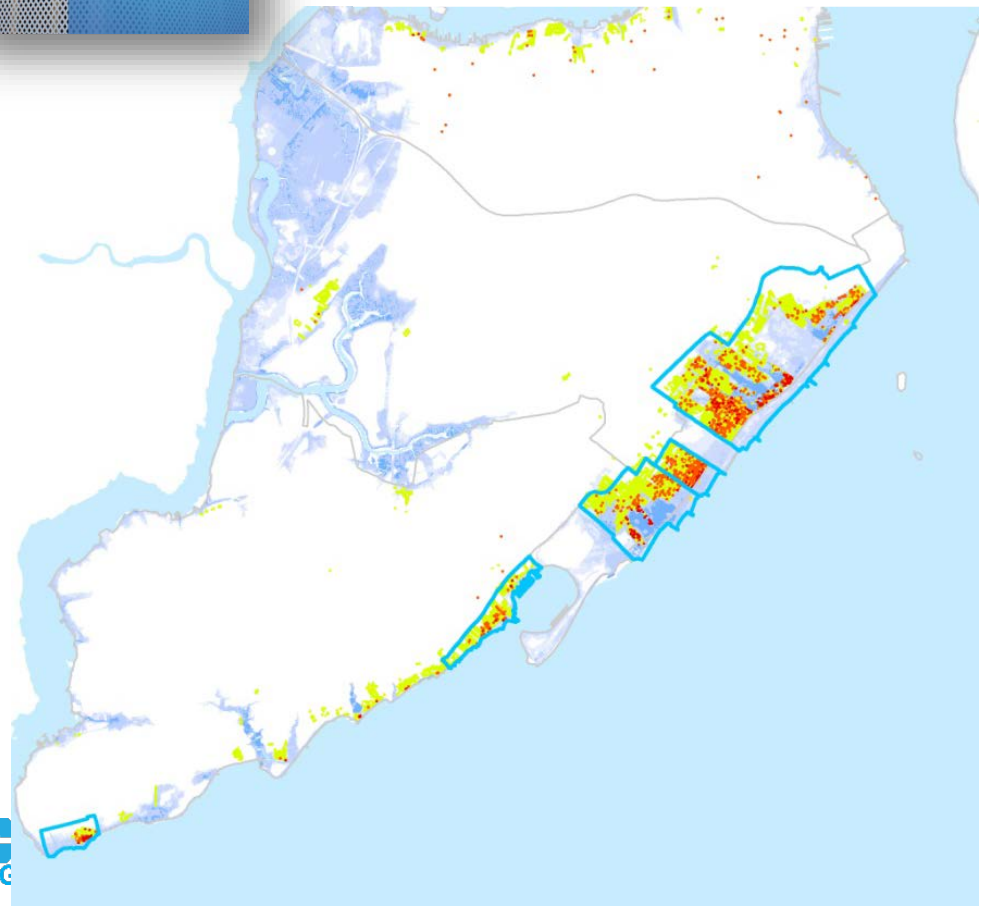


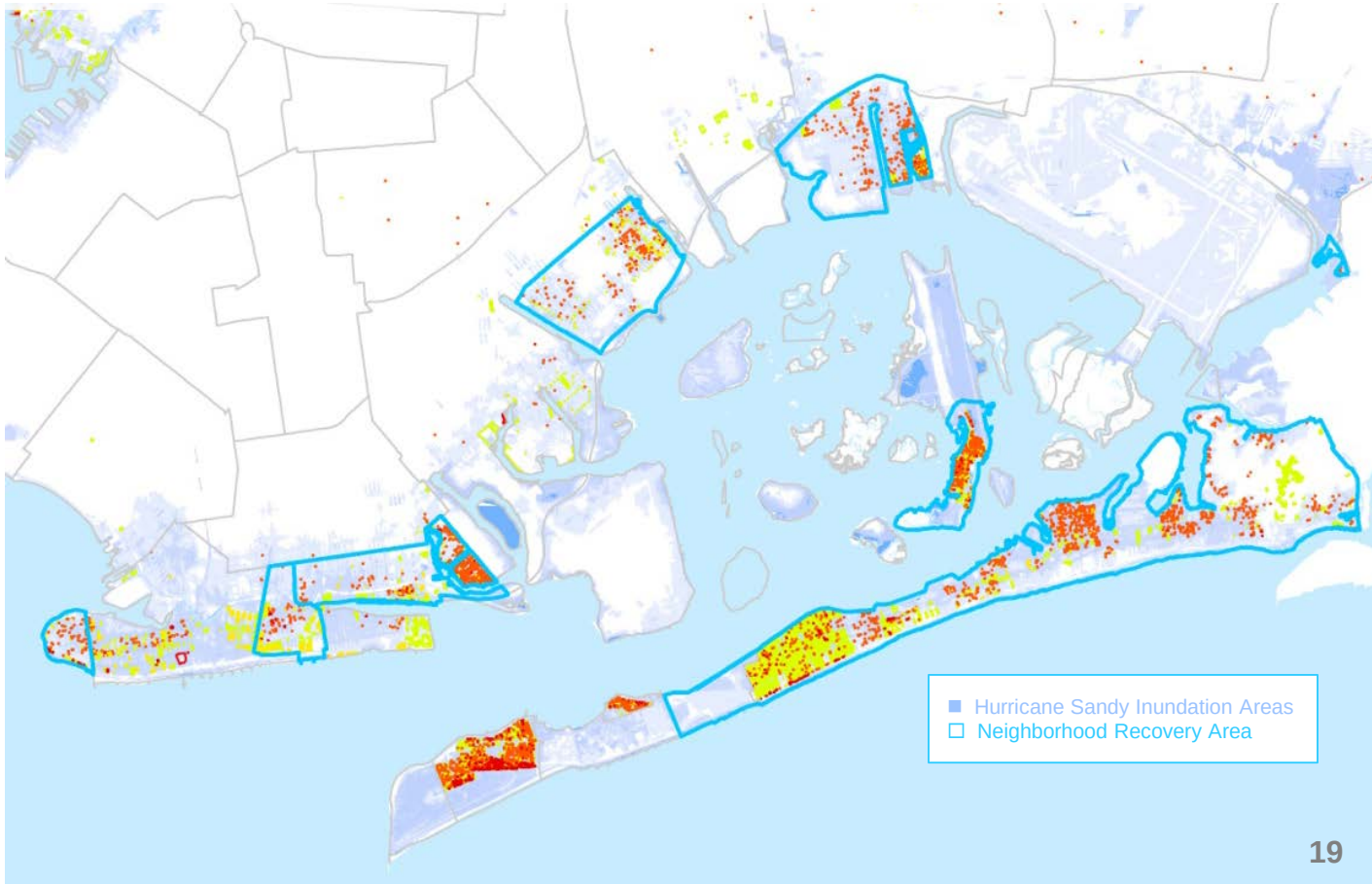
# 2015 Special Regulations for Neighborhood Recovery


**Special rules to accelerate recovery from Hurricane Sandy.**

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

**In Brooklyn:** Seagate, Brighton Beach, Sheepshead Bay, Gerritsen Beach, Canarsie





# 2015 Special Regulations

Accelerate recovery in Sandy-damaged neighborhoods

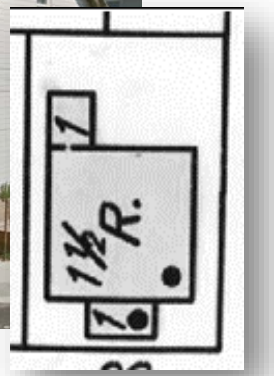
## Provided new zoning solutions in three key areas:

### Simplified process

for documenting old homes

Home in Gerritsen Beach



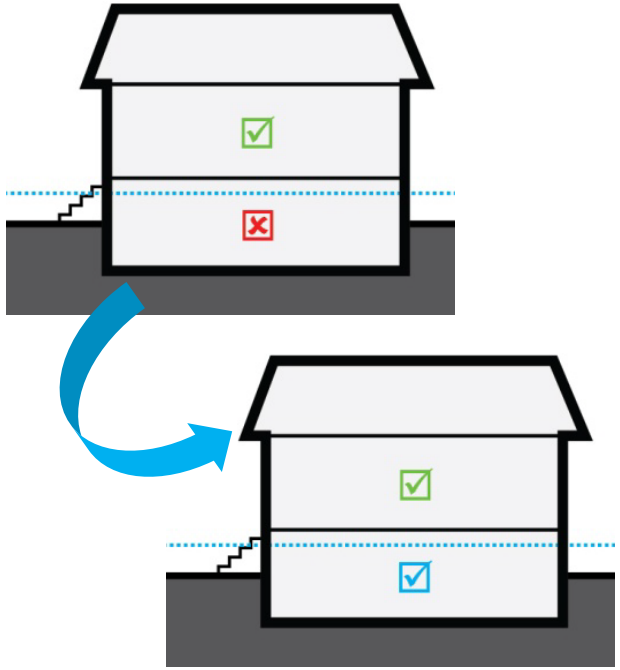


1931 Sanborn Map

Used with permission from The Sanborn Library, LLC

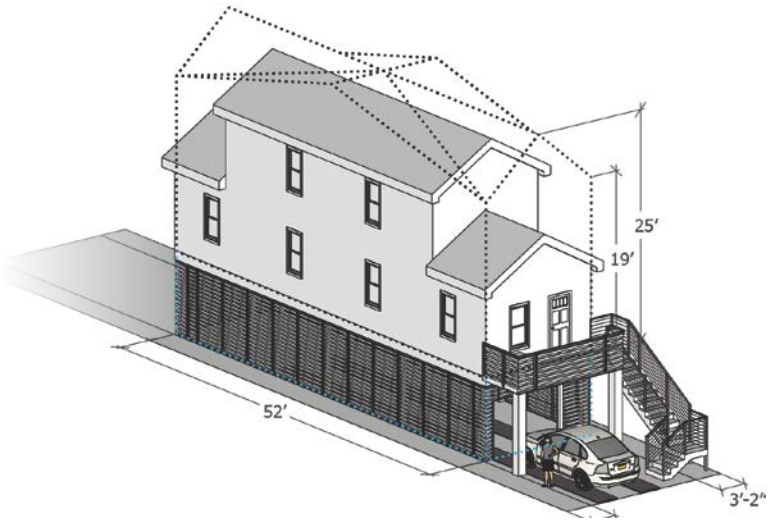
### Removed disincentives

such as loss of basement space



### Established new envelope

for rebuilds on small existing lots




(more on this later)

# Lessons learned since 2013

## Citywide DCP Studies:


## Neighborhood Studies:

# 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

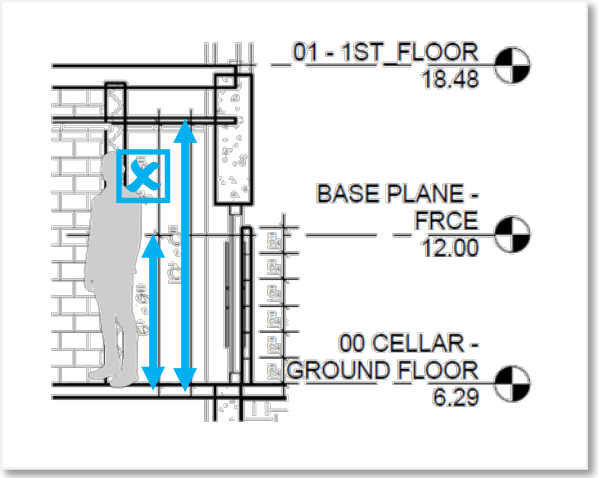
| NB | Alt-1 | Alt-2 |
|---|---|---|
| **1,021** | **1,090** | **15,573** |
| **All 1,021 are Appendix G compliant** | **Only 10% (113) are Appendix G compliant** | **Only 3% (532) are Appendix G compliant** |
| 149 (14%) approved<br>451 (44%) underway<br>179 (17%) complete | 36 (31%) approved<br>24 (21%) underway<br>0 (0%) complete | 245 (46%) approved<br>122 (23%) underway<br>9 (1%) complete |
| 25% rejected/pending | 48% rejected/pending | 30% rejected/pending |

# Flood Text II

## Need for a new citywide text amendment:

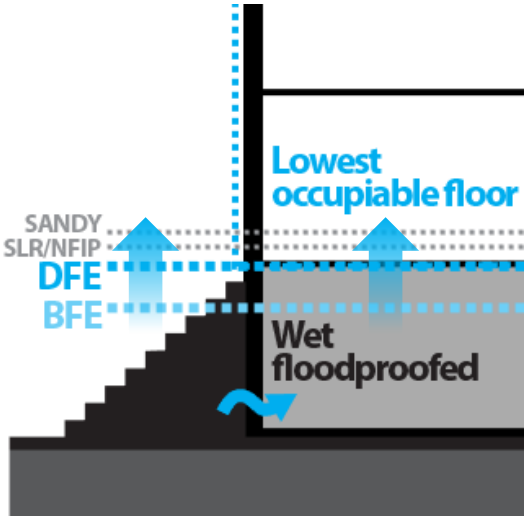
**1**

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**

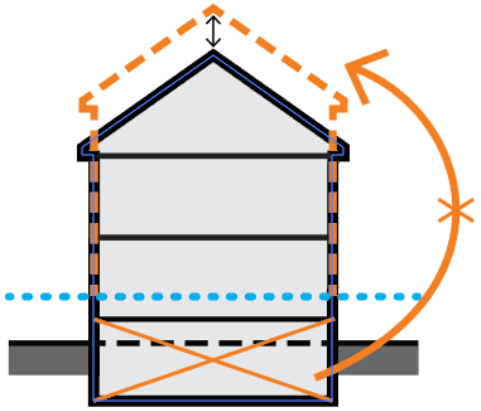
Begin to **promote** new development + proactive retrofitting to high resiliency standards

# Flood Text II

## Fix and improve provisions based on lessons learned

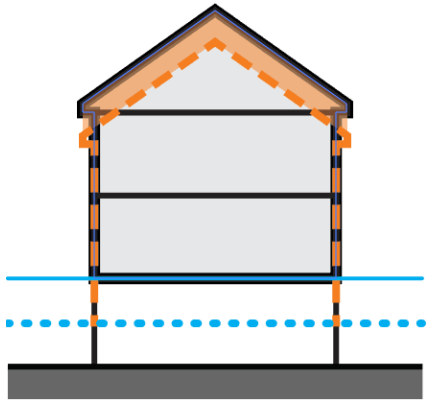
### 1 Height

Homeowners may face the loss of subgrade spaces when retrofitting



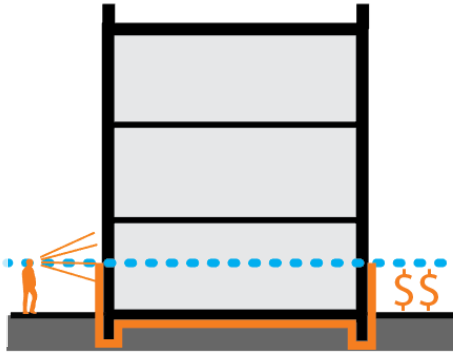
### 2 Height

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



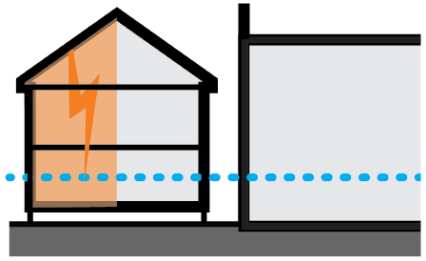
### 3 Ground Floors

Current incentives to keep active ground floors may not be enough



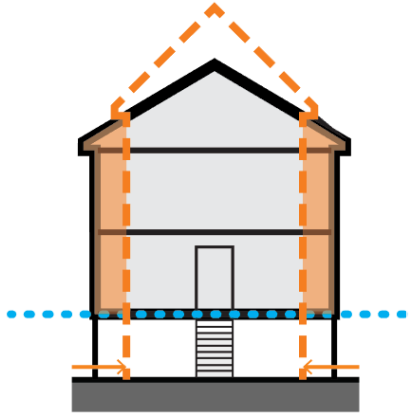

### 4 Homes in M Districts

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



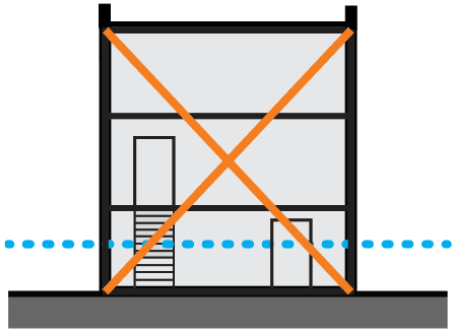
### 5 Old Homes in Small Lots

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



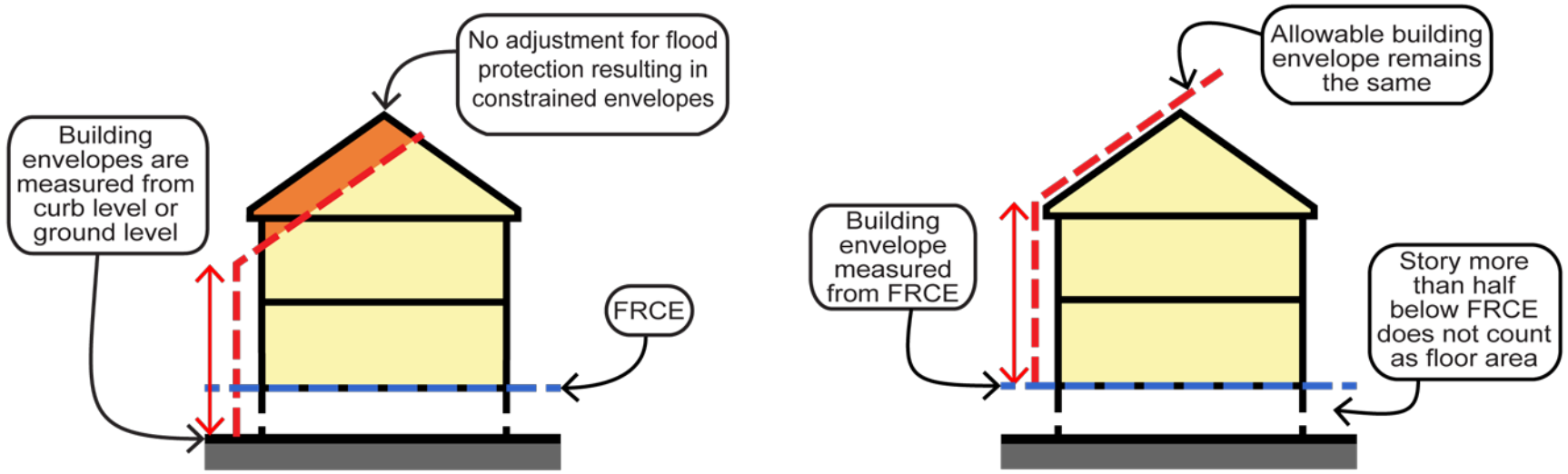
### 6 Highly Vulnerable Areas

Density may need to be limited in highly vulnerable areas



# 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)

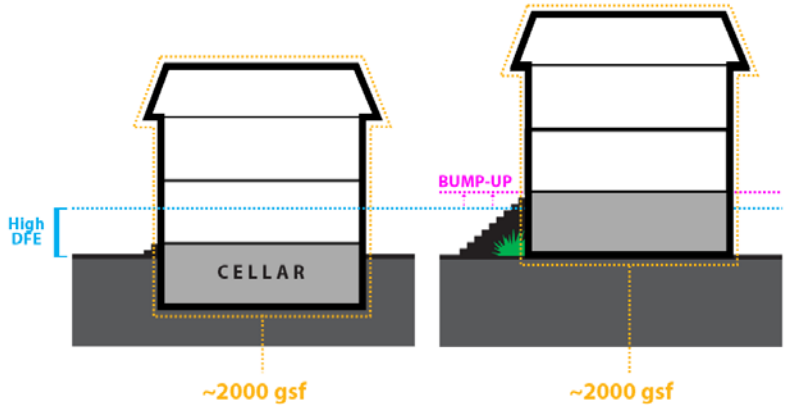



**Fig 1.** Replacement of 'cellar' story in a high-DFE retrofit

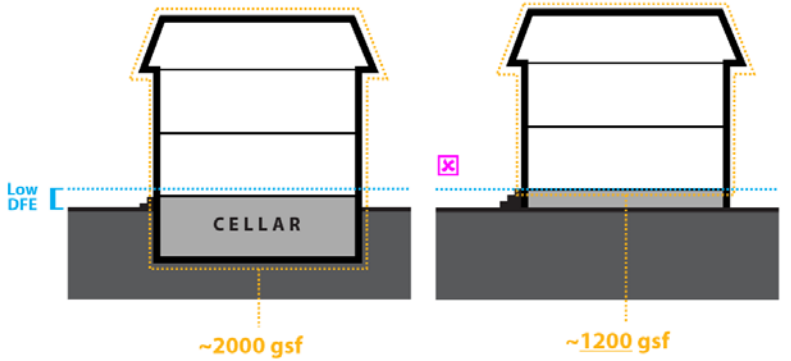



**Fig 2.** Loss of 33% of home in a low-DFE retrofit

# 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

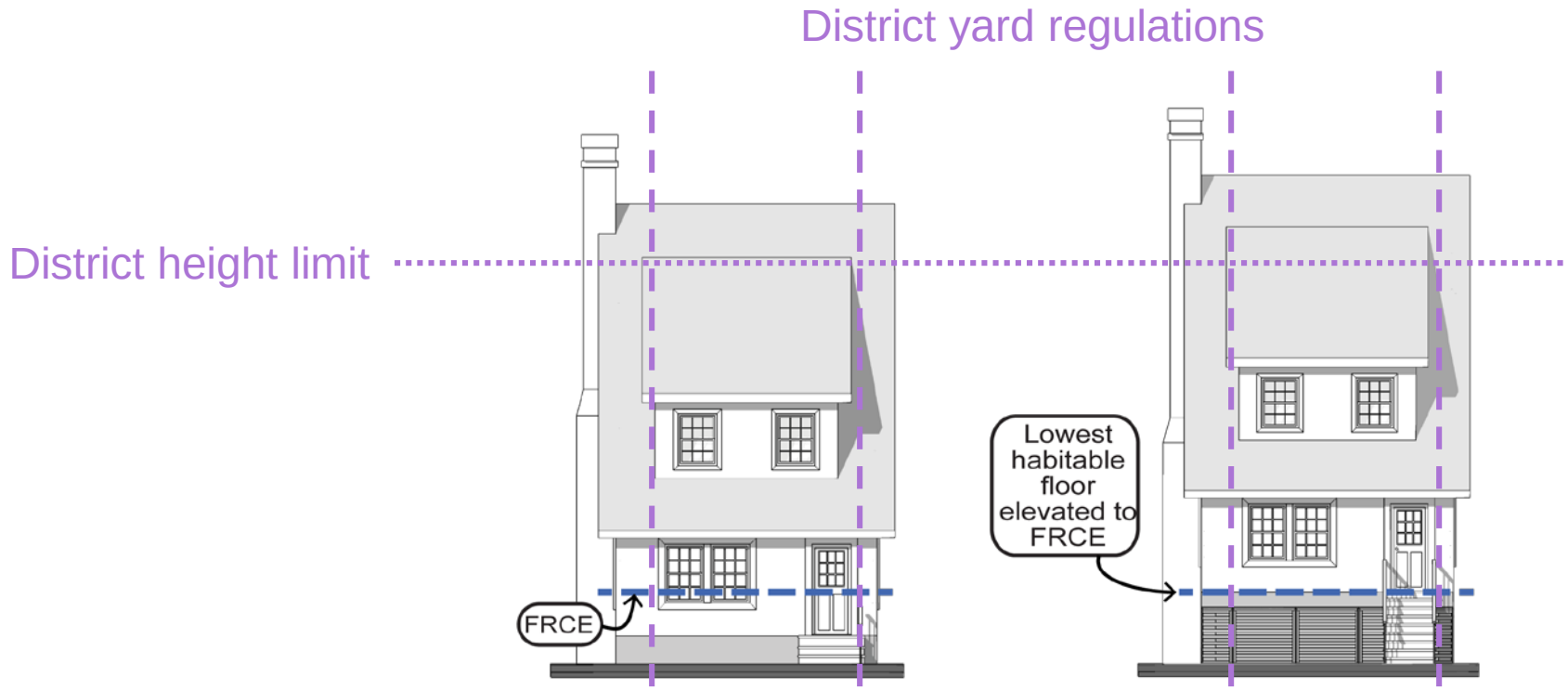
**Without**
bump-up

**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**

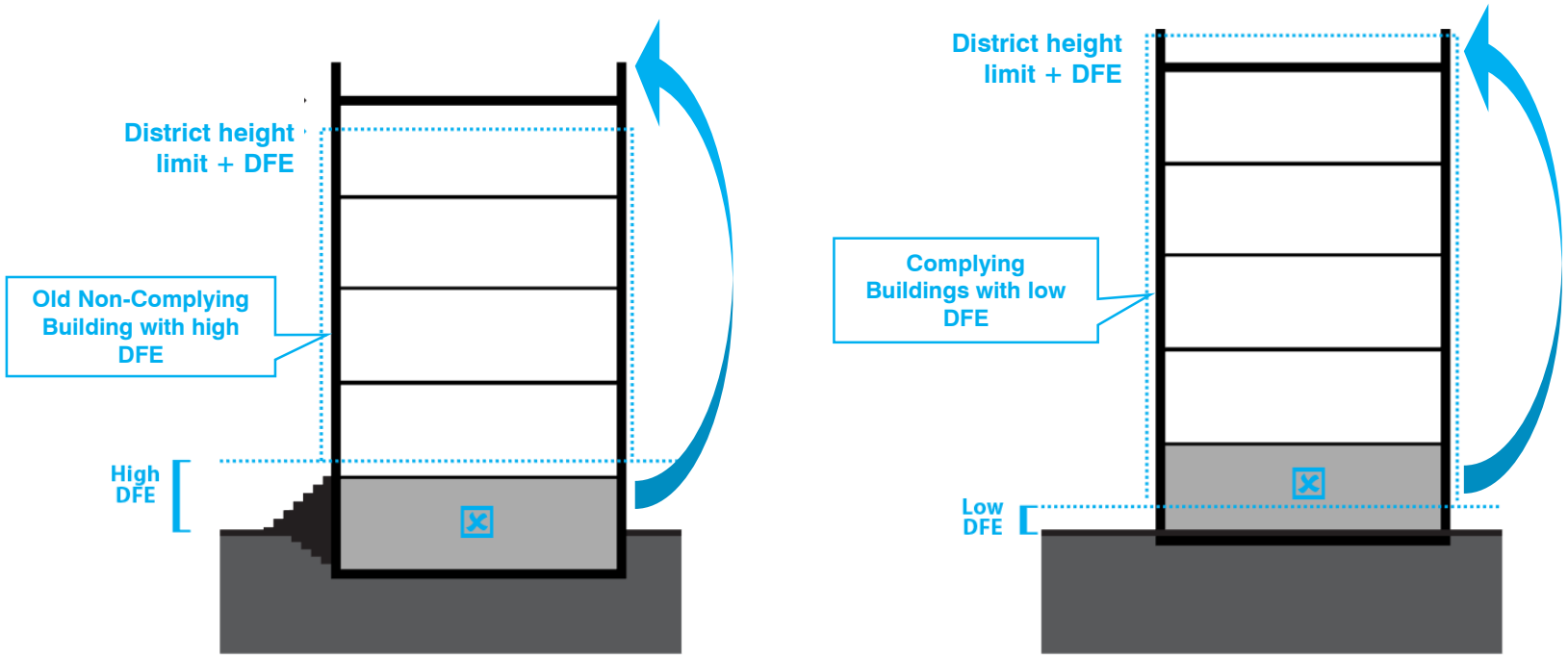
- Doesn't apply to **other building types**
  (3 family homes, larger multi-family buildings, non-residential buildings)
- Doesn't allow the **bump-up to apply**
  (the provisions are mutually exclusive)
- Doesn't allow elevation to any higher level (i.e., BFE+3)
- Doesn't provide a solution for **non-raisable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

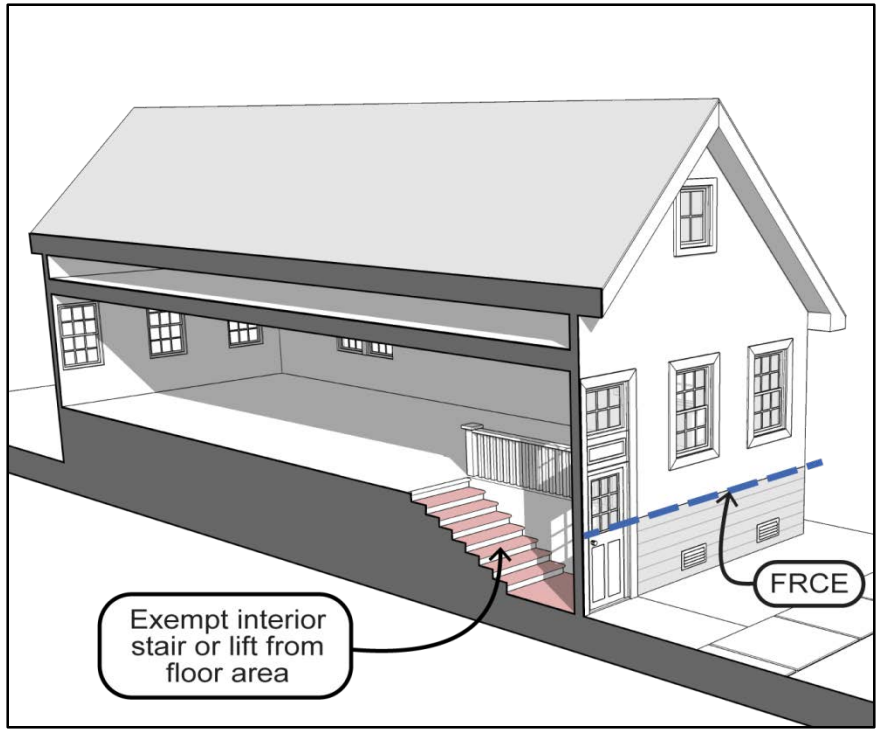
- Doesn't provide a solution for non-raisable building typologies.

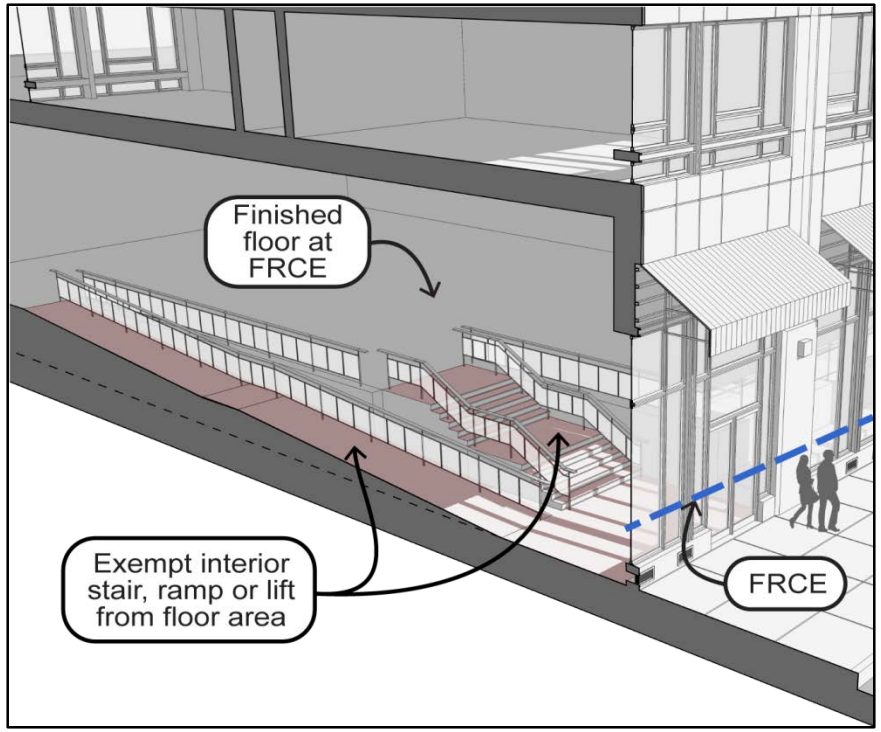


# Floor Area

## 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.



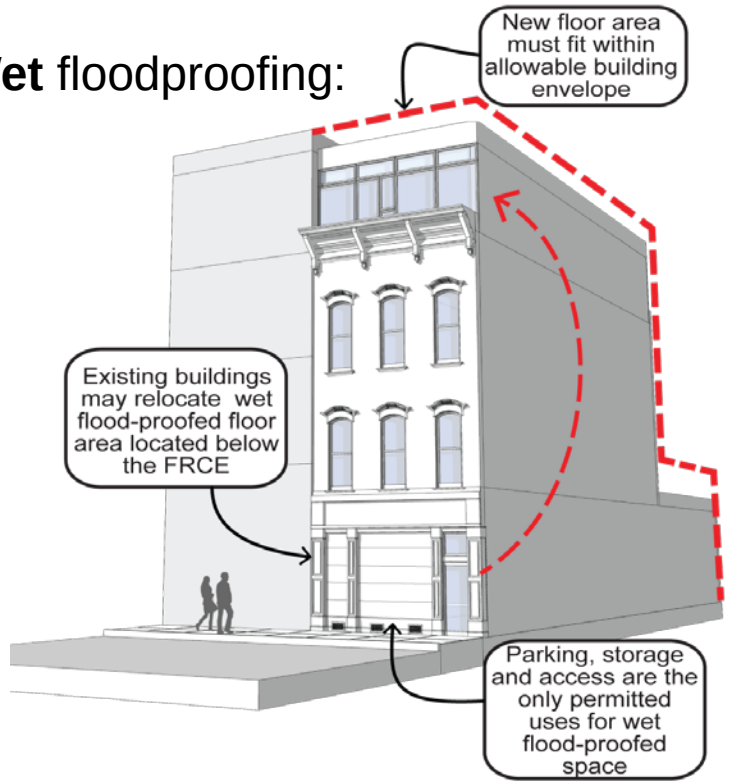



# Floor Area

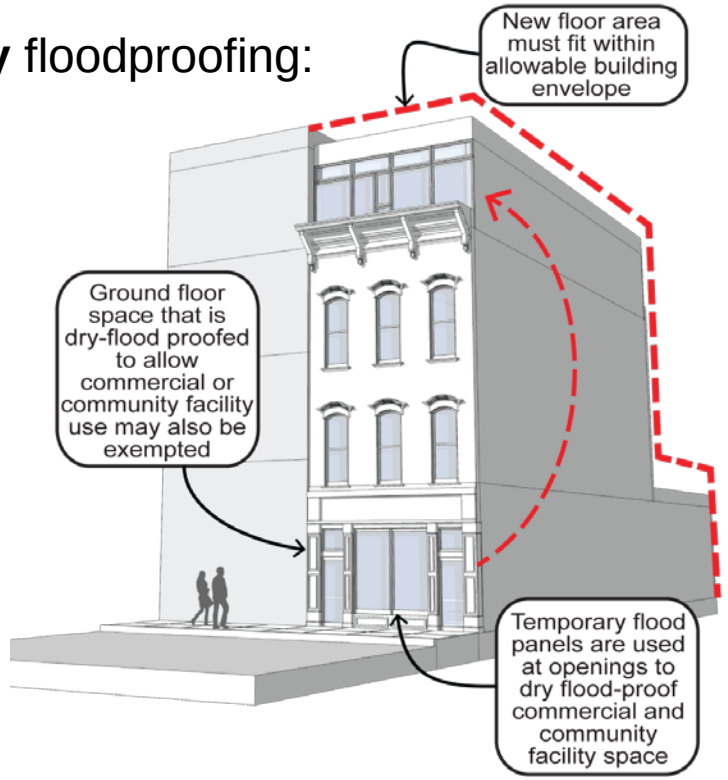
**To incentivize the retrofitting of existing buildings, the 2013 Flood Text allowed any floodproofed space to be exempted from floor area**

- 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

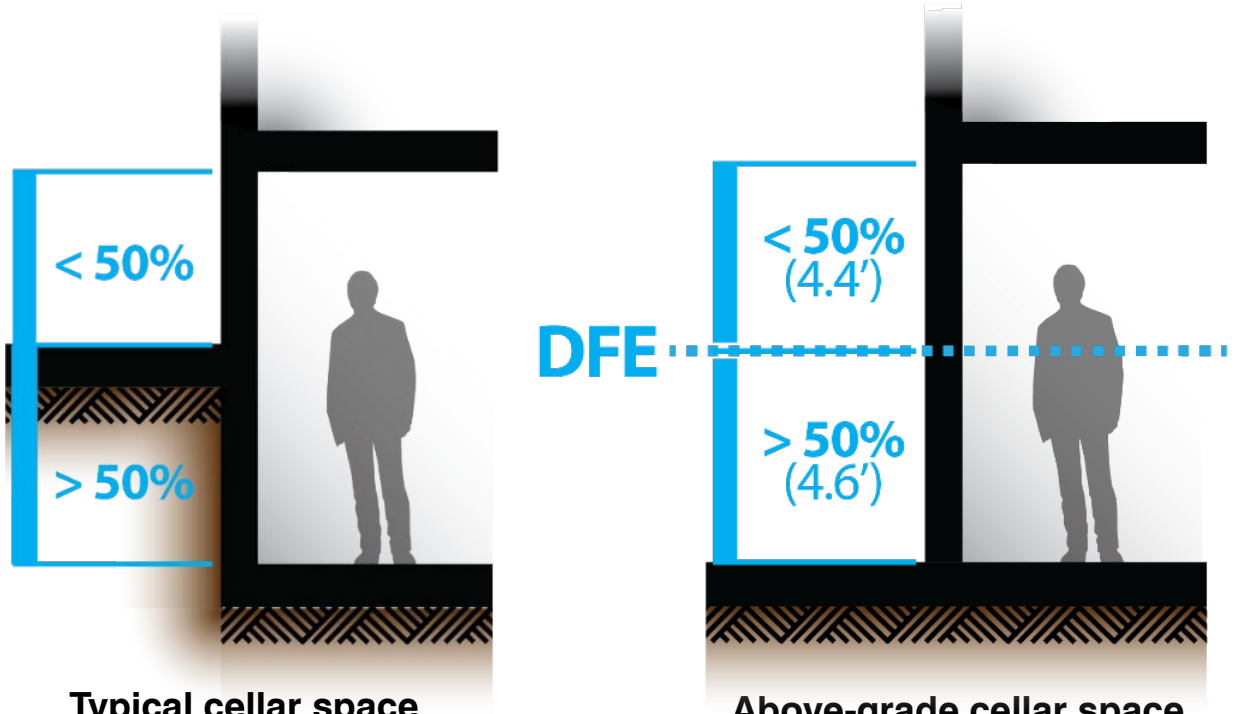
**ISSUE**

- 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)

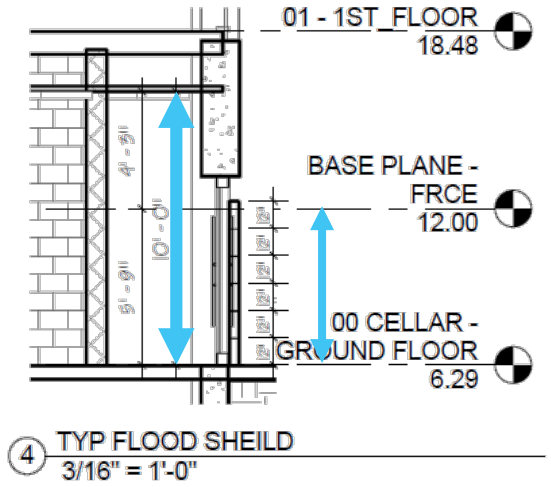
**Above-grade cellar space**
(In flood zones where DFE > 4.6')

# 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:

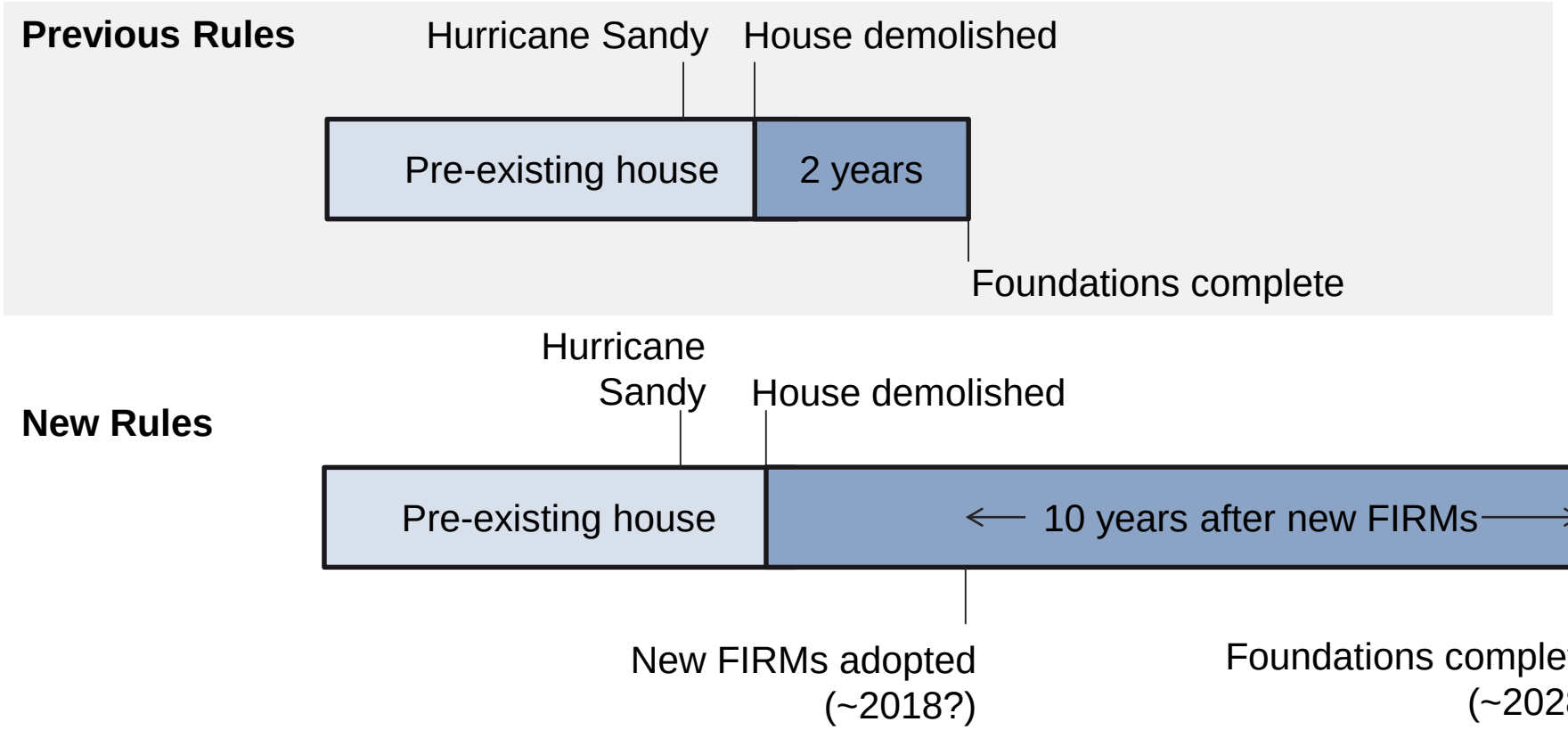
**Deployable floodgate**
(currently allowed only at doors and operable windows)


**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)

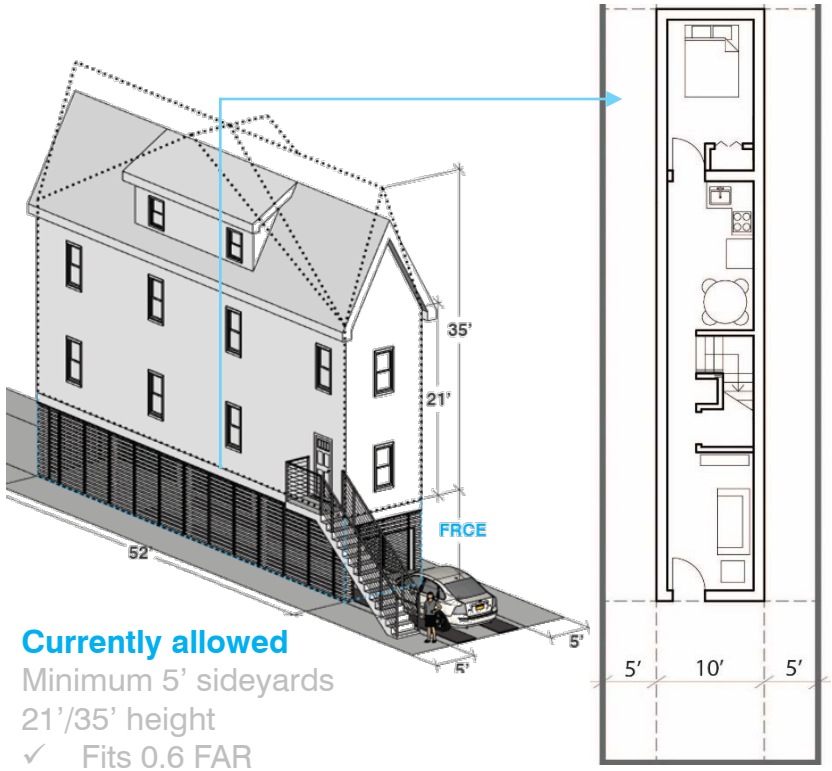
Non-Conforming Single-Two Family Lots

Non-Conforming Multi-family Lots

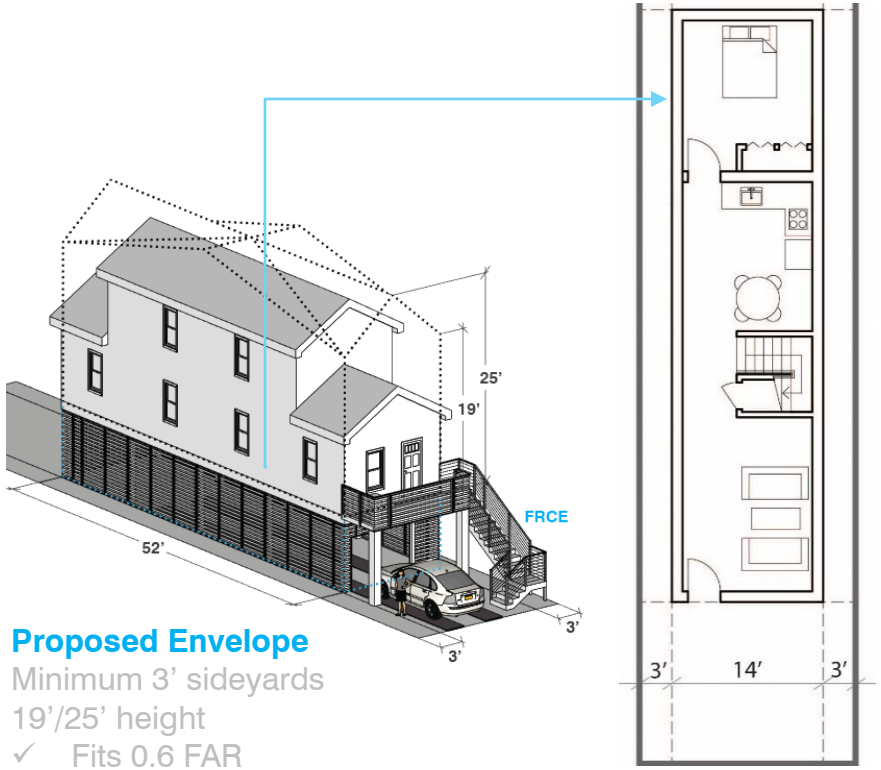
# Cottage Envelope

**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**

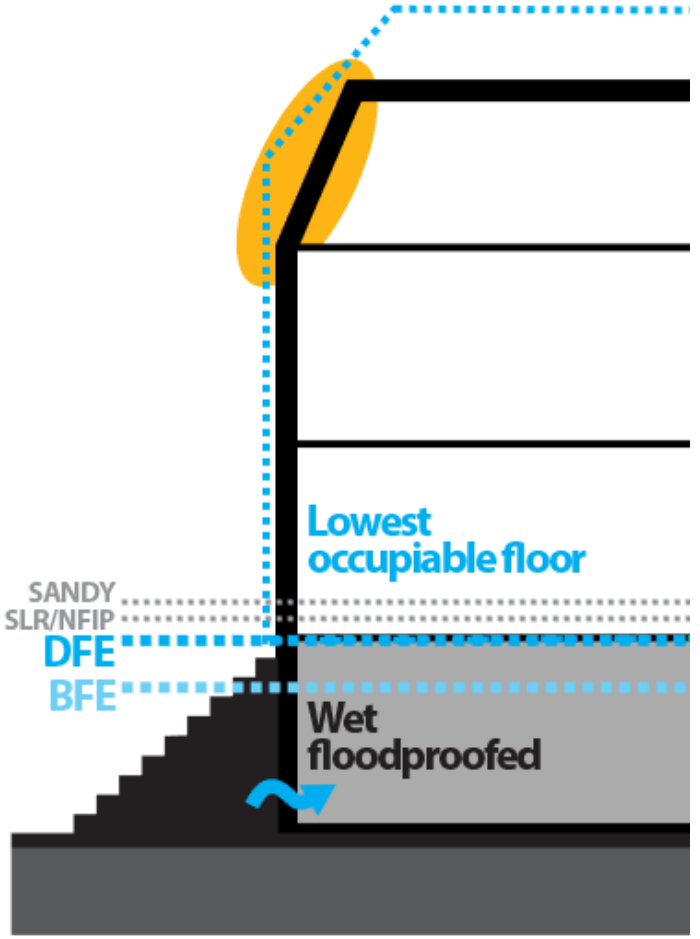
- Not available permanently (past 2022)
- Doesn’t apply outside of “Neighborhood Recovery Areas”
- Doesn’t prevent “candlesticks” on currently vacant lots

# **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'**



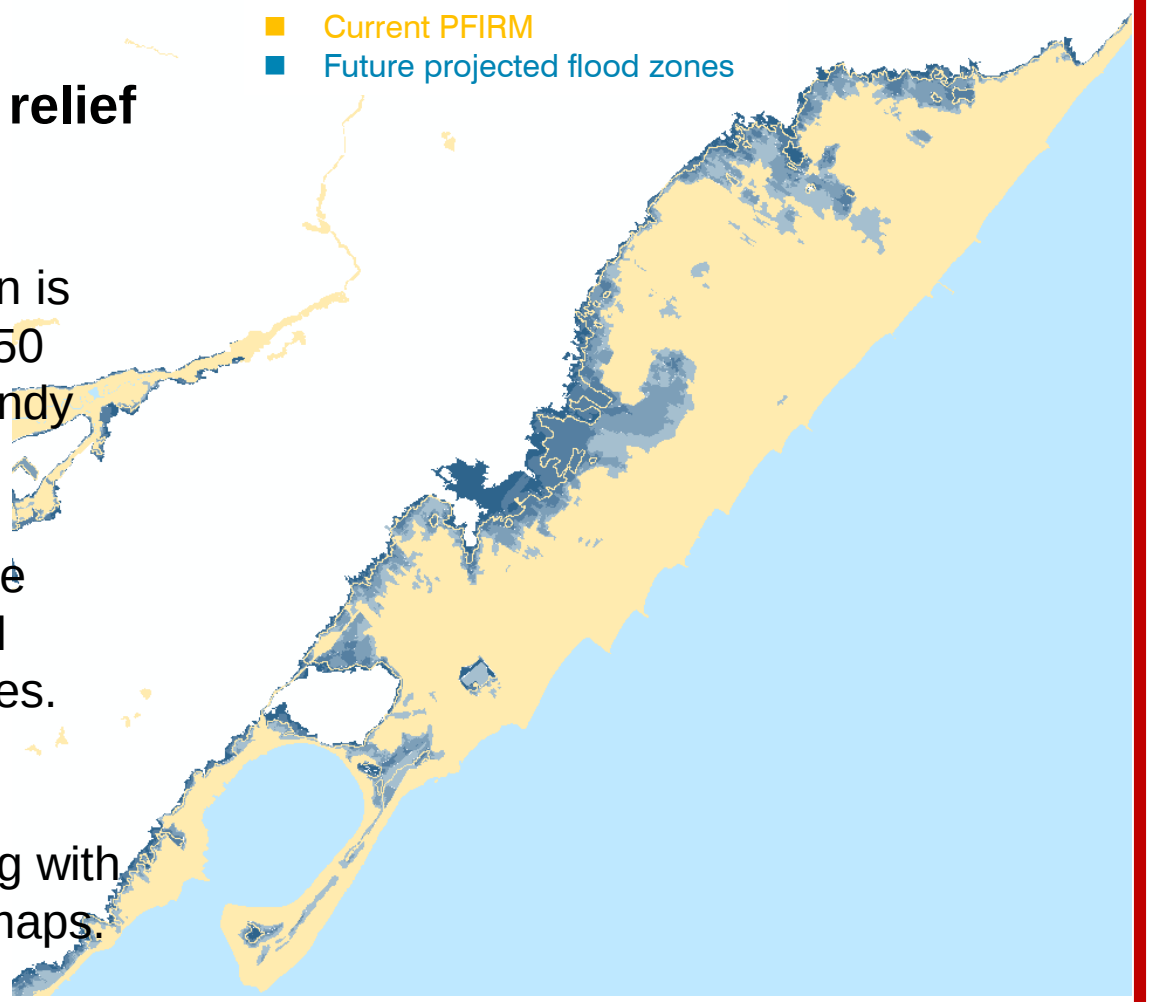

NYC PLANNING

# **Future Flood Risk** - Geography

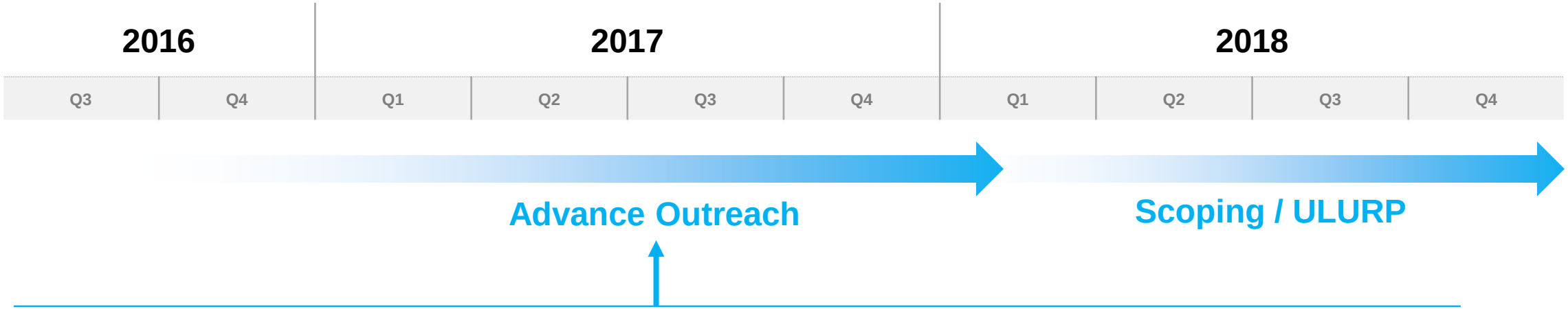
**ISSUE**

**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

# Thank you!

**For more information, and to stay involved, email**

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