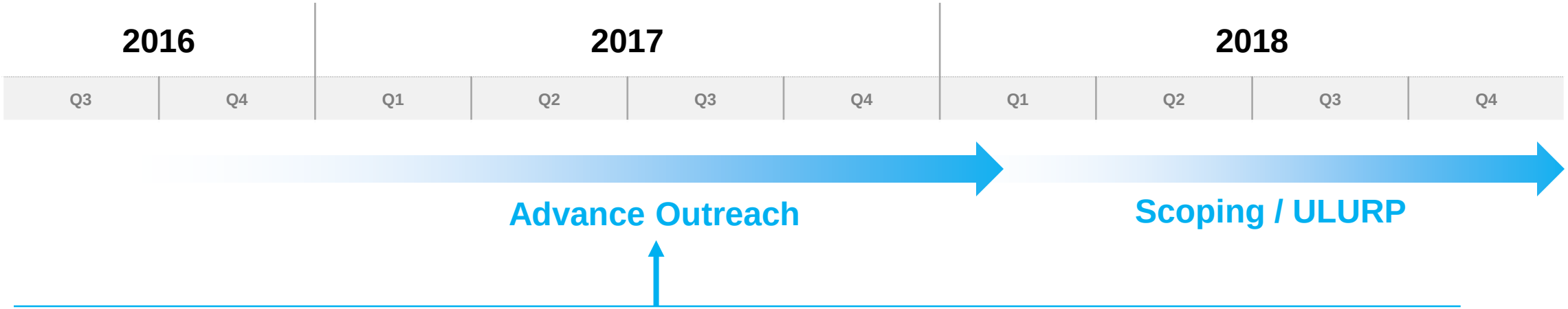
Flood Resilience Text Amendment II

Presentation to the Resilient Red Hook Committee

July 10, 2017

NYC PLANNING

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

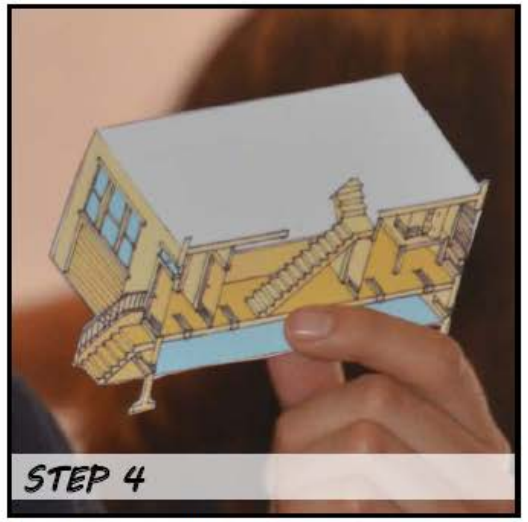
*Schedule is tentative and subject to change

RETI Center Workshop - June 17, 2017

Pick a building in your neighborhood. It can be the place you live, work or are interested in!

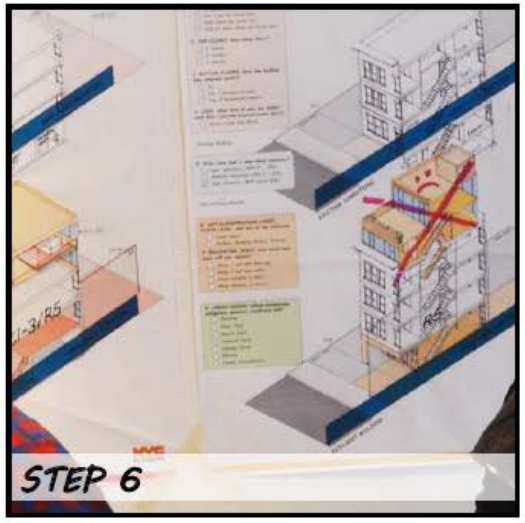
Build the existing conditions of your building with available cut-out cards (black and white).

Place your flood elevation (low, medium or high) above existing building and check your risk!



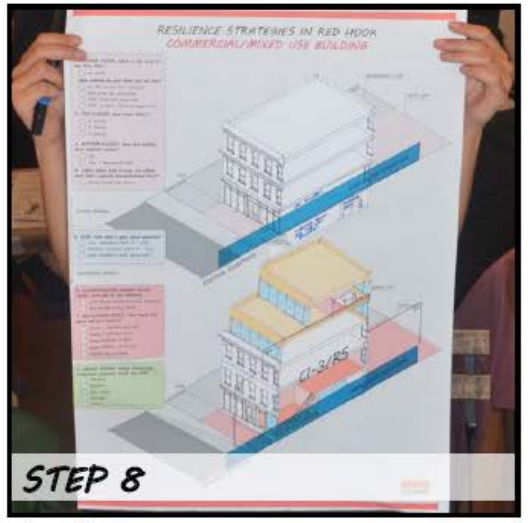
Retrofit your building to become resilient by using available cards (colored).

Add the zoning envelope that reflects your neighborhood's zoning above the flood level.



Check if there are any zoning conflicts. Does the retrofitted building fit within the envelope?

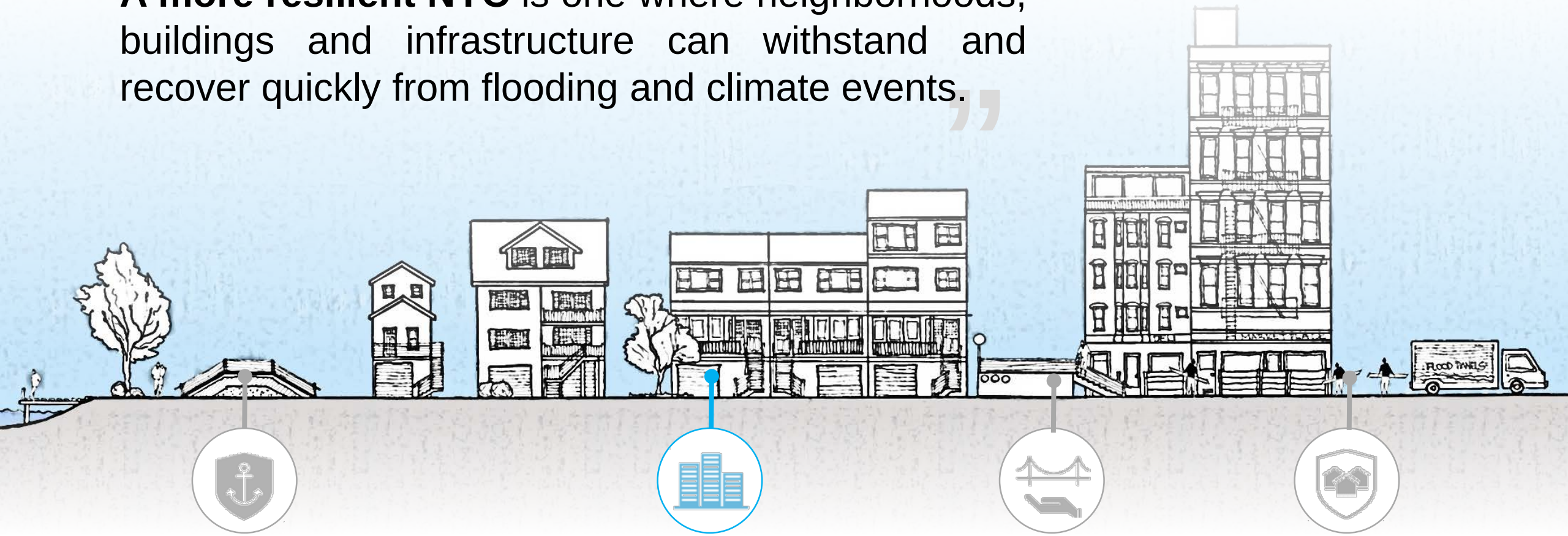
Add your building to the wall and imagine how your neighborhood could look like!



What do you think about the results? Add a post-it with your thoughts on the wall!

#ONENYC

"**A more resilient NYC** is one where neighborhoods, buildings and infrastructure can withstand and recover quickly from flooding and climate events."



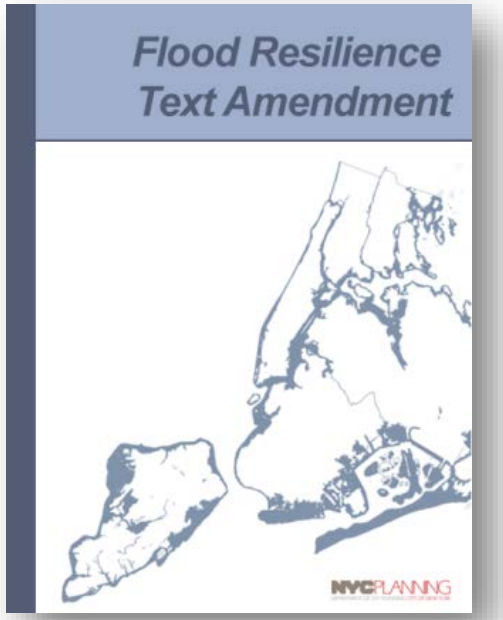
Coastal defenses
are strengthened as first line of defense against flooding and sea level rise

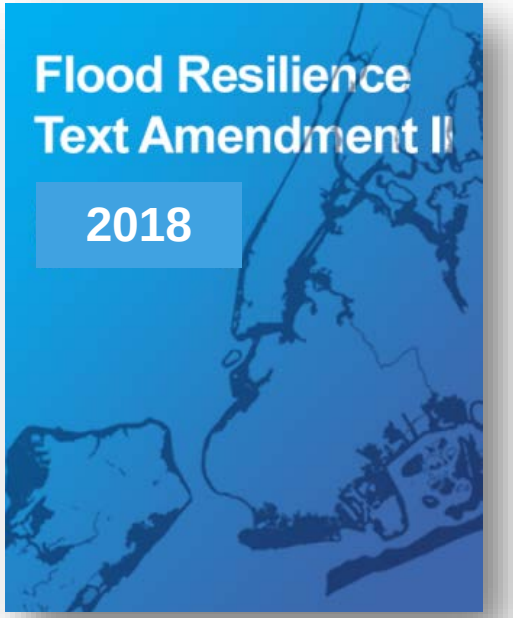
Buildings
are designed to withstand and recover from flooding

Infrastructure
is protected from climate hazards

Residents and businesses
are prepared

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

FEMA Flood Map
Citywide Flood Risk

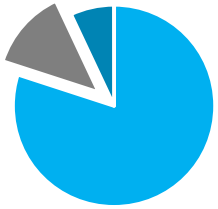
NYC's flood risk is high.

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

100 Year Floodplain
FEMA 2015 PFIRM

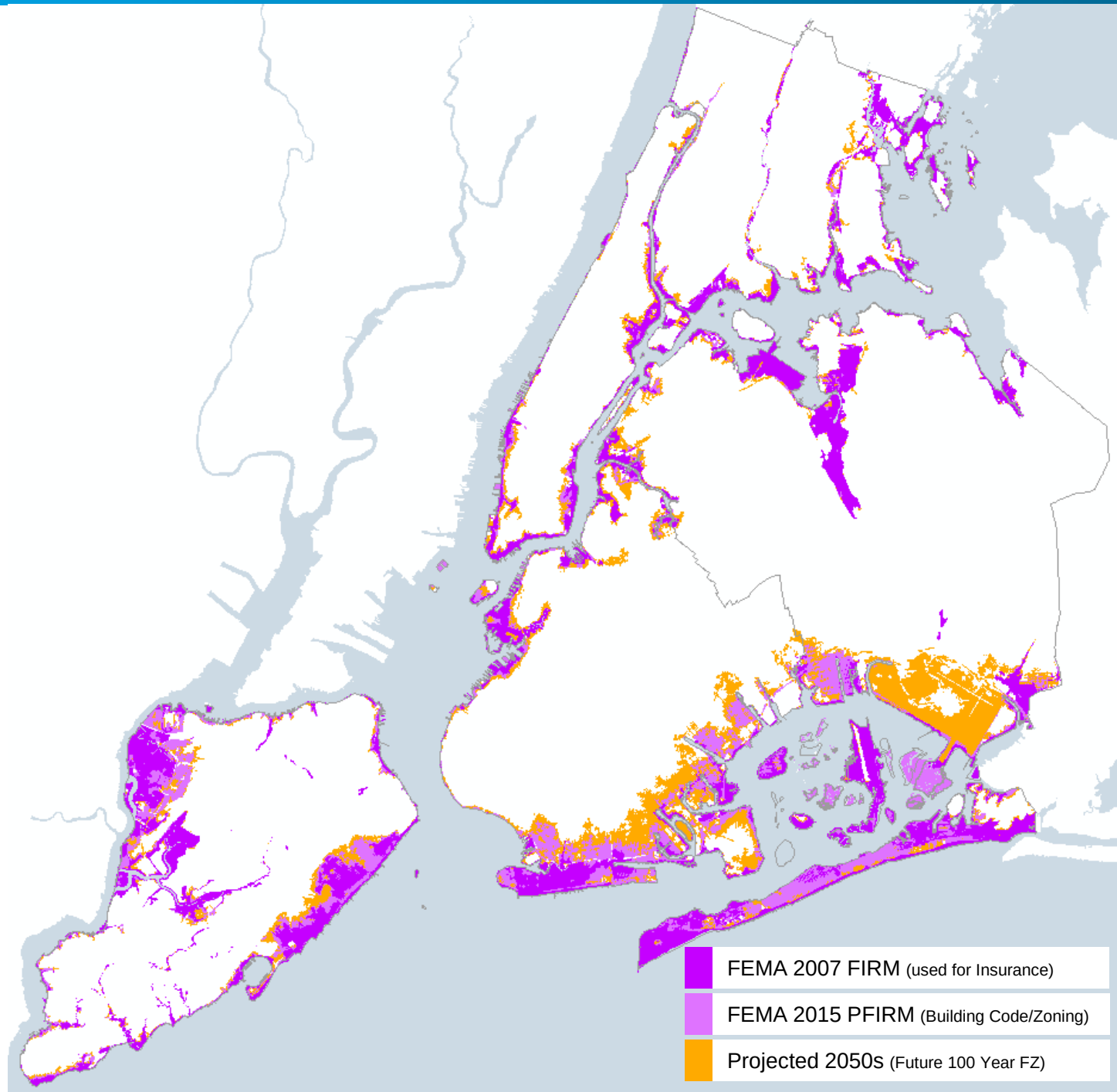
Population: **400,000**
Buildings: **71,500**

50 of 59 Community Boards
45 of 51 Council Districts



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

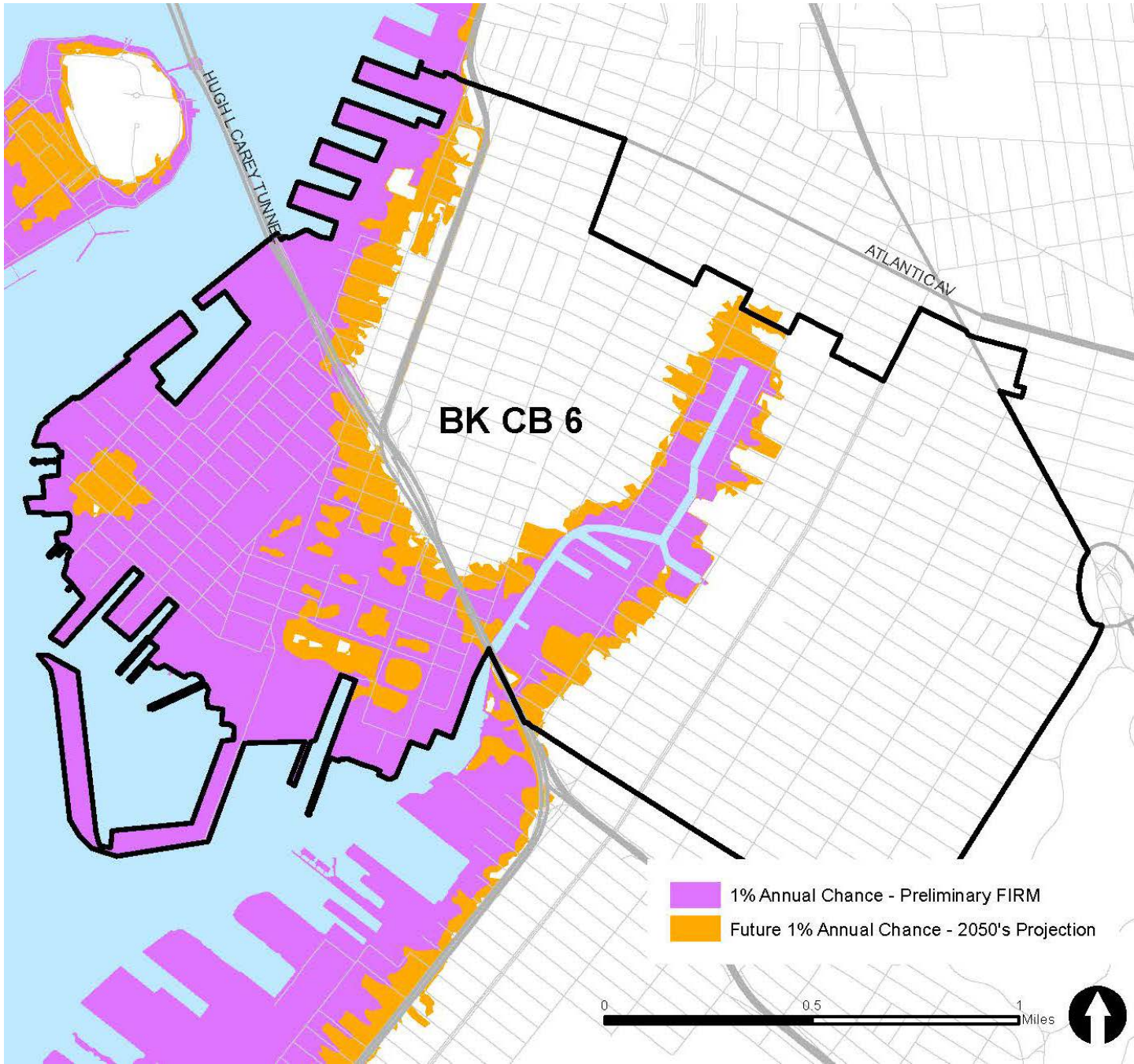
Residential Units:
30% 1-4 units
70% 5+ units



NYC PLANNING

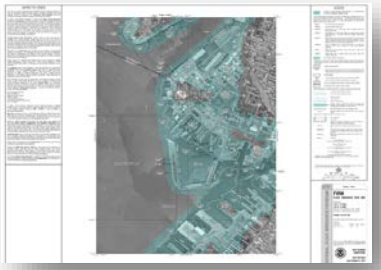
Future Flood Risk
Flood Risk in BK CB 6

	2015 PFIRMS	2050's Projected	
R units in floodplain	6,067	8,856	↑ 46%
Buildings in floodplain	1,308	2,096	↑ 60%



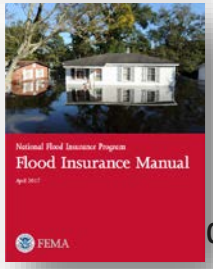
How are buildings in the floodplain regulated?

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

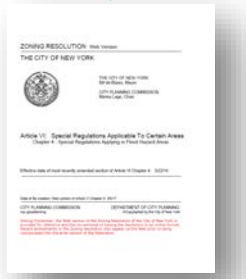
Construction Standards (ASCE 24)

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

NYC PLANNING

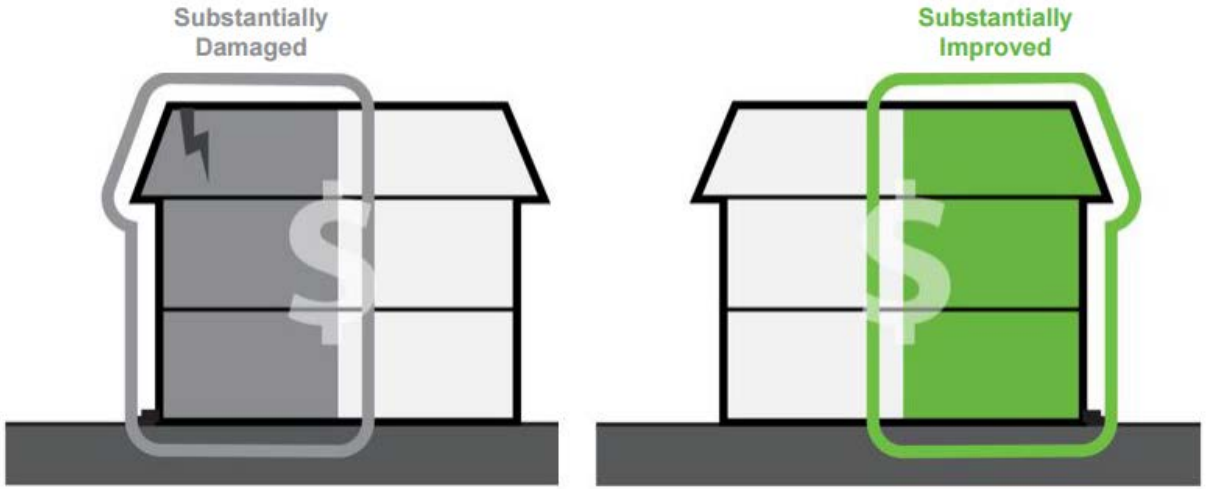
Flood resilient construction
Required by DOB

Building Code (DOB)

Requires new buildings and substantial improvements to meet FEMA standards

Required
for all new buildings

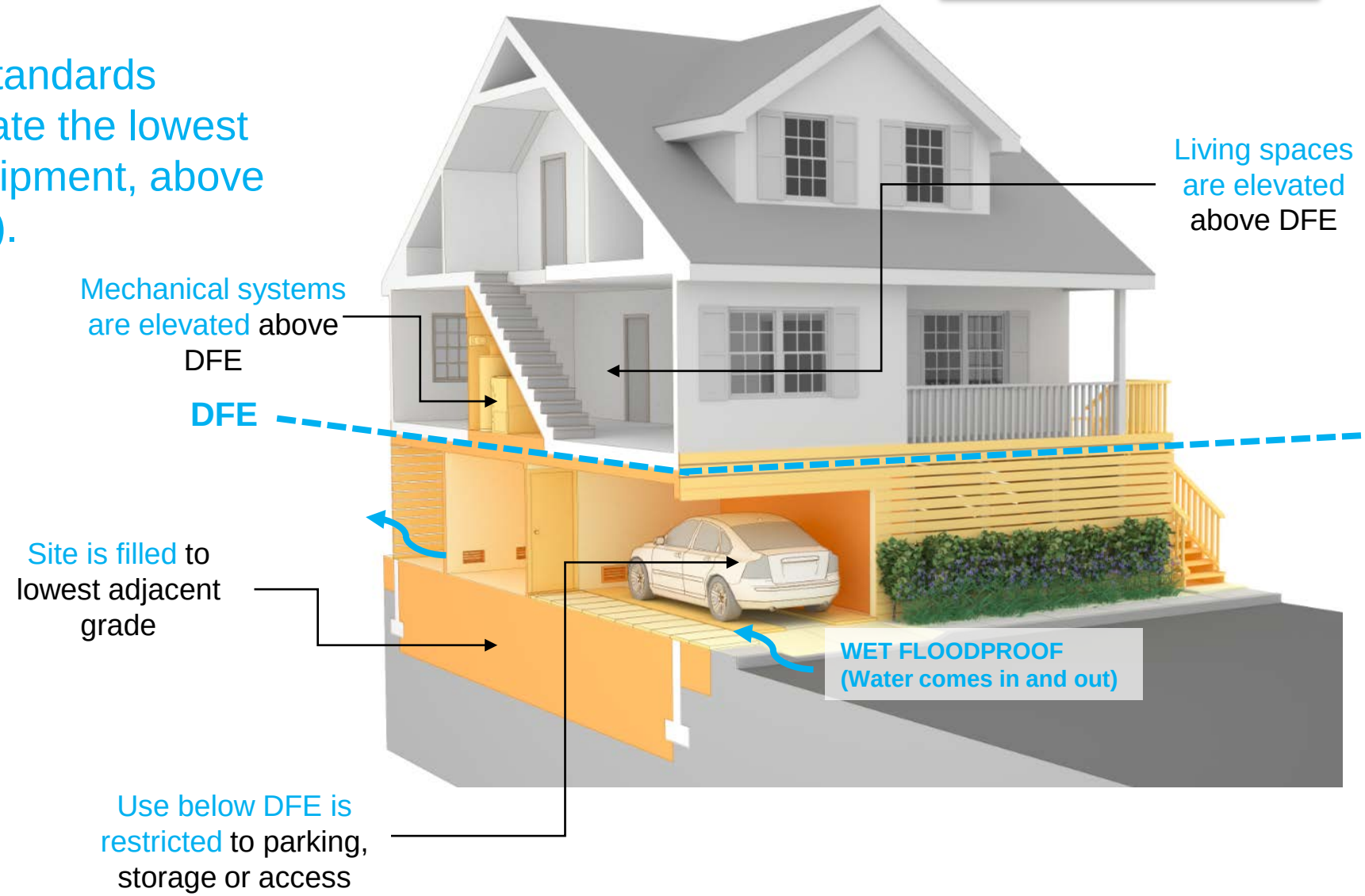
Not required for existing buildings
(unless substantially damaged or improved)



Flood-resistant construction
Required by DOB

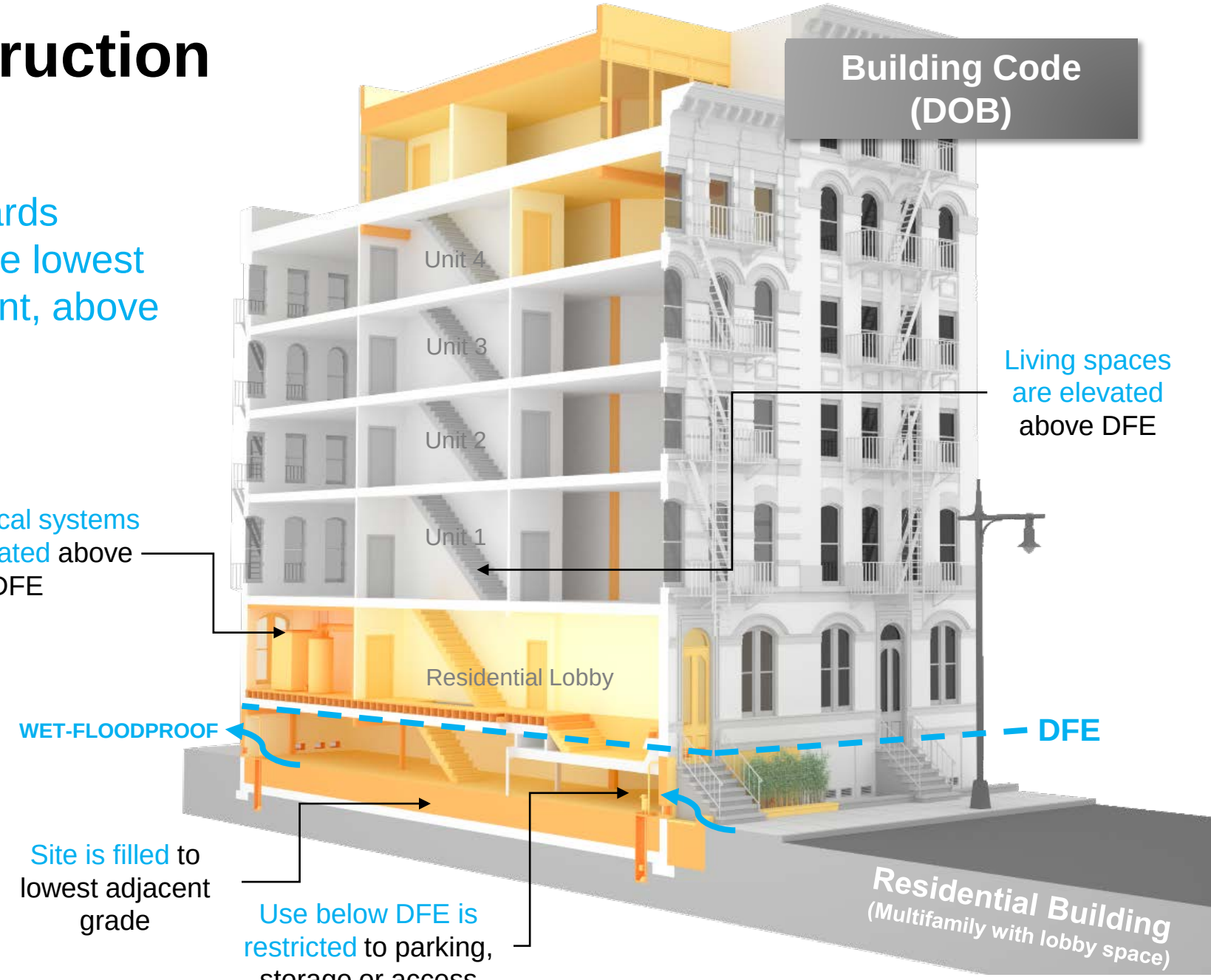
Building Code (DOB)

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



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).



Flood resilient construction
Examples of Residential Buildings

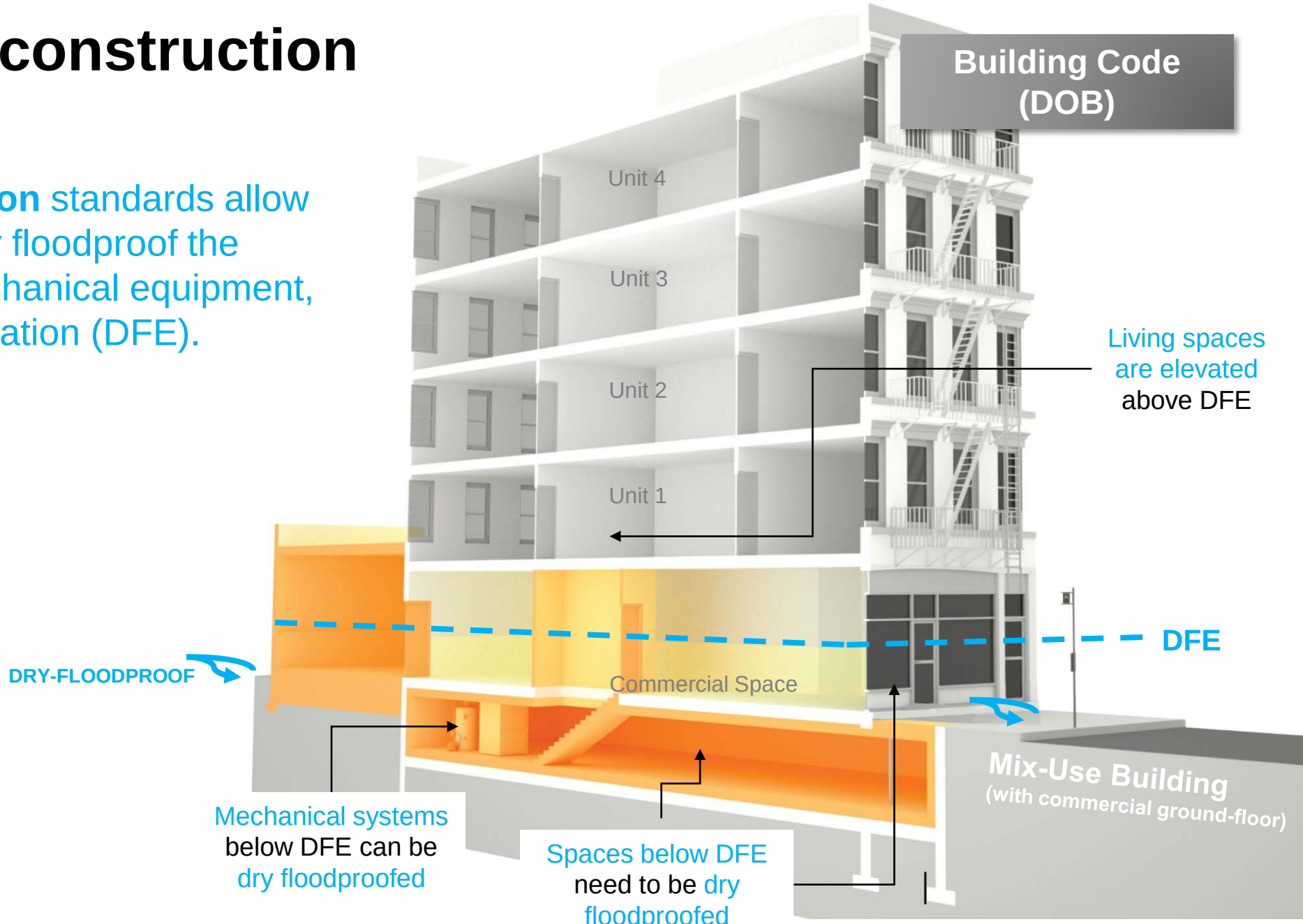
Building Code (DOB)

Residential Building
with access at grade (wet-floodproofed)

Residential Building
Elevated to DFE – 3’ above grade

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).



Flood resilient construction
Dry-floodproofing techniques

Building Code (DOB)

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

Aquarium Glass
('aquarium-grade' glass for glazing or curtain-wall systems)

Flood resilient construction
Examples of Commercial Buildings

Building Code (DOB)

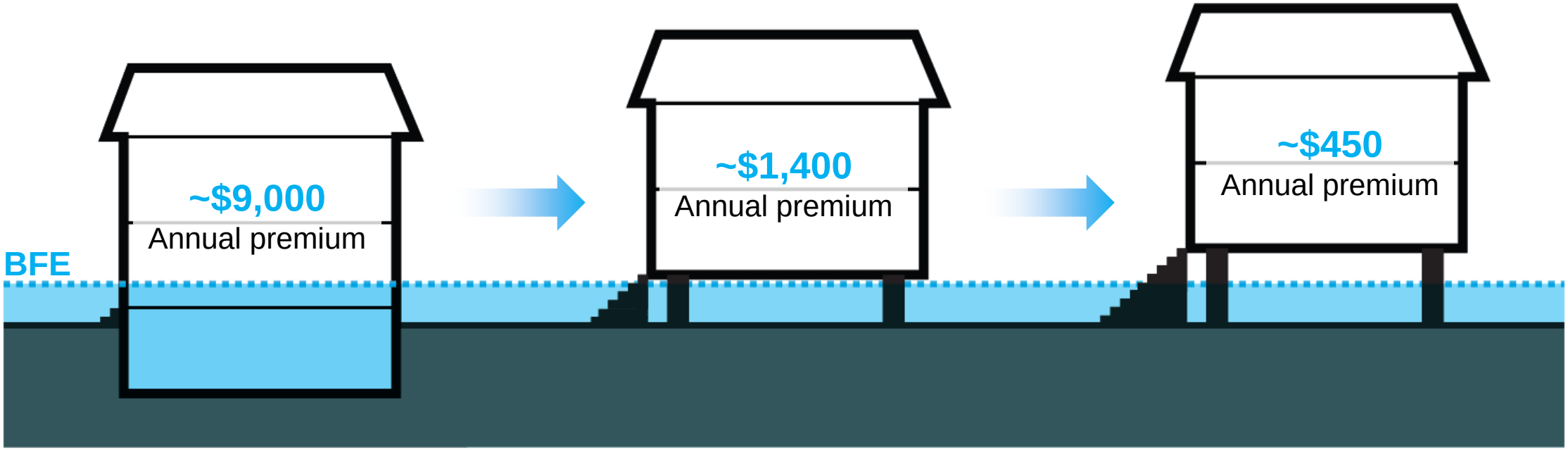
Commercial Ground Floor
Existing Building with access at grade (deployable flood shields)

Commercial Ground Floor
Elevated to DFE – 2.5’

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

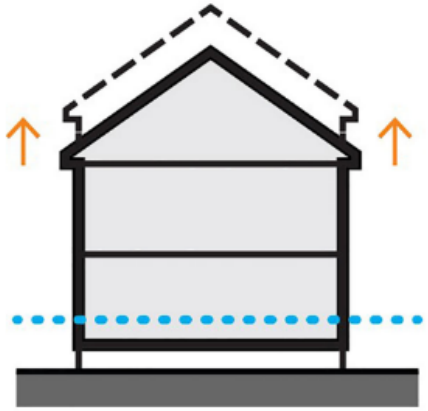
2013 Citywide Flood Text

Amended zoning in six key areas

Zoning Resolution (DCP)

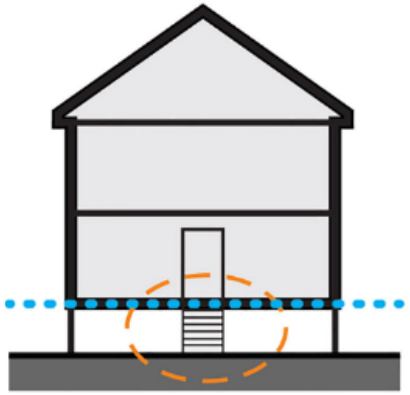
1 Height

Measured from flood elevation



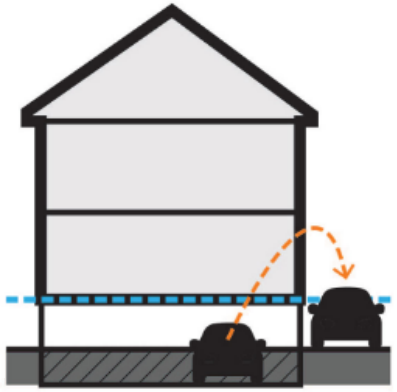
2 Access

Flexibility for stairs, ramps, lifts



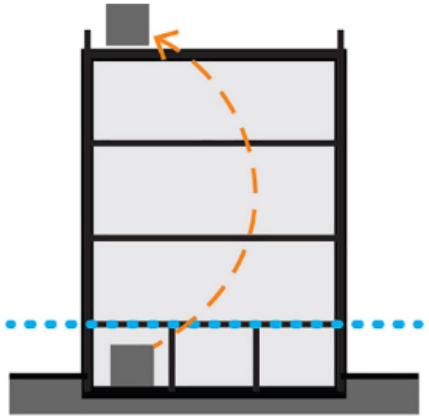
3 Parking

Flexibility to relocate parking



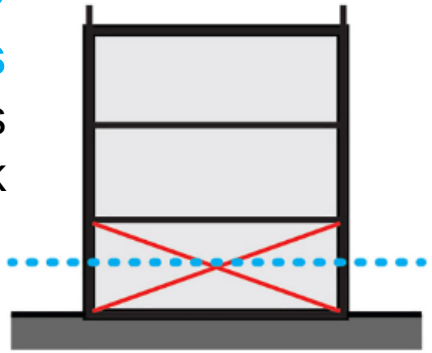
4 Systems

Flexibility to relocate/elevate



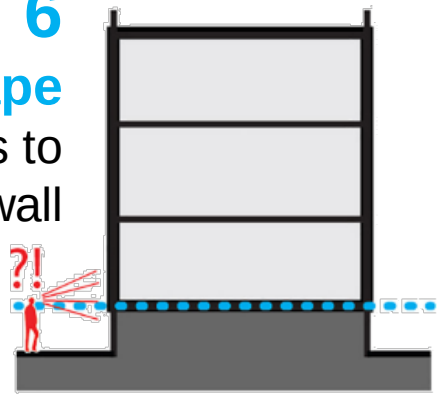
5 Ground Floors

Account for costs of new flood risk



6 Streetscape

Require features to mitigate blank wall



Lessons learned since 2013

Zoning Resolution (DCP)

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

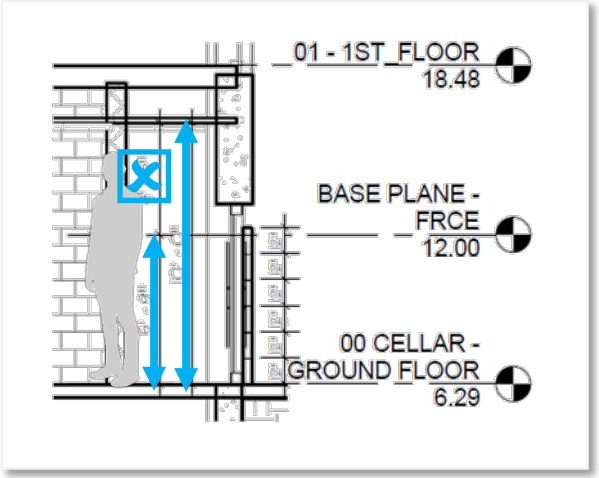
NB	Alt-1	Alt-2
1,021	**1,090**	**15,573**
All 1,021 are Appendix G compliant	**Only 10% (113) are Appendix G compliant**	**Only 3% (532) are Appendix G compliant**
149 (14%) approved 451 (44%) underway 179 (17%) complete	36 (31%) approved 24 (21%) underway 0 (0%) complete	245 (46%) approved 122 (23%)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

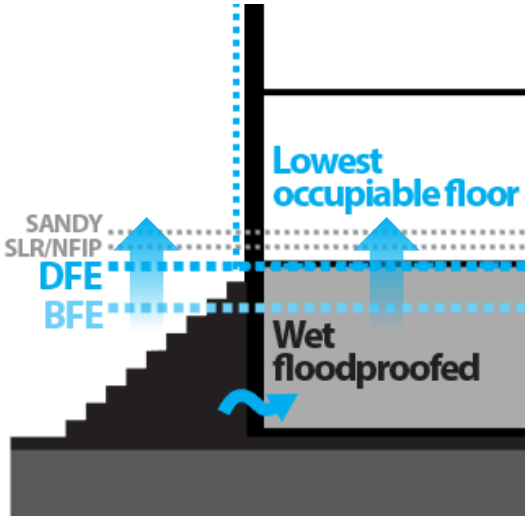
NYC PLANNING

Flood Text II

Need for a new citywide text amendment:

Zoning Resolution (DCP)





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

4

Encourage good resilient construction that enhances the character of coastal communities

DCP's approach to future zoning + land use strategies

Zoning Resolution (DCP)

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.

Flood risk and local planning considerations

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

NYC PLANNING

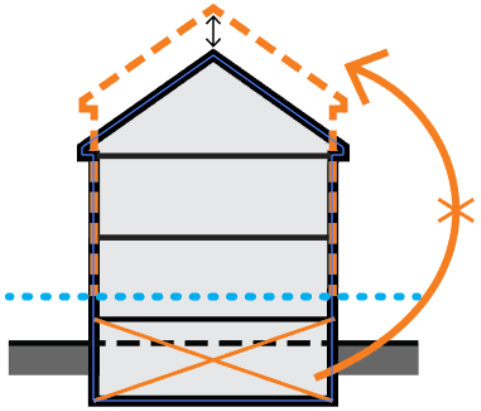
Flood Text II

Fix and improve provisions based on lessons learned

Zoning Resolution (DCP)

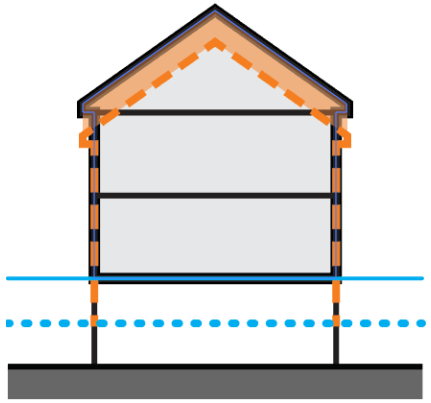
1 Height

Homeowners may face the loss of subgrade spaces when retrofitting



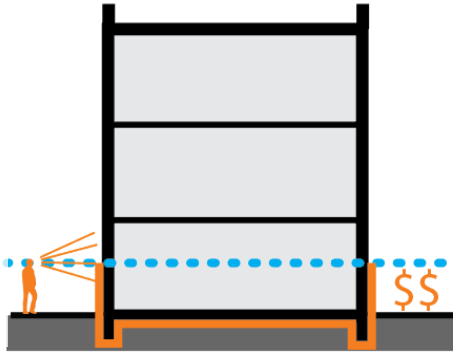
2 Height

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



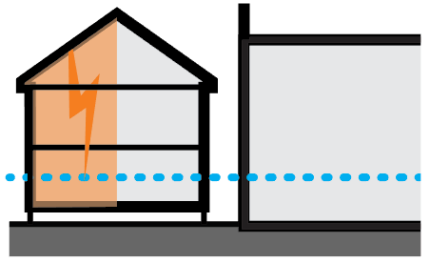
3 Ground Floors

Current incentives to keep active ground floors may not be enough



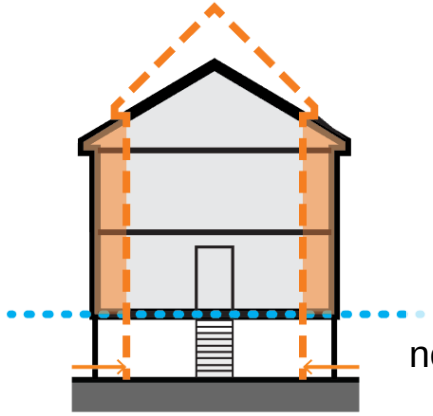
4 Homes in M Districts

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



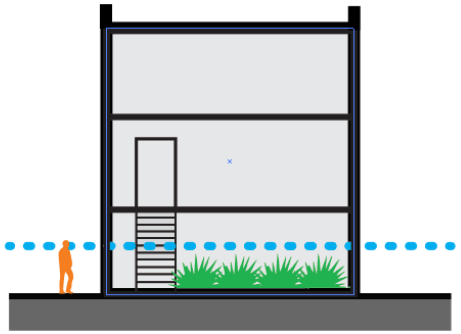
5 Old Homes in Small Lots

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

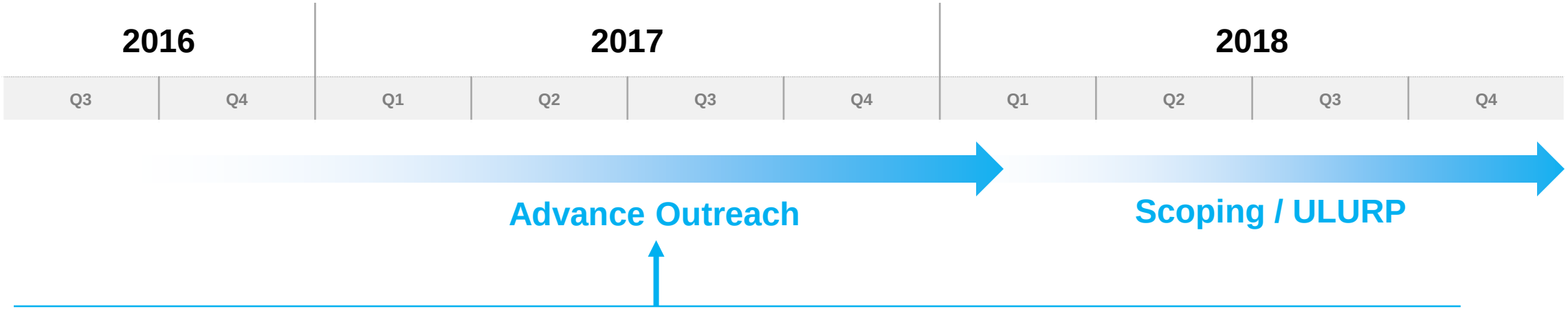


6 Improve Streetscape

Mitigate the effects of elevated buildings on neighborhood character



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

resilientneighborhoods@planning.nyc.gov

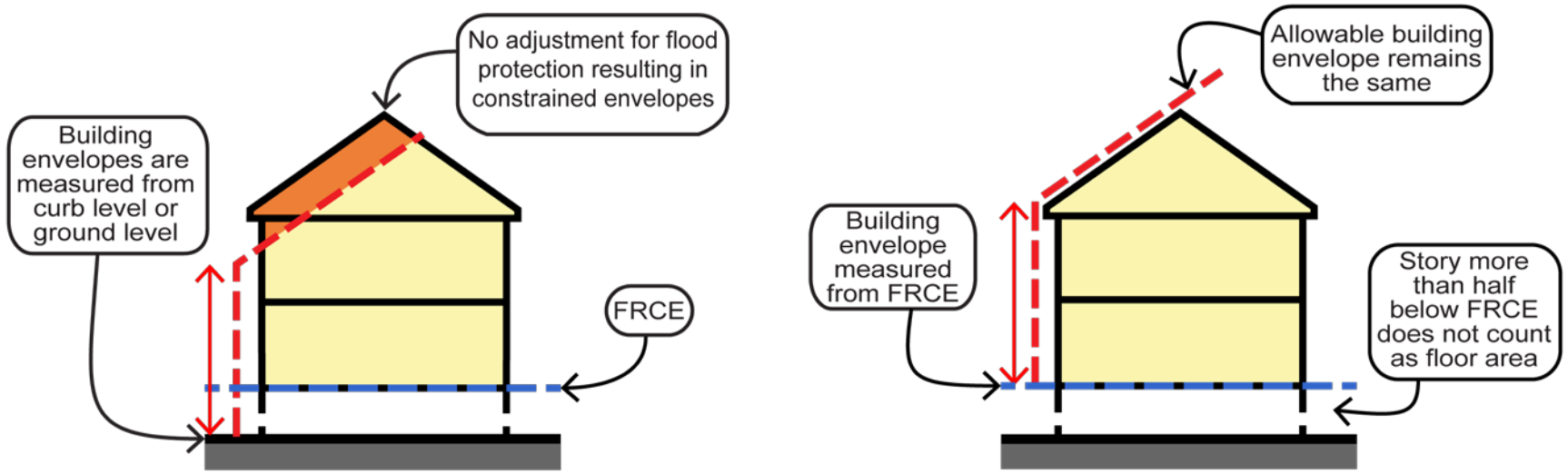
Nilus Klingel
nklingel@planning.nyc.gov
212-720-3268

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

Appendix

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)

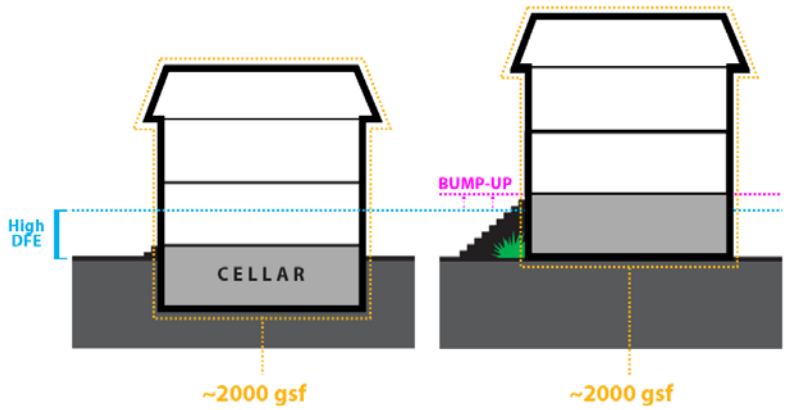


Fig 1. Replacement of 'cellar' story in a high-DFE retrofit

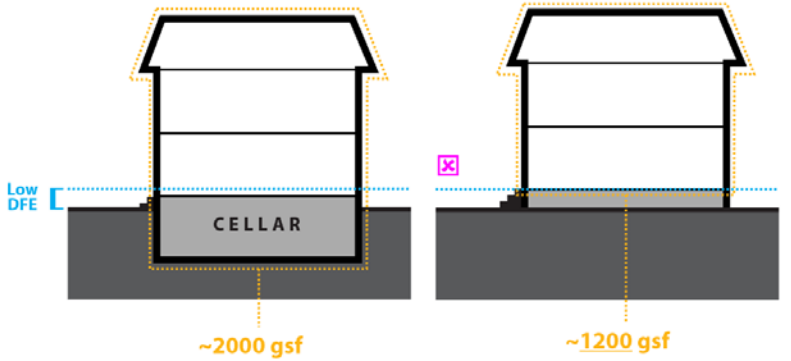


Fig 2. Loss of 33% of home in a low-DFE retrofit

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

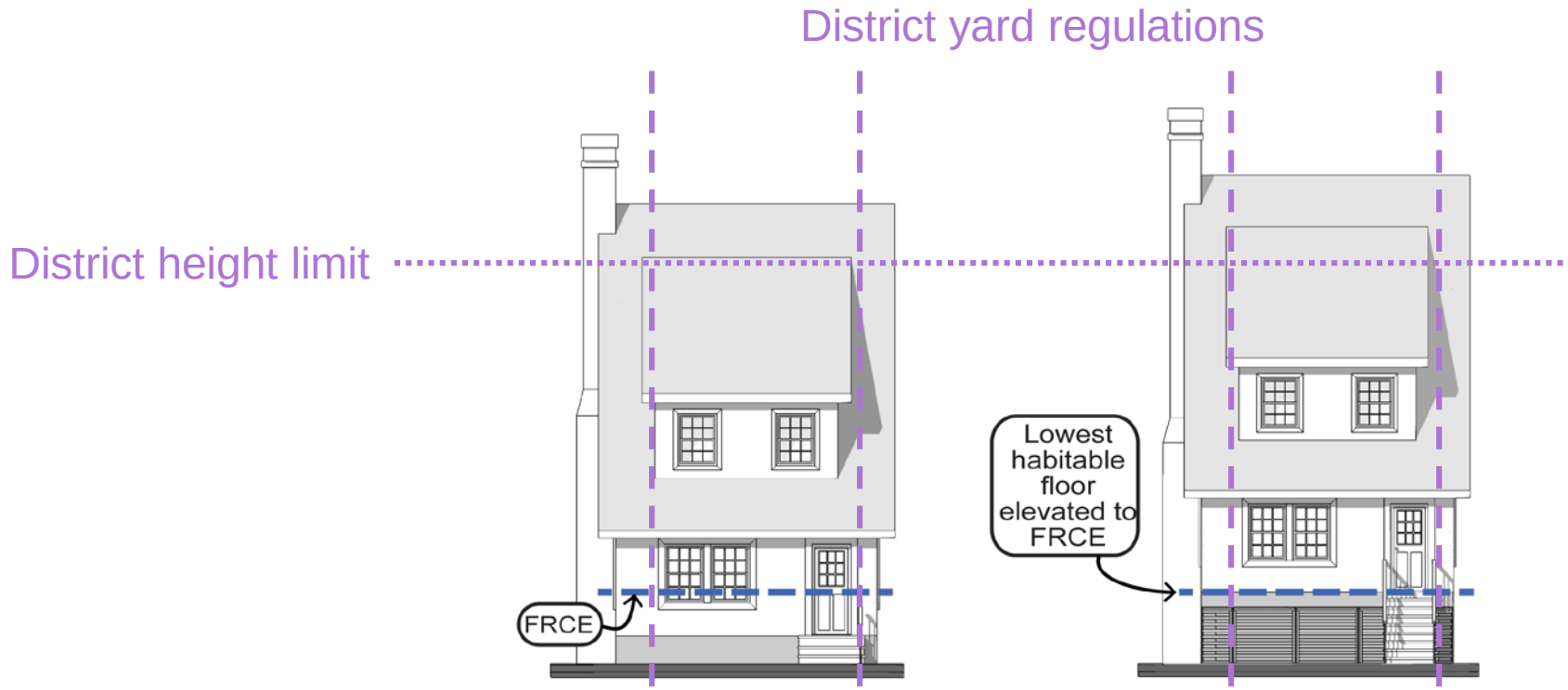
Without
bump-up

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

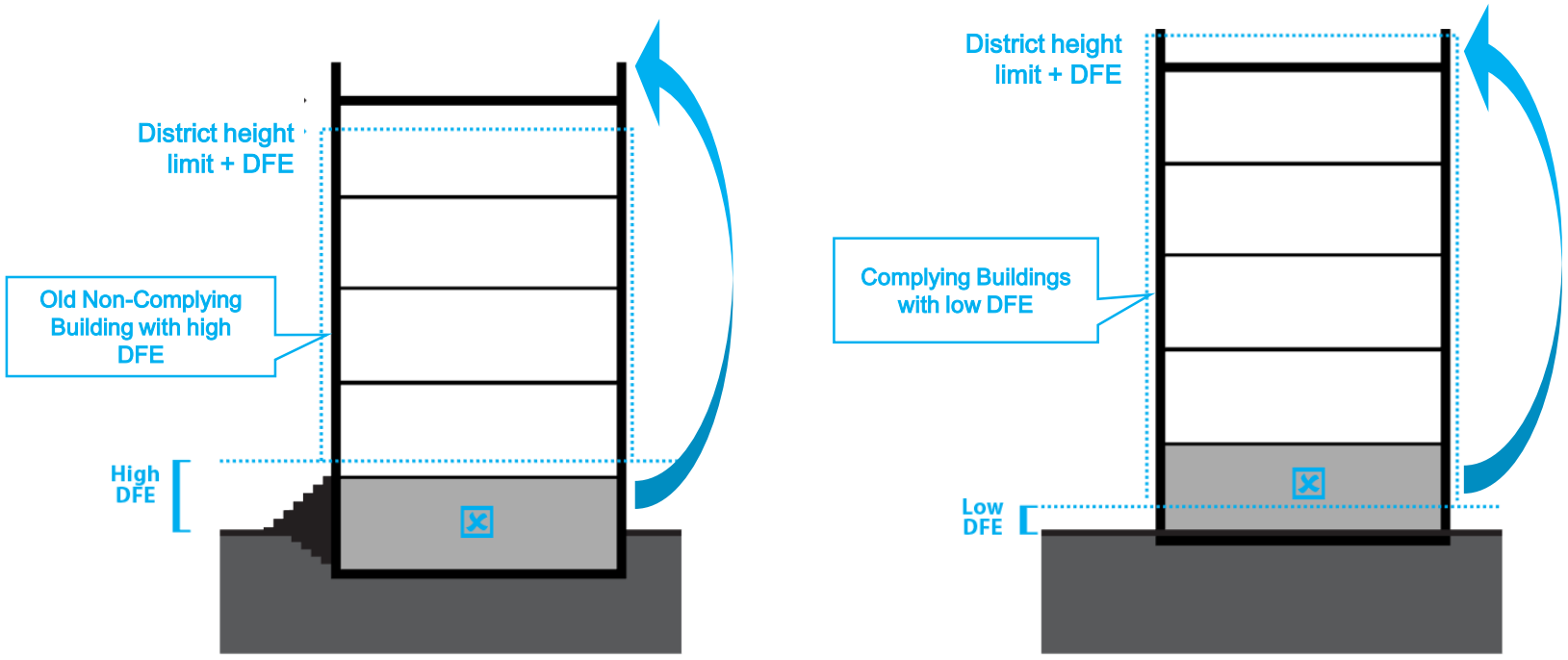
- Doesn't apply to **other building types**
  (3 family homes, larger multi-family buildings, non-residential buildings)
- Doesn't allow the **bump-up to apply**
  (the provisions are mutually exclusive)
- Doesn't allow elevation to any higher level (i.e., BFE+3)
- Doesn't provide a solution for **non-raisable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

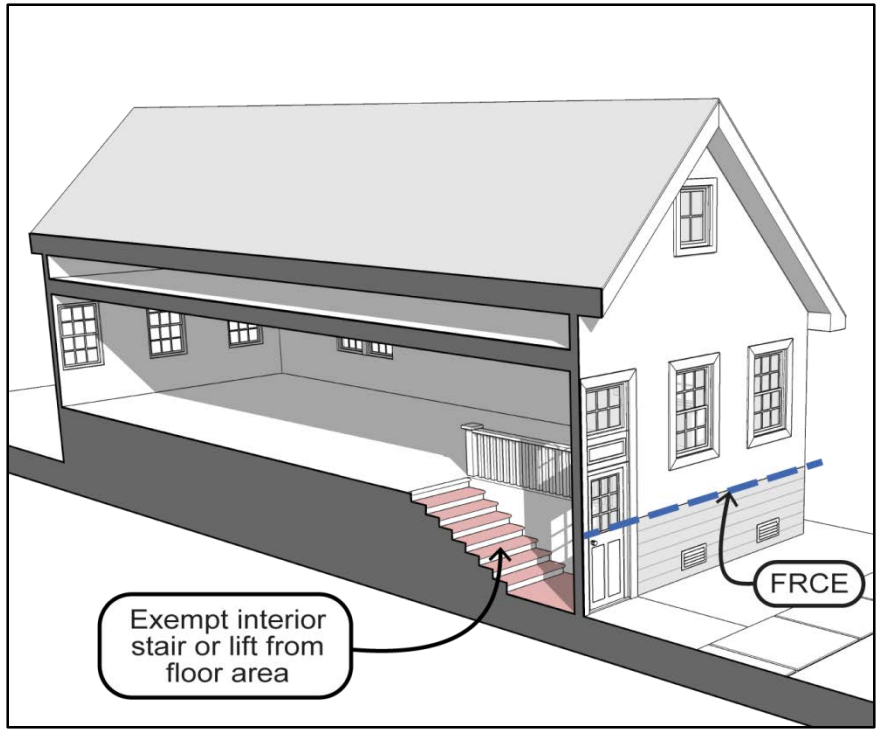
- Doesn't provide a solution for non-raisable building typologies.

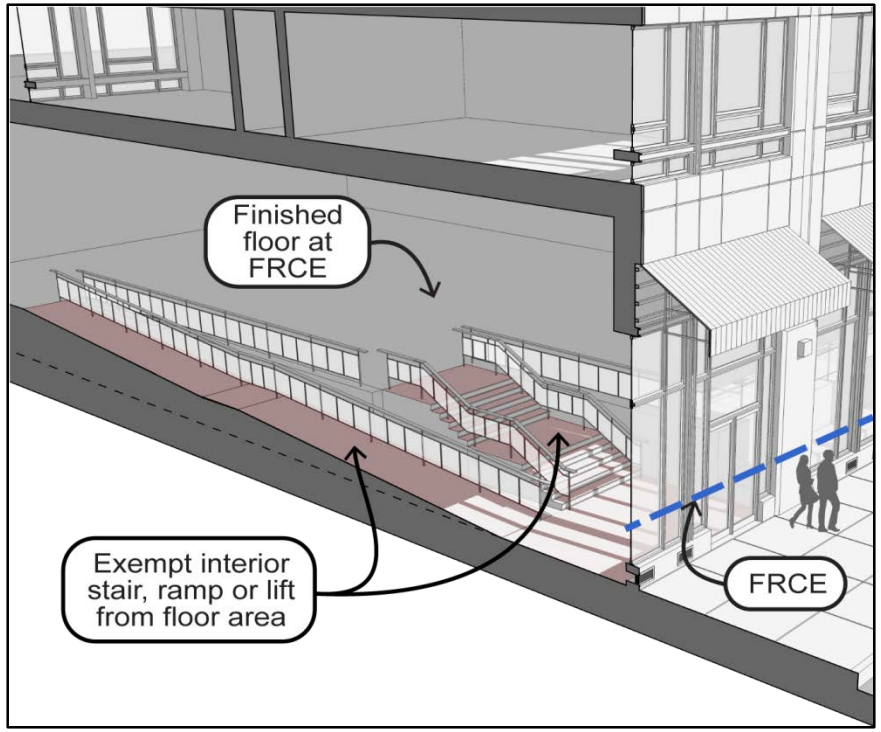


Floor Area

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.



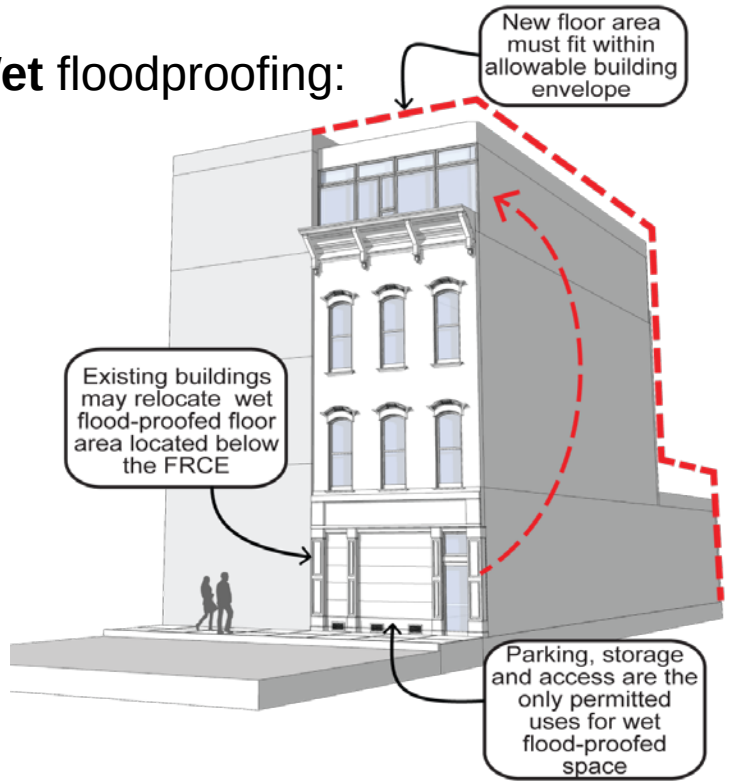


Floor Area

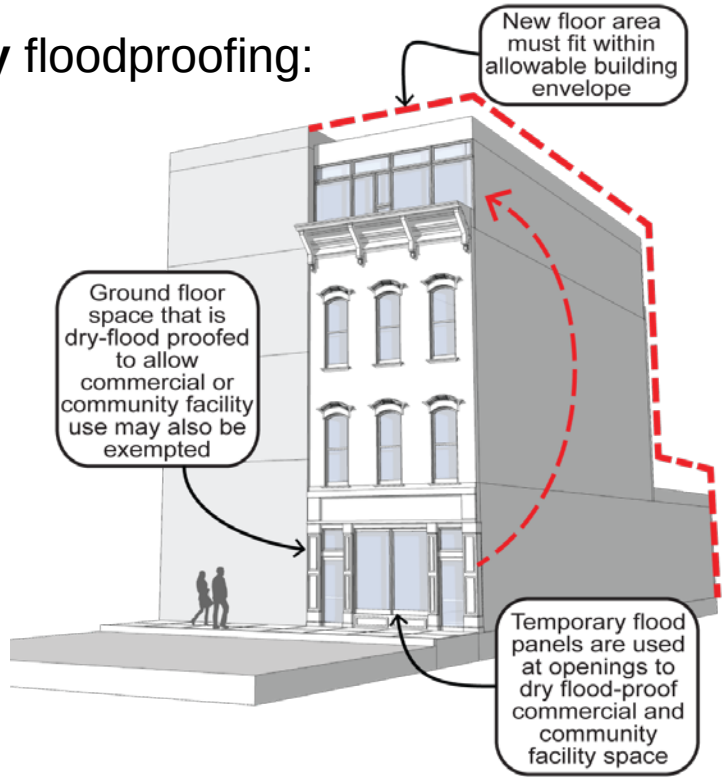
To incentivize the retrofitting of existing buildings, the 2013 Flood Text allowed any floodproofed space to be exempted from floor area

- 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

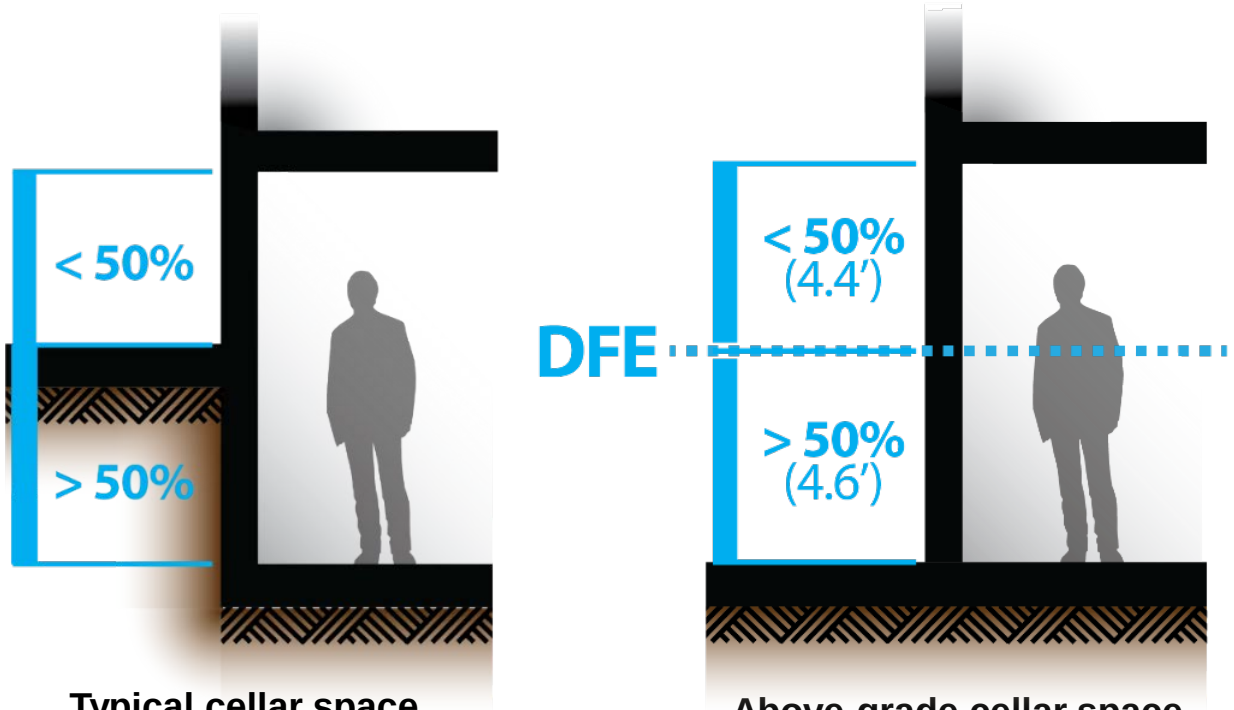
ISSUE

- 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)

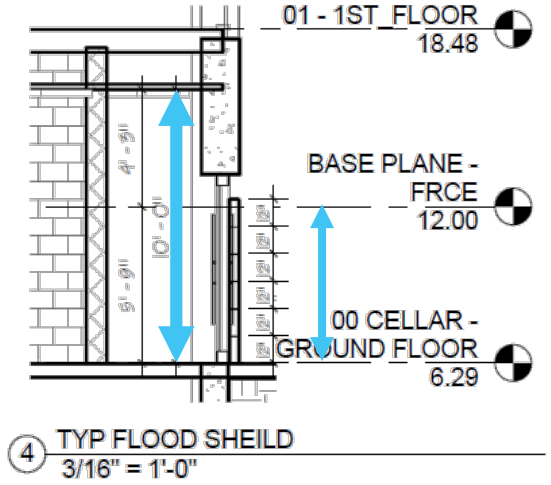
Above-grade cellar space
(In flood zones where DFE > 4.6’)

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:

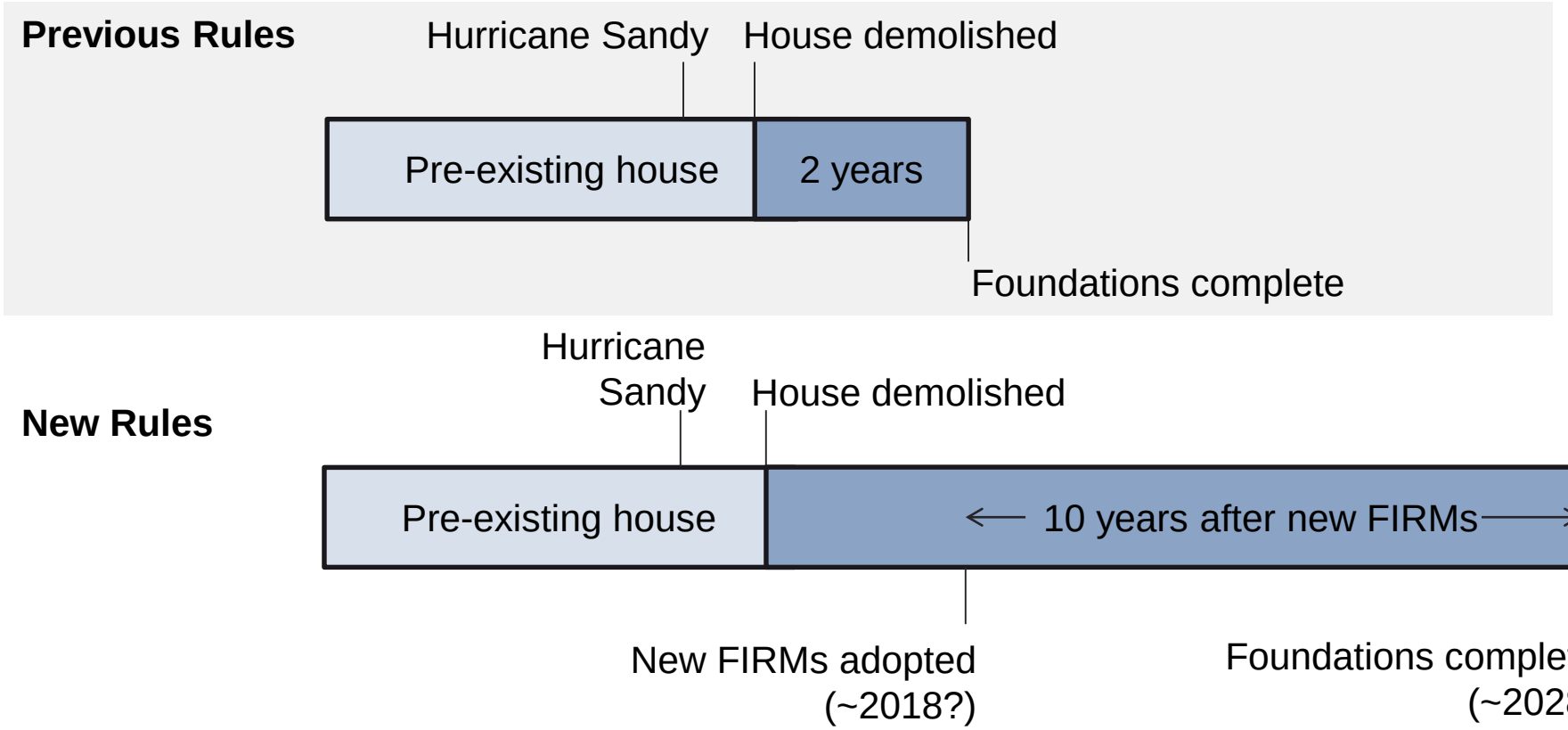
Deployable floodgate
(currently allowed only at doors and operable windows)

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)

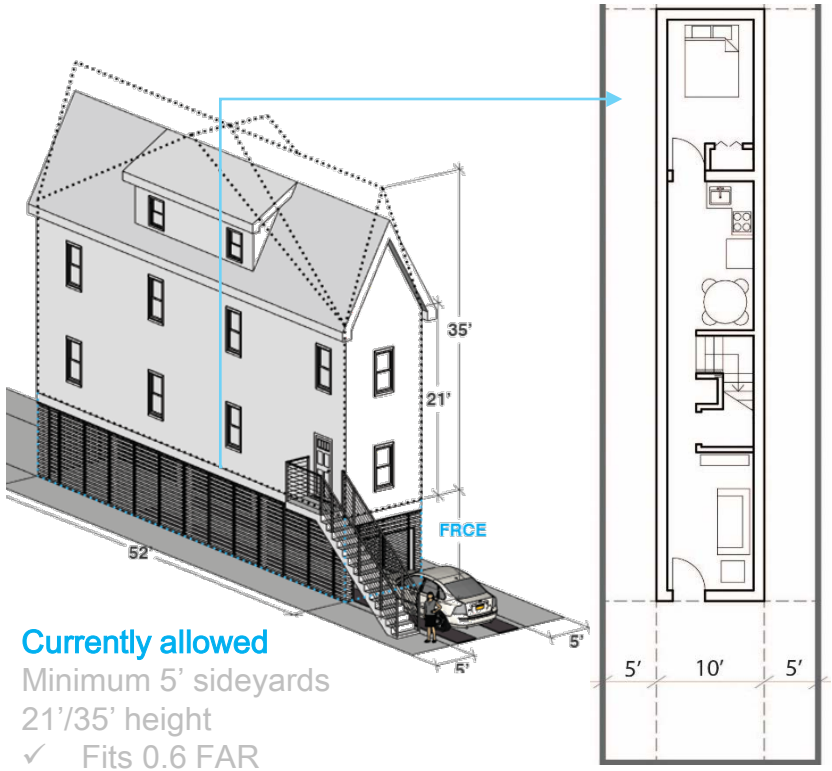
Non-Conforming Single-Two Family Lots

Non-Conforming Multi-family Lots

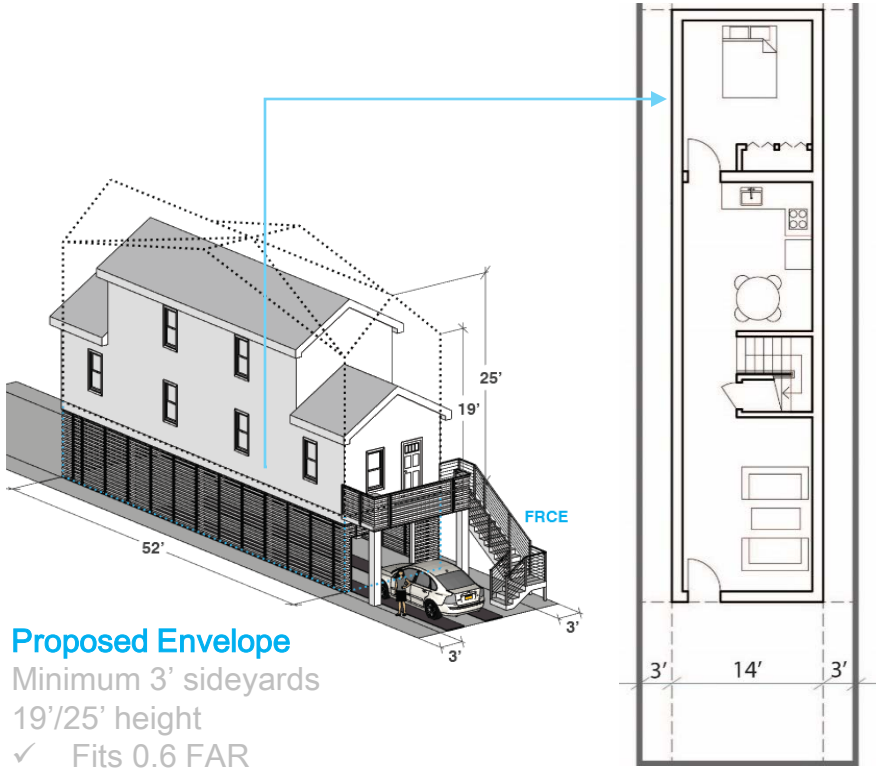
Cottage Envelope

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

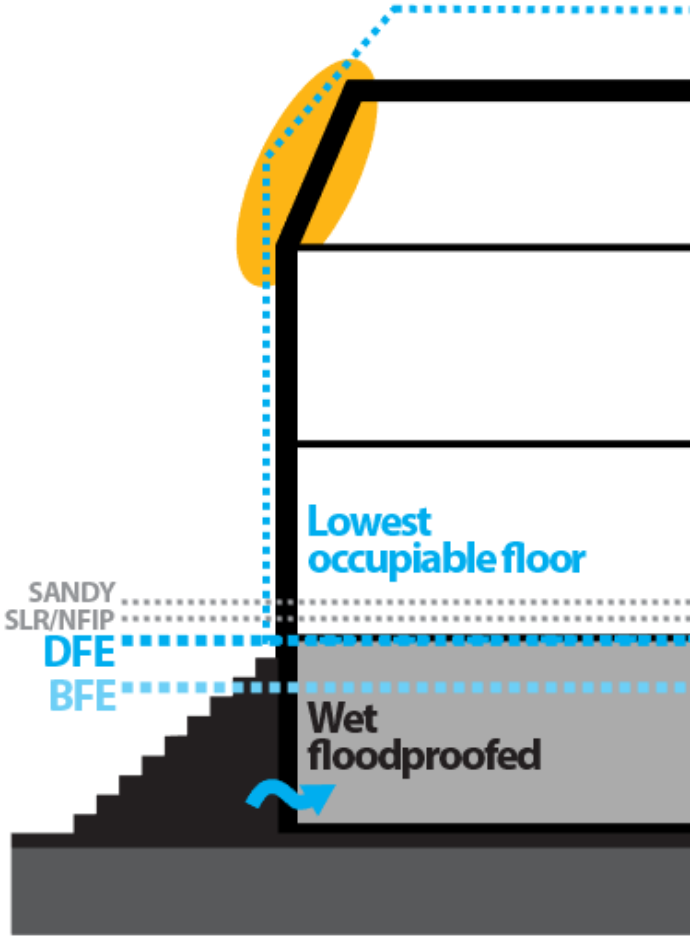
- Not available permanently (past 2022)
- Doesn’t apply outside of “Neighborhood Recovery Areas”
- Doesn’t prevent “candlesticks” on currently vacant lots

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'**



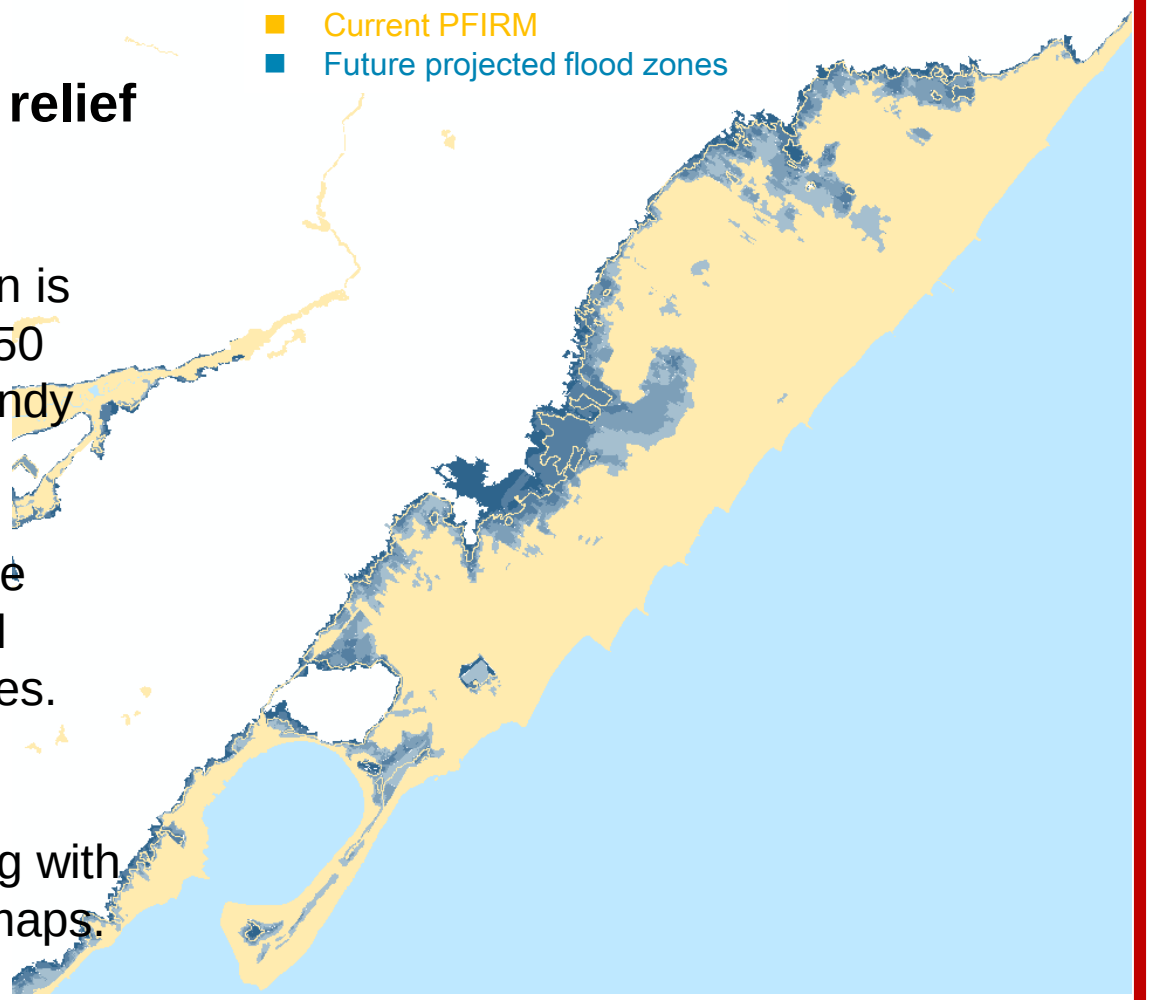
NYC PLANNING

Future Flood Risk - Geography

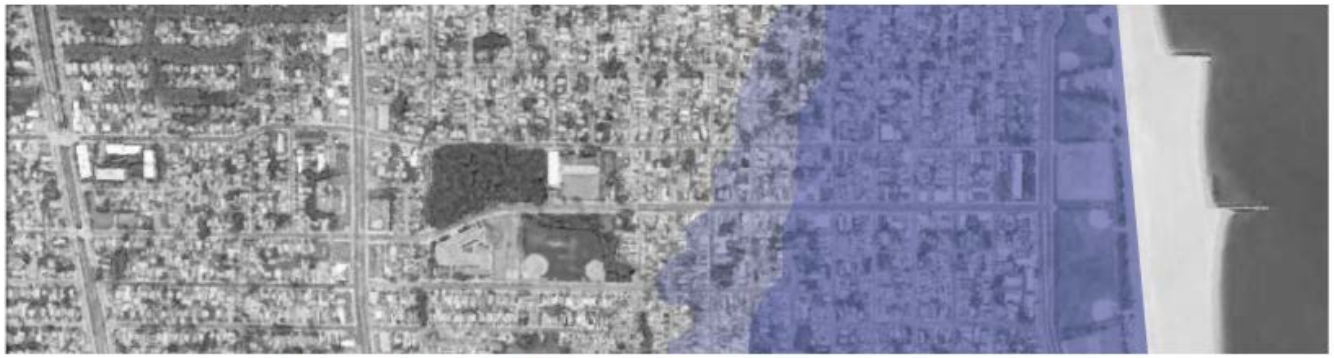
ISSUE

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.



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

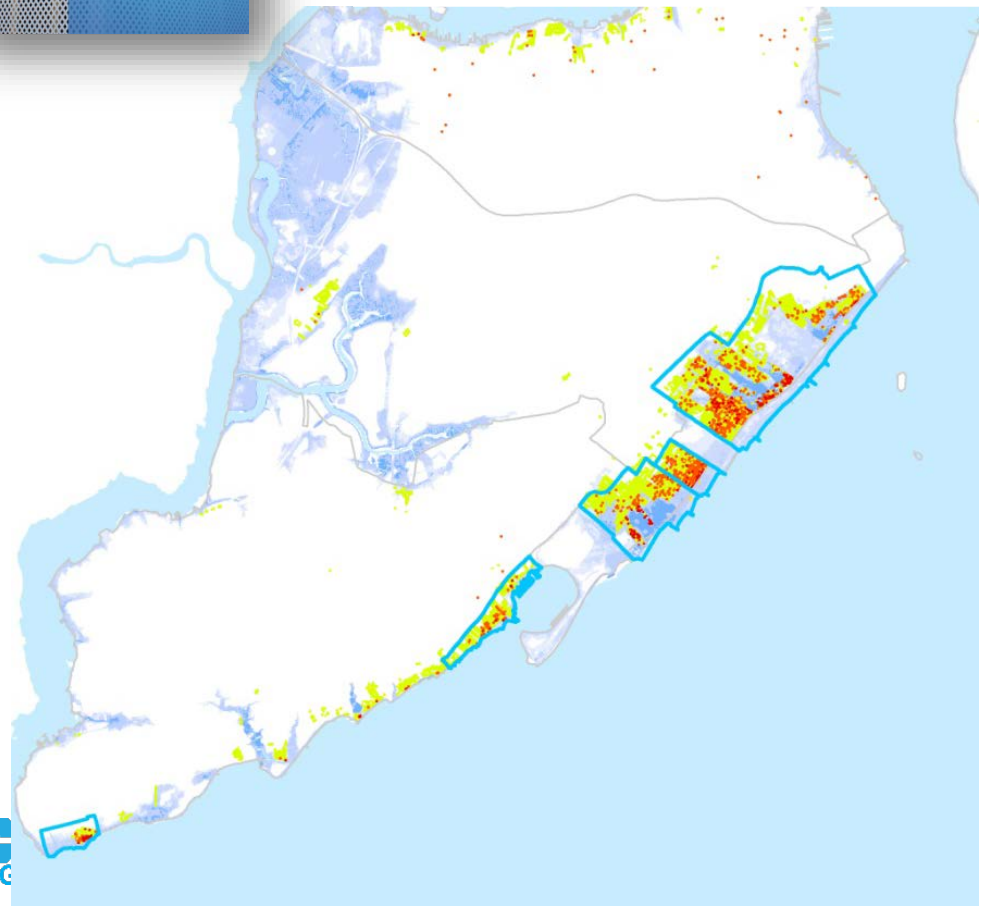
Not actual map – illustrative only

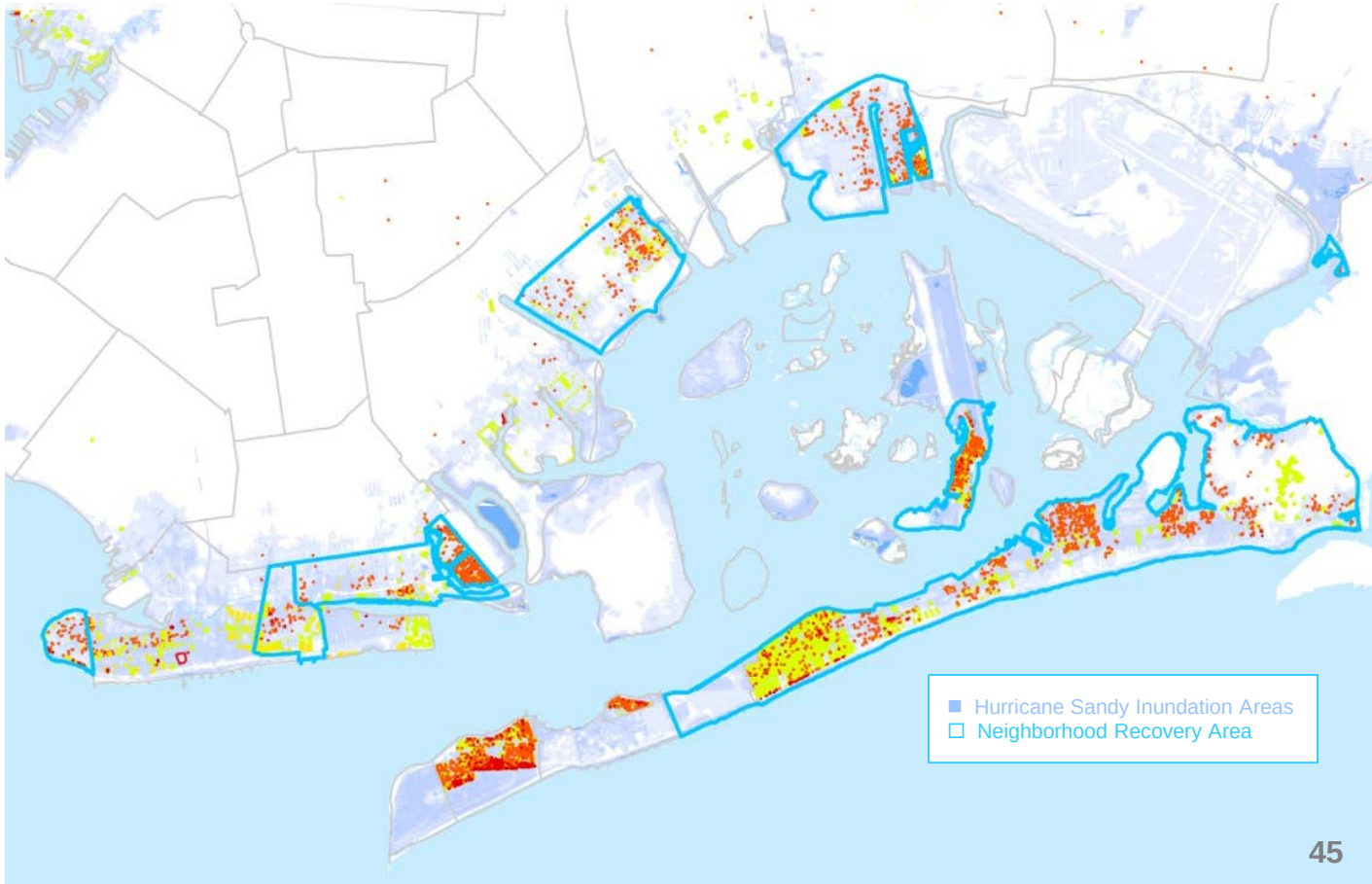
2015 Special Regulations for Neighborhood Recovery

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

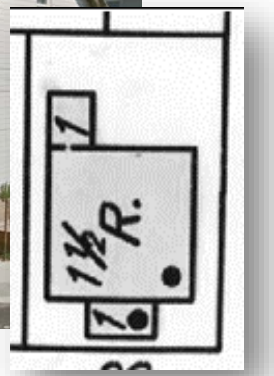
Accelerate recovery in Sandy-damaged neighborhoods

Provided new zoning solutions in three key areas:

Simplified process

for documenting old homes

Home in Gerritsen Beach

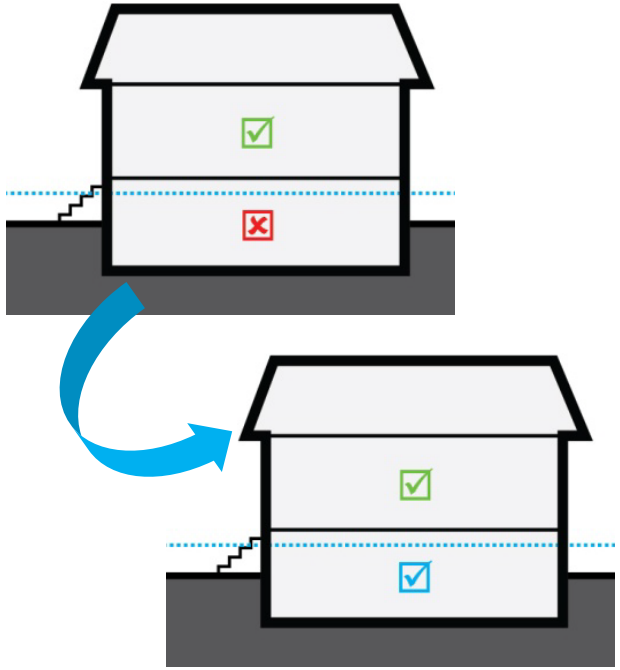


1931 Sanborn Map

Used with permission from The Sanborn Library, LLC

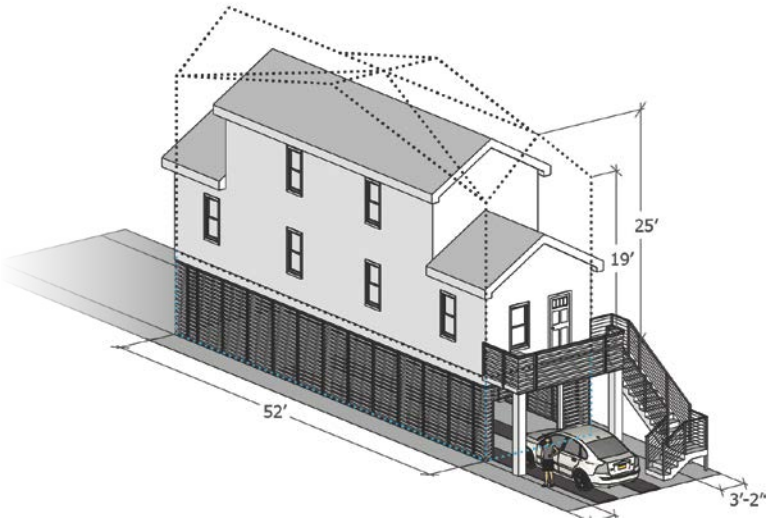
Removed disincentives

such as loss of basement space



Established new envelope

for rebuilds on small existing lots



(more on this later)

Urban Design Principles

The future of NYC coastal communities:

4

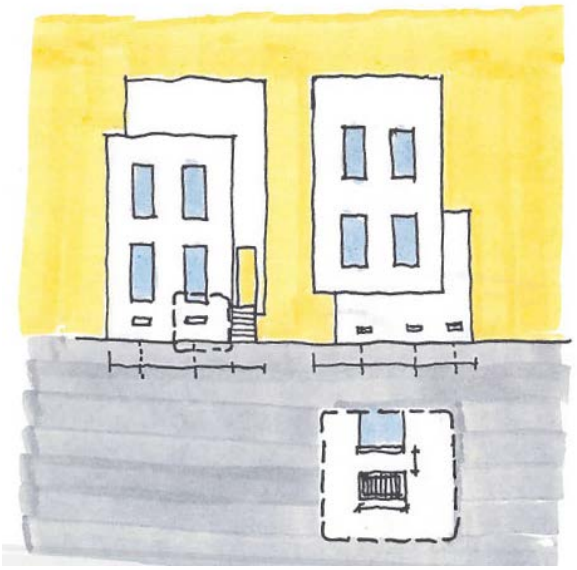
Encourage good resilient construction that enhances the character of coastal communities

PLACE

Preserve Neighborhood Character

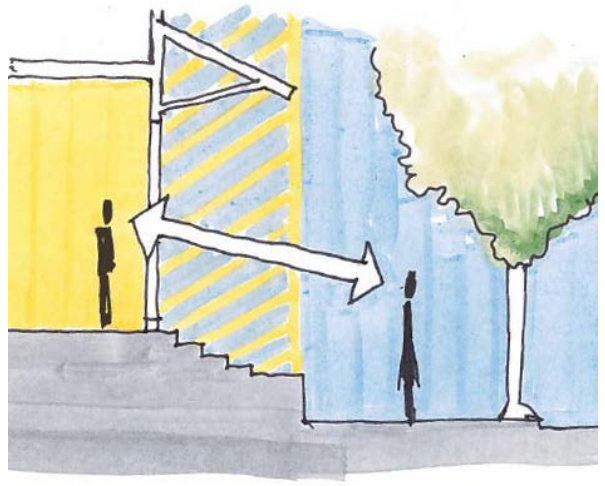
EQUITY

Ensure Inviting Access



DETAIL

Encourage Dynamic and Thoughtful Architecture



COMFORT

Maintain Street Vitality and Safety

Red Hook, Brooklyn – Neighborhood Character

Mixed Use–
1-6 stories, commercial and residential, predominantly masonry, attached and semi attached.

Residential Streets –
3-4 stories, 1-2 family, masonry and wood frame, attached and semi attached.

Industrial Waterfront –
1-6 stories, commercial and industrial, masonry, concrete, and steel frame, attached and semi attached.

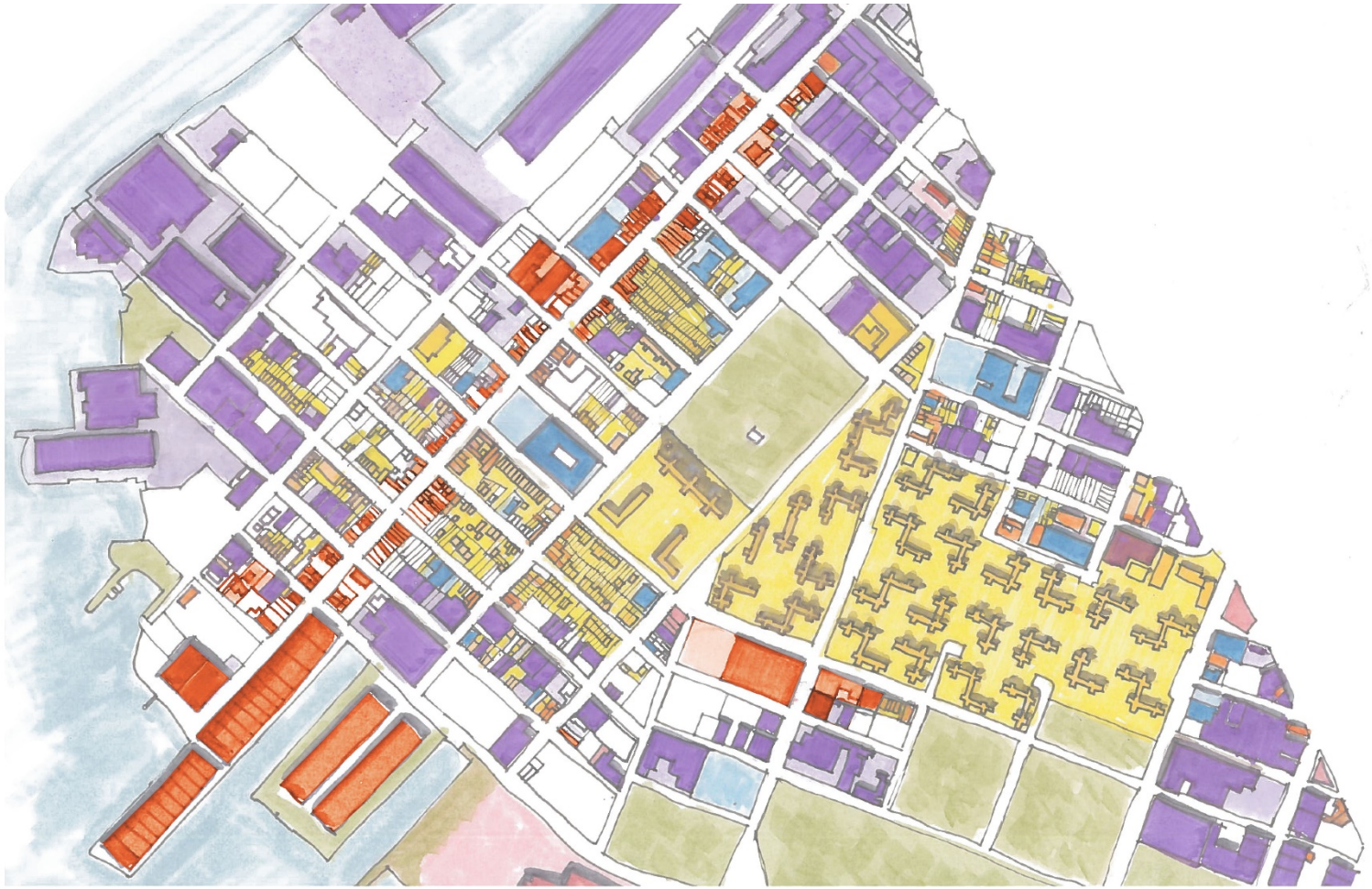
Red Hook Houses–
6 – 14 stories, 3,000 units.

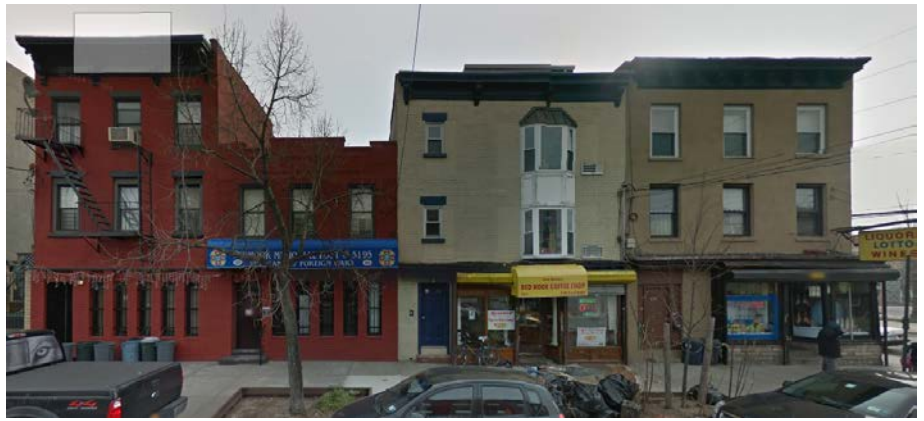
Red Hook, Brooklyn – Neighborhood Character

Residential Streets –
3-4 stories, 1-2 family, masonry and wood frame, attached and semi attached.

Red Hook, Brooklyn – Neighborhood Character

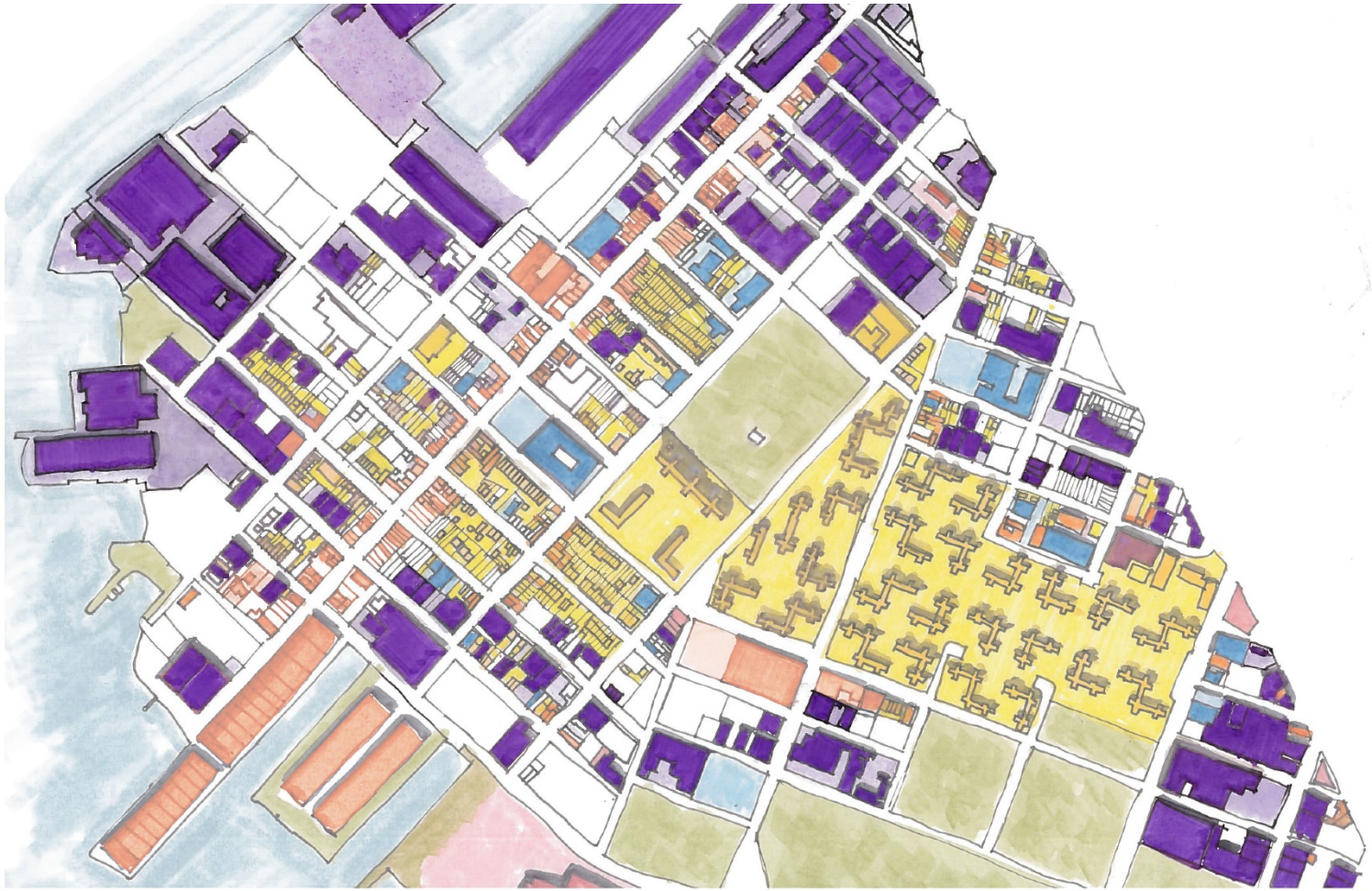
Mixed Use–
1-6 stories, commercial and residential, predominantly masonry, attached and semi attached.





Red Hook, Brooklyn – Neighborhood Character

Industrial Waterfront –
1-6 stories, commercial and industrial, masonry, concrete, and steel frame, attached and semi attached.



Red Hook, Brooklyn – Neighborhood Character

Red Hook Houses–
6 – 20 stories, 3,000 units,