



Building a Resilient **NEW YORK CITY**

Zoning for Coastal Flood Resiliency

DCP-Proposed Zoning Text Amendment

Manhattan CB 3

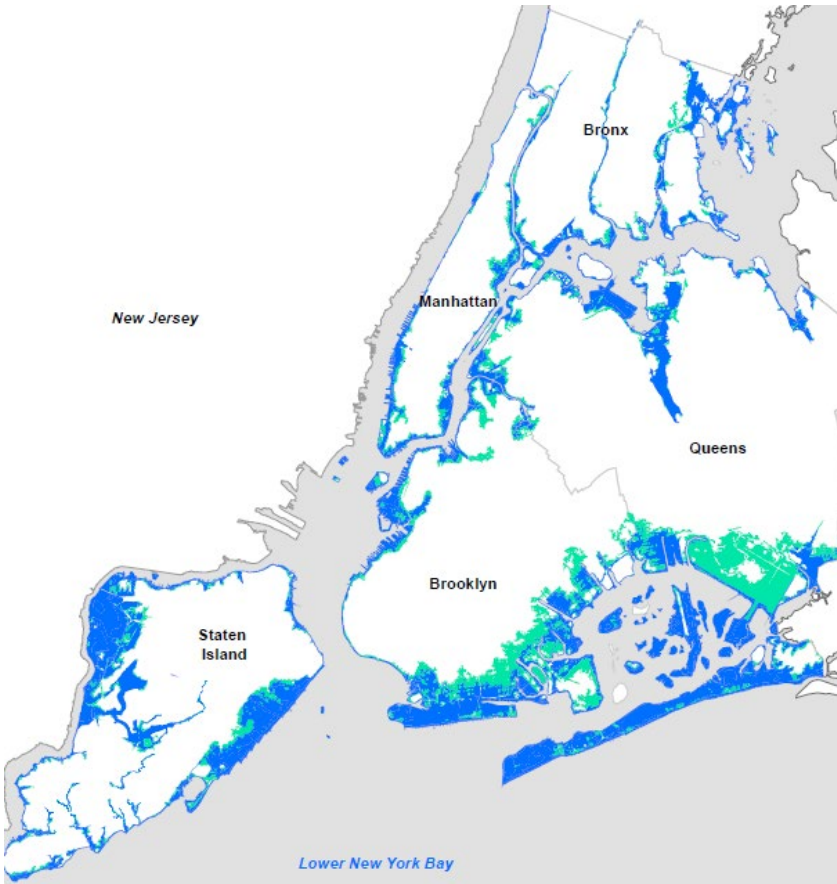
November 17, 2020

Introduction

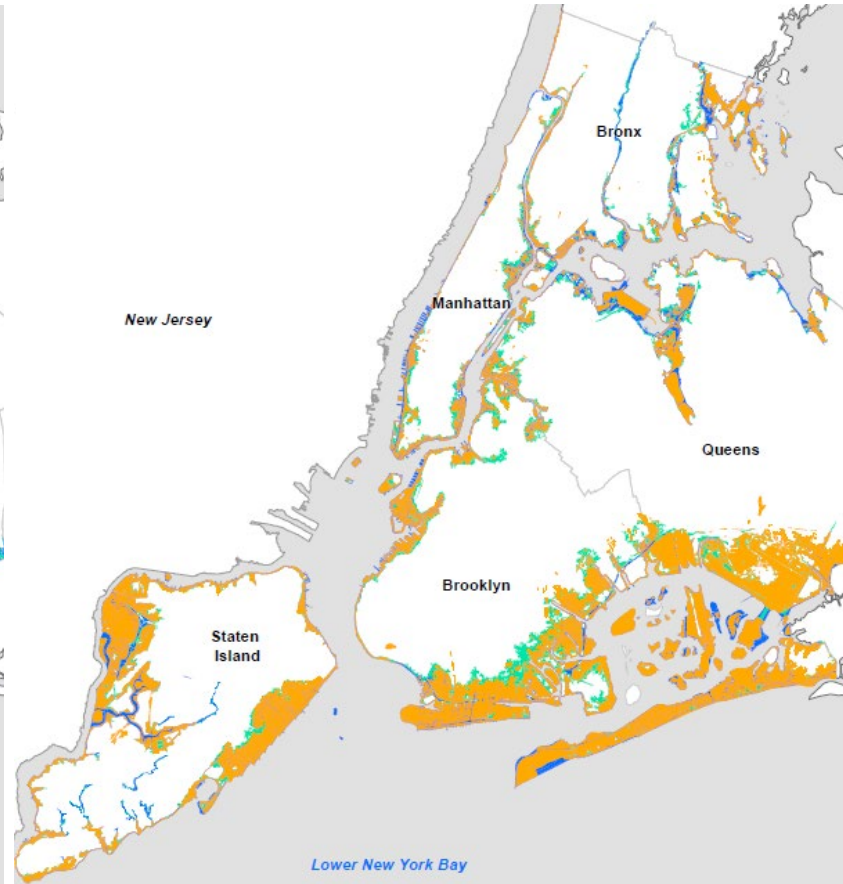
Overview

Close to a million New Yorkers live in the floodplain today, a risk that Hurricane Sandy awakened us to in 2012. This risk will increase over time with sea levels rising, and will be exacerbated by more frequent and powerful coastal storms.

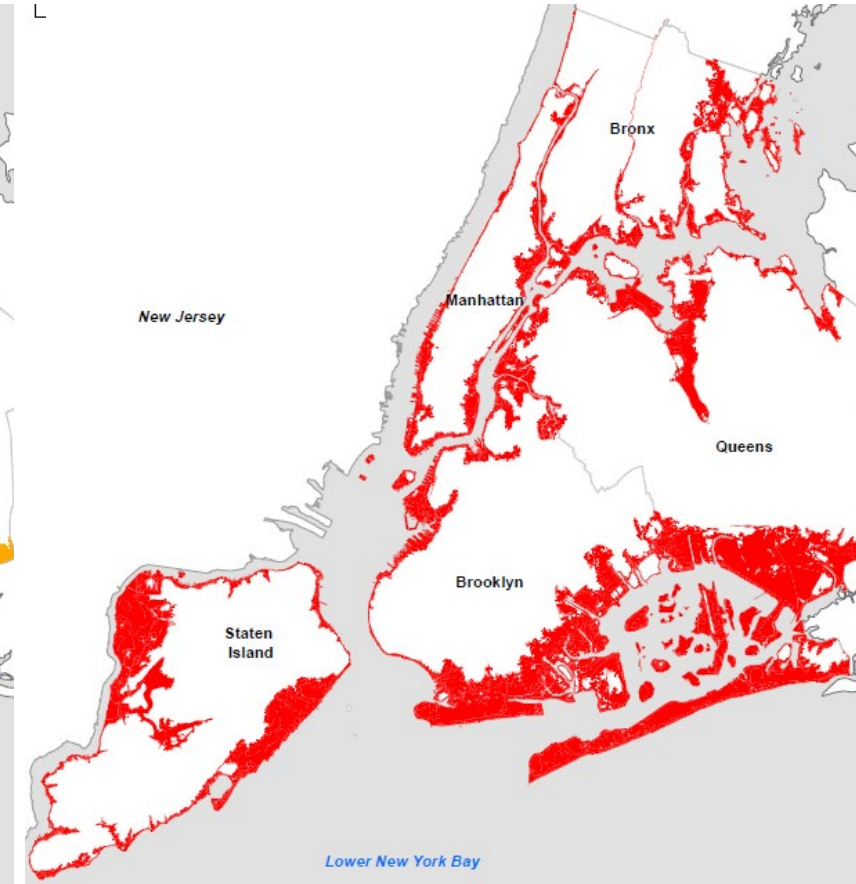
434,500 residents → high-risk zones
+ 348,000 residents → moderate-risk zones





Hurricane Sandy inundated beyond the high-risk zone (~half of lots in the moderate-risk zone)



This area will likely become the future high-risk zones



1% annual chance floodplain (FEMA)* 
0.2% annual chance floodplain (FEMA)* 

Hurricane Sandy Storm Surge 

2050s 1% Annual Chance Floodplain (NPCC) 



Close to 20% of the city's land area is in the floodplain

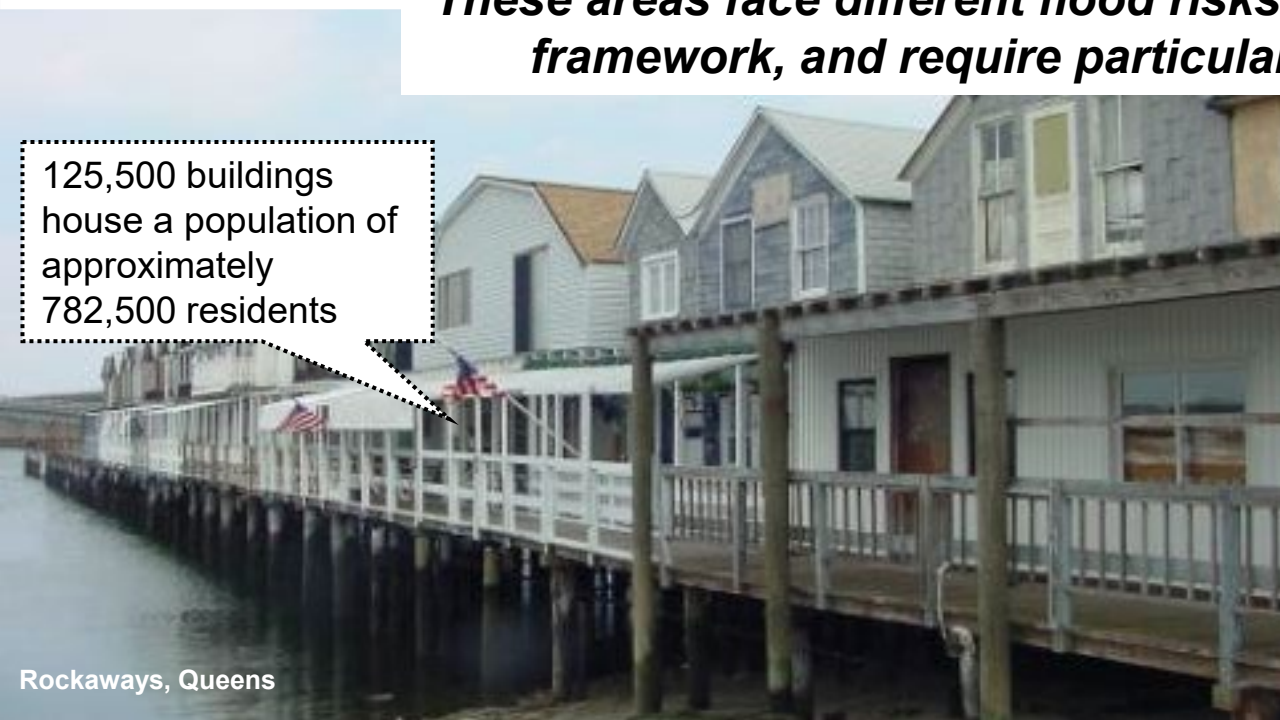


3,600 businesses employ roughly 87,000 people in industrial areas

Alley Pond Creek, Queens

Upper Bay

The floodplain is diverse. These areas face different flood risks and issues with the current regulatory framework, and require particular strategies to make them resilient.



125,500 buildings house a population of approximately 782,500 residents

Rockaways, Queens



14,500 businesses employ close to 270,000 people in commercial corridors

Williamsburg, Brooklyn

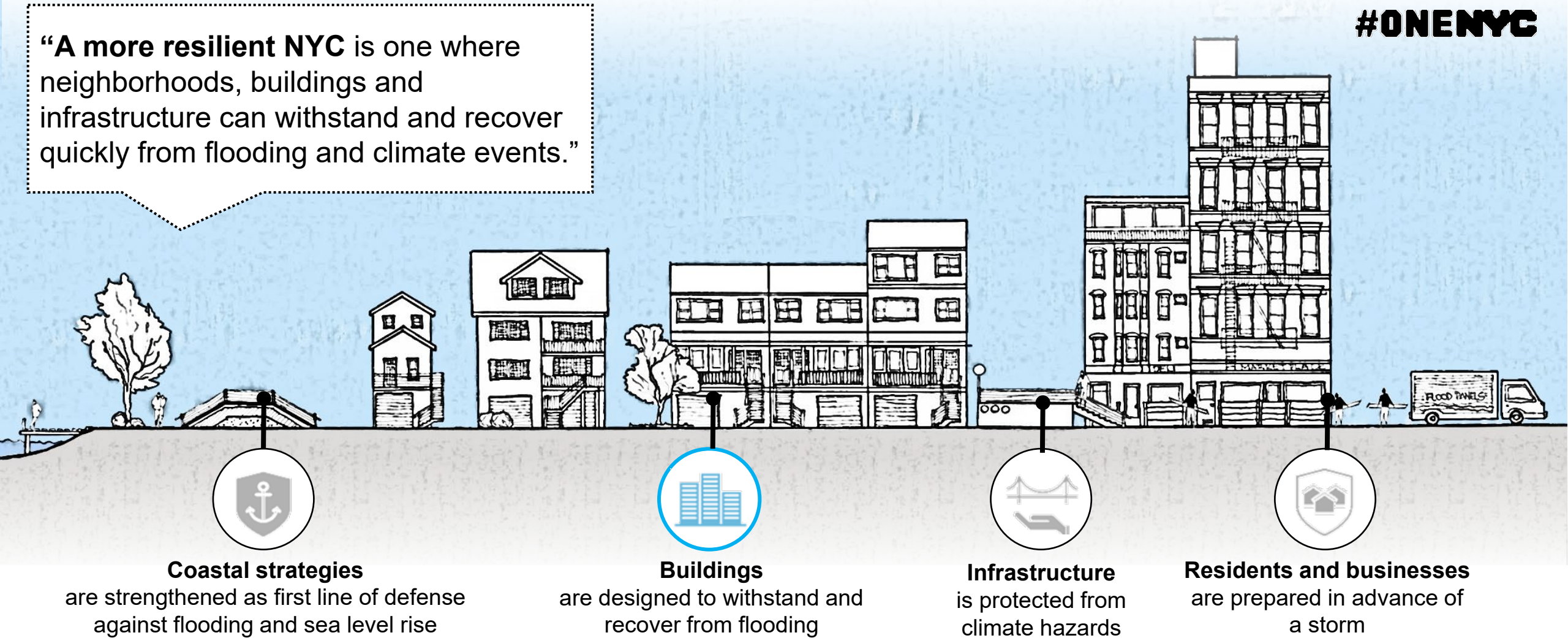
Introduction

Overview

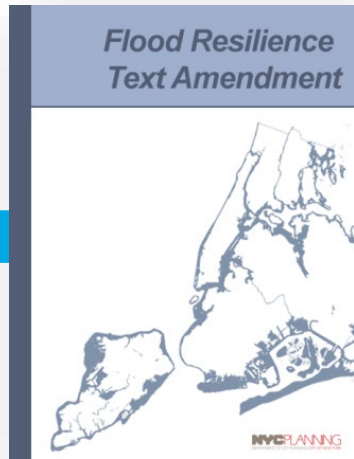
The City's overall resiliency strategy will involve a multi-tiered, complementary approach. Zoning for Coastal Flood Resiliency (ZCFR) is a central tool in encouraging resilient buildings.

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

#ONENYC



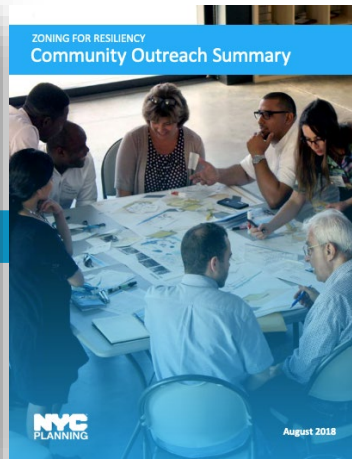
History of Resiliency in Zoning



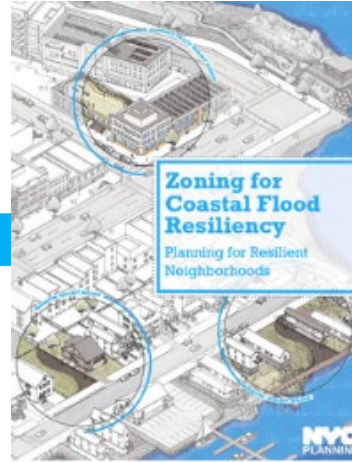
**2013
Flood Text**
*Expires 1 year
after the adoption
of the new FIRMs*



**2015
Recovery
Text**
*Expired on
July 23, 2020*



**2016-2018
Outreach
Summary**
*Released on
August, 2018*



**2019
Preliminary ZCFR
Recommendations**
*Released on
May, 2019*

ZCFR would provide the option to design or otherwise retrofit buildings to:

- Reduce damage from future coastal flood events
- Be resilient in the long-term by accounting for climate change
- Potentially save on long-term flood insurance costs

ZCFR would also set a framework for emergency situations—whether they be like Hurricane Sandy, or COVID-19.

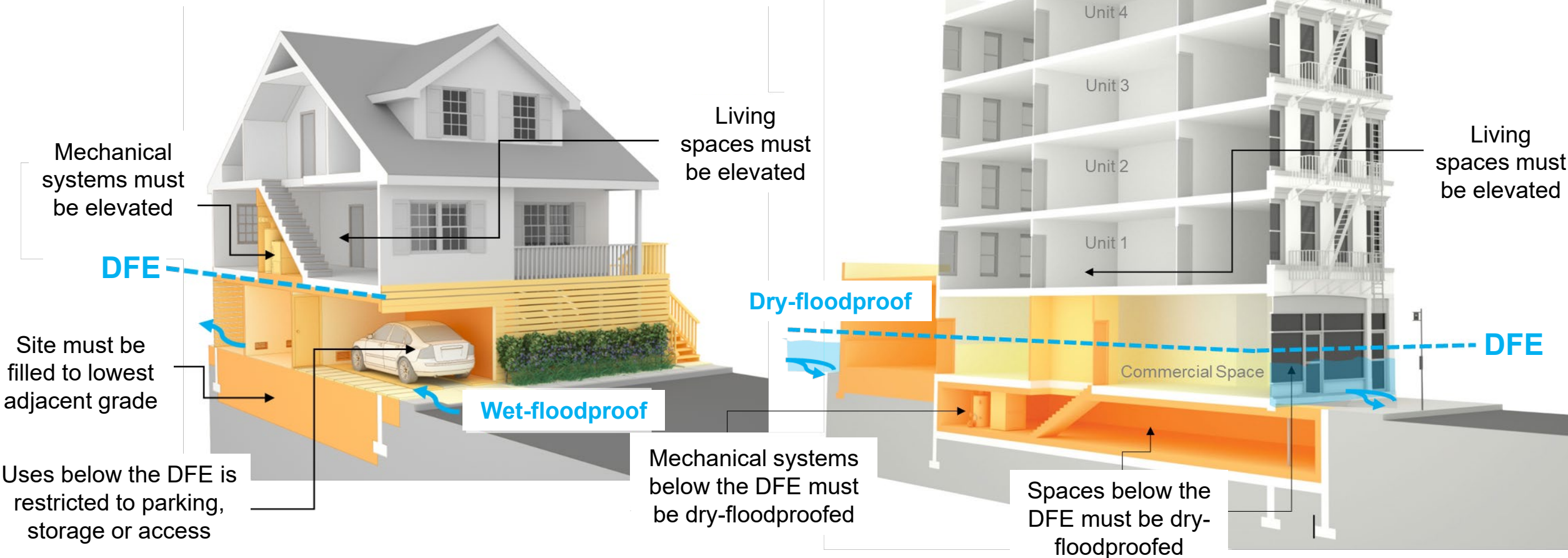
ZCFR would make permanent the temporary zoning rules adopted post-Sandy to help buildings meet flood-resistant construction requirements in Appendix G of the Building Code.

Introduction

Current Rules

Building Code

DOB Appendix G regulations depend upon the building's location in the flood zone, the building's uses, and where these uses are situated in relation to the design flood elevation (DFE)*.

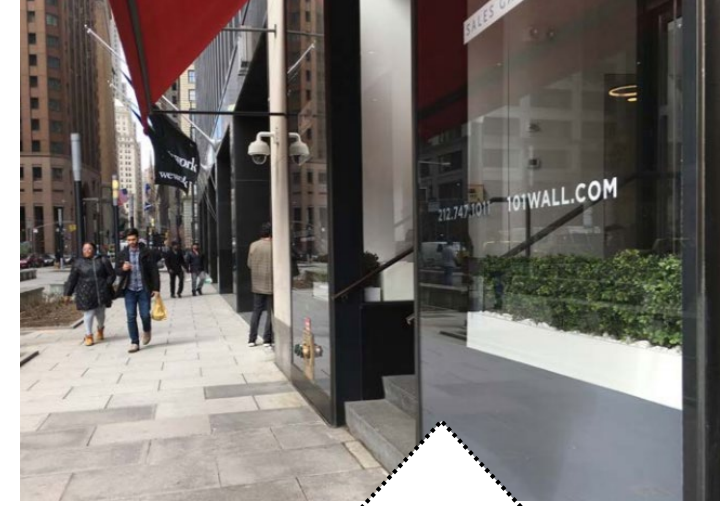
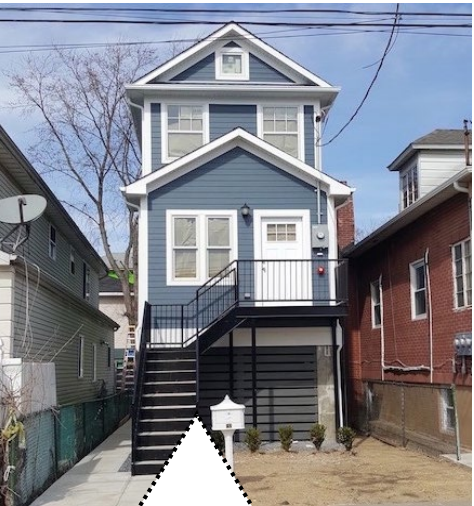


*the DFE is determined by adding freeboard (additional height for safety established in Appendix G) to the Base Flood Elevation (BFE), which is the elevation to which floodwater is anticipated to rise during a 1% annual chance storm as shown on FEMA's maps.

Introduction

Lessons Learned

The existing zoning rules helped many buildings meet Appendix G. However, we've heard during the outreach process that these rules were not enough in certain situations, in a manner that assists all types of neighborhoods be resilient, especially in the long-term.



Many regulations were not enough in assisting with the elevation of the lowest floor beyond the DFE

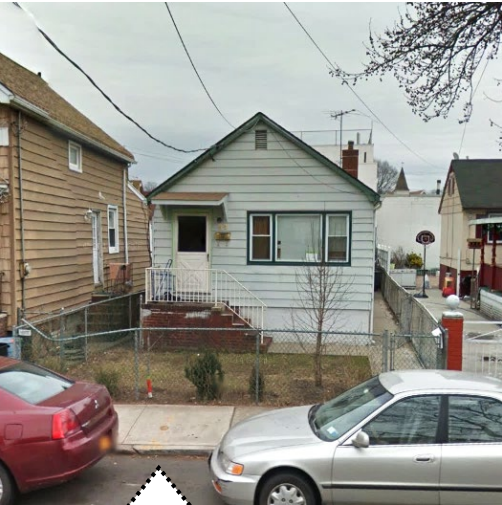
Attached homes and multi-family buildings were not adequately addressed, since they must relocate spaces below the DFE (often habitable space) to above the structure

Businesses were also not adequately addressed either, as they heavily rely on cellars for operations and need high-visibility from sidewalks to be viable

Introduction

Lessons Learned

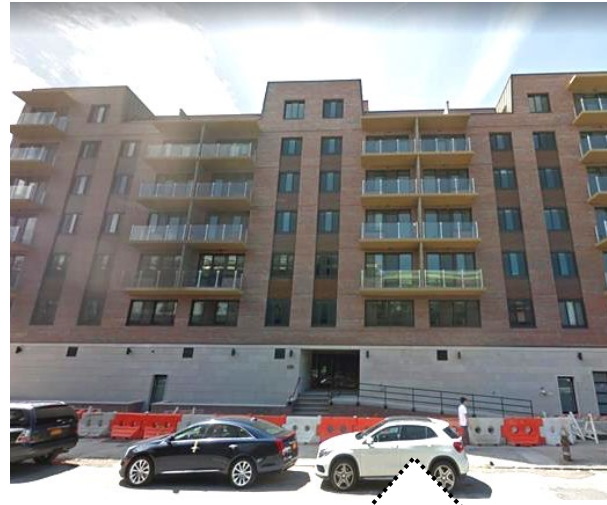
The existing zoning rules helped many buildings meet Appendix G. However, we've heard during the outreach process that these rules were not enough in certain situations, in a manner that assists all types of neighborhoods be resilient, especially in the long-term.



Certain older neighborhoods did not get enough relief to also be resiliency



Additional height and floor area exemptions varied by the flood level, leading to unintended outcomes, sometimes even along the same street



Streetscape regulations had inconsistent applicability, particularly in medium- and high-density districts



Disasters may take many forms and lead to different types of damage

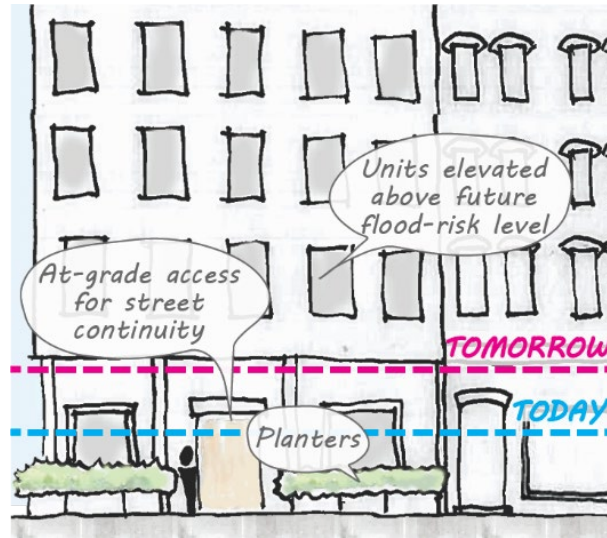
Proposal

Overview

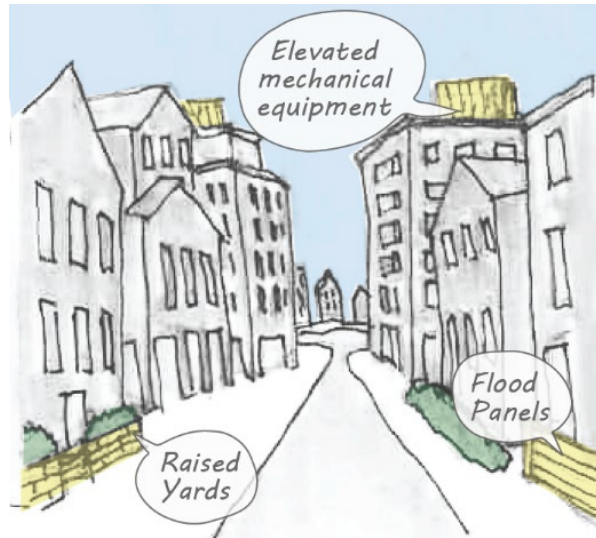
ZCFR would provide permanent relief to floodplain properties, focusing on long-term resiliency by removing impediments for buildings to exceed minimum flood-resistant construction requirements, and by allowing neighborhoods to be adapted over time.



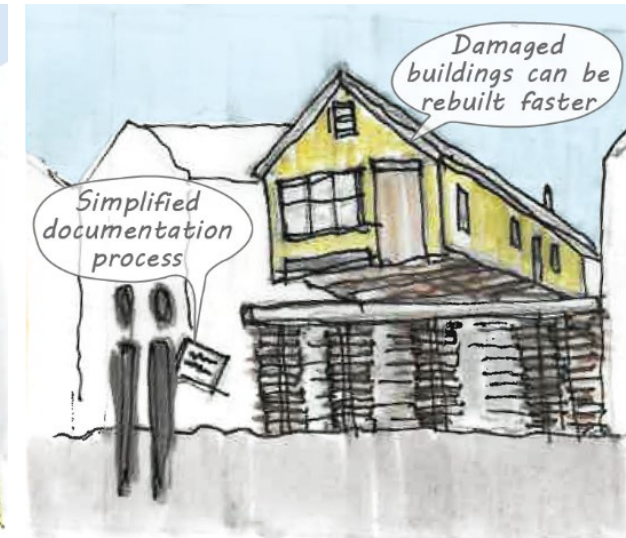
Encourage resiliency throughout the current and future floodplains



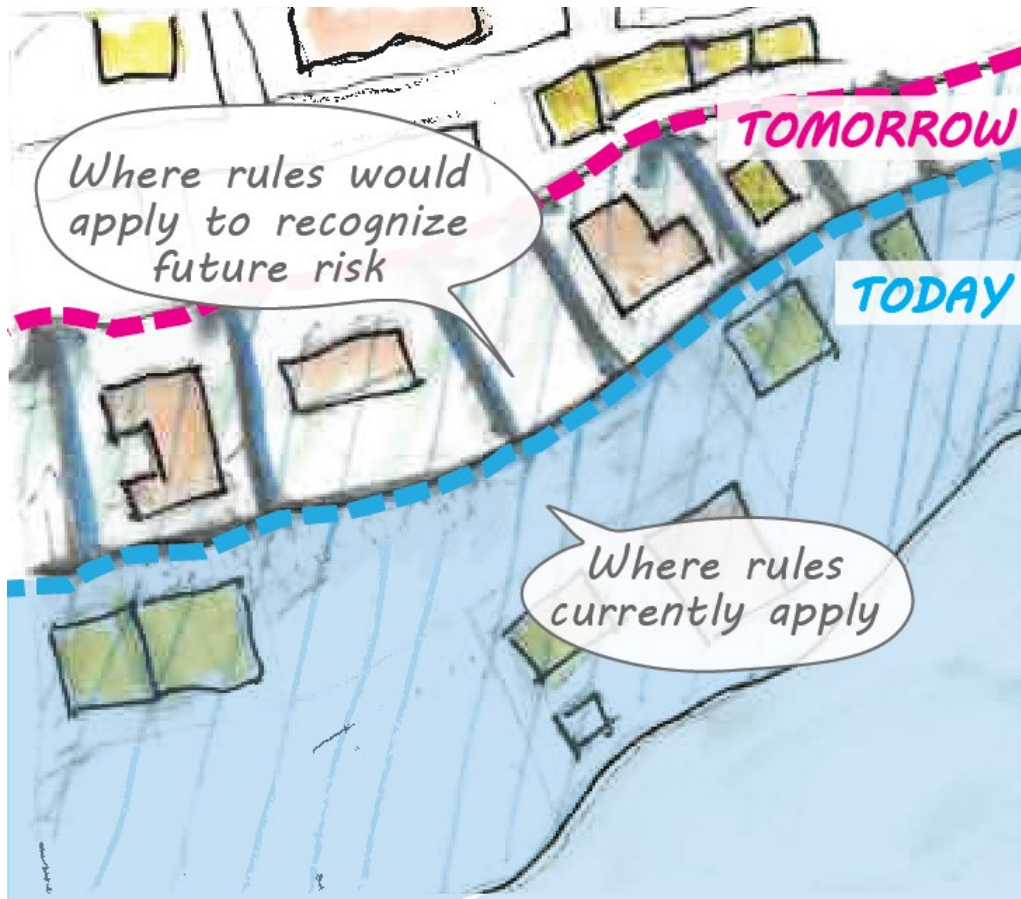
Support long-term resilient design of all building types



Allow for adaptation over time through incremental retrofits



Facilitate future recovery by reducing regulatory obstacles



Goal 1

Encourage resiliency throughout the current and future floodplains

Applicability.....

Applicability

Where rules currently apply

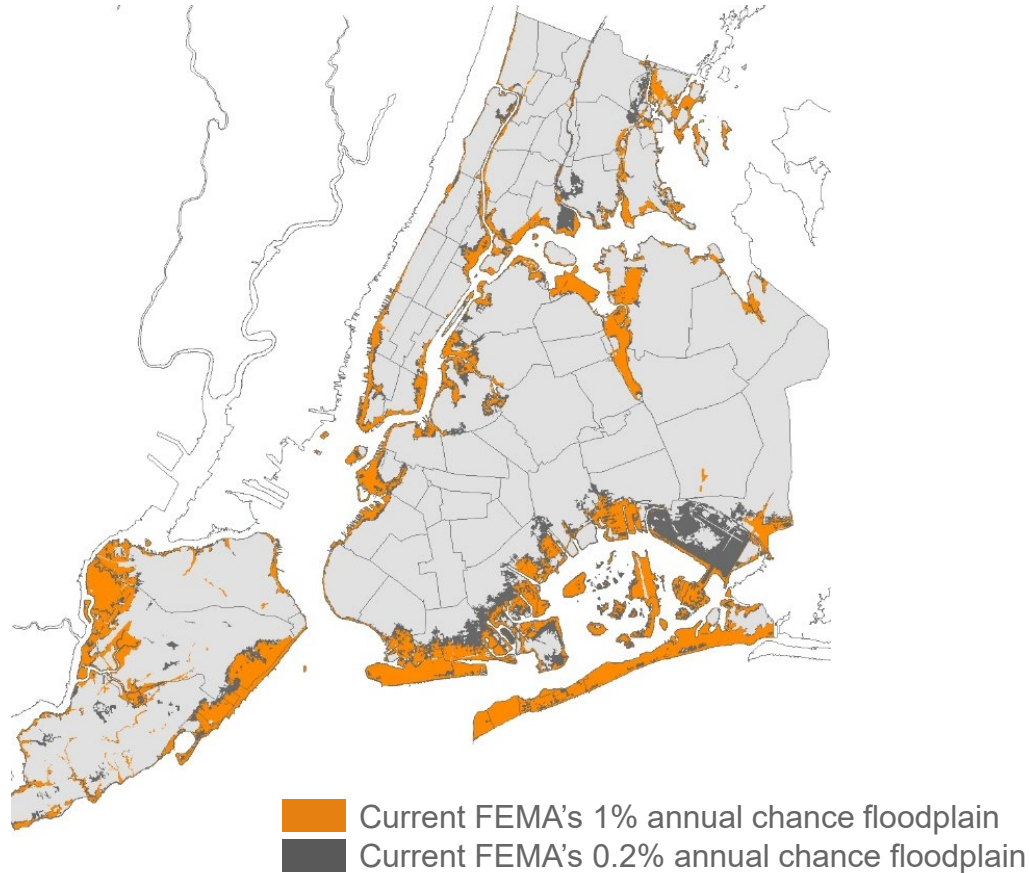
By **expanding the applicability** of the optional rules, building owners throughout the floodplain **would be able to proactively incorporate resiliency improvements in their buildings**

Applicability

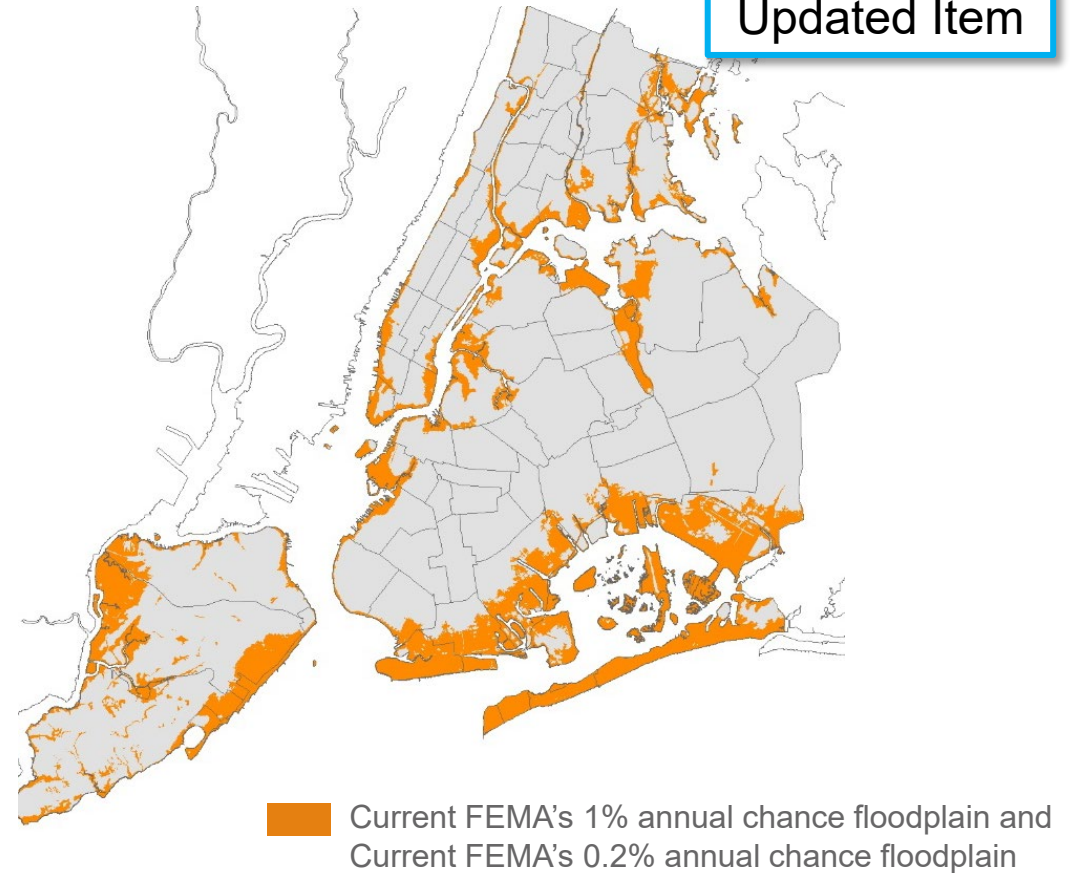
Expanding beyond 1%

By expanding the availability of optional floodplain regulations to beyond the areas at high risk of being flooded, more building owners would be able to design or retrofit their buildings to proactively meet flood-resistant construction standards

Updated Item



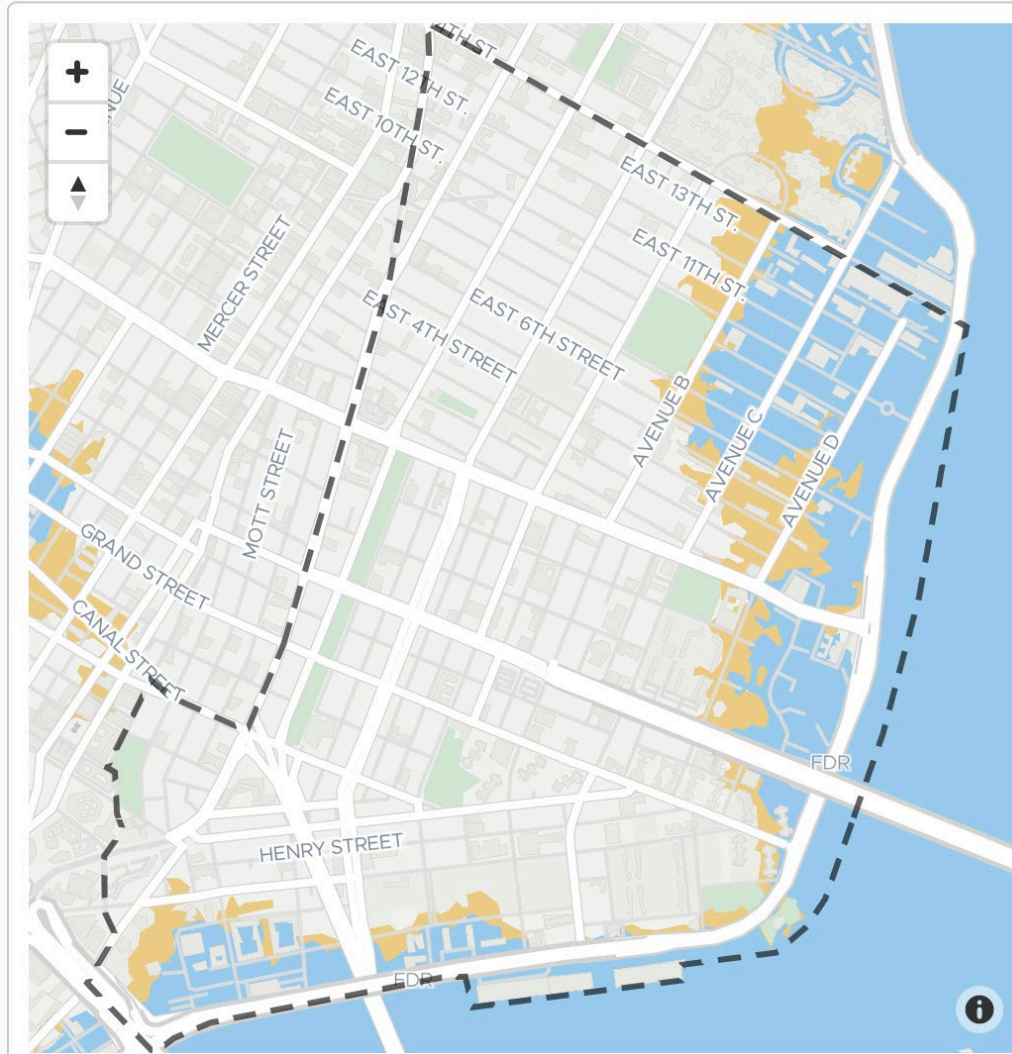
2013 Flood Text: applies to the 1% annual chance floodplain



Proposed Rule: applies to both the 1% and 0.2% annual chance floodplains

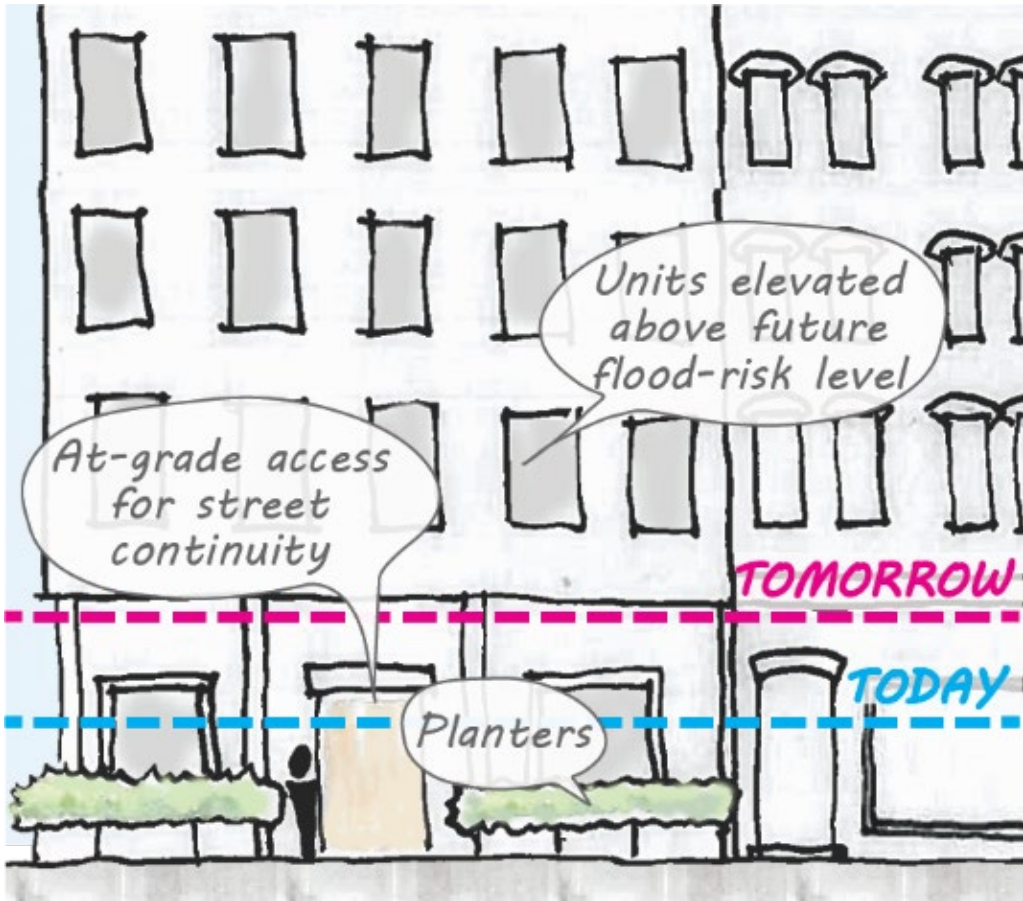
Community District 3 Population in the Floodplain

1% & 0.2% Annual Chance Floodplain



Indicator	1% Floodplain	0.2% Floodplain
Population	32,300	47,300
Median Income	\$18,000	\$21,000
Buildings	495	819
Dwelling Units	21,052	27,536
% of Units that are Owner-Occupied	11.2%	10.7%

Sources: US Census 2010, MapPLUTO



Goal 2

Support long-term resilient design of all building types

- Building Envelope.....
- Ground Floors.....
- Streetscapes.....
- Special Conditions.....
- Discretionary Actions.....

Building Envelope

Optional zoning regulations would allow building owners to **physically elevate habitable spaces and other building support features** above expected flood elevations



Habitable spaces are elevated

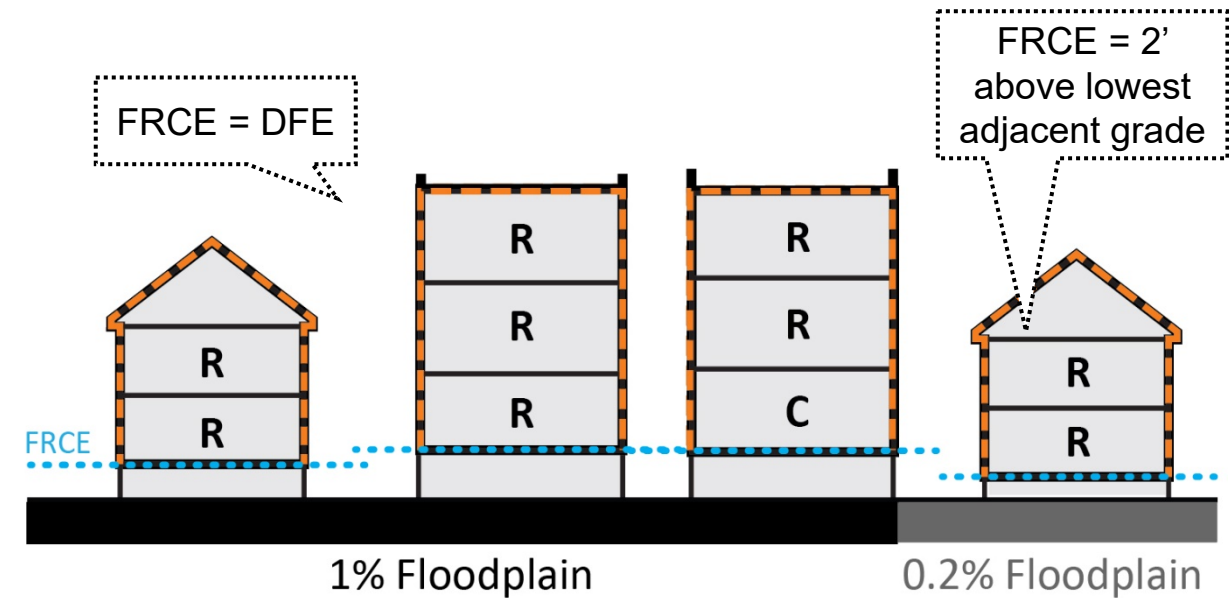
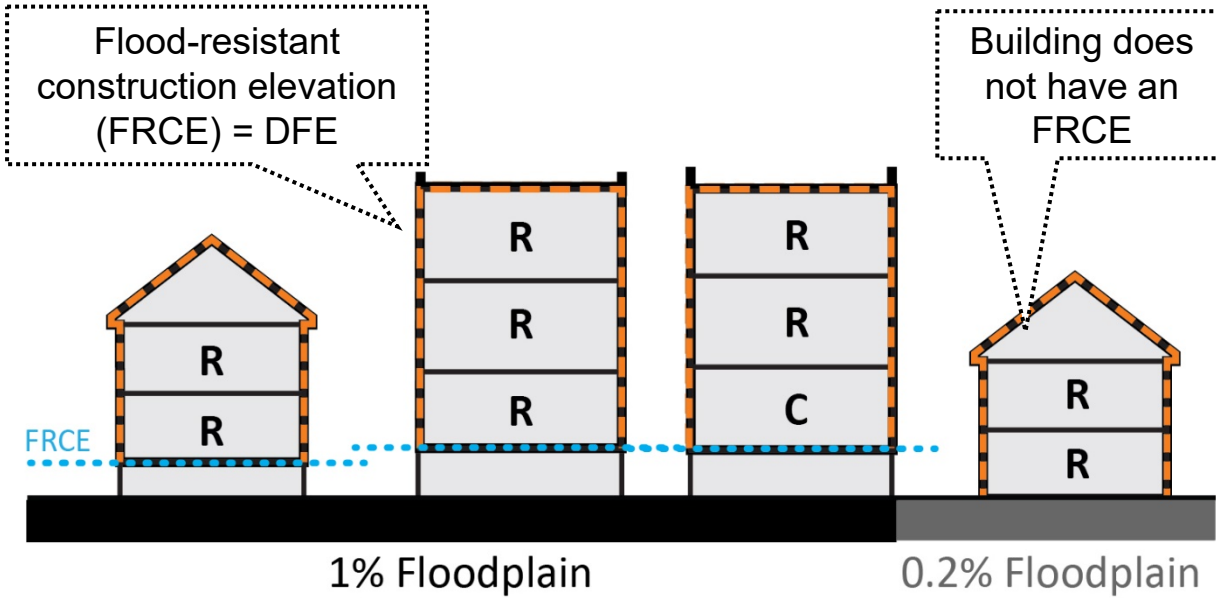
Flood Elevation

Building Envelope

FRCE

Additional height would continue to be given to allow building owners to meet the requirements set by FEMA and Appendix G of NYC's Building Code for flood-resistant construction, even when these are not required.

Updated Item



2013 Flood Text: allows building height to be measured from the FRCE

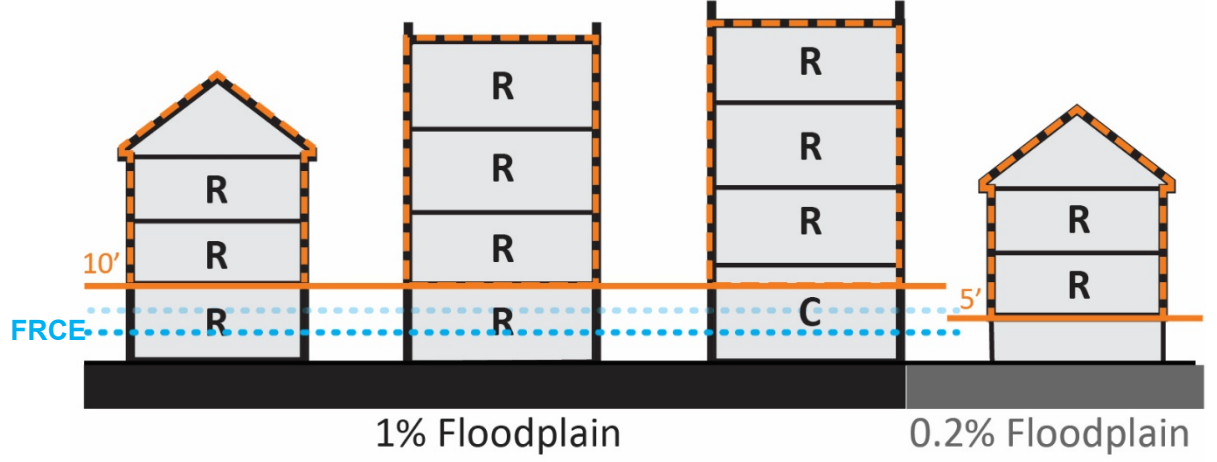
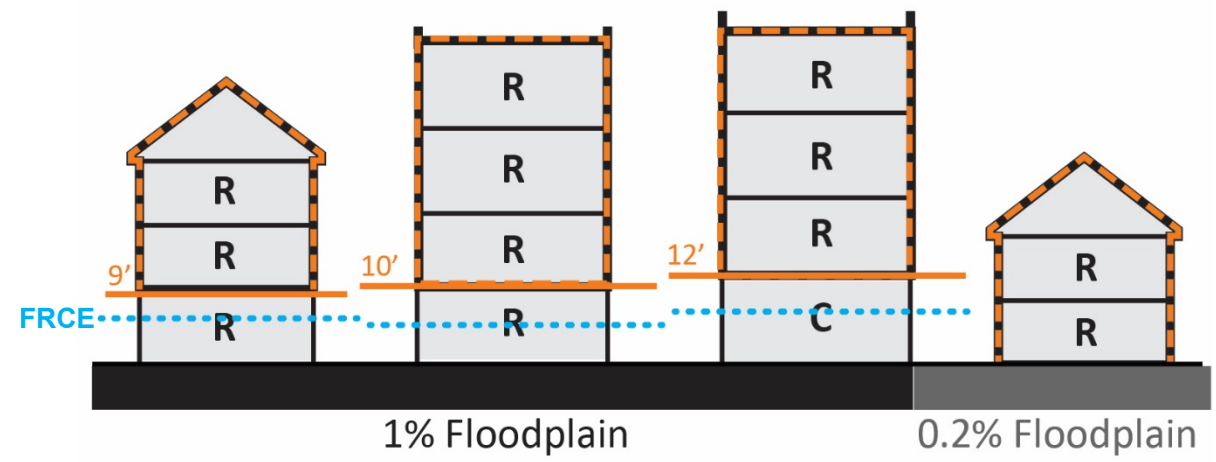
Proposed Rule: continues to allow building height to be measured from the FRCE

Building Envelope

Reference Plane

A consistent framework for additional building height would encourage building owners to address long-term climate change, and allow for lower insurance costs and usable spaces at grade.

Updated Item



2013 Flood Text: allows building height to be measured from a reference plane located at 9', 10' or 12' depending on the building's use and zoning district

Proposed Rule: allows building height to be measured from a Reference Plane located at **max 10' or 5' above grade** (in the 1% and 0.2% floodplains, respectively)

Ground Floors

Ground-floor regulations would incentivize the floodproofing of ground floors, encourage active uses to be kept at the street level and promote internal building access



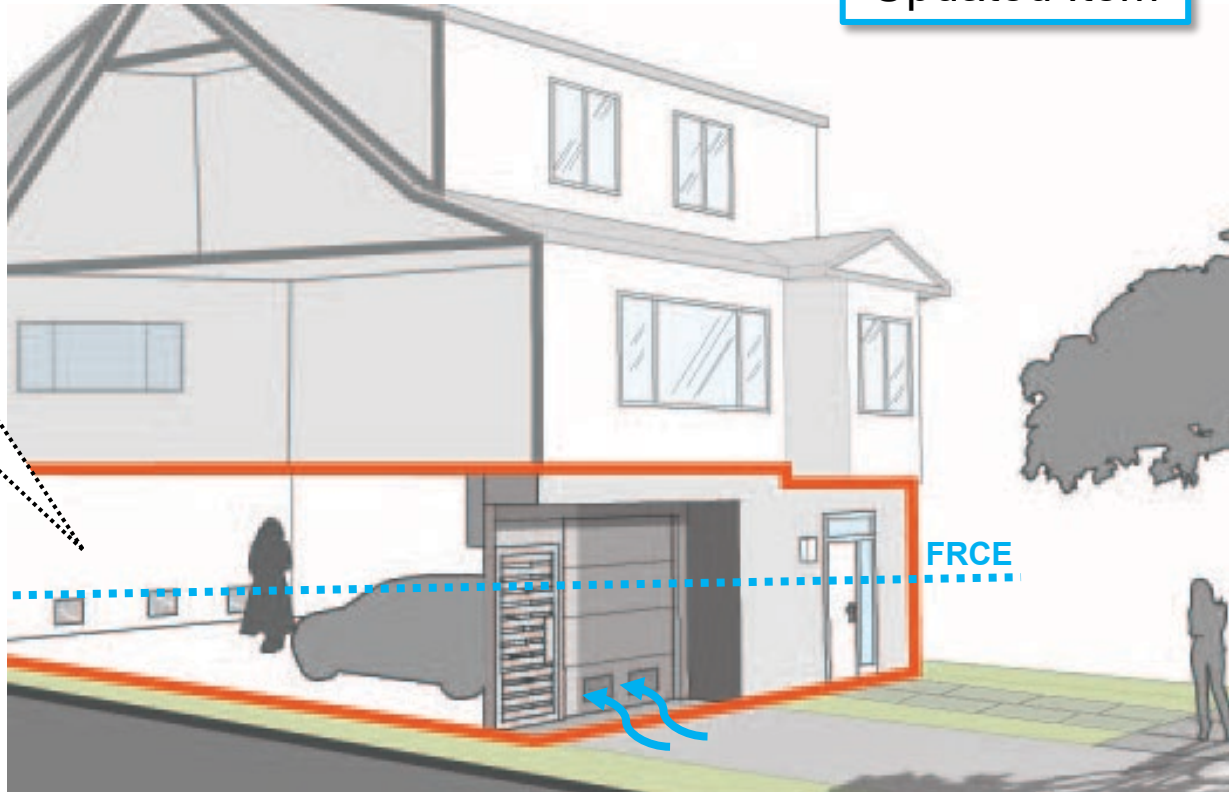
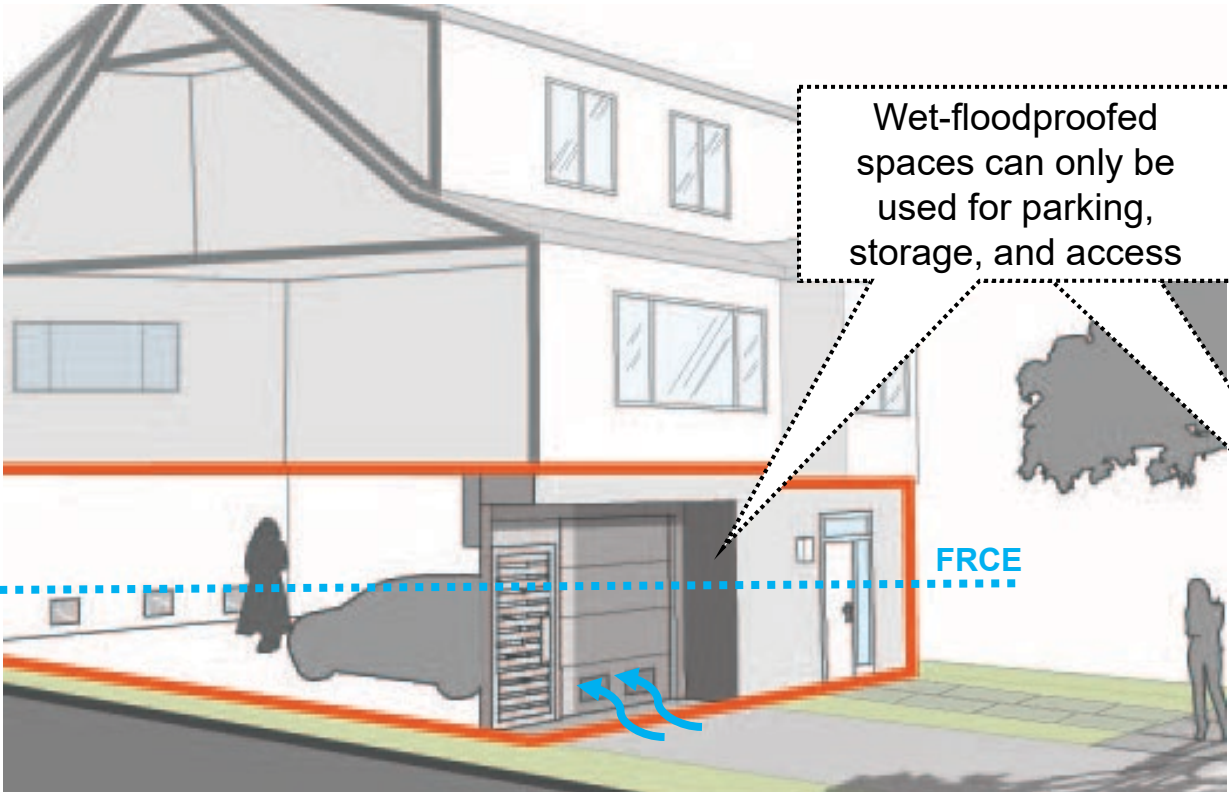
Internal access is provided & the ground-floor is floodproofed

Ground Floors

Wet-floodproofed Spaces

A more consistent floor area exemption for wet-floodproofed spaces in all buildings would help promote long-term resiliency improvements and useful ground floors.

Updated Item



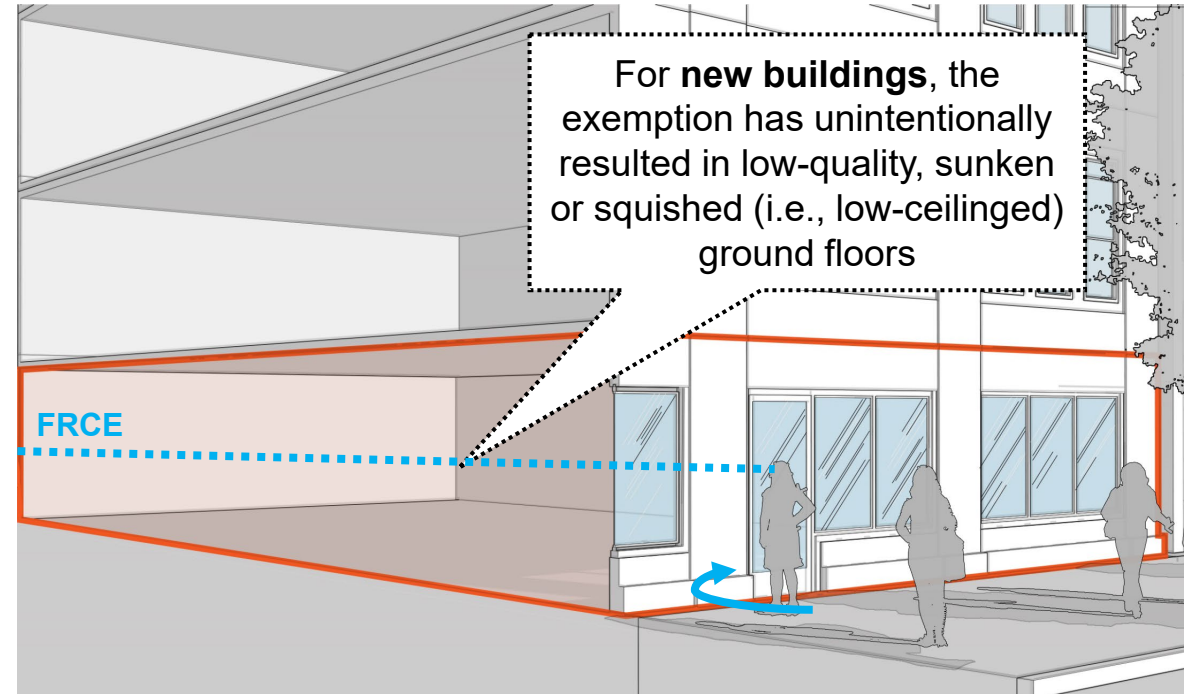
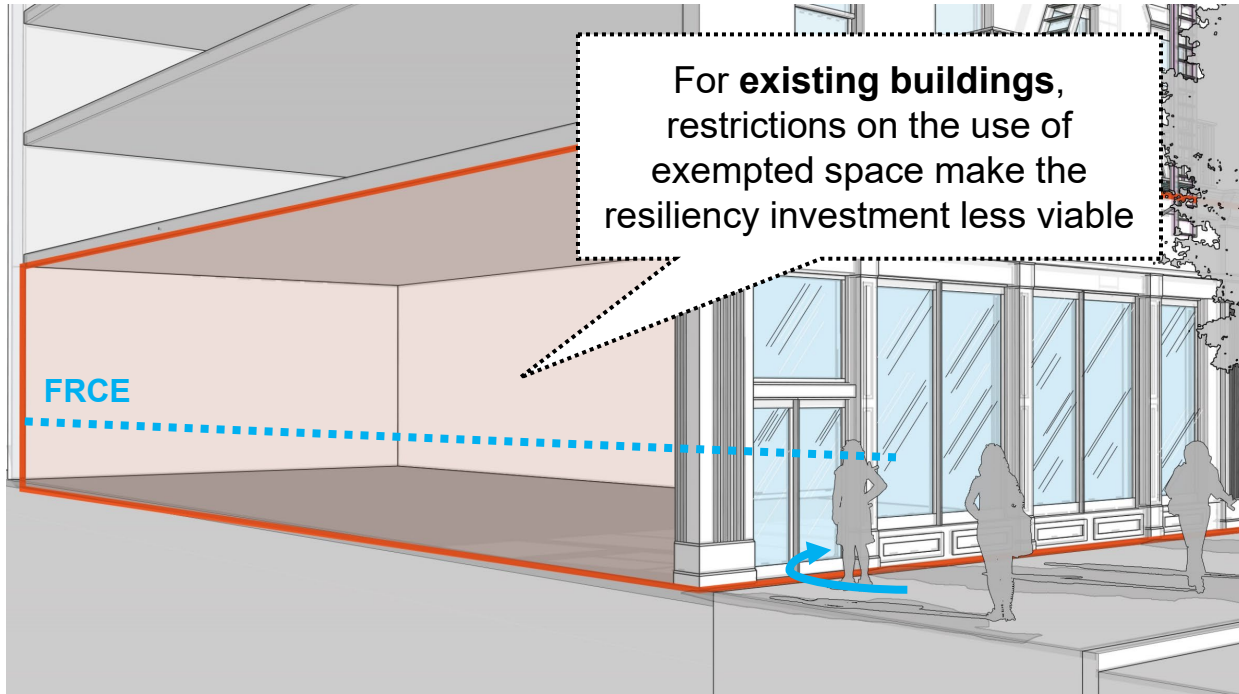
2013 Flood Text: allows existing buildings to exempt wet-floodproofed spaces from floor area

Proposed Rule: allows **new and existing** buildings to exempt wet-floodproofed spaces from floor area

Ground Floors

Dry-floodproofed Spaces

A floor area exemption for dry-floodproofed spaces along the retail corridors would encourage active uses to be kept at the street level, promoting a safe and lively pedestrian environment.



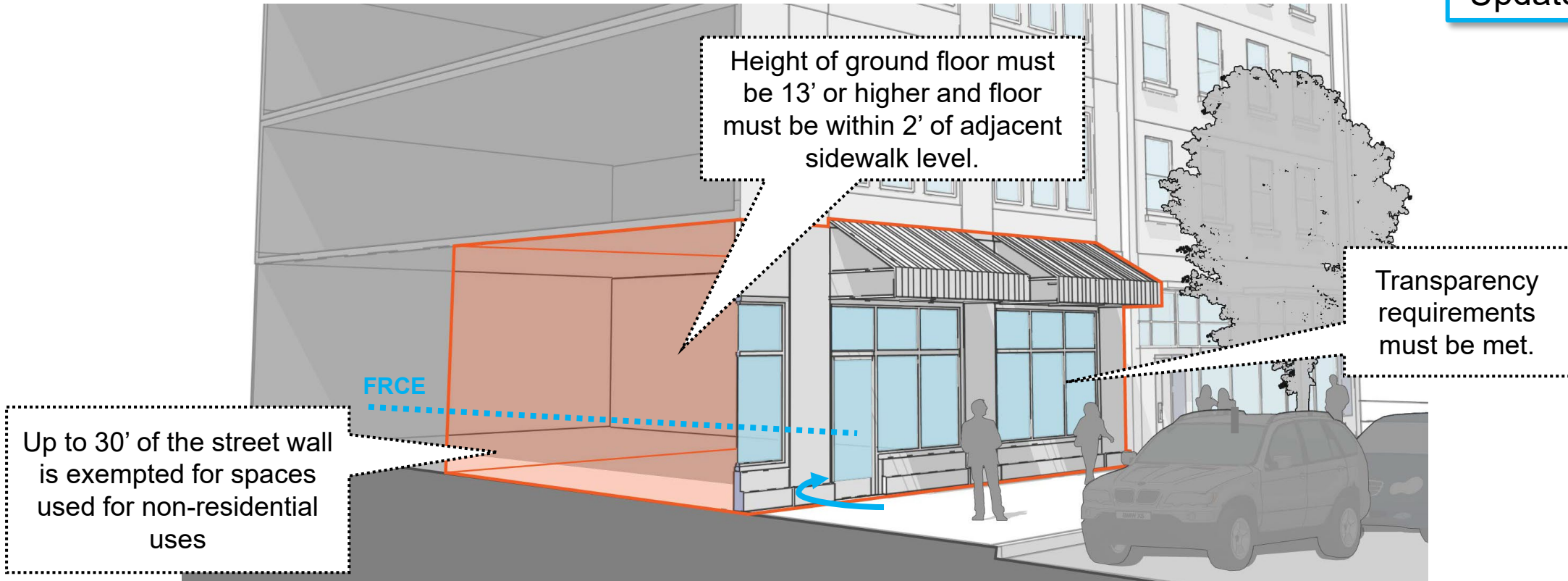
2013 Flood Text: allows the entire ground floor to be exempted in existing buildings (with certain limitations), and for new buildings, only cellar space is exempted (as measured from the FRCE, not the base plane)

Ground Floors

Dry-floodproofed Spaces

A floor area exemption for dry-floodproofed spaces along the retail corridors would encourage active uses to be kept at the street level, promoting a safe and lively pedestrian environment.

Updated Item



Proposed Rule: allows a **portion of the ground-floor** to be exempted without regard to the FRCE level for **new and existing buildings**, provided that certain design conditions are met (spaces will not be considered “cellars”)

Streetscape

When these allowances are used, **buildings would have to comply with “flood-resistant construction standards”** and a new set of streetscape requirements



The design is improved



The building is flood-resistant

Flood Elevation

Streetscape

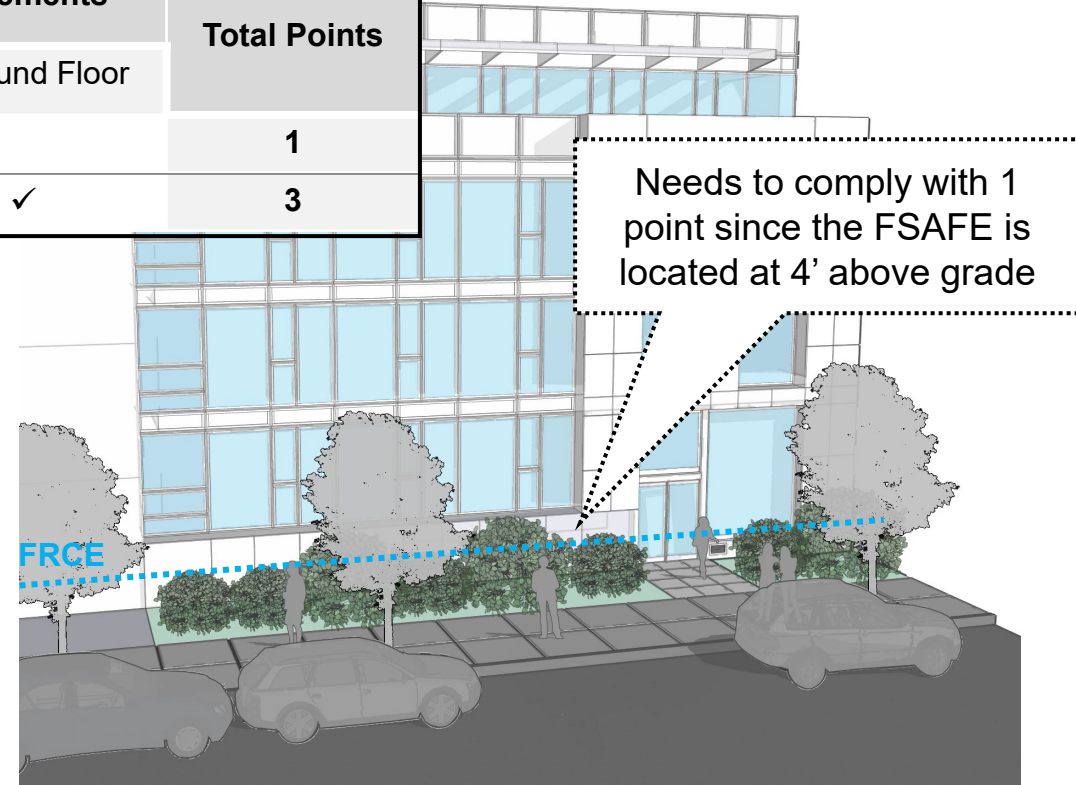
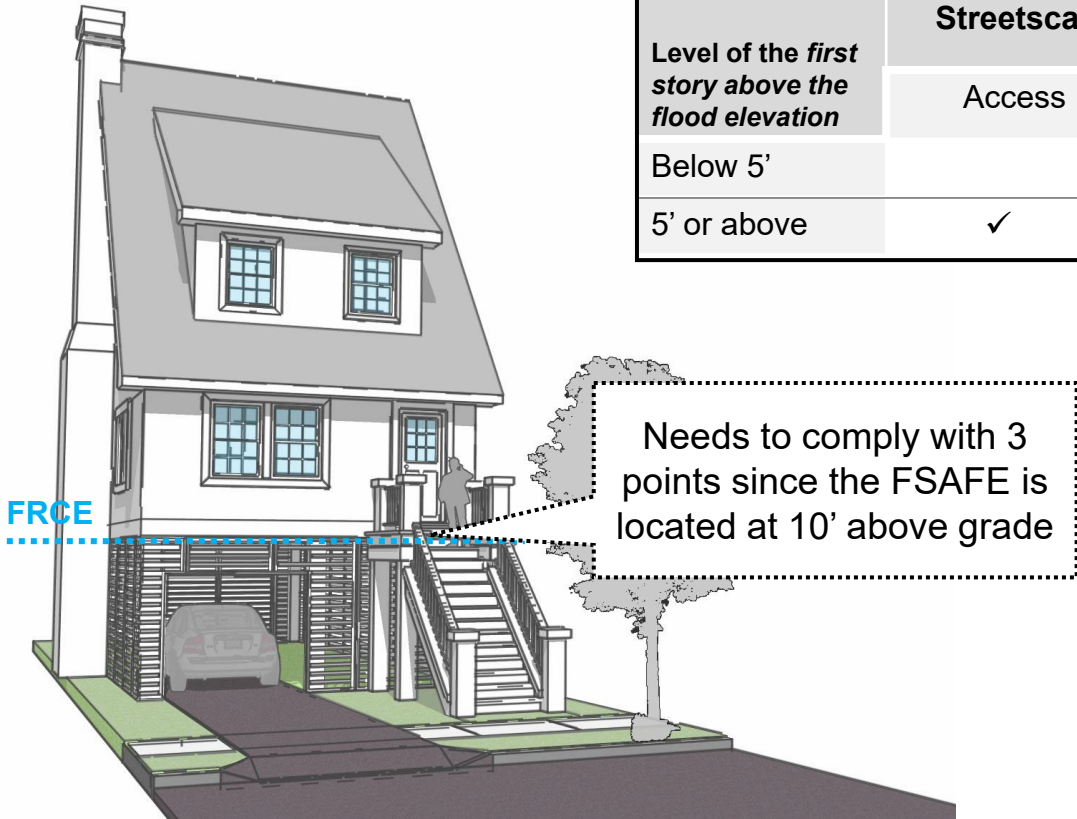
Point System

More consistent streetscape requirements and greater design options will ensure that buildings contribute to their surroundings while reflecting the variety of neighborhoods in the floodplain.

Updated Item

All Buildings

Level of the <i>first story above the flood elevation</i>	Streetscape Requirements		Total Points
	Access	Ground Floor	
Below 5'			1
5' or above	✓	✓	3



Proposed Rule: provides **consistent thresholds** for **all building types** and a wider range of design options to help mitigate potential blank walls and elevated access

Streetscape

Mitigation Options

More consistent streetscape requirements and greater design options will ensure that buildings contribute to their surroundings while reflecting the variety of neighborhoods in the floodplain.

Updated Item

ACCESS:



GROUND FLOOR LEVEL:



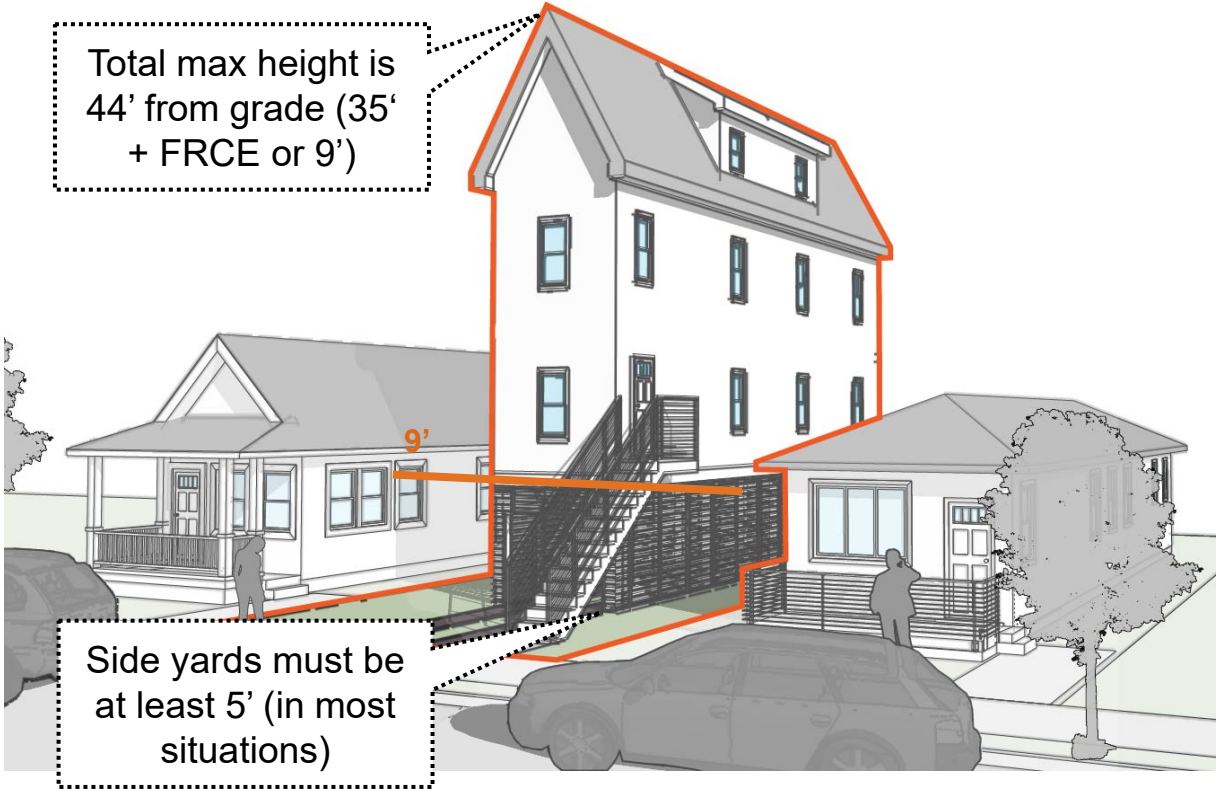
Proposed Rule: provides design options for different building types

Special Conditions

Cottage Envelope

The popular set of rules for small lots known as the “cottage envelope” would continue to enable construction and retrofits of resilient homes that better match their surroundings and are able to accommodate better layouts.

Total max height is 44' from grade (35' + FRCE or 9')



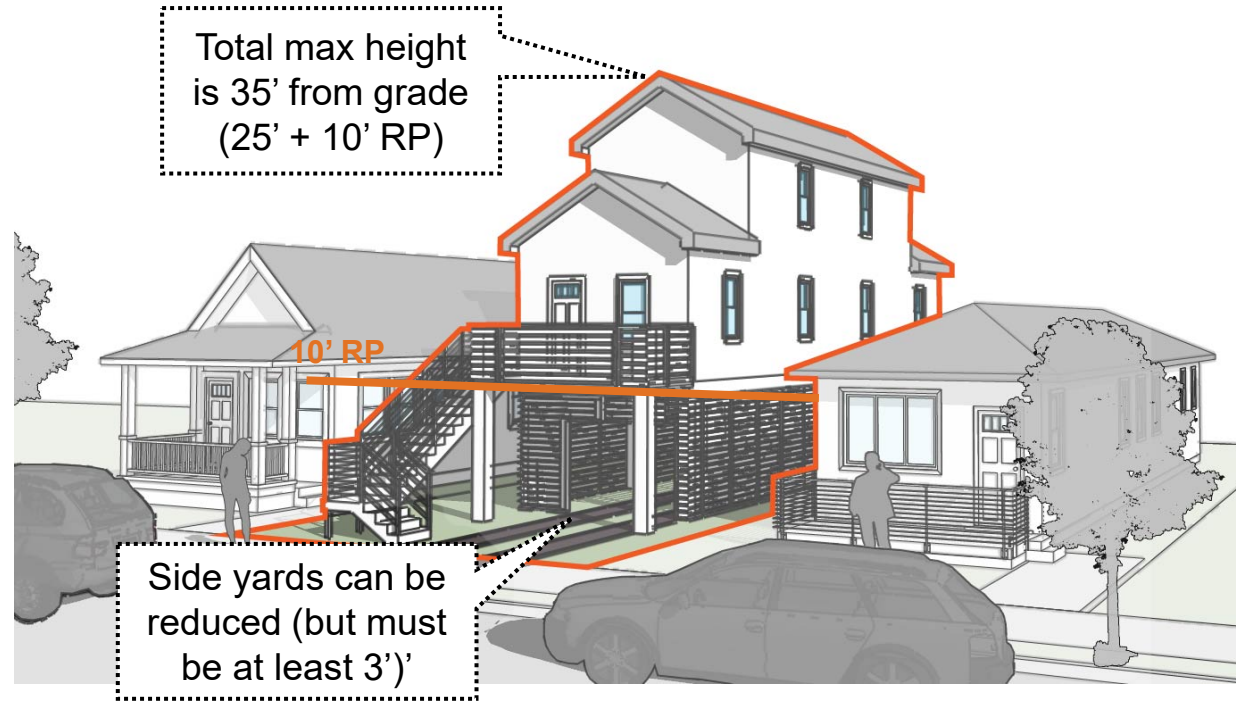
Side yards must be at least 5' (in most situations)

2013 Flood Text: does not provide additional relief for small zoning lots beyond underlying allowances

2015 Recovery Text: created the “cottage envelope”, offering broader side and rear yard reductions in exchange for a shorter height above the FRCE

Updated Item

Total max height is 35' from grade (25' + 10' RP)



Side yards can be reduced (but must be at least 3')

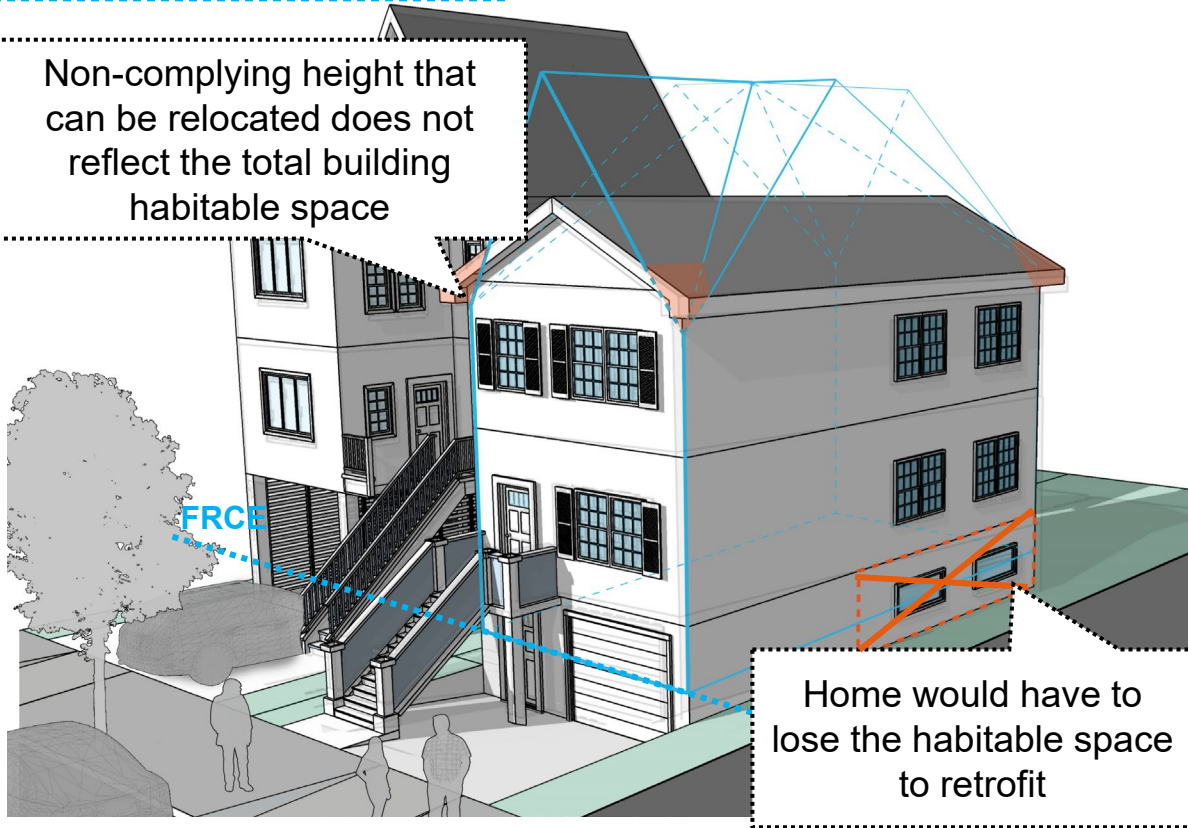
Proposed Rule: continues to allow the “cottage envelope” provisions including an allowance for buildings to match their neighboring front yard, in exchange for a shorter height above the RP

Special Conditions

Allowances for retrofitting or reconstructing non-complying buildings will enable resiliency for the large number of buildings that do not adhere to the current rules.

Existing Non-complying buildings

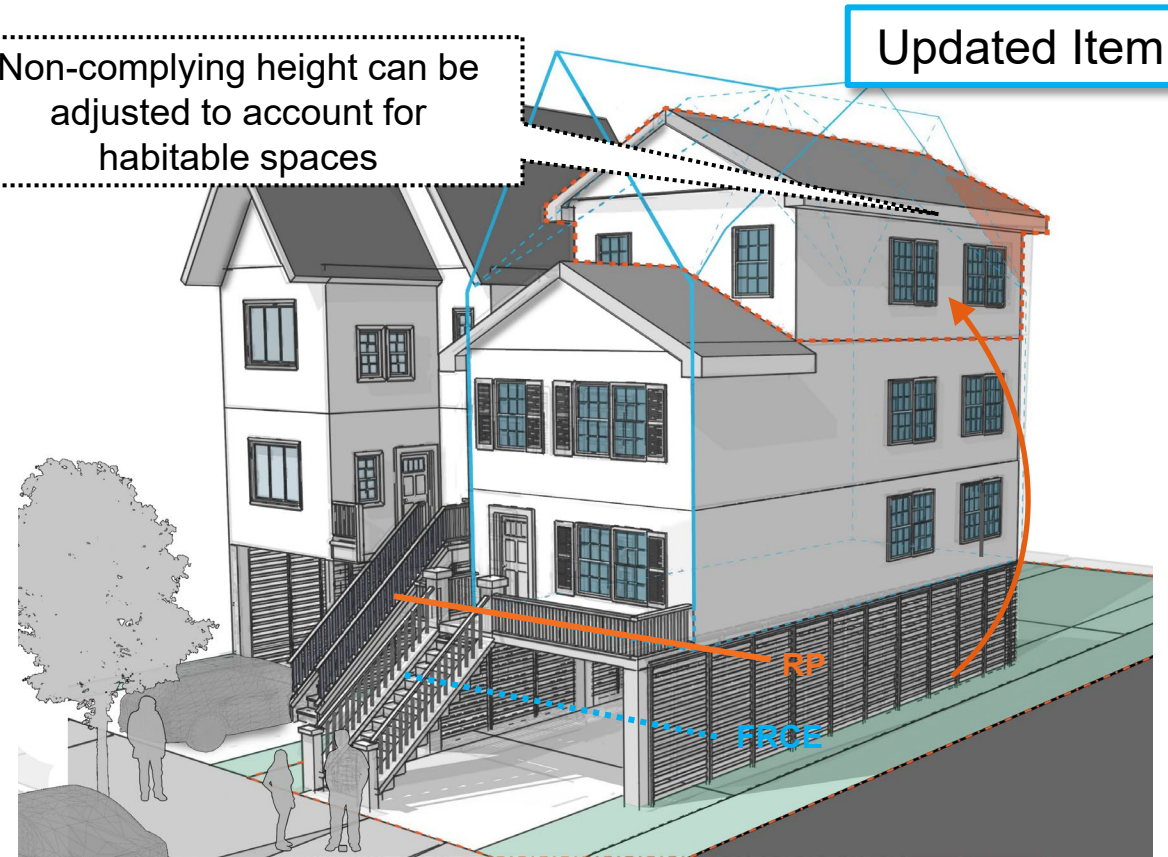
Non-complying height that can be relocated does not reflect the total building habitable space



Home would have to lose the habitable space to retrofit

2013 Flood Text: allows these buildings to be retrofitted or reconstructed by raising the lowest habitable floor located above grade to the FRCE (and increase non-compliances)

Non-complying height can be adjusted to account for habitable spaces

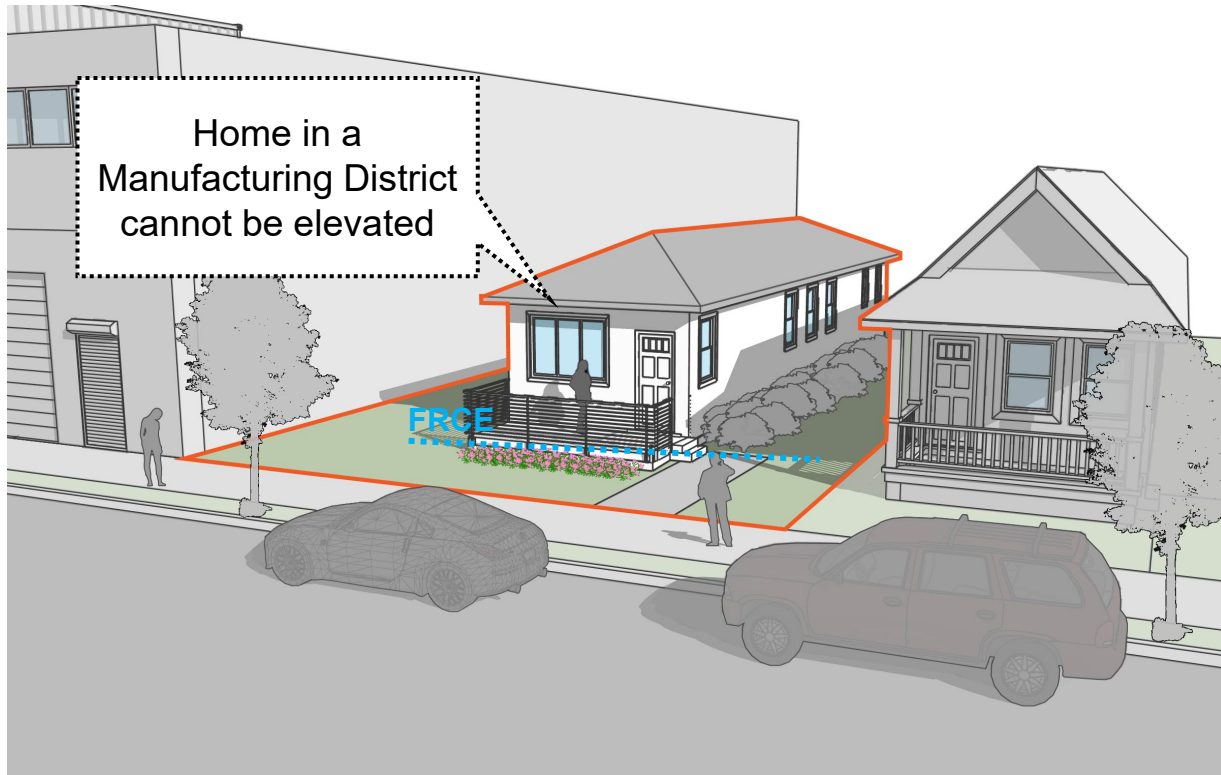


Proposed Rule: allows these buildings to be retrofitted or reconstructed by **relocating the lowest habitable floor to the FRCE or RP**, provided it complies with certain parameters that control new non-compliances

Special Conditions

Non-Conforming

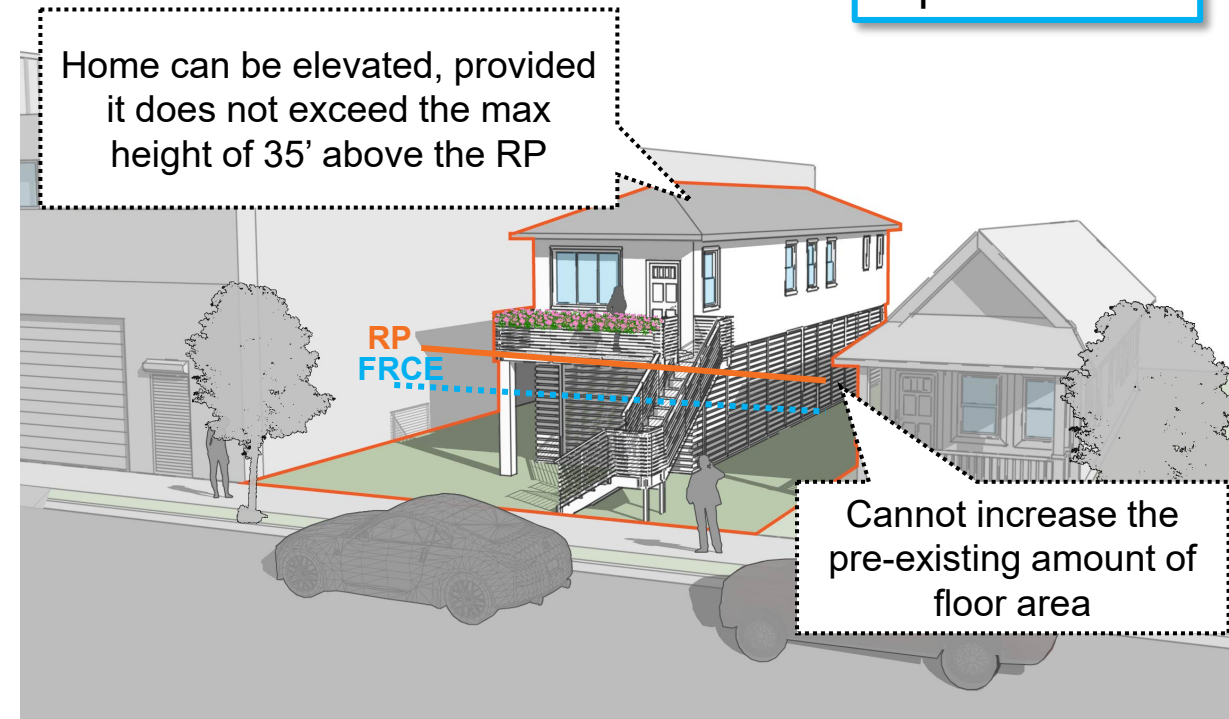
Allowances for retrofitting or reconstructing buildings with non-conforming uses would enable resiliency for the large number of buildings that do not adhere to the current rules.



2013 Flood Text: allows non-conforming 1&2 family homes (except homes in M or C8 Districts) to be reconstructed to the FRCE.

2015 Recovery Text: allows homes in M Districts to be elevated and reconstructed.

Updated Item



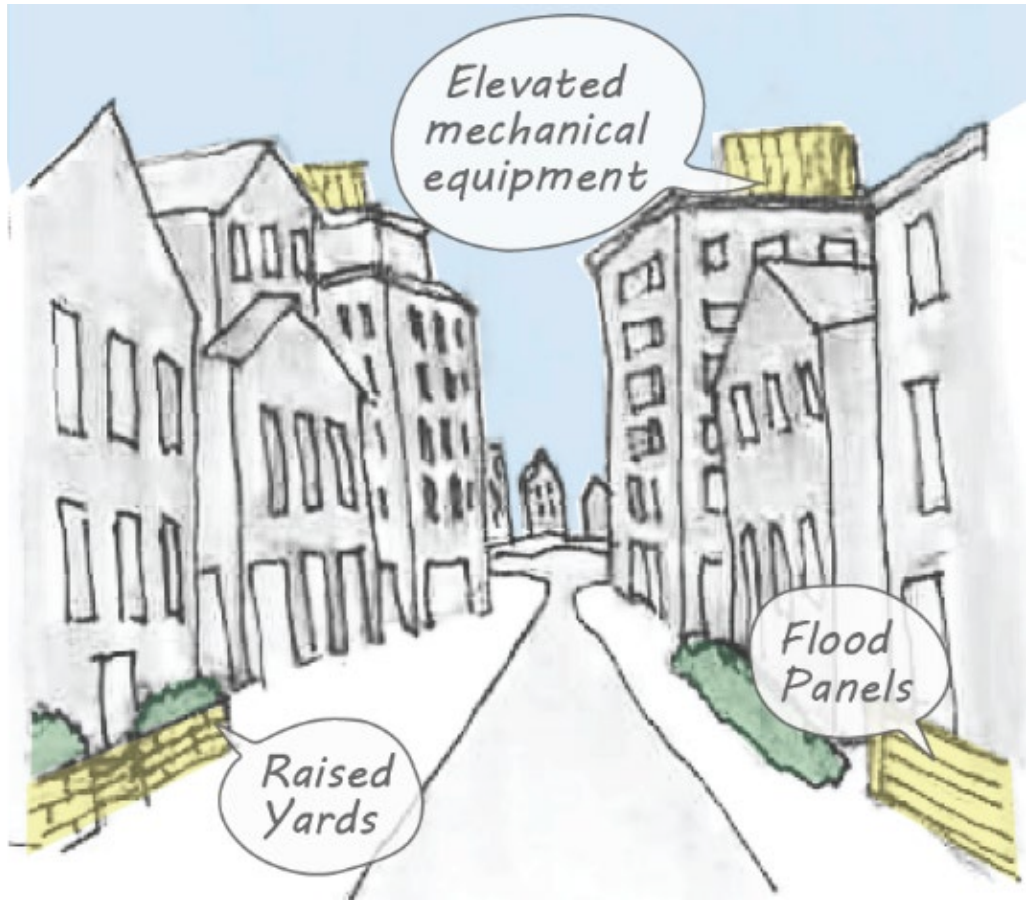
Proposed Rule: allows **more types of buildings** with non-conforming uses (including residences in M or C8 Districts) to be **retrofitted** or reconstructed (if within residential clusters) **to the RP**.

Discretionary Actions

Discretionary options would be available to address **unique situations to ensure that all buildings and neighborhoods can be resilient**



All neighborhoods can be resilient




Goal 3

Allow for adaptation over time through incremental retrofits

- Mechanical Equipment.....
- Support Spaces.....
- Flood Protection Measures.....
- Waterfront Sites.....

Mechanical Equipment



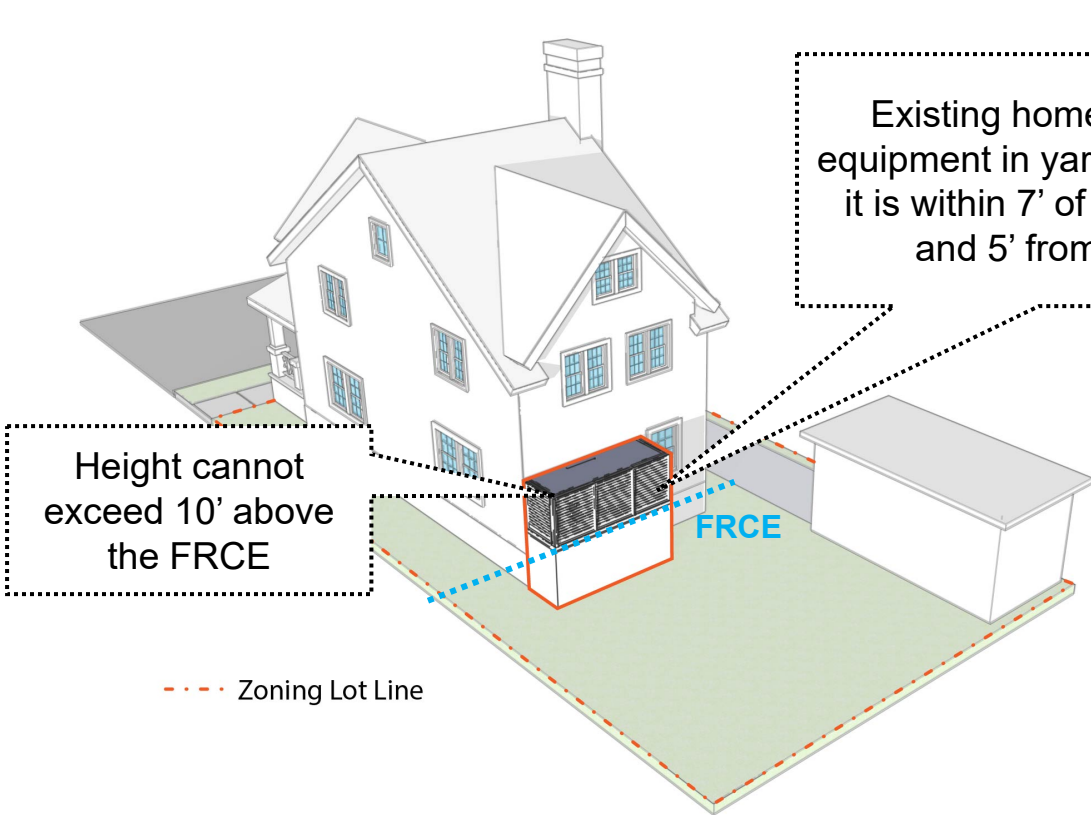
Mechanical equipment would have more options to be placed above flood levels either on open areas or on roofs in lieu of basements or cellars (which make them more vulnerable)

Building owners that face regulatory obstacles or cost constraints to make their buildings fully comply with “flood-resistant construction standards” would still have the option to make them more resilient

Mechanical Equipment

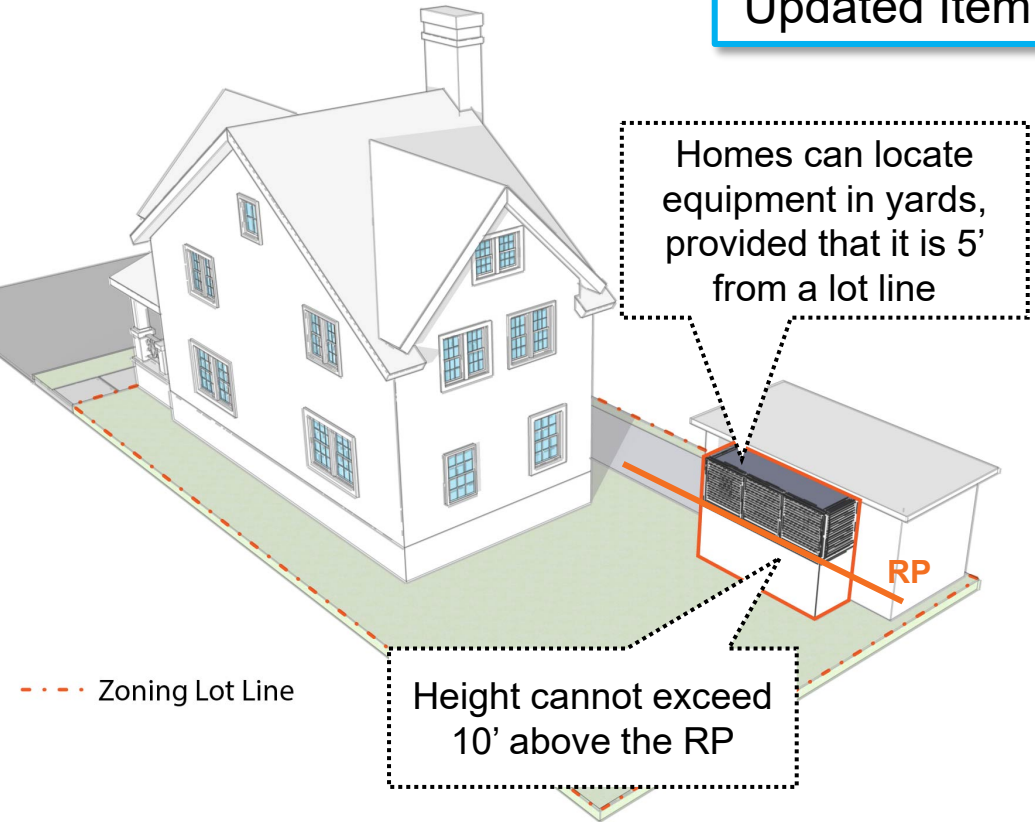
Open areas

Permitted obstruction allowances would enable the placement of mechanical equipment above flood levels outside of buildings to address situations where space is constrained, or when structures cannot sustain additional loads.



2013 Flood Text: allows mechanical equipment to be located within open areas, provided that it is screened, and that location and height limitations are met

Updated Item



Proposed Rule: allows additional flexibility for mechanical equipment to be located within open areas, provided that it is enclosed, and that coverage and height limitations are met

Support Spaces

Key spaces that are often located within basements or cellars, especially those that help support businesses such as offices or storage rooms, would be able to be located above flood levels

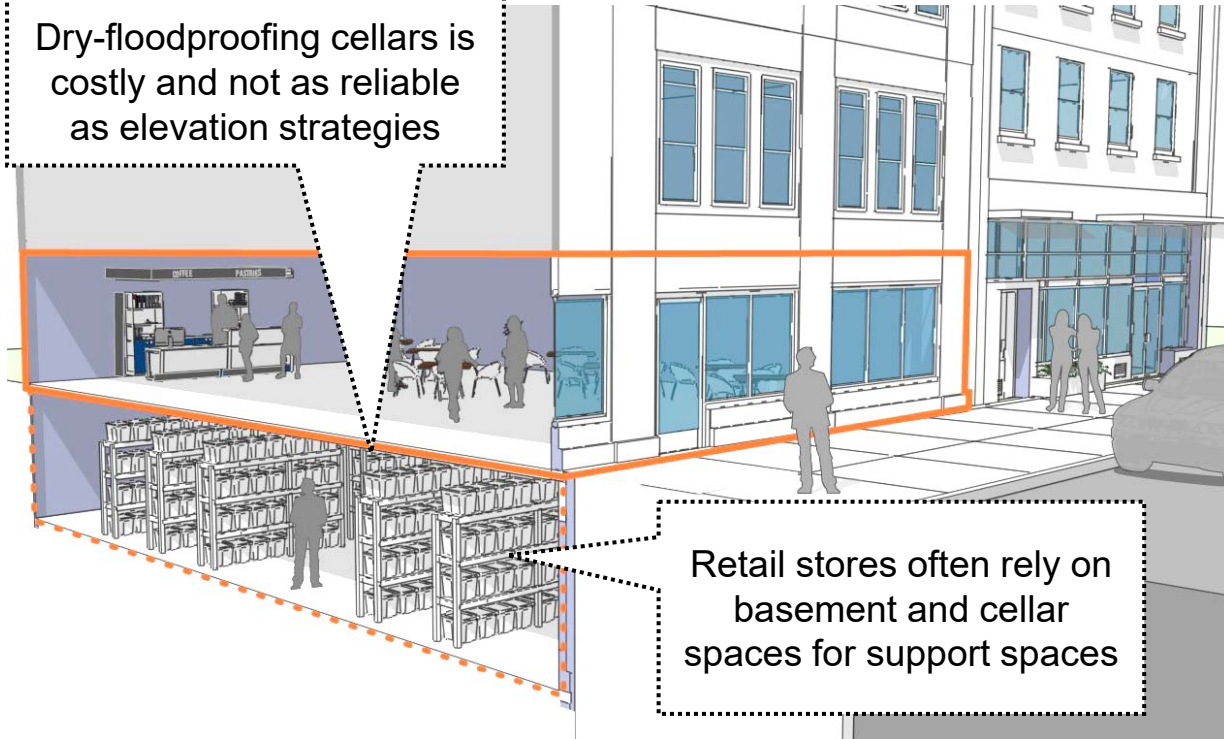


Support Spaces

Ground Floors: 2nd story commercial

Modified use regulations would give businesses the opportunity to move critical business functions, such as storage and inventory, out of basements or cellars to above the flood level, improving the long-term resiliency of commercial corridors.

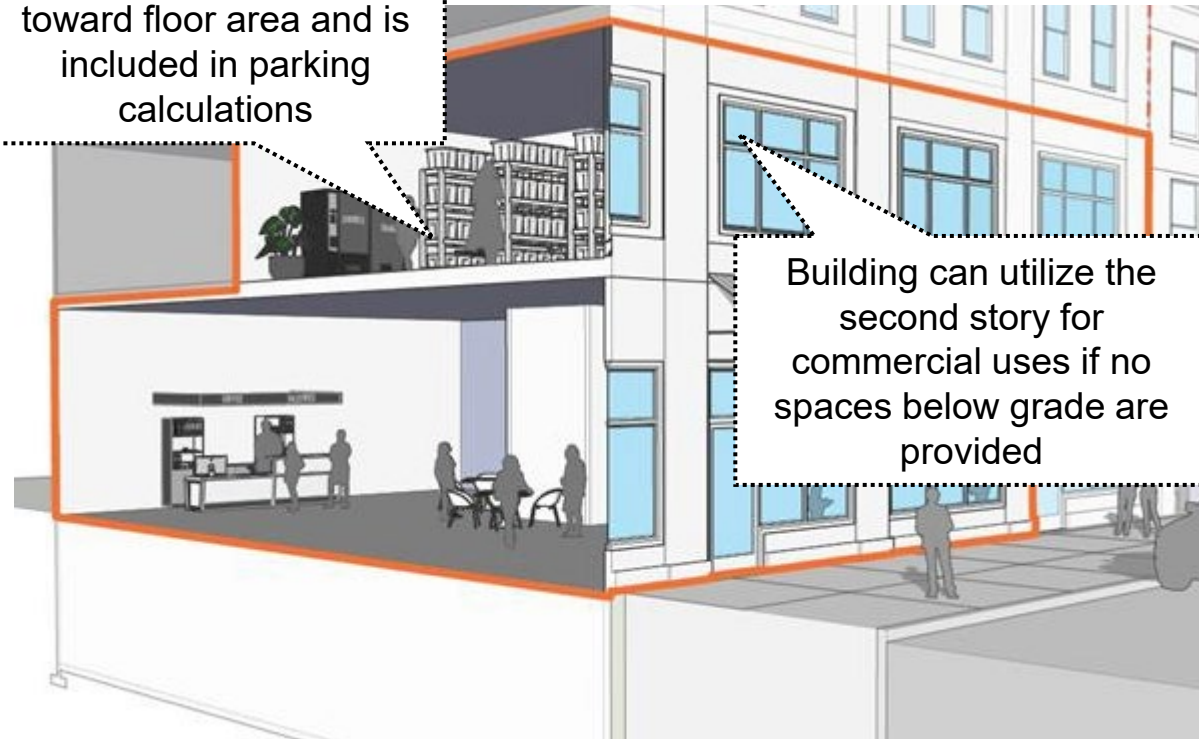
Dry-floodproofing cellars is costly and not as reliable as elevation strategies



Underlying Text: limits commercial uses to the ground-floor in mixed-use buildings located within in low- and medium-density commercial corridors

New Item

Space is still counted toward floor area and is included in parking calculations



Proposed Rule: allows commercial uses on the second story of mixed-use buildings in all commercial corridors

**Flood
Protection Measures**

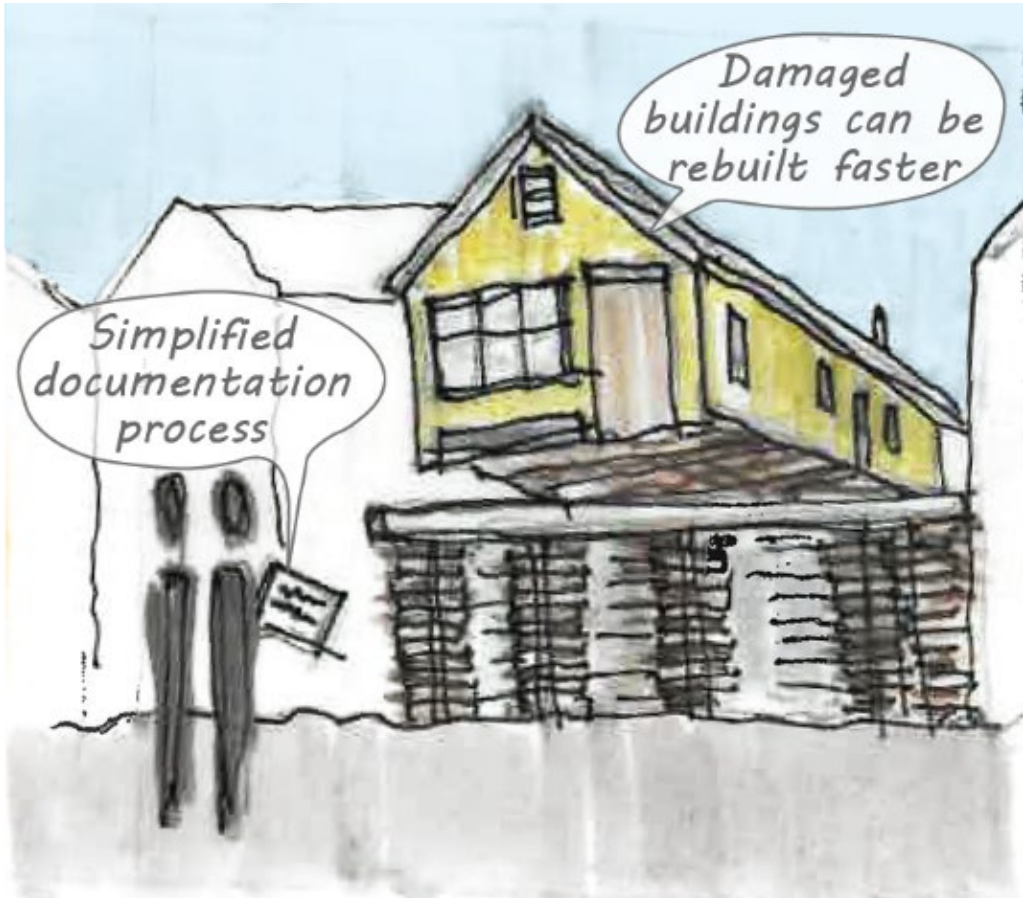


Flood protection measures would be able to be as installed either when they are required for compliance with flood-resistant construction standards or where alternate flood protection strategies may be warranted

Waterfront Sites

Waterfront sites would be able to better accommodate contemporary resiliency measures and address sea level rise





Goal 4

Facilitate future recovery by reducing regulatory obstacles

- Power Systems.....
- Accessibility.....
- Vulnerable Populations.....
- Disaster Recovery

Power Systems

Hurricane Sandy showed that areas affected by the storm went beyond the floodplain and that the regulations which would facilitate recovery would be useful for other types of disasters

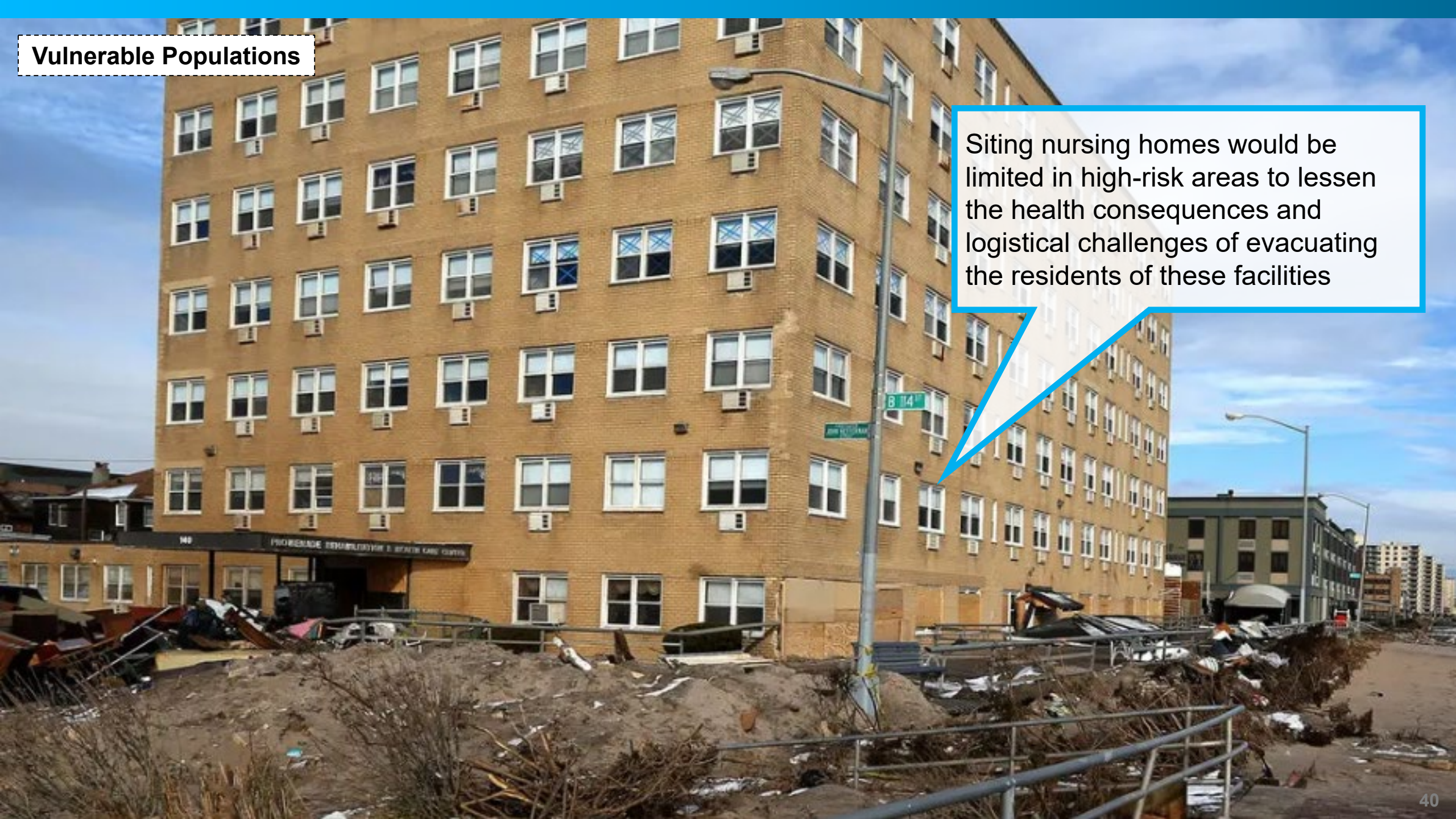
More options to locate power systems on lots throughout the city would make it easier for properties to provide back-up energy, especially in the event of a disaster

Accessibility

An accessible design would be better enabled consistently throughout the city

Vulnerable Populations

Siting nursing homes would be limited in high-risk areas to lessen the health consequences and logistical challenges of evacuating the residents of these facilities

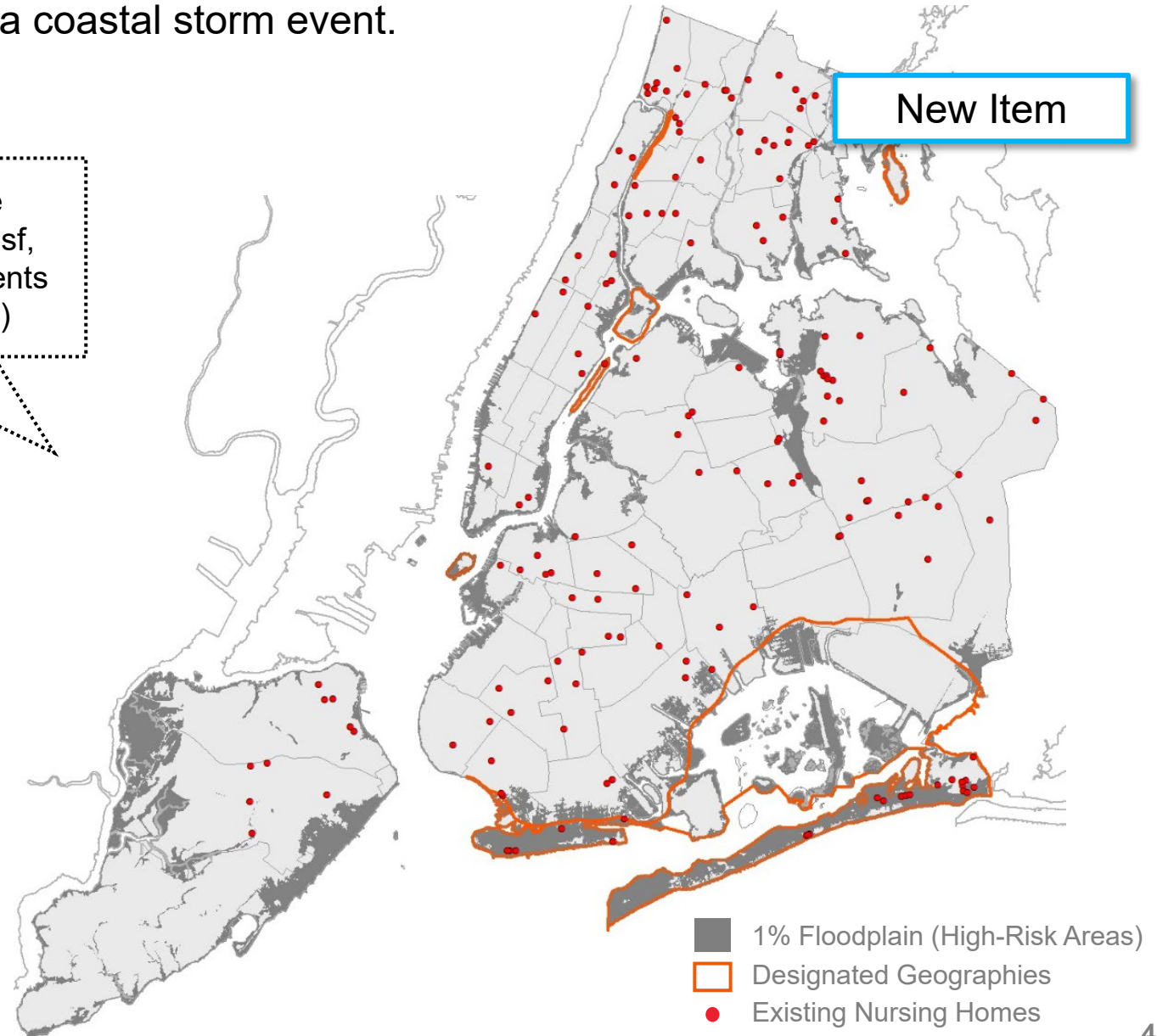


Vulnerable Populations

Use restrictions would limit the exposure of nursing home residents to areas at high risk of flooding since these populations are particularly vulnerable, whether they shelter in place or evacuate prior to a coastal storm event.

Existing facilities can create enlargements of up to 15,000 sf, allowing for modest improvements (including building resiliency)

Proposed Rule: prohibits new nursing homes and restrict the enlargement of existing facilities within the 1% annual chance floodplain and selected areas where vehicular access would likely become limited during a disaster.



Disaster Recovery

Rules that could be made available to facilitate the recovery process from future disasters would be included, some of which would be implemented now to help address the COVID-19 pandemic and its associated economic effects

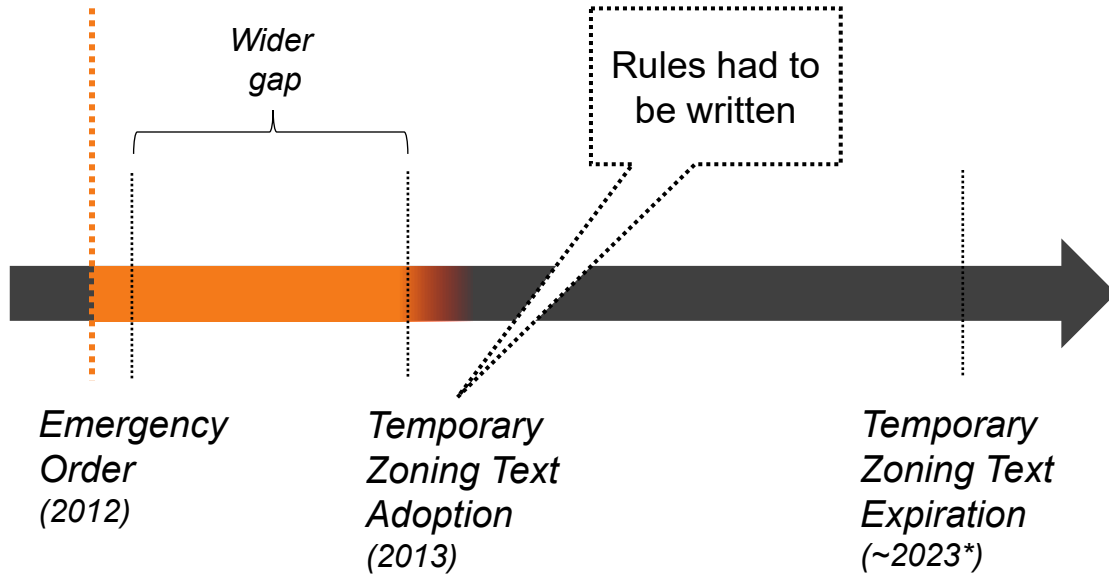
Hurricane Sandy demonstrated that a lengthy process to update zoning regulations can present obstacles to the necessarily fast-paced disaster response

Disaster Recovery

Framework

A series of disaster recovery provisions that could be made available through a text amendment when a disaster occurs would offer a roadmap for the public, planners, and decisionmakers when working to recover from a disaster.

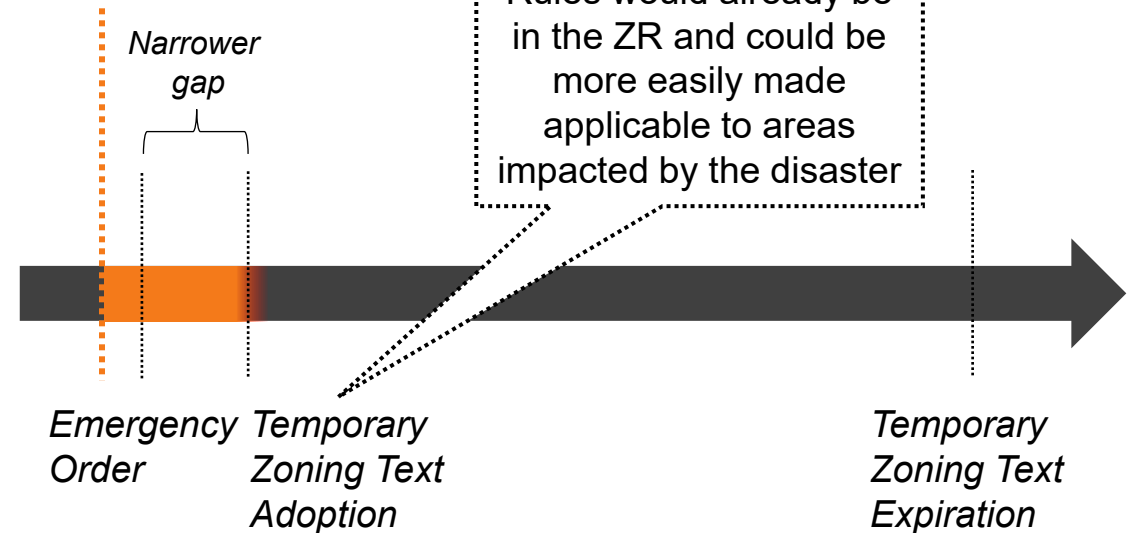
Hurricane Sandy



*original assumption: 2014

2013 Flood Text: recovery provisions had to be developed soon after Hurricane Sandy, taking certain time to be adopted

Future Disaster



Proposed Rule: recovery provisions would be placed in the Zoning Resolution today, so they can be quickly selected post-disaster based on the issues caused by such event and the necessary time period for recovery

Disaster Recovery

Types of Rules

Recovery provisions would include rules that could facilitate the recovery process from disasters which cause physical impacts (e.g., hurricanes), and a wider range of disasters that do not necessarily lead to physical damage (e.g., pandemics).

Updated Item

- Damage & Destruction Provisions
- Bulk Modifications
- Tax Lots as Zoning Lots
- Documentation Allowances

- Damage & Destruction Provisions
- Bulk Modifications
- Tax Lots as Zoning Lots
- Documentation Allowances
- Construction Timeframes
- CPC Special Permits/Authorizations Timeframes
- Discontinuance of non-conforming uses
- Temporary Uses

2013 Flood Text and 2015 Recovery Text: allowed Sandy-damaged buildings (i.e. most non-conforming and non-complying) to be rebuilt and additional relief to expedite recovery (such as documentation allowances)

Proposed Rule: builds upon this set of provisions and include additional rules such as allowing non-conforming uses to be discontinued for a longer period of time

Disaster Recovery

COVID-19

Selected rules would be triggered to provide a more predictable, long-term method to administer the pandemic relief.

New Item

These allowances will cease when the EO expires and is not renewed, or when the state of emergency ends



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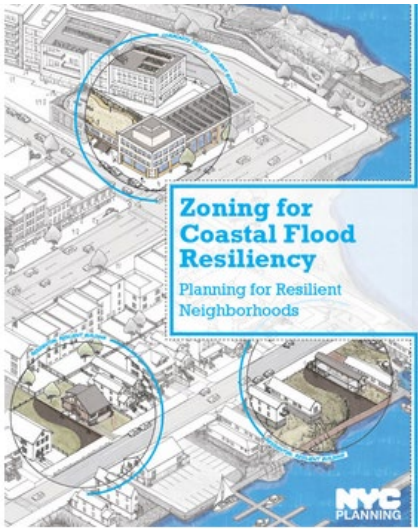
Mayor's Executive Order: provides short-term relief from regulations, including relief from construction timeframe rules and non-conforming use provisions

Proposed Rule: puts these two provisions into effect throughout the city for a period of two years, consistent with the general intent of the disaster recovery rules and the Executive Order

Next Steps

Public Review

The citywide text amendment has been referred out on October 19, 2020 to all 59 Community Boards, Borough Boards and Borough Presidents for 60 days. The deadline to receive recommendations is Dec 28, 2020.



Zoning for Coastal Flood Resiliency
Citywide Text Amendment

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Local Actions

- Gerritsen Beach, BK
- Sheepshead Bay, BK
- Old Howard Beach, QN



Referral
October 19, 2020

Community Boards

Borough Presidents & Boards

City Planning Commission

City Council

Mayor
(Spring 2021)