

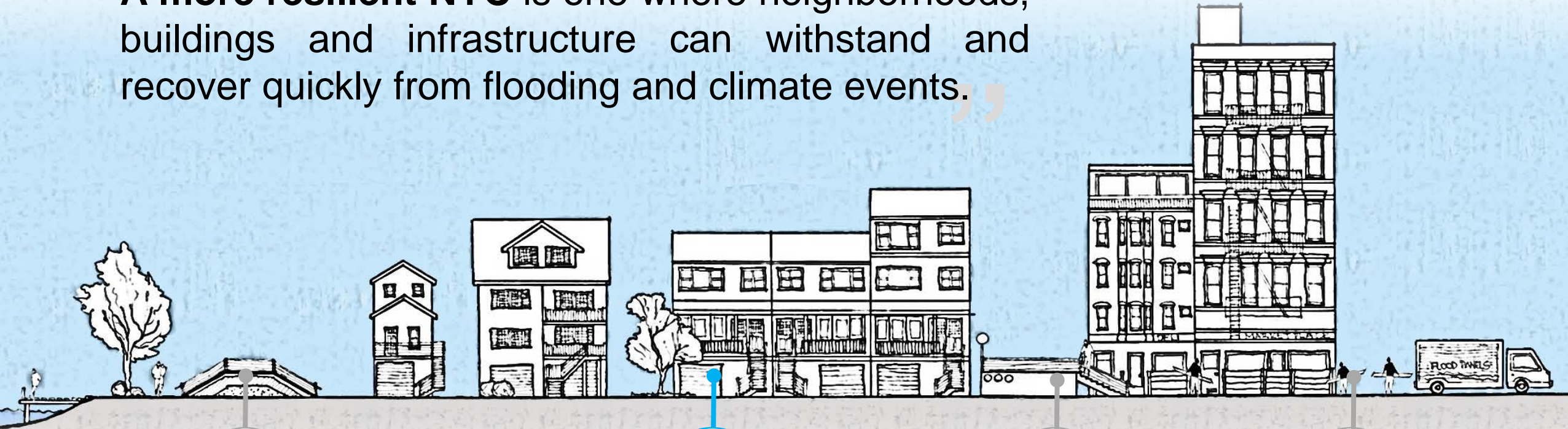
Flood Resilience Zoning Text Update

Brooklyn CB 2 Land Use Committee
September 19, 2017



#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

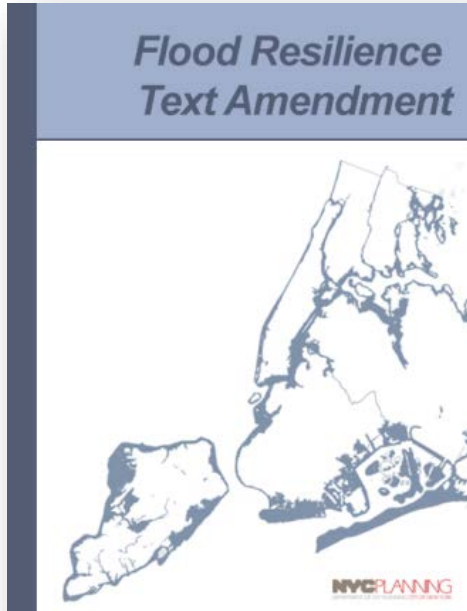
is protected from climate hazards



Residents and businesses

are prepared

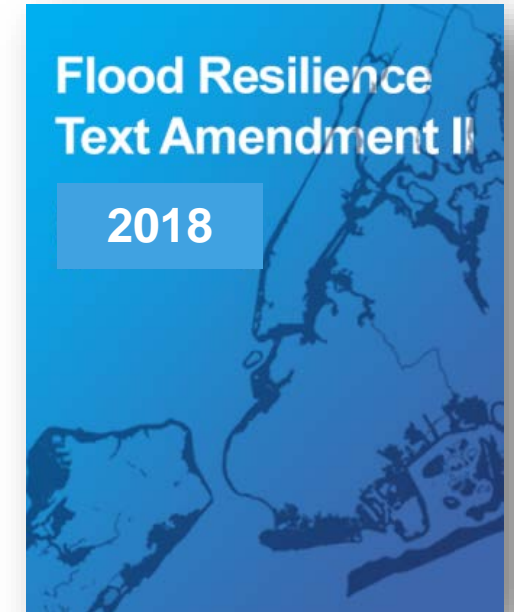
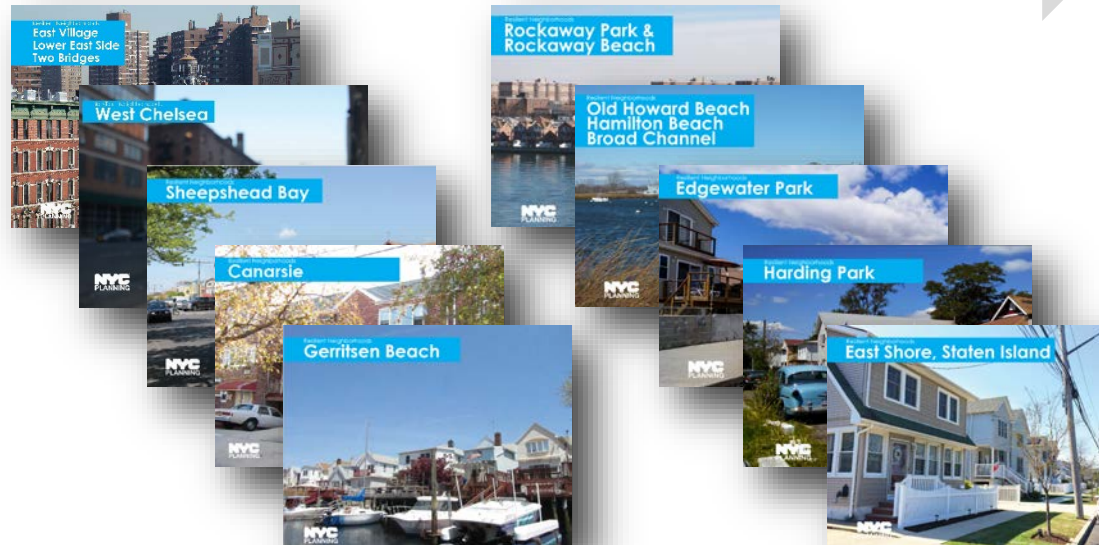
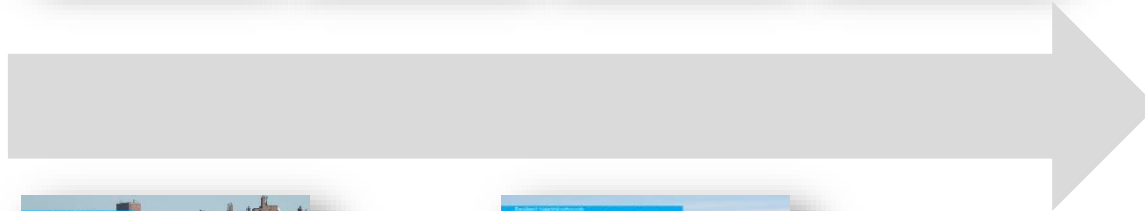
Flood Resilience Zoning Projects at DCP



2013

“Flood Text”

initial temporary 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.

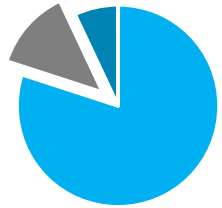
The floodplain affects a large geography and most community and council districts.

100 Year Floodplain

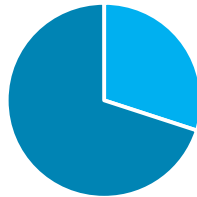
FEMA 2015 PFIRM

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

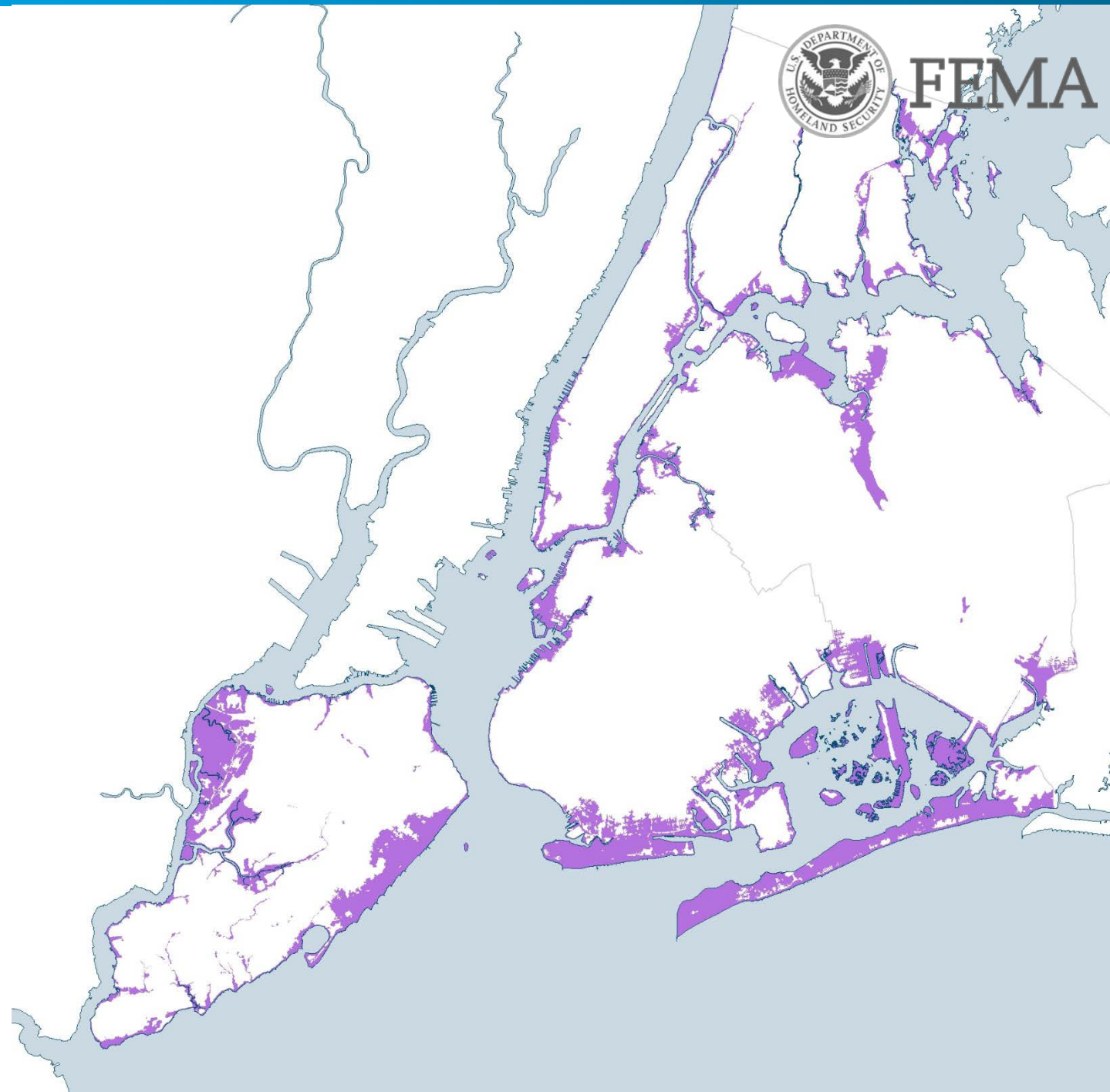
50 of 59 Community Boards
45 of 51 Council Districts



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



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

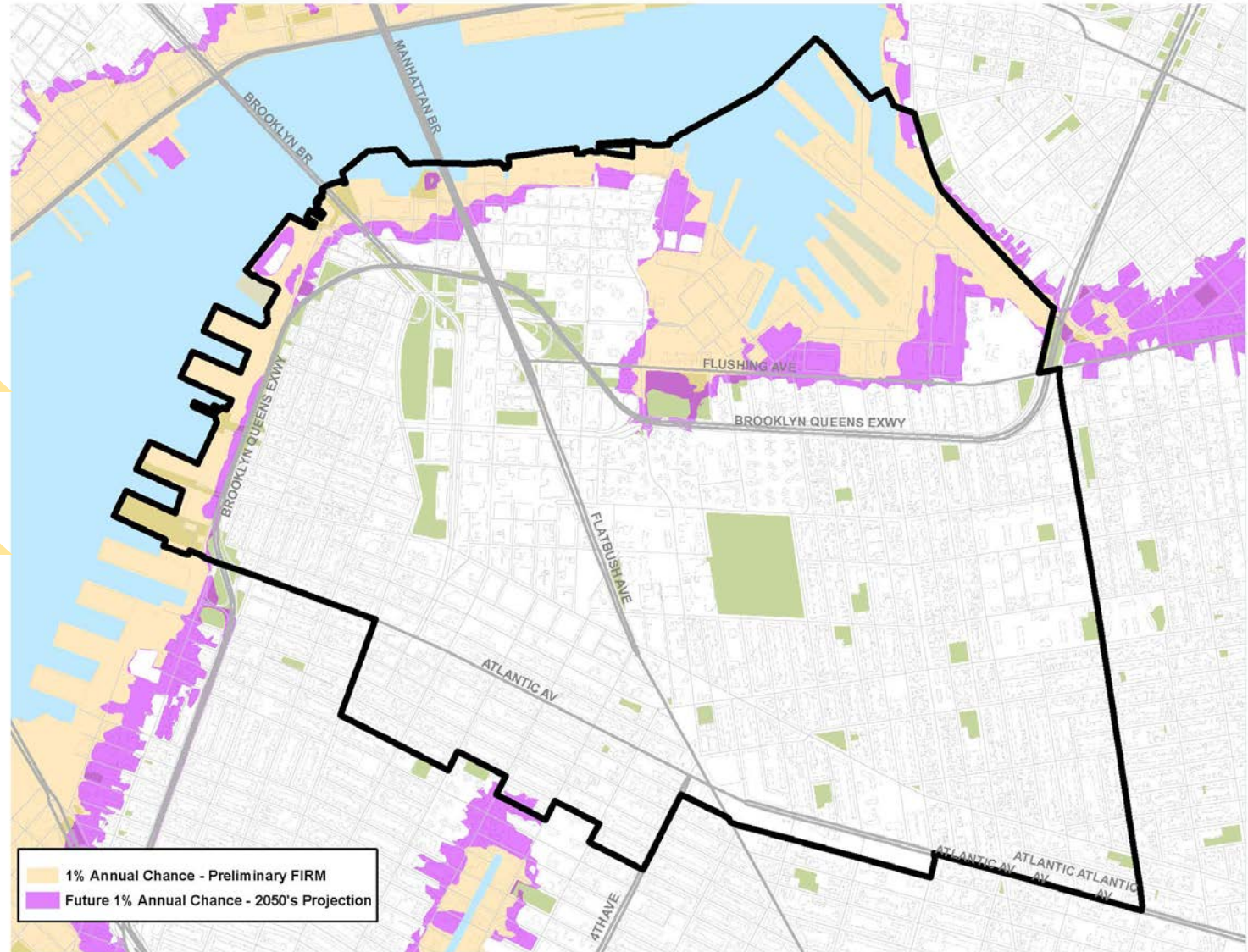


FEMA

Future Flood Map

Flood Risk in BK CB 2

	1% Chance Flood Today	Projected 2050s	
Residential units in floodplain	1,400	2,125	↑ 30%
Buildings in floodplain	240	350	↑ 45%



How are buildings in the floodplain regulated?

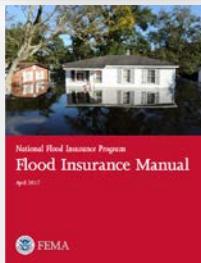


FEMA



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)

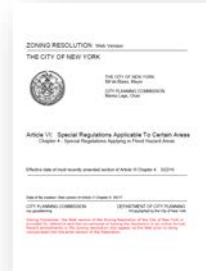
Design minimum construction requirements for flood hazard areas

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

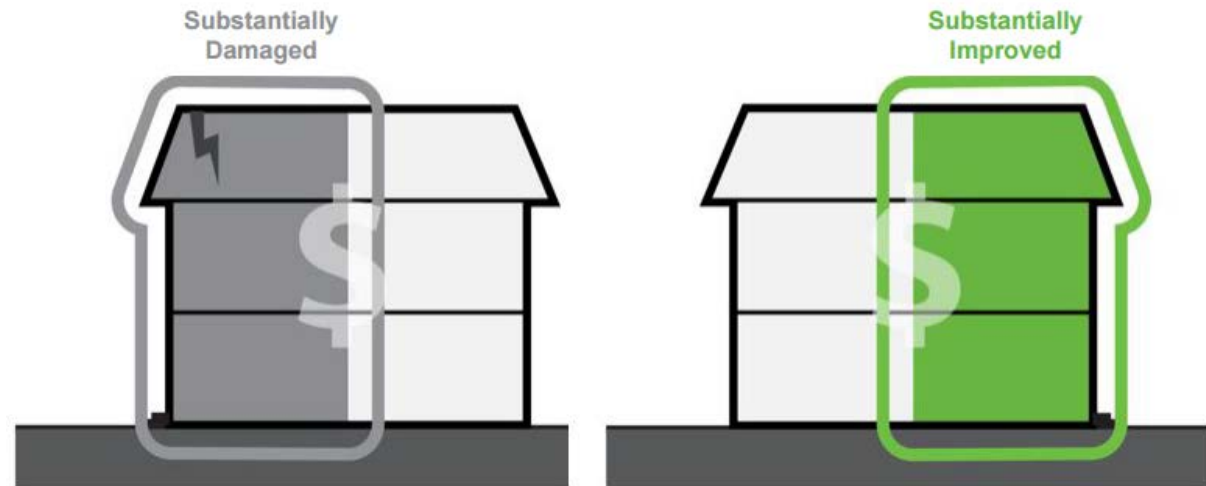
Flood resilient construction

Required by DOB

Required
for all new buildings



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



Substantially Damaged: Restoring Cost \geq 50% Market Value

Substantially Improved: Improvement Cost \geq 50% Market Value

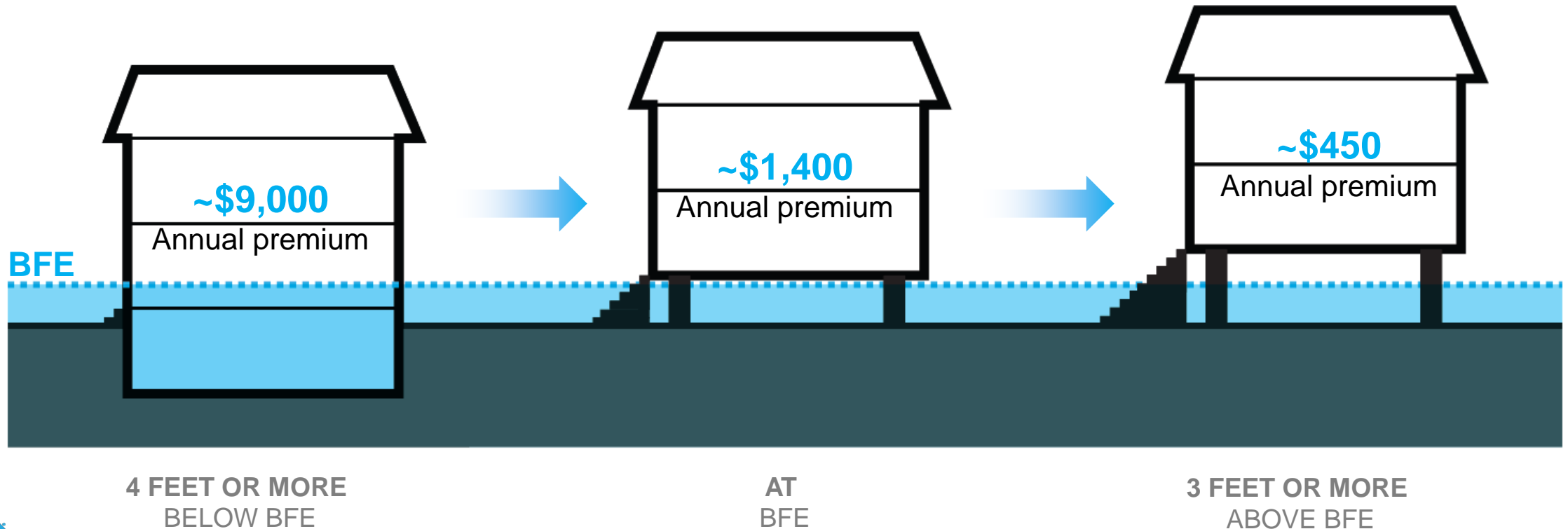
Flood insurance rates

Set by FEMA



Raising or retrofitting your building or home will reduce costs

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



Flood resilient construction

Required by DOB - Residential

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

Base Flood Elevation (BFE) is the expected height of flooding from the 1% annual chance flood

Design Flood Elevation (DFE) is the BFE + *freeboard* of 1-2 feet for additional margin of safety

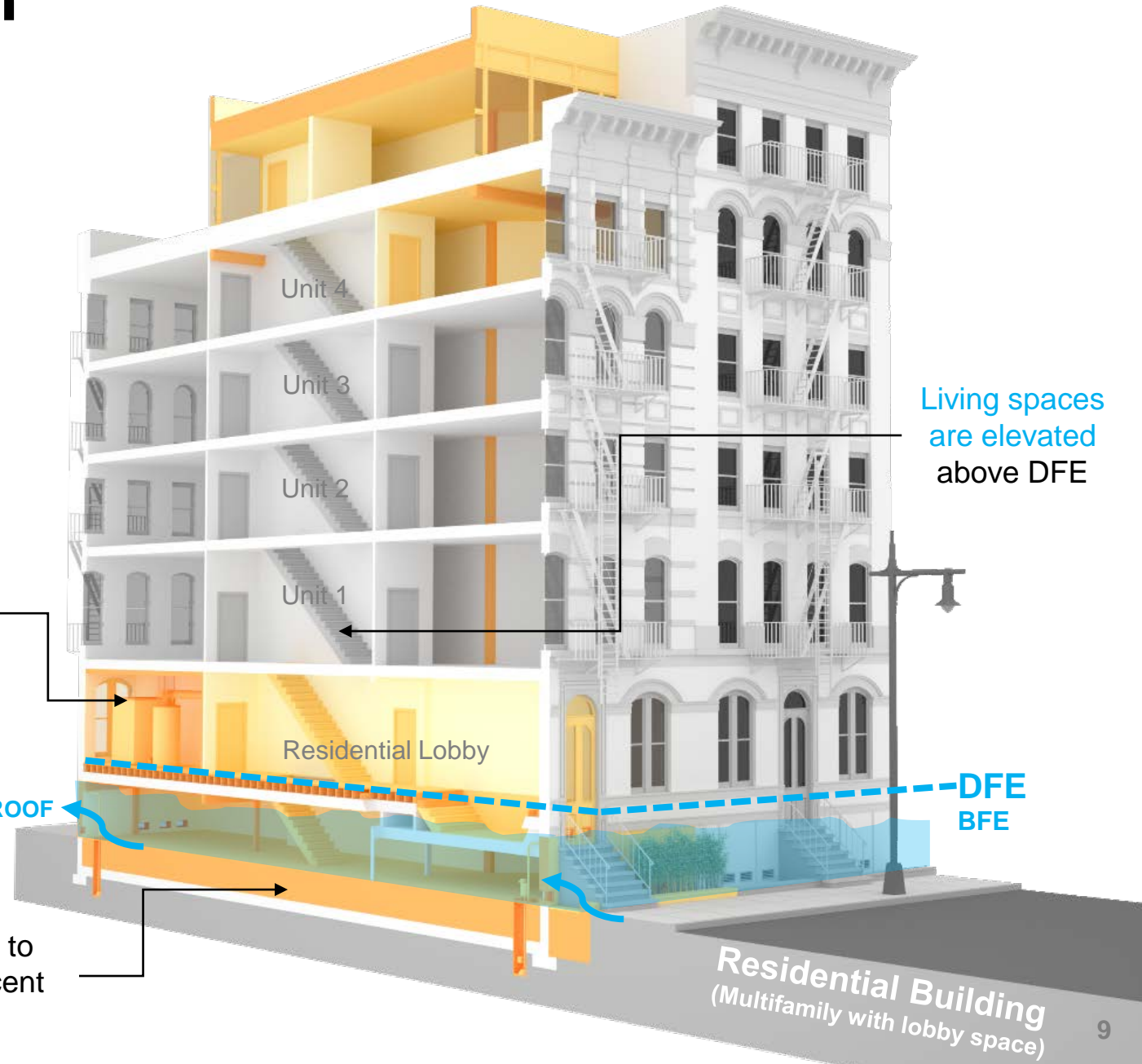
Mechanical systems are elevated above DFE

WET-FLOODPROOF

Site is filled to lowest adjacent grade

Living spaces are elevated above DFE

DFE
BFE



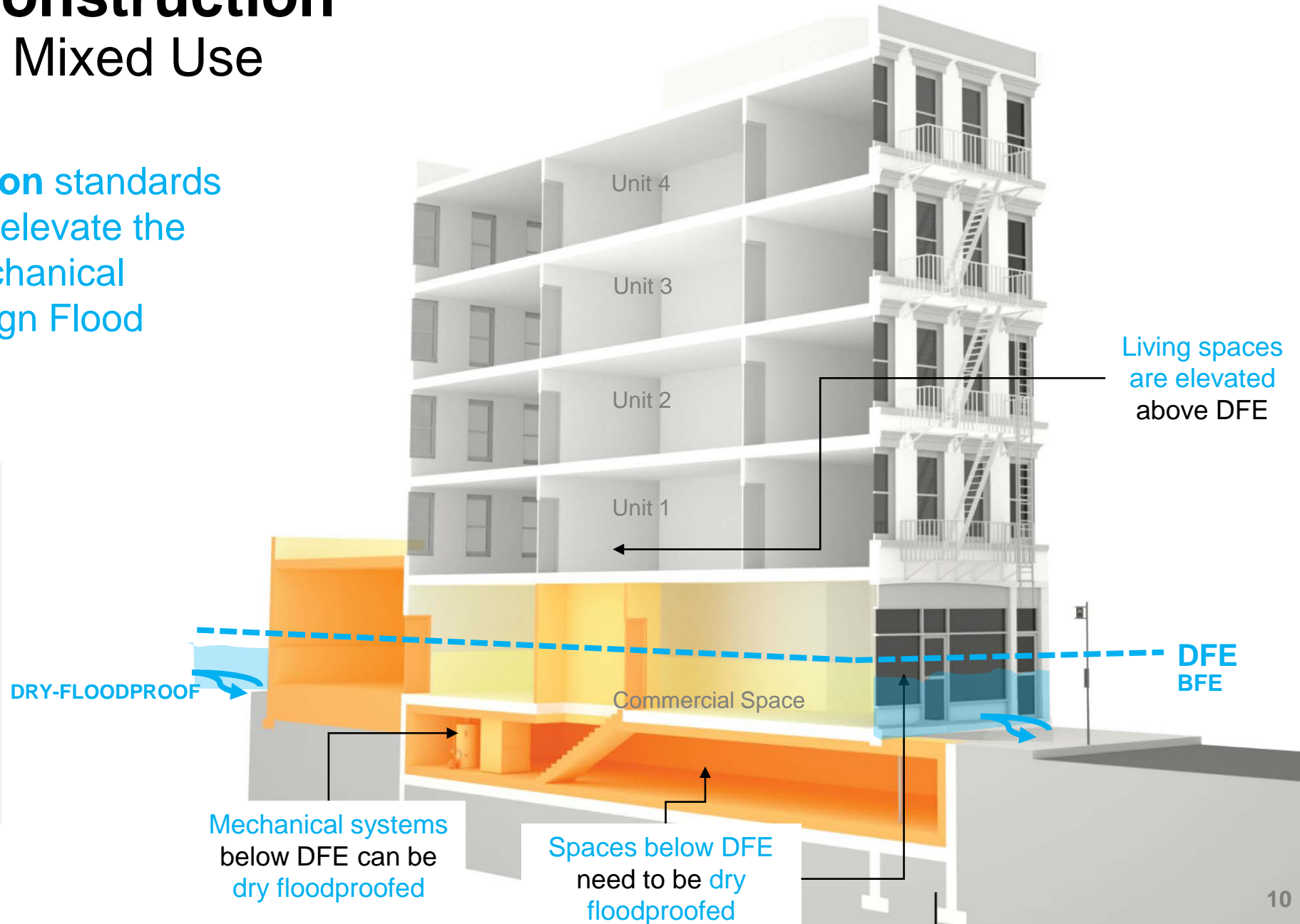
Flood resilient construction

Required by DOB – Mixed Use

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

Base Flood Elevation (BFE) is the expected height of flooding from the 1% annual chance flood

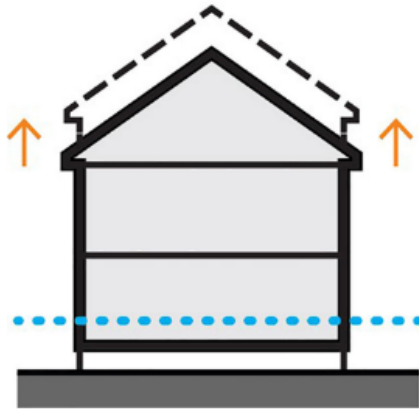
Design Flood Elevation (DFE) is the BFE + *freeboard* of 1-2 feet for additional margin of safety



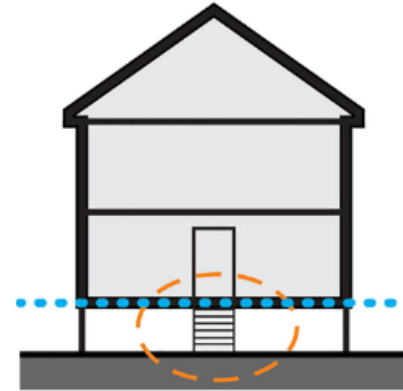
2013 Citywide Flood Text – Current

Amended zoning in six key areas

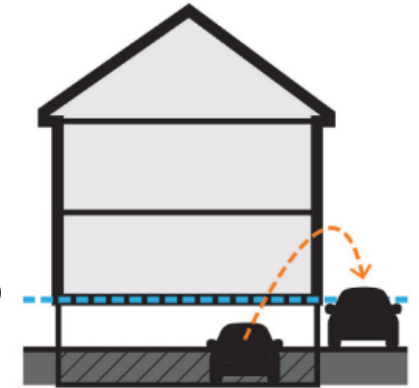
1
Height
Measured from
flood elevation



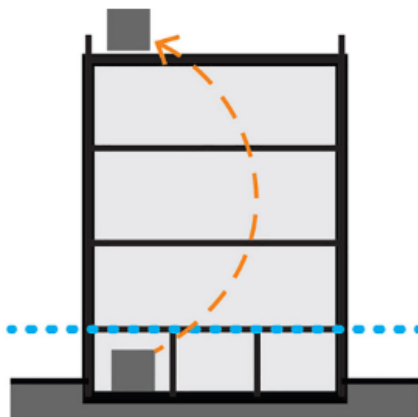
2
Access
Flexibility for
stairs, ramps, lifts



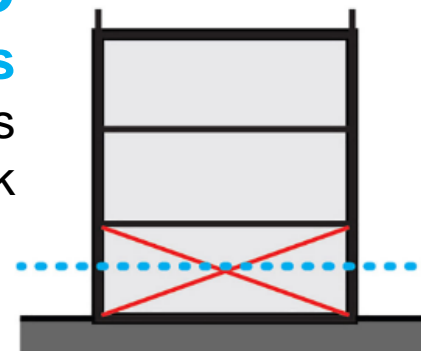
3
Parking
Flexibility to
relocate parking



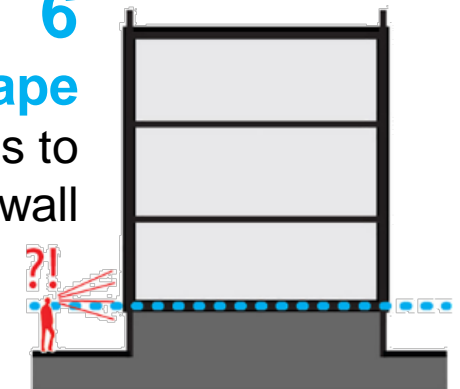
4
Systems
Flexibility to
relocate/elevate



5
Ground Floors
Account for costs
of new flood risk



6
Streetscape
Require features to
mitigate blank wall



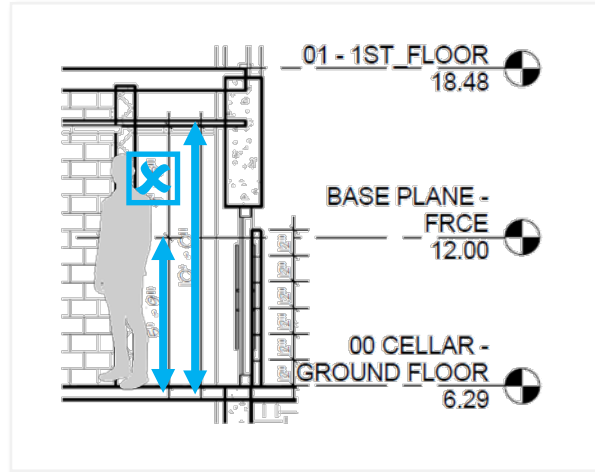
Flood Text II

Need for a new citywide text amendment



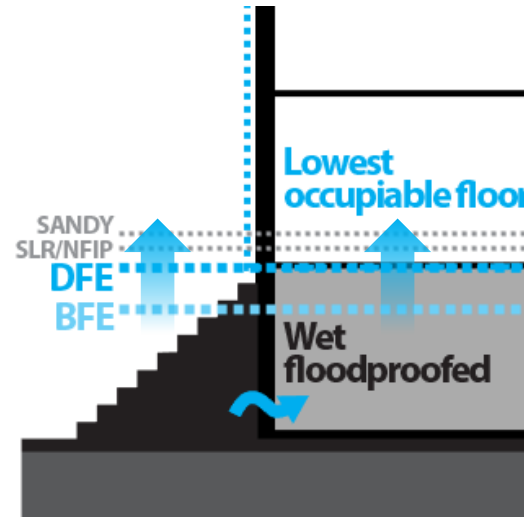
1

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



2

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



3

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



4

Encourage **good resilient construction** that enhances the character of coastal communities

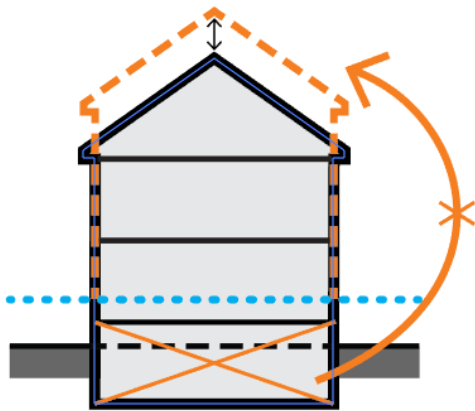
Flood Text II

Fix and improve provisions based on lessons learned

1

Height

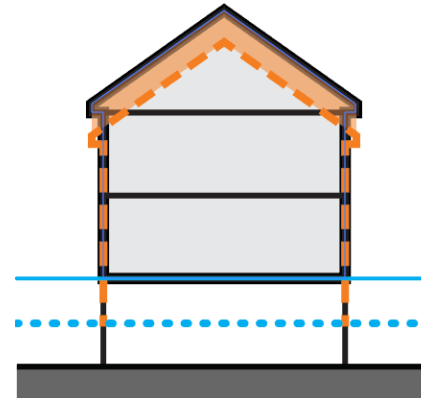
Homeowners may face the loss of subgrade spaces when retrofitting



2

Height

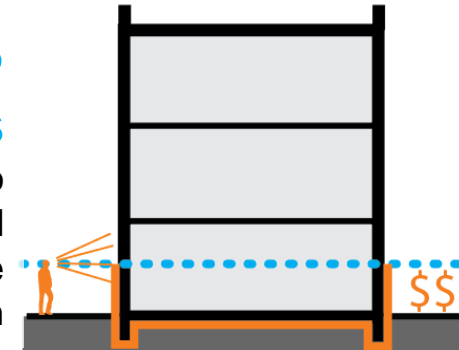
Property owners may want to address future risk by over-elevating



3

Ground Floors

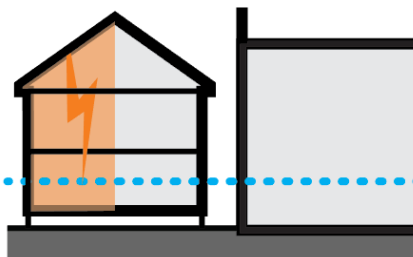
Current incentives to keep active ground floors may not be enough



4

Homes in M Districts

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



5

Old Homes in Small Lots

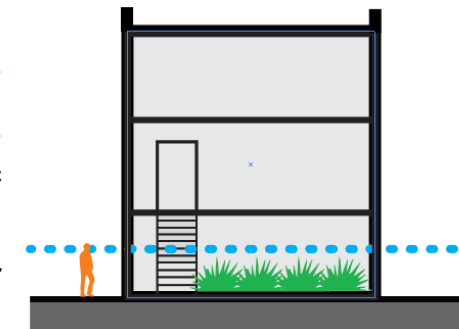
Old homes on small lots may need more flexibility to rebuild in the future



6

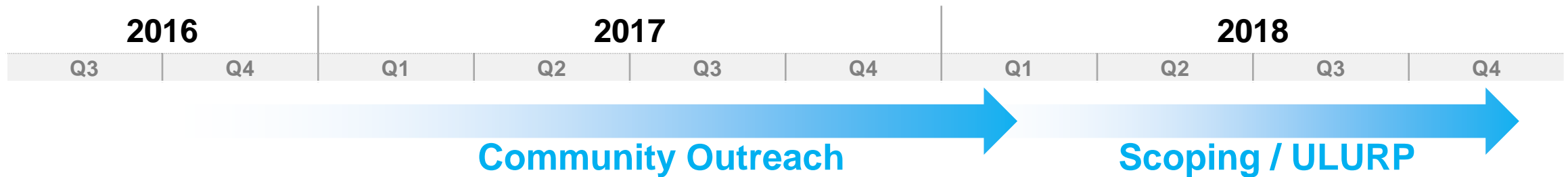
Improve Streetscape

Mitigate the effects of elevated buildings on neighborhood character



Flood Text Update Outreach

DCP plans a robust public engagement process:



As part of this outreach process, DCP will:

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

* Schedule is tentative and subject to change

Outreach Resources



NYC Flood Hazard Mapper

www.nyc.gov/floodhazardmapper

Info briefs on Flood Resilience Zoning, Flood Risk, Flood Resilient Construction, and Flood Insurance

www.nyc.gov/resilientneighborhoods

NYC PLANNING Info Brief Flood Insurance

Flood insurance covers damages to property or personal contents from flooding caused by excessive rainfall, tidal flooding, or wind-driven storm surges. Changes to flood maps and reforms to the National Flood Insurance Program will lead to increases in flood insurance rates over time. In addition to flood resilient construction, insurance is another strategy for reducing flood risk.

Why is Flood Insurance Important?

- Floods can cause significant damage to your most valuable asset: your business.
- Even properties far from the coast are at risk of flooding.
- Homeowner and property insurance do not cover damage by flooding. You need a separate policy.
- Federal assistance is not guaranteed in the event of a flood.
- Many property owners are required by federal law to purchase and maintain flood insurance if the property is located in a federal risk flood zone of the 2007 FIRMs (see map to the right), has a federally backed mortgage, or has received federal disaster assistance.

How Much Flood Insurance Must a Homeowner Purchase?

Properties with a federally backed mortgage or outside a high-risk flood zone and those that received federal disaster assistance must maintain flood insurance up to the National Flood Insurance Program (NFIP) limits, or the outstanding mortgage balance, whichever is lower. Failure to do so may require mortgage servicers to purchase a private mortgage insurance policy for the property—possibly at a higher price—on the cost through monthly mortgage payments.

Homeowners without a federally backed mortgage or outside a high-risk flood zone may carry up to the maximum policy limit with additional contents coverage up to \$100,000 for owners or renters. Co-ops, multifamily buildings and business properties can be covered up to \$500,000. Businesses and tenants can also purchase up to \$500,000 in contents coverage.

NYC Planning | November 2016

NYC PLANNING Info Brief Flood Risk in NYC

New York City is highly vulnerable to flooding from coastal storms due to its intensively used waterfront and its extensive coastal geography. Floods have the potential to destroy homes and businesses, impair infrastructure, and threaten human safety. With climate change and sea level rise, these risks are expected to increase in the future, but will most adversely affect low-lying neighborhoods.

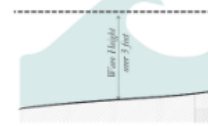
Flood Risks

Hurricanes, tropical storms, nor'easters, intense rain storms, and even extreme tides are the primary causes of flooding in NYC.

For building code, zoning, and planning purposes, flood risk in NYC is regulated by FEMA's 2015 Preliminary Flood Risk Rate Maps (PFIRMs).

- PFIRMs show the extent to which waters are expected to rise during a storm event that has a 1% annual chance of occurring. This height is denoted as Flood Elevation (FE) on the maps.
- The 1% annual chance floodplain, sometimes referred to as the 100-year floodplain, is the area that is expected to be flooded once every 100 years. In the 1% annual chance floodplain, there is a 26% chance over the life of a 30-year mortgage that a property will be flooded.

For flood insurance purposes, the 1% annual chance floodplain with a federally backed mortgage are mandated by law to purchase flood insurance.



The 1% annual chance floodplain is divided into different degrees of flood risk: V and Coastal Flood Risk. The maps show the areas that have a lower annual chance of flooding.

NYC Planning | November 2016

NYC PLANNING Flood Resilience Zoning

www.nyc.gov/resilientneighborhoods

City Planning is working with communities throughout the floodplain to identify zoning and land use strategies to reduce flood risks and support the city's vitality and resiliency through long-term adaptive planning. The Flood Resilience Zoning Text is one part of a wide range of efforts by the City to recover from Hurricane Sandy, promote rebuilding, and increase the city's resilience to climate-related events.

Overview

The Flood Text enables and encourages resilient building construction through designated floodplains.

The Flood Text modified zoning to regulate building construction through the reconstruction of storm-damaged buildings by enabling new and existing buildings with new, higher flood elevations issued by the Federal Emergency Management Agency (FEMA), and to comply with new requirements of the New York City Building Code.

It also introduced regulations to mitigate negative effects of flood resilient construction on the public realm. The text was adopted on a temporary, emergency basis. The future update of this text, guided by public input, will aim to make the text permanent and incorporate lessons learned during the rebuilding process.

Where is the Flood Text Applicable?

The Flood Text is available to buildings located entirely or partially within the 1% annual chance floodplain.

These rules can be found in Article 24 of the Zoning Resolution and, if utilized, require the building to fully comply with resilient construction standards found in the New York City Building Code. Some provisions, such as elevation certification, are available to all buildings in the floodplain, even if not fully compliant with Appendix G.

For more information about the Flood Resilience Zoning Text, visit www.nyc.gov/resilientneighborhoods.

*Per the more restrictive of the 2007 FIRMs or PFIRMs.

NYC Planning | March 2017 | Flood Resilient Construction

NYC PLANNING Info Brief Flood Resilient Construction

Flood resilient construction reduces potential damages from flooding and can lower flood insurance premiums. New buildings in the floodplain are required to meet flood resilient standards. Existing buildings can reduce their risk by retrofitting or rebuilding to meet these standards, or can take partial, short-term measures to address safety concerns.

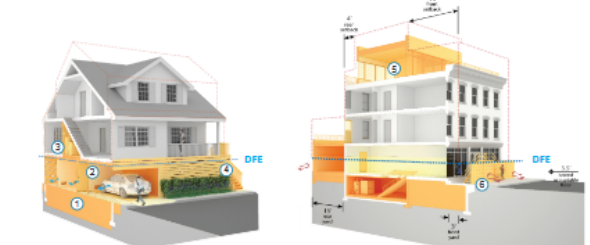
Overview

There is a wide range of accepted flood resilient construction practices for buildings to better withstand floods and reoccupy more quickly following a storm. These include:

- Elevating the lowest floor.
- Elevating mechanical equipment such as electrical, heating, and plumbing equipment.
- Wet floodproofing by utilizing water resistant building materials and limiting uses below the Design Flood Elevation (DFE) to parking, building access, and minor storage. This allows water to move in and out of uninhabited, lower portions of the building with minimal damage.
- Dry floodproofing sealing the building's exterior to flood waters and using removable barriers at all entrances below the expected level of flooding in mixed-use and non-residential buildings.

Examples of Flood Resilient Construction

Visit www.nyc.gov/resilientneighborhoods to see more examples in the Retrofitting for Flood Risk report.



- Wet floodproofed residential building**
- 1 Site is filled to the lowest adjacent grade
 - 2 Space below the DFE is for parking, building access or minor storage
 - 3 Mechanical systems are above the DFE
 - 4 Plants and stair turns improve the look of the building from the street

- Dry floodproofed mixed-use building**
- 5 Rooftop addition replaces lost below grade space
 - 6 Commercial space is dry floodproofed with removable barriers

NYC Planning | November 2016 | Flood Resilient Construction

Thank you!

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

Flood Text II

Zoning and 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.



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