

# Zoning for Flood Resilience



Building a Resilient **NEW YORK CITY**

## Manhattan Flood Resilient Retail Workshop

At LMHQ

Tuesday, November 21st – 9:00-11:00am

Welcome to the workshop!  
Before we get started,  
please take our survey on  
one of our tablets or your  
personal cell phone:

[bit.ly/2ATivOr](https://bit.ly/2ATivOr)

# Zoning for Flood Resilience

## Workshop Agenda

### Agenda:

1. Welcome and introduction – 5 min
2. Presentation by Small Business Services on a new grant program for Hurricane Sandy-impacted small businesses – 10 min
3. Presentation by the Department of City Planning on flood risk in Manhattan, resilient retail building designs, and zoning that applies in the floodplain – 20 min
4. Table activity and discussion: How can zoning help achieve building-scale resilience to ensure vibrant retail corridors? – 60 min
5. Workshop wrap-up – 15 min

Was your business impacted by flooding or power outage because of Hurricane Sandy? You can apply to receive a **free one-on-one, on-site, risk assessment & grant.**

The assessment will:

- Help you identify and understand physical, operational and financial risks that your business faces.
- Provide you with personalized recommendations to improve your business preparedness and resiliency.
- Make you eligible for a grant of up to \$3,000 towards certain items or equipment like portable generators, tablets, fire/flood proof storage containers, and more.

For more information email: [BusinessPREP@sbs.nyc.gov](mailto:BusinessPREP@sbs.nyc.gov) or visit [www.nyc.gov/businessprep](http://www.nyc.gov/businessprep)

# SBS Emergency Response Services

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<https://www.youtube.com/watch?v=9EMyQ5IPZyw>



# SBS Emergency Response Services

SBS provides immediate assistance to businesses that experience natural disasters or emergencies like fires.

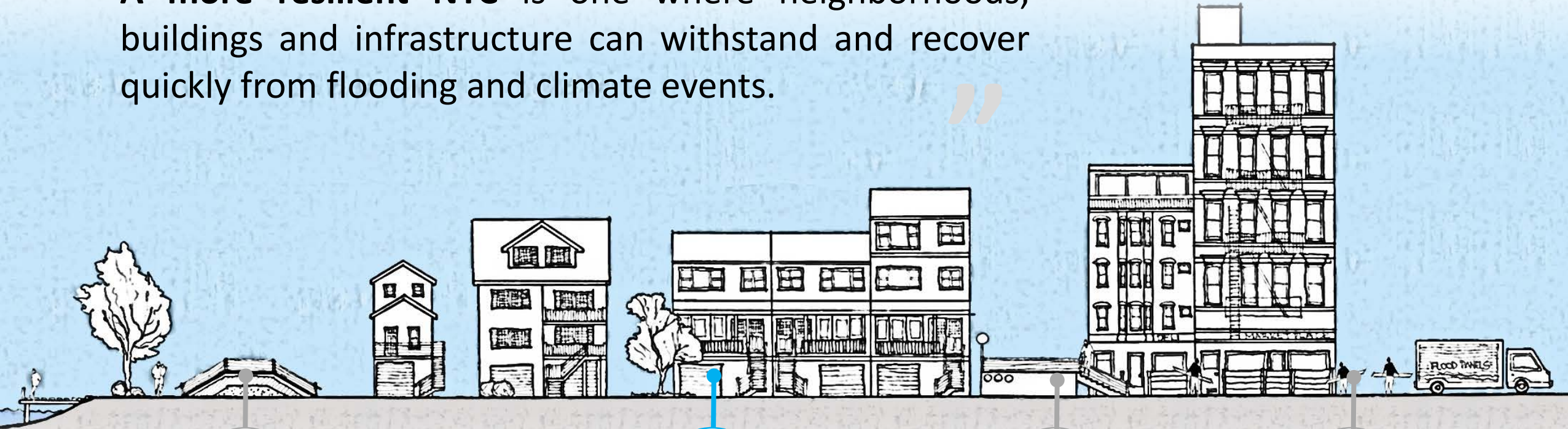
This includes:

- One-on-one personal assistance with client managers to guide you through the recovery process
- Assistance with insurance questions/paperwork
- Connections to financing assistance, including NYC Business Solutions and SBA loans
- Access to pro-bono legal services
- Help accelerating the replacement of necessary licenses and permits

SBS emergency support  
Telephone Number:  
**(212) 618-8810**

# #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

*US Army Corps of Engineers, NYS DEC, NYC DPR*



## Buildings

are designed to withstand and recover from flooding

*FEMA, DCP, DOB, HRO, NYCHA*



Infrastructure is protected from climate hazards

*DOT, DEP, DDC, Utility Companies, MTA*

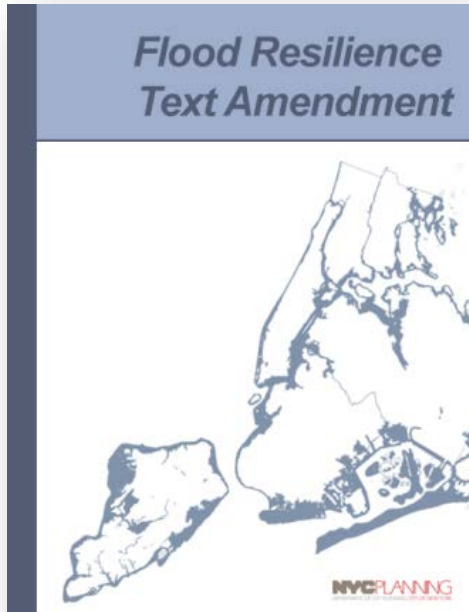


## Residents

and businesses are prepared

*OEM*

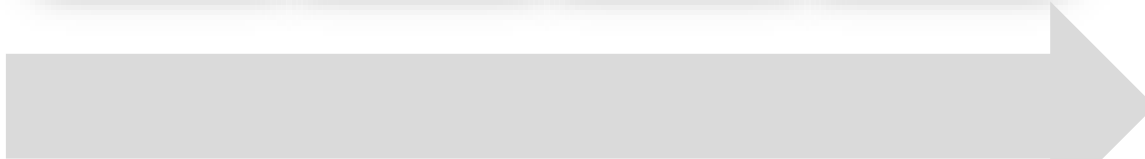
# Flood Resilience Zoning Projects at DCP



2013

“Flood Text”

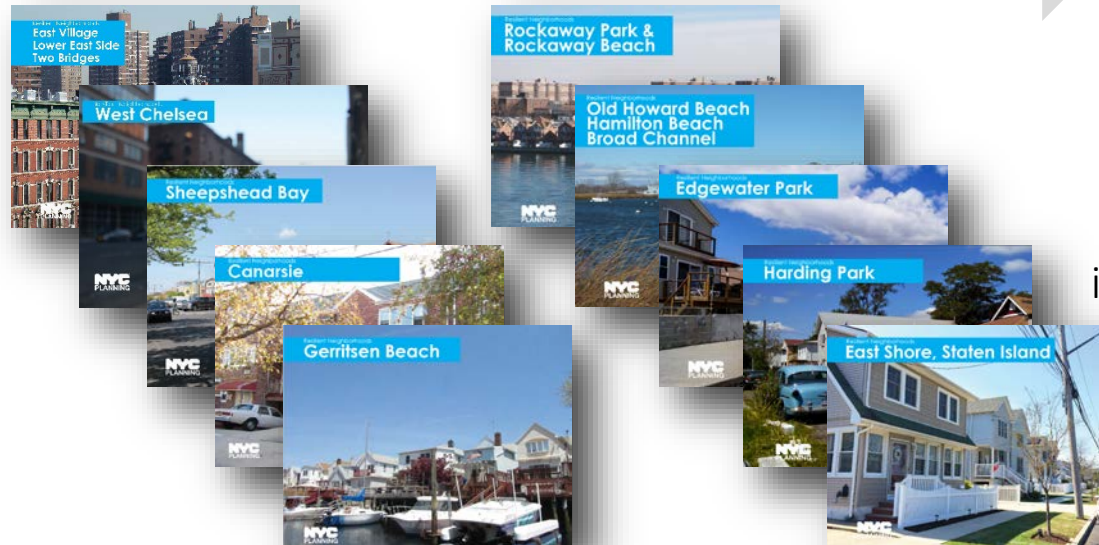
initial temporary regulations to facilitate recovery



2018

“Flood Text Update”

improve upon, and make permanent, the Flood Text

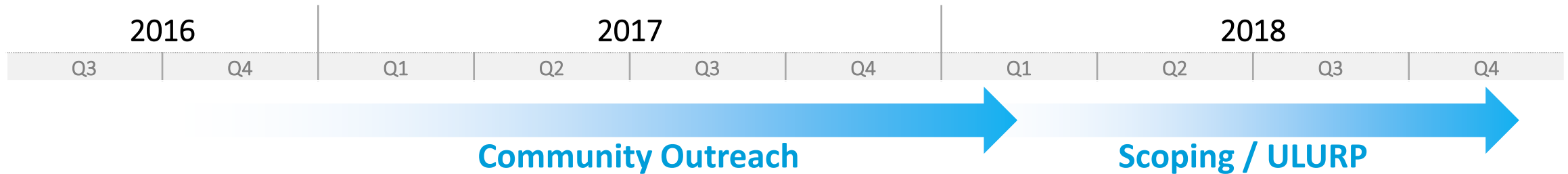




# Zoning for Flood Resilience

## Overview of DCP's Timeline

DCP plans a robust public engagement process:



As part of this outreach process, DCP has been:

- **Partnering 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

# Outreach Resources



NYC Flood Hazard Mapper

[www.nyc.gov/floodhazardmapper](http://www.nyc.gov/floodhazardmapper)

## Planning a Resilient NYC video with captions in English and Spanish



## Info briefs on Flood Resilience Zoning, Flood Risk, Flood Resilient Construction, and Flood Insurance in 7 languages

[www.nyc.gov/resilientneighborhoods](http://www.nyc.gov/resilientneighborhoods)

|  |   |   |   |
|--|---|---|---|
| <p><b>NYC PLANNING</b> Info Brief<br/><b>Flood Resilient Construction</b></p> <p>Flood resilient construction reduces potential damage from flooding and can lower flood insurance premiums. New buildings in the Floodplain are required to meet flood resilient standards. Existing buildings can also be retrofitted to withstand or resist to meet these standards. To see how your building measures to address safety concerns.</p> <p><b>Overview</b></p> <ul style="list-style-type: none"> <li>• Reducing the lowest floor</li> <li>• Elevating mechanical equipment such as electrical, heating, and plumbing equipment</li> <li>• Base floodproofing by utilizing water resistant building materials and testing with water-tight Design Flood Barrier (DFB) to sealing, building areas, and minor storage. This allows water to rise in and around unsealed, lower portions of the building with minimal damage.</li> <li>• Dry floodproofing sealing the building's exterior to flood waters and using removable barriers at all entrance points for exterior level flooding in flood zone and non-flooded buildings.</li> </ul> <p><b>Examples of Flood Resilient Construction</b></p> <p>For more information on flood resilient construction, visit <a href="http://www.nyc.gov/resilientneighborhoods">www.nyc.gov/resilientneighborhoods</a> for more examples in the Resilient for Flood Risk report.</p> | <p><b>NYC PLANNING</b> Info Brief<br/><b>Flood Risk in NYC</b></p> <p>New York City is highly vulnerable to flooding from coastal storms due to its proximity to ocean waters and its extensive harbor geography. Flooding from the coastal waters poses a significant threat to the city's infrastructure, economy, and public safety. The Flood Resilience Zoning Text is a key part of a wide range of efforts by the City to reduce the future damage, property loss, and loss of life that may be caused by flooding in the future, but will most certainly affect existing neighborhoods.</p> <p><b>Flood Risks</b></p> <p>Approximately 1.5 million people live in the city's floodplains. The city's floodplains are divided into three categories: Flood Risk 1 (FR1), Flood Risk 2 (FR2), and Flood Risk 3 (FR3). The city's floodplains are also divided into three categories: Flood Risk 1 (FR1), Flood Risk 2 (FR2), and Flood Risk 3 (FR3). The city's floodplains are also divided into three categories: Flood Risk 1 (FR1), Flood Risk 2 (FR2), and Flood Risk 3 (FR3).</p> | <p><b>NYC PLANNING</b> Info Brief<br/><b>Flood Resilience Zoning</b></p> <p>The Flood Resilience Zoning Text is a key part of a wide range of efforts by the City to reduce the future damage, property loss, and loss of life that may be caused by flooding in the future, but will most certainly affect existing neighborhoods.</p> <p><b>Overview</b></p> <p>The Flood Resilience Zoning Text is a key part of a wide range of efforts by the City to reduce the future damage, property loss, and loss of life that may be caused by flooding in the future, but will most certainly affect existing neighborhoods.</p> <p><b>Summary of the Flood Text</b></p> <p>The Flood Resilience Zoning Text is a key part of a wide range of efforts by the City to reduce the future damage, property loss, and loss of life that may be caused by flooding in the future, but will most certainly affect existing neighborhoods.</p> <p><b>Where is the Flood Text Applicable?</b></p> <p>The Flood Resilience Zoning Text is a key part of a wide range of efforts by the City to reduce the future damage, property loss, and loss of life that may be caused by flooding in the future, but will most certainly affect existing neighborhoods.</p> | <p><b>NYC PLANNING</b> Info Brief<br/><b>Flood Insurance</b></p> <p>Flood insurance coverage is essential for protecting your property and assets from flooding. Flood insurance coverage is essential for protecting your property and assets from flooding. Flood insurance coverage is essential for protecting your property and assets from flooding.</p> <p><b>Why is Flood Insurance Important?</b></p> <p>Flood insurance coverage is essential for protecting your property and assets from flooding. Flood insurance coverage is essential for protecting your property and assets from flooding.</p> <p><b>How Are Flood Insurance Policies Purchased?</b></p> <p>Flood insurance coverage is essential for protecting your property and assets from flooding. Flood insurance coverage is essential for protecting your property and assets from flooding.</p> <p><b>How Much Flood Insurance Must a Homeowner Purchase?</b></p> <p>Flood insurance coverage is essential for protecting your property and assets from flooding. Flood insurance coverage is essential for protecting your property and assets from flooding.</p> |
|--|---|---|---|



# How are buildings in the floodplain regulated?

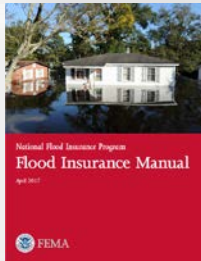


FEMA



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)

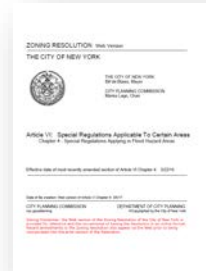
Design minimum construction requirements for flood hazard areas

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

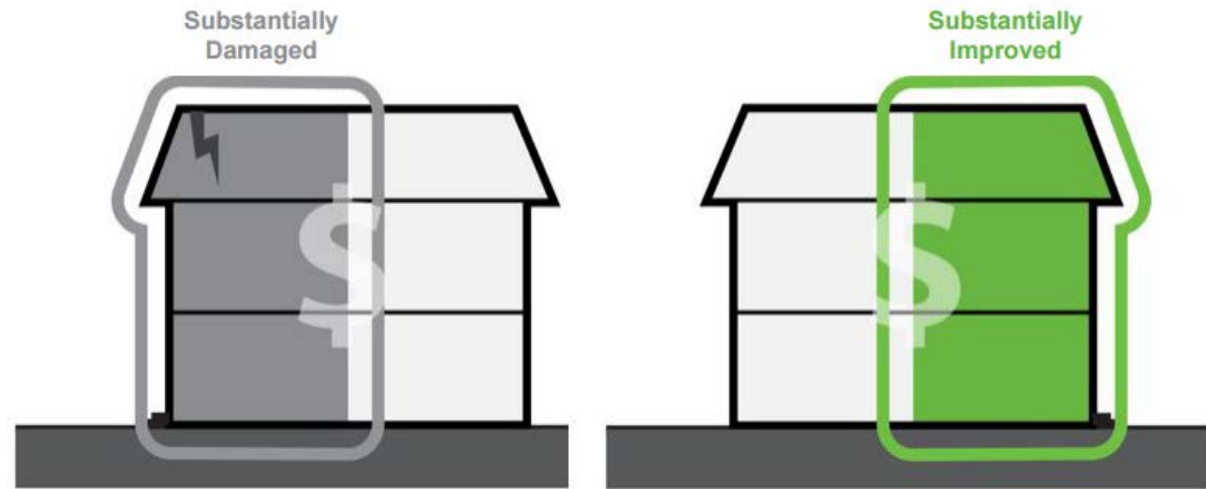
# Flood resilient construction

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**

# FEMA Flood Map

## Citywide Flood Risk

NYC's flood risk is high.

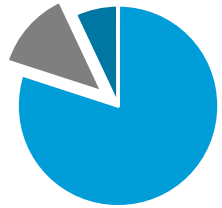
The floodplain affects a large geography and most community and council districts.

### 100 Year Floodplain

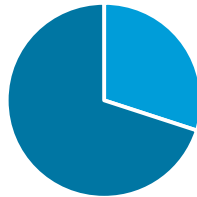
FEMA 2015 PFIRM

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

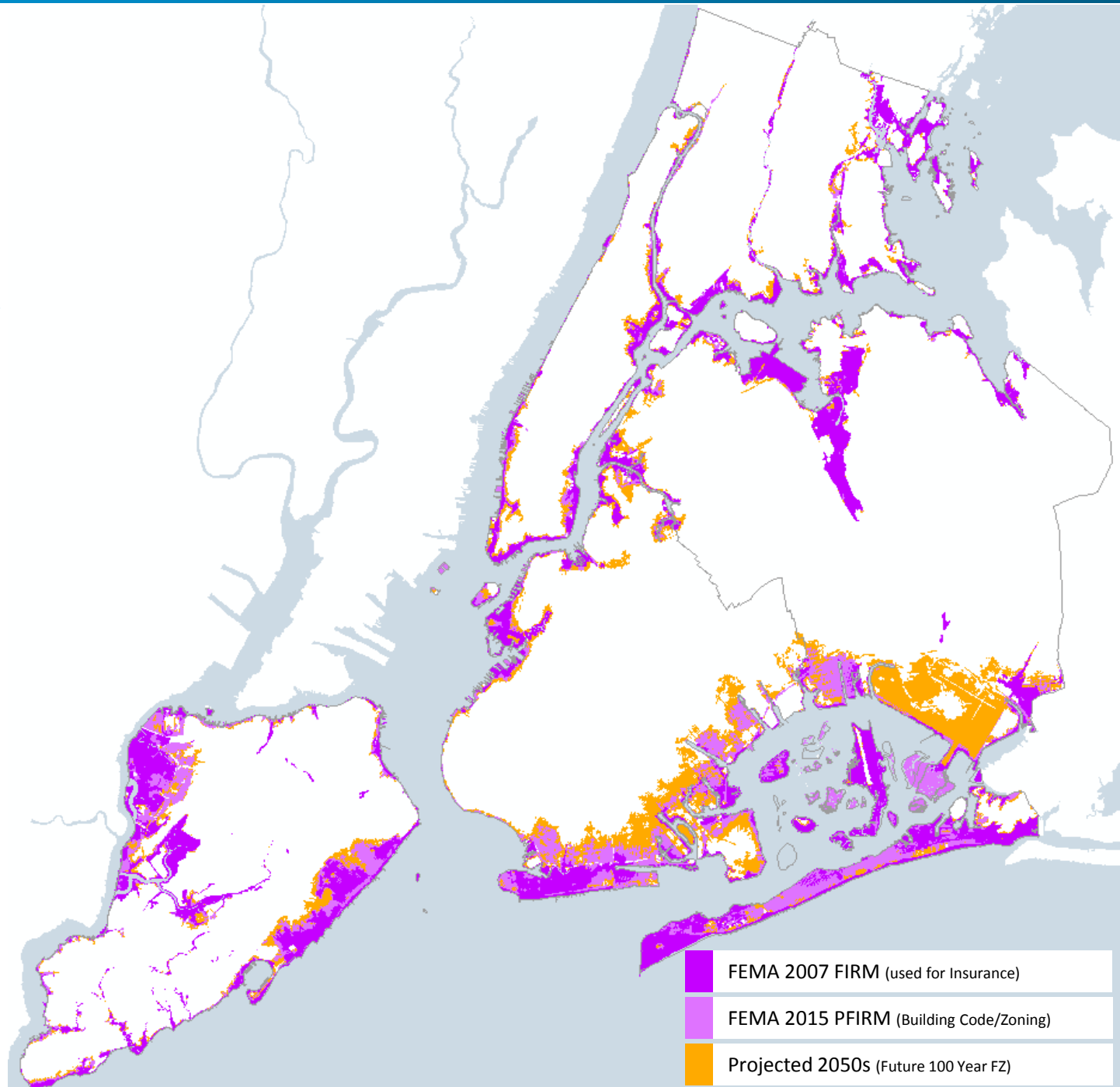
**50** of 59 Community Boards  
**45** of 51 Council Districts



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



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



FEMA 2007 FIRM (used for Insurance)  
FEMA 2015 PFIRM (Building Code/Zoning)  
Projected 2050s (Future 100 Year FZ)

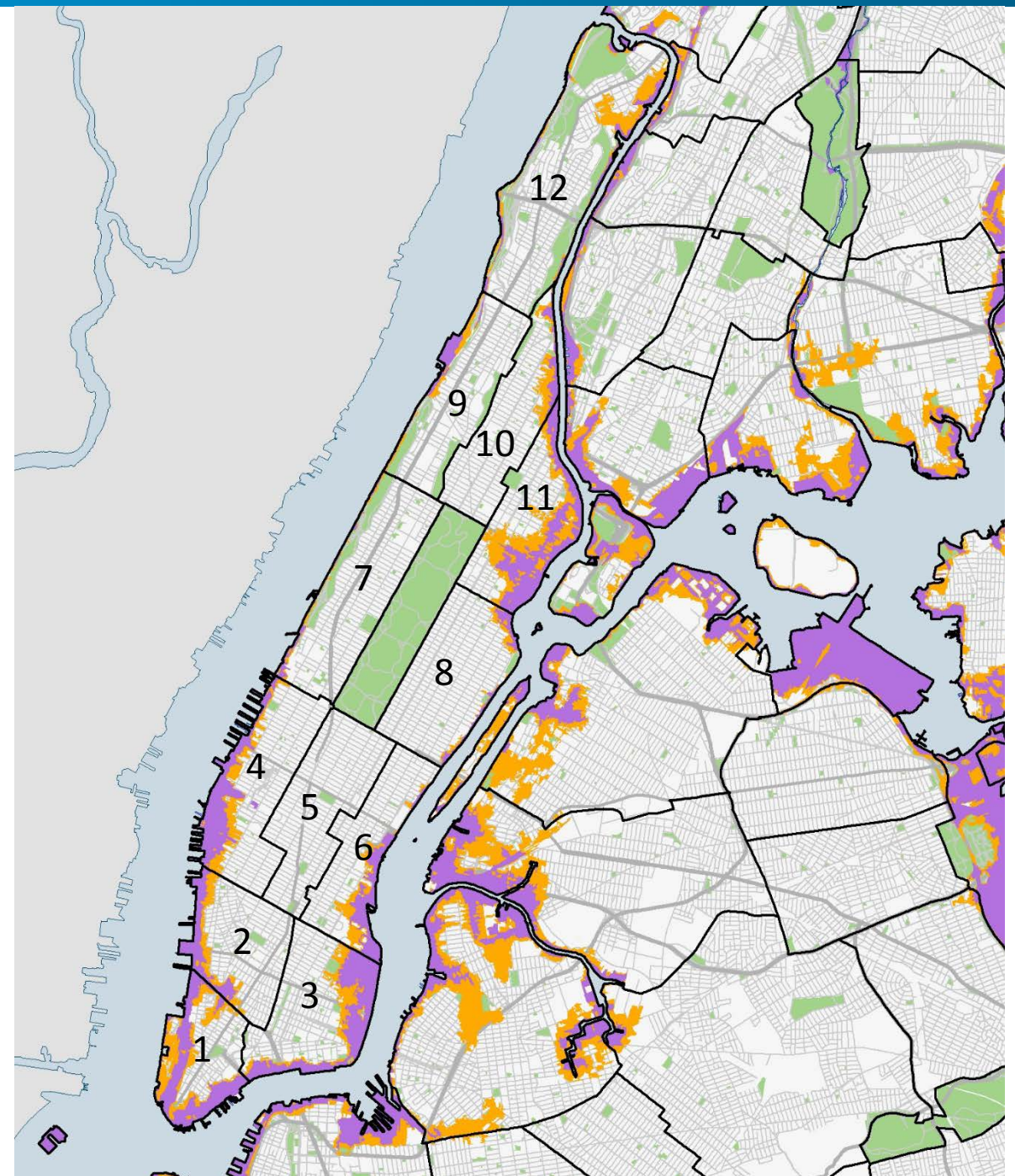


# Future Flood Risk Manhattan

|                             | 2015<br>PFIRMs | 2050s<br>Projected |
|-----------------------------|----------------|--------------------|
| Population in<br>Floodplain | 89,100         | 214,500            |
| Buildings in<br>Floodplain  | 3,100          | 5,900              |

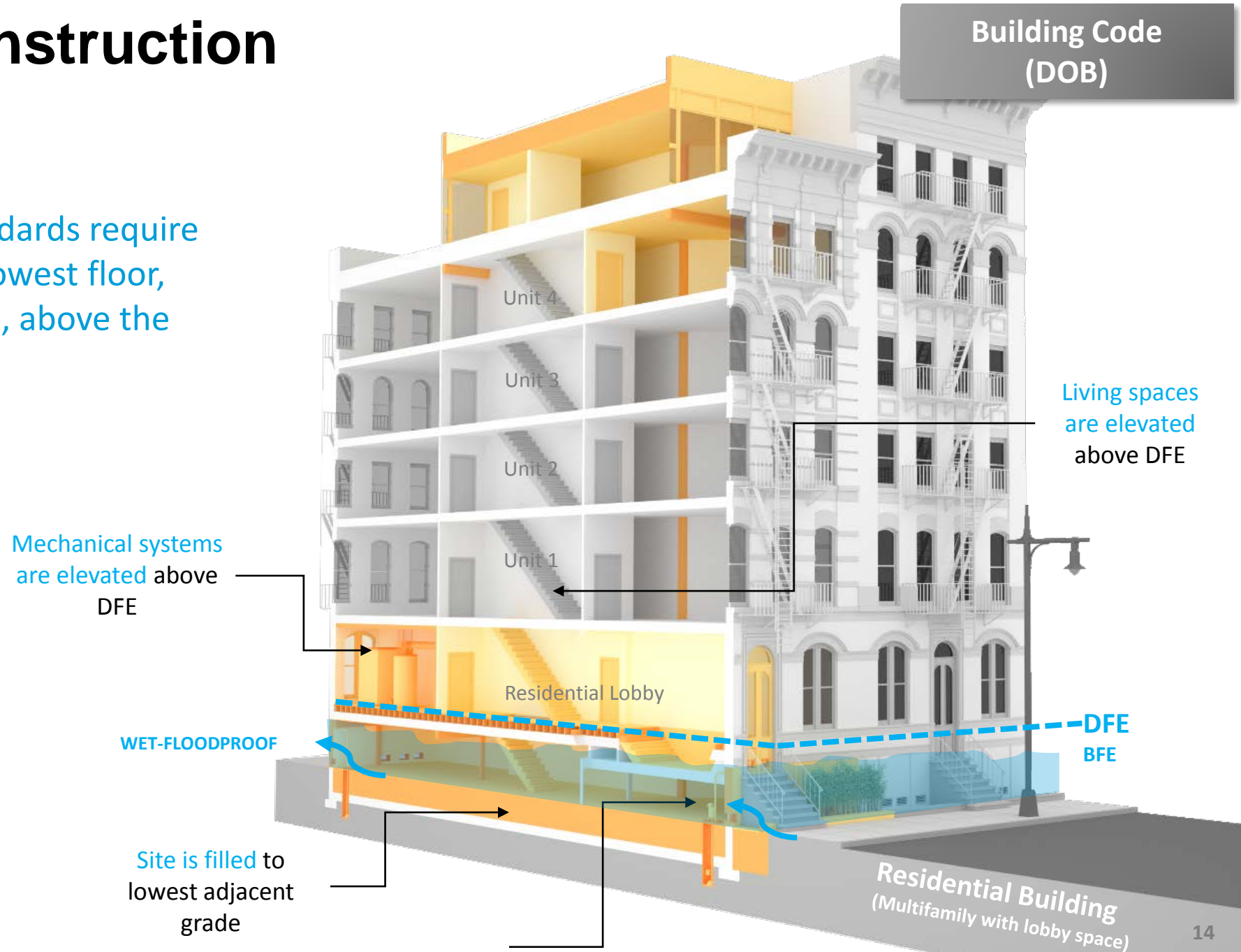
**140%**

**90%**



# Flood resilient construction Required by DOB

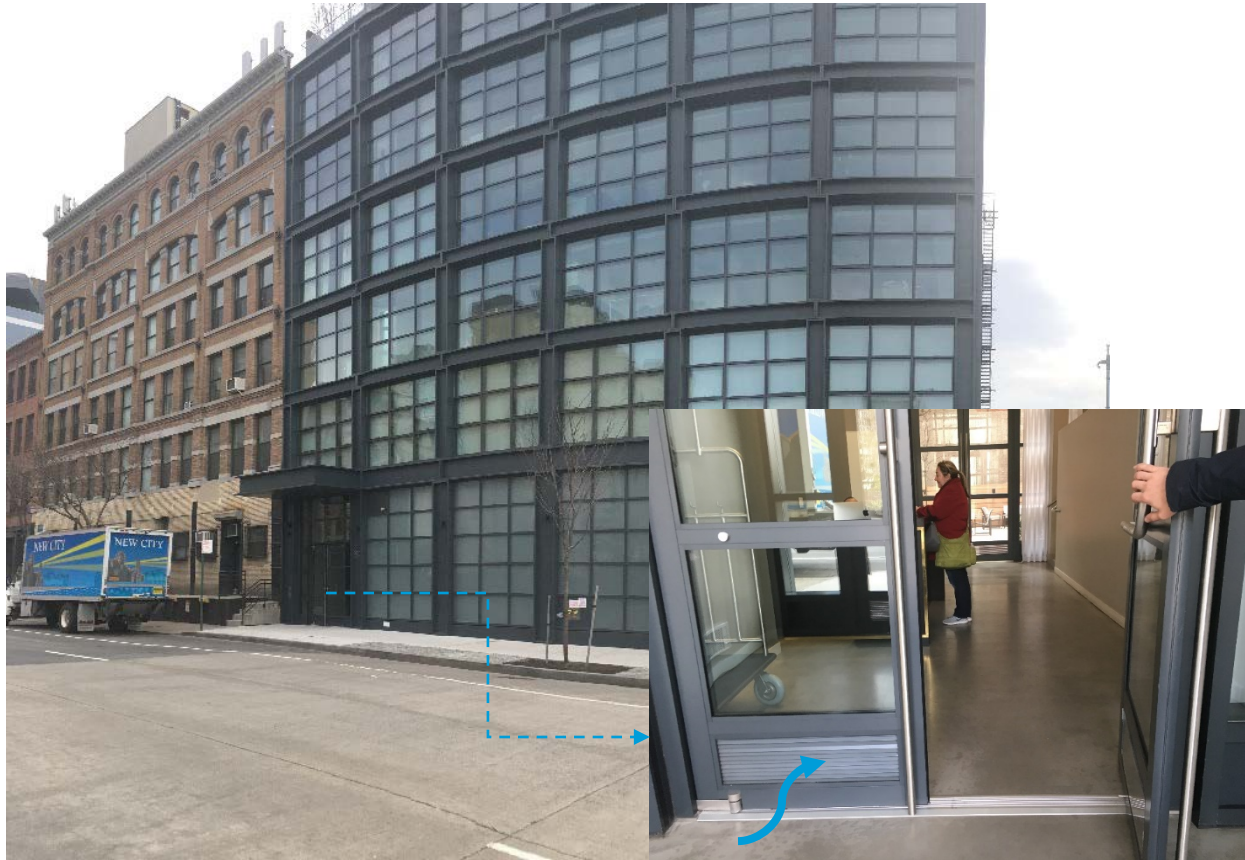
Flood resilient construction standards require certain buildings to elevate the lowest floor, as well as mechanical equipment, above the Design Flood Elevation (DFE).





# Flood resilient construction Required by DOB

Building Code  
(DOB)



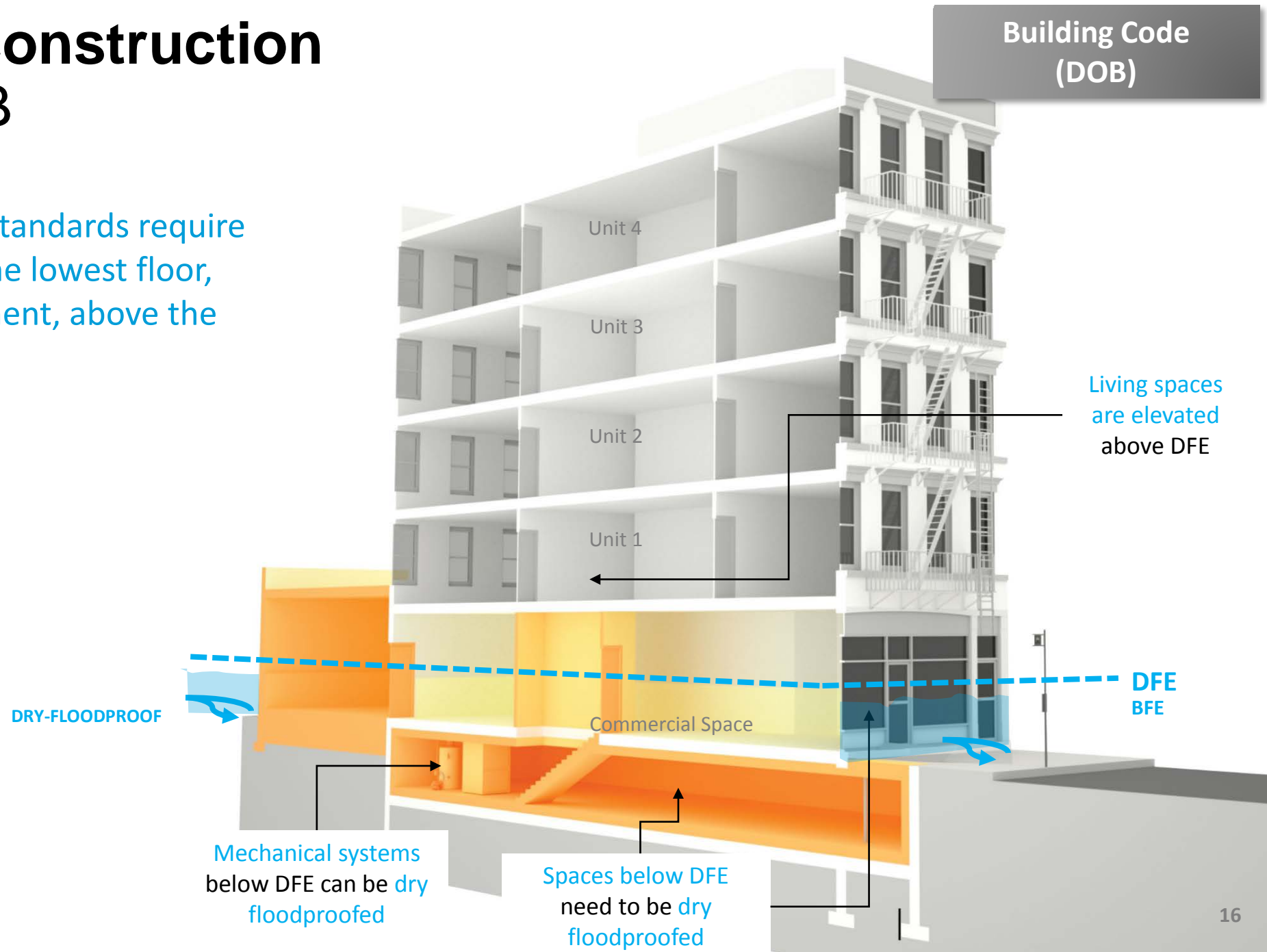
Residential Building in Manhattan  
With wet-floodproofed residential lobby



Residential Building in Manhattan  
Elevated to DFE (~3' above grade)

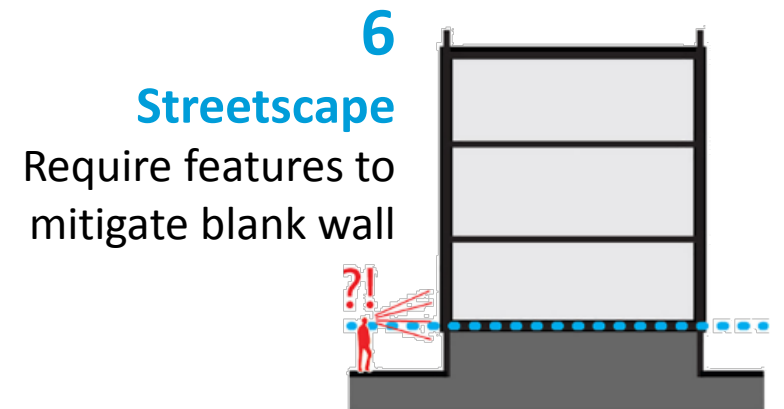
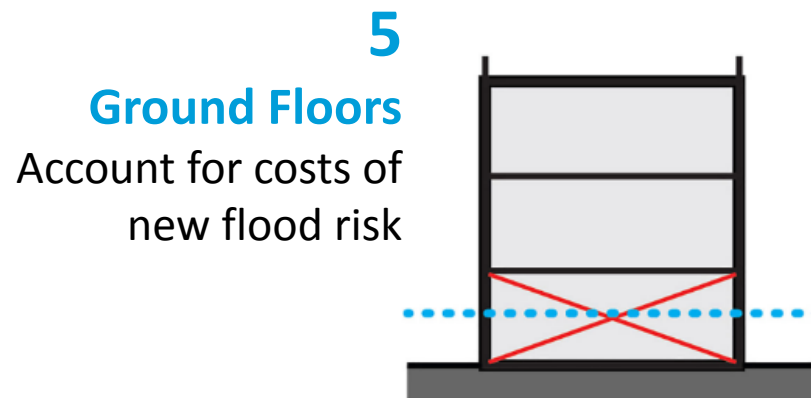
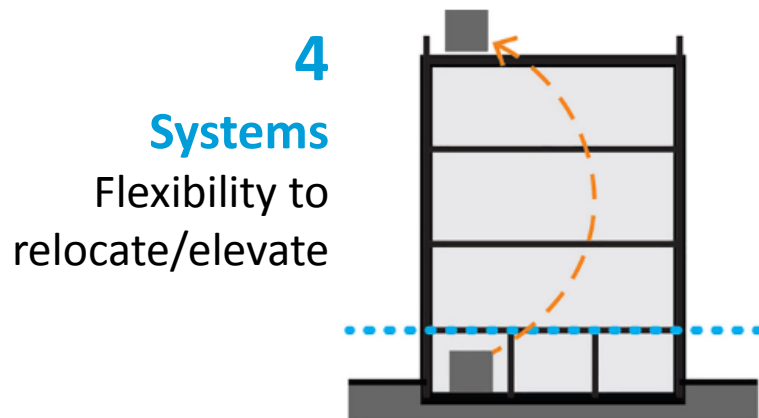
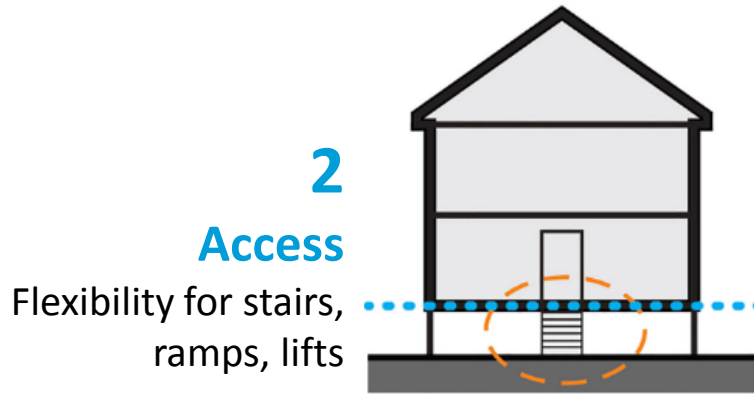
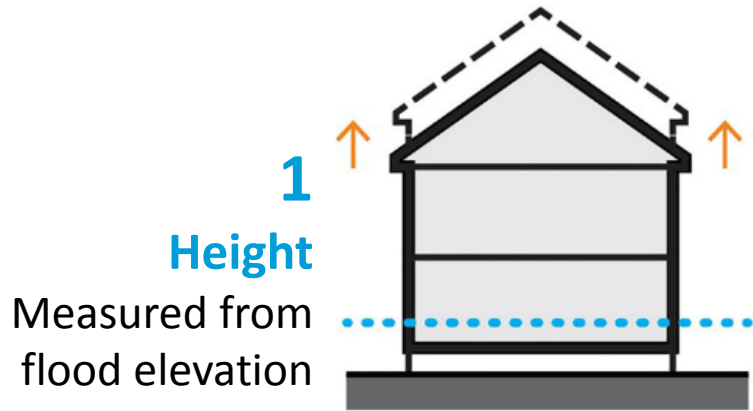
# Flood resilient construction Required by DOB

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



# 2013 Citywide Flood Text

## Amended zoning in six key areas



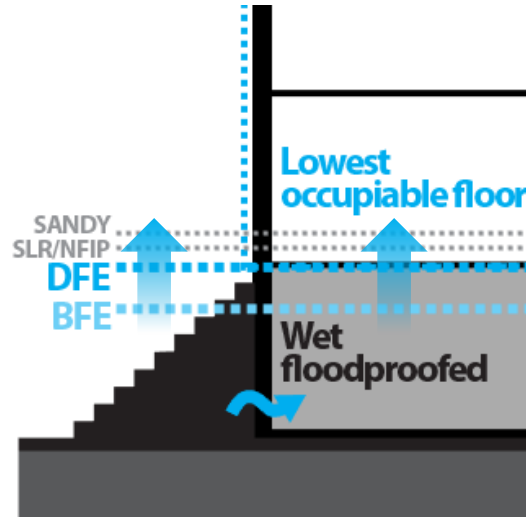


# Flood Text Update Permanent Rules



## Goal 1

**Facilitate Recovery from Future Storms** by making the provisions of the temporary Flood Text permanent



## Goal 2

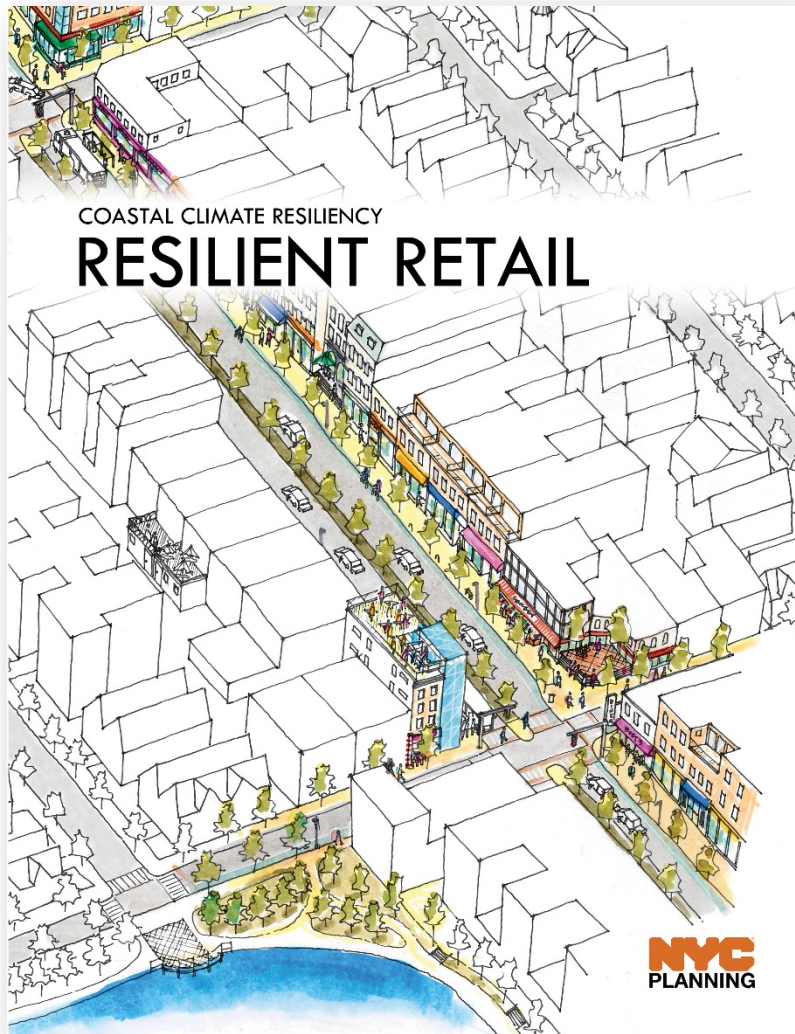
**Promote Long-Term Resiliency** by encouraging proactive retrofitting and development that is safe in the long run



## Goal 3

**Enhance Neighborhood Character** By encourage good resilient design within coastal communities

# Resilient Retail Study



## Retail Corridors

- Support existing retail corridors and the neighborhoods they serve by addressing short- and long-term challenges related to flood risk.

## Retail Businesses

- Promote retrofitting and rebuilding strategies that reduce flood risk to individual businesses
- Ensure businesses remain accessible, viable and able to meet community needs for critical goods and services.

## Advocacy

- Advocate for federal reforms to NFIP and floodplain regulations that support partial mitigations.
- Build a national coalition of communities, business groups, and designers to support flexibility for commercial corridors.



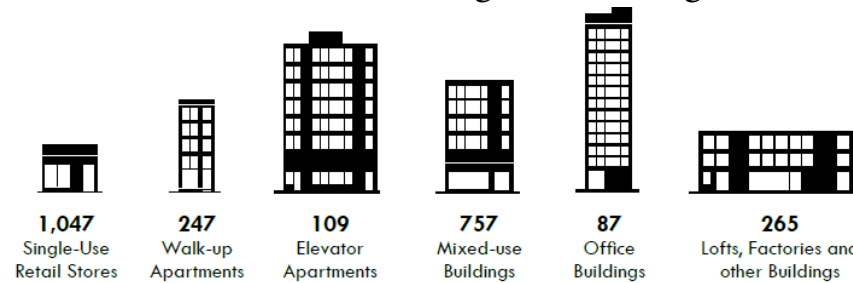
# Retail Business in the Floodplain

NYC retail businesses and jobs are at risk from storms and flooding.

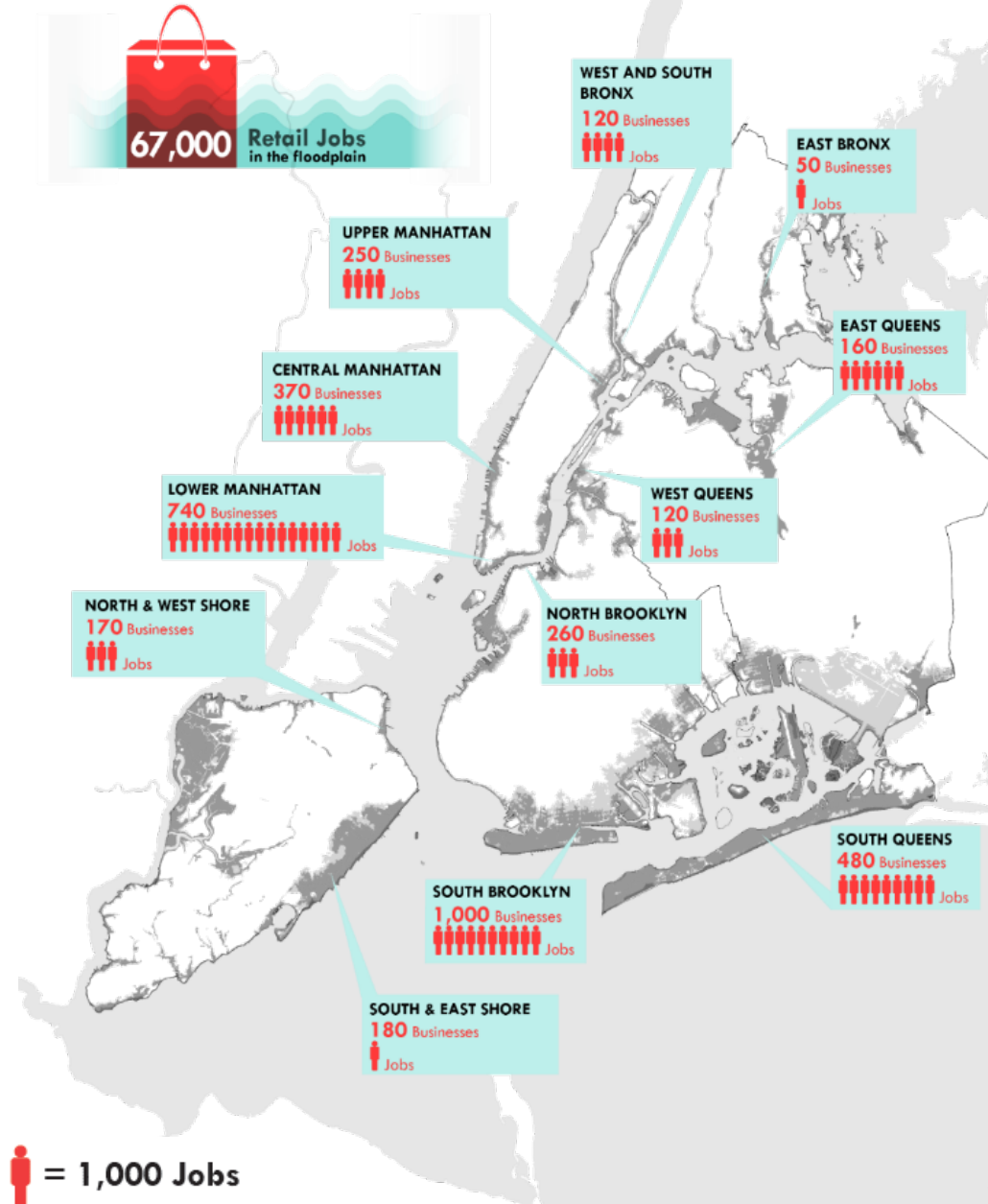
Today's 100-year floodplain affects :

**3,900 retailers**  
**67,000 retail jobs**  
**\$3 billion in annual retail wages**

Across a broad range of buildings:



And many critical retail goods and services:



# Post-Sandy Business Challenges

- Few businesses were able to make resilient improvements
- Lack of operational readiness (loss of records, no business disruption insurance)
- Most repaired in place to reopen quickly
- Many struggled to obtain loans/grants and meet SBA requirements
- Build it Back was not an option for businesses
- Most businesses are individually owned, and many are owned by people who live in the floodplain
- Landlord absenteeism made it difficult to make repairs
- Many business owners went into major debt to reopen their business
- While most businesses “survived” Sandy, a future storm would have a catastrophic effect on business viability



# Avenue C, East Village





# 2<sup>nd</sup> Avenue, East Harlem



Street View ©2016 Google



# Water Street, Financial District



Street View ©2015 Google



# 10<sup>th</sup> Avenue, West Chelsea



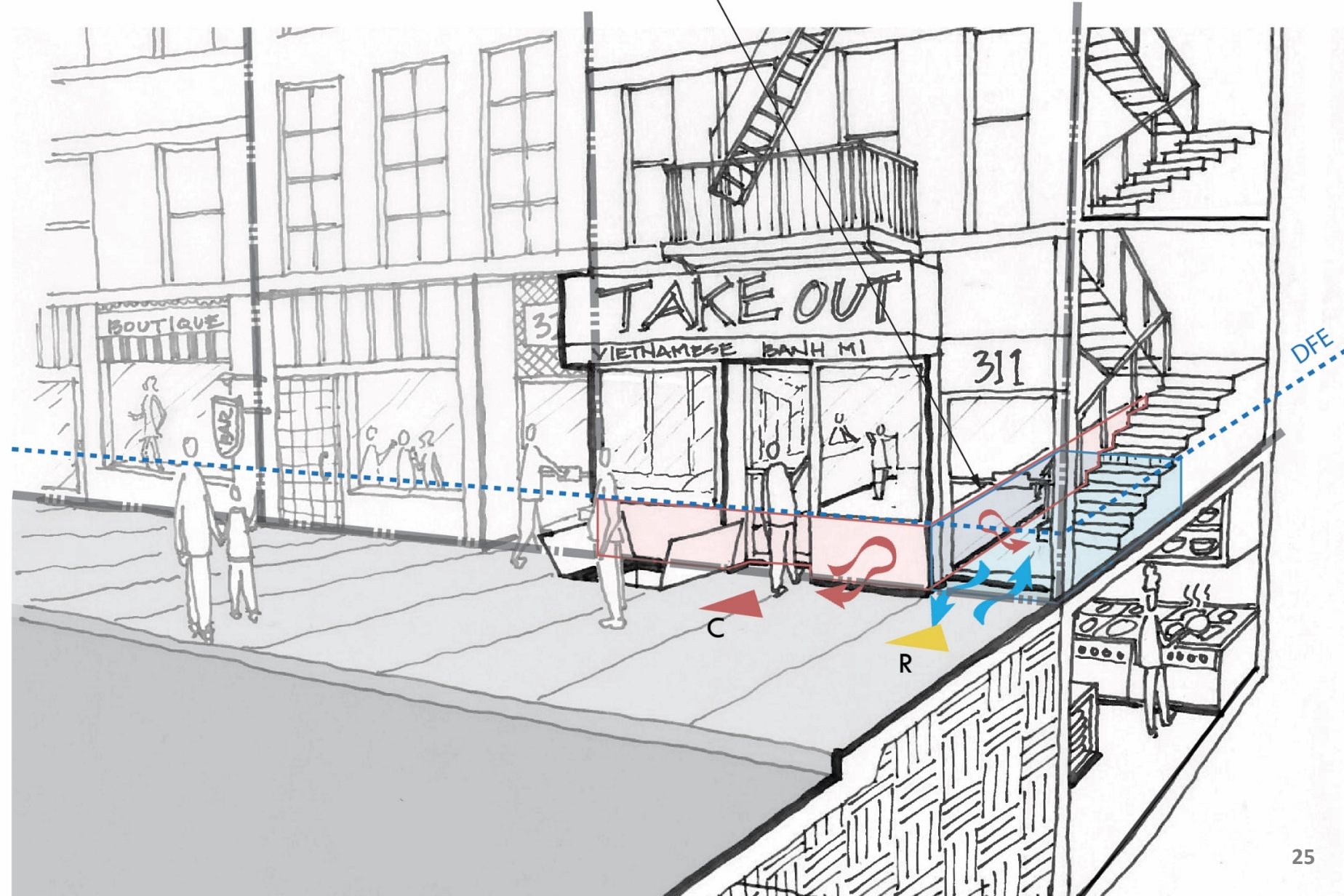
Street View ©2017 Google



# Resiliency Challenges ---

## Dense, Mixed-Use & Pedestrian-Oriented

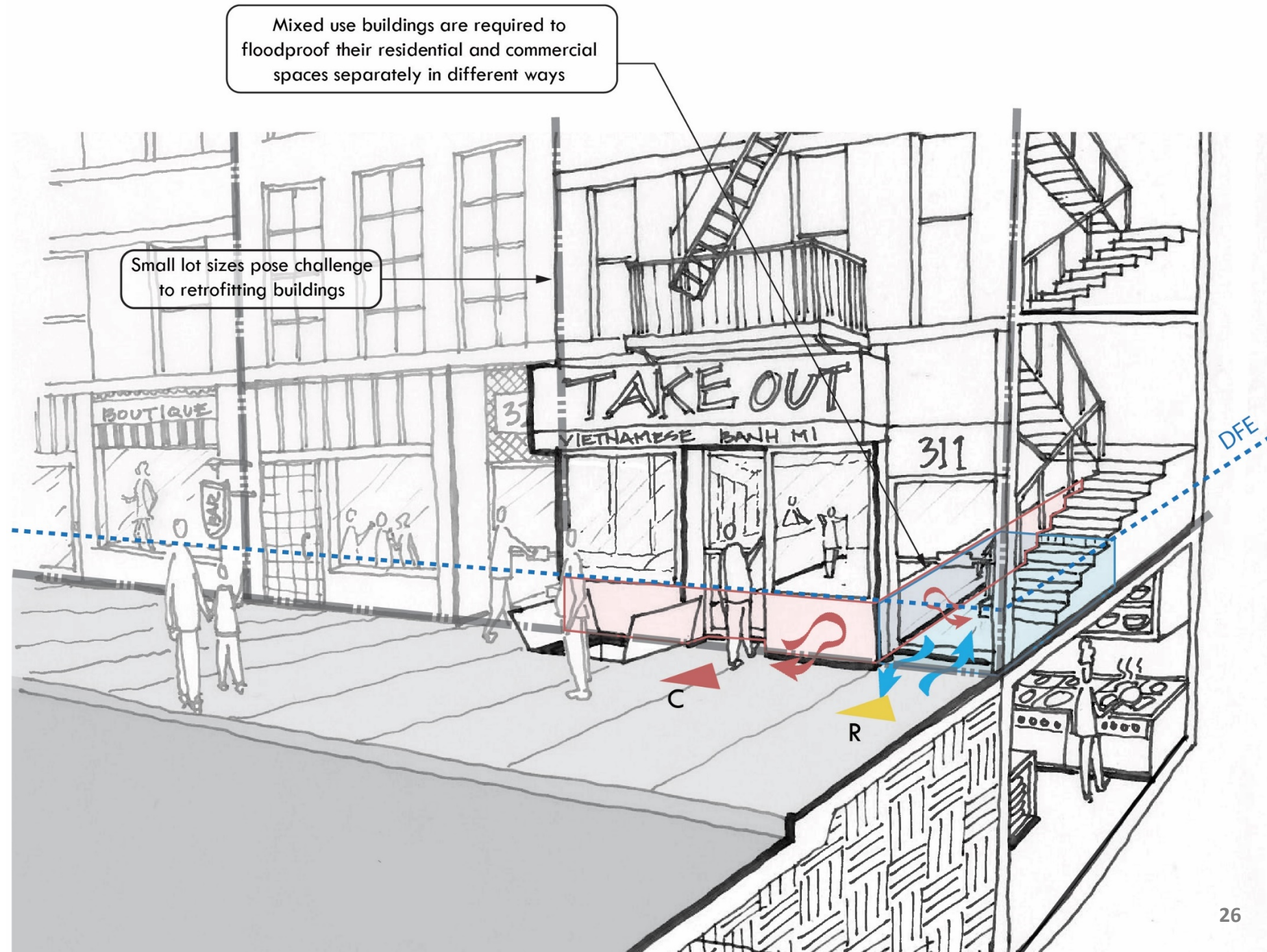
Mixed use buildings are required to floodproof their residential and commercial spaces separately in different ways





# Resiliency Challenges ---

## Dense, Mixed-Use & Pedestrian-Oriented



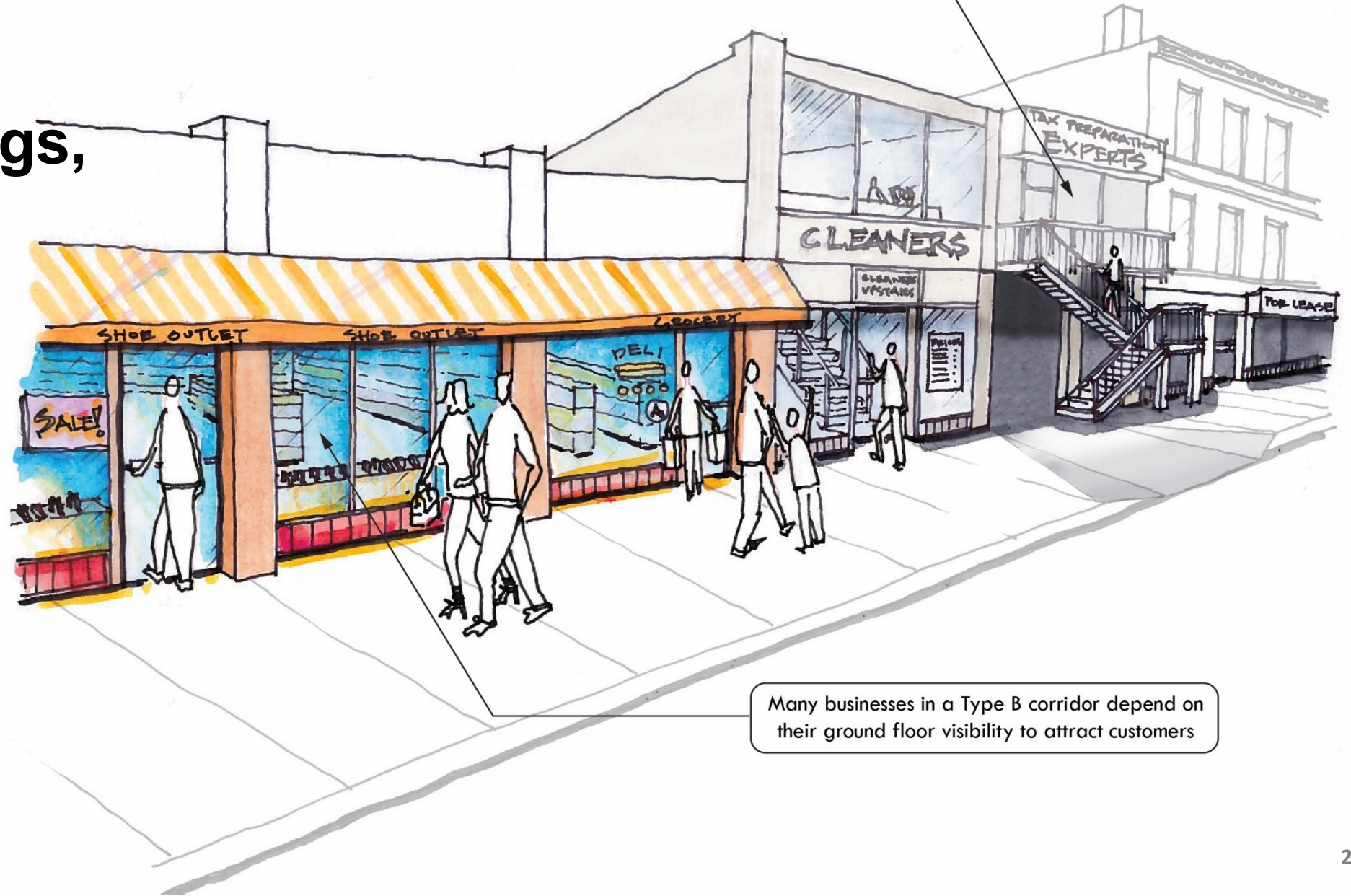




# Resiliency Challenges ---

## Varied Buildings, Lot Sizes & Uses

Elevating businesses in the floodplain would significantly impact sidewalk activity & may jeopardize business viability



Many businesses in a Type B corridor depend on their ground floor visibility to attract customers





## **Urban Design Principles**

*Neighborhood Character*

*Visual Connectivity/  
Active Streets*

*Façade Articulation*

*Inviting Access*

*Sheepshead Bay Road, South Brooklyn*



# Neighborhood Character



*John Allan's Hair Salon – TriBeCa, Manhattan*



# Visual Connectivity / Active Streets



*Tribeca, Lower Manhattan*



# Façade Articulation



*Retail Space for Lease – Chelsea, Manhattan*



# Inviting Access



Chillax Café – Manhattan Beach, Brooklyn

# Zoning for Flood Resilience

## Workshop Overview

### TABLE ACTIVITY

1. Existing commercial buildings and uses – 15 min
2. Design options for new construction in the floodplain – 30 min
3. Urban design strategies for active corridors – 15 min

### WRAP-UP

4. Group discussion – 15 min