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.
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 Flood Map
Citywide Flood Risk
Future Flood Map
Flood Risk in QN CB 1

<table>
<thead>
<tr>
<th></th>
<th>2015 PFIRMS</th>
<th>2050’s Projected</th>
</tr>
</thead>
<tbody>
<tr>
<td>R units in floodplain</td>
<td>4,804</td>
<td>12,591</td>
</tr>
<tr>
<td>Buildings in floodplain</td>
<td>874</td>
<td>2,152</td>
</tr>
</tbody>
</table>

162% increase in R units in floodplain
146% increase in Buildings in floodplain
How are buildings in the floodplain regulated?

FCCM

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

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

**Required**
for all **new** buildings

**Not required** for **existing** buildings
(unless substantially damaged or improved)
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
2013 Citywide Flood Text
Amended zoning in six key areas

1. **Height**
   Measured from flood elevation

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

3. **Parking**
   Flexibility to relocate parking

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

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

6. **Streetscape**
   Require features to mitigate blank wall
Based on these filings, only 1,600 (2%) of the 71,000 buildings in the floodplain will be fully flood resilient.

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

<table>
<thead>
<tr>
<th>Category</th>
<th>New buildings</th>
<th>Major alterations (Alt-1)</th>
<th>Minor alterations (Alt-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Complete</td>
<td>100%</td>
<td>10%</td>
<td>3%</td>
</tr>
<tr>
<td>Approved/Filings (Total)</td>
<td>1,021 of 1,021</td>
<td>113 of 1,090</td>
<td>532 of 15,573</td>
</tr>
<tr>
<td>Meet Full Resiliency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standards</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved/Filings (Percent)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>149 (14%) approved</td>
<td></td>
<td>36 (31%) approved</td>
<td>245 (46%) approved</td>
</tr>
<tr>
<td>451 (44%) underway</td>
<td></td>
<td>24 (21%) underway</td>
<td>122 (23%) underway</td>
</tr>
<tr>
<td>179 (17%) complete</td>
<td></td>
<td>0 (0%) complete</td>
<td>9 (1%) complete</td>
</tr>
<tr>
<td>Rejected/Pending</td>
<td>25% rejected/pending</td>
<td>48% rejected/pending</td>
<td>30% rejected/pending</td>
</tr>
</tbody>
</table>

Lessons learned since 2013
Encouraging resilient construction
Flood Text Update

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
Flood Text II
Fix and improve provisions based on lessons learned

1. **Height**
   Homeowners may face the loss of subgrade spaces when retrofitting.

2. **Height**
   Properties owners may want to address future risk by over-elevating.

3. **Ground Floors**
   Current incentives to keep active ground floors may not be enough.
The 2013 Flood Text doesn’t provide a solution for non-raisable building typologies:

ISSUE

Homeowners may face the loss of subgrade/at grade spaces when retrofitting.
The 2013 Flood Text allowed for zoning envelopes to be adjusted to the height of the flood elevation. Although, it may still prevent certain access solutions in “packed” envelopes, and it may discourage long-term planning:

Properties owners may want to address future risk by over-elevating.
Commercial Ground Floors
Improvements and lessons learned

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 (1809 Emmons Ave., BK)
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
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
Thank you!

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

- **4 FEET OR MORE BELOW BFE**: ~$9,000 Annual premium
- **AT BFE**: ~$1,400 Annual premium
- **3 FEET OR MORE ABOVE BFE**: ~$450 Annual premium
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

?
Flood Text II
Fix and improve provisions based on lessons learned

1. Height
Homeowners may face the loss of subgrade/at grade spaces when retrofitting.

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

3. Ground Floors
Current incentives to keep active ground floors may not be enough.
Height
Improvements and lessons learned

The 2013 Flood Text doesn’t provide a solution for non-raisable building typologies:

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