Flood Resilience
Zoning Text Update
Howard Beach Lindenwood Civic
September 26, 2017
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  
50 of 59 Community Boards
Buildings: 71,500  
45 of 51 Council Districts

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

Residential Units:
- 30% 1-4 units
- 70% 5+ units
Flood Map
Flood Risk in Queens

<table>
<thead>
<tr>
<th></th>
<th>2015 PFIRMs</th>
<th>2050s Projected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population in Floodplain</td>
<td>99,100</td>
<td>167,200</td>
</tr>
<tr>
<td>Buildings in Floodplain</td>
<td>25,200</td>
<td>35,600</td>
</tr>
</tbody>
</table>

65% increase

40% increase
Flood Map
Flood Risk in Queens CD 10

<table>
<thead>
<tr>
<th></th>
<th>2015 PFIRMs</th>
<th>2050s Projected</th>
<th>Increase</th>
</tr>
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<tbody>
<tr>
<td>Population in Floodplain</td>
<td>11,910</td>
<td>20,580</td>
<td>72%</td>
</tr>
<tr>
<td>Buildings in Floodplain</td>
<td>5,440</td>
<td>6,500</td>
<td>19%</td>
</tr>
</tbody>
</table>
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
How are buildings in the floodplain regulated?

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
Required by DOB

**Required**
for all *new* buildings

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

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**Building Code (DOB)**

*Requires* new buildings and substantial improvements to meet FEMA standards

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Substantially Damaged: Restoring Cost ≥ 50% Market Value
Substantially Improved: Improvement Cost ≥ 50% Market Value
Flood resilient construction standards require certain buildings to elevate the lowest floor, as well as mechanical equipment, above the Design Flood Elevation (DFE).

- **Site is filled to lowest adjacent grade**
- **Mechanical systems are elevated above DFE**
- **Use below DFE is restricted to parking, storage or access**
- **Living spaces are elevated above DFE**
- **WET FLOODPROOF (Water comes in and out)**
Flood resilient construction standards require certain buildings to elevate the lowest floor, as well as mechanical equipment, above the Design Flood Elevation (DFE).

Site is filled to lowest adjacent grade

Mechanical systems are elevated above DFE

Living spaces are elevated above DFE

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 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**
  - Annual premium: ~$9,000

- **AT BFE**
  - Annual premium: ~$1,400

- **3 FEET OR MORE ABOVE BFE**
  - Annual premium: ~$450
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
2015 Special Regulations
Accelerate recovery in Sandy-damaged neighborhoods

Temporary regulations, expiring in 2020, in limited areas of Brooklyn, Queens, and Staten Island
2015 Special Regulations
Accelerate recovery in Sandy-damaged neighborhoods

Provided new zoning solutions in three key areas:

- **Simplified process**
  for documenting old homes

- **Removed disincentives**
  such as loss of basement space

- **Established new envelope**
  for rebuilds on small existing lots
2017 Special Coastal Risk District
Broad Channel and Hamilton Beach

The rezoning created a Special Coastal Risk District and updated the zoning in Broad Channel and Hamilton Beach, the areas of the City most vulnerable to projected future tidal flooding. Future residential development is limited to detached houses.

2050s Sea Level Rise Projections

<table>
<thead>
<tr>
<th>Buildings</th>
<th>Sea Level Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 Buildings</td>
<td>MHHW + 11&quot; (25th percentile projection)</td>
</tr>
<tr>
<td>178 Buildings</td>
<td>MHHW + 21&quot; (75th percentile projection)</td>
</tr>
<tr>
<td>310 Buildings</td>
<td>MHHW + 30&quot; (90th percentile projection)</td>
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</table>
Lessons learned since 2013

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

<table>
<thead>
<tr>
<th>New Buildings (NB)</th>
<th>Major Alterations (Alt-1)</th>
<th>Minor Alterations (Alt-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,021</td>
<td>1,090</td>
<td>15,573</td>
</tr>
<tr>
<td>All 1,021 (100%)</td>
<td>Only 113 (10%)</td>
<td>Only 532 (3%)</td>
</tr>
<tr>
<td>meet full resiliency standards</td>
<td>meet full resiliency standards</td>
<td>meet full resiliency standards</td>
</tr>
<tr>
<td>149 (14%) approved</td>
<td>36 (31%) approved</td>
<td>245 (46%) approved</td>
</tr>
<tr>
<td>451 (44%) underway</td>
<td>24 (21%) underway</td>
<td>122 (23%) underway</td>
</tr>
<tr>
<td>179 (17%) complete</td>
<td>0 (0%) complete</td>
<td>9 (1%) complete</td>
</tr>
<tr>
<td>25% rejected/pending</td>
<td>48% rejected/pending</td>
<td>30% rejected/pending</td>
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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 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
Flood Text Update
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.
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