Flood Resilience Zoning

Queens Borough Board
May 15, 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**
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
# Future 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>

- **Population in Floodplain** increased by 65%
- **Buildings in Floodplain** increased by 40%
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 standards require certain buildings to elevate the lowest floor, as well as mechanical equipment, above the Design Flood Elevation (DFE).
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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
2013 Citywide Flood Text
Amended zoning in six key ways

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

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*Home in Gerritsen Beach © Google 2015*

*1931 Sanborn Map Used with permission from The Sanborn Library, LLC*
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
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 through infrastructure and context can 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.
Resilient Neighborhoods
Old Howard Beach, Hamilton Beach, and Broad Channel

Community Advisory Committee:
• Appointed by Councilmember Eric Ulrich and included representatives from:
  o Community Boards 10 and 14
  o Broad Channel Civic Association
  o New Hamilton Beach Civic Association
  o Howard Beach-Lindenwood Civic Association
  o Local business owners

Public Outreach Summary:
• 5 Community Advisory Committee Meetings
• 4 Community Board Meeting Presentations
• 4 Civic Association Meeting Presentations

Recommendations:
• Reflect neighborhood character in Old Howard Beach through a future rezoning
• Update zoning to make it easier for property owners to make resiliency investments to their buildings
• Advance coordinated infrastructure and coastal protection strategies
• Enact targeted zoning changes to reflect the unique character and long-term vulnerability of Hamilton Beach and Broad Channel
Resilient Neighborhoods
Broad Channel

Existing Zoning

R3-2
• Allows all residential building types
• 0.6 FAR (includes 0.1 attic allowance)
• 40' min. lot width (D); 18' min. lot width (SD, A)
• 5' min. side yard width (D)
• 1 parking space required per unit

C1-2 Overlay
• Max. commercial FAR is 1.0 when mapped in R3-2
• Permits local commercial uses
• Parking requirements vary by use, but typically one off-street parking space is required for every 300 sq ft of commercial floor area

2050s Sea Level Rise Projections

- 226 Buildings
  MHHW + 11" (25th percentile projection)
- 368 Buildings
  MHHW + 21" (75th percentile projection)
- 744 Buildings
  MHHW + 30" (90th percentile projection)
Resilient Neighborhoods
Hamilton Beach

Existing Zoning

R3-1
• Allows one- and two-family detached and semi-detached residences
• 0.6 FAR (includes 0.1 attic allowance)
• 40’ min. lot width (D); 18’ min. lot width (SD, A)
• 5’ min. side yard width (D)
• 1 parking space required per unit

C1-2 Overlay
• Max. commercial FAR is 1.0 when mapped in R3-1
• Permits local commercial uses
• Parking requirements vary by use, but typically one off-street parking space is required for every 300 sq ft of commercial floor area

2050s Sea Level Rise Projections

<table>
<thead>
<tr>
<th>Buildings</th>
<th>MHHW + 11” (25th percentile projection)</th>
<th>MHHW + 21” (75th percentile projection)</th>
<th>MHHW + 30” (90th percentile projection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 Buildings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>178 Buildings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>310 Buildings</td>
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</table>
Special Coastal Risk District
Proposed Zoning Text Amendment

The proposed zoning strategy would create a Special Coastal Risk District in the Zoning Resolution to provide a zoning tool for signifying flood risk in the areas of the City most vulnerable to projected future tidal flooding. It would be mapped in Broad Channel and Hamilton Beach.
Special Coastal Risk District, Broad Channel Subdistrict
The Broad Channel Subdistrict would modify the underlying regulations of the proposed R3A and C3A districts to limit future residential development to single-family detached houses only. In addition, community facilities with sleeping or overnight accommodations would be prohibited.

Proposed R3-2 to R3A
R3A districts permit detached residential buildings, but would be modified by the Special District. The main changes to the underlying zoning from R3-2 to R3A are:
- 40’ min. lot width → 25’ min. lot width
- 5’ min. lot width → 4’ min. side yard width

Proposed R3-2 to C3A
C3A districts permit detached residential buildings and water-dependent uses, including marinas and boat storage facilities, but would be modified by the Special District.

Proposed C1-2 to C1-3
Updating the existing commercial overlay to C1-3 is proposed to slightly reduce the off-street parking requirement.
Special Coastal Risk District, Hamilton Beach Subdistrict
The Hamilton Beach Subdistrict would modify the underlying regulations of the proposed R3A district to limit future residential development to single-family detached houses, except on lots at least 40 feet wide where two-family detached residences would be permitted. In addition, community facilities with sleeping or overnight accommodations would be prohibited.

Proposed R3-1 to R3A
R3A districts permit detached residential buildings, but would be modified by the Special District. The main changes to the underlying zoning from R3-1 to R3A are:
• 40’ min. lot width $\rightarrow$ 25’ min. lot width
• 5’ min. lot width $\rightarrow$ 4’ min. side yard width

Proposed C1-2 to C1-3
Updating the existing commercial overlay to C1-3 is proposed to slightly reduce the off-street parking requirement.
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
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.

<table>
<thead>
<tr>
<th>DOB Permit Filings</th>
<th>in the flood hazard area, 10/2013 – 1/26/2016</th>
</tr>
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<tbody>
<tr>
<td><strong>New Buildings</strong></td>
<td><strong>Major Alterations</strong></td>
</tr>
<tr>
<td>NB</td>
<td>Alt-1</td>
</tr>
<tr>
<td>1,021</td>
<td>1,090</td>
</tr>
<tr>
<td>All 1,021 (100%) meet full resiliency standards</td>
<td>Only 113 (10%) meet full resiliency standards</td>
</tr>
<tr>
<td>149 (14%) approved</td>
<td>36 (31%) approved</td>
</tr>
<tr>
<td>451 (44%) underway</td>
<td>24 (21%) underway</td>
</tr>
<tr>
<td>179 (17%) complete</td>
<td>0 (0%) complete</td>
</tr>
<tr>
<td>25% rejected/pending</td>
<td>48% rejected/pending</td>
</tr>
<tr>
<td><strong>Minor Alterations</strong></td>
<td></td>
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<tr>
<td>Alt-2</td>
<td></td>
</tr>
<tr>
<td>15,573</td>
<td></td>
</tr>
<tr>
<td>Only 532 (3%) meet full resiliency standards</td>
<td></td>
</tr>
<tr>
<td>245 (46%) approved</td>
<td>122 (23%) underway</td>
</tr>
<tr>
<td>122 (23%) complete</td>
<td>9 (1%) complete</td>
</tr>
<tr>
<td>30% rejected/pending</td>
<td>48% rejected/pending</td>
</tr>
</tbody>
</table>
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. **Highly Vulnerable Areas**
   Density may need to be limited in highly vulnerable areas.
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
Thank you!

For more information, and to stay involved, email resilientneighborhoods@planning.nyc.gov
Flood Text II
Lesson learned: Cellar and Residential living space lost

EXAMPLE ISSUE

The 2013 Flood Text allowed for adjustment of “zoning envelopes” to facilitate the retrofitting and replacement of living space above the DFE, out of harm’s way, but this flexibility applies unevenly:

Case study 1: Replacement of ‘cellar’ story in a high-DFE retrofit

Case study 2: Loss of living space in a low-DFE retrofit