Flood Resilience
Text Amendment II
Staten Island Borough Board
April 5, 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
FEMA Flood Map
Flood Risk in Staten Island

Population in Floodplain

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2013</th>
<th>2020s</th>
<th>2050s</th>
<th>2080s</th>
<th>2100</th>
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<tbody>
<tr>
<td>Staten Island</td>
<td>18,100</td>
<td>30,700</td>
<td>38,600</td>
<td>44,900</td>
<td>56,300</td>
<td>63,100</td>
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<td>Citywide</td>
<td>218,000</td>
<td>400,000</td>
<td>605,300</td>
<td>808,900</td>
<td>1,113,500</td>
<td>1,259,100</td>
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Buildings in Floodplain

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2013</th>
<th>2020s</th>
<th>2050s</th>
<th>2080s</th>
<th>2100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staten Island</td>
<td>8,000</td>
<td>11,800</td>
<td>14,200</td>
<td>16,700</td>
<td>19,800</td>
<td>21,500</td>
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<tr>
<td>Citywide</td>
<td>35,000</td>
<td>71,500</td>
<td>93,600</td>
<td>118,000</td>
<td>152,900</td>
<td>171,800</td>
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*Future flood zone impacts based on NPCC2 90th percentile sea level rise projections

2015 PFIRMs  
46% increase  
100% increase

2050 Projected 100 year flood plain

2015 PFIRMs  
41.5% increase  
59% increase

2050 Projected 100 year flood plain
Common Building Typologies
Flood Risk in Staten Island
How are buildings in the floodplain regulated?

- **Flood Insurance Rate Maps**: Determine where floodplain regulations apply.
- **National Flood Insurance Program**: Rates encourage building elevation and other retrofits.
- **Building Code (DOB)**: Code requires new buildings and substantial improvements to meet FEMA standards.
- **Zoning Resolution (DCP)**: Zoning accommodates these regulations and improves neighborhood character.
Flood-resistant 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).

Living spaces are elevated above DFE

Mechanical systems are elevated above DFE

Site is filled to lowest adjacent grade

Use below DFE is restricted to parking, storage or access

Mechanical systems

Living spaces
Flood insurance rates
Set by FEMA

Raising or retrofitting your 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 resilience zoning
Projects at DCP

2013
“Flood Text”
initial temporary regulations
to facilitate recovery

2015 “SRNR”
additional zoning relief
to expedite recovery

2018
“Flood Text II”
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
2015 Special Regulations
Accelerate recovery in Sandy-damaged neighborhoods

Temporary regulations, expiring in 2020, in limited areas of Brooklyn, Queens, and Staten Island

In Staten Island: Tottenville, Great Kills, Oakwood Beach, Cedar Grove, New Dorp Beach, Midland Beach, and South Beach

Simplified process for documenting old homes

Removed disincentives such as loss of basements

Established new envelope for rebuilds on small existing lots
DCP Staten Island
Projects and outreach

Community Advisory Committee

Business Community

Interagency Coordination

Borough President’s Sandy Task Force

SI East Shore Community Outreach

ULURP for East Shore Buyout Areas

Release East Shore Report

2015
Q1 Q2 Q3 Q4

2016
Q1 Q2 Q3 Q4

2017
Q1 Q2 Q3

Worked with CAC and SI stakeholders to develop recommendations for Resilient Neighborhoods East Shore Study
The Resilient Neighborhoods East Shore Report is scheduled for release this Spring.

The study’s key recommendations include:

• Working to reduce flood risk by supporting the U.S. Army Corp’s Line of Protection

• Advancing resilient building by creating a new zoning envelope for detached and semi-detached homes in the floodplain and reducing zoned density in New Dorp Beach

• Strengthening key waterfront destinations by exploring rezoning options for Midland Avenue and Sand Lane to encourage attractive mixed-use development

• Preserving ecologically sensitive natural environments and open spaces by limiting density and ensuring review of development near wetlands and in other hazardous areas
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 and lessons learned in six key areas

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.

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

5. **Old Homes in SmallLots**
   Old bungalow 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.
Flood Text II
Outreach

DCP plans a robust public engagement process:

2016 2017 2018
Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4

Community Outreach Scoping / ULURP

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
Lesson learned: FAR incentive to retrofit buildings not effective

**EXAMPLE ISSUE**

The 2013 Flood Text allowed for floodproofed space to be exempted from floor area to incentivize the retrofitting of existing buildings but had the following issues:

- Analysis of DOB permitting indicates this incentive likely has not been used since it was introduced.
- Restrictions accompanying this flexibility (only applies in certain districts, up to 10,000 sq. ft., C space cannot be replaced atop R, prohibition against creating new units, requirement to provide new parking spaces) may be too onerous.
- Only applies to existing buildings – not new buildings.

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**Wet floodproofing**

*Existing buildings may relocate wet floodproofed floor area located below the PCC.*

**Dry floodproofing**

*Temporary flood panels are used at openings to allow commercial or community facility spaces.*
Flood Text II
Lesson learned: Desirable ground floor retail not being provided

EXAMPLE ISSUE

The 2013 Flood Text redefined “cellar” to exempt at-grade stories to incentivize the retrofitting of existing buildings but had the following issues:

- 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)
Flood Text II
Lesson learned: Additional height not permitted for future flood projections

EXAMPLE ISSUE
The 2013 Flood Text doesn’t provide zoning relief for accommodating future flood risk

- Zoning relief is “minimum necessary” to elevate only to the DFE – nothing higher.
- Some building owners may want to take sea level rise, future flood heights, or more powerful storms (e.g., Hurricane Sandy) into account when building. No incentives.
- Close coordination is necessary to align zoning with FEMA “Climate Smart” maps.
Flood Text II
Lesson learned: Cottage envelope is not permanent

EXAMPLE ISSUE

The 2015 SRNR created a new contextual envelope to facilitate the reconstruction of the very small homes on small lots, however these rules were temporary:

- Not available permanently (past 2022)
- Doesn’t apply outside of “Neighborhood Recovery Areas”
- Doesn’t prevent “candlesticks” on currently vacant lots

<table>
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<tr>
<th>Currently allowed</th>
<th>Proposed Envelope</th>
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<tr>
<td>Minimum 5’ sideyards</td>
<td>Minimum 3’ sideyards</td>
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<tr>
<td>21’/35’ height</td>
<td>19’/25’ height</td>
</tr>
<tr>
<td>✓ Fits 0.6 FAR</td>
<td>✓ Fits 0.6 FAR</td>
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</table>
Flood Text II
Lesson learned: Not all existing buildings were grandfathered

EXAMPLE ISSUE

To facilitate the recovery of non-conforming and non-complying homes, the 2013 Flood Text gave greater relief to these homes, but 500+ residential buildings in C8/M Districts were left out.

• **Underlying Article V** rules always allow 1+2 family homes to be rebuilt, regardless of level of damage, except R in C8/M
• **FT I** allowed any non-conforming building damaged >50% by Hurricane Sandy to rebuild, except R in C8/M