

Resilient Neighborhoods Initiative: Canarsie

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Residential space below the DFE is relocated in a vertical addition that is set back

Parking and storage area is wet floodproofed and outfitted with flood vents

#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 and sea level rise

Buildings are designed to withstand and recover from flooding

Infrastructure is protected from climate hazards

Residents and businesses are prepared

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)

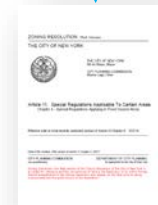
Design minimum construction requirements for flood hazard areas

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



What are the Federal design standards?



Homeowner's Guide to Retrofitting

Six Ways to Protect Your Home From Flooding

FEMA P-312, 3rd Edition / June 2014



Floodproofing Non-Residential Buildings

FEMA P-936 / July 2013



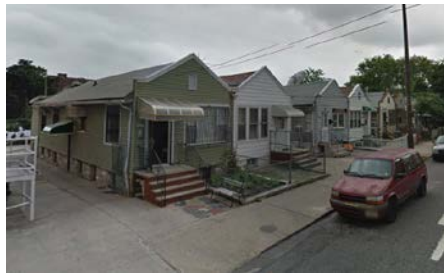
New York City's floodplain is diverse



Apartment Buildings



Bungalows/
1-2 Family



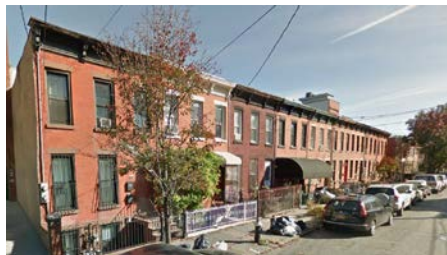
Retail
Corridors



Industrial/
Manufacturing



Attached/Semi-
detached Buildings



FEMA Flood Map

Citywide Flood Risk

NYC's flood risk is high.

The floodplain affects a large geography and a large number of community and council districts.

100 Year Floodplain FEMA 2015 PFIRM

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

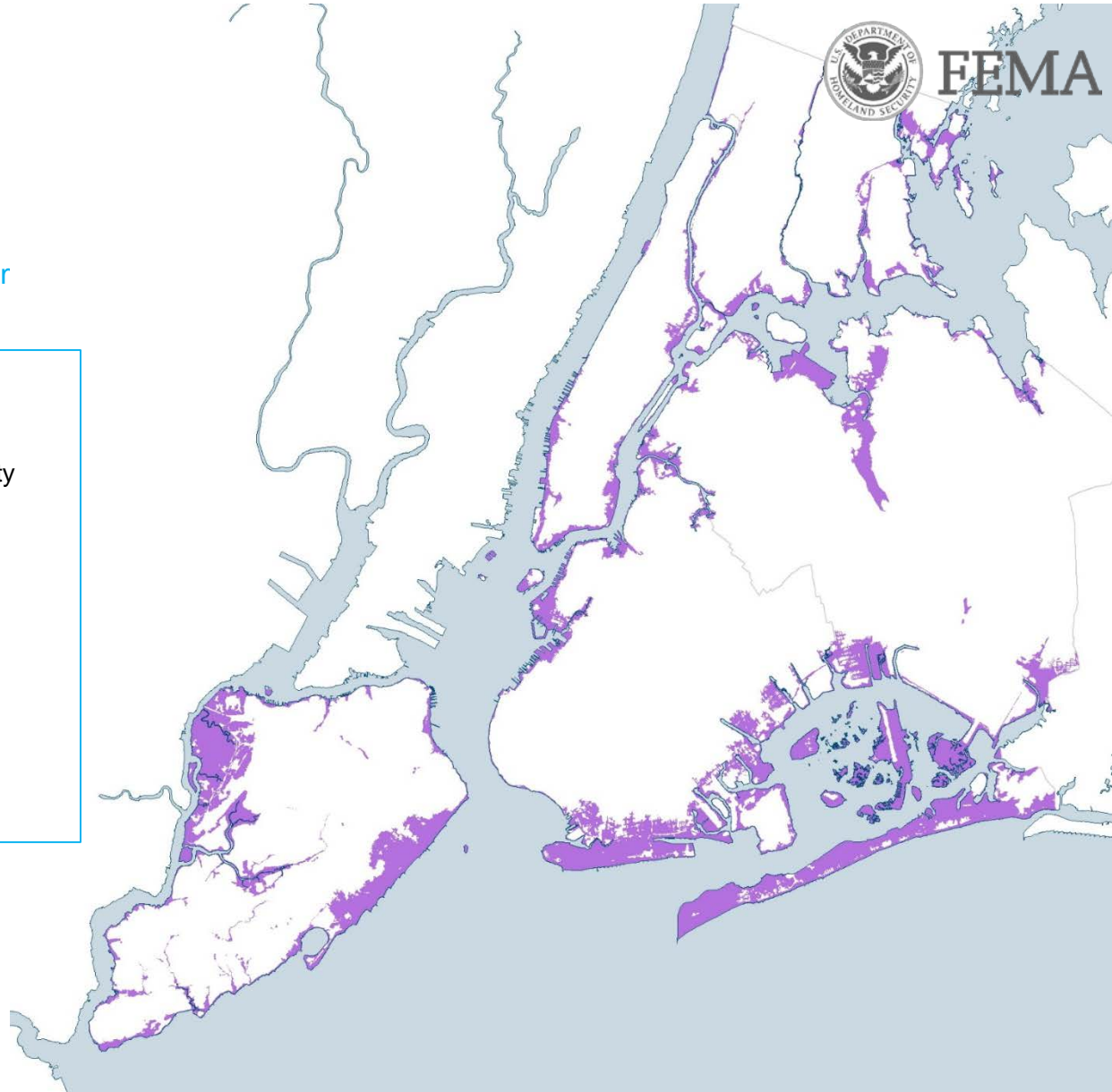
50 of 59 Community
Boards
45 of 51 Council
Districts



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

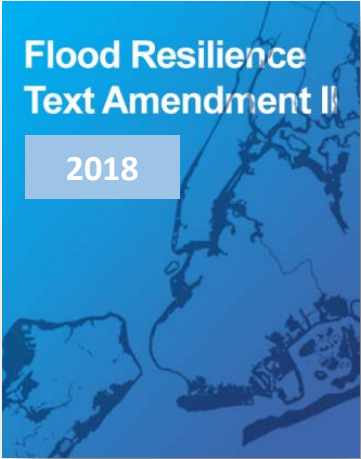
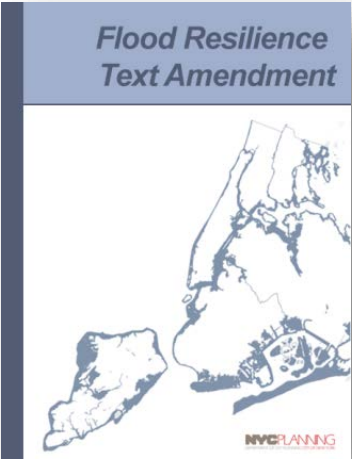


Residential
Units:
30% 1-4 units
70% 5+ units



Flood Resilience Zoning Projects at DCP

Design Best Practices Guidelines



2013
“Flood Text”
initial temporary regulations to
facilitate recovery



2018
“Flood Text Update”
improve upon, and make permanent,
the Flood Text

Neighborhood Studies

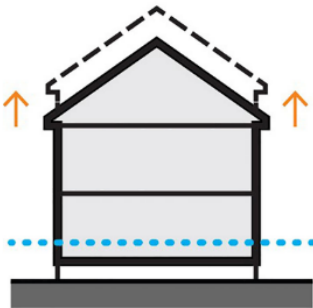
2013 Citywide Flood Text

Amended zoning in six key areas

1

Height

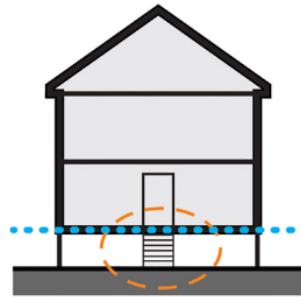
Measured from flood elevation



2

Access

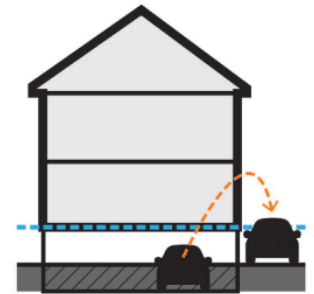
Flexibility for stairs, ramps, lifts



3

Parking

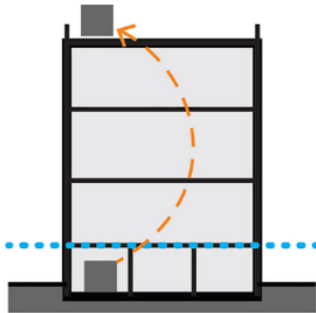
Flexibility to relocate parking



4

Systems

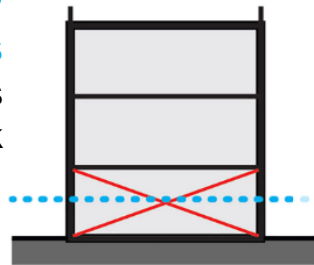
Flexibility to relocate/elevate



5

Ground Floors

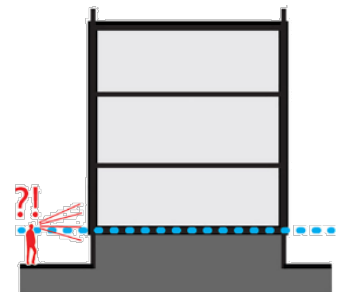
Account for costs of new flood risk



6

Streetscape

Require features to mitigate blank wall



Resilient Neighborhoods Initiative

Reduce flood risks

Develop zoning strategies and other tools to advance short-term, cost-effective investments that can make New York City's building stock more resilient to severe storms and better protect our coastline.

Plan for adaptation over time

Climate change will increase coastal risks over time, including more tidal flooding in some areas. It is important to take measures to reduce the long-term vulnerabilities that neighborhoods will face over time.

Ensure neighborhoods are both resilient and vibrant

Encourage high-quality development that is both resilient and respects each neighborhood's built environment, such as by limiting building height and improving public space.



Resilient Neighborhoods

Canarsie





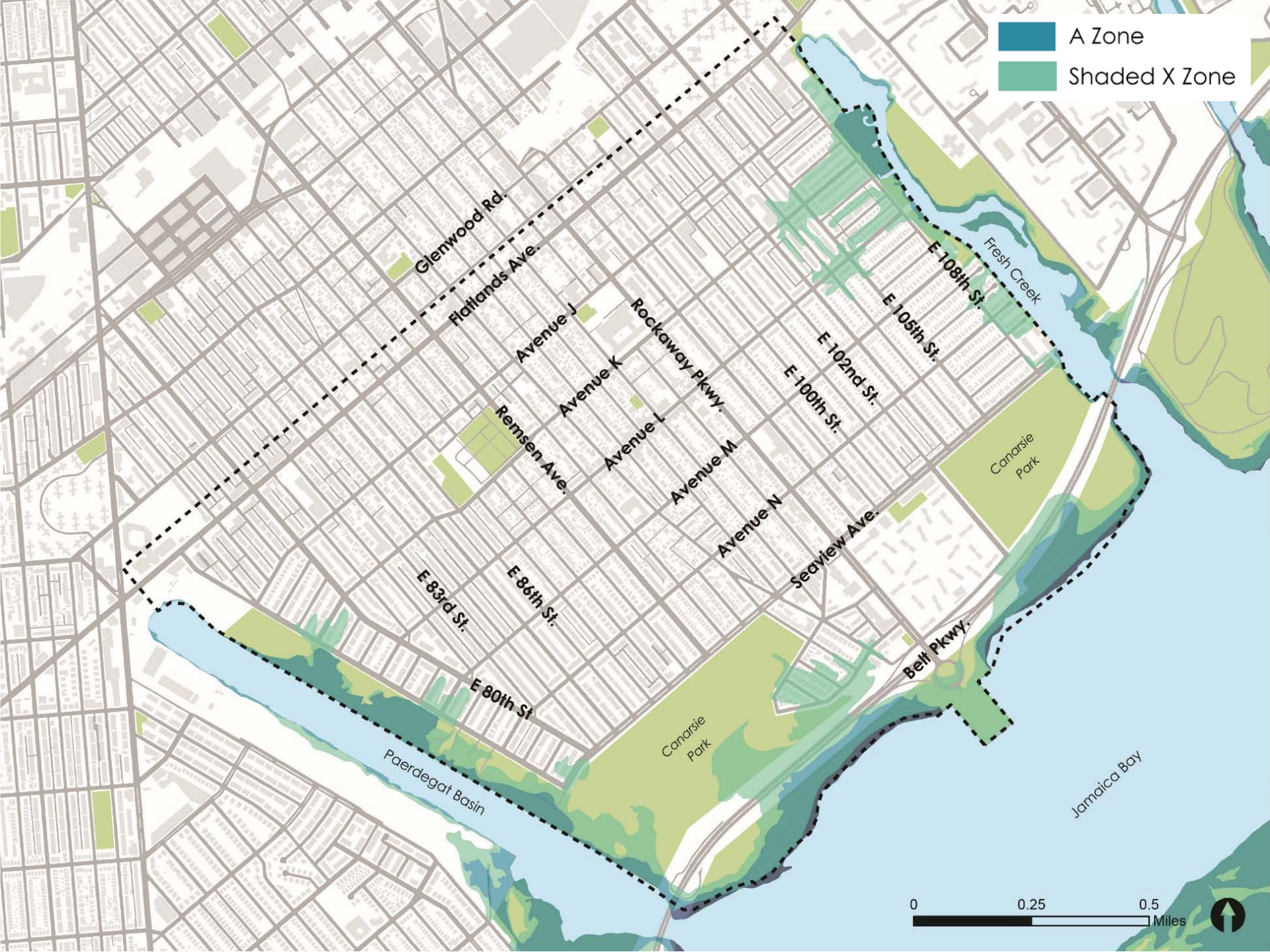
Copyright 2015 The City of New York

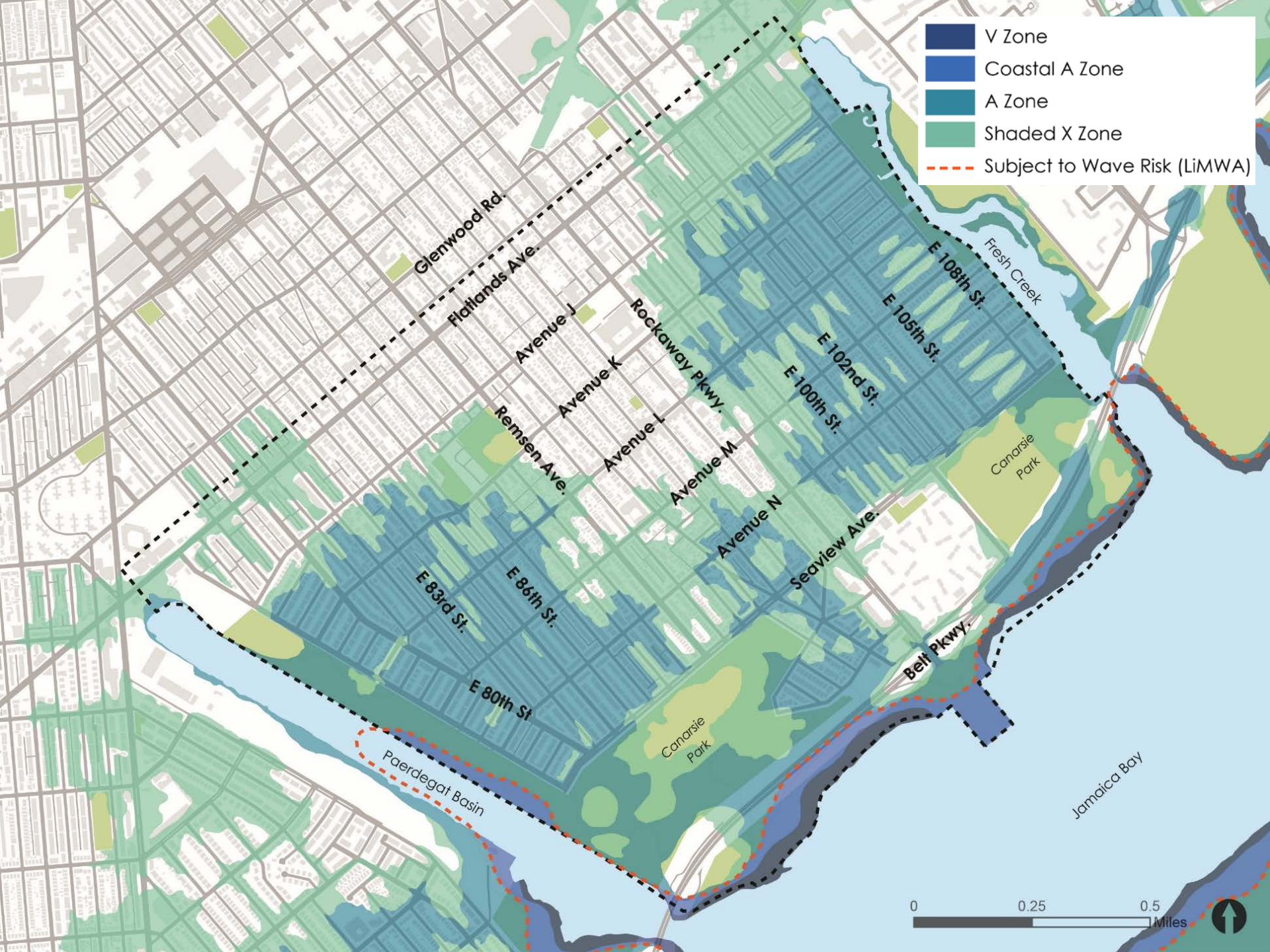
1924 Aerial of Jamaica Bay





- A Zone
- Shaded X Zone





- **Dense residential area of over 83,000 residents and 17,900 residential units**
- **80% of units are in attached or semi-detached buildings**
- **86% of homeowners have mortgages**
- **Many homes in Canarsie have critical systems such as heaters in cellars and basements that are below the DFE and subject to flooding**
- **Some homeowners have converted garages and storage spaces to residential areas such as dens or separate residential units**

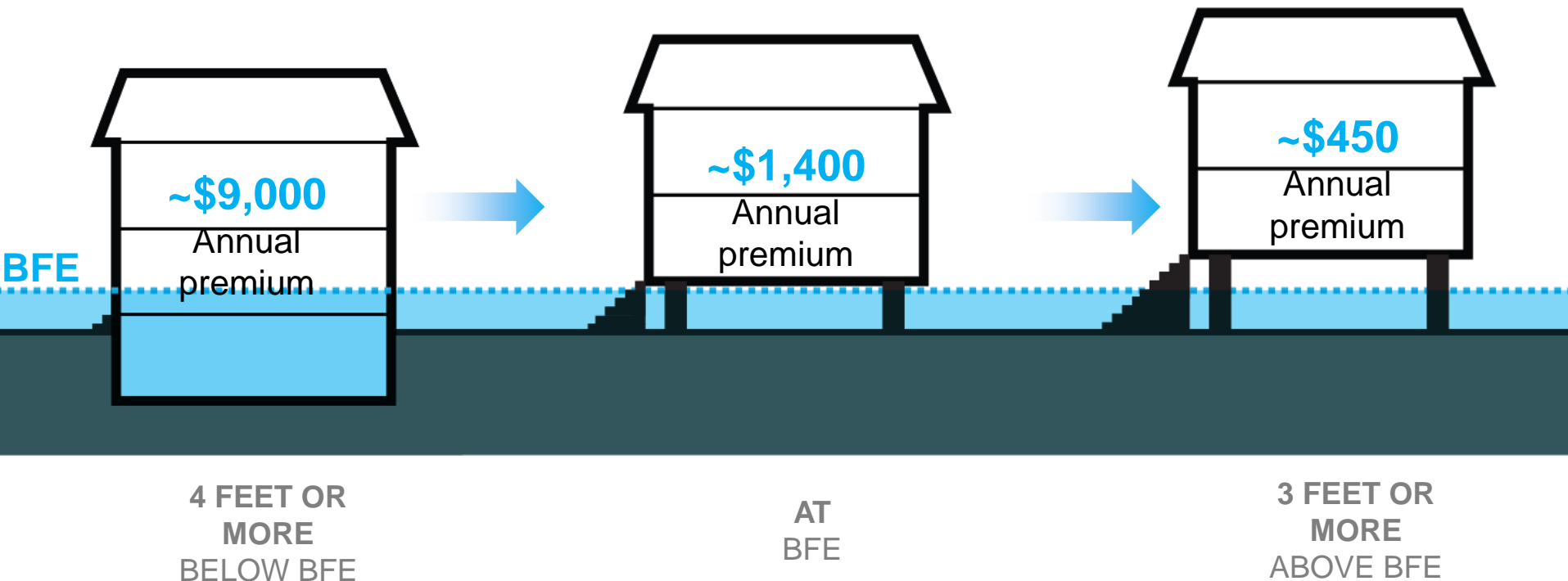
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Flood insurance rates

Set by FEMA

Raising or retrofitting a 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)**.





easier to retrofit



harder to retrofit

ZONING STRATEGIES

Attached/Semi-detached Housing

Identify citywide zoning modifications that make it easier to undergo retrofitting and replace ground floor uses in vertical additions.



Detached Housing

Identify citywide zoning modifications that make it easier for detached homes to elevate to a height that allow for use of ground floor for parking and storage.



ADDITIONAL RESILIENCY STRATEGIES

Retail Corridors

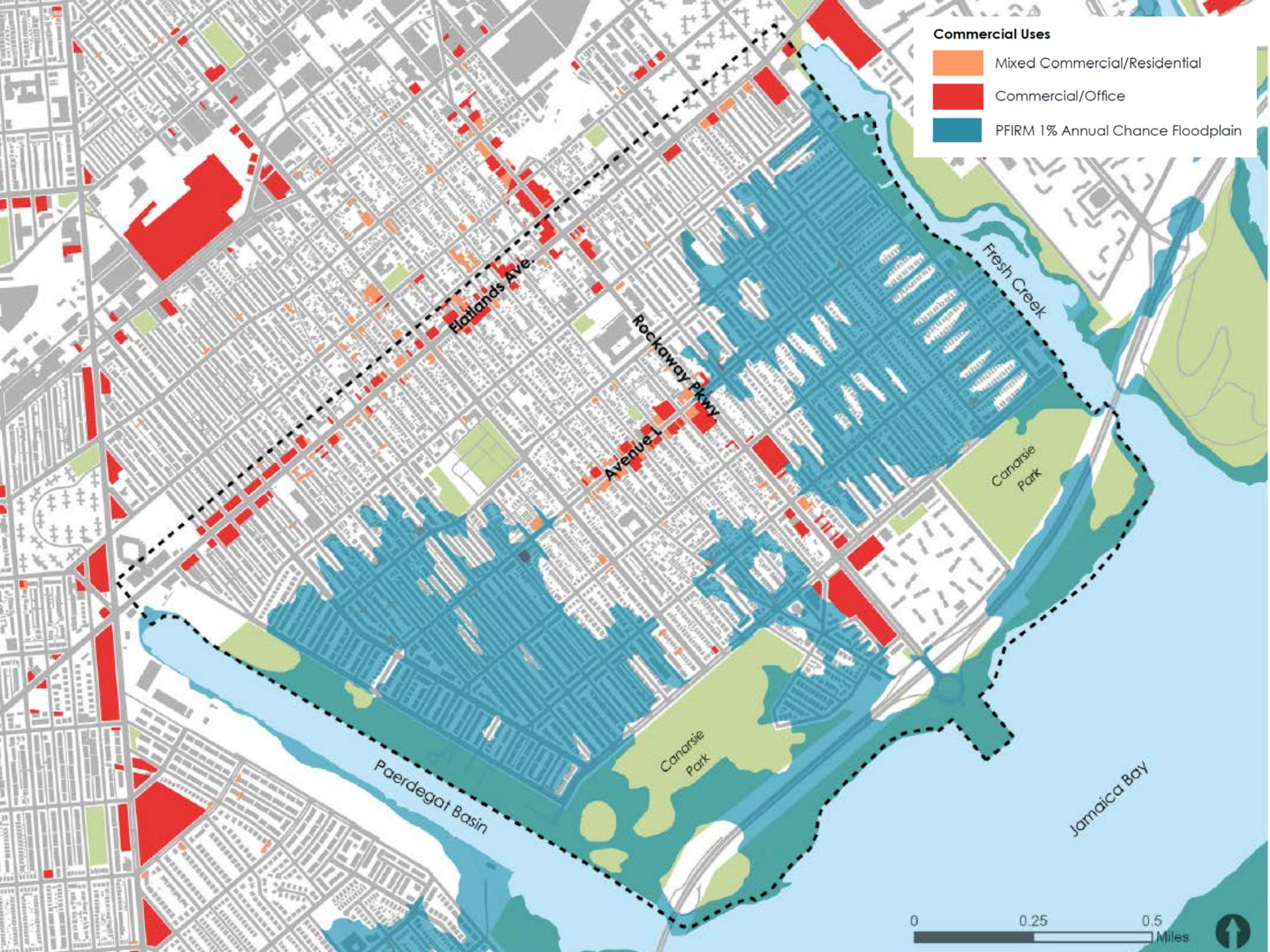
Canarsie's retail corridors are not in the floodplain. Strategies should be pursued to strengthen existing and future businesses.



Potential for Coastal Protection

Canarsie is surrounded by city and federally owned parkland which could be leveraged to create coastal protection against serious flooding events





Commercial Uses

- Mixed Commercial/Residential
- Commercial/Office
- PFIRM 1% Annual Chance Floodplain

Flatlands Ave.

Rockaway Pkwy.
Avenue L

Fresh Creek

Canarsie Park

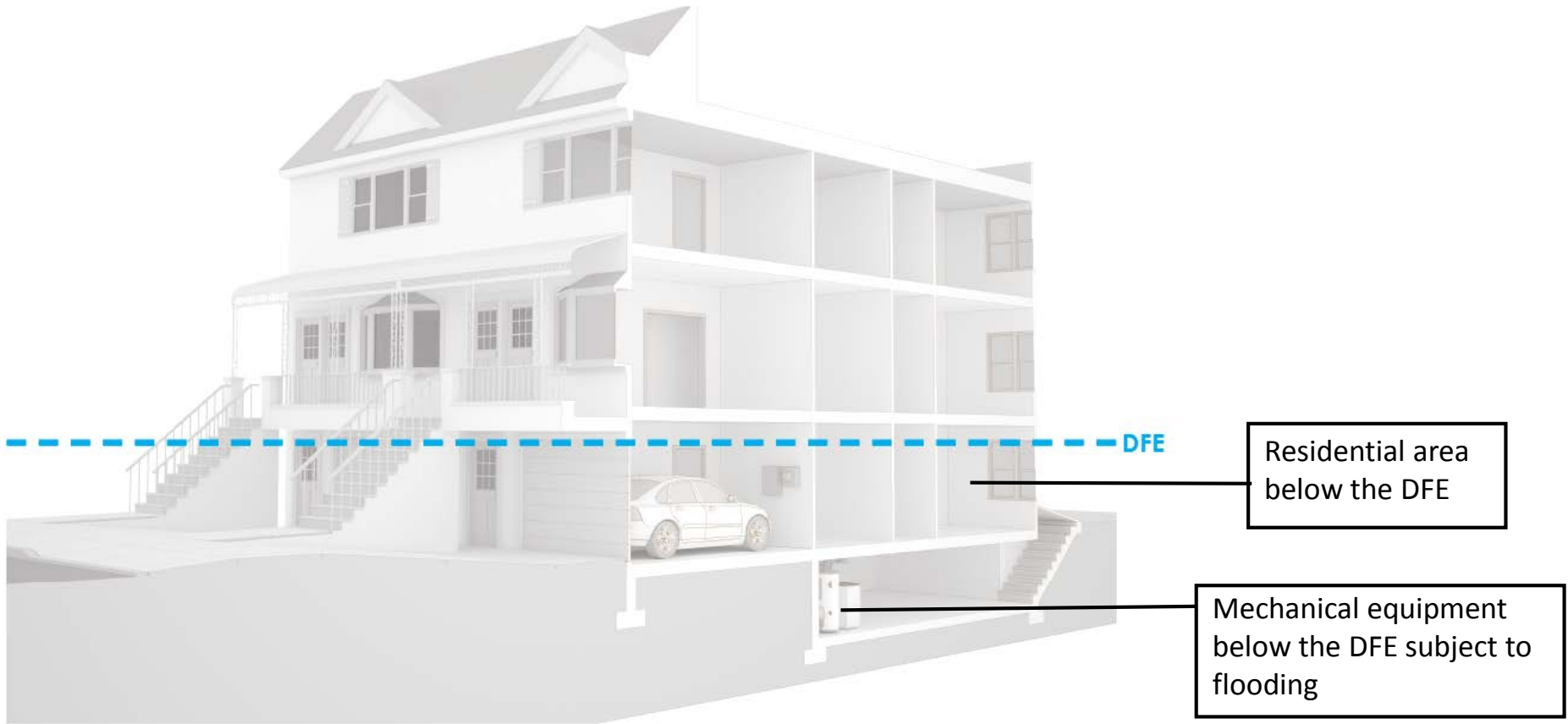
Paerdegat Basin

Canarsie Park

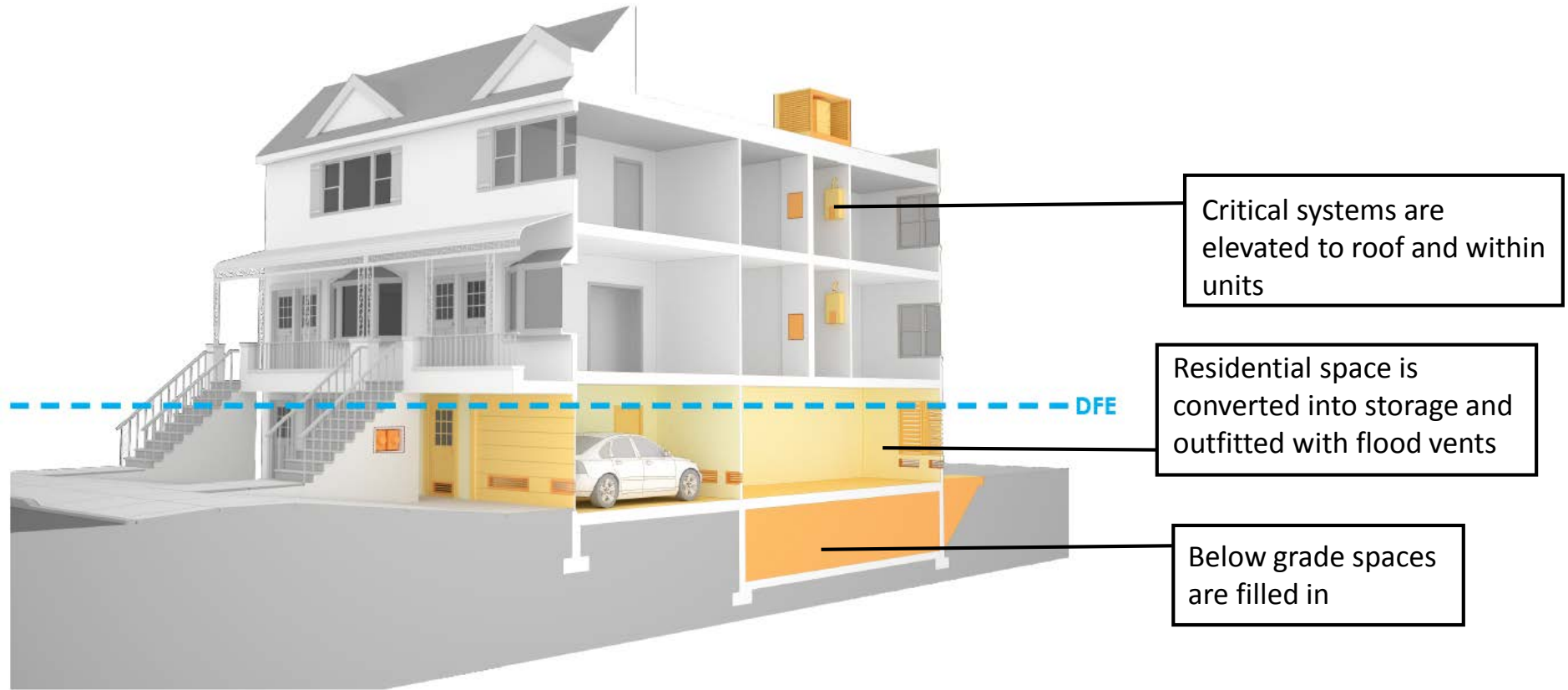
Jamaica Bay



Existing Building



Retrofitted Building



Critical systems are elevated to roof and within units

Residential space is converted into storage and outfitted with flood vents

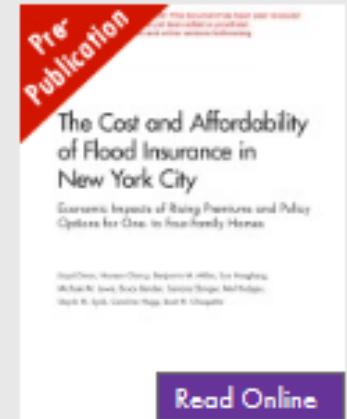
Below grade spaces are filled in

The Cost and Affordability of Flood Insurance in New York City

Economic Impacts of Rising Premiums and Policy Options for One- to Four-Family Homes

by Lloyd Dixon, Noreen Clancy, Benjamin M. Miller, Sue Hoegberg, Michael M. Lewis, Bruce Bender, Samara Ebinger, Mel Hodges, [Gayle M. Syck](#), Caroline Nagy, Scott R. Choquette

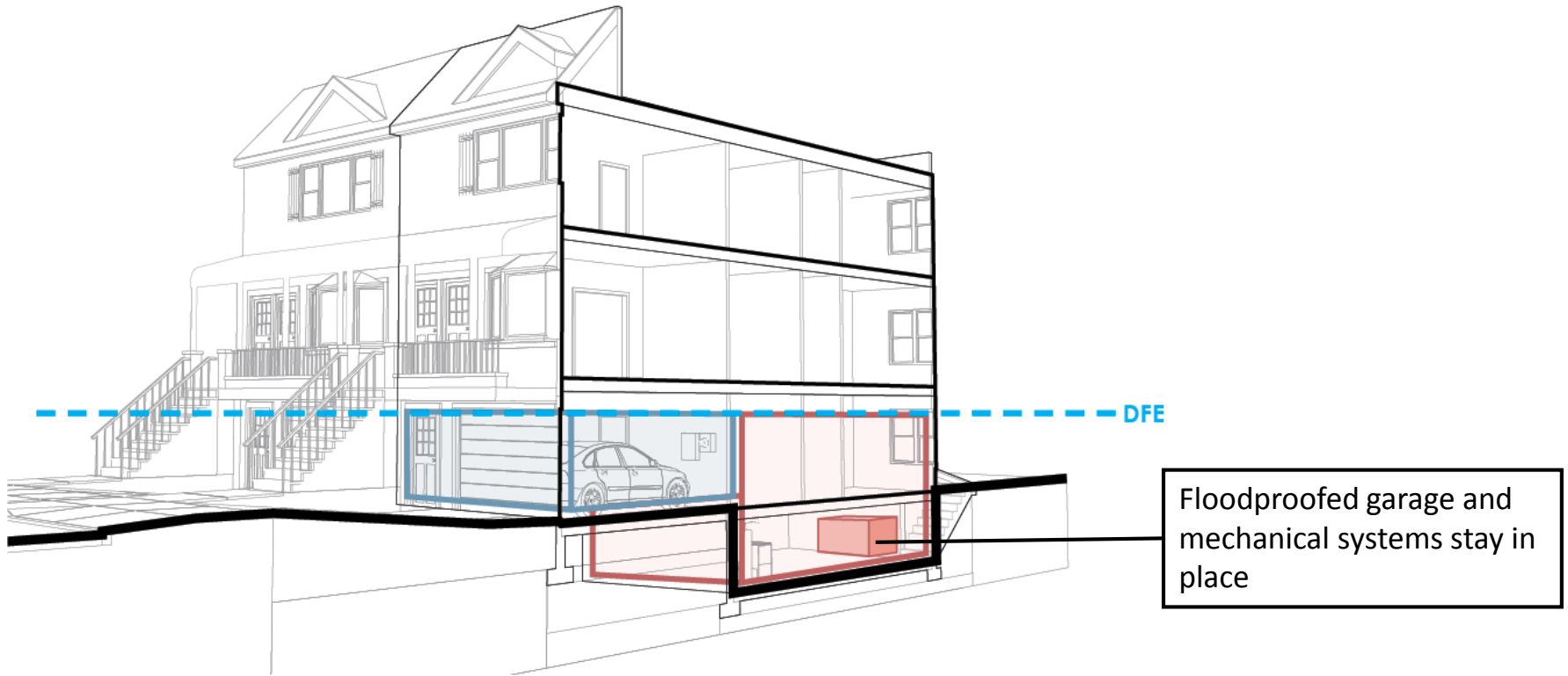
Related Topics: [Community Resilience](#), [Flooding](#), [Insurance](#), [New York City](#), [Residential Housing](#)



Key Findings/Next Steps

- Many neighborhoods including Canarsie will be especially hard hit when risk increases and rates move toward actuarial rates. Rates could reach up to \$4000 a year.
- City is advocating that FEMA explore more cost-effective retrofitting strategies.

Partial Mitigation Strategies



Key Takeaways

- Ground resiliency efforts in a place
- Help people visualize their risk
- Pair design solutions with policy solutions

www.nyc.gov/resilientneighborhoods