



#ONENYC

Vision 4: Our Resilient City

TITLE

DATE, 2015

OneNYC: Resiliency

Following Hurricane Sandy, a global conversation on resiliency emerged. Here's what it means to us in New York City.

Our Resilient City

Our neighborhoods, economy, and public services will be ready to withstand and emerge stronger from the impacts of climate change and other 21st century threats

Hurricane Sandy

This conversation took on new urgency after Hurricane Sandy struck the region in October 2012...



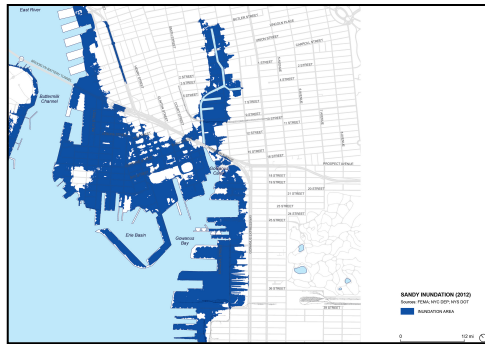
- 44 lives lost
- \$19 billion in damages and lost economic activity
- Thousands of New Yorkers were displaced from homes
- 51 square miles (17% of NYC land mass) flooded
- 88,700 buildings were inundated, including 23,400 businesses
- 2,000,000 people lost power, many for weeks and longer

Major disruptions to lives, neighborhoods, and infrastructure demonstrated our vulnerabilities to coastal storms and the risks of a changing climate.

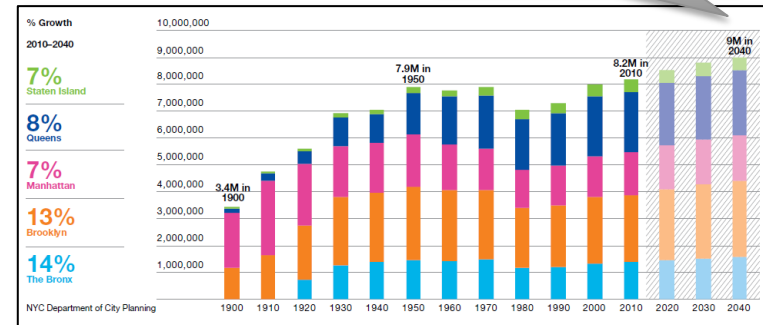
Climate Change / 21st Century Threats

...But we know that Sandy is not the only risk we face. As we look toward the future, we must take stock of our current challenges...

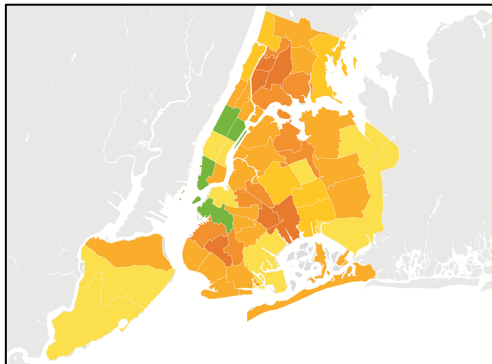
9 million by 2040



Hurricane Sandy



A growing population



Increasing inequality

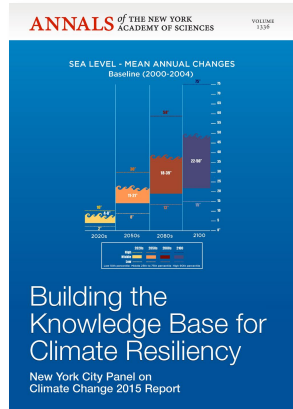


Aging infrastructure

Climate Change / 21st Century Threats

...And grapple with the impacts of climate change on our city.

The NYC Panel on Climate Change (NPCC) projects increased chronic climate hazards...



By the 2050s:

- 4.1°F to 5.7°F increase in average temperature
- 4% to 11% increase in average annual precipitation
- Sea levels likely to rise 1-2 ft.; maybe 2½ ft.

By 2100:

- High-end projections may reach 6 ft.

...and increased impact from extreme weather events.



By the 2050s:

- Number of days in NYC above 90° could triple

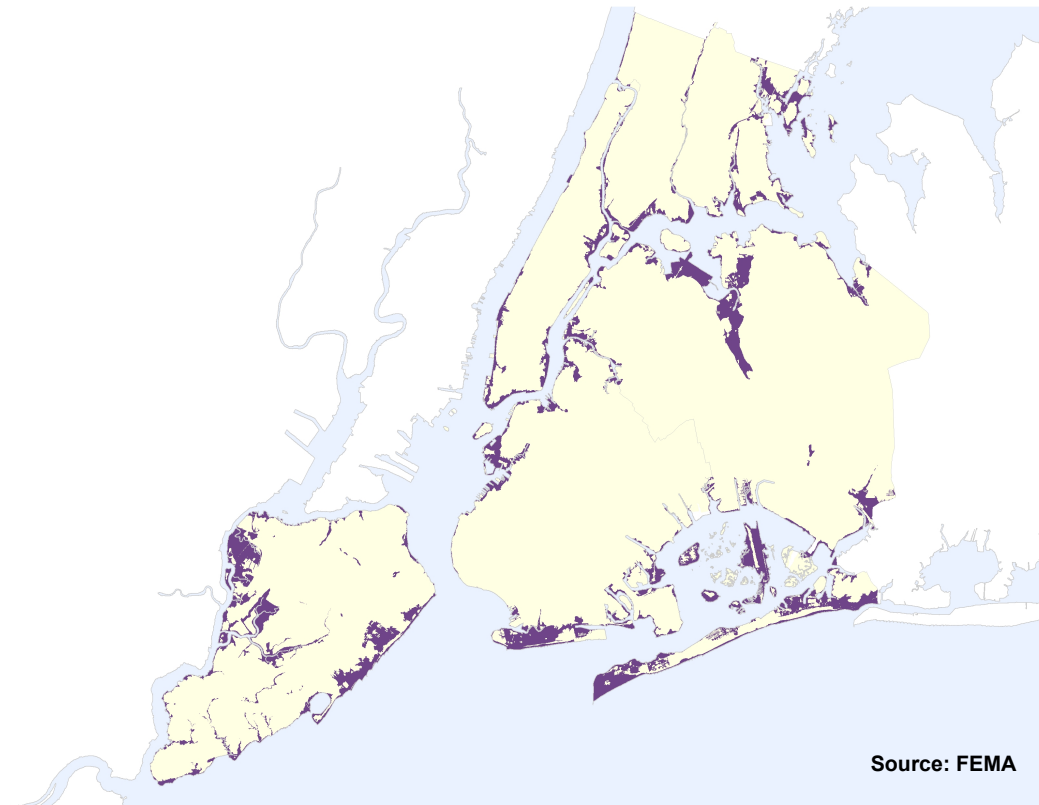
Even today:

- 100-year floodplain expanded by 17 square miles (51%) citywide; 2.3 ft. average increase in 100-year flood elevations; will increase with further sea level rise; now encompasses 71,500 structures

Climate Change / 21st Century Threats

Prior to Sandy, FEMA's Flood Insurance Rate Maps, initially produced in 1983, were the best indicator of flood risk in the five boroughs...

FEMA 2007 Flood Insurance Rate Maps (FIRMs)



Source: FEMA

FEMA 2007 FIRMs 100-year Floodplain

100-year Floodplain*

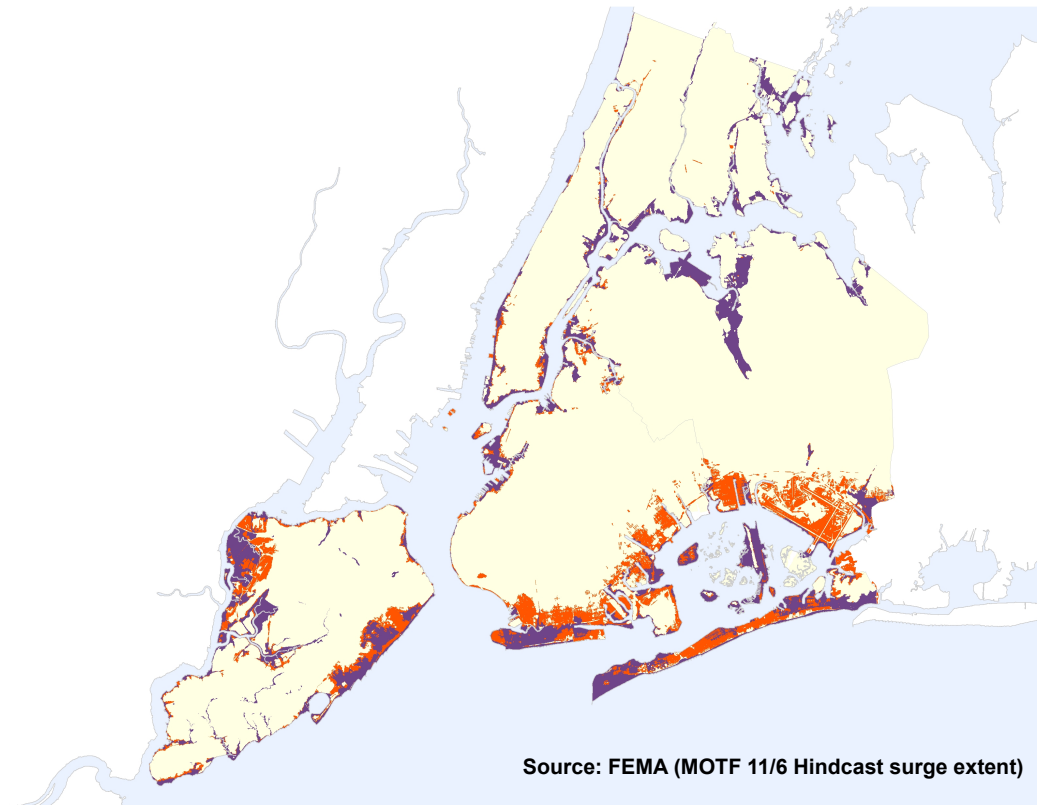
1983 FIRMs	
Residents	218,000
Jobs	214,000
Buildings	36,000
1-4 Family	26,000
Floor Area (Sq Ft.)	377M

- FIRMs not significantly updated since 1983
- City called on FEMA to initiate new maps in 2007



Climate Change / 21st Century Threats

...Although Sandy demonstrated that the city is more vulnerable than previously understood.

FEMA 2007 FIRMs vs. Sandy Inundation Area



Source: FEMA (MOTF 11/6 Hindcast surge extent)

-  FEMA 2007 FIRMs 100-year Floodplain
-  Sandy Inundation Area (outside the 100-year Floodplain)

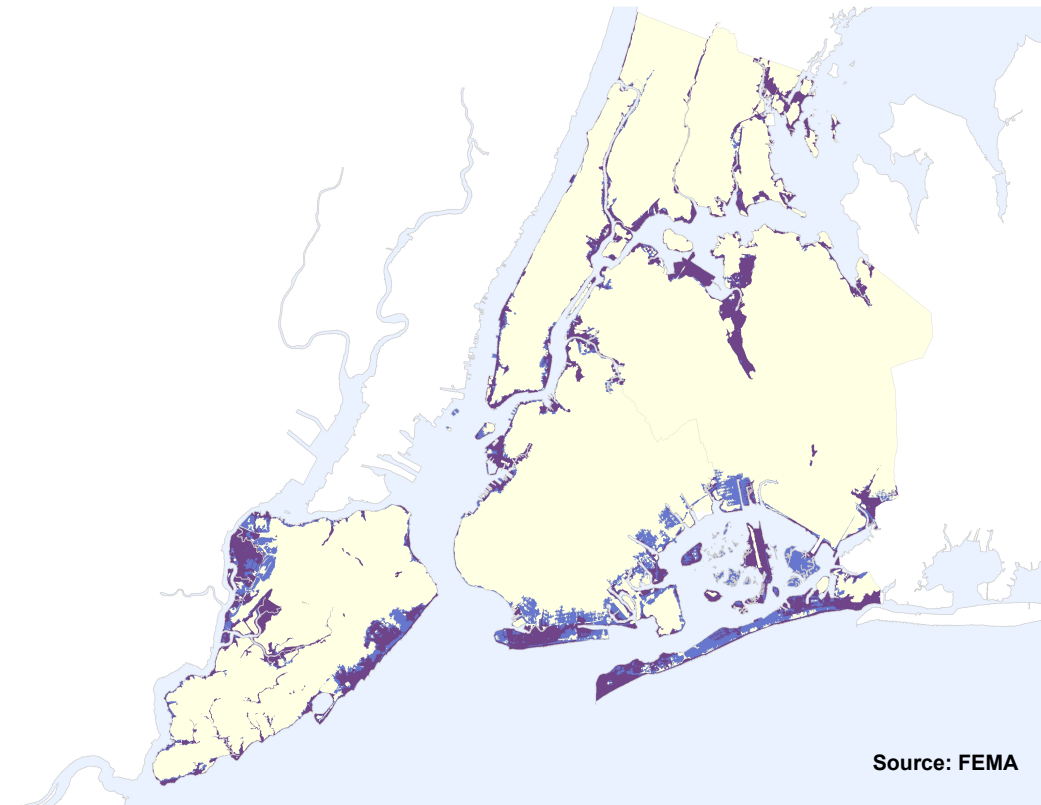
Damage outside 2007 100-year floodplain:



- > 1/3 of red- and yellow-tagged buildings
- ~ 1/2 of impacted residential units
- > 1/2 of impacted buildings

Climate Change / 21st Century Threats

The latest Preliminary FIRMs were released in December 2013 and show the city's floodplain to be 51% more expansive than previously...

FEMA 2007 FIRMs vs. Preliminary FIRMs



 FEMA 2007 FIRMs 100-year Floodplain
 FEMA 2013 Preliminary FIRMs 100-year Floodplain

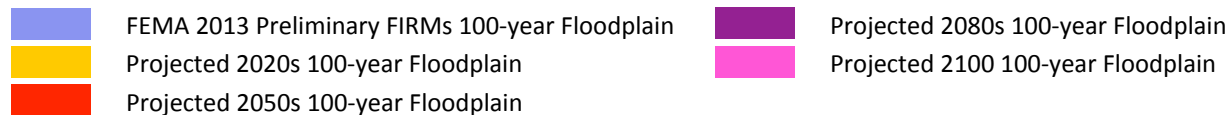
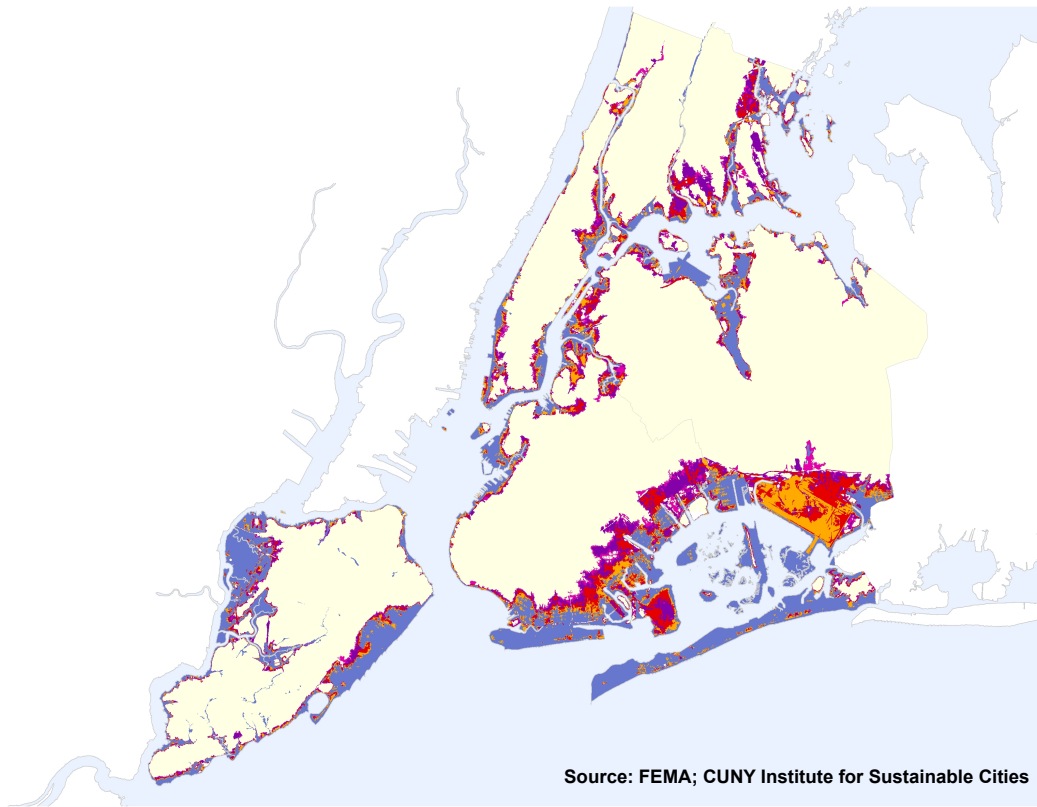
100-year Floodplain*			
	2007 FIRMs	2013 PFIRMs	Change (%)
Residents	218,000	400,000	83%
Jobs	214,000	290,800	35%
Buildings	36,000	71,500	99%
1-4 Family	26,000	57,400	120%
Floor Area (Sq Ft.)	377M	532M	42%

* Numbers are rounded for clarity

Climate Change / 21st Century Threats

...And leading to expanded vulnerability as sea levels continue to rise.

Projected floodplain for the 2020s and 2050s



100-year Floodplain*

	2013 PFIRMs	2050s Projected	Change (%)
Residents	400,000	808,900	102%
Jobs	290,800	555,700	91%
Buildings	71,500	118,000	65%
1-4 Family	57,400	89,000	55%
Floor Area (Sq Ft.)	534M	855M	42%

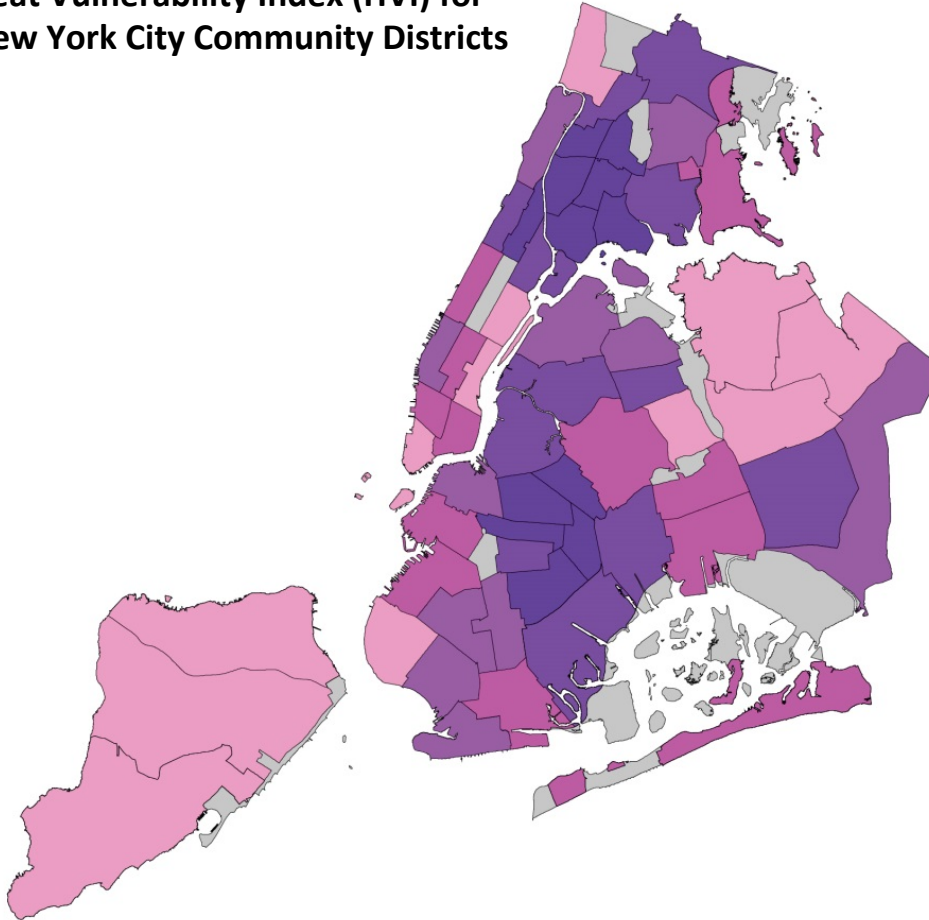
* Numbers are rounded for clarity

Over 171,000 buildings and 1.2 million New Yorkers projected to live in the floodplain by 2100.

Climate Change / 21st Century Threats

Flooding is of course not our only climate vulnerability. Heat kills more than every other natural hazard, with certain neighborhoods at higher risk.

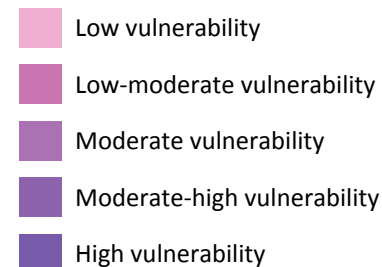
Heat Vulnerability Index (HVI) for New York City Community Districts



Top Tier Heat Vulnerable Neighborhoods

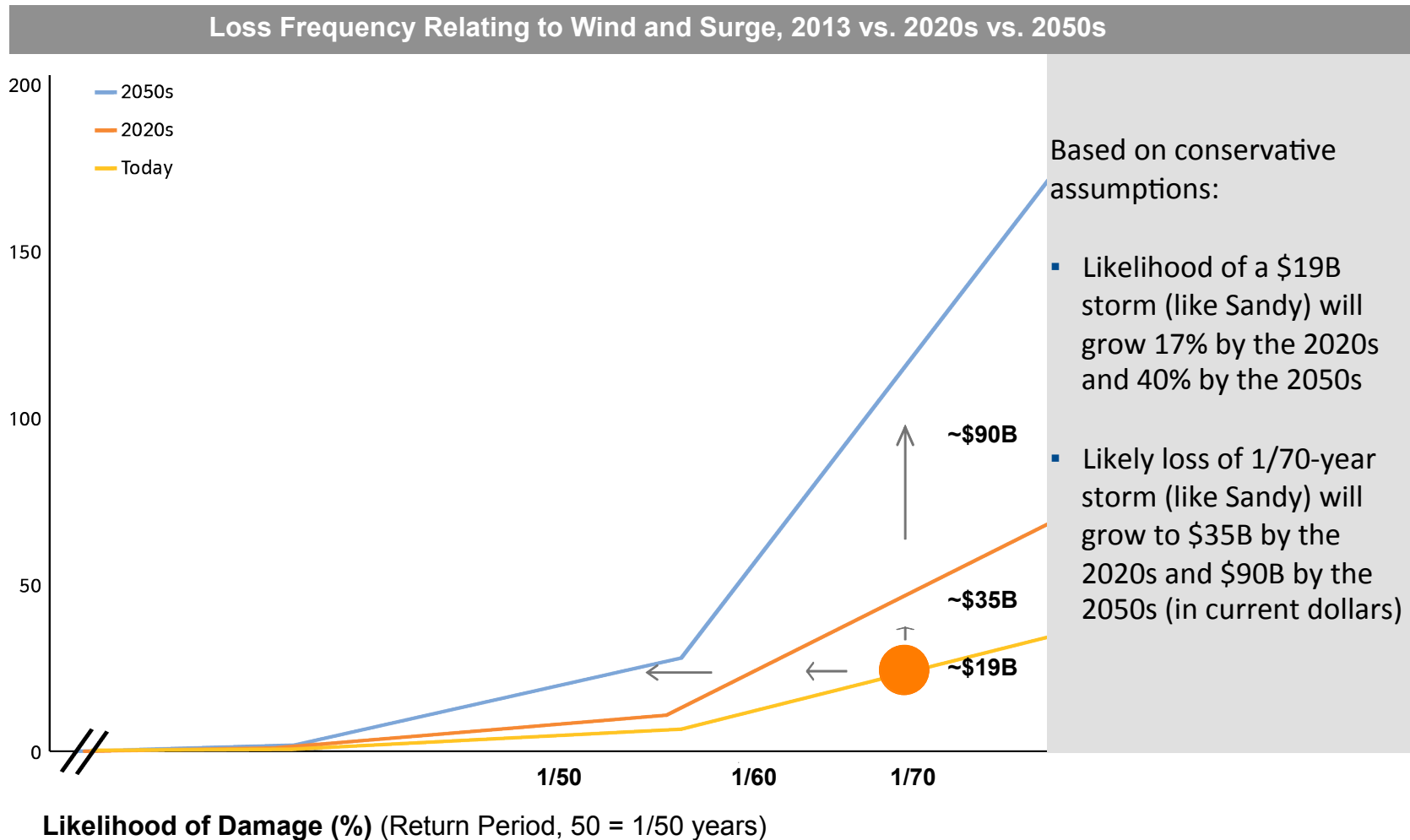
CD 316 Brownsville, Ocean Hill
CD 203 Morrisania, Crotona Park East
CD 202 Hunts Point, Longwood
CD 201 Melrose, Mott Haven, Port Morris
CD 206 East Tremont, Belmont
CD 303 Bedford Stuyvesant
CD 110 Central Harlem
CD 304 Bushwick
CD 205 University Hts., Fordham, Mt. Hope
CD 317 East Flatbush, Rugby, Farragut

Additionally, there are vulnerable populations living in all of the city's neighborhoods



Climate Change / 21st Century Threats

And the financial risk of climate change continues to grow, as demonstrated by this analysis performed by SwissRe.



OneNYC

On April 22nd, Mayor Bill de Blasio released a new long-term strategic plan to address our most pressing challenges.



One New York: The Plan for a Strong and Just City

OneNYC recognizes a historical moment:
in 2025, we will celebrate our 400th
anniversary and **begin our fifth century.**

The plan **envisions** how we want our City
to look in ten years and beyond

We commit to the **goals and initiatives**
designed to achieve that long-term vision

OneNYC: Our Four Visions

This plan is organized across four strategic visions for growth, equity, sustainability, and resiliency.



**Our Growing,
Thriving City**

**Our Just and
Equitable
City**

**Our Sustainable
City**

**Our Resilient
City**

OneNYC: Our Resilient City

This plan builds on prior efforts and strengthens and expands the City's commitment to a multilayered approach to resiliency.



Neighborhoods

Every city neighborhood will be safer by strengthening community, social, and economic resiliency



Buildings

The city's buildings will be upgraded against changing climate impacts



Infrastructure

Infrastructure systems across the region will adapt to enable continue services



Coastal Defense

New York City's coastal defenses will be strengthened against flooding and sea level rise

Our Resilient City: Neighborhoods

With OneNYC, every city neighborhood will be safer by strengthening community, social and economic resiliency...



INITIATIVES

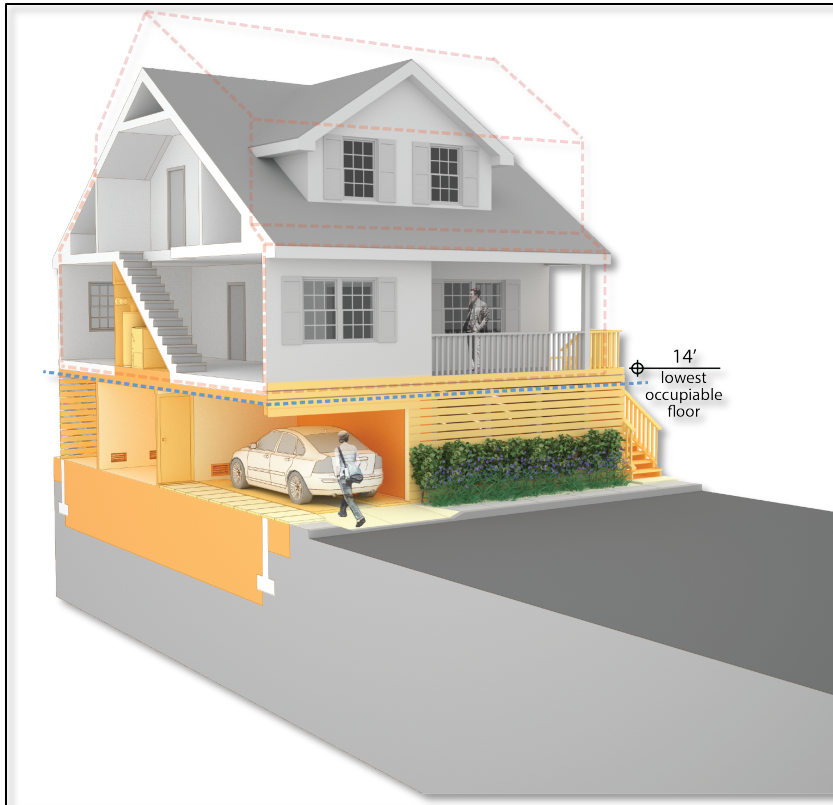
- Strengthen community-based organizations
- Improve emergency preparedness and planning
- Support small businesses and commercial corridors
- Ensure that workforce development is a part of all resiliency investments
- Mitigate the risks of heat

INDICATORS + TARGETS

- Increase the capacity of accessible recovery shelters from 10,000 in 2014 to 120,000 by 2017
- Increase the rate of volunteerism among New Yorkers from 18% today to 25% by 2020

Our Resilient City: Buildings

With OneNYC, the city's buildings will be upgraded against changing climate impacts...



INITIATIVES

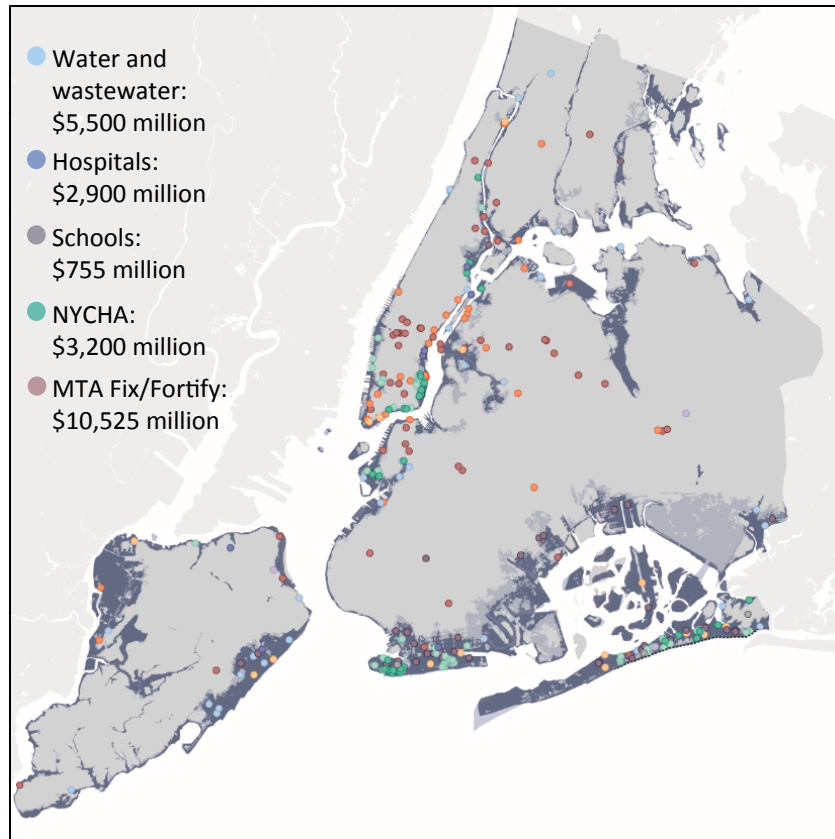
- Adapt public and private buildings against the impacts of climate change
- Adopt new land use policies to promote resiliency
- Work with FEMA to reform the National Flood Insurance Program to promote affordability

INDICATORS + TARGETS

- Increase the percentage of households in the 100-year floodplain with flood insurance policies
- Increase the square footage of buildings upgraded against flood risk
- Increase the number of homes elevated through the Build it Back program

Our Resilient City: Infrastructure

With OneNYC, infrastructure systems across the region will adapt to maintain continued services...



INITIATIVES

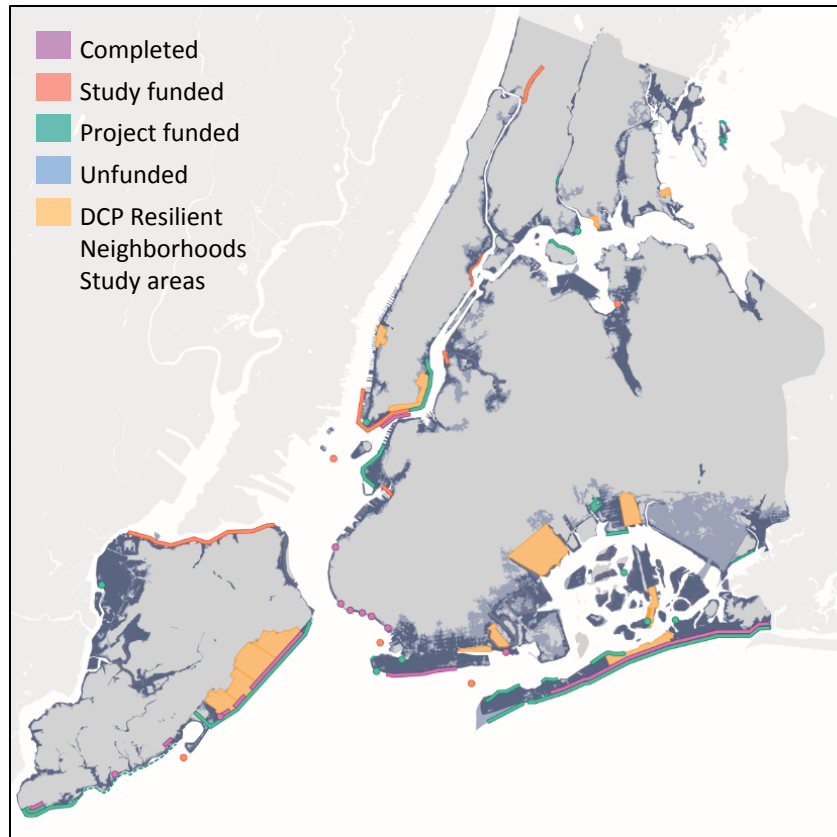
- Undertake required infrastructure repairs and mitigation
- Develop standardized resiliency guidelines
- Call on regional infrastructure operators to make critical resiliency investments



INDICATORS + TARGETS

- Reduce customer-hours of weather-related utility and transit service outages
- Increase the percentage of patient beds at hospitals and long-term care facilities in the 100-year floodplain benefiting from retrofits for resiliency

Our Resilient City: Coastal Defense

With OneNYC, New York City's coastal defenses will be strengthened against flooding and sea level rise...



 FEMA 2013 Preliminary FIRM's 100-year Floodplain
 2050s Projected 100-Year Floodplain

INITIATIVES

- Continue to implement the city's coastal protection plan
- Secure new funds for flood risk reduction
- Implement nature-based strategies for resiliency

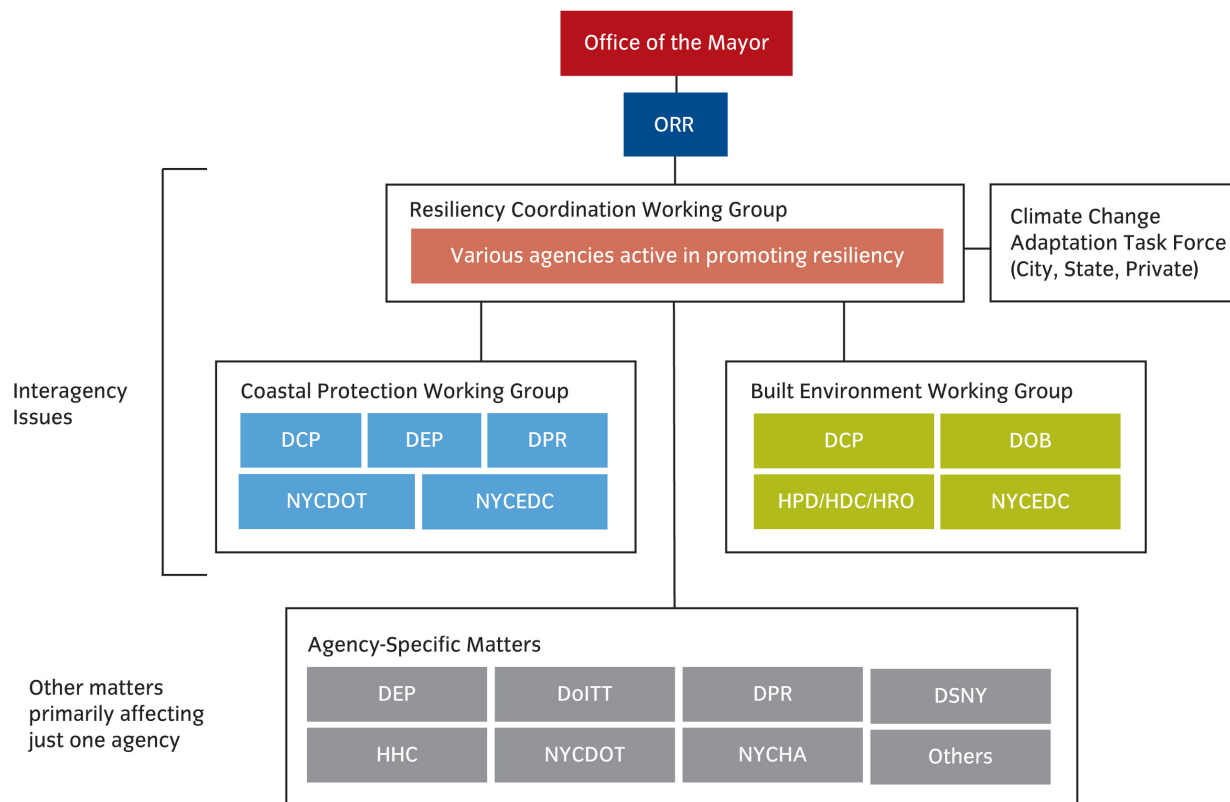
INDICATORS + TARGETS

- Increase the linear feet of coastal defenses completed
- Increase the acres of coastal ecosystems restored
- Increase the number of residents with coastal defenses and restored ecosystems

Implementation

Mayor de Blasio created a new Mayor's Office of Recovery and Resiliency dedicated to the City's resiliency initiatives.

Interagency Coordination



Agency coordination will expand to include:

- Design Guidelines
- Continued Planning: Integration of Strategic Land Use and Infrastructure Policy

Implementation: Partnerships

...And we have partnered with 100 Resilient Cities...

PIONEERED BY THE
ROCKEFELLER FOUNDATION

100 RESILIENT CITIES



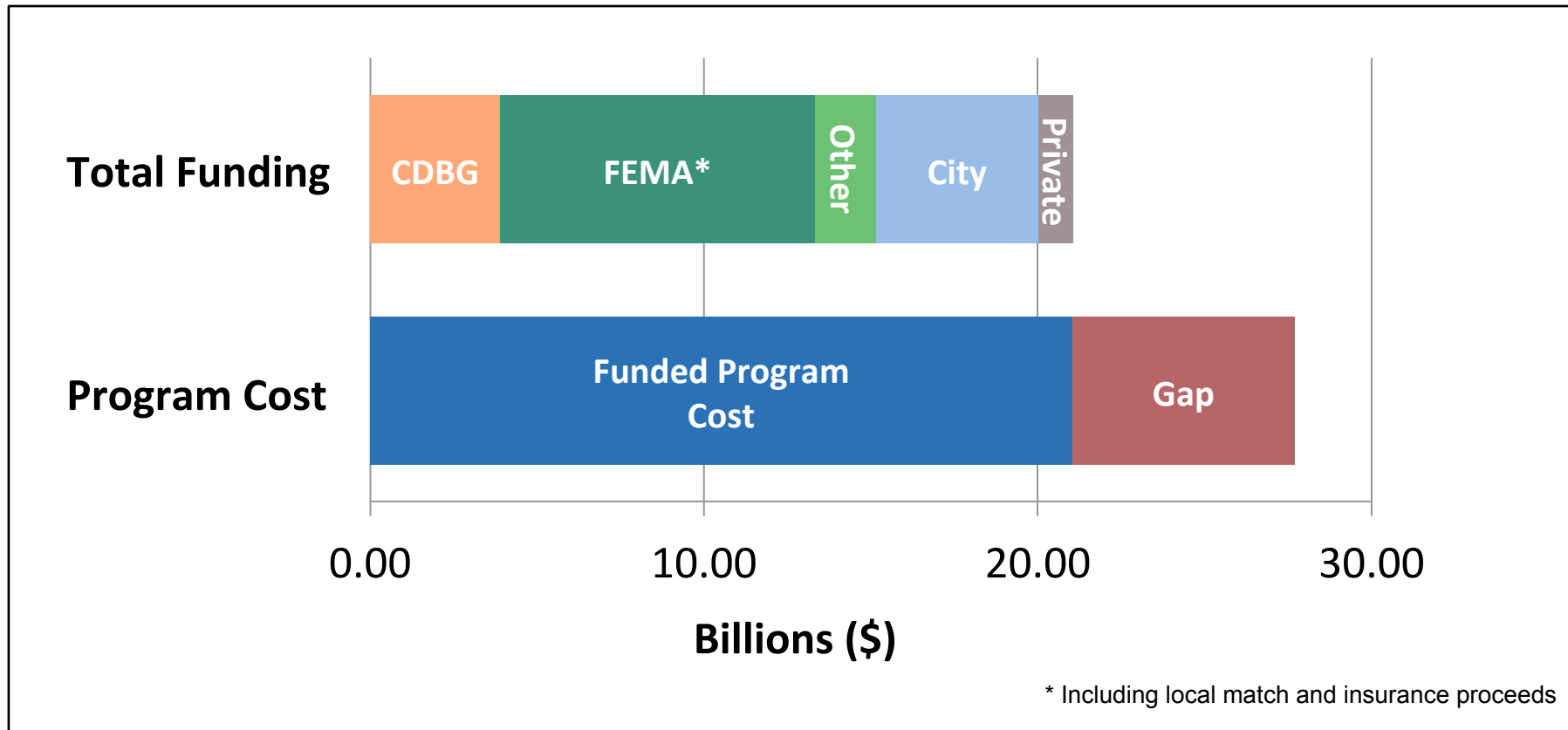
100 Resilient Cities is an innovative global network pioneered by the Rockefeller Foundation.



New York City joined the network as part of the first wave in 2013.

Implementation: Funding

...As we direct over \$20 billion of investments for the City's resiliency program, part of nearly \$30 billion in regional resiliency spending.



Implementation: Federal Agenda

The entire effort will benefit from a continued advocacy for Federal reforms, policy changes, new legislation, and funding.



U.S. Congress

- Secure additional funds and allocate existing funds for resiliency investments
- Continue to advocate for long-term affordability of flood insurance



FEMA / NFIP

- Develop flood protection standards for existing buildings and offer premium credits
- Collect elevation data on existing buildings to better assess risk-based premiums
- Clearly articulate projected rate changes for all categories of buildings
- Support the City's application for State-allocated hazard mitigation grant funds



USACE

- Authorize new USACE projects in New York City to address vulnerable areas
- Streamline USACE processes to expedite necessary projects
- Complete all projects authorized under the Sandy supplemental bill (PL 113-2)

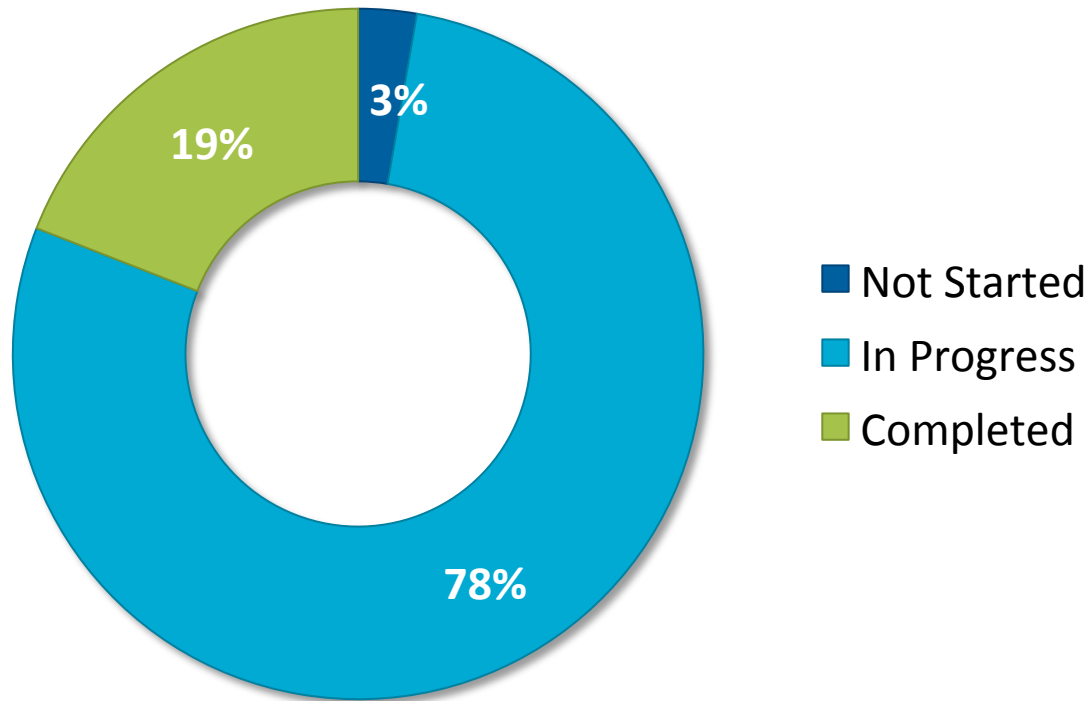


DOE

- Convene regional liquid fuels supply chain working group

Implementation: Progress

Thankfully, this effort didn't start today. We have already reported progress on over 97% of the City's 257 resiliency initiatives launched in 2013.



While we have made substantial early progress, much more remains to be done.

Implementation: Transformation

We have a unique opportunity to invest in resiliency to transform our neighborhoods for the city's fifth century.



Coney Island Creek Wetlands & Tidal Barrier

#01ENYCN



nyc.gov/resiliency
[@NYClimate](https://twitter.com/NYClimate)