



lower manhattan
COASTAL RESILIENCY

TWO BRIDGES
OCTOBER 5, 2016
286 SOUTH STREET, CHINATOWN YMCA CORNERSTONE CENTER

AGENDA

Welcome + Opening Remarks (10 mins)

OneNYC: Our Resilient City (10 mins)

Project Overview (10 mins)

Question and Answer (15 mins)

Key Considerations + Small Group Discussions (50 mins)

Work Session 1: Coastal Resiliency Infrastructure Types (30 mins)

Work Session 2: Community Priorities (20 mins)

Report Back + Questions (20 mins)

Next Steps + How to Stay Involved (5 mins)

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SPEAKERS

Carrie Grassi, Mayor's Office of Recovery and Resiliency (ORR)

Gonzalo Cruz, Urban Design Lead, AECOM

Betsy MacLean, Community Engagement, Hester Street Collaborative

VISION

The Lower Manhattan Coastal Resiliency (LMCR) Project aims to reduce flood risk due to coastal storms and sea level rise from Manhattan's Two Bridges neighborhood through Battery Park City. It intends to build the physical, social, and economic resiliency of the area by integrating flood protection into the community fabric through strengthening the City's coastline while improving access to the waterfront and enhancing public spaces.

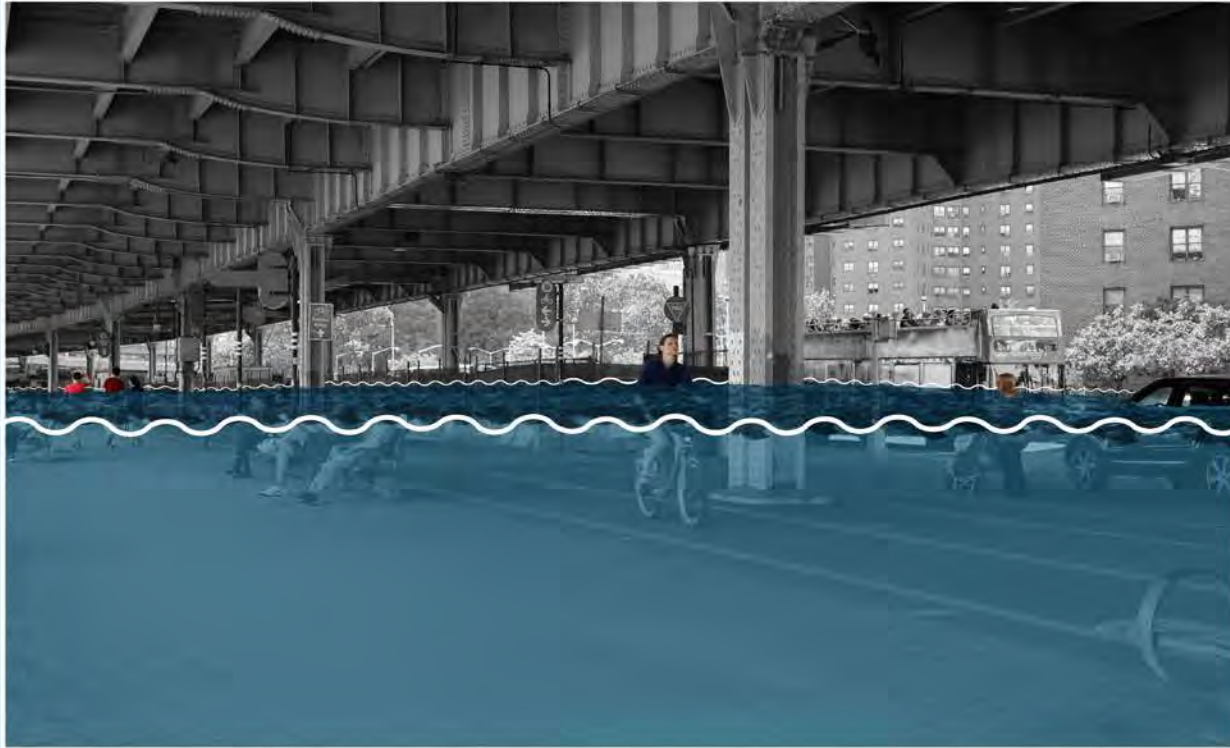
HURRICANE SANDY

TWO BRIDGES



HURRICANE SANDY

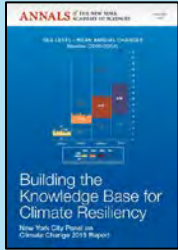
TWO BRIDGES



~5' Flood
(Sandy)

CLIMATE CHANGE / 21ST CENTURY THREATS

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.

...and increased impact from extreme weather events.



Today:




- + 100-year floodplain has 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

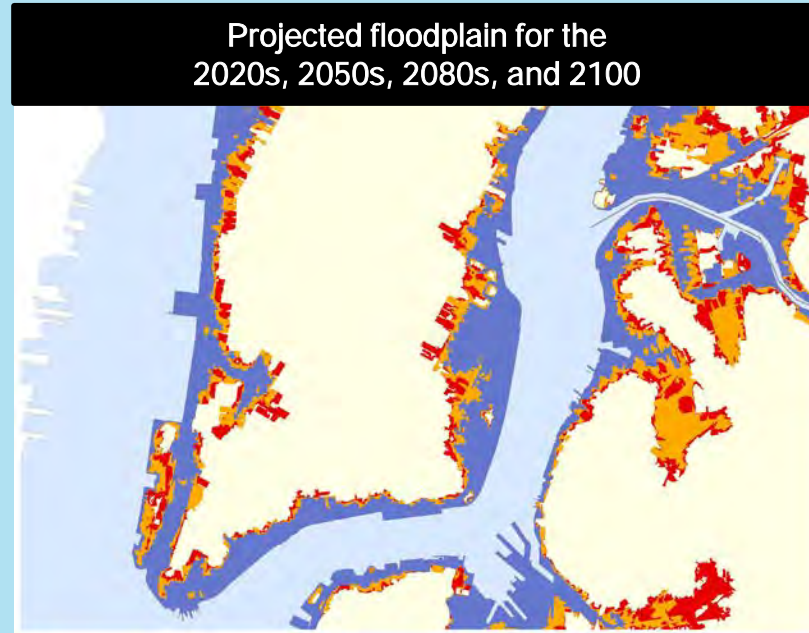
By the 2050s:

- + Number of days in NYC above 90° could triple
- + Number of most intense hurricanes and associated extreme winds may increase

SEA LEVEL RISE AND STORM SURGE

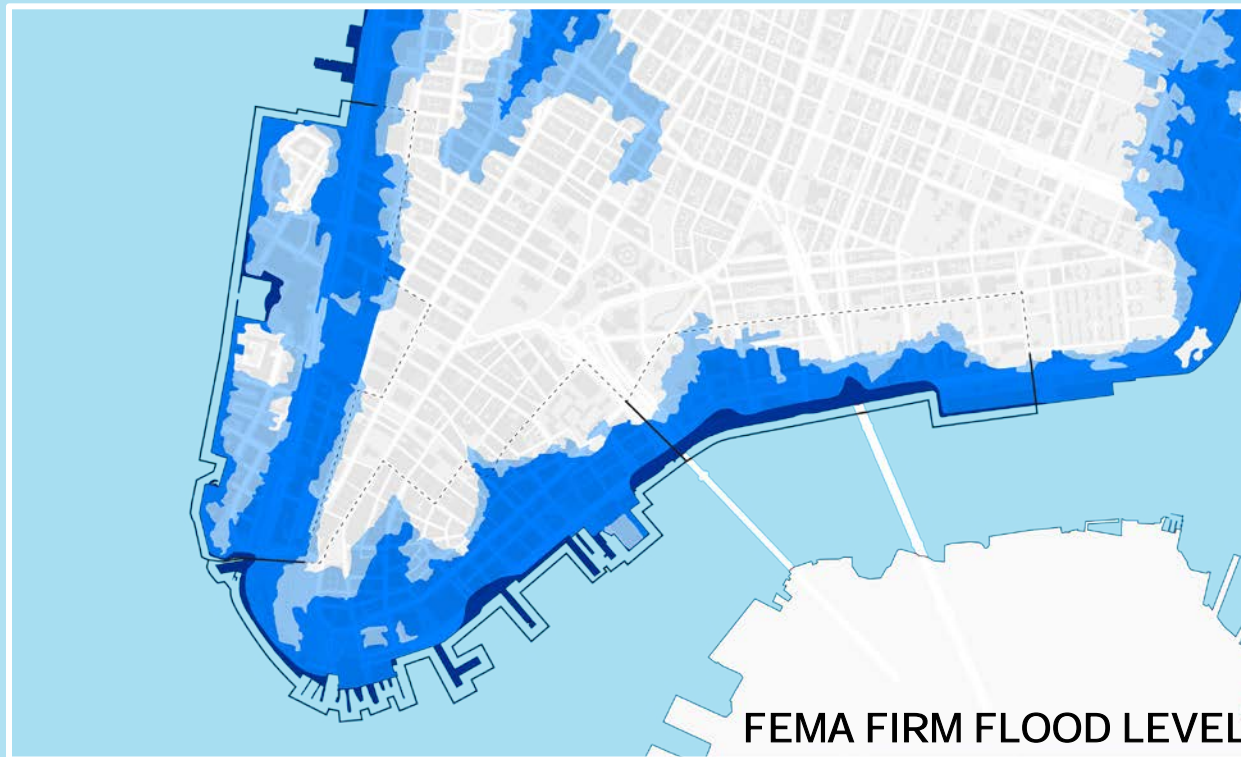
The City's 520 miles of coastline are vulnerable to flooding from coastal storms.

-  FEMA 2013 Preliminary FIRMs 100-year Floodplain
-  Projected 2020s 100-year Floodplain
-  Projected 2050s 100-year Floodplain



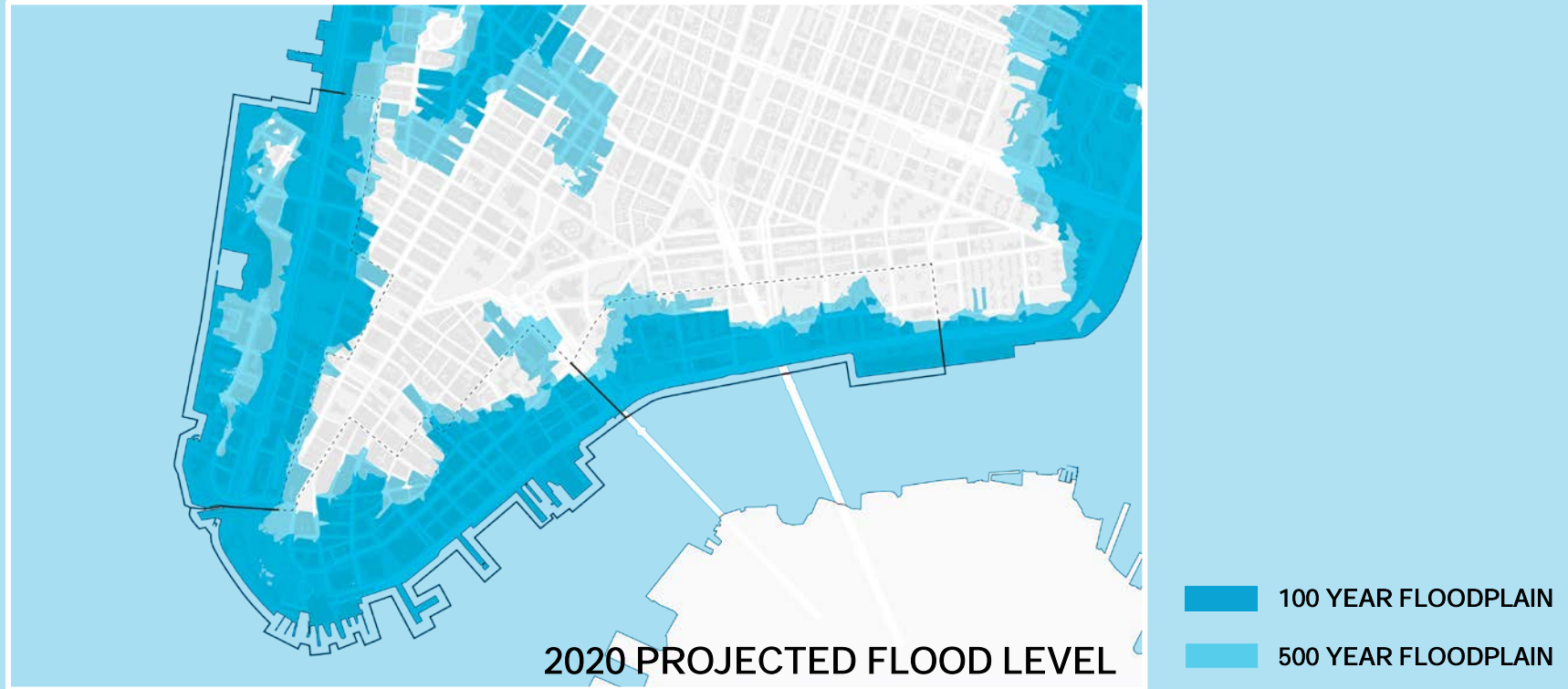
Source: FEMA; CUNY Institute for Sustainable Cities

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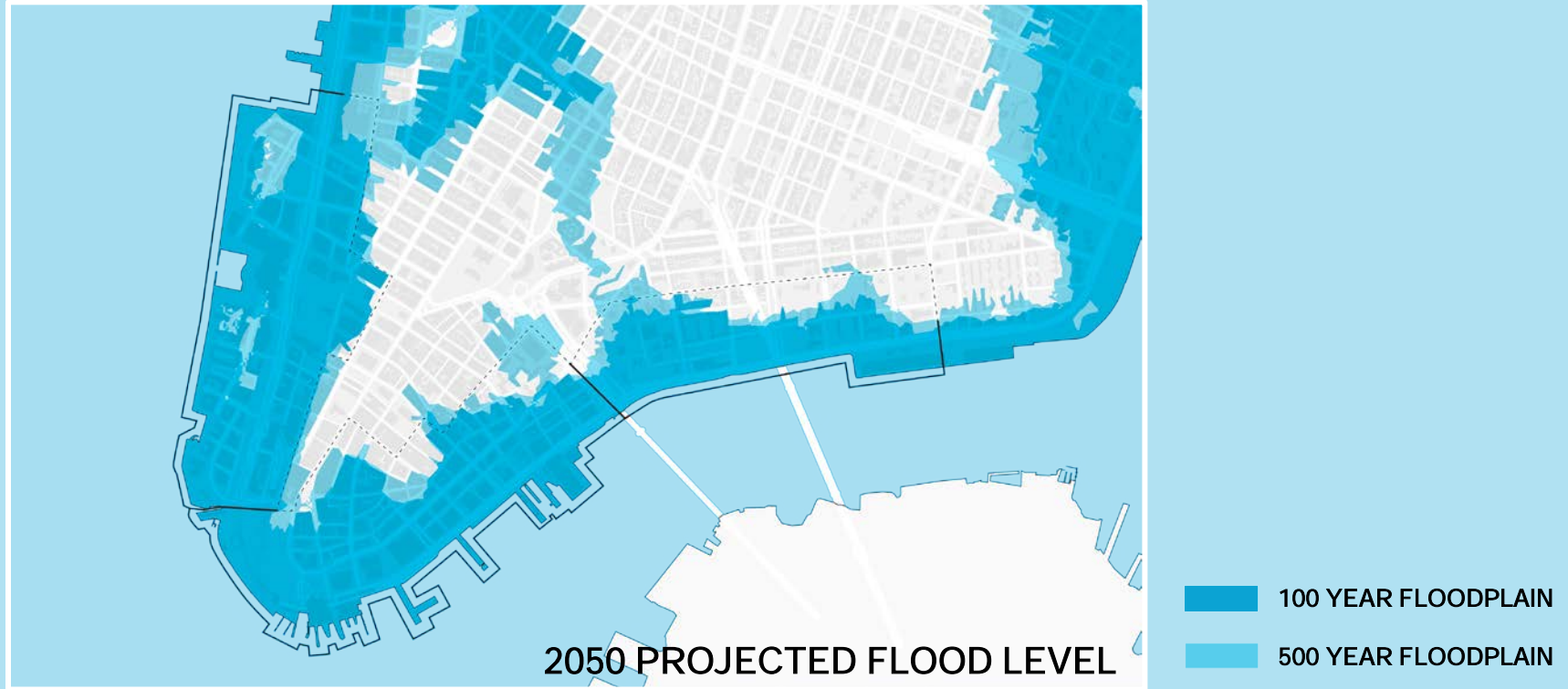


- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- ADDITIONAL HAZARD DUE TO WAVE ACTION

SEA LEVEL RISE AND STORM SURGE



SEA LEVEL RISE AND STORM SURGE



OneNYC: OUR RESILIENT CITY

This plan builds on existing 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

PLANNING EFFORTS

Building off of recommendations from previous resiliency plans



OneNYC: The Plan for a Strong and Just City

- Comprehensive report outlining NYC's plans for maintaining and improving its position as a leading global city.
- 4 major principles: growth, equity, sustainability, and resiliency



Lower Manhattan New York Rising

- Proposes a series of projects to improve resiliency of physical and social structures in Lower Manhattan
- Proposals range from interventions that improve community and agency responsiveness to interventions of flood protection infrastructure

**REBUILD
BY
DESIGN**

Rebuild by Design: The Big U

- Competition dedicated to creating innovative solutions to protect vulnerable cities against increasingly intense weather events.
- The Big U proposed a series of compartmentalized long term solutions for 10 miles of Lower Manhattan after Hurricane Sandy

PLANNING EFFORTS

Building off of recommendations from previous resiliency plans



National Disaster Resiliency Competition

- The application presents NYC's need for federal grant funds associated with climate change adaptation and resiliency.
- The goal is to strengthen physical and social connections in the target area of Lower Manhattan



A Stronger More Resilient New York

- In response to Sandy, Mayor Michael Bloomberg's Special Initiative for Rebuilding and Resiliency devised 257 specific initiatives for protecting the City from future flood events and rising sea levels.
- The plan proposed a tailored approach that can be built upon over time.

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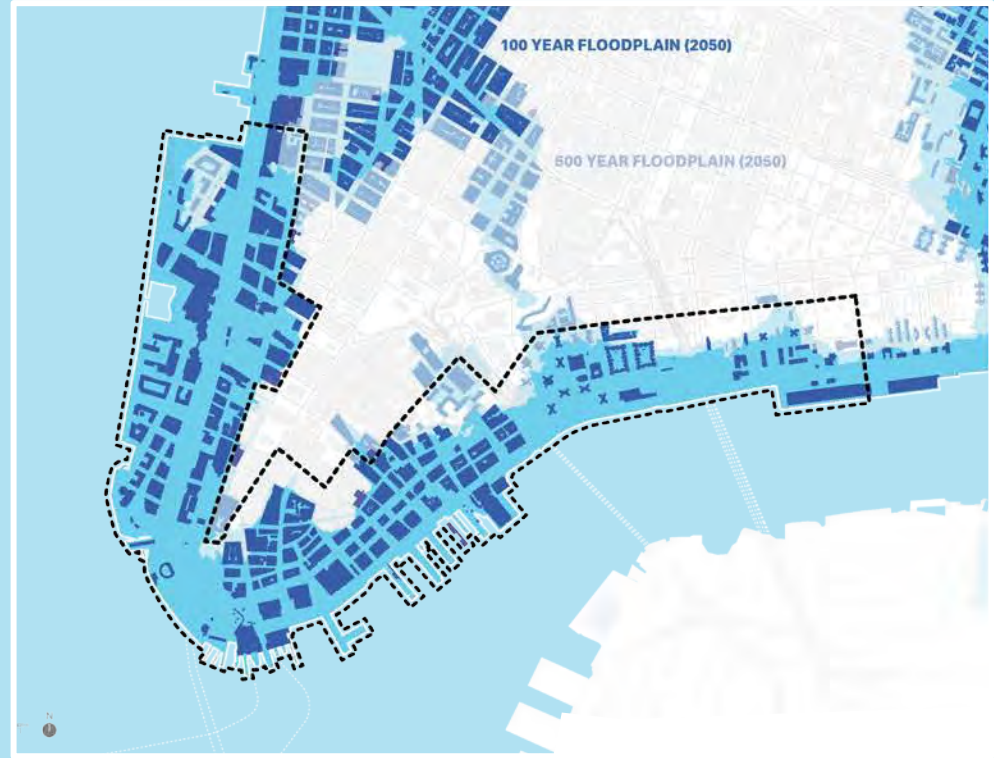
PROJECT OVERVIEW

Purpose of Study:

1. Develop long-term strategy and feasible concept design for all of Lower Manhattan
2. Prioritize project concepts toward implementation and conduct advanced planning when possible
3. Engage with community on core design principles and priorities

Study Funding:

- + \$7.25M CDBG-DR
(*\$3.75M GOSR; \$3.5M NYC*)



IMPLEMENTATION FUNDING IN PLACE



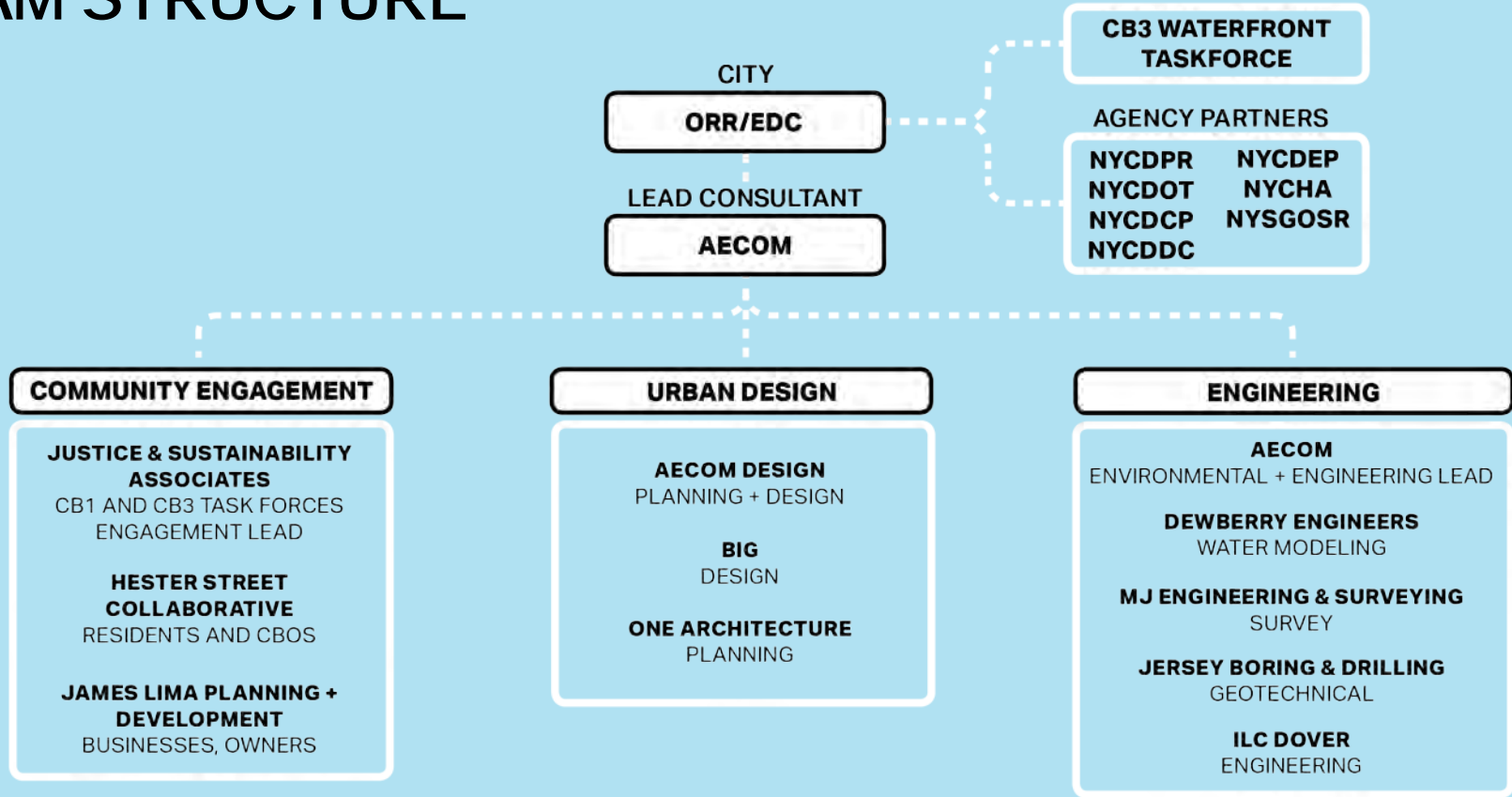
East Side Coastal Resiliency
Funding Secured :
\$335 million (CDBG-DR)
\$170 million (City Capital)
Project Budget : \$505 million

Lower Manhattan Coastal Resiliency Implementation :

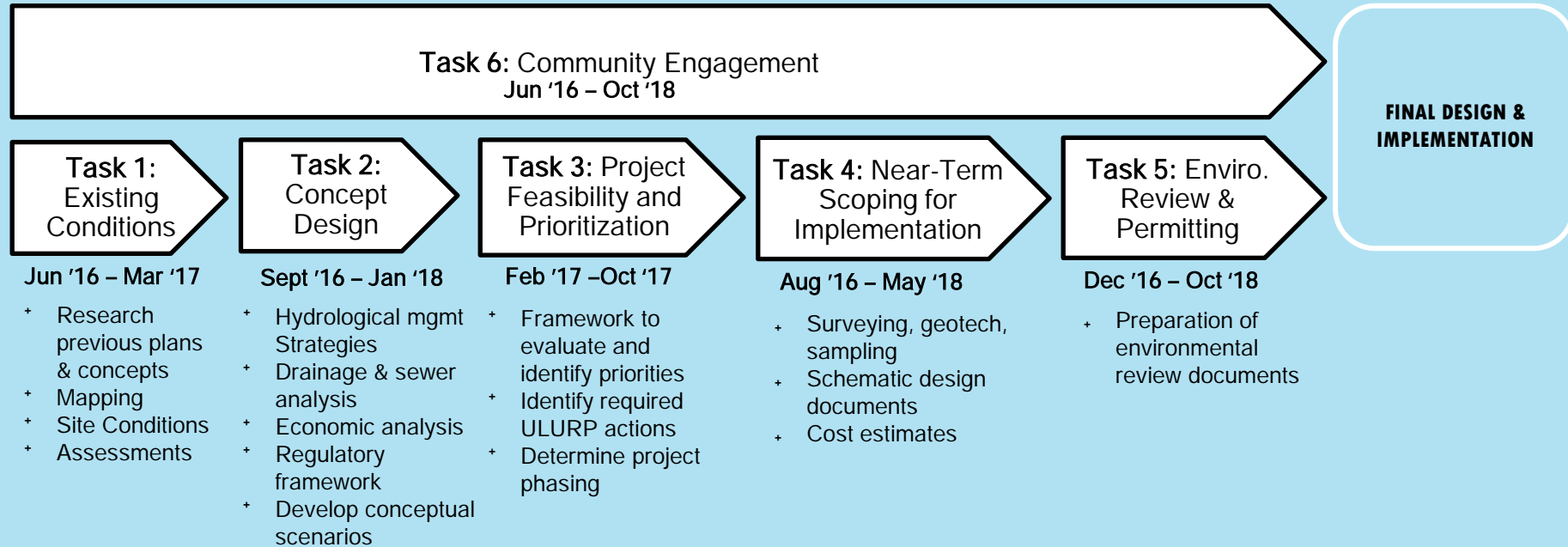
Two Bridges
Funding Secured :
\$176 million (CDBG-NDR)
\$27 million (City Capital)
Project Budget : \$203 million

Manhattan Tip
Funding Secured :
\$100 million (City Capital)
\$8 million for The Battery
Project Budget : TBD

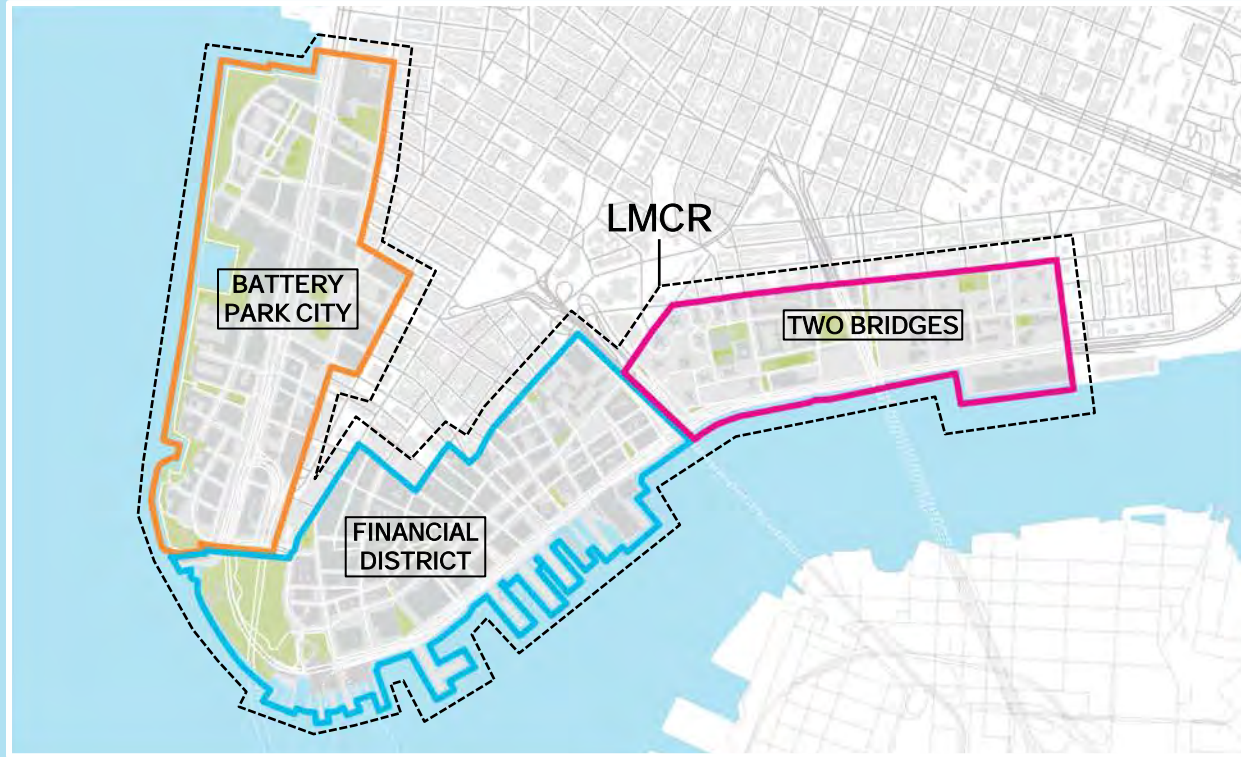
TEAM STRUCTURE



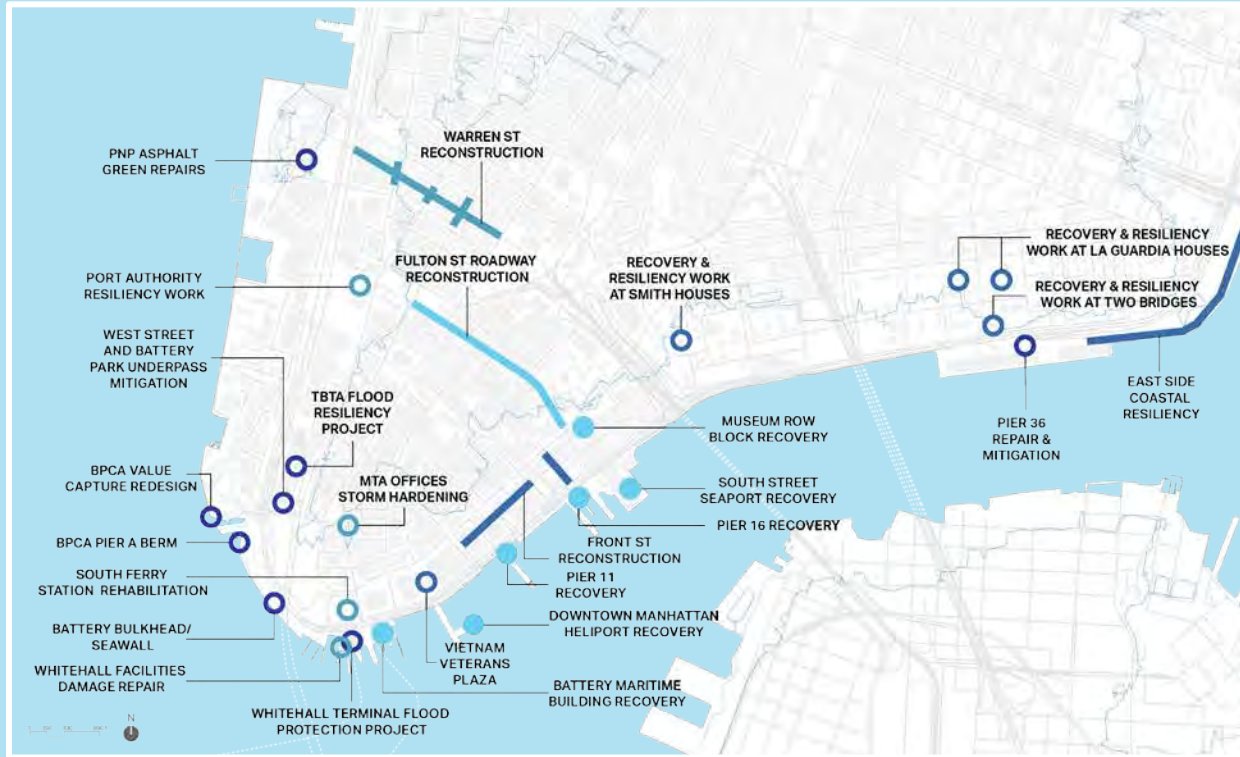
PROJECT PROCESS



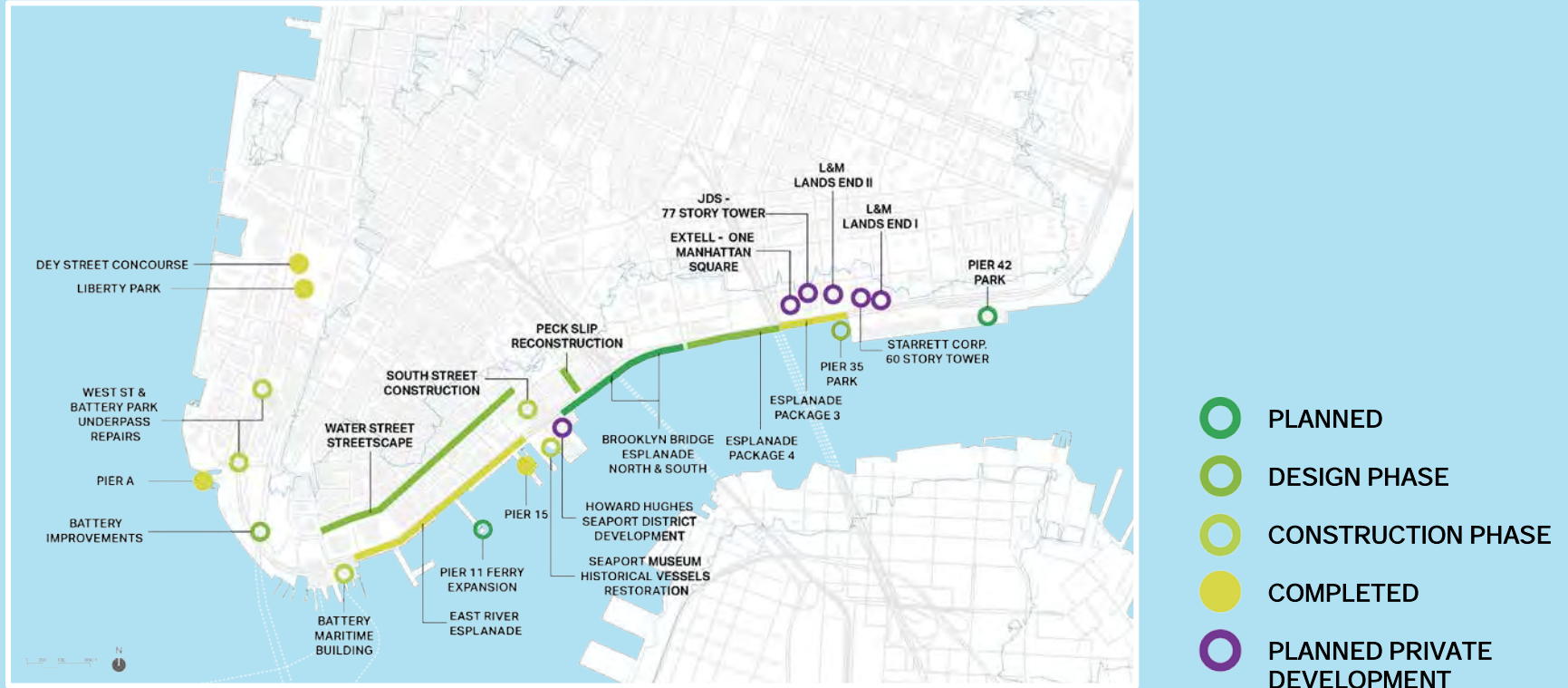
PLANNING STUDY AREA



ADJACENT RESILIENCY PROJECTS

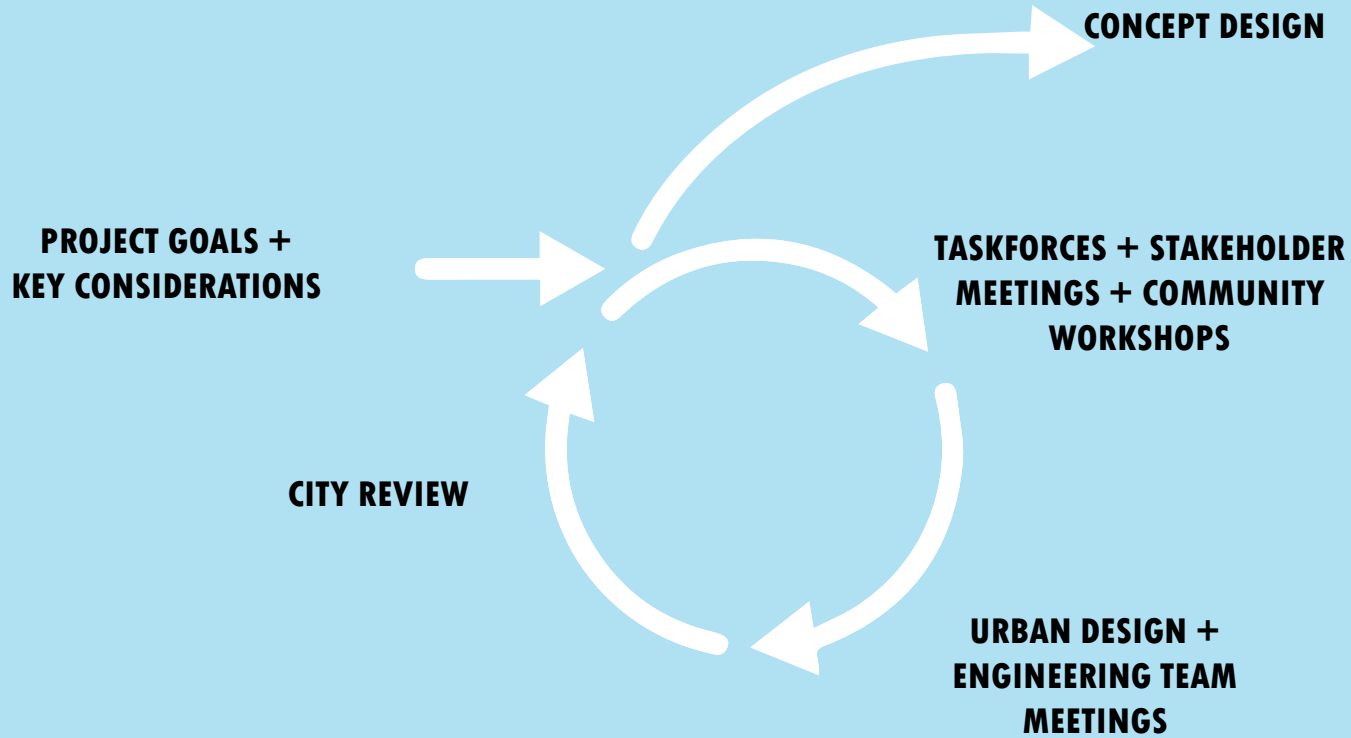


ADJACENT WATERFRONT IMPROVEMENT PROJECTS



COLLABORATIVE PROCESS

HOW ARE WE GOING TO WORK TOGETHER?



ENGAGEMENT METHODS – MEETING TYPES



- + Community Workshops
- + Informal Engagement
- + Stakeholder Interviews
- + Focus Groups
- + Surveys
- + Walking/Biking tours

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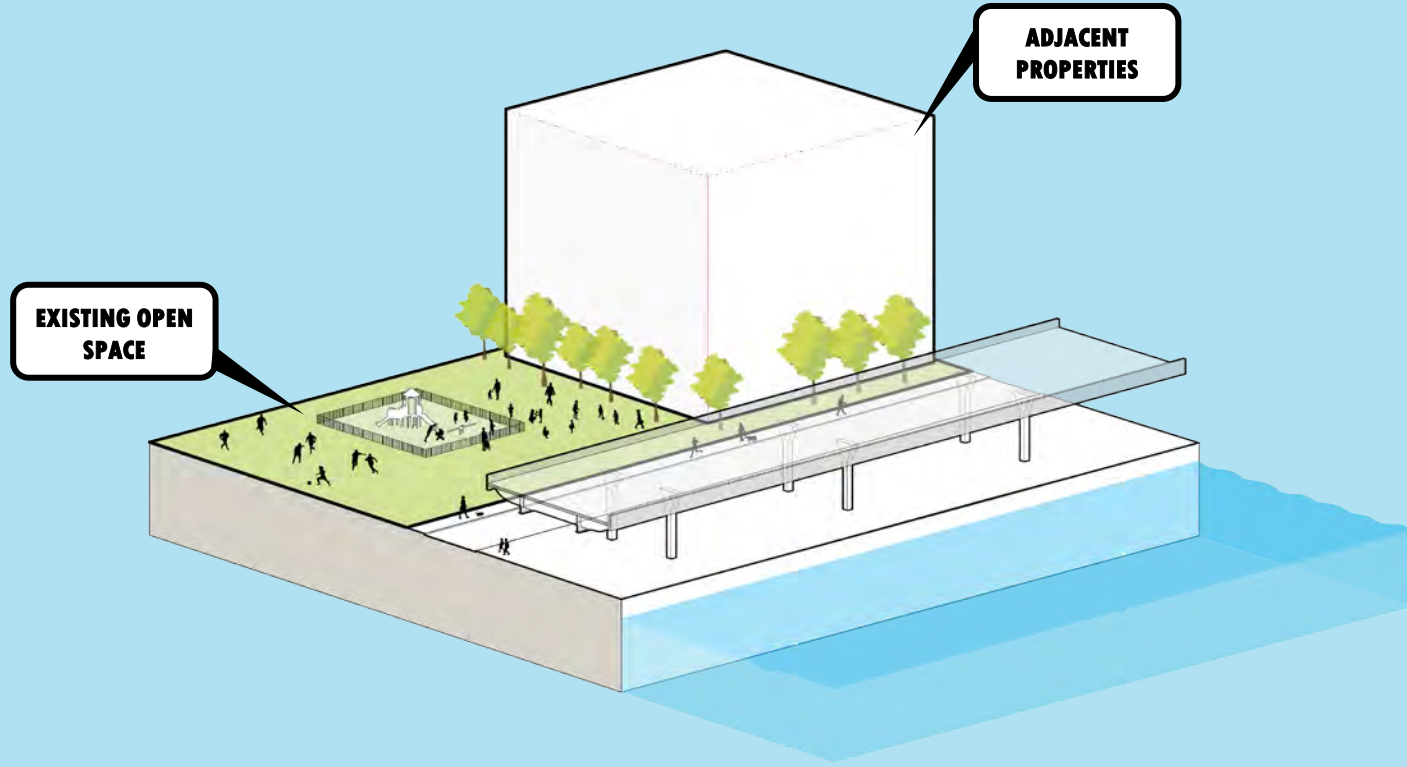
Work Session 2: Community Priorities (20 mins)

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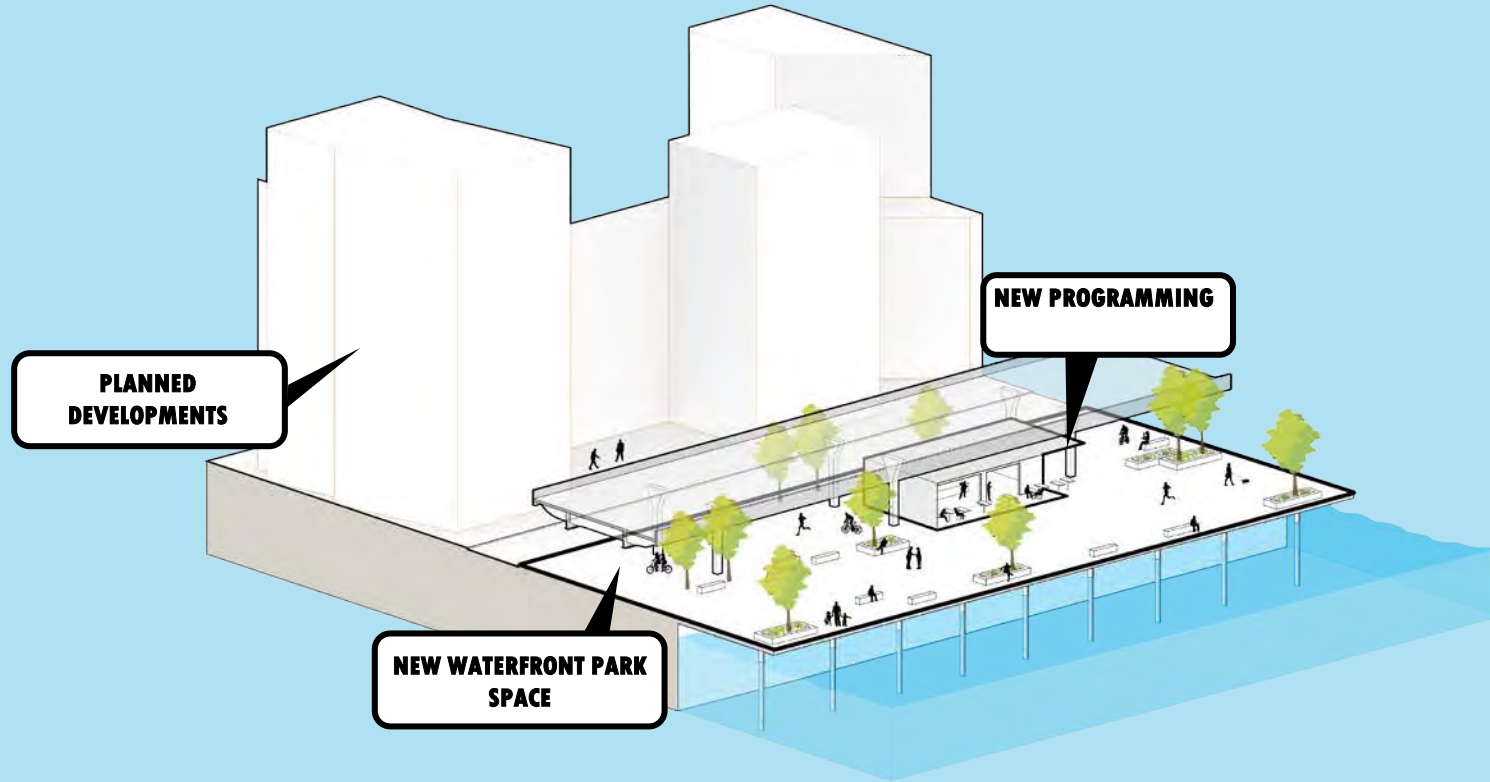
Next Steps + How to Stay Involved (5 mins)

KEY CONSIDERATIONS

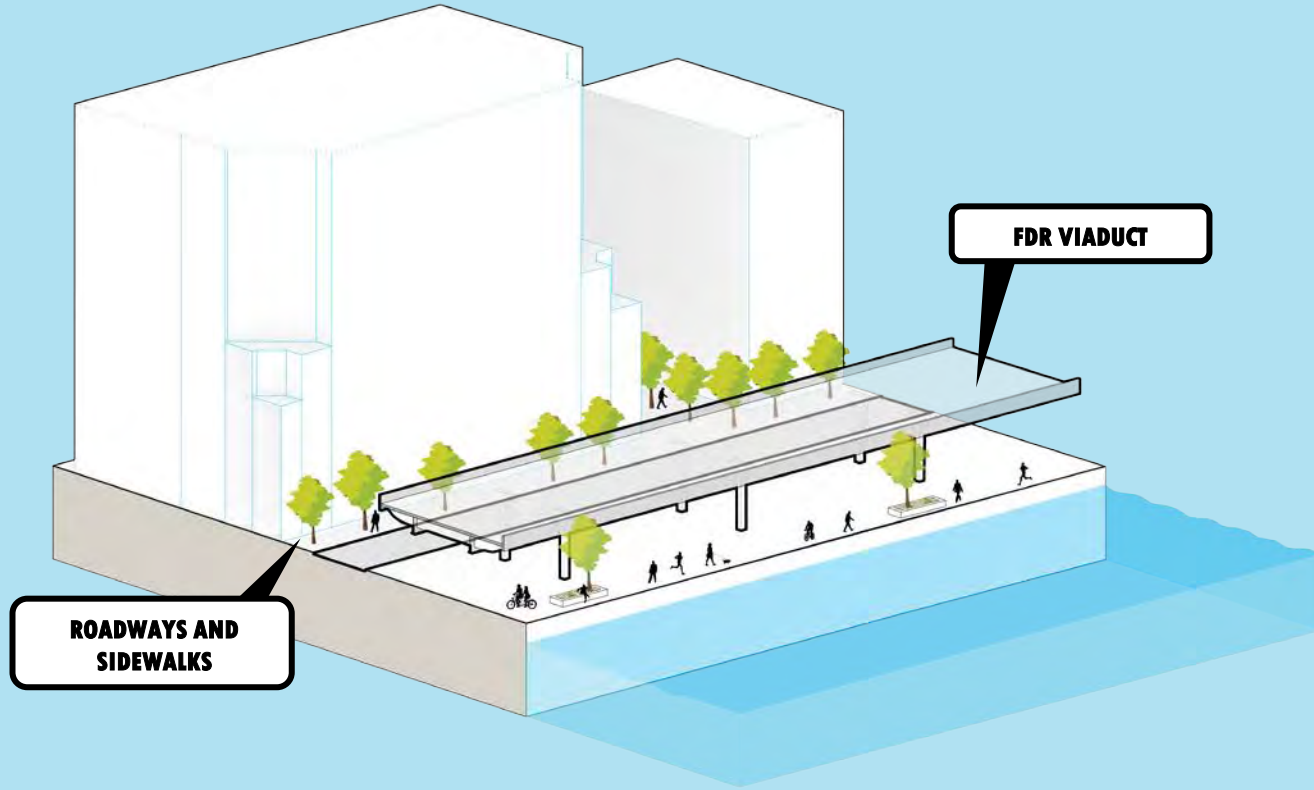
ADJACENT USES



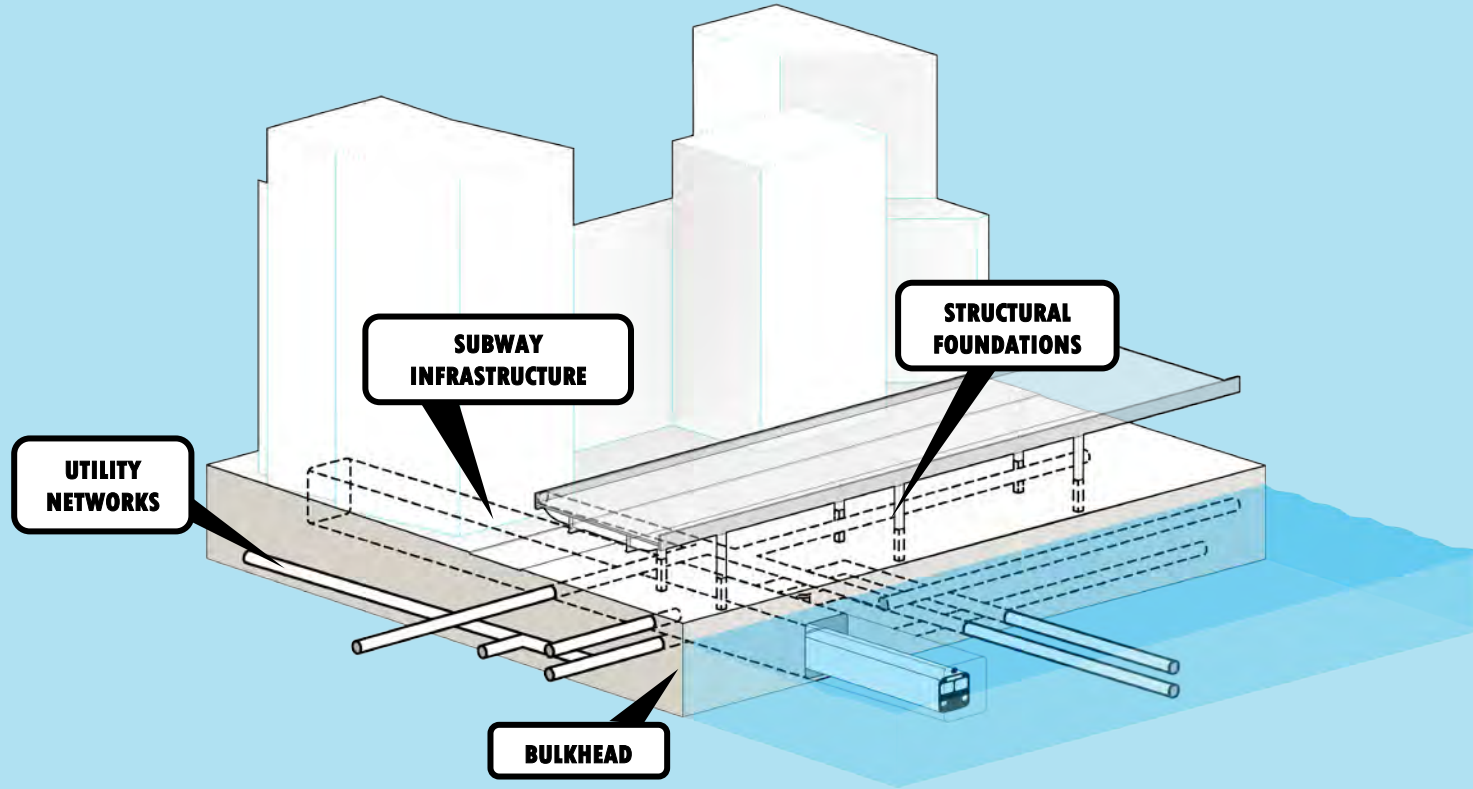
NEW AND PLANNED IMPROVEMENTS



CIRCULATION AND TRANSPORTATION

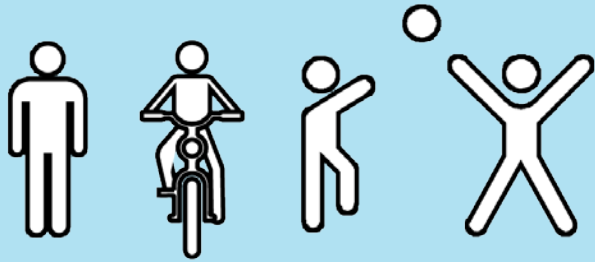


UNDERGROUND



SOCIAL INFRASTRUCTURE

HOW DOES RESILIENCY INFRASTRUCTURE BENEFIT PEOPLE?



PEOPLE



RESILIENCY
INFRASTRUCTURE

SMALL GROUP DISCUSSIONS

HOW WILL YOUR INPUT SHAPE THE PROJECT?

WORK SESSION 1: 30 minutes

Coastal Resiliency Infrastructure Types – Priorities and Concerns

WORKSHEET

1:

TWO BRIDGES RE-ENGAGEMENT WORKSHOP
COASTAL RESILIENCY INFRASTRUCTURE TYPES

EARTHEN BERM

- Built with **bank and field** (series of natural elements including stones, logs, gabions, etc.)
- Allows for **vegetation to grow and provide resilience** (if needed)
- Best suited for areas with a **large amount of space**
- **Multiple permanent and/or deployable** (often better when deployable)
- **Vegetation/cover should be able to resist significant weight**
- **Shouldn't provide cover to prevent access to the water side**

URBAN BERM

- Can be integrated with **other urban bank and field**
- **Completed series of bank elements and an underlying electric, water, sewage, etc.** that can integrate **waterfront access and passive recreation**
- Can include **multiple** (not too complex, heavy, or noisy) and **reusable** elements
- Best suited for areas with a **large amount of space**
- **Multiple permanent and/or deployable** (change from before, during and after flood events)
- **Big and heavy** (stand up to a wall of water/light reflection)
- **Vegetation/cover should be able to resist significant weight**

FLOOD WALL

- Can be structured more closely resembling an **ebb & flow** (not to be bank and field)
- Can include **elements** (not on bank, gabion, etc.)
- Best suited for areas with **limited space**
- **Multiple permanent and/or deployable** (change from before, during and after flood events)
- **Resilient structures that get along with ground** (e.g., non-toxic, non-polluting) (change or integrate with other things that allow for resilience, e.g. green wall, etc.)
- **Water on the strength of the wall to provide flood relief** (as well as the foundation to prevent the wall from being pushed over)

DEPLOYABLE

- **Lightweight, retractable, steerable and accessible** (some weather conditions)
- **Best suited for tight spaces** (not too expensive for ongoing maintenance and installation and have operational conditions that allow for resilience, e.g. green wall, etc.)
- **Temporary** (not used only in the event of an emergency)
- **Standardized custom** (rather than region/region maintenance)
- **Some may include** (allowing for an increase in water level in the event of an emergency and begin to **store** space off site)

EXAMPLES

lower manhattan COASTAL RESILIENCY

HVC New York City Office of Resilience and Recovery | **NYC** NYC | **NYC** NY | **NYC** NY

HOW WILL YOUR INPUT SHAPE THE PROJECT?

WORK SESSION 2: 20 minutes
Community Priorities

WORKSHEET
2:



RE-ENGAGEMENT WORKSHOP
COMMUNITY PRIORITIES

STEP 1
Which priorities listed below matter most to you? Add any that you think are missing.

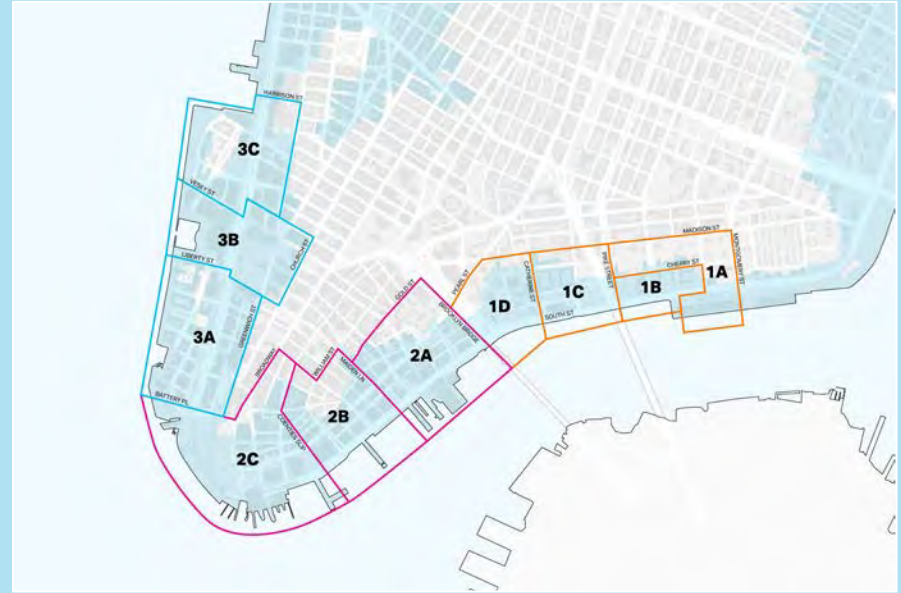
STEP 2
Rank the priorities in order of importance using the bull's eye Diagram.

FUNCTIONALITY **DESIGN** **USES + ACTIVITIES**

most important
less important
least important

ranked top 10
ranked other priorities

lower manhattan
COASTAL RESILIENCY



AGENDA

- 6:30 – 6:40pm Welcome + Opening Remarks (10 mins)
- 6:40 – 6:50pm OneNYC: Our Resilient City (10 mins)
- 6:50 – 7:00pm Project Overview (10 mins)
- 7:00 – 7:15pm Question and Answer (15 mins)
- 7:15 – 8:05pm **Key Considerations + Small Group Discussions (50 mins)**
 - Work Session 1: Coastal Resiliency Infrastructure Types (30 mins)
 - Work Session 2: Community Priorities (20 mins)
- 8: 05 – 8:25pm **Report Back + Questions (20 mins)**
- 8:25 – 8:30pm Next Steps + How to Stay Involved (5 mins)

STAY IN TOUCH



www.nyc.gov/lmcr



@NYClimate



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By Mail

253 Broadway – 14th Floor



in person



nycresiliency@cityhall.nyc.gov