



**FINANCIAL DISTRICT AND BATTERY PARK CITY
OCTOBER 6, 2016
6 RIVER TERRACE, BATTERY PARK CITY**

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)

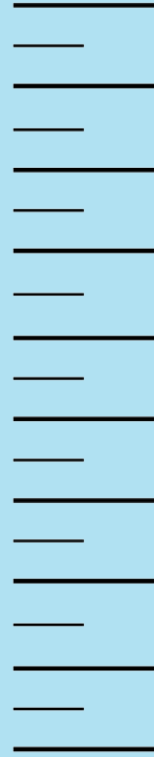
Gonzalo Cruz, Urban Design Lead, AECOM

James Lima, Community Engagement, James Lima Planning + Development

VISION

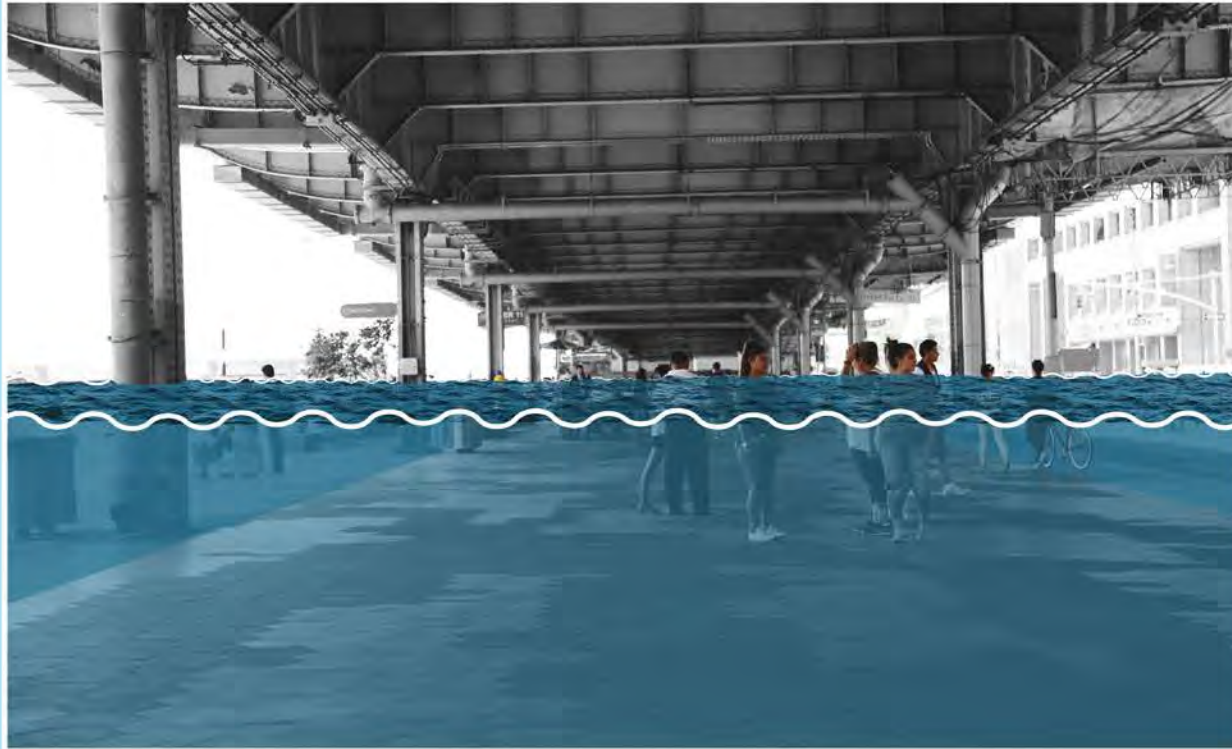
The Lower Manhattan Coastal Resiliency (LMCR) Project aims to reduce flood risk due to coastal storms and sea level rise from Manhattan's Two Bridges neighborhood through Battery Park City. It intends to build the physical, social, and economic resiliency of the area by integrating flood protection into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

HURRICANE SANDY FINANCIAL DISTRICT



HURRICANE SANDY 2012

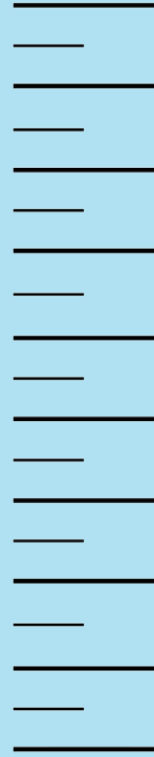
FINANCIAL DISTRICT



~5' Flood
(Sandy)

HURRICANE SANDY

THE BATTERY



HURRICANE SANDY 2012

THE BATTERY



3'-6' Flood
(Sandy)

HURRICANE SANDY

BATTERY PARK CITY



HURRICANE SANDY 2012

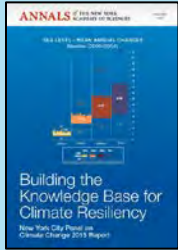
BATTERY PARK CITY



0'-3' 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:

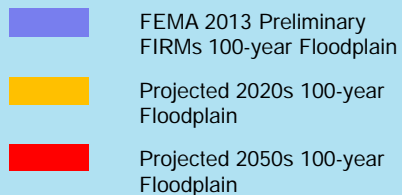
- + 100-year floodplain has expanded by 17 square miles (51%) citywide; 2.3 ft. average increase in 100-year flood elevations; will increase with further sea level rise; now encompasses 71,500 structures

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.

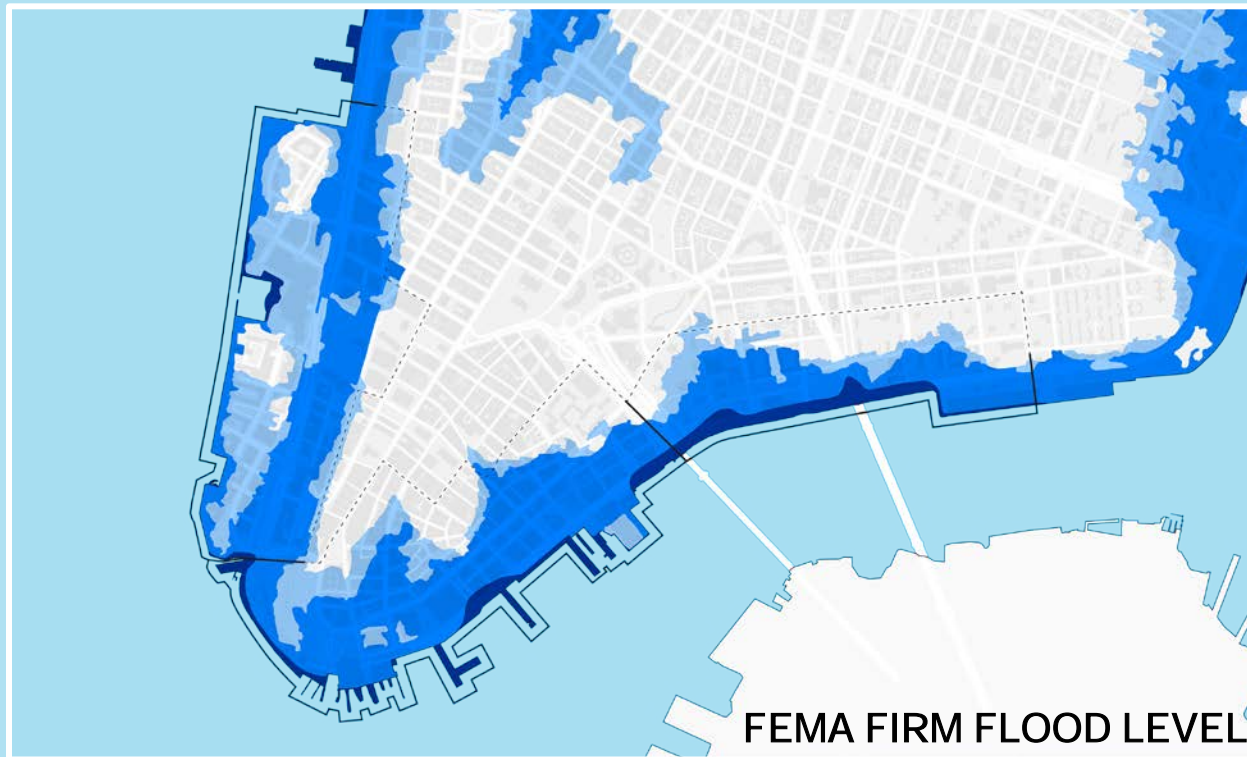


Projected floodplain for the 2020s, 2050s, 2080s, and 2100



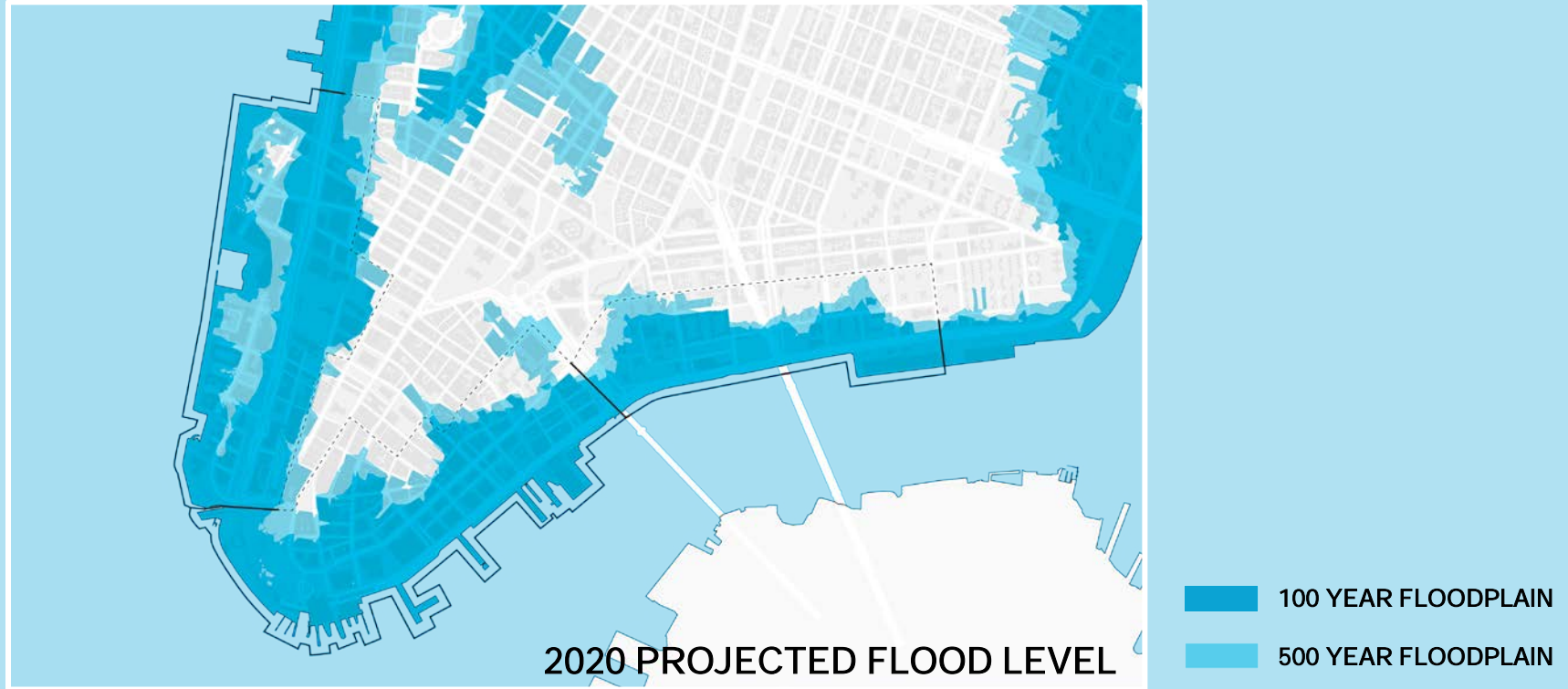
Source: FEMA; CUNY Institute for Sustainable Cities

SEA LEVEL RISE AND STORM SURGE

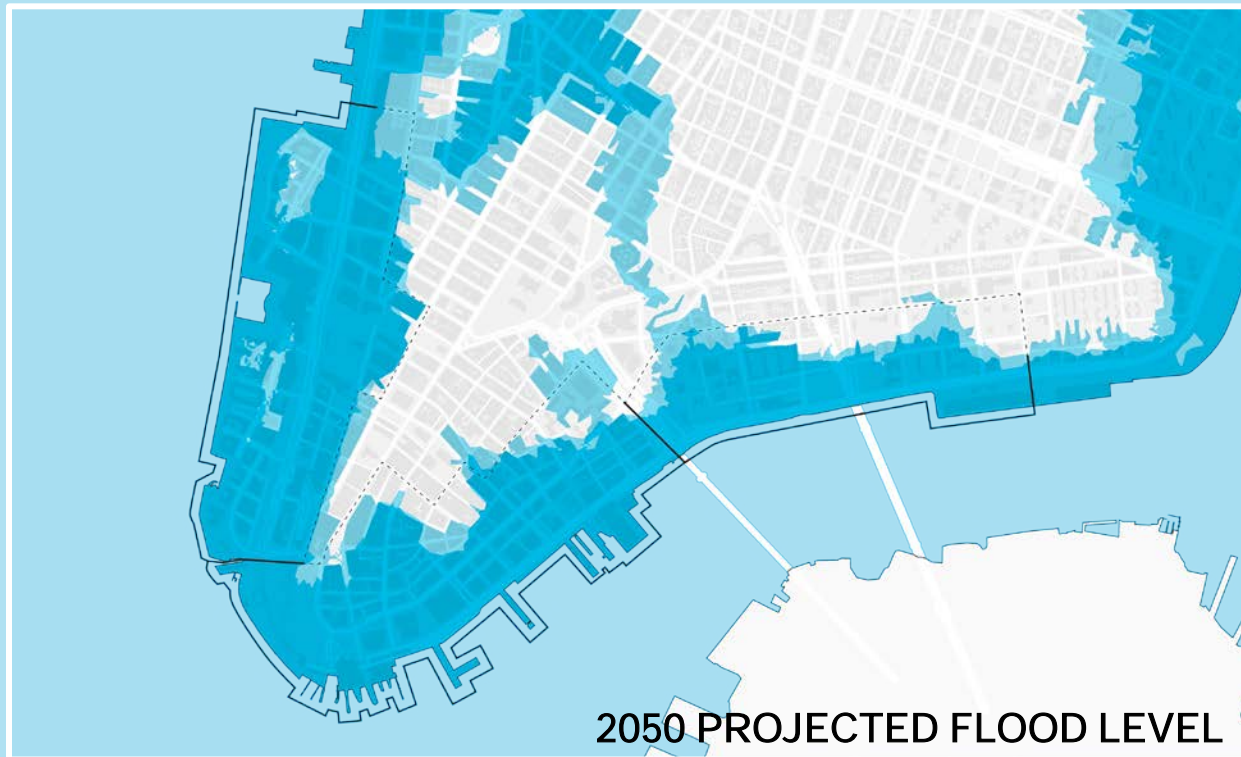


- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN
- ADDITIONAL HAZARD DUE TO WAVE ACTION

SEA LEVEL RISE AND STORM SURGE



SEA LEVEL RISE AND STORM SURGE



- 100 YEAR FLOODPLAIN
- 500 YEAR FLOODPLAIN

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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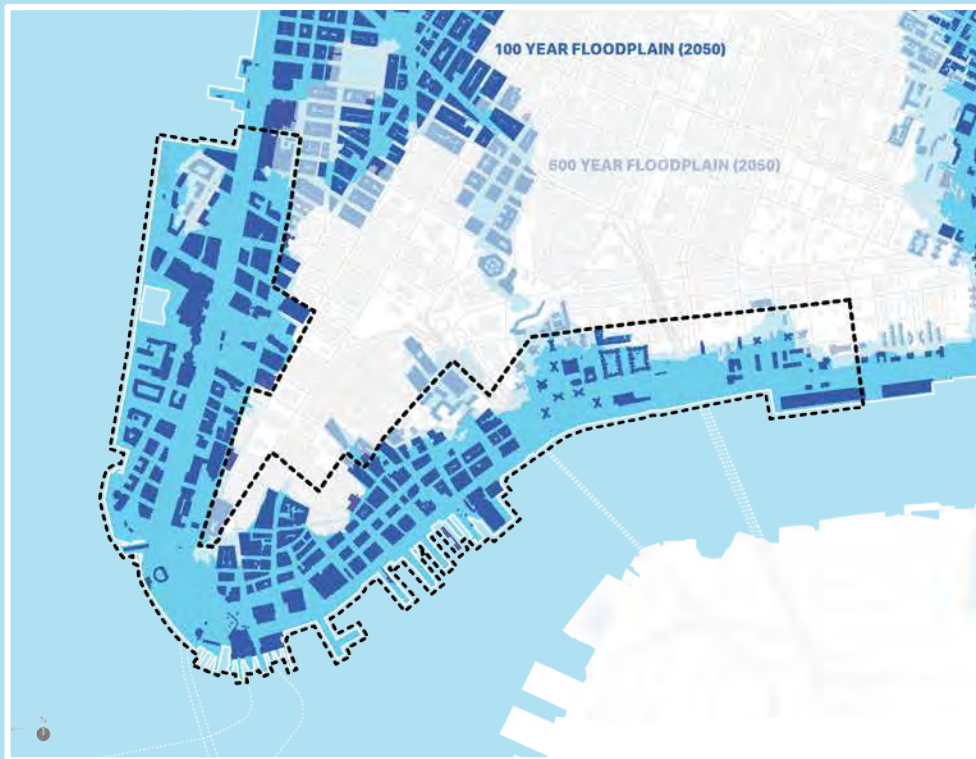
PROJECT OVERVIEW

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



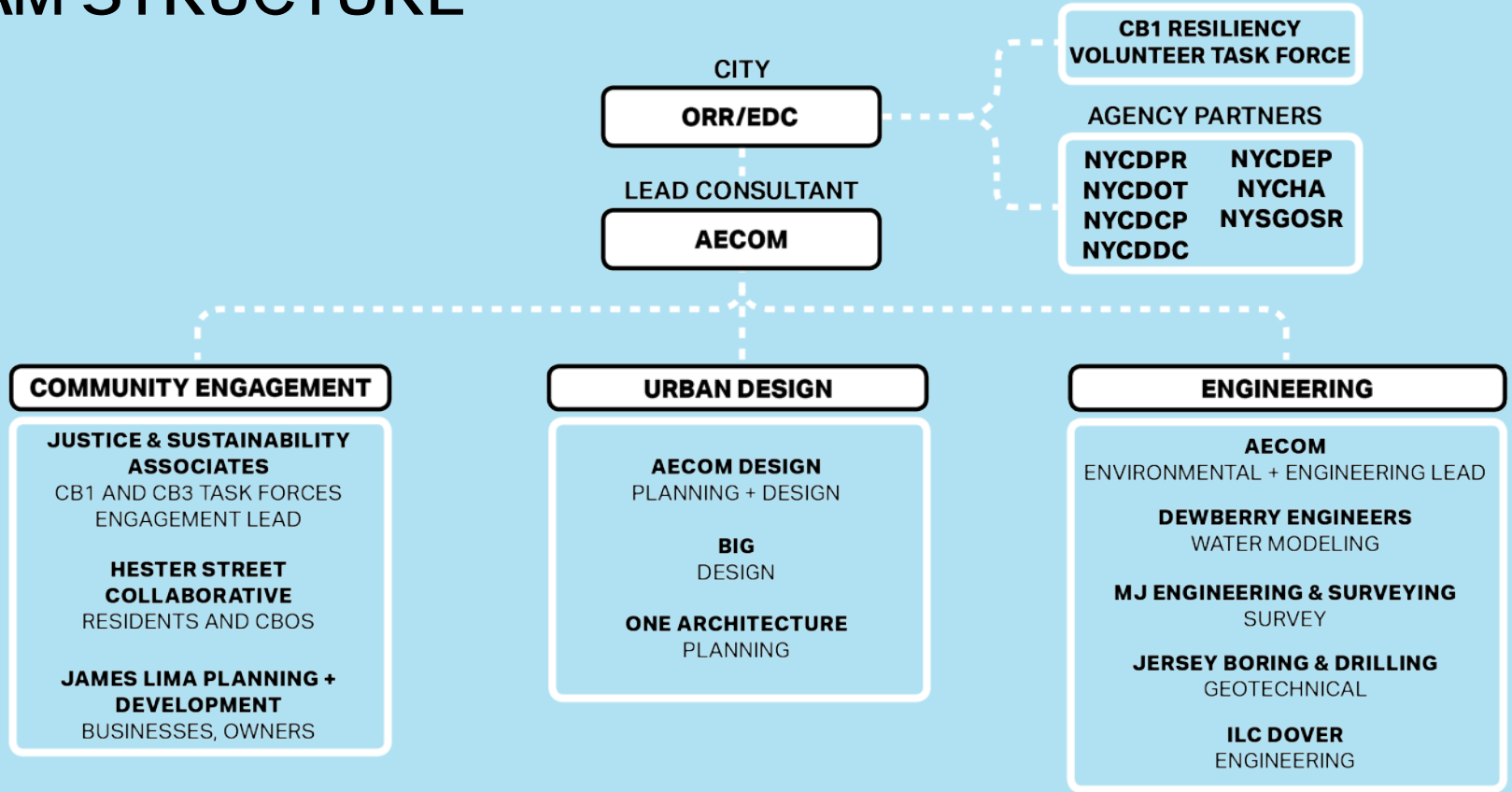
**East Side Coastal Resiliency
Funding Secured :**
\$335 million (CDBG-DR)
\$170 million (City Capital)
Project Budget : \$505 million

**Lower Manhattan Coastal
Resiliency Implementation :**

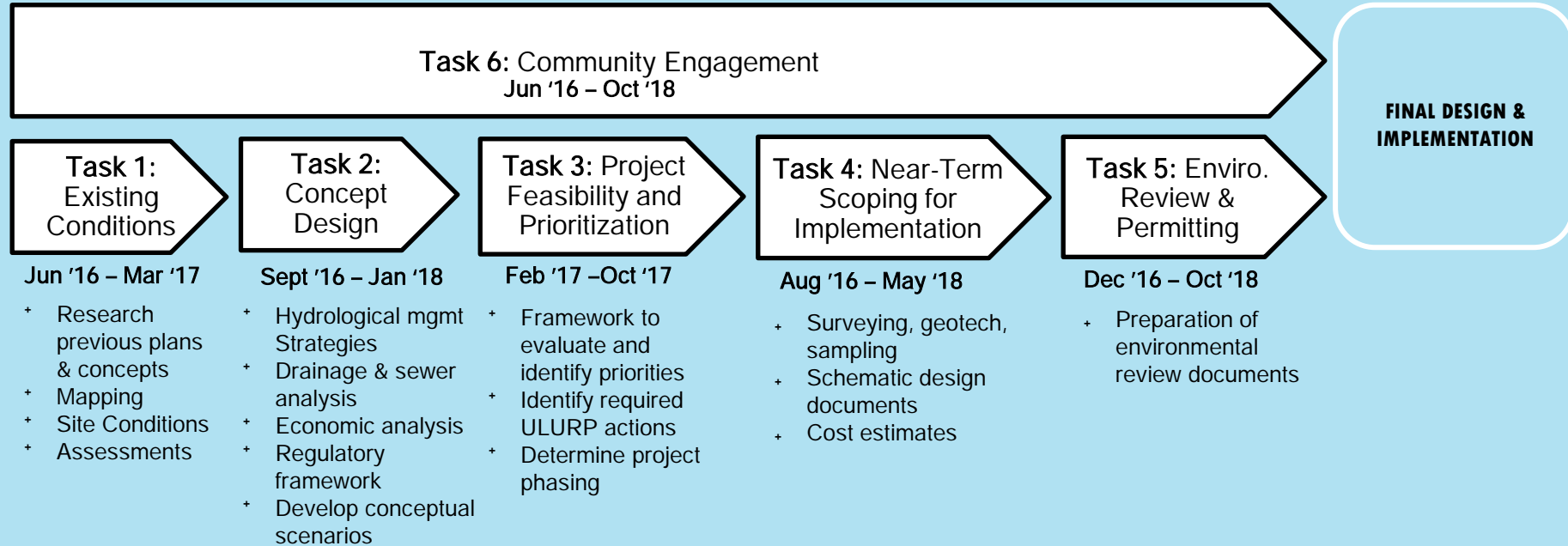
Two Bridges
Funding Secured :
\$176 million (CDBG-NDR)
\$27 million (City Capital)
Project Budget : \$203 million

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

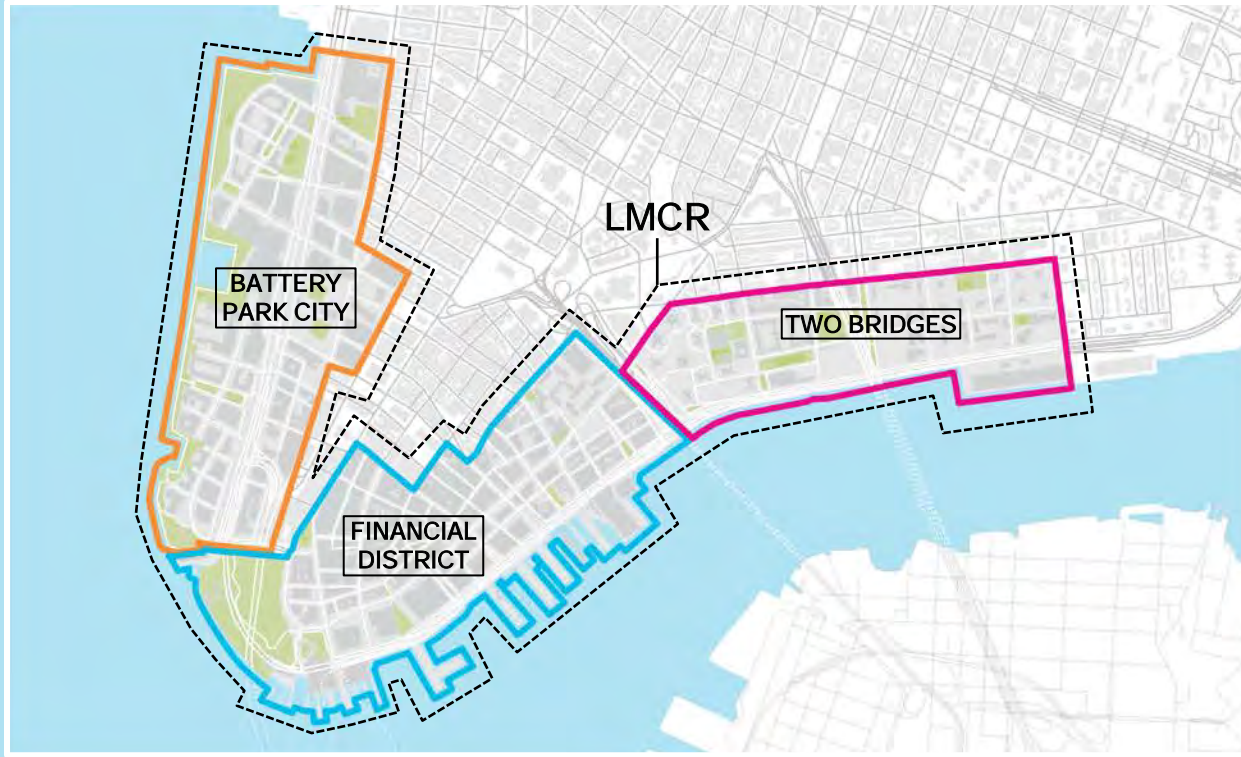
TEAM STRUCTURE



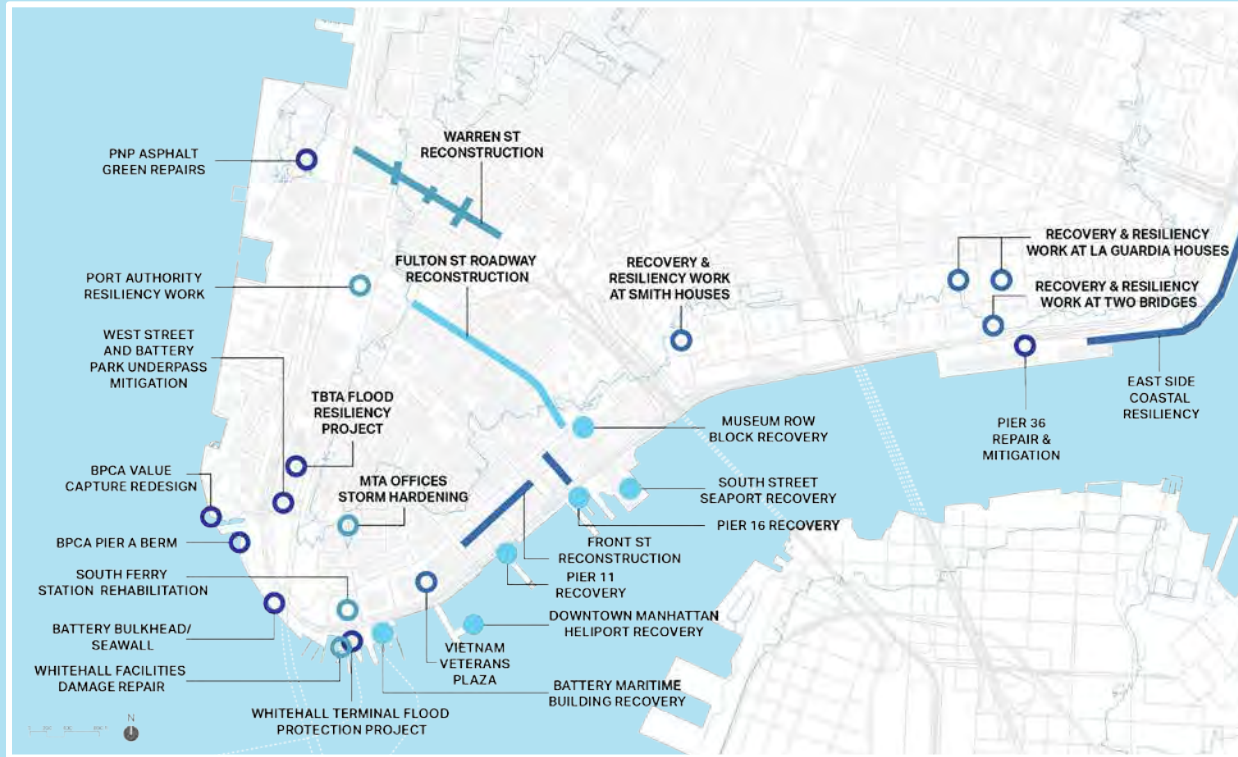
PROJECT PROCESS



PLANNING STUDY AREA

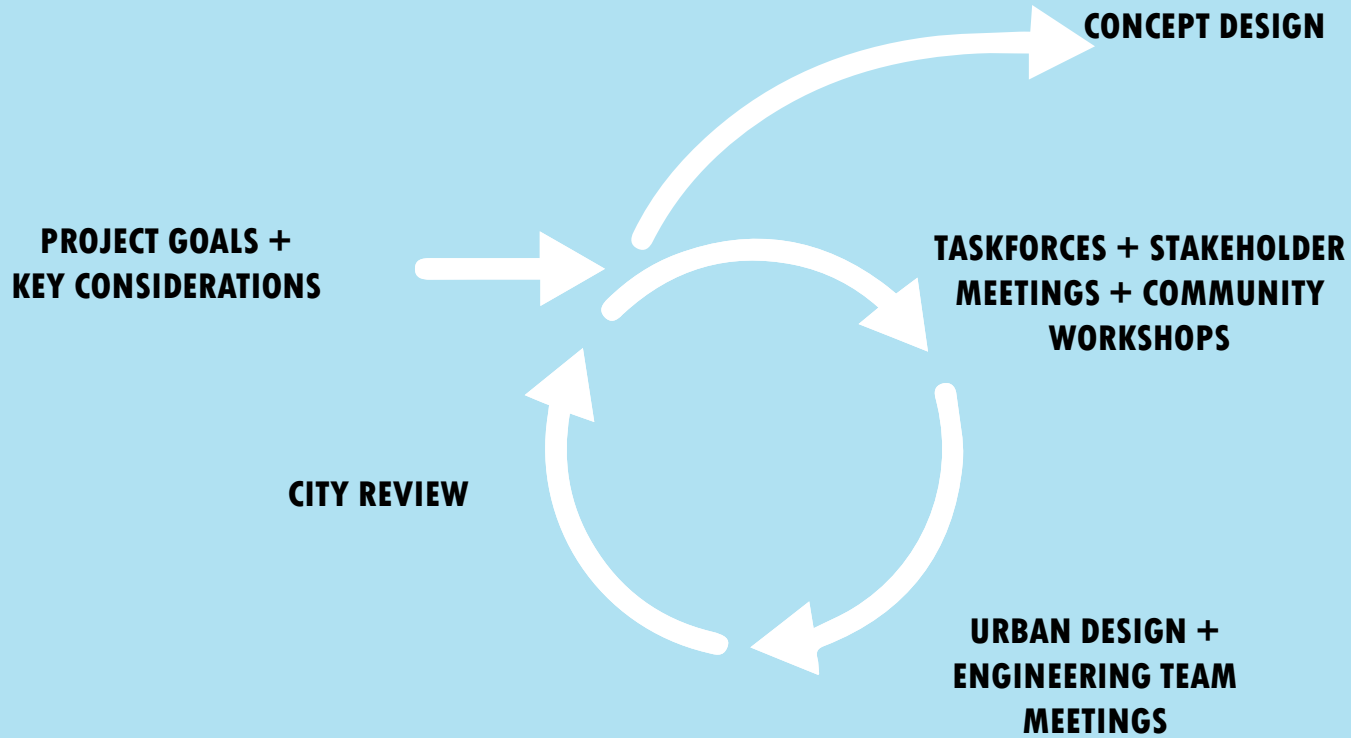


ADJACENT RESILIENCY PROJECTS



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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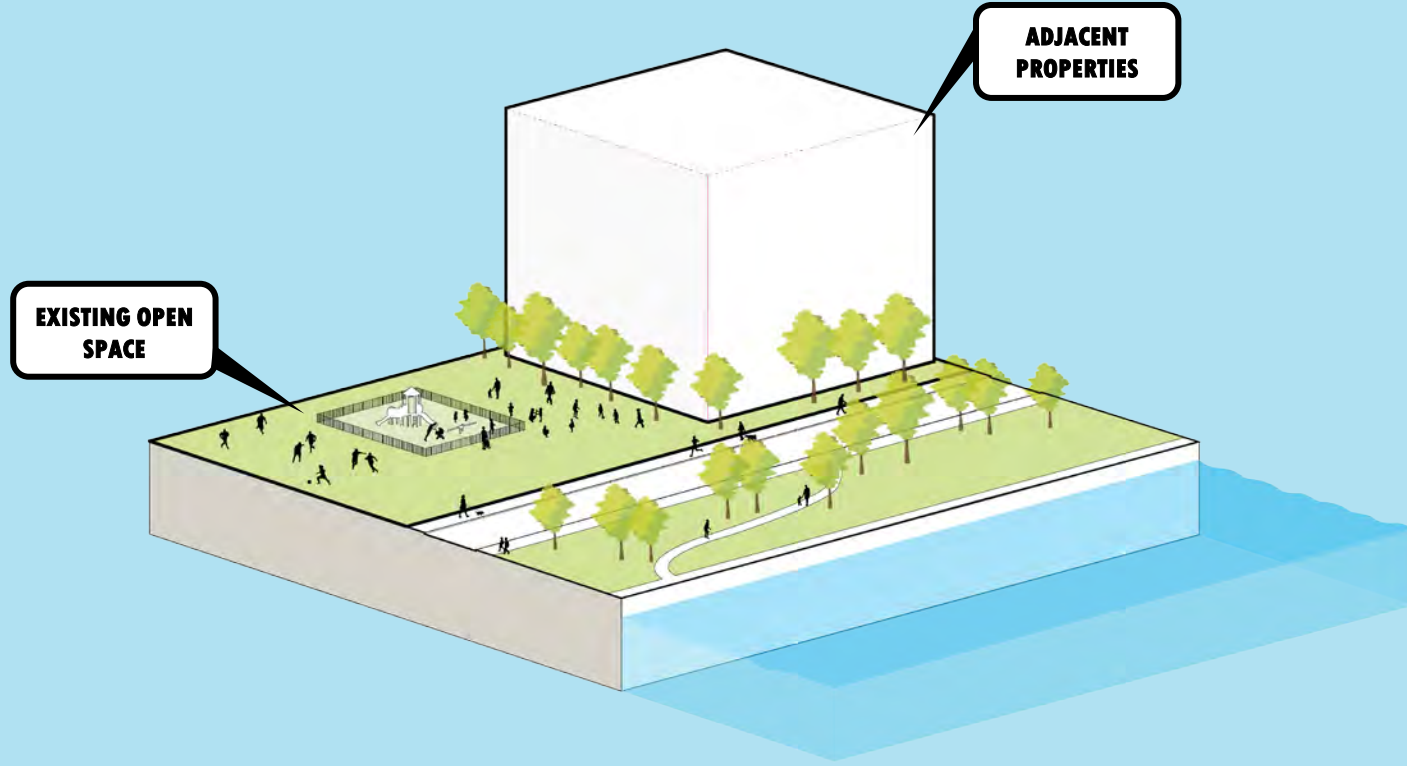
Work Session 2: Community Priorities (20 mins)

Report Back + Questions (20 mins)

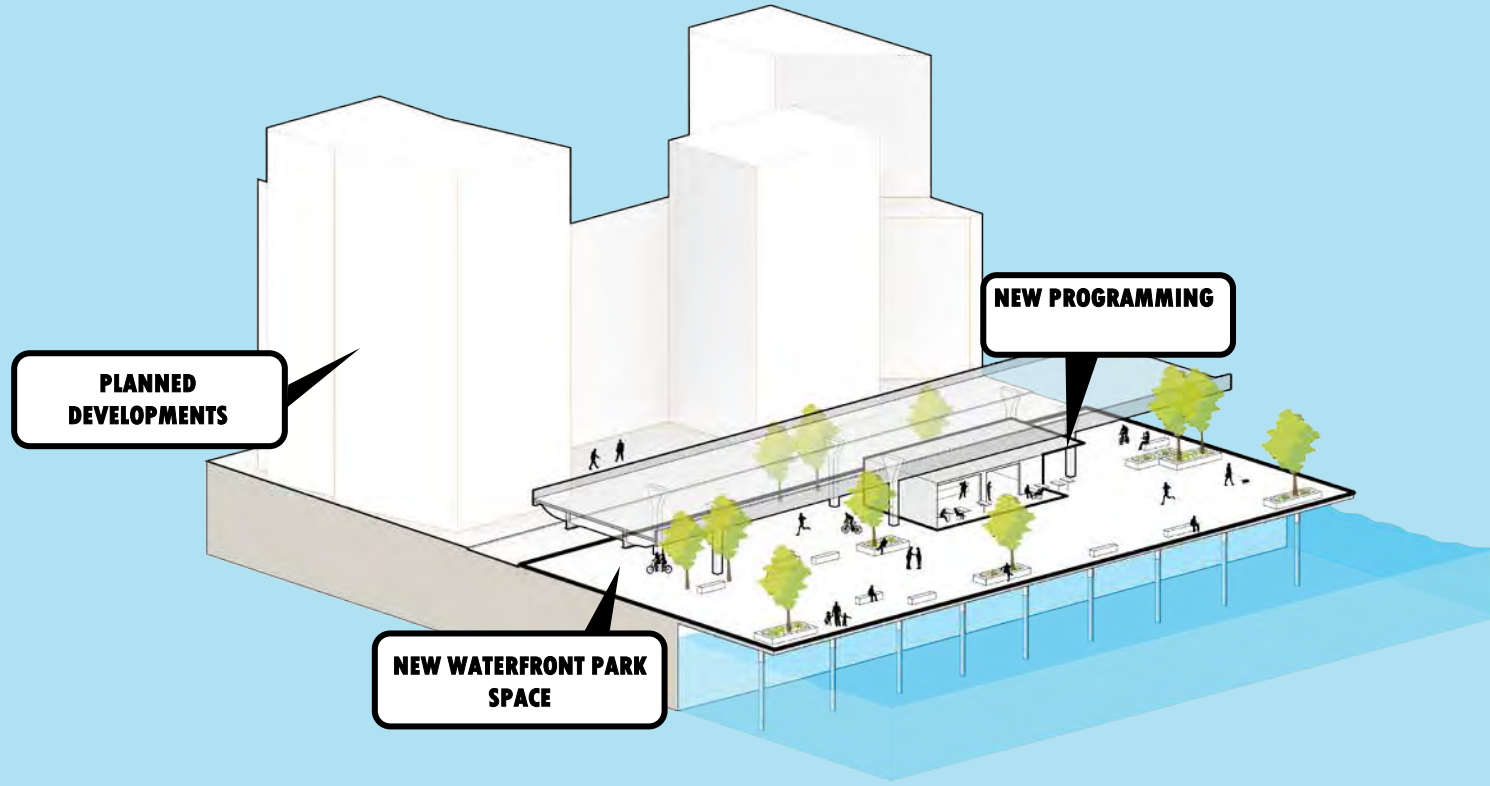
Next Steps + How to Stay Involved (5 mins)

KEY CONSIDERATIONS

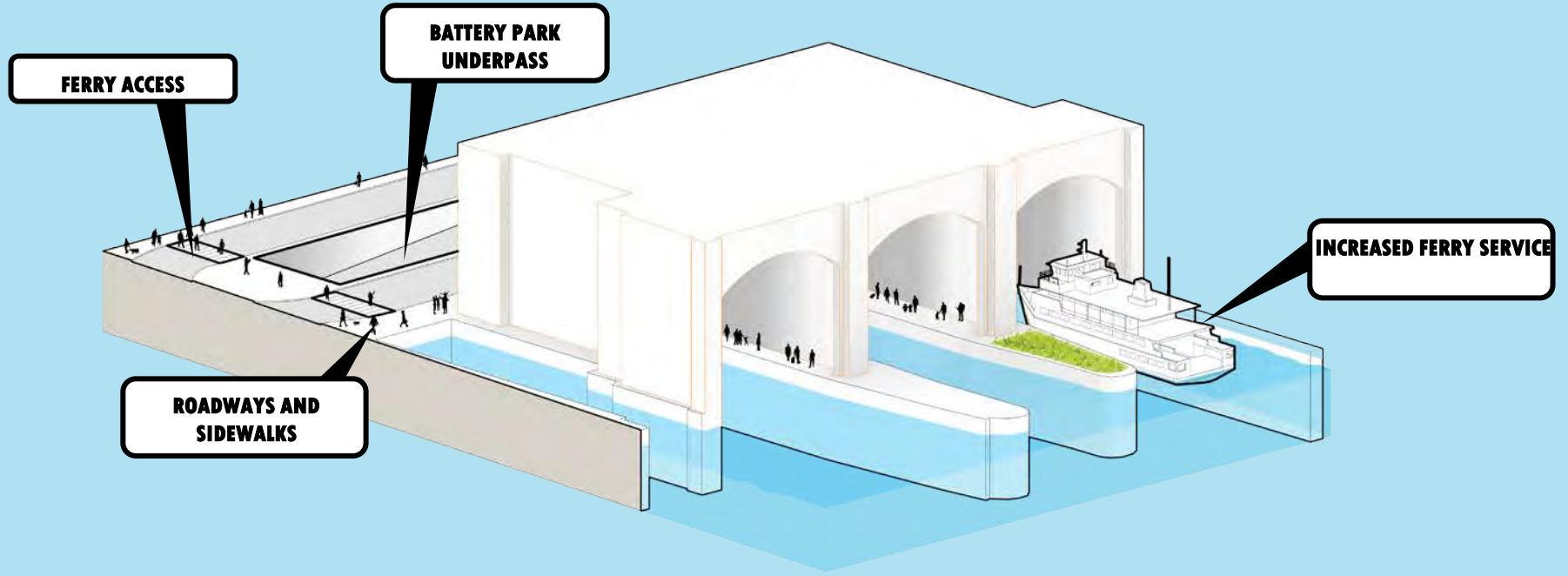
ADJACENT USES



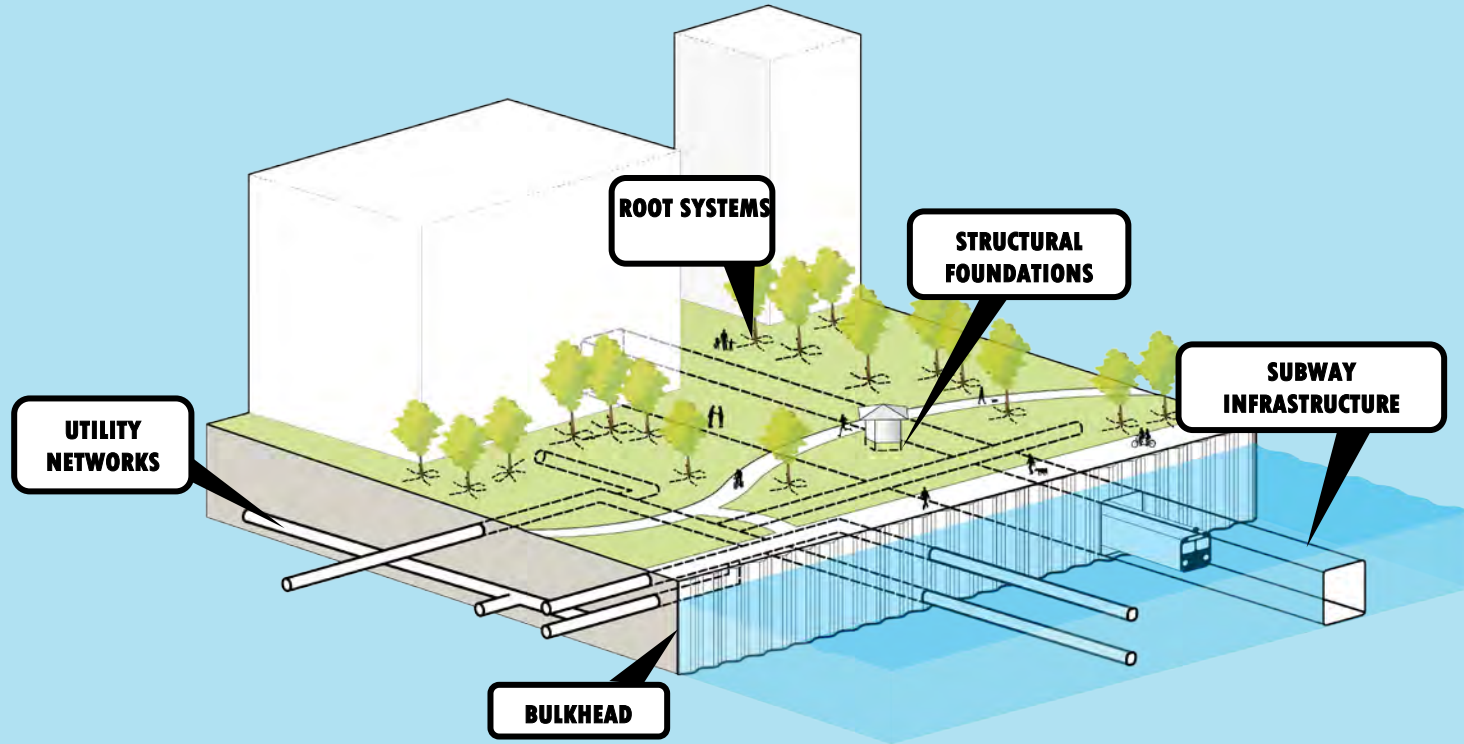
NEW AND PLANNED IMPROVEMENTS



CIRCULATION AND TRANSPORTATION

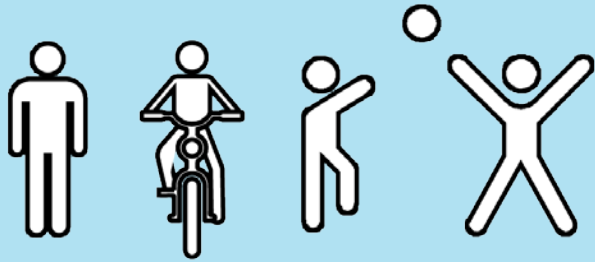


UNDERGROUND



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:

FD-1 • NYC RE-ENGAGEMENT WORKSHOP
COASTAL RESILIENCY INFRASTRUCTURE TYPES

EARTHEN BERM

- Can be built with earthen fill, built up of natural elements such as stone and geotextiles, grass, etc.
- Best suited for **medium-sized areas and passive recreation** and parking
- Best suited for areas with **large amount of space**
- Available, permanent and in place** - except from failure during and after flood events
- Long-term conditions must be able to support **significant weight**
- Requires periodic maintenance to avoid erosion due to the water table

URBAN BERM

- Can be built with earthen fill, built up of natural elements such as stone, masonry, brick, concrete, etc. that can integrate pedestrian access and passive recreation
- Can include **amenities** such as landscaping, seating, art, bike racks, etc.
- Best suited for areas with **large amount of space**
- Available, permanent and in place** - except from failure during and after flood events
- Big and heavy** - made up of a mass of water-tight material
- Underground conditions must be able to support **significant weight**

FLOOD WALL

- Can be classified as being usually **interlocking** as high as an **active bank wall**
- Can include **amenities** such as landscaping, seating, artwork, etc.
- Best suited for **medium-sized areas**
- Available, permanent and in place** - except from failure during and after flood events
- Requires structures that go **deep under ground**, assess corner points and ensure underground conditions that allow for **large flood events**
- Relies on the **strength of the wall** to handle flood forces, as well as the foundation

DEPLOYABLE

- Unsuitable for **waterfront areas and areas** under normal weather conditions
- Best suited for **high ground** that an **access** for ongoing maintenance and emergency use
- Underground conditions that allow for **large flood events** if placed in place
- Temporary** or in **emergency** in the event of an emergency
- Deployment of an element that requires **significant maintenance**
- Some require advanced planning and **advance material** to install in the event of an emergency and **require storage space** off site

EXAMPLES

- Earthen Landfill** - Lower Manhattan, East River
- Stone Wall** - South 6th Street, East River
- Replenish** - East River Park, East River
- Seating Steps** - Lower Manhattan, East River
- Promenade** - Lower Manhattan, East River
- Align with Berms, Art, and Retail** - Lower Manhattan, East River
- Concrete Flood Wall** - Lower Manhattan, East River
- Glass Flood Wall** - Lower Manhattan, East River
- Single-Fold Wall** - Lower Manhattan, East River
- Reinforced Flood Wall** - Lower Manhattan, East River
- Reinforced Flood Berms on Street Front** - Lower Manhattan, East River
- Sealing Gates** - Lower Manhattan, East River

lower manhattan
COASTAL RESILIENCY

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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
Add other priorities

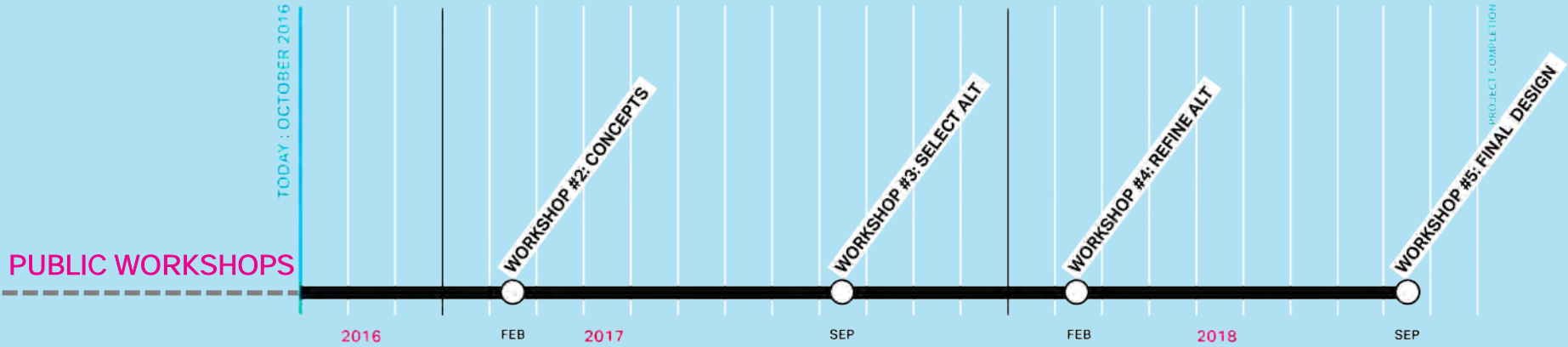
lower manhattan
COASTAL RESILIENCY



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)

TIMELINE



STAY IN TOUCH



www.nyc.gov/lmcr



@NYClimate



@NYClimate



By Mail

253 Broadway – 14th Floor



in person



nycresiliency@cityhall.nyc.gov