

# Waterfront Resilience Program Update

**Maritime Commerce Advisory Committee**

January 18, 2024



Waterfront Resilience Program

# AGENDA



- Waterfront Resilience Program
- Short and Long-Term Adaptation
- Community Engagement Summary
- Updates on the Coastal Flood Study with U.S. Army Corps of Engineers
- What's Next

# WATERFRONT RESILIENCE PROGRAM VISION STATEMENT

The Port's Waterfront Resilience Program will take actions to **reduce seismic and climate change risks** that support a safe, equitable, sustainable, and vibrant waterfront.



# RIISING TO THE CHALLENGE - BACKGROUND

San Francisco Faces Urgent Seismic, Coastal, and Inland Flood Risks Today

## SEISMIC RISKS



San Francisco, 1906



Marina, 1989

## COASTAL FLOODING



Recology



The Embarcadero

## INLAND FLOODING



Islais Creek outfall and  
Marin St.

# RISING TO THE CHALLENGE

## Initiatives Underway



- **Prop A Embarcadero Seawall Bond** funds are being leveraged to match federal grant opportunities
- **Key studies** along the Embarcadero and in Islais Creek are helping us plan with data instead of guessing what's happening underneath the waterfront
- **Embarcadero Early Projects** are under development, with construction starting in 2024
- **Longer-term adaptation planning** is underway
- **Innovative solutions** like the Living Seawall Pilot are being explored

# Short and Long-Term Adaptation



Waterfront Resilience Program

# SAN FRANCISCO'S BELOVED WATERFRONT HAS CHANGED OVER TIME

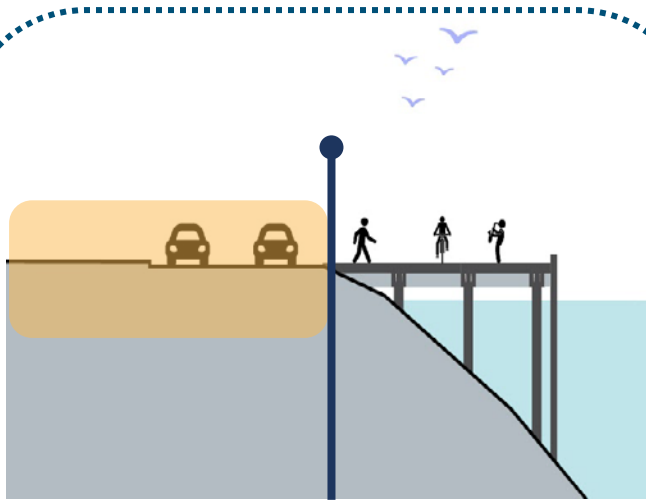


## Short Term - Embarcadero Early Projects

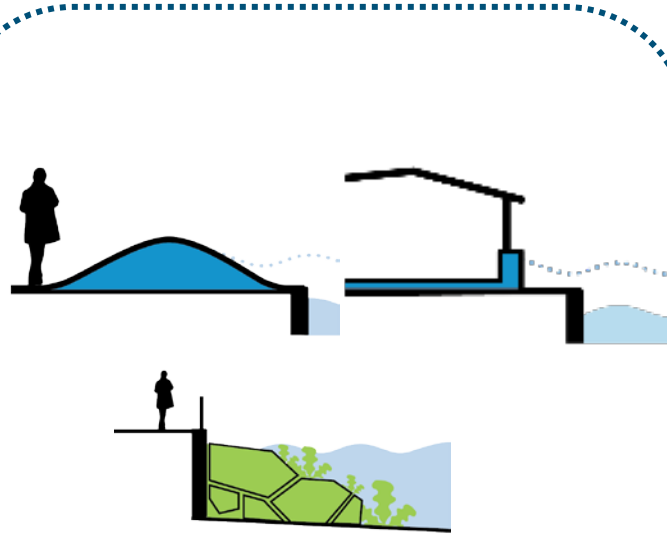
- 6 advanced to pre-design using Proposition A funding
- 5 advancing to pre-design through a geographic strategy for the stretch between Piers 19 and 41
- 7 advancing through coordination with long-term Port tenants, capital programs, and City agency coordination
- 2 Southern Waterfront early projects identified to advance at Pier 50 and Pier 94-96.

# LONGER-TERM ADAPTATION PLANNING

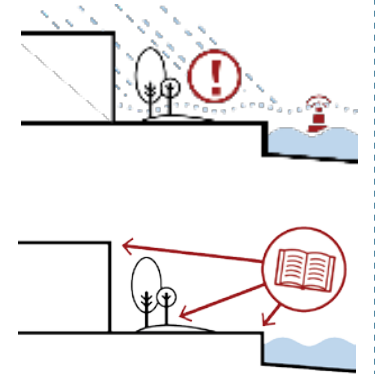
Goal: Develop plans to guide WRP long-term resilience efforts and work with USACE to complete the SF Waterfront Coastal Flood Study



**Coastal Flood Defense  
Location + Height**  
*And area of elevation  
change*



**Physical Changes**  
*Such as seawalls, berms,  
floodproofing, and nature-  
based features*

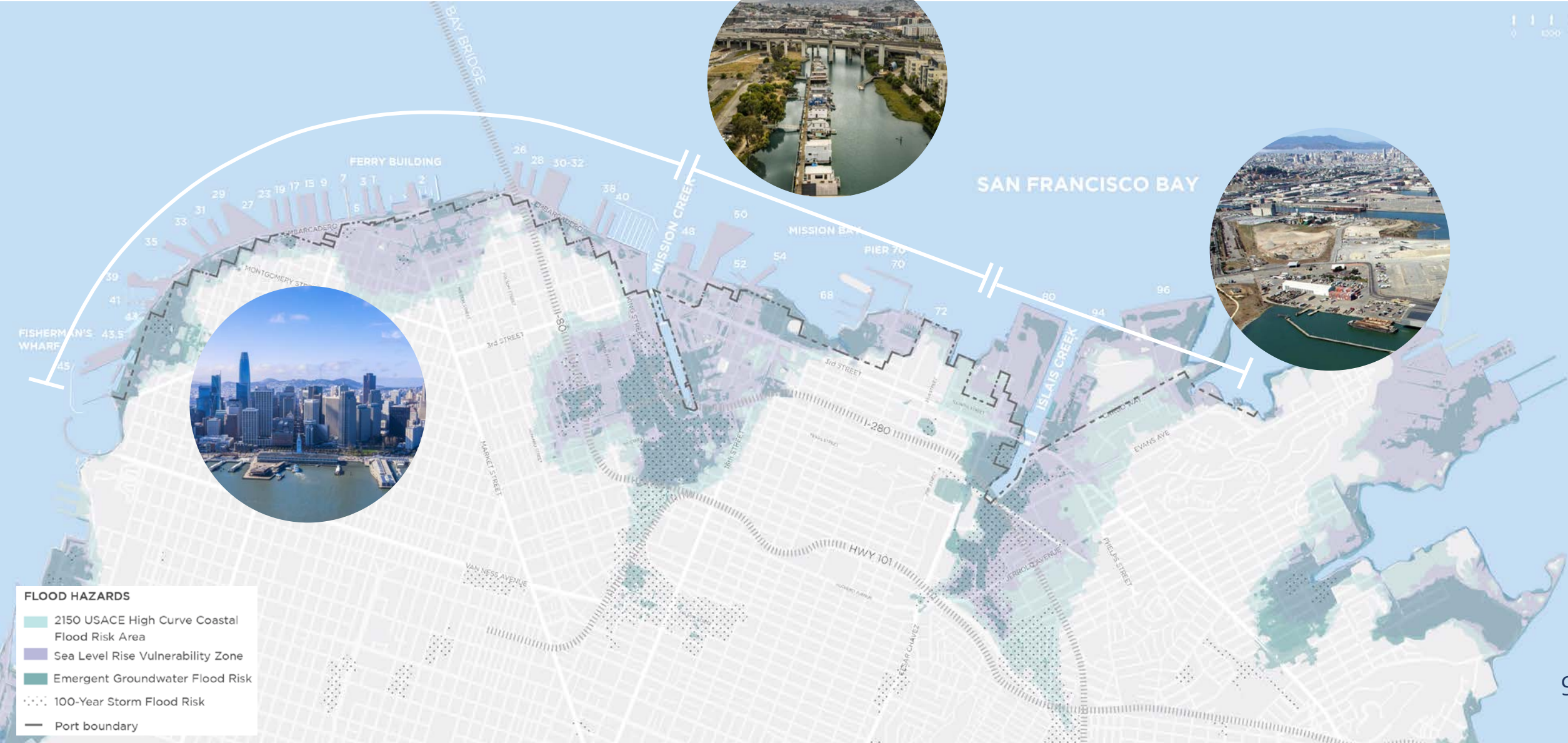


**Policy Changes**  
*Such as resilient codes,  
warning systems, and land  
use changes*



# COASTAL AND INLAND FLOOD RISK

## Different Geographic Impacts

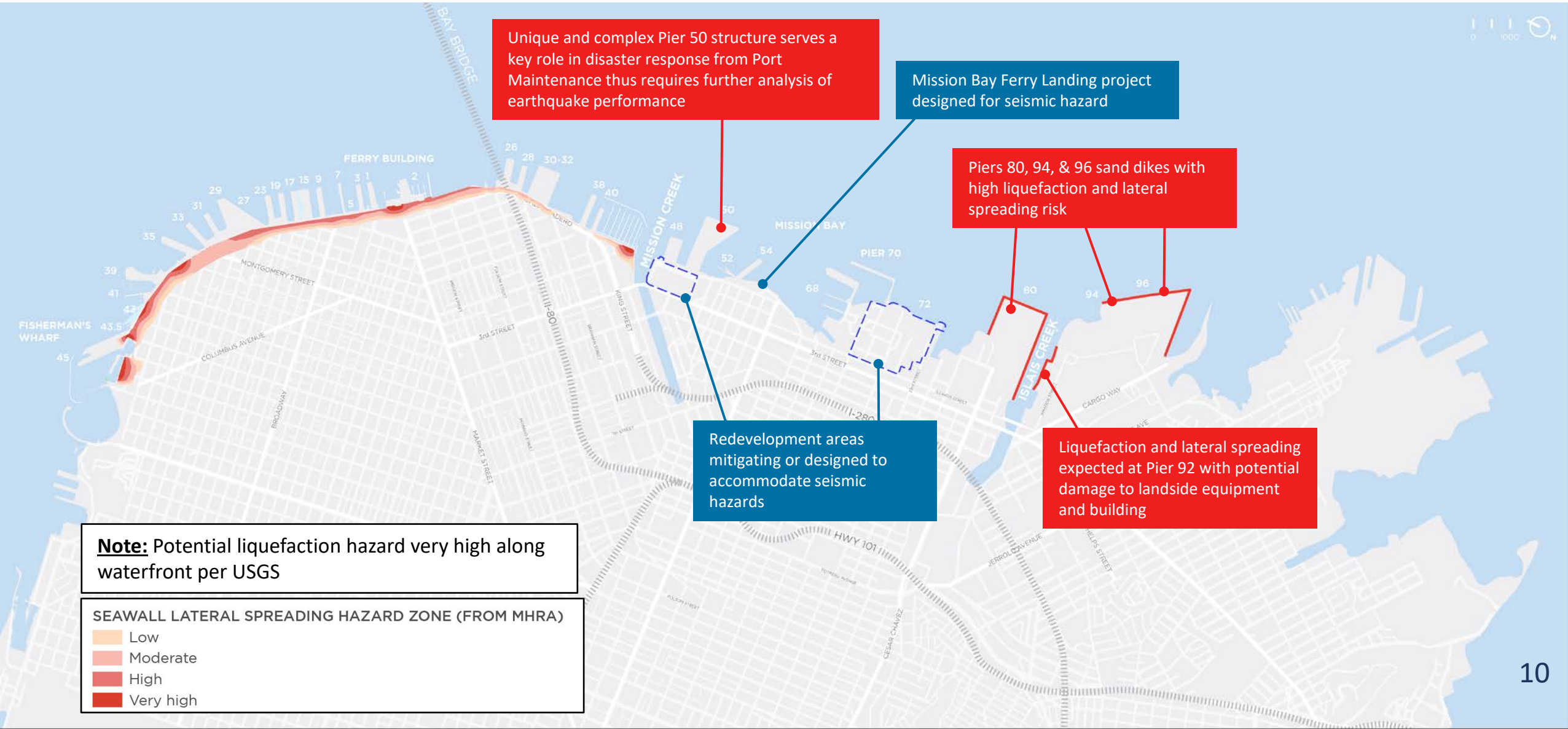


**FLOOD HAZARDS**

- 2150 USACE High Curve Coastal Flood Risk Area
- Sea Level Rise Vulnerability Zone
- Emergent Groundwater Flood Risk
- 100-Year Storm Flood Risk
- Port boundary

# WATERFRONT SEISMIC HAZARDS

## Potential Lateral Spread and Liquefaction Risk



# ADAPTATION APPROACHES



## DEFEND

Keep coastal water out,  
stay in place



## ACCOMMODATE

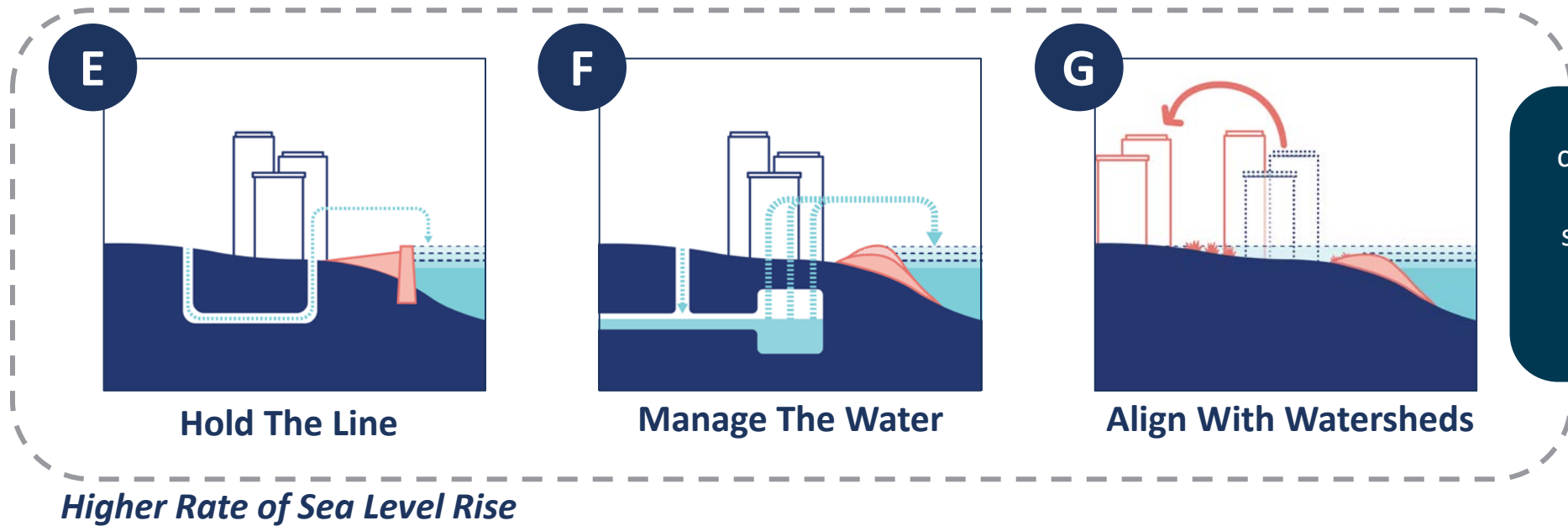
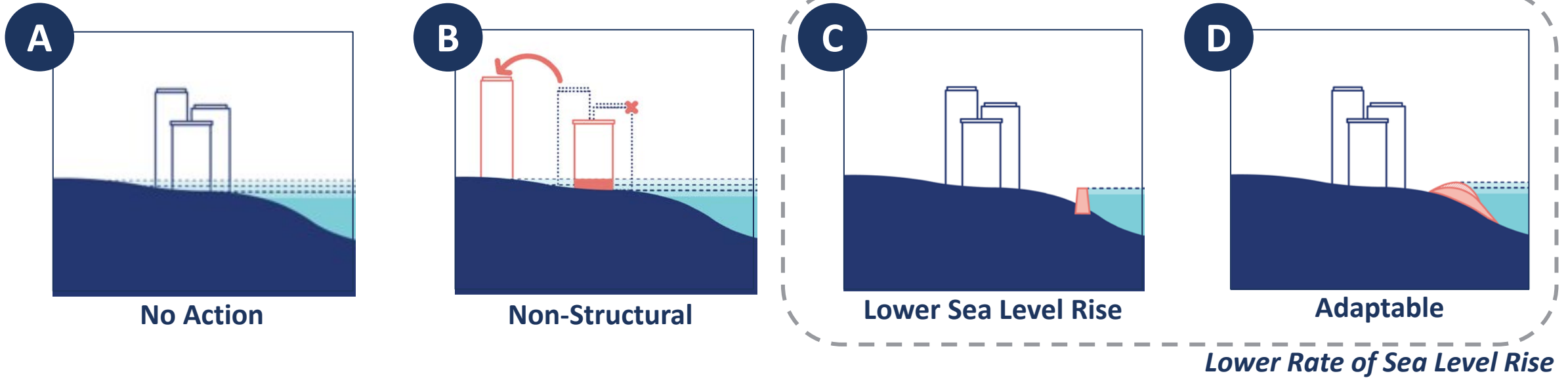
Let coastal water in,  
stay in place



## RETREAT

Move out of the area  
over time

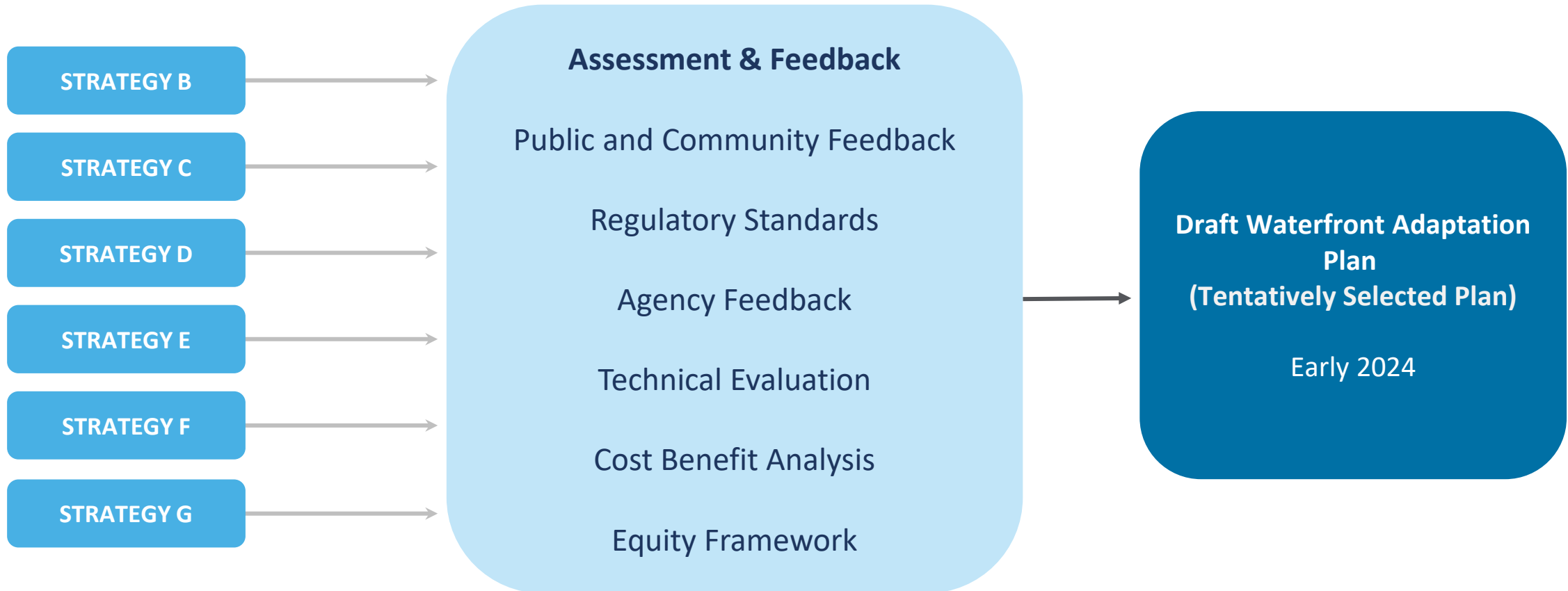
# OVERVIEW OF WATERFRONT DRAFT ADAPTATION STRATEGIES



In addition to coastal flood risks- these strategies address groundwater, stormwater, and seismic risks

# GETTING TO DRAFT WATERFRONT ADAPTATION PLAN

## Mix and Match Best Elements of Each Strategy



# WATERFRONT RESILIENCE PROGRAM PARTNERS

## Working Groups



Resource Agency  
Working Group



Equity Working  
Group



Engineering with  
Nature Working Group



Historic Preservation  
Technical Advisory  
Committee



# Community Engagement



# COMMUNITY INPUT HELPED DEFINE THE WRP

## Community-driven resilience

1

Focus on life safety & emergency response

2

Prioritize assets most loved by the community and most important to the city

3

Put people first

Assets and services most prioritized: housing, disaster recovery facilities, utilities, transportation and businesses





# DRAFT STRATEGIES – PUBLIC ENGAGEMENT

October 2022 – February 2023



Engagement included:

- **16 events** open to the public: online community meetings, waterfront walking tours
- **Southern Waterfront** in-person open-house & in-person mixer,
- **Multiple focus groups** and presentations to Community Organizations and Community Advisory Councils
- **StoryMaps, Social Media, Emails, Video**
- Over **500 people** participated across all events
- Over **170,000 people** viewed content related to draft strategies

# WHAT WE HEARD OVERALL

We heard the following general comments and feedback:

- Flooding around where they **live and work**, impacts to **community safety**, and **disruption to transportation or waterfront access** are their top sea level rise related concerns.
- **Community members support a strategy that defends against higher projected rates of sea level rise.**
- **Nature-based approaches** and **improved public access to the waterfront** remain high priority.
- **Overall, there was no strong preference** for any one strategy over another (when selecting between strategies E, F, and G). **Pros and Cons were identified for each.**
- Common concerns ranged from **equity and environmental justice** implications, to **technical** practicalities, to questions about **cost and feasibility**.



# S.F. Waterfront Coastal Flood Study with the U.S. Army Corps of Engineers

BESHA II  
SAN FRANCISCO

LADY FISH  
SAN FRANCISCO, CA



# WATERFRONT RESILIENCE PROGRAM PARTNERS

Port team working in close coordination with key partners

San Francisco  
**Planning**

**ONESF**  
Building Our Future



**US Army Corps  
of Engineers®**



**San Francisco Waterfront  
Coastal Flood Study**



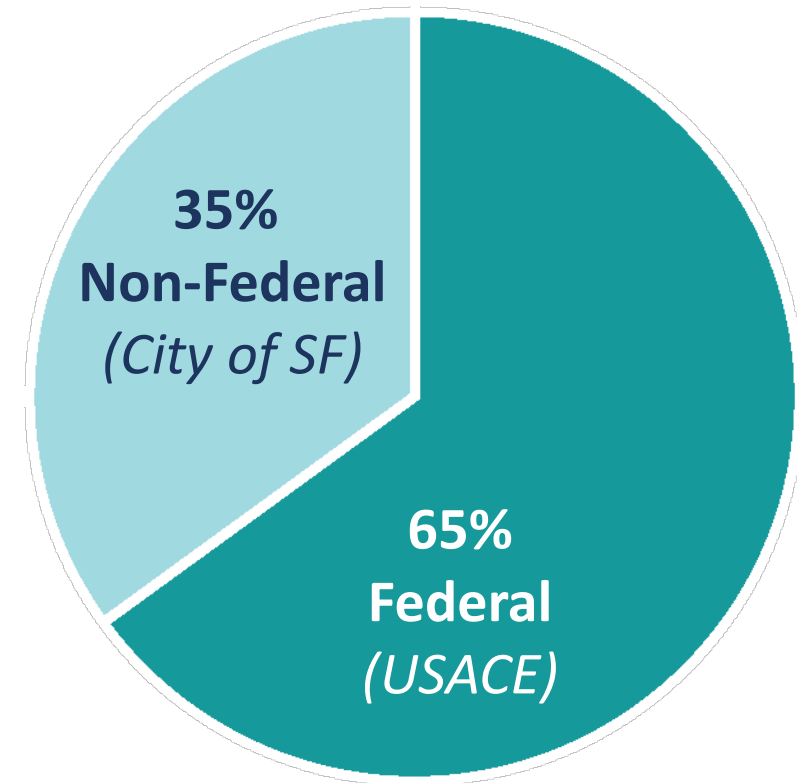
# PROJECT COSTS

*To address the risks and hazards that the city faces:*

Total Cost: **\$ Billions**

If USACE finds a Federal interest, this Study can lead to **federal funding** to help design and build coastal flood defenses for 7½ miles of bay waterfront.

*Project Cost Sharing*



# PROJECT BENEFITS

Benefits are calculated across multiple **accounts**:

## National Economic Development

- Total Project Cost
- Physical Damages
- Non-Physical Damages
- Loss of Land

## Regional Economic Development

- Business Economic Disruptions
- Population Economic Impacts

## Other Social Effects

- Health & Safety
- Economic Vitality
- Social Connectedness
- Community Identity
- Social Vulnerability and Resilience
- Disproportionate Effects

## Environmental Quality

- Physical Environment
- Biological Environment

# PRIORITIZING EQUITY IN BOTH...

## PLANNING PROCESS

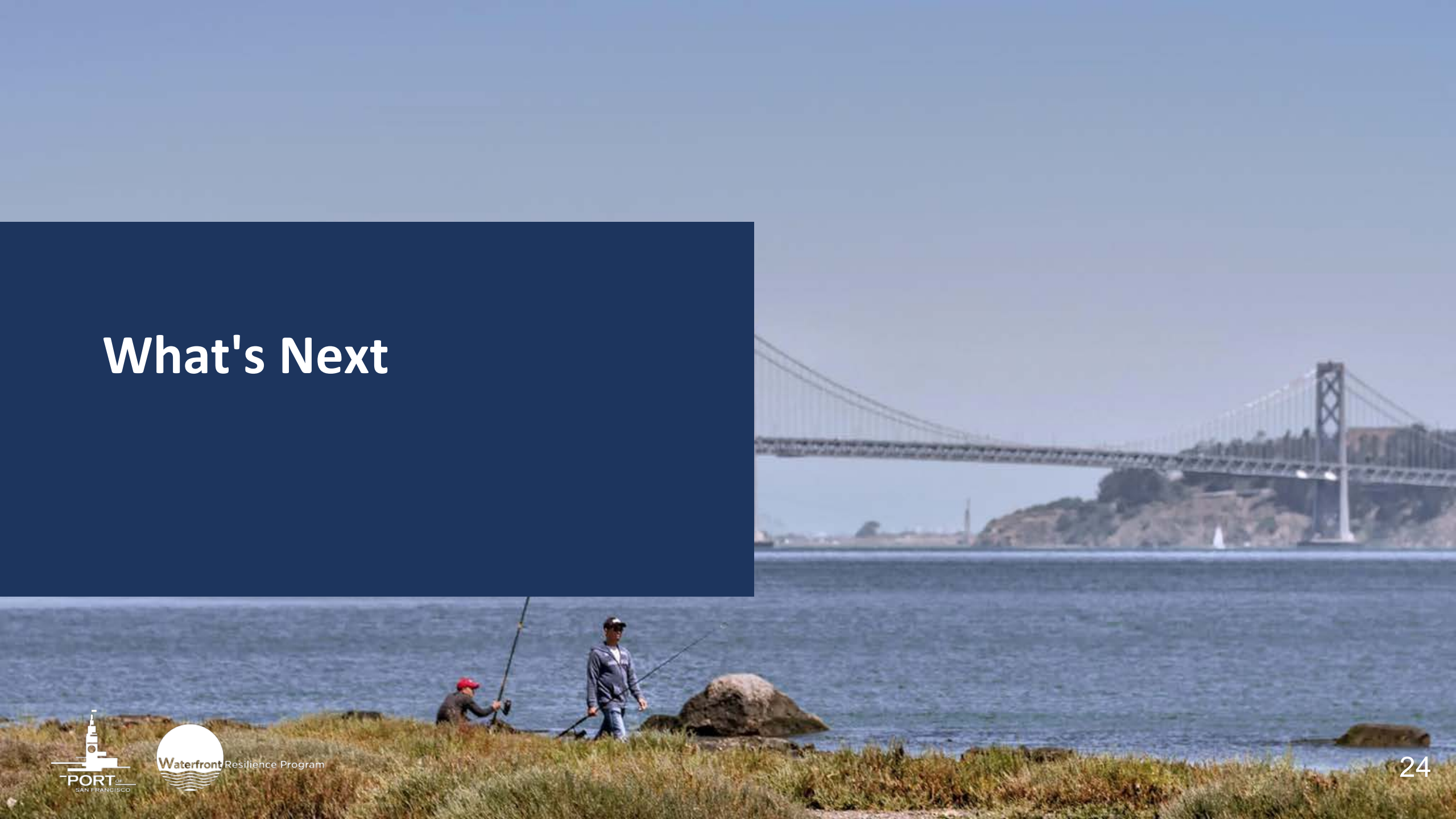
- Collaborate with equity practitioners from city agencies to draw out equity considerations of strategies
- Develop an equity framework to support evaluation of adaptation strategies
- Vet equity framework with CBO leaders to validate approach in assessing strategies

## + DISTRIBUTION OF PROJECT BENEFITS

- Remedy historic lack of investment in Southeast neighborhoods
- Protect housing and jobs
- Contracting and workforce development opportunities
- Improve public access to the waterfront
- Maintain transit connectivity

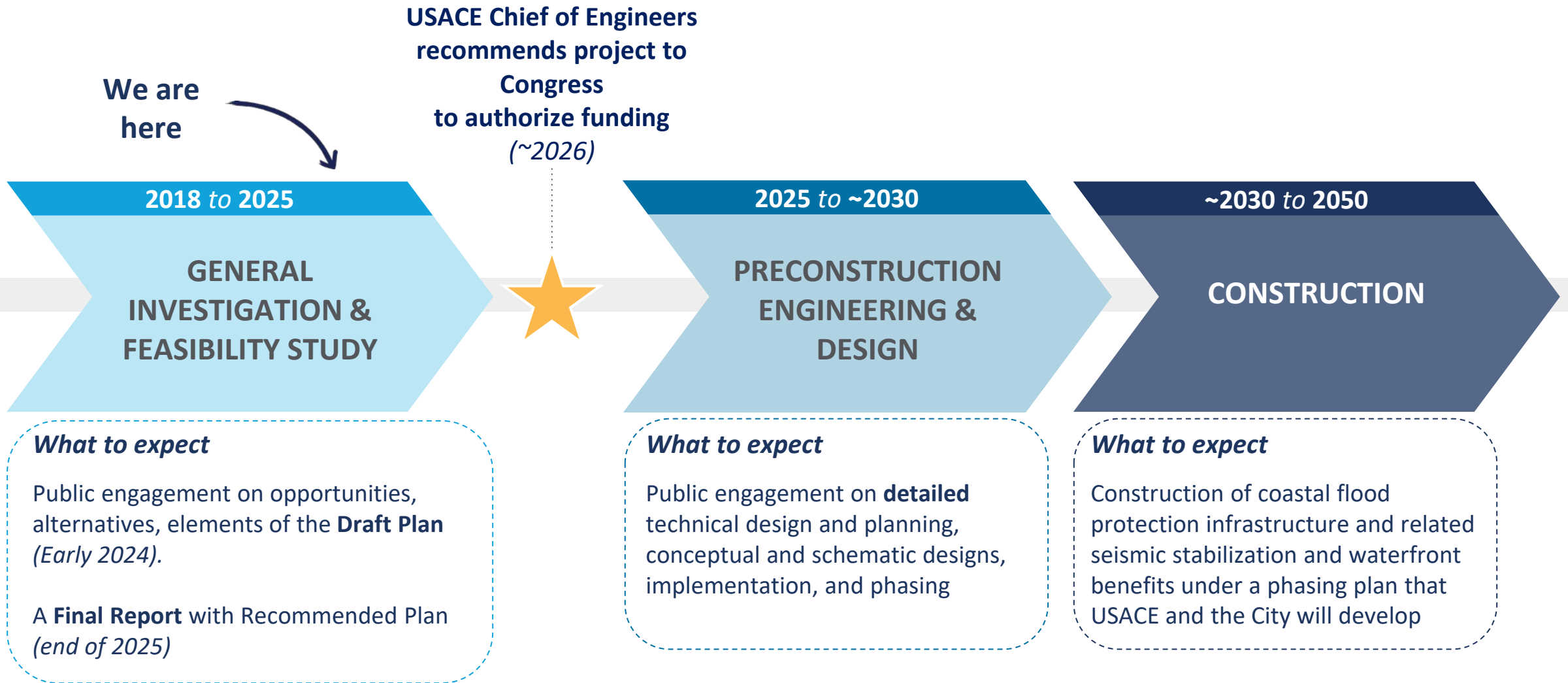


# What's Next



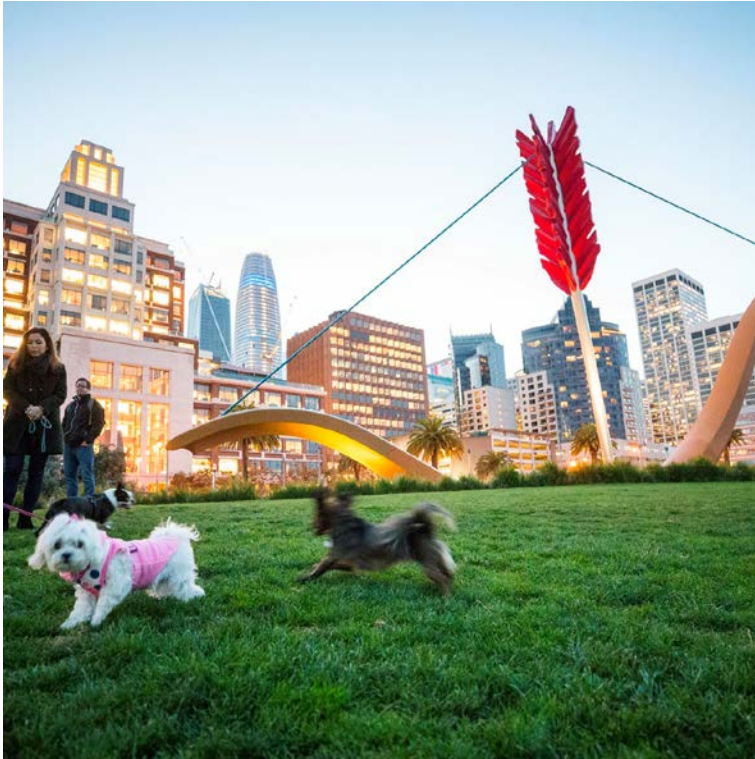


# WHERE ARE WE IN THE FLOOD STUDY PROCESS?



# BEYOND INFRASTRUCTURE IMPROVEMENTS

A multi-benefit project, and a once-in-a-generation opportunity to...



**Invest radically in the public realm for people**



**Integrate natural features to begin to restore natural habitats and provide ecological benefits**



**Protect historically disinvested areas from flooding and earthquakes through an equitable and inclusive process**

# Thank You

Luiz Barata | [luiz.barata@sfport.com](mailto:luiz.barata@sfport.com)

[www.sfport.com/wrp](http://www.sfport.com/wrp)

