

PORT OF
SAN FRANCISCO



SEAWALL EARTHQUAKE SAFETY PROGRAM

Community Meeting #3
January 31, 2019

Port Jurisdiction

Historic shoreline

Embarcadero Seawall



WELCOME!

Welcome back to those of you who joined us in June or September for our first two meetings and **welcome aboard** the Seawall Program if this is your first time joining us!

We also want to **thank our partners at SPUR** for hosting us and helping us plan this event.



MEETING AGENDA

Tonight, we will cover:

- Embarcadero Seawall 101
- Overview of the Seawall Program
- Quick recap of first two meetings
- Seawall Program goals
- Tradeoffs: balancing priorities & resources
- Engagement around framework, goals and trade-offs (downstairs)

**We need to hear
from you!**

TONIGHT'S OBJECTIVES

3

Jan. 2019

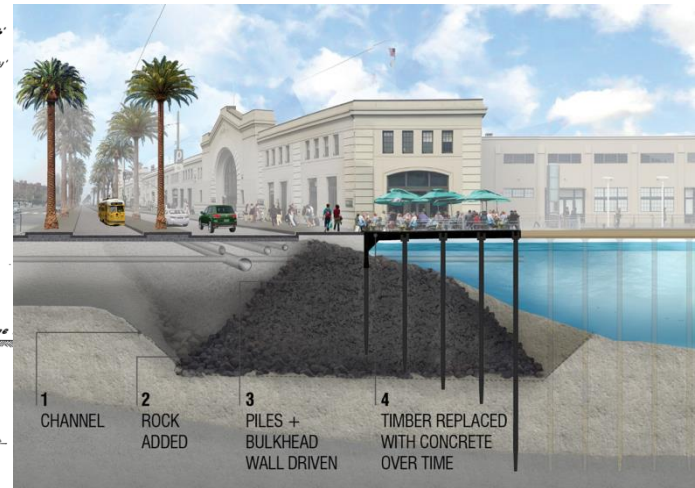
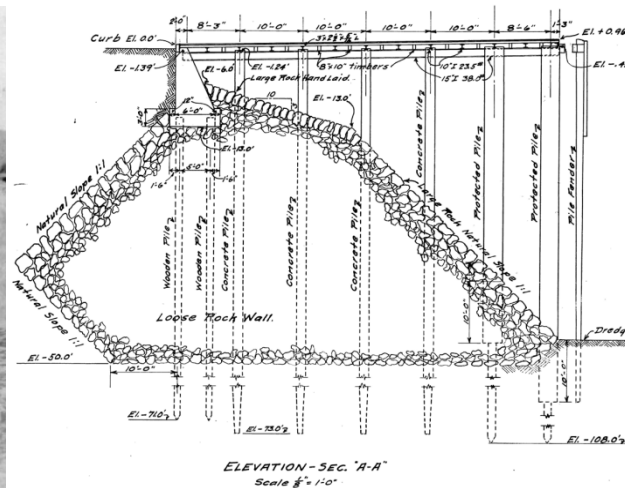
Tradeoffs:
Balancing
Priorities &
Resources

1. **Informational:** Understand Seawall Program Framework and why we're phasing the work ahead
2. **Participation:** Share draft Seawall Program goals and get feedback
3. **Discussion:** Think about and discuss balancing priorities and resources
4. **Engagement:** Consider the challenges we face as a city and a region

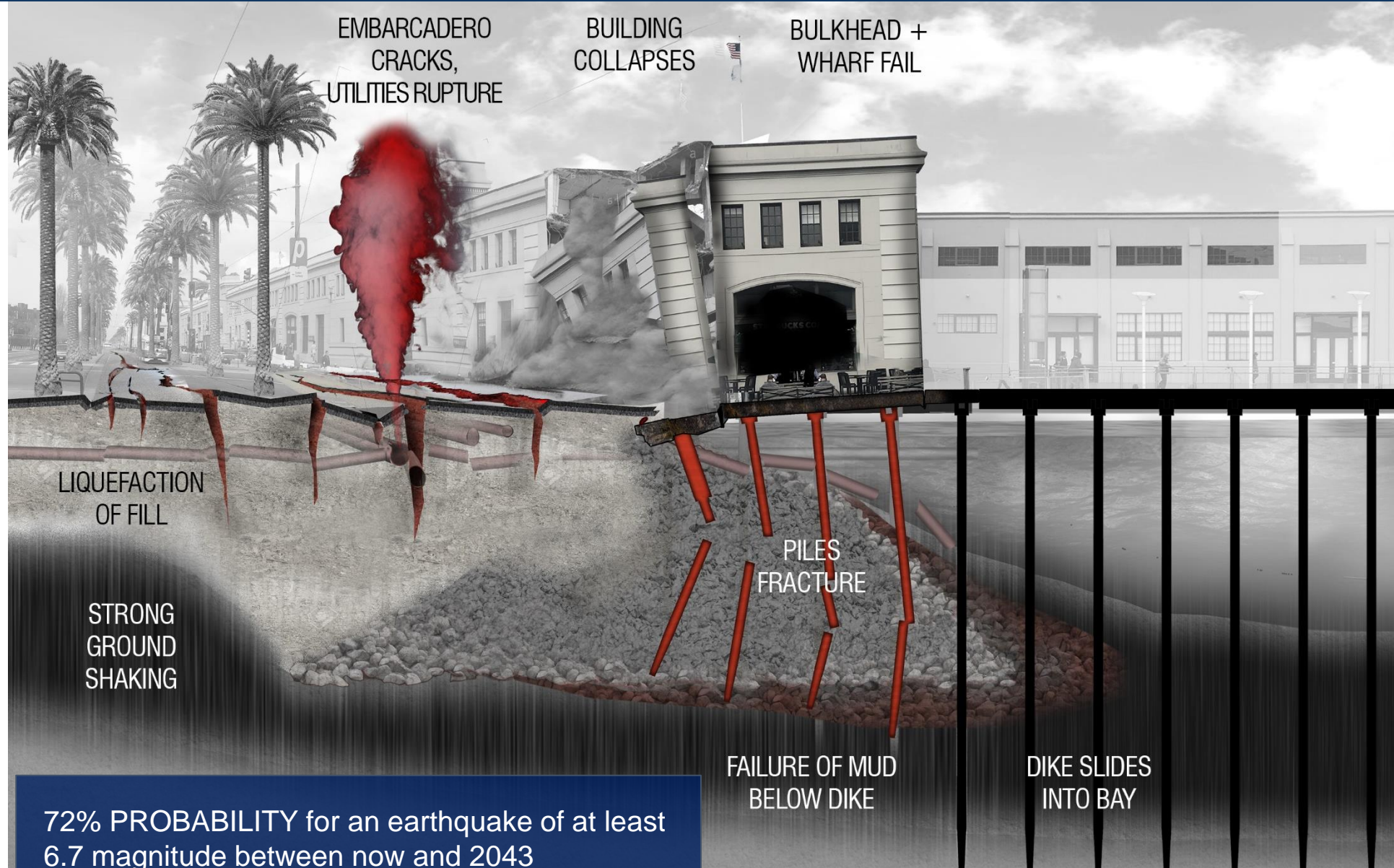
This meeting is designed to allow us to explore risk reduction and adaptive capacity along the Embarcadero Seawall, identify priorities and develop an approach to phase actions based on the risks and priorities as they change over time.

UNDERSTANDING THE EMBARCADERO SEAWALL

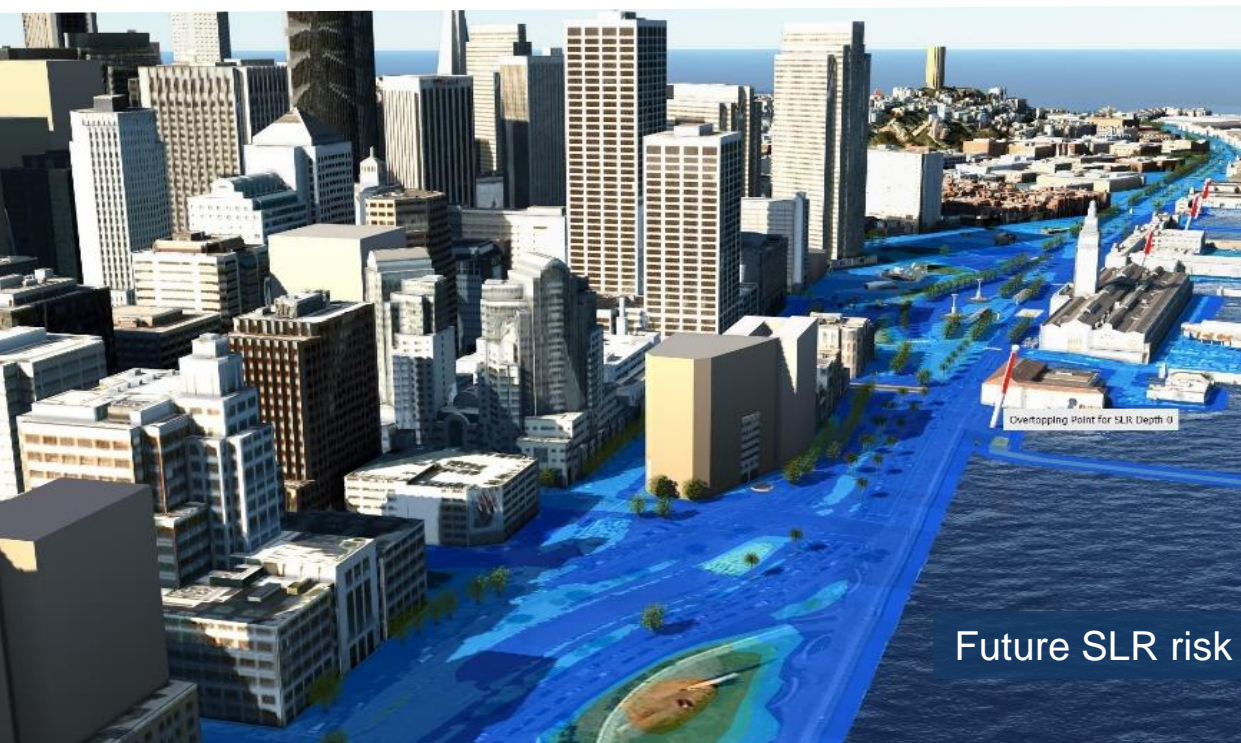
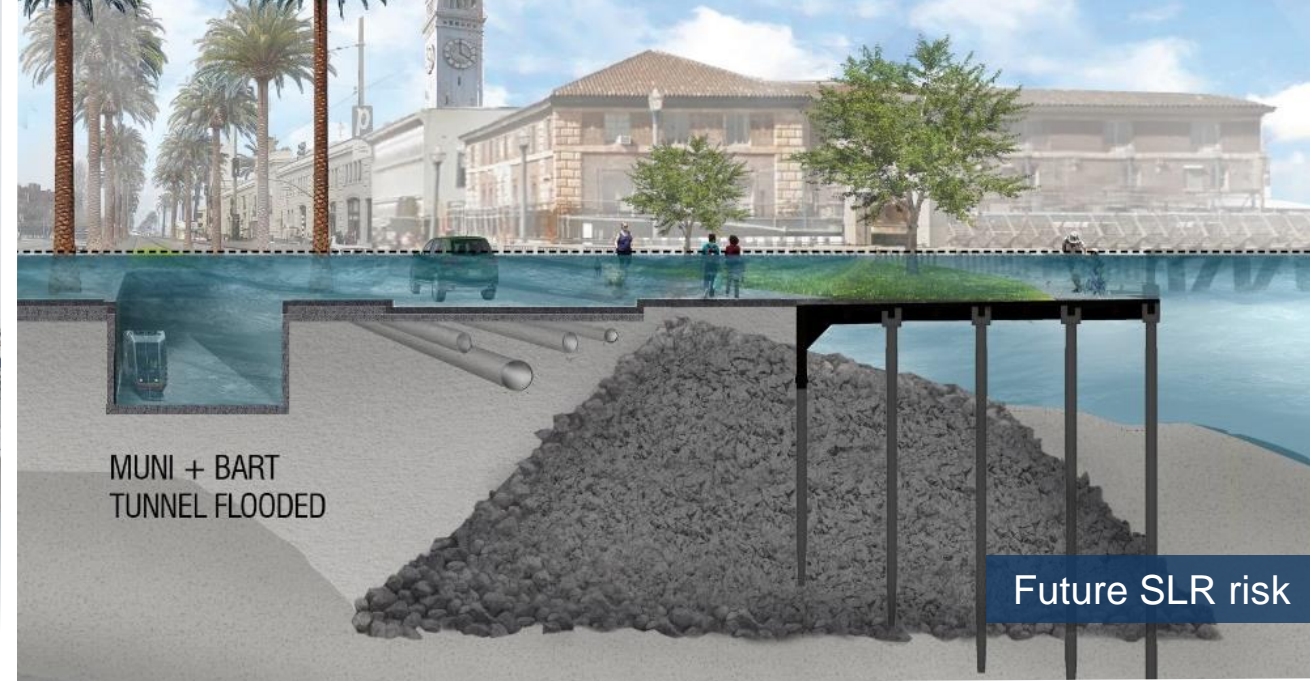
- Built 1878 to 1915
- Rock dike & bulkhead
- 3 miles long
- 500 acres of filled land
- 126 acres pier & wharves today



SAN FRANCISCO FACES URGENT EARTHQUAKE RISKS



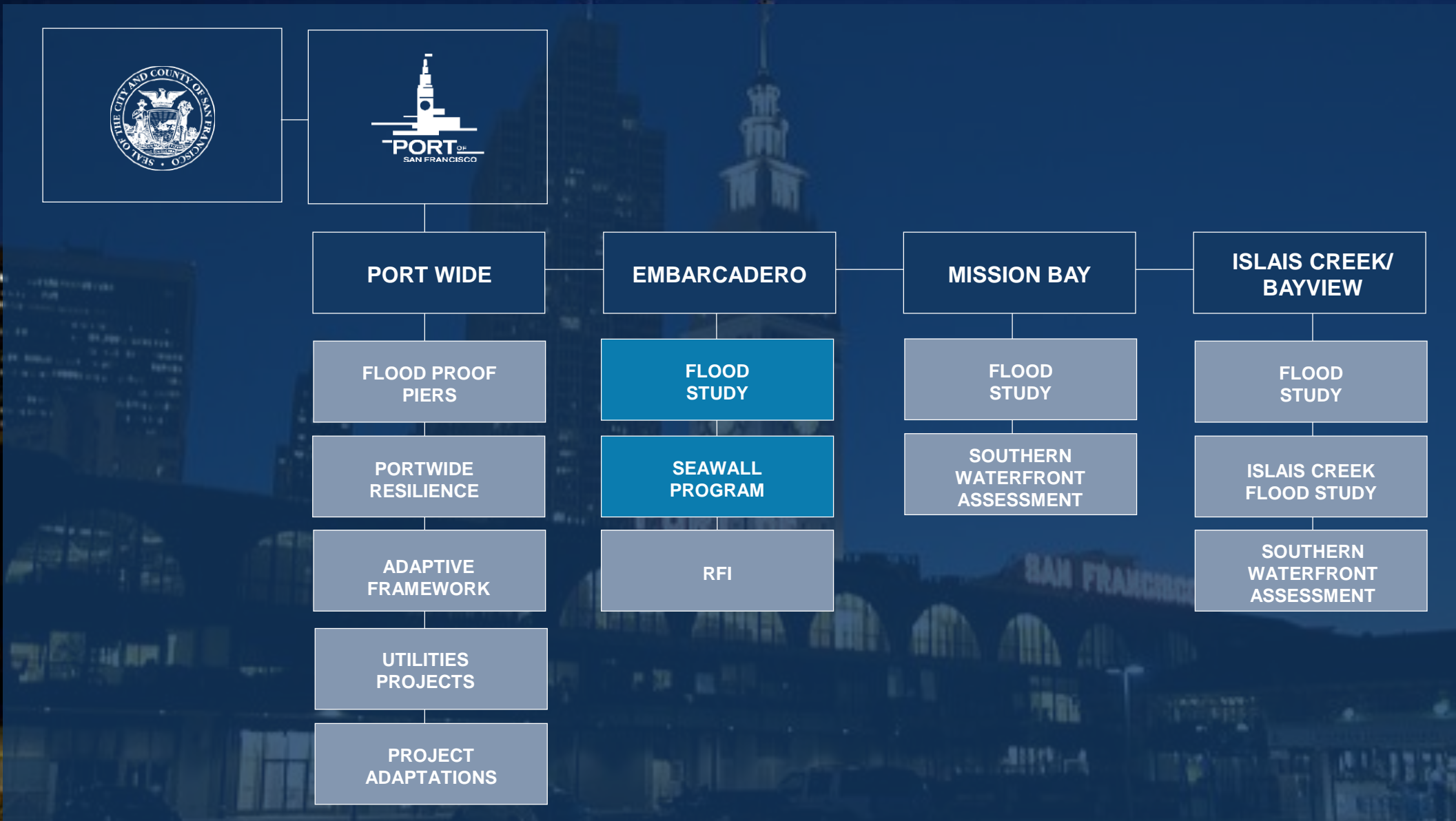
72% PROBABILITY for an earthquake of at least 6.7 magnitude between now and 2043



INCREASING FLOOD RISKS FROM SEA LEVEL RISE

- Muni and BART tunnels subject to flood risk today
- Up to 3 feet by 2050
- Up to 6-10 feet by 2100

CITY AND PORT OF SF RESILIENCE STRATEGY



PORT AND SEAWALL RESILIENCE STRATEGY

PHASE

1

STRENGTHEN ELEMENT

STRENGTHEN THE SEAWALL FOR PUBLIC SAFETY

Objective:
Immediately implement highest priority disaster response and life safety projects along the Embarcadero Seawall

Planning and Implementation Horizon:
2018 – 2026

Priorities:
Current Seismic & Flood Risk

Geographic Focus:
Embarcadero Seawall

PHASE

2

ADAPT ELEMENT

ADAPT TO MID-CENTURY RISKS

Objective:
Identify policies and projects that will result in a Port that is resilient to seismic and increasing flood risks and that can respond to changing priorities. Projects will be integrated into city, regional, and private actions, resulting in coordinated actions to increase waterfront resilience.

Planning and Implementation Horizon:
2018 – 2050, Plan updated every five years

Priorities:
Seismic Risk and Future Flood Risk

Geographic Focus:
Entire Port Jurisdiction

PHASE

3

ENVISION ELEMENT

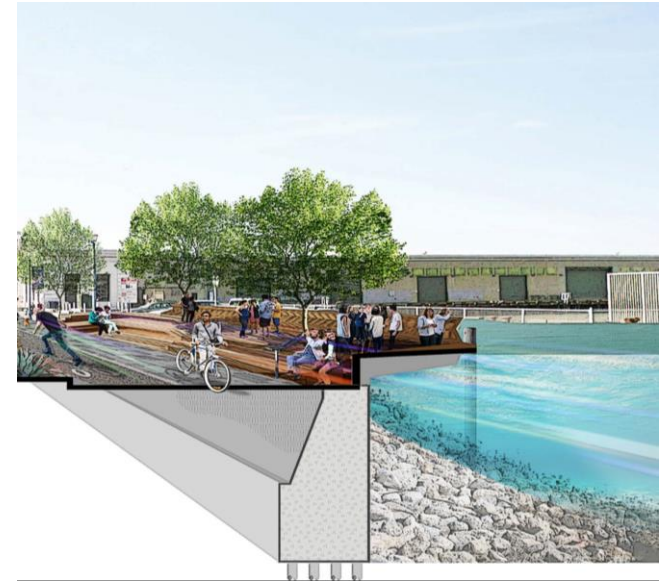
ENVISION THE WATERFRONT IN 2100

Objective:
Develop visions that can respond to remaining seismic risk and increasing flood risks and have an ongoing public conversation about the trade-offs of different options.

Planning and Implementation Horizon:
2018 – 2100, Vision Element updated every 10 years

Priorities:
Future Flood Risk

Geographic Focus:
Entire Port Jurisdiction



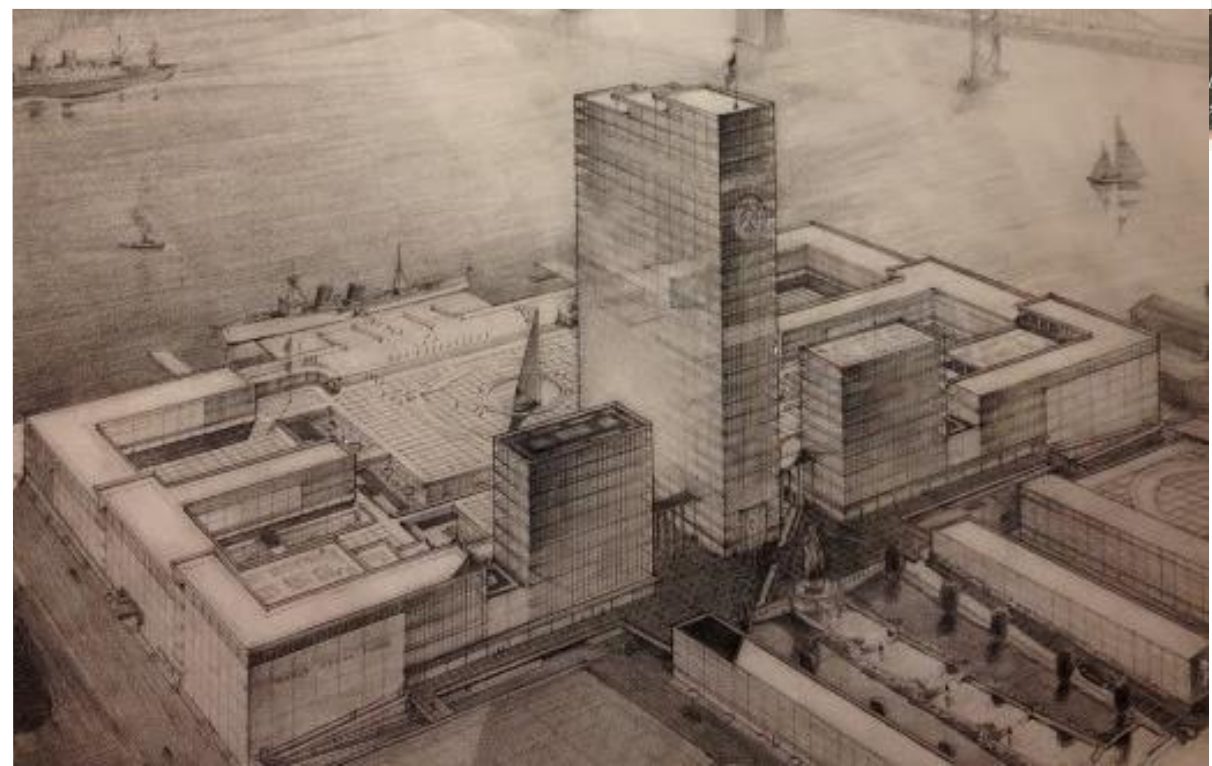


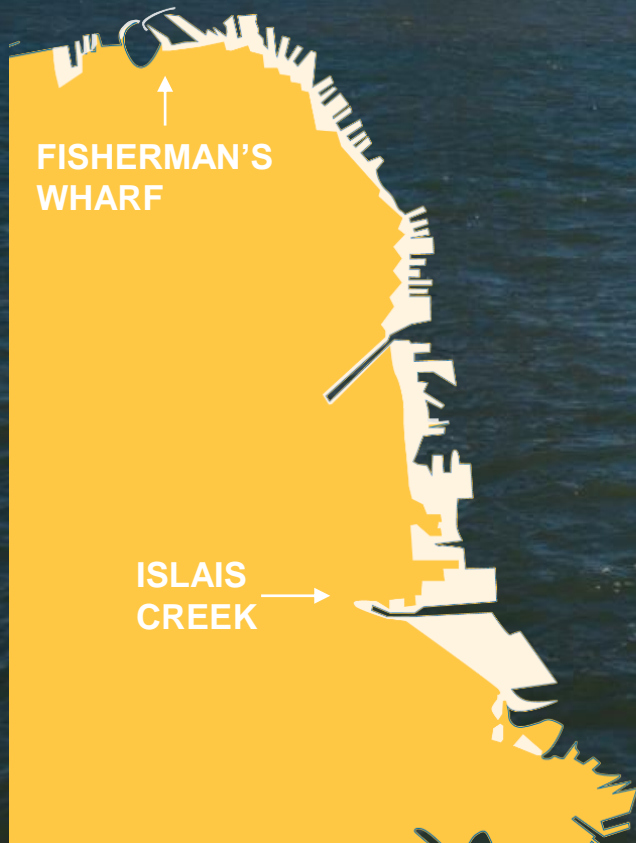
SEAWALL PROGRAM OVERVIEW

- First priority is to **protect life safety and emergency response** from seismic events
- Up to \$5 billion over 30+ years
- Funding and financing from City, state, federal and private
- Will address **as much flood risk as possible and create a foundation** for addressing flood risk
- **Adaptive program framework** to be able to respond to changes in science, priorities and monitoring
- **Robust engagement and outreach**

WHY PHASE THE SEAWALL PROGRAM?

- Funding and financing considerations
- Limiting disruption along the Seawall and entire Port jurisdiction for Port and City businesses and communities
- Changes in science
- Need to consider changes in priorities and context
- Robust community and stakeholder engagement
 - Adapt plan updated every 5 years
 - Envision plan updated every 10 years





HIGHLIGHTS

- Federal funding, expertise, partnership
- Port is the local sponsor
- Flood Study is entire Port jurisdiction
- Focus on flood risk
- Federal interest is key and local priorities considered

STUDY OVERVIEW

- Assess the risks
- Identify problems, opportunities, constraints, considerations
- Engage the community and stakeholders throughout the process
- Develop a range of alternatives
- Develop a National Economic Development plan designed to result in meaningful flood risk reduction
- Study schedule is under development, but typically takes 3 to 5 years

SEAWALL PROGRAM YEAR IN REVIEW

DATA COLLECTION + FIELD WORK

- Existing Assets
- Bathymetric & Laser Survey
- Geotechnical Exploration

RISK ASSESSMENT

- Earthquake Risk
- Flood Risk

COMMUNITY & STAKEHOLDER ENGAGEMENT

FUNDING FOR PHASE I: IMMEDIATE LIFE SAFETY RISKS

- Thank you! Over 82% voted for the bond measure

ARMY CORPS FLOOD STUDY





RECAP OF COMMUNITY MEETING #2

After the presentations, attendees joined Port staff for an exercise to identify priorities and concerns.



What do you love most about the waterfront?



What assets are the most important to the city?



If disaster strikes, what is of the most concern?



- Bay Bridge lights
- Dining
- Embarcadero Promenade
- Exploratorium
- The Ferry Building
- Marine life
- Muni
- Open Space
- Public Space
- Views

- Businesses
- Disaster recovery
- Economy
- The Ferry Building
- Housing
- Open space
- Piers
- Tourism
- Transit
- Utilities

- Emergence Response and Evacuation
- Fire
- Housing
- Lifeline Infrastructure
- Shelter
- Staging Areas
- Transportation
- Utilities
- Water Supply

AN OVERVIEW OF WHAT WE HEARD

Your engagement at our last meeting helped us draft the program goals.

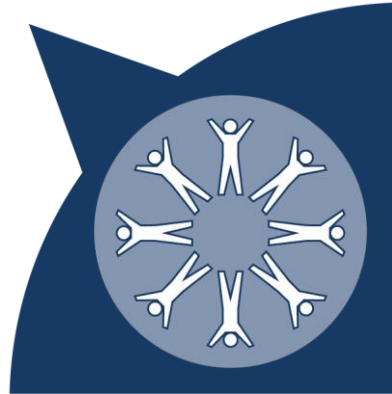
For example, a draft Strengthen goal is:

Protect, and if possible enhance, critical transportation (and utility) assets within the Seawall study area, that serve the City and the region.

PORT RESILIENCE GOALS

SOCIETY & EQUITY

- Protect all communities and what they rely on
- Protect people near the Port
- Preserve and enhance historic resources
- Advance equity and environmental justice



ENVIRONMENT

- Preserve and protect the environment including habitat, water and air quality
- Use natural approaches to risk reduction wherever possible



ECONOMY

- Maintain and improve local economic vitality and access to employment
- Recognize regional connectedness
- Provide opportunities for local businesses and communities to thrive



GOVERNANCE

- Build Port's resilience by improving capacity and partnerships among a broad range of stakeholders



STRENGTHEN GOALS



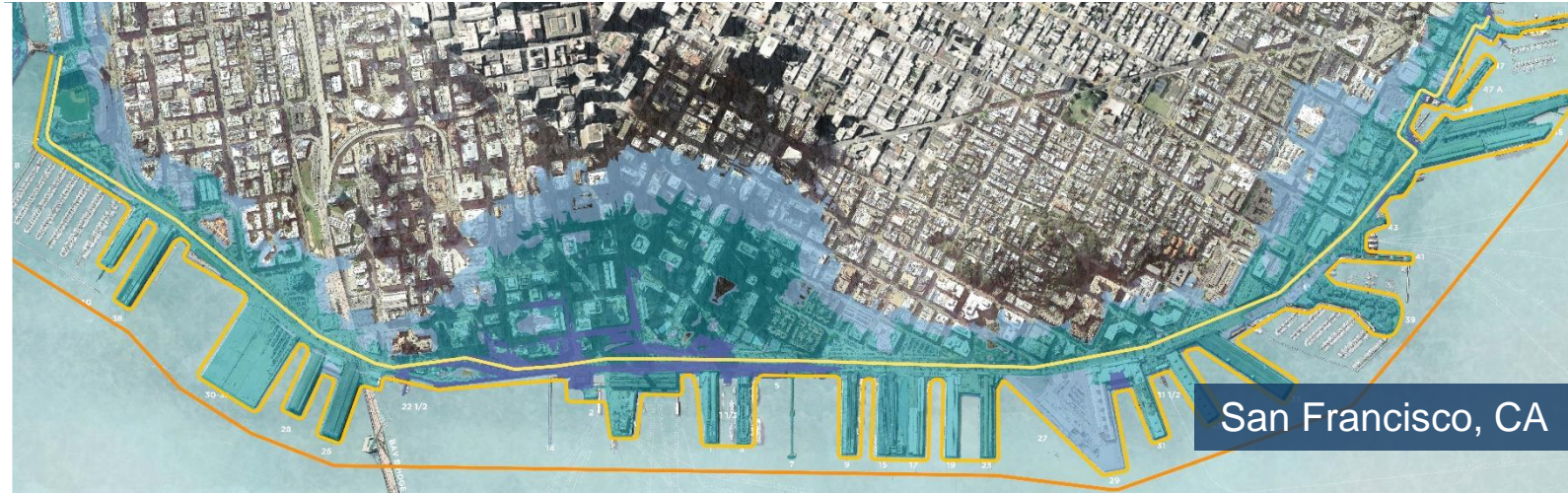
- PROTECT LIFE SAFETY AND DISASTER RECOVERY CAPABILITIES
- PROTECT AND ENHANCE ASSETS WHERE POSSIBLE
- MINIMIZE DISRUPTION TO THE PORT AND THE CITY
- USE ADAPT AND ENVISION PHASES TO INFORM STRATEGIES

ENVISION GOALS



- PROTECT UNIQUE AND CRITICAL ASSETS
- CREATE FUTURE SHORELINE ASSETS AND ECONOMIC OPPORTUNITIES
- IMPROVE THE HEALTH OF THE BAY AND WATERFRONT
- MAINTAIN WORLD CLASS WATERFRONT DESTINATION

LINES OF DEFENSE



- One way to think about flood risk management is to consider the possible locations for flood measures – or what we’re calling “lines of defense”
- Some parts of the Bay shoreline provide a broader range of options, others are more constrained due to shoreline uses, type and space
- San Francisco’s waterfront is on the constrained side by uses (housing, utilities, transportation, historic, maritime), type and space

POSSIBLE FLOOD MANAGEMENT EXAMPLES



Breakwaters



Coastal Defense



Deployable Flood Barrier



Flood Wall



Resilient Parklands



Super Levee



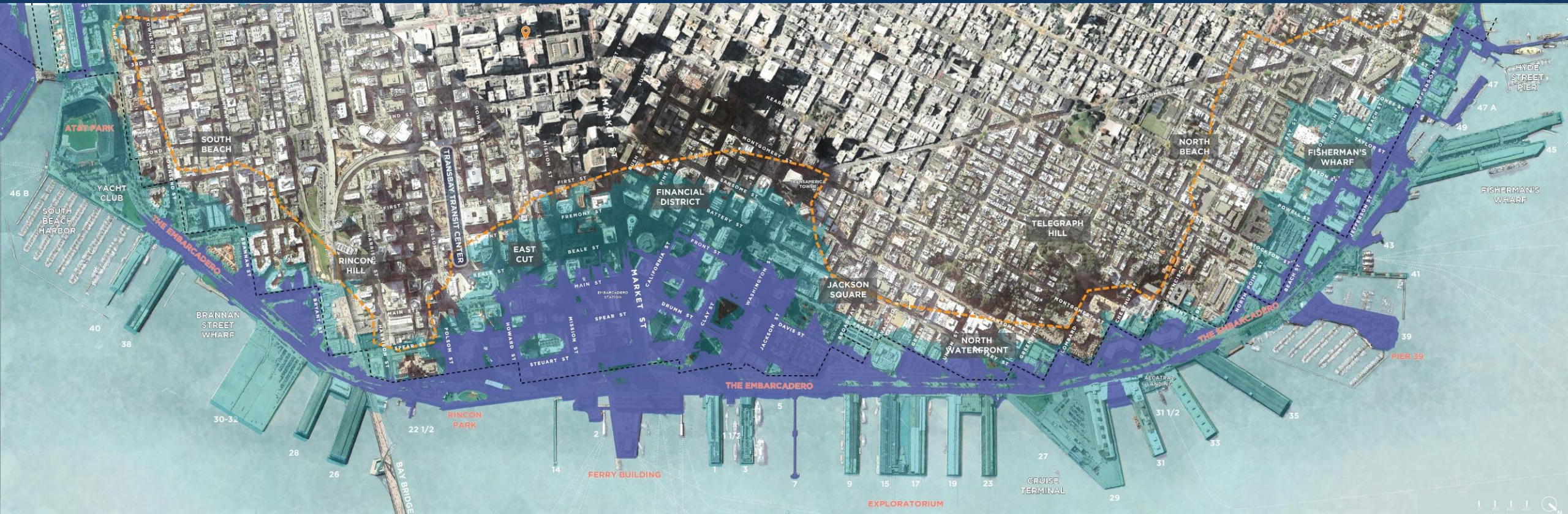
THANK YOU & GET INVOLVED!

- Please sign up for our monthly eNewsletter
- Take a free Seawall walking tour!
- Visit sfseawall.com and follow the Port on social media
- For any follow-up questions, please contact:

Lindy Lowe
Resilience Program
Port of San Francisco
lindy.lowe@sfport.com

SEAWALL GAME OF HAZARDS
part II

WHAT IS THE VISION?



ENVISION
2050 – 2100

HOW DO WE GET THERE?



ADAPT
2026 – 2050

WHAT DO WE DO FIRST?



STRENGTHEN
2018-2026

STRENGTHEN

2018 – 2026



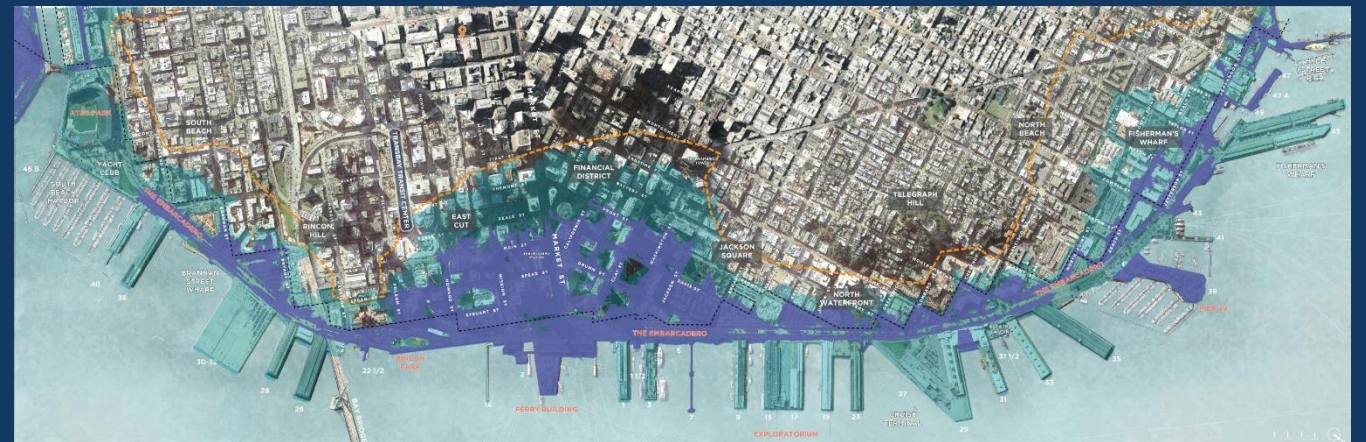
ADAPT

2026 – 2050



ENVISION

2050 – 2100



STRENGTHEN the waterfront from current seismic and flood hazards

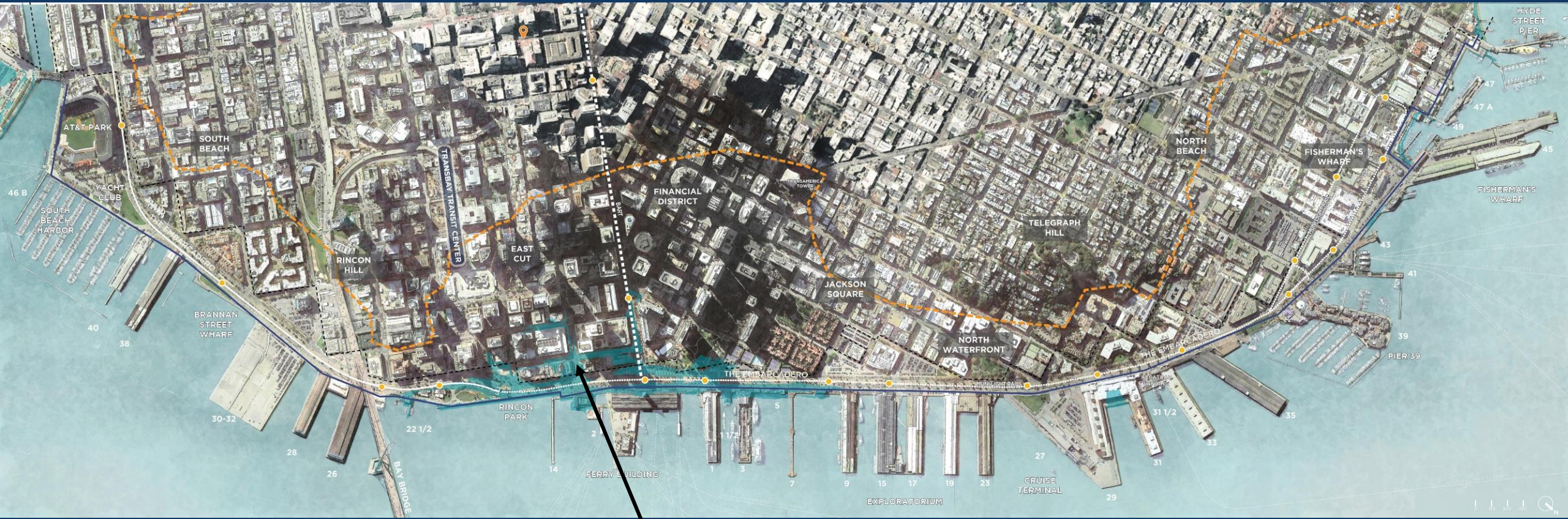


STRENGTHEN the waterfront from current seismic and flood hazards



SEISMIC HAZARD ZONE

STRENGTHEN the waterfront from current seismic and flood hazards



NEAR TERM FLOODING 2030-2050

STRENGTHEN the waterfront from current seismic and flood hazards



LIFE SAFETY / EMERGENCY RESPONSE ASSETS

 EMERGENCY OPERATIONS CENTER	 EVACUATION FACILITY	 DISASTER RECOVERY	 ASSEMBLY
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STRENGTHEN the waterfront from current seismic and flood hazards



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ADAPT the waterfront up to 3 feet of sea level rise by 2050

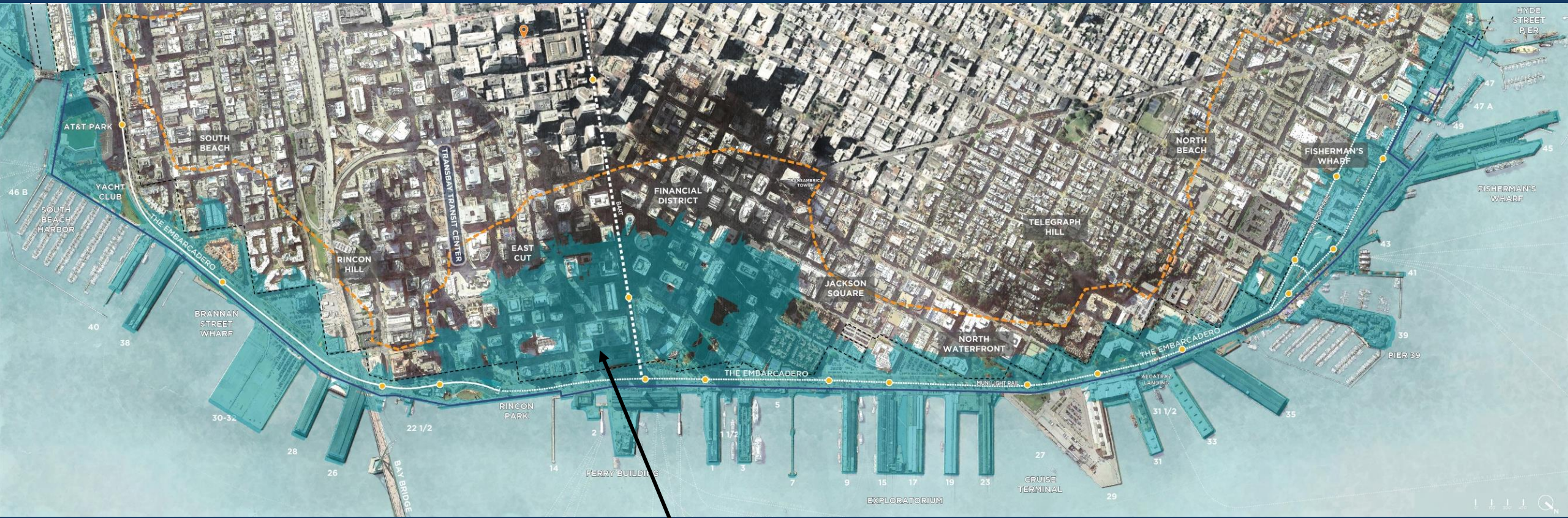


ADAPT the waterfront up to 3 feet of sea level rise by 2050



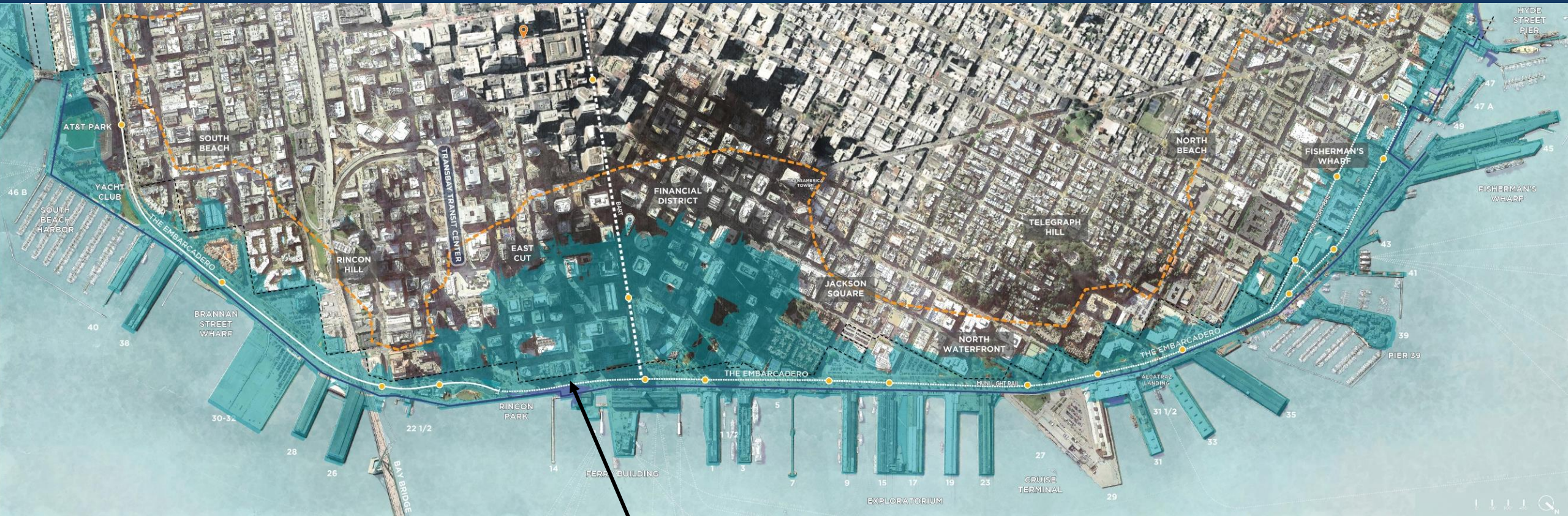
SEISMIC HAZARD ZONE

ADAPT the waterfront up to 3 feet of sea level rise by 2050



100 YEAR FLOODING WITH 3' SLR

ADAPT the waterfront up to 3 feet of sea level rise by 2050



KING TIDE FLOODING WITH 3' SLR

ADAPT the waterfront up to 3 feet of sea level rise by 2050



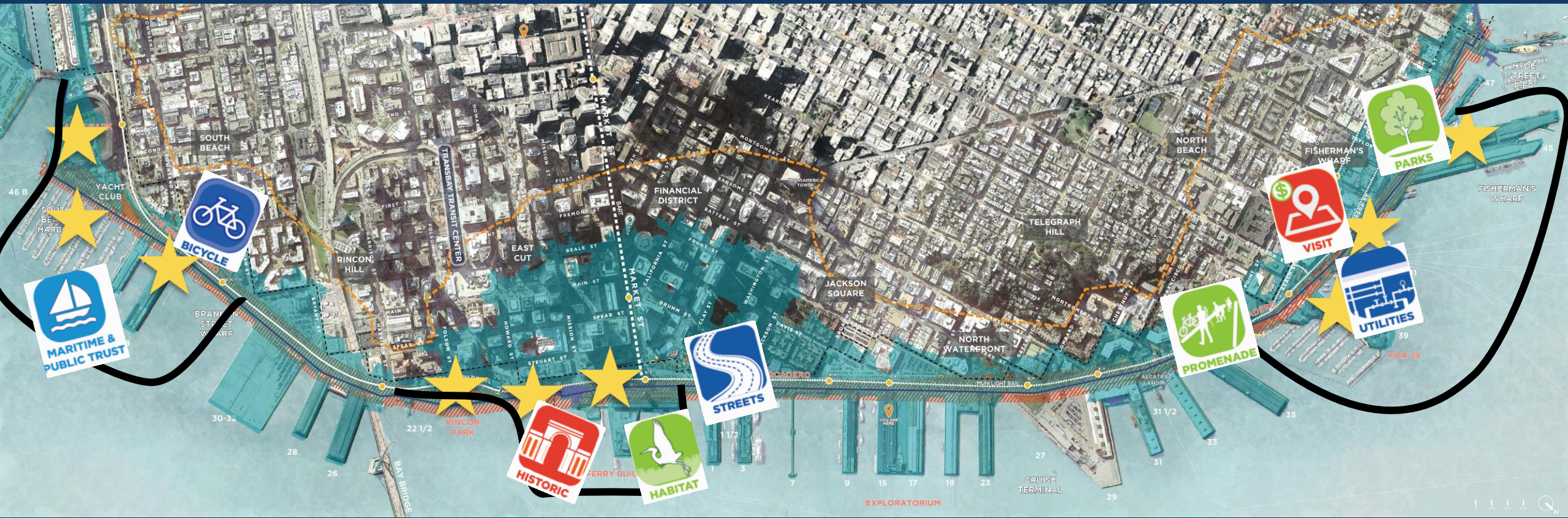
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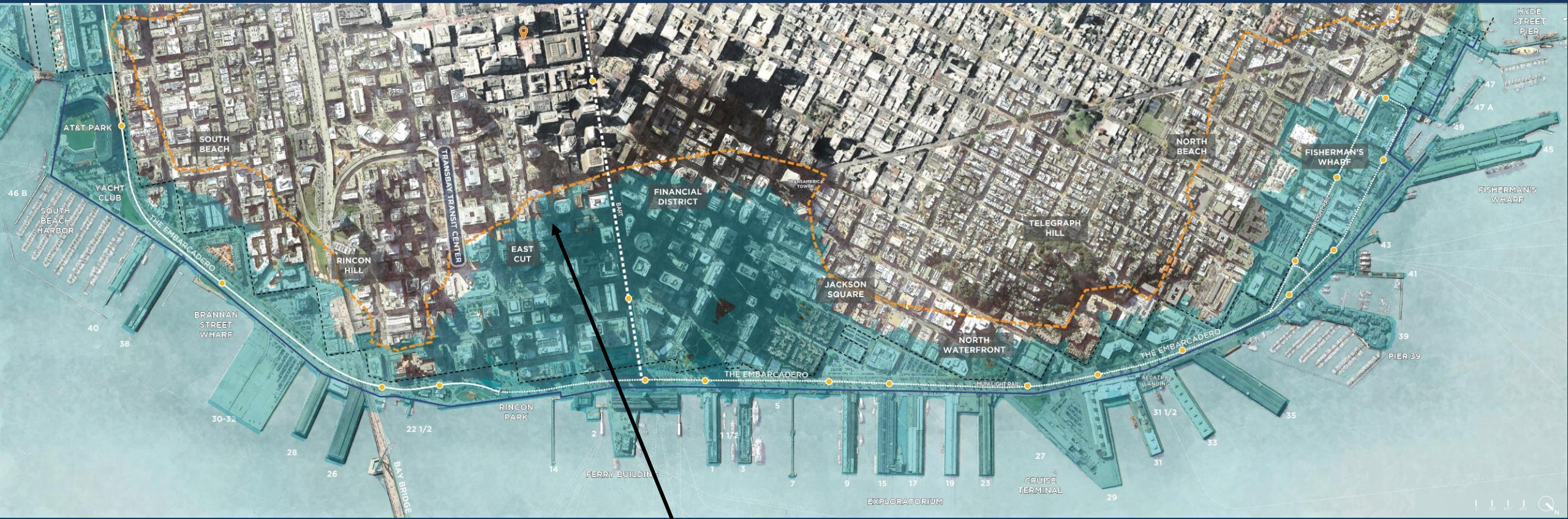
ADAPT the waterfront up to 3 feet of sea level rise by 2050



ENVISION a future waterfront with 6 feet of sea level rise by 2100

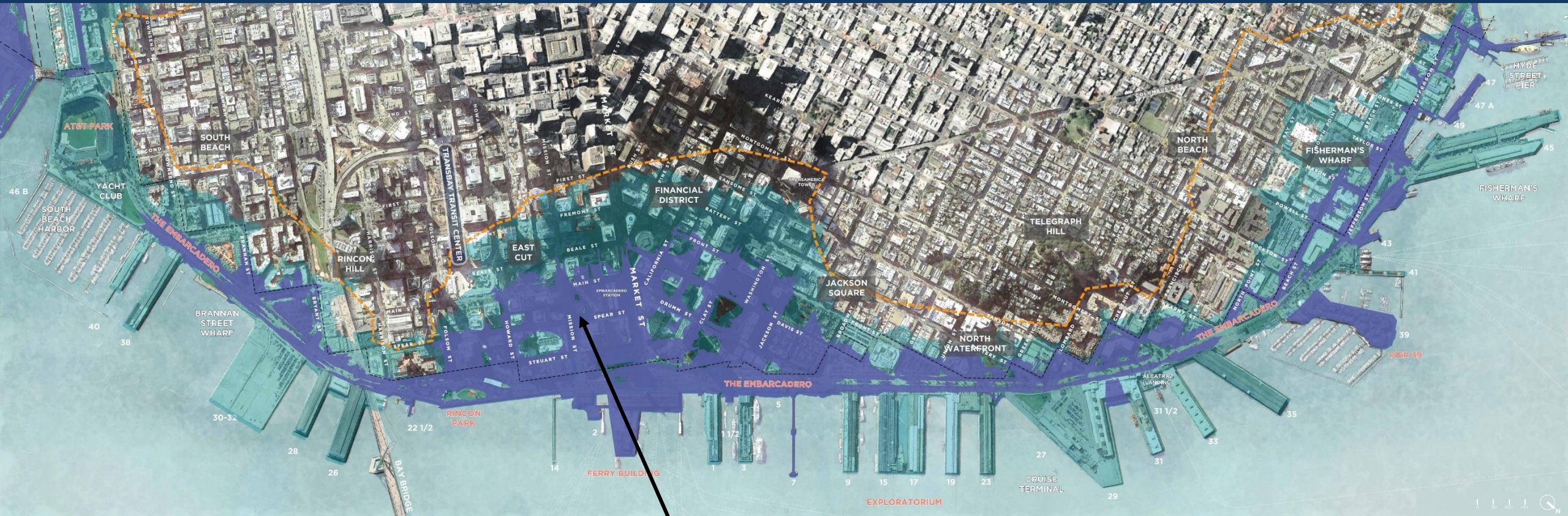


ENVISION a future waterfront with 6 feet of sea level rise by 2100



100 YEAR FLOODING WITH 6' SLR

ENVISION a future waterfront with 6 feet of sea level rise by 2100



KING TIDE FLOODING WITH 6' SLR

ENVISION a future waterfront with 6 feet of sea level rise by 2100



ENVISION a future waterfront with 6 feet of sea level rise by 2100



STRENGTHEN

2018 – 2026



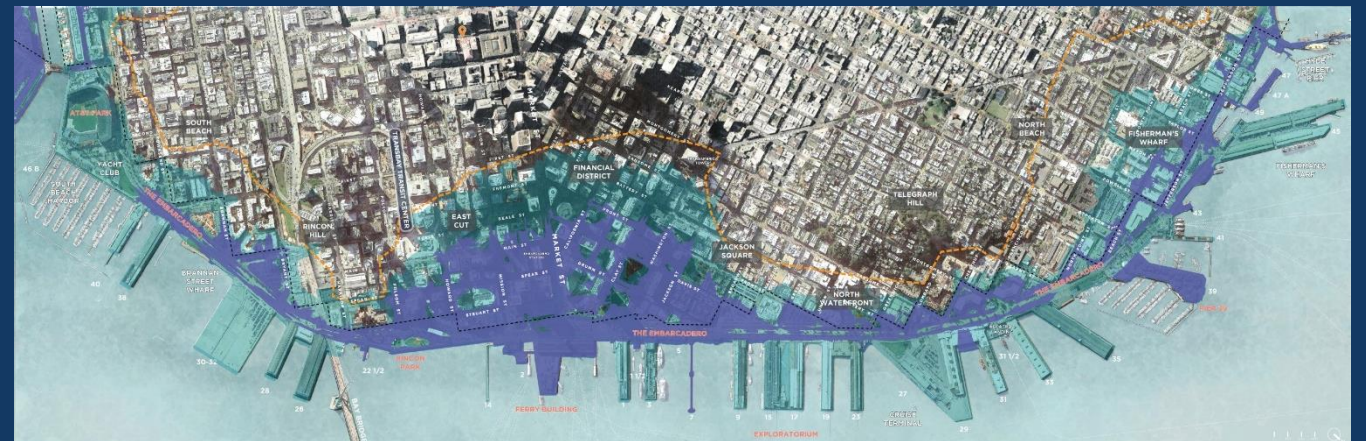
ADAPT

2026 – 2050



ENVISION

2050 – 2100



RULES OF THE GAME

- Be a polite fellow citizen and listener
- Recognize that this is a game
- Follow the instructions and guidance of your facilitator
- Next meeting focus on detailed strategies – this is high level
- Have fun!

Hello
my name is

AWESOME!