

2018 Embarcadero Seawall Earthquake Safety Bond

Quarterly Status Report

Presented to the Citizens' General Obligation Bond
Oversight Committee

For the Second Quarter of FY 20-21 as of December 2020



Waterfront Resilience Program

AGENDA

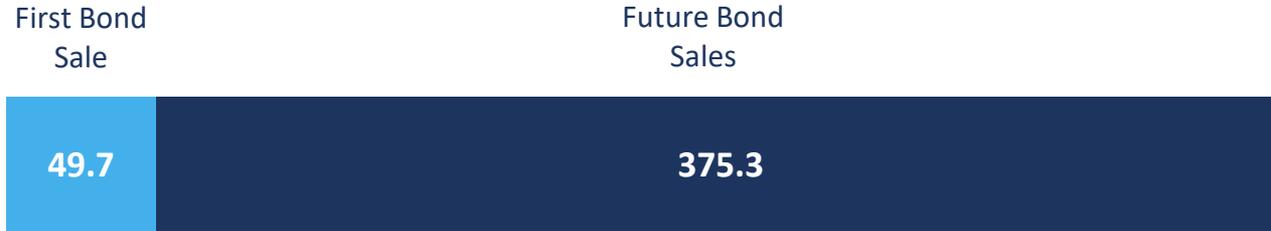
Presentation Overview



- Update on 2018 Proposition A Seawall Bond
- Litigation and Status of 1st Bond Sale
- Waterfront Resilience Program Overview
- Embarcadero Seawall Program
- USACE Flood Study
- Seismic and Flood Measures
- 2018 Proposition A Quarterly Report
- Next Steps

2018 EMBARCADERO SEAWALL EARTHQUAKE SAFETY BOND

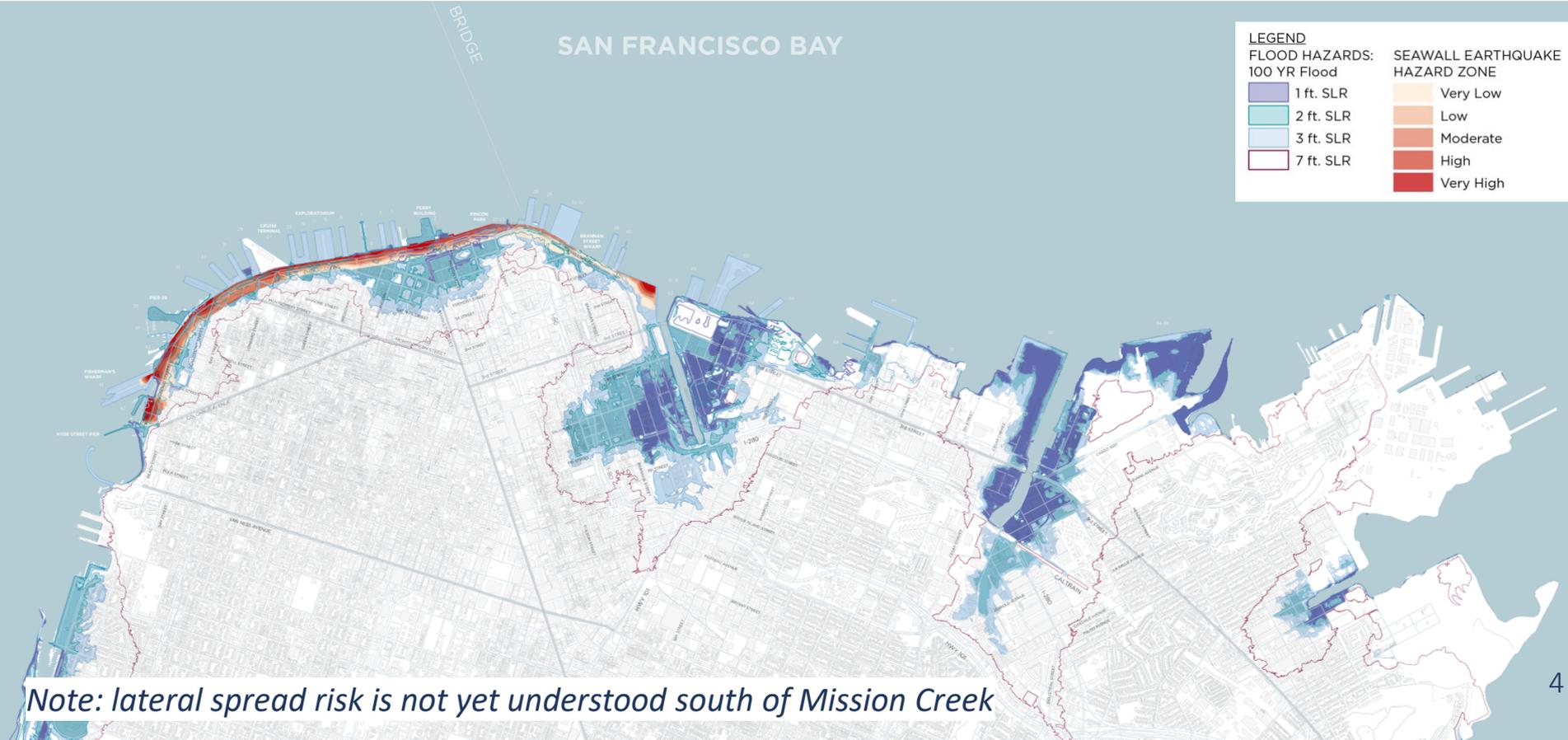
First Bond Sale



- First Bond sale was approved by the Board of Supervisors and Mayor’s Office in July 2019
- Bond sale was delayed due to legal challenge (Denny v. Arntz et al. Case: A158029, 1st District, Division 2). Complainant Denny asserted several causes of action (ballot simplification statement was not impartial, ballot question was too long, etc.) and sought to nullify the approval of Proposition A (November 2018). City Attorney Dennis Herrera successfully defended the City’s actions at trial and the California Court of Appeals upheld the lower court decision. The California Supreme Court denied a petition for review.
- **First Bond sale finalized on June 2, 2020 for \$49,675,000.**
- Port has been using City, Port, and state grant funds to advance the Embarcadero Seawall Program since voters approved Proposition A in 2018. Eligible expenditures will be repaid by proceeds of bond sales.

PORTWIDE RESILIENCE NEEDS

Seismic and Flood Risk Along the Waterfront



WATERFRONT RESILIENCE PROGRAM

Draft Goal 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.



WATERFRONT RESILIENCE PROGRAM DRAFT PRINCIPLES

Affirmed through Robust Community Engagement

- **Prioritize** life safety and emergency response
- **Advance** equity throughout the Waterfront Resilience Program, including through community and stakeholder engagement, planning, contracting, jobs and decision-making
- **Enhance** and sustain economic and ecological opportunities
- **Inspire** an adaptable waterfront that:
 - Improves the health of the Bay
 - Ensures public access to the waterfront and historic places and an inviting waterfront for all
 - Protects and preserves historic and maritime resources
 - Provides opportunities for diverse families, businesses, and neighborhoods to thrive
- **Lead** a transparent, innovative, collaborative, and adaptive Resilience Program



WATERFRONT RESILIENCE PROGRAM EFFORTS

Program and City Resilience Projects and Efforts



Embarcadero Seawall Program

Update and Key Findings from the Multi-Hazard Risk Assessment (MHRA)

EMBARCADERO SEAWALL PROGRAM

Program Overview



- **Project Area:** Fisherman’s Wharf to Mission Creek
- **Timing:** 2017 to 2021 project planning followed by implementation / construction
- **Focus:** Seismic and flood risk associated with the Embarcadero Seawall
- **Funding:** \$425 million General Obligation Bond passed in November 2018
- **Embarcadero Historic District:** The Embarcadero Seawall, bulkhead wharves and piers are contributing resources

WHAT IS THE MULTI-HAZARD RISK ASSESSMENT (MHRA)?

Proposition A Required a Detailed Safety Assessment of the Embarcadero

Refined investigation of flood and seismic hazards along the Embarcadero Seawall, from Fisherman's Wharf to Mission Creek

SAN FRANCISCO BAY

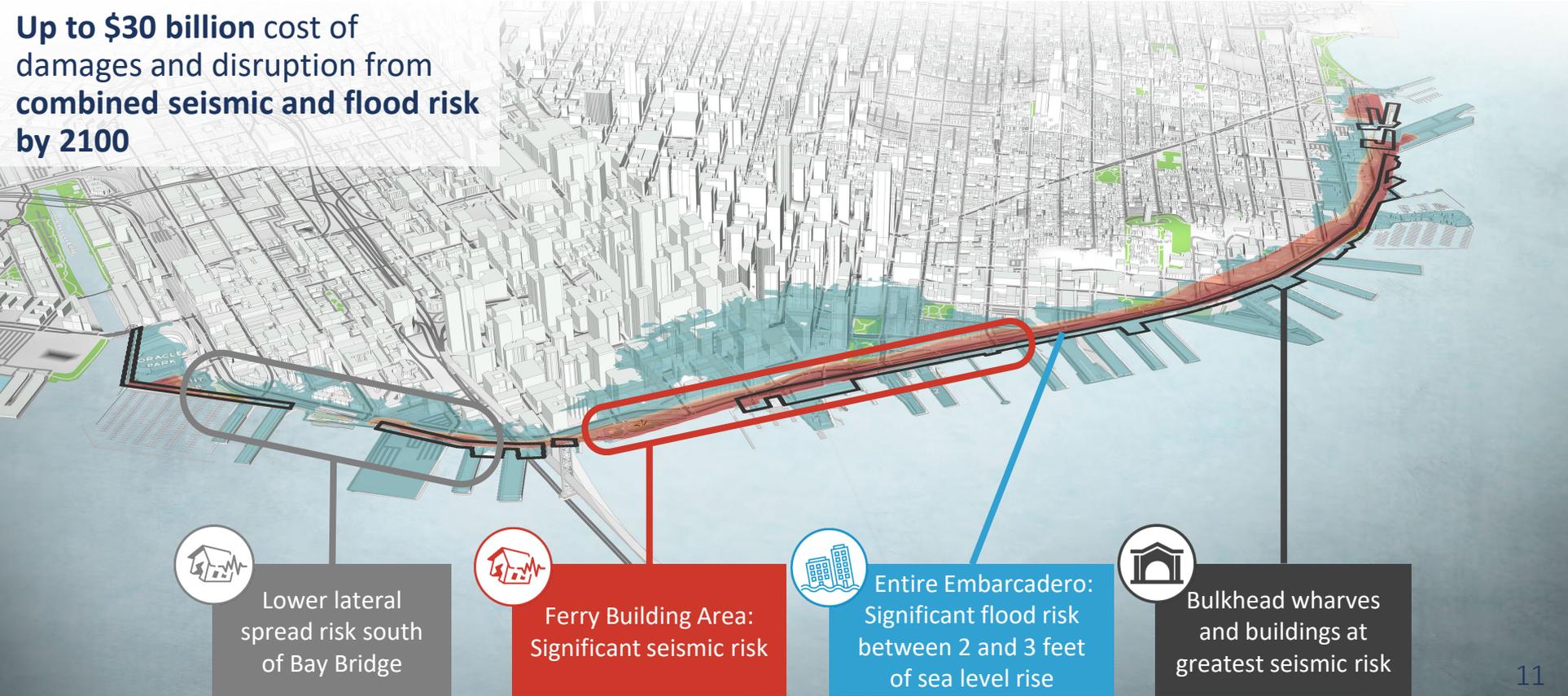


- Range of seismic hazards assessed within Embarcadero Seawall area
- Range of flood hazard scenarios assessed including impacts to critical City infrastructure
- Methodology: Bored holes and used lasers to uncover what is happening under the Bay and worked closely with agency partners to understand impacts to assets and services that the City and the region rely upon

HAZARDS AND CONSEQUENCES

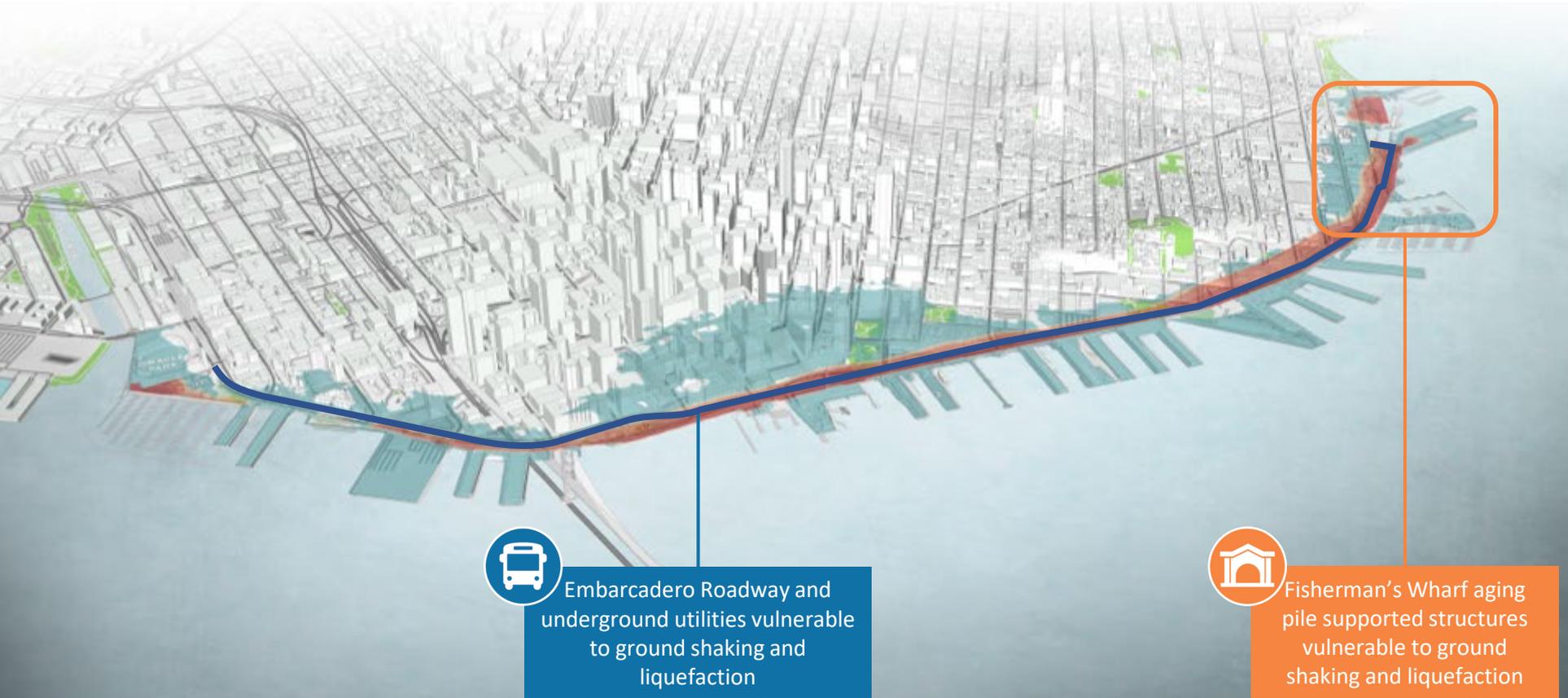
MHRA Key Findings

Up to \$30 billion cost of damages and disruption from combined seismic and flood risk by 2100



OTHER EARTHQUAKE HAZARDS AND CONSEQUENCES

MHRA Key Findings



EXISTING SHORELINE

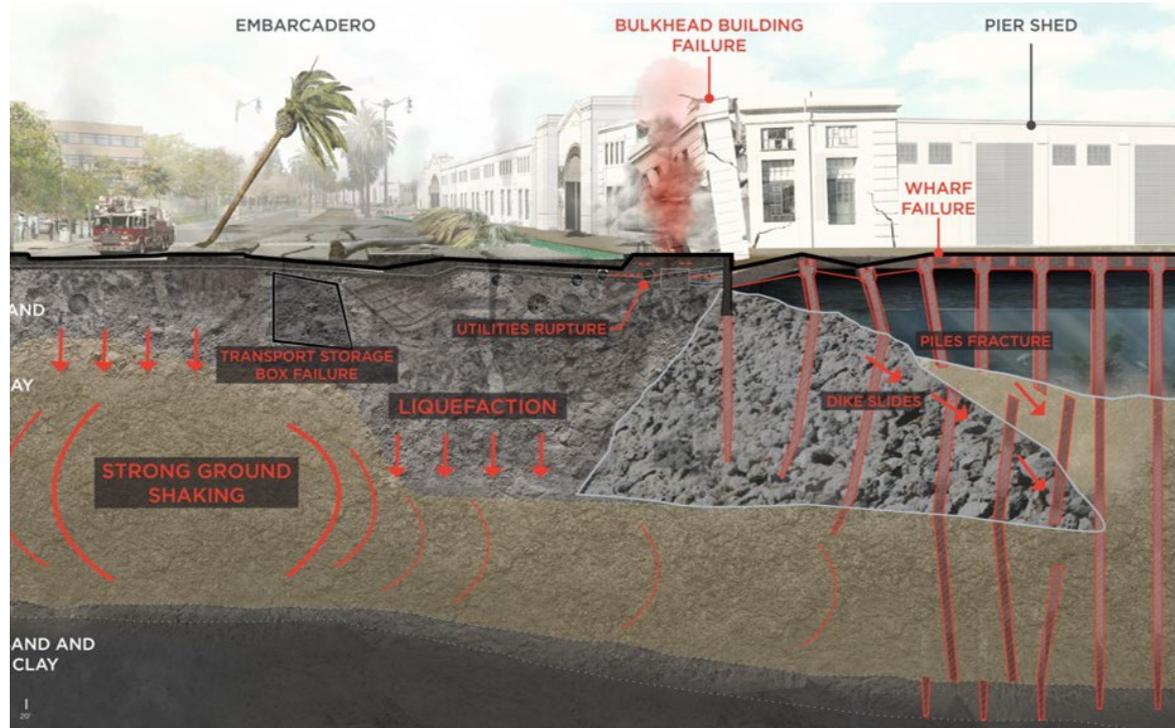
Critical Components of the Waterfront



- Seawall and Bulkhead Wharves are the city's flood protection and are highly vulnerable to seismic events

BULKHEAD WHARF EARTHQUAKE HAZARDS

MHRA Key Findings



Liquefaction induced lateral spreading at Port de Port-au-Prince



Lateral spreading cause by 1906 earthquake in San Francisco

BULKHEAD WHARF

WHARF TODAY AT CURRENT WATER LEVEL



WHARF TODAY WITH WATER LEVEL SURGE



Wharf is a current protection measure
– King Tide conditions today

LOCATIONS OF INTEREST

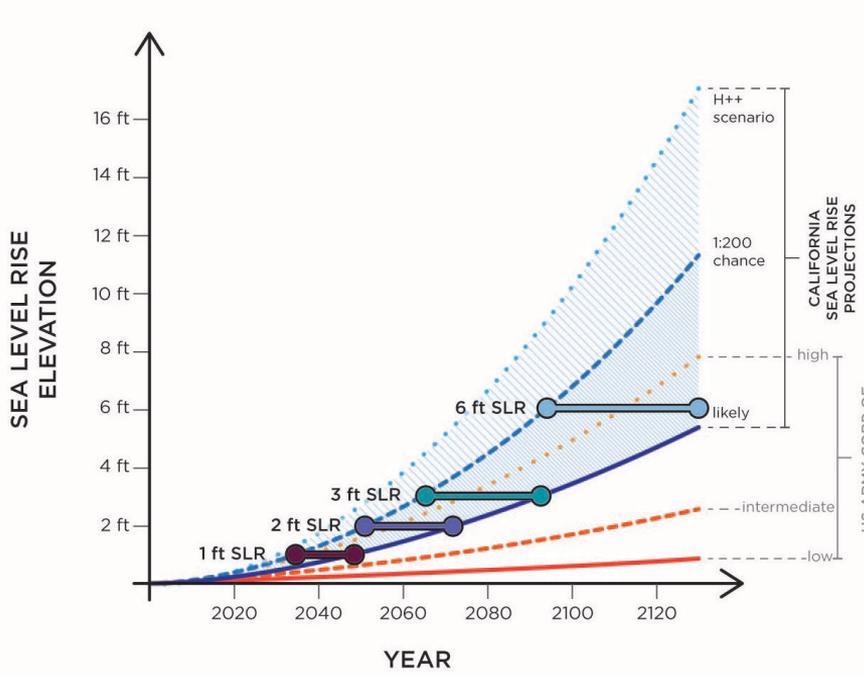


FLOOD HAZARDS

MHRA Key Findings

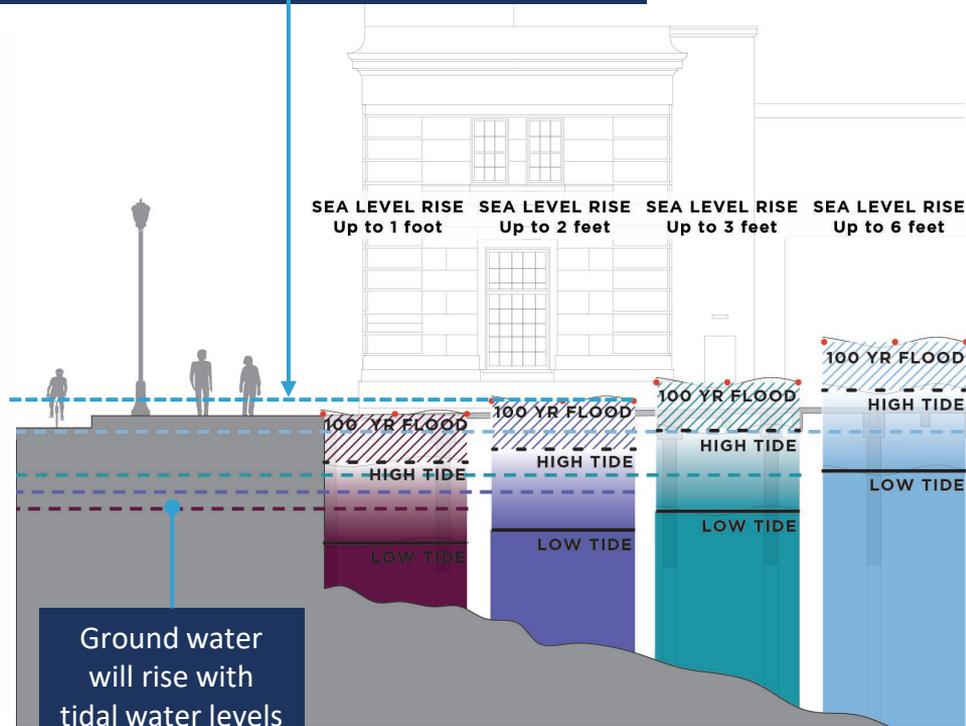


Flood risk tipping point at 2' of sea level rise



CALIFORNIA SEA LEVEL RISE PROJECTIONS
U.S. ARMY CORP OF ENGINEERS PROJECTIONS

State of CA – Updated 2018; USACE – Updated 2013



Ground water will rise with tidal water levels due to SLR



U.S. Army Corps of Engineers San Francisco Waterfront Flood Resiliency Study



USACE FLOOD RESILIENCY STUDY

Overview and Key Highlights



- Port is local sponsor, seeking assistance since 2012
- Local and Federal Expertise
- ~7 years (subject to waiver), 50/50 cost share
- Assess flooding under five sea level rise curves, including three USACE curves (low, medium, high) and two additional State of California curves
- Robust community and stakeholder input
- If USACE finds a Federal interest and Congress authorizes a Project:
 - Design/construction of project cost-shared 65% Federal, 35% Local

USACE FLOOD RESILIENCY STUDY PROCESS

Develop, evaluate, refine, and narrow alternatives under consideration

1

Future Without Project (FWOP) - **in process**
(flood damages and consequences)

Detailed Economic Analysis

- National Economic Development (NED) Account
- Regional Economic Development (RED) Account
- Other Social Effects (OSE)
- Environmental Quality

2

Problems, Opportunities, Objectives,
Constraints, and Considerations
(POOCCs)

3

Iterative Multi Step Alternative Formulation

- Initial Array
- Focused Array – **We Are Here**
- Final Array

4

National Economic Development (NED)
Plan / Locally Preferred Plan (LPP)

5

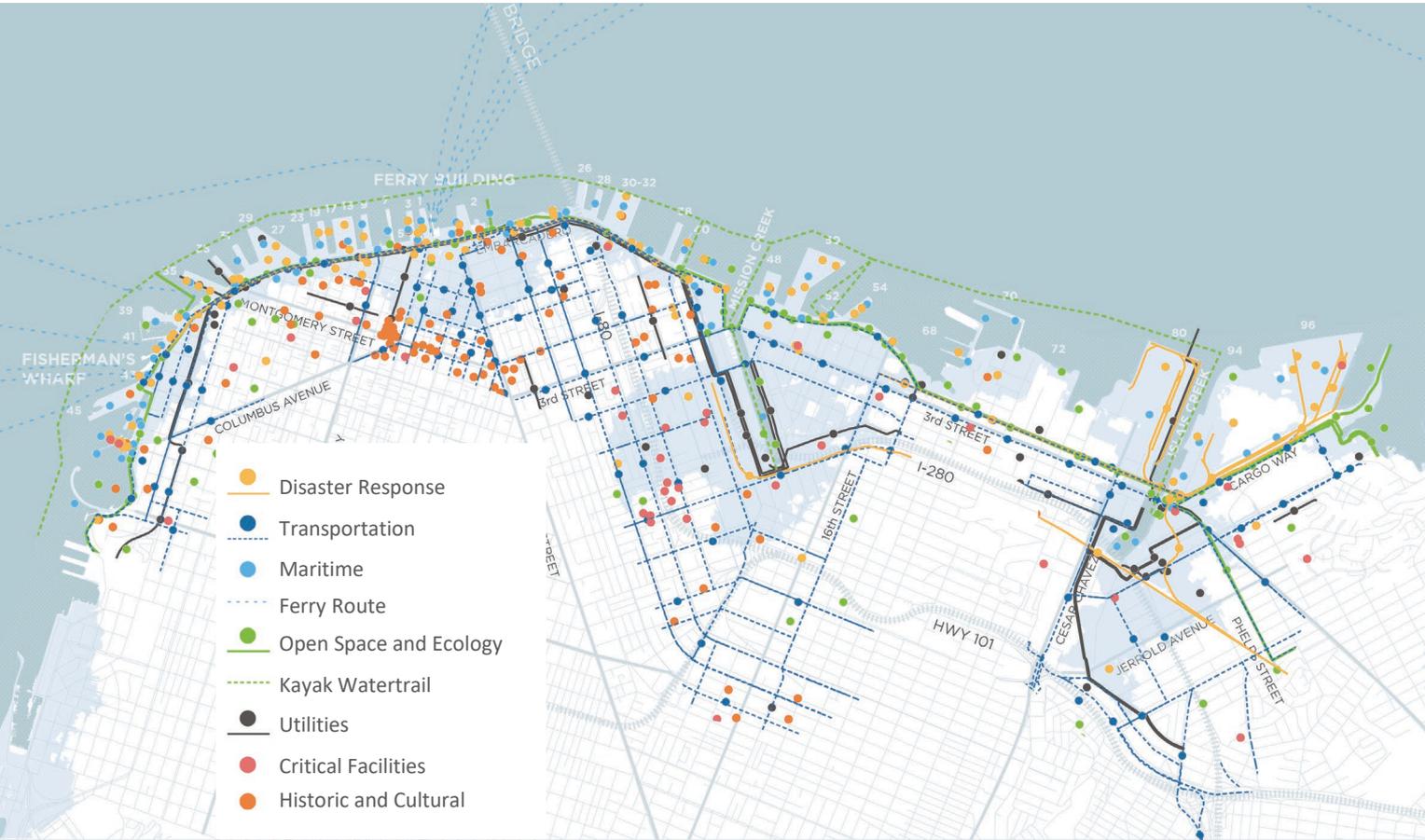
Tentatively Selected Plan (TSP)

6

Feasibility Report and National
Environmental Policy Act (NEPA)

COMPILE ROBUST INVENTORY OF ASSETS

FWOP – Step 1



Assets at risk include more than:

- 40 miles of roadway
- 25 miles of muni & cable car track
- 5 miles of freight railway
- 6 fire stations
- Dozens of other critical facilities
- 11,000 jobs
- 360,000 regional commuters
- 2,600 residential and commercial buildings
- 13,500 residents, 58% people of color
- Wastewater functions for 580,000 residents



Seismic & Flood Measures

Introducing improvements or “measures” for consideration along the Embarcadero

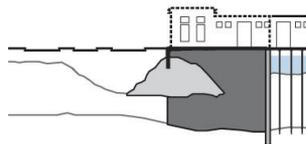


EMBARCADERO SEAWALL SEISMIC MEASURES

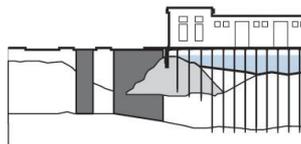
Draft seismic improvements under consideration by the Port

Seismic Measures

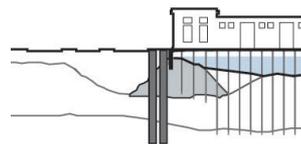
Shoreline
Stabilization



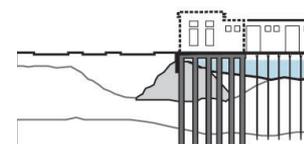
Nearshore
Buttress



Landside
Buttress

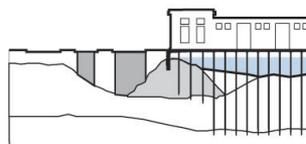


Drilled Shafts

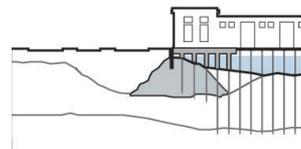


Super Bulkhead
Wharf

Targeted
Measures



Liquefaction
Mitigation



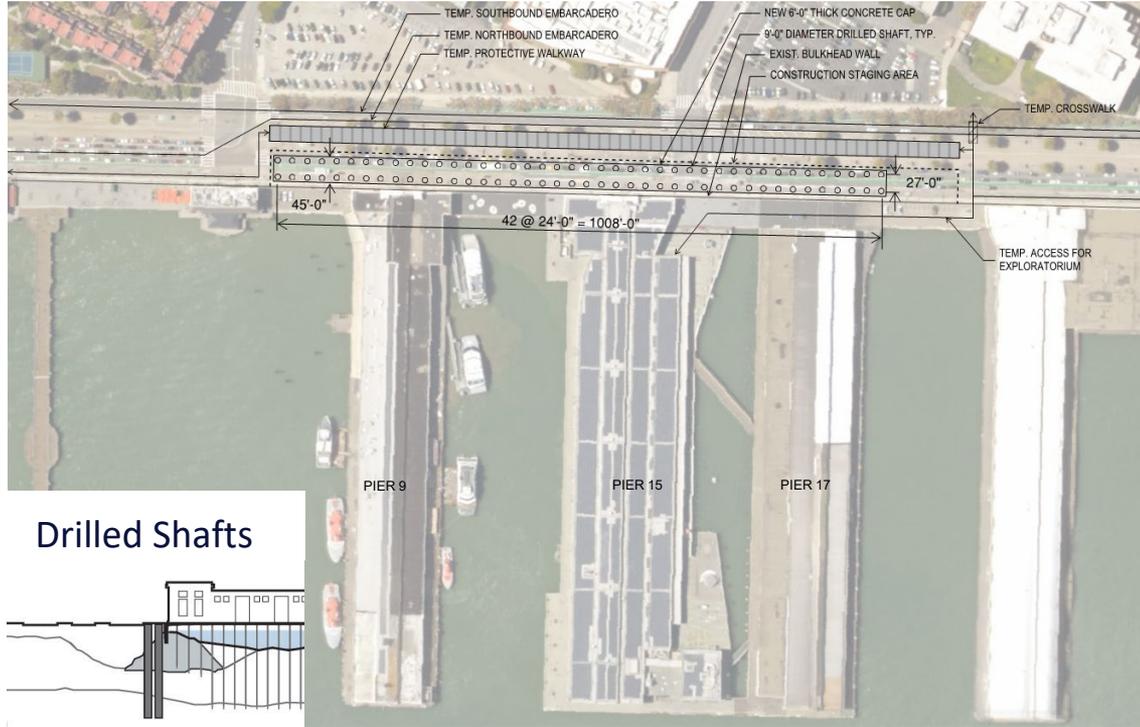
Bulkhead
Wharf Retrofits

For each seismic measure:

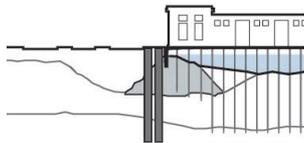
- Preliminary Engineering
- Cost Estimates
- Production Rates
- Construction Impacts
- Feasibility
- Adaptation for Sea Level Rise

SEAWALL SEISMIC MEASURES DEVELOPMENT

Example Measure Construction Process

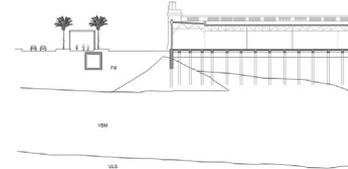


Drilled Shafts

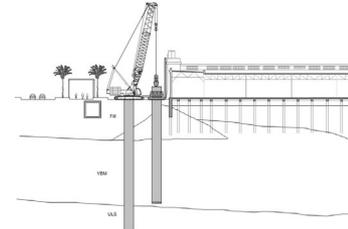


Construction Stages

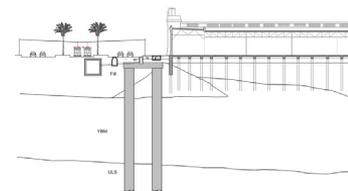
Remove / relocate utilities:



Close northbound lanes, reroute traffic, install concrete shafts:



Place slab, restore Embarcadero:



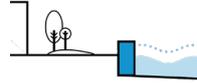
FLOOD MEASURES

Draft flood improvements under consideration by the Port

Physical



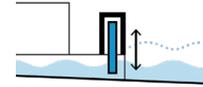
Levees



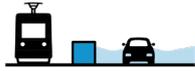
Seawalls



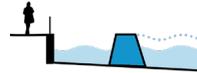
Raised Marine Structures



Gates and Barriers



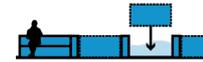
Floodwalls



Breakwaters



Building Adaptations



Deployables

Ecological



Ecological Marine Structures



Ecological Features



Aquatic Habitat



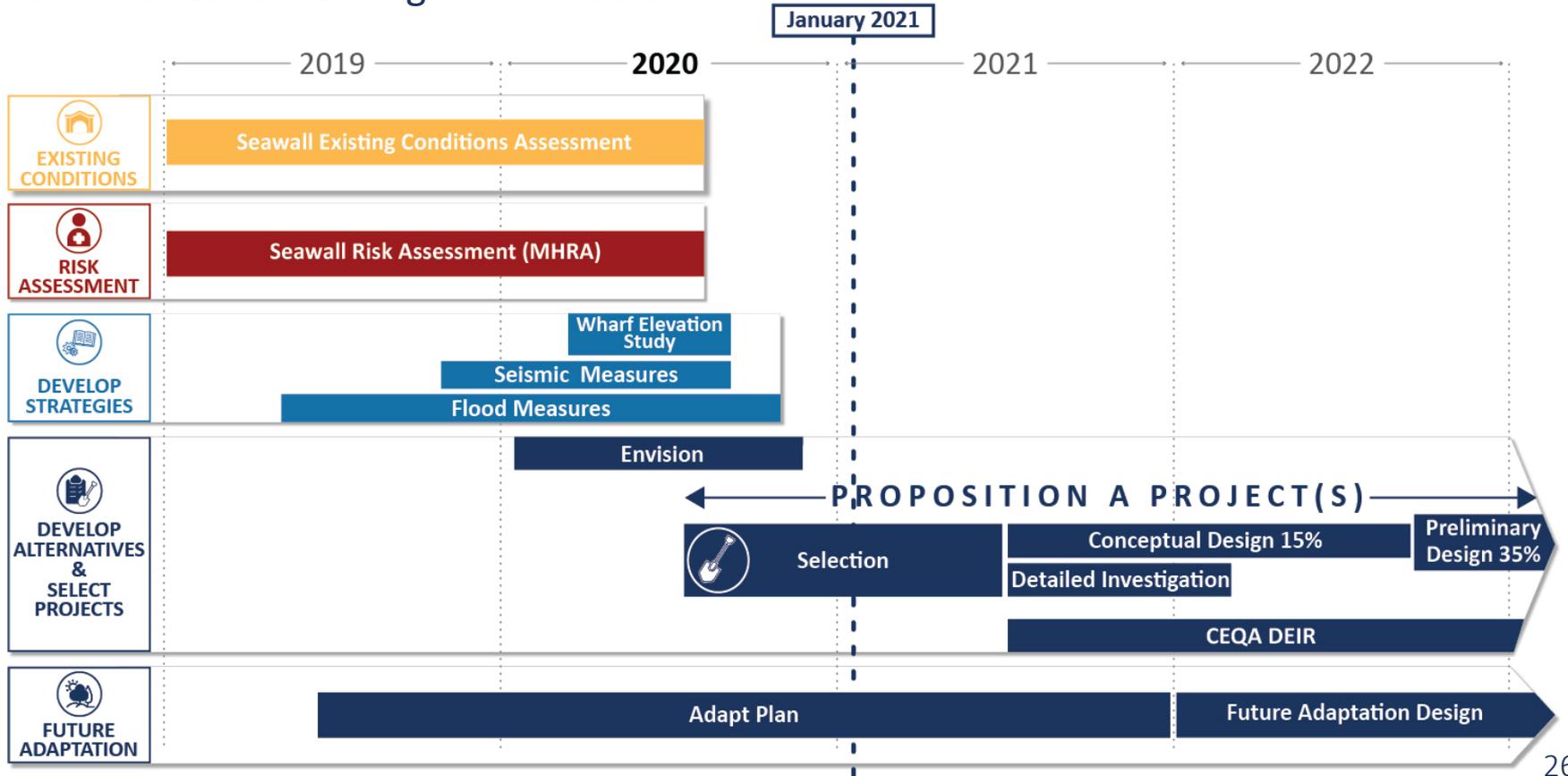
Ecological Shorelines



2018 Proposition A Bond Quarterly Report

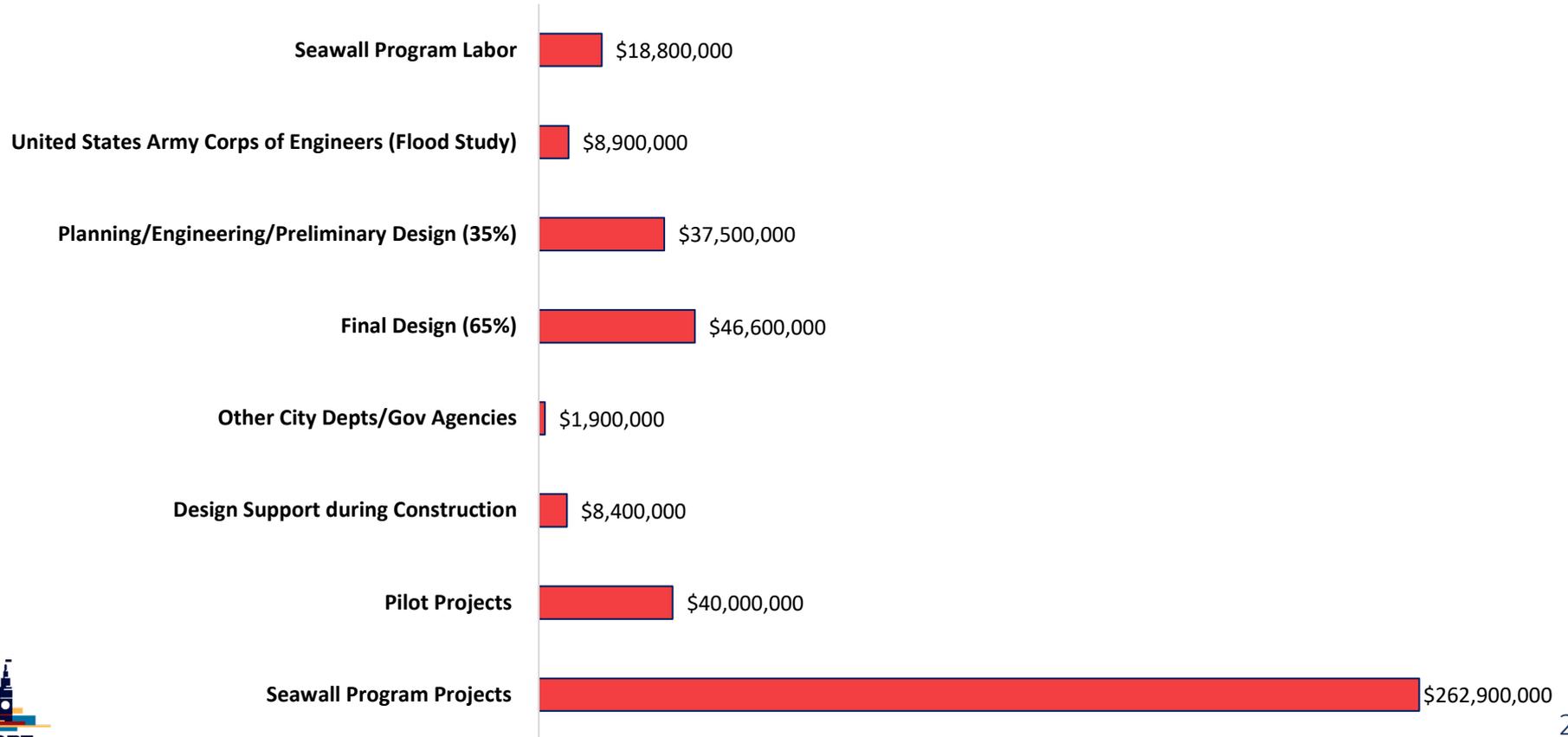
2018 EMBARCADERO SEAWALL EARTHQUAKE SAFETY BOND

Waterfront Resilience Program Schedule



2018 EMBARCADERO SEAWALL EARTHQUAKE SAFETY BOND

Overview of Scope and Budget - \$425M



2018 EMBARCADERO SEAWALL EARTHQUAKE SAFETY BOND

I. Highlights and accomplishments

- The completion of the Multi-Hazard Risk Assessment
- Existing Conditions Final Report
- Bulkhead Wharf Elevation Study
- Robust community engagement, including Embarcadero Community Meeting series and tenant outreach

II. Upcoming milestones

- USACE Flood Study 3x3x3 Waiver
- USACE Coastal Flood Risk Assessment Economic Report – Future without Project
- Alternatives development
- Adaptation Design Guidelines
- Prop A Seawall Bond Project Selection
- Prop A project preliminary design
- Adapt Plan

III. Bond sales and appropriations

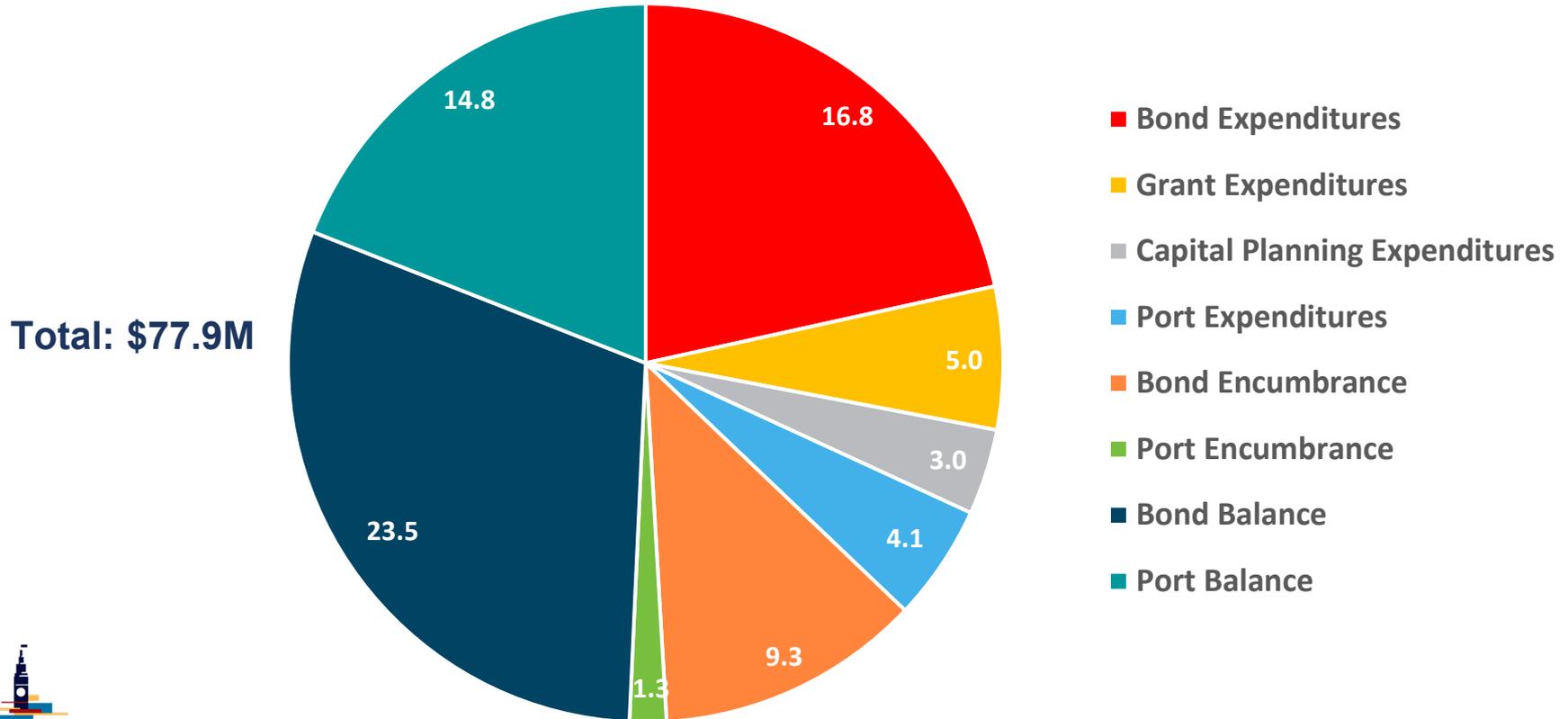
- City has issued one bond sales for the 2018 Seawall Bond totaling \$49,675,000.
- A second bond sale dollar amount and schedule will be determined in spring 2021.

IV. Risks, issues or concerns on budget, scope or schedule

- The dollar value of the second bond sale cannot be determined until potential projects are selected, which will determine project delivery method and cost.
- Schedule could be impacted if funds are fully expended from the first bond sale before funds from a second bond sale are available.

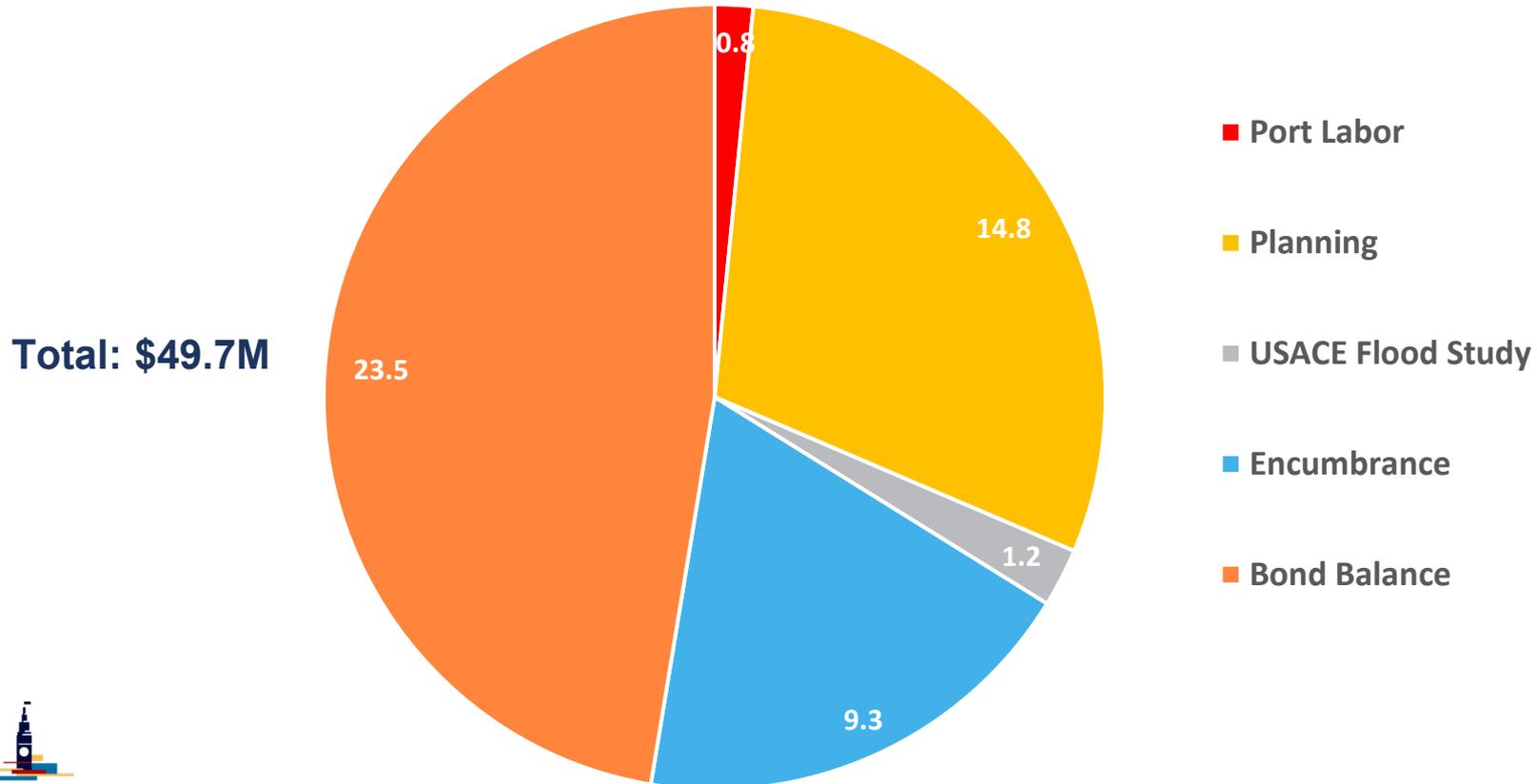
2018 EMBARCADERO SEAWALL EARTHQUAKE SAFETY BOND

Overall Program Expenditures, Encumbrances, and Balances (\$M) through December 2020



2018 Embarcadero Seawall Earthquake Safety Bond

Bond Expenditures, Encumbrances, and Balances (\$M) through December 2020



2018 EMBARCADERO SEAWALL EARTHQUAKE SAFETY BOND

Seawall Program Appropriations, Expenditures, Encumbrances, and Balance

Components	Original Budget*	General Obligation Bond**				Encumbrance + Expenditures / Budget	Encumbrance + Expenditures / Appropriation
		Appropriations	Expenditures	Encumbrances	Balance		
Seawall Program Labor	18,800,00	3,155,482	786,344	-	2,369,138	4.2%	24.9%
United States Army Corps of Engineers (Flood Study)	8,900,00	3,000,000	1,195,143	-	1,804,857	13.4%	39.8%
Planning/Engineering/Preliminary Design (35%)	37,500,000	24,154,000	14,818,141	9,335,859	-	64.2%	100.0%
Final Design (65%)	46,600,000	-	-	-	-	0.0%	0.0%
Other City Depts/Gov Agencies	1,900,000	-	-	-	-	0.0%	0.0%
Design Support during Construction	8,400,000	-	-	-	-	0.0%	0.0%
Pilot Projects	40,000,000	-	-	-	-	0.0%	0.0%
Seawall Program Projects	262,900,000	-	-	-	-	0.0%	0.0%
Oversight, Accountability & Cost of Issuance	-	875,000	-	-	875,000	0.0%	0.0%
Unappropriated Bond Sale Funds	-	18,490,518	-	-	18,490,518	0.0%	0.0%
TOTAL	425,000,000	49,675,000	16,799,627	9,335,860	23,539,513	6.1%	52.6%

Thank You!

Brad Benson, Waterfront Resilience Director

brad.benson@sfport.com

Carlos Colon, Waterfront Resilience Program Administrator

carlos.colon@sfport.com

Port of San Francisco



Waterfront Resilience Program

