

# Capital Planning Committee

*March 25, 2019*



Port Jurisdiction

Historic shoreline

Embarcadero Seawall

**PORT** OF  
SAN FRANCISCO







## SEAWALL EARTHQUAKE SAFETY PROGRAM BOND REPORT

April 2018



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# EMBARCADERO SEAWALL PROGRAM

The Port of San Francisco requests a bond sale, not to exceed \$50 million, to support the planning and preliminary design phases of the Seawall Program



# TAKING ACTION: OUR GOALS



**ENGAGE THE  
COMMUNITY**

**ACT QUICKLY  
RESPONSIBLY,  
TRANSPARENTLY, &  
WITH ACCOUNTABILITY**

**ENHANCE THE CITY  
& THE BAY**

**REDUCE  
EARTHQUAKE  
DAMAGE**

**IMPROVE FLOOD  
RESILIENCE**



# WHAT WILL THIS FIRST BOND SALE FUND?

- **Program Management (Port Staff)**
- **Program Development (Strengthen, Adapt, and Envision)**
- **Project Planning**
  - Geotechnical Investigations
  - Risk Assessment and Alternatives Analysis
  - Pilot Projects
  - Stakeholder Engagement
  - Environmental Review (CEQA/NEPA)
- **Preliminary Design**
- **San Francisco Waterfront Storm Risk Management Study General Investigation (“Flood Study”) with the United States Army Corps of Engineers (“USACE”), *only eligible flood study costs will be covered***
- **Workforce Development and Education**

**Port  
Commission  
Informational**  
March 12



**Capital Planning  
Committee  
Approval**  
March 25

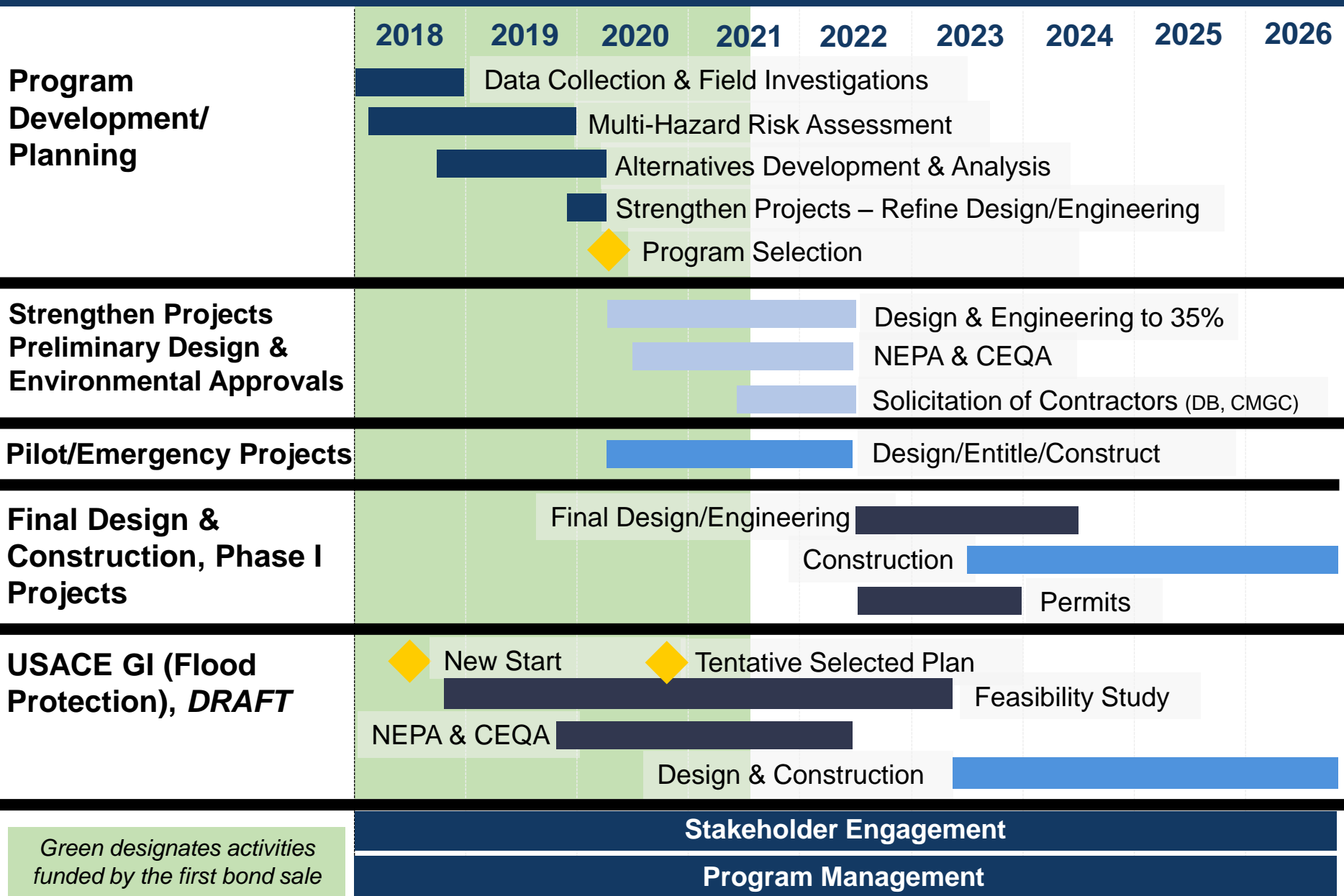


**Port  
Commission  
Approval**  
March 26



**Board of  
Supervisors  
Introduction**  
April 2

# PHASE I DETAILED SCHEDULE (with USACE GI, v3)



# SEAWALL PROGRAM FUNDING NEXT STEPS

Phase I: \$500 million  
Full Program: \$5 billion

## LOCAL

- City GO Bond Program
- Other

## FEDERAL

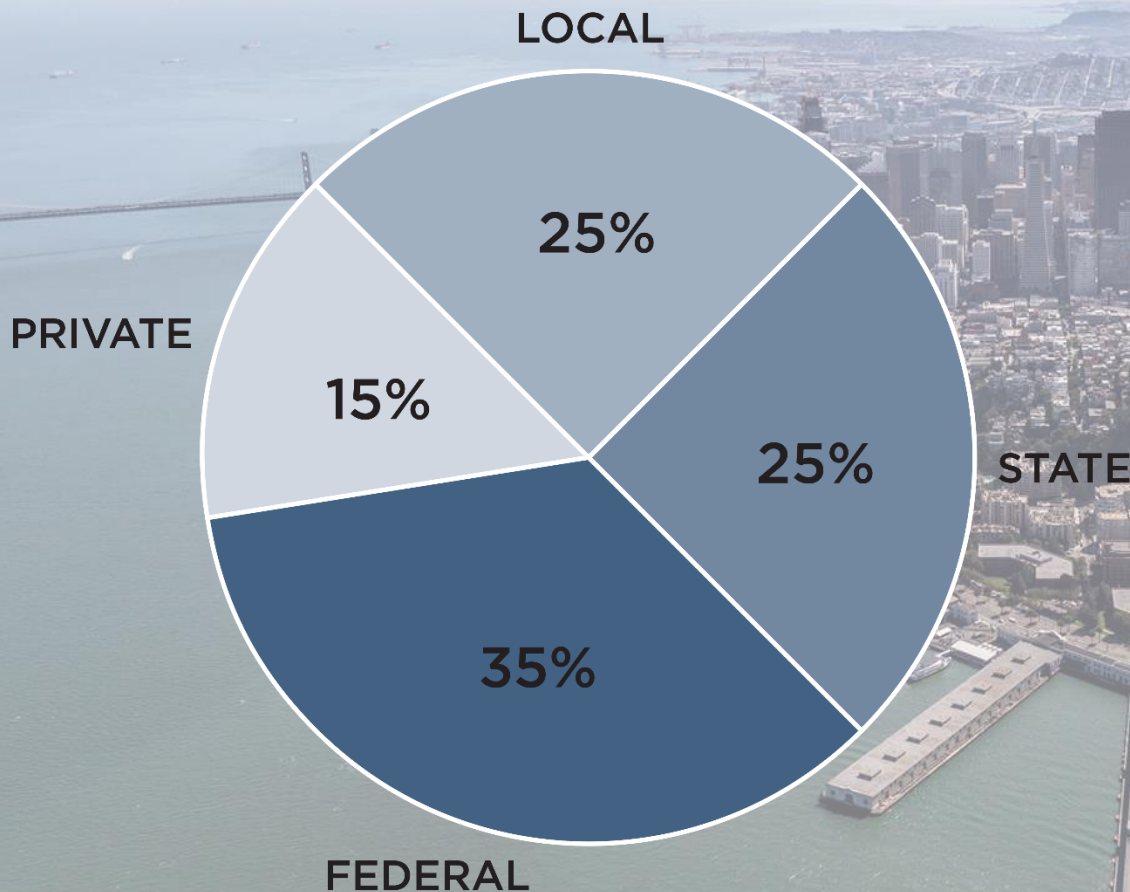
- Army Corps of Engineers
- Transportation
- FEMA/Port Security Grants

## STATE

- State Resiliency Bond - SB-45  
Wildfire, Drought, and Flood  
Protection Bond Act of 2020
- State Budget Request
- Cap and Trade Revenues

## PRIVATE

- Waterfront Development Projects
- Businesses - CFD





# PHASE I FUNDING – ALL SOURCES

Fiscal Year	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23-27
<b>Funding Sources</b>								
Port Capital	\$2.9		\$1.1					\$10.0
City Revolving Fund	\$1.0	\$3.0	\$5.0	(\$6.0)		(\$3.0)		
SFMTA Contribution	\$0.5	\$0.5						
Planning Dept Contribution	\$0.5	\$0.3	\$0.3					
State Sources			\$5.0					
2018 General Obligation Bond			\$50.0			\$250.0		\$125.0
Other Funds*								\$54.0
<b>Total Planned Sources</b>	<b>\$4.9</b>	<b>\$3.8</b>	<b>\$61.4</b>	<b>(\$6.0)</b>	<b>\$0.0</b>	<b>\$247.0</b>	<b>\$0.0</b>	<b>\$189.0</b>
<b>Cumulative Sources</b>	<b>\$4.9</b>	<b>\$8.7</b>	<b>\$70.0</b>	<b>\$64.0</b>	<b>\$64.0</b>	<b>\$311.0</b>	<b>\$311.0</b>	<b>\$500.0</b>
Current Funding								
First Bond Sale								
*Pending								

# PHASE I EXPENDITURES THROUGH FY20/21

	BOND	STATE	PORT	TOTAL
<b>SERVICES PROVIDED</b>	<b>\$ 50,000,000</b>	<b>\$ 5,000,000</b>	<b>\$ 2,120,000</b>	<b>\$ 57,120,000</b>
<b>Program Management</b>	<b>\$ 5,907,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 5,907,000</b>
<b>United States Army Corps of Engineers</b>	<b>\$ 8,875,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 8,875,000</b>
<b>Communications/Public Relations</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,870,000</b>	<b>\$ 1,870,000</b>
<b>Planning/Engineering/Environmental</b>	<b>\$ 30,035,000</b>	<b>\$ 5,000,000</b>	<b>\$ 250,000</b>	<b>\$ 35,285,000</b>
Phase 1 - Planning	\$ 14,965,000	\$ 5,000,000	\$ 250,000	\$ 20,215,000
Phase 2 - Preliminary Design	\$ 9,020,000	\$ -	\$ -	\$ 9,020,000
Phase 2 - Pilot Projects	\$ 6,050,000	\$ -	\$ -	\$ 6,050,000
<b>City Agencies/Departments/Regulatory Agency Approvals</b>	<b>\$ 983,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 983,000</b>
<b>Bond Related Costs</b>	<b>\$ 4,200,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 4,200,000</b>
Reserve for Market Uncertainty	\$ 2,990,000			\$ 2,990,000
Cost of Issuance	\$ 601,290			\$ 601,290
Underwriter's Discount	\$ 470,100			\$ 470,100
CSA Audit Fee	\$ 91,600			\$ 91,600
GOBOC Fee	\$ 47,010			\$ 47,010



# ADDITIONAL PHASE I FUNDING

Original \$500 million budget for Phase I life safety improvements, with \$446 million secured as of today:

- \$425 million in General Obligation Bond funding
- \$5 million grant from State of California
- \$16 million from Port and City sources

Additional funding strategies to address the \$54 million gap include:

- State Resilience Bond
- State Cap and Trade Revenue
- State General Fund Budget Request
- Development of a Mello Roos District along the waterfront

# DATA COLLECTION: SUBSTANTIALLY COMPLETE



## INFRASTRUCTURE



## URBAN AND CULTURAL



## PARKS AND ECOSYSTEMS



## MARITIME

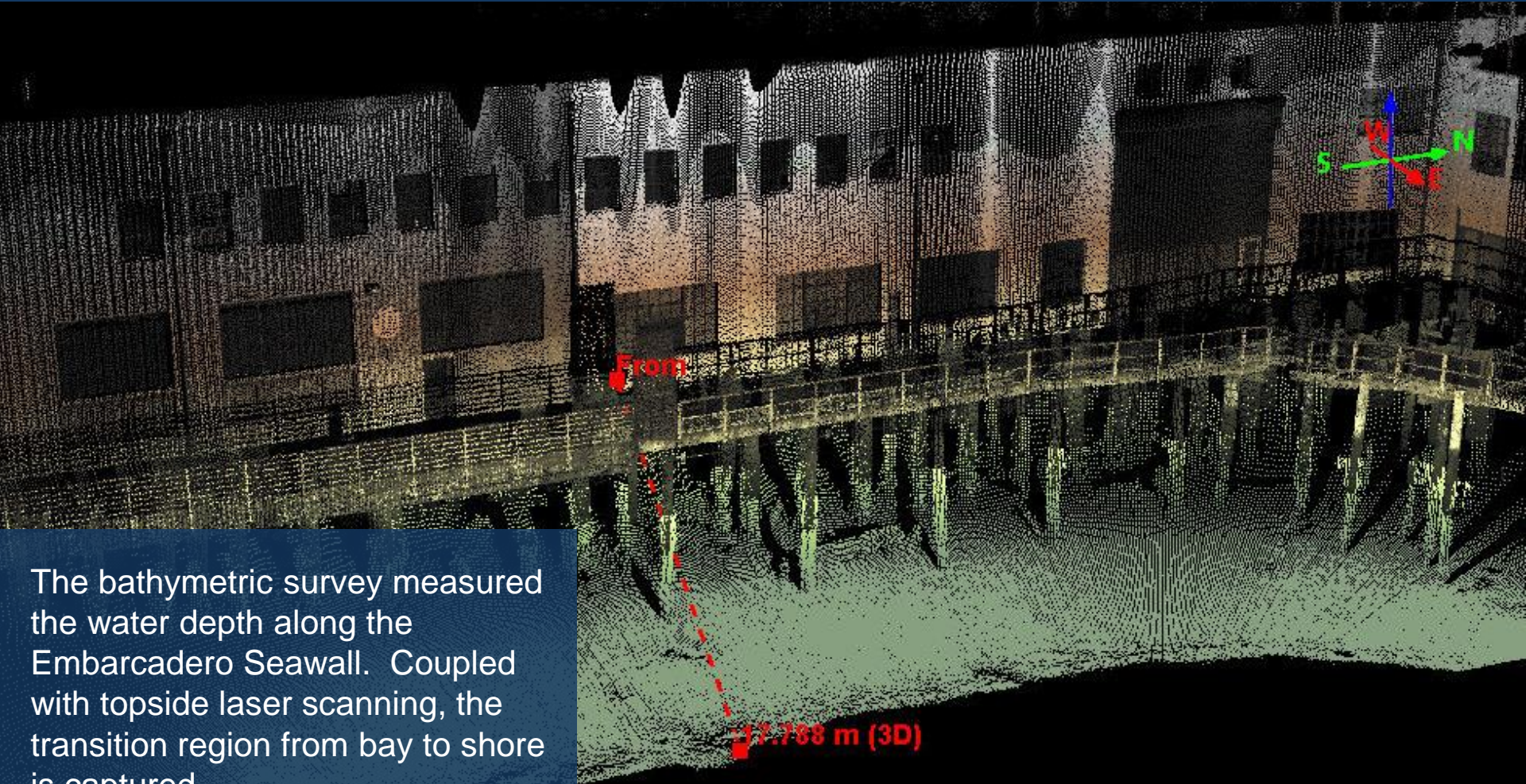


## DISASTER RESPONSE





# ADDITIONAL INVESTIGATIONS: COMPLETED BATHYMETRY AND LASER SURVEY



The bathymetric survey measured the water depth along the Embarcadero Seawall. Coupled with topside laser scanning, the transition region from bay to shore is captured.

Survey results will inform the seismic and flood analysis models for the Seawall.



# GEOTECHNICAL EXPLORATION

- Completed approximately 100 exploratory borings along the Embarcadero Seawall
- Borings concentrated in the immediate Seawall area allow for increased confidence in subsequent analysis used to evaluate potential earthquake effects

DEPTH (ft)	SAMPLER		SAMPLE TYPE	LITHOLOGY	MATERIAL DESCRIPTION (For use ONLY if NAME, Number, concentration, density, color, moisture, mass grain size, consistency, texture, and soil composition in % are given. For use ONLY if ROCK TYPE (ROCK NAME), weathering, hardness, color, grain size, bedding, fracture density, discontinuity type, discontinuity cohesion, discontinuity separation are given.)	OTHER
	TYPE	TOP DEPTH (ft)				
25					1:05-1:20 Drill in casing from 19 ft to 29 ft Drive casing to 29 ft Difficulty drilling casing @ 25 ft and below. Casing chatter + bounce	
30					1:25 Soil in casing @ 27 ft Begin drilling out. Similar cuttings - grayish-brown sandstone	
					1:30 Lost circulation @ 29 ft (Bottom of Casing) 1:38-2:00 Drill in Casing to 37 ft Drive in casing to 39 ft	





# MULTI-HAZARD RISK ASSESSMENT

## What are the Hazards?

### Step 1 SELECT HAZARD SCENARIOS



#### SEISMIC HAZARDS

- Ground Shaking
- Liquefaction
- Ground Deformations
  - Horizontal
  - Vertical



#### FLOOD HAZARDS

- Total Water Levels
  - Tides
  - Wind Waves
  - Sea Level Rise

## What's at Stake?

### Step 2 IDENTIFY ASSETS, SYSTEMS AND FUNCTIONS

#### BUILDINGS AND MARINE STRUCTURE ASSETS



##### BUILDINGS

- Port Buildings on Land
- Non-port Buildings in the Floodplain
- Port Over-Water Buildings



##### MARINE STRUCTURES

- Piers • Wharves • Seawall

#### INFRASTRUCTURE SYSTEMS



##### TRANSPORTATION

- Embarcadero Roadway
- Land-Based Public Transportation Assets
- Ferry System



##### UTILITY

- Storm/Combined Sewer
- Telecommunications
- Water • Energy

#### WATERFRONT ASSETS, FUNCTIONS AND SERVICES



##### PUBLIC SPACE



##### DISASTER RESPONSE



##### HABITAT



##### HISTORIC



##### MARITIME



##### SOCIAL



##### MOBILITY

## How will we Measure?

### Step 3 ASSESS VULNERABILITIES AND CONSEQUENCES

#### MODEL-BASED METHODS



##### DIRECT IMPACTS (SEISMIC)

- Assess Structural Vulnerabilities
- Assess Consequences Using Hazus Methods:
  - Direct Casualties (Deaths and Injuries)
  - Direct Physical Damage
  - Direct Business Interruption



##### INDIRECT AND INDUCED BUSINESS INTERRUPTION

- Using IMPLAN and other Economic Disruption and Calculation Methods



##### DIRECT IMPACTS (FLOOD)

- Using Site Specific USACE and Hazus Methods:
  - Direct Physical Damage
  - Direct Business Interruption

#### SYSTEM OWNER DRIVEN ASSESSMENTS



##### COORDINATE WITH STAKEHOLDERS TO:

- Assess Asset Criticality
- Define System Vulnerabilities
- Document Anticipated Consequences
  - Physical damages
  - Loss of service
- Define Thresholds for Consequences based on Vulnerabilities
- Quantify Consequences where feasible



#### PORT DRIVEN ASSESSMENTS



##### CUSTOMIZED RISK SCORING

- Unique to each Seawall Program Specific Risk Assessment Category



## Why does it Matter?

### Step 4 EVALUATE RISKS

#### Economic

##### Direct Physical Damages

##### Economic Disruption

#### Society and Equity

##### Life Safety and Disaster response

##### Mobility

##### Historic

##### Social Disruption

##### Waterfront Public Space

#### Environment

##### Environmental Risks



# THE SEAWALL INCUBATOR

**Begin concept development for Seawall Strengthen project(s) and test process for project selection**

- Begin the design process for the first Strengthen Project(s)
- Review developing data on existing conditions
- Identify criteria for selecting first locations
- Conduct a “dry-run” of selecting locations
- Consult with city stakeholders
- Refine process to be ready for the full Multi-Hazard Risk Assessment results in June



# USACE/PORT FLOOD RISK STUDY (General Investigation)



## HIGHLIGHTS

- Federal funding, expertise, partnership
- Port is the local sponsor, seeking assistance since 2012
- Flood Study is entire Port jurisdiction
- No limit to the scale, extent or cost of projects
- Suspend CAP 103, use prior work in GI

## STUDY OVERVIEW

- Estimate 4-1/2 years & \$6M, 50/50 cost share
- Evaluate flood risk to entire Port, develop and evaluate a wide range of alternatives
- Culminates in a recommendation to Congress to authorize and fund design & construction of selected plan.
- Design/construction of federal plan cost shared 65% fed / 35% local
- Locally preferred plan can be selected, sponsor pays extra cost



THANK YOU