AGENDA

1 Waterfront Flood Study
2 Risks and Hazards
3 The Draft Plan
4 Key Policy Considerations
5 Public Comment
WHAT IS THE FLOOD STUDY?

Analyzes **coastal flood risk** and effects of **sea level rise** along the Port’s jurisdiction of the Waterfront over the next 100 years.

Led by the **U.S. Army Corps of Engineers** in collaboration with the **City of San Francisco**.
WHAT IS THE DRAFT PLAN?

Informs stages of funding and design towards targeted construction projects

Costs around $13.5 billion

Federal government will pay 65% of the cost if approved by the U.S. Congress
Waterfront Risks and Hazards
WHAT’S AT RISK?

Seismic Hazard

Up to 40,000 people could be at risk on Port property if an earthquake occurs during the day.
Mobility and MTA operations are impacted by flooding today.

Historic changes have been substantial along the waterfront.
San Francisco’s waterfront location makes it vulnerable to coastal flooding due to sea level rise.

Without a Federal project, modeling shows:
- By 2050, 100 to 500 structures and assets will be vulnerable to flooding.
- By 2140, damages could amount up to $23 billion.
The **San Francisco Waterfront Flood Study** is one of several adaptation efforts by City and Federal agencies to address risks and build resilience.
San Francisco Waterfront Flood Study
WHERE ARE WE IN THE FLOOD STUDY PROCESS?

We are here
Release of Draft Plan

2018 to 2025
GENERAL INVESTIGATION & FEASIBILITY STUDY

What to expect
Draft Plan for public engagement and technical reviews (Winter 2024), and Recommended Plan (2025)

2026
SEEK CONGRESSIONAL FUNDING

What to expect
USACE Chief of Engineers recommends project to Congress to authorize funding.

2026 to ~2030
PRECONSTRUCTION ENGINEERING & DESIGN

What to expect
Detailed design and engineering, implementation, and phasing pending Congressional funding

~2030 onward
CONSTRUCTION

What to expect
Phased construction of coastal flood protection infrastructure, related seismic stabilization, and other improvements

Note: Dates are approximate and subject to change. Projects will occur in phases. Many first actions will not be ready for implementation or construction in 2030 or 2050 respectively. The Draft Plan will be prioritized so not everything described will be done.
WHAT IS IN THE DRAFT PLAN?

**Where** to build flood defenses

**How high** to build flood defenses

**How much space** to use

Have we located the flood defenses in the right place?

Should we invest in higher levels of protection first, or adapt in multiple phases?

More space provides more flexibility but is associated with more disruption. Less space means more abrupt grade changes.

...and How flood defenses can be adapted in the future
The Draft Plan does not include the following:

- Detailed designs for flood defenses
- Designs for waterfront streets, open spaces, and infrastructure (including pumping stations)
- Timing and sequencing of construction
- Funding plan

These elements will be developed during later project phases with the public, USACE and City Agencies.

The Draft Plan is not:

- A design for the future waterfront
- A plan for the Embarcadero Historic District, the Ferry Building and public plazas and roadway, and creek and shoreline amenities
- Project plans and implementation strategies will leverage other opportunities, align with other public and private projects, and reflect what the City can afford given other capital obligations
HOW DID WE DEVELOP THE DRAFT PLAN?

1. Analyzed Risks and Impacts to communities
2. Identified Opportunities & Constraints
3. Engaged Local Communities
   150+ events
4. Developed Alternatives
   7 Strategies

Interagency Alignment
Cost & Benefits Analysis
Public Feedback on Alternatives

The Draft Plan
This plan is a **first** for USACE.

Typical plan selection maximizes national economic benefits. This plan incorporates analysis and selects a plan considering:

+ Regional economic impacts (including jobs)
+ Environmental quality, consequences, and compliance (including pollution)
+ **Other social effects (including disproportionate effects on vulnerable populations)**
3 The Draft Plan
KEY FEEDBACK THAT HELPED SHAPE THE DRAFT PLAN

Focus on life safety & emergency response

Put people first
Prioritize housing, disaster recovery facilities, utilities, transportation and businesses

Expand (and maintain) the City’s connection to the waterfront

Prioritize nature and healing the Bay

Consider racial and social equity and environmental justice
THE DRAFT PLAN

- Incorporate nature based features, such as creek enhancements
- Waterfront-wide stormwater management adaptations related to coastal flood defenses
- Raise the shoreline with seismically sound structures
- Floodproof piers and select buildings
- Adapt historic waterfront buildings and wharves

US Army Corps of Engineers
FISHERMAN'S WHARF: FIRST ACTIONS

Floodproofing structures

- Add short walls around the piers
- Floodproof select buildings along the water’s edge
- Existing high ground
- Existing breakwaters
- Embarcadero Corridor
- F Line
- AQUATIC PARK
- REACH 1
**ACTIONS EXPLAINED**

**Floodproof select buildings**
Some facilities can be modified to keep water out entirely, while others can be modified on the inside to allow water to enter and exit the facility, causing little or no lasting damage.

**Add short walls around piers**
Build up to two-foot walls around piers to manage flood risks & defend against intermittent high water.
MOBILITY CONSIDERATIONS

Construction Disruption

Building improvements likely to take time, require space, and impact loading and roadway areas, including rolling/biking facilities and driving, with minimal transit disruption.

Permanent Changes

Retaining existing features
EMBARCADERO: FIRST ACTIONS

Defend against **3.5 feet** of sea level rise

- Raise buildings along the water’s edge and raise wharves
- Raise the shoreline and roadway with a gradual transition, designed to withstand a seismic event
- Add short walls around the piers
ACTIONS EXPLAINED

Raise the shoreline

This action will elevate the shoreline at the roadway edge and gradually slope back to existing city elevation. The action includes seismic improvements under the roadway to reduce seismic damages to flood defenses.

Elevating the shoreline presents an opportunity for new waterfront public spaces. Design details will be developed at later project phases.
Elevate buildings and wharves along the water’s edge, including the Ferry Building and historic bulkhead buildings. Enhance seismic stability for wharves and buildings.

Add short walls around piers

Build up to two-foot walls around piers to manage flood risks and defend against intermittent high water.
MOBILITY CONSIDERATIONS

Construction Disruption
Substantial disruption to ferry access, transit and roadway system with the raising of the Ferry Building

Permanent Changes
New potential adjustments to roadway and transit with opportunities to improve access to Chinatown, Fisherman’s Wharf, North Beach, South Beach through community process
Embarcadero Mobility Resilience Plan

Protect, coordinate, connect, and improve transportation through end of century

A responsible next step to reduce impacts on and enhance benefits for adjacent businesses and communities

Renew a vibrant corridor to support the city’s economic future

2024 to 2026 supported by $1.3M in Caltrans funds
Elevate the shoreline to defend against **1.5 feet** of sea level rise.

New park and development projects will adapt their sites to sea level rise.

Add short walls around the piers.

Closure structures on bridges.

Ground improvements to ensure flood defenses withstand a seismic event.

Elevated shoreline.

Berms + nature-based features.
Closure structure on bridges

Closure structures on Third and Fourth Street Bridges will close gaps in the elevated shoreline to prevent flooding.

It is anticipated that these closures would be infrequent (less than once a year) and used in anticipation of a large storm or tide event.
MOBILITY CONSIDERATIONS

First Phase Disruptions
Closure structures are not ideal given transit’s reliance on bridge

Bridge Replacement
Prioritizing Fourth Street Bridge replacement and elevation essential for access to critical MTA southeast facilities, residents, and commerce
Elevate the shoreline to defend against **1.5 feet** of sea level rise

- Add short walls around the piers
- Ground improvements to ensure flood defenses withstand a seismic event
- Berms + nature-based features
- Closure structure on Illinois Street Bridge
- New raised wharves
- Connect with higher ground

**ISLAIS CREEK / BAYVIEW: FIRST ACTIONS**
Berms are areas of raised ground that can help prevent flooding while maintaining waterfront access. They can include public space, such as walking or biking paths, and incorporate vegetation that support habitats.
MOBILITY CONSIDERATIONS

Existing Challenges
Islais Creek Facilities and Bayview neighborhood already face significant disruptions at stormwater events

Bridge Replacement
An elevated Islais Creek Bridge replacement in design stages

Implementing Community Planning
Prioritizing implementation of: the Bayview community-based transportation plan, Islais Creek Adaptation Strategy, and Yosemite Slough Adaptation Planning
4 Key Policy Considerations
PHASING OF FIRST ACTIONS

First Actions will be built in phases.

The Draft Plan will be prioritized so not everything described will be done at once, and will be built as funding is available.

Managing Risks and Expenditures over time

Prioritization factors could include:

- Level of Risk
- Equity
- Environmental clean-up considerations
- Complexity of design and construction
- Related investment opportunities
- Other factors
Defend communities, assets, and infrastructure against coastal flooding

Secure funding through collaboration with the Federal government

Improve earthquake safety related to flood protection projects

Invest in a great public waterfront along with flood protection projects

Safeguard resilient transit and utility networks

Adapt historic and cultural resources to climate change

This is a once-in-a-century opportunity to:
5 Public Comment
WE WANT TO HEAR FROM YOU

There are several ways that you can add a comment:

- Join USACE and the City for one of several **upcoming community workshops** being hosted along the waterfront. Each meeting will include the same presentation. Comment cards will be available, and a station will be set up to record verbal comments as well. Learn more at sfport.com/wrp.

- Share written comments via email: SFWFRS@usace.army.mil

- Share written comments via mail: U.S. Army Corps of Engineers, Tulsa District ATTN: RPEC-SFWS, 2488 E 81st St., Tulsa, OK 74137

- Share written comments online: learn more and comment online at sfport.com/wrp

To stay in touch, please sign up for the Port of SF's Waterfront Resilience Program **eNewsletter and mailing list** by visiting sfport.com and clicking the Signup for e-newsletter in the footer and selecting Waterfront Resilience Program from the list in the form provided.
Thank you

U.S. Army Corps of Engineers | SFWFRS@usace.army.mil
Port of SF Waterfront Resilience Program | wrp@sfport.com