



Embarcadero Seawall Community Meeting #6 Summary

September 24 + 25, 2020



Waterfront Resilience Program

COMMUNITY MEETING #6 OVERVIEW

Event Details

COMMUNITY-DRIVEN WATERFRONT RESILIENCE PROGRAM Community Meeting Series



- **Timing:**
 - Thursday, September 24, 2020, 5:30 to 7 PM &
 - Friday, September 25, 2020, 12:30 to 2 PM
- **Location:**
 - Zoom meeting link provided

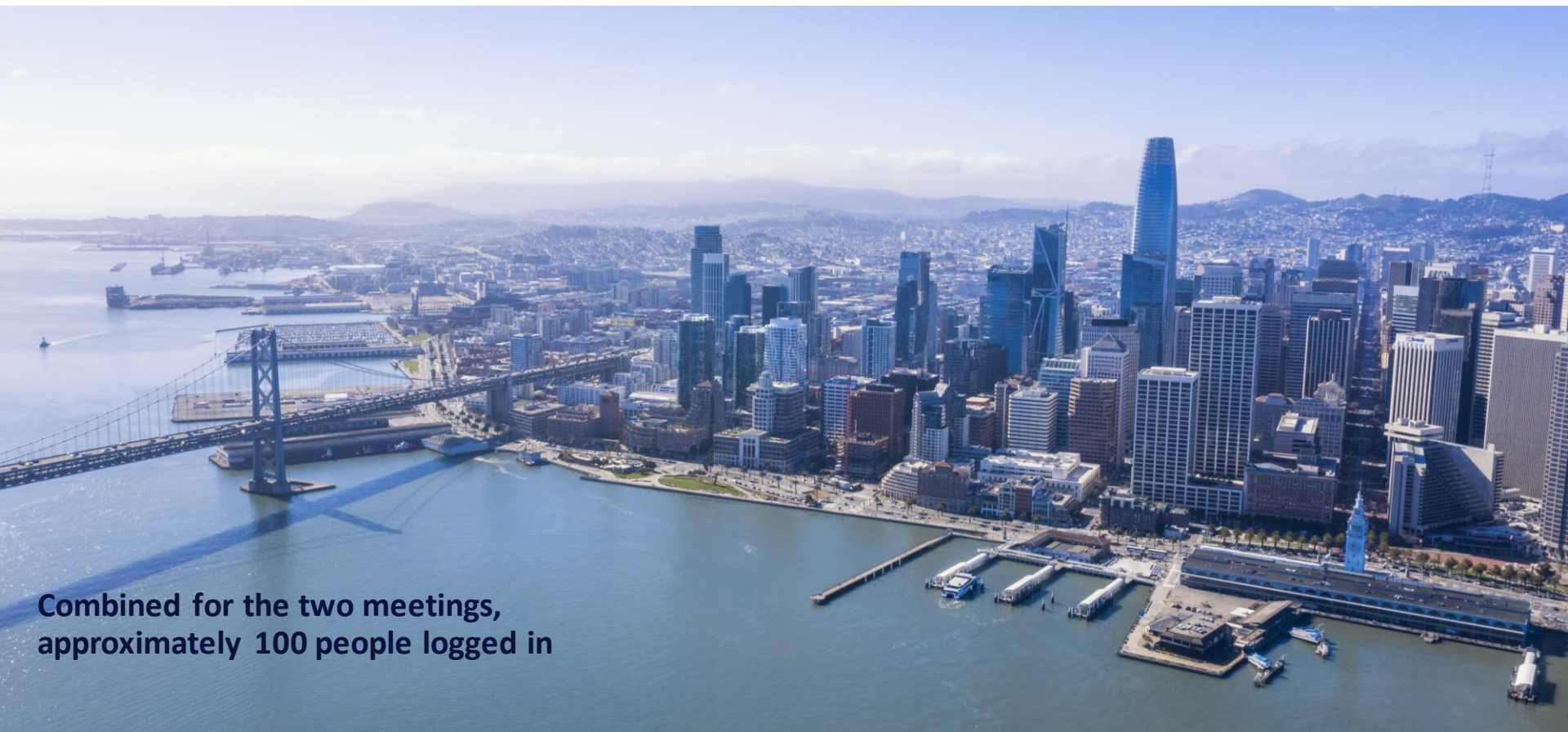
COMMUNITY MEETING #6 OVERVIEW

Agenda



- Key findings from the Multi-Hazard Risk Assessment (MHRA)
- Introduction to “measures” or strategies for addressing risk along the Embarcadero waterfront
- Key priorities from community and stakeholder engagement
- Describe next steps to develop Proposition A projects

MEETING ATTENDANCE



**Combined for the two meetings,
approximately 100 people logged in**

MEETING MATERIALS

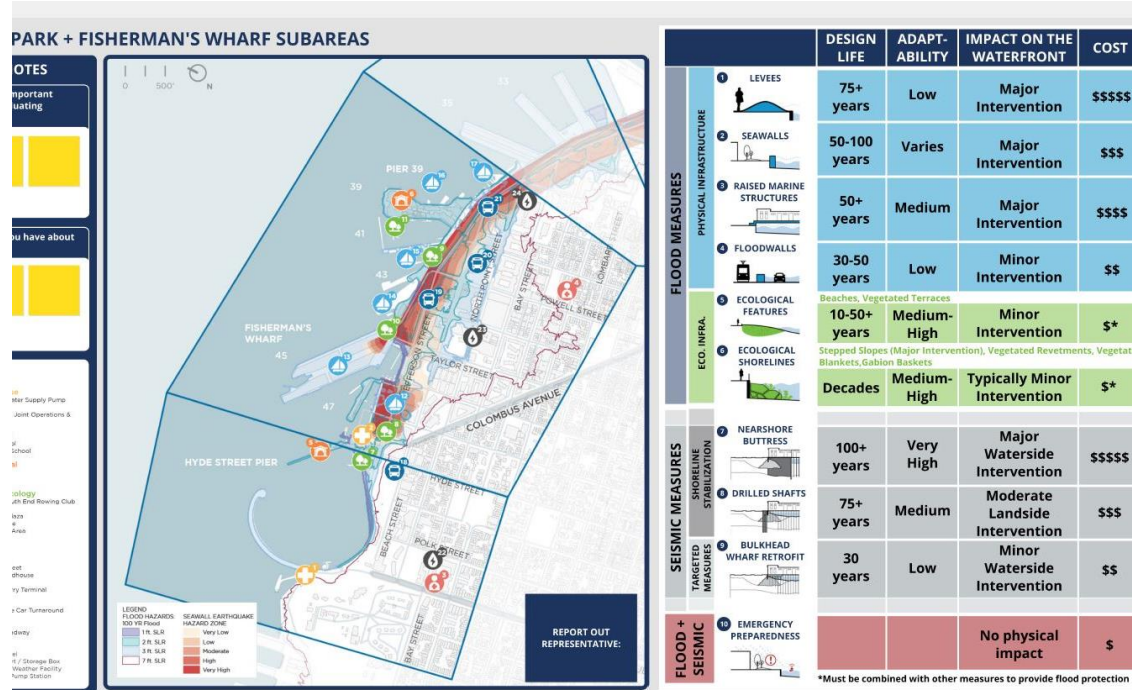
Click the links to the right to view meeting materials



- [MHRA Key Findings + Measures Introduction](#)
- [Measures Engagement Online Activity Boards](#)

ENGAGEMENT ACTIVITY

Overview



- After the presentations, attendees joined Port staff in breakout rooms for small-group discussions:
 - What are the most important considerations for evaluating measures?
 - What concerns do you have about any of the measures?
 - Where would you like to see measures placed on the waterfront?

SAMPLE MEASURES ACTIVITY FOR BREAKOUT ROOM DISCUSSION

1a AQUATIC PARK + FISHERMAN'S WHARF SUBAREAS

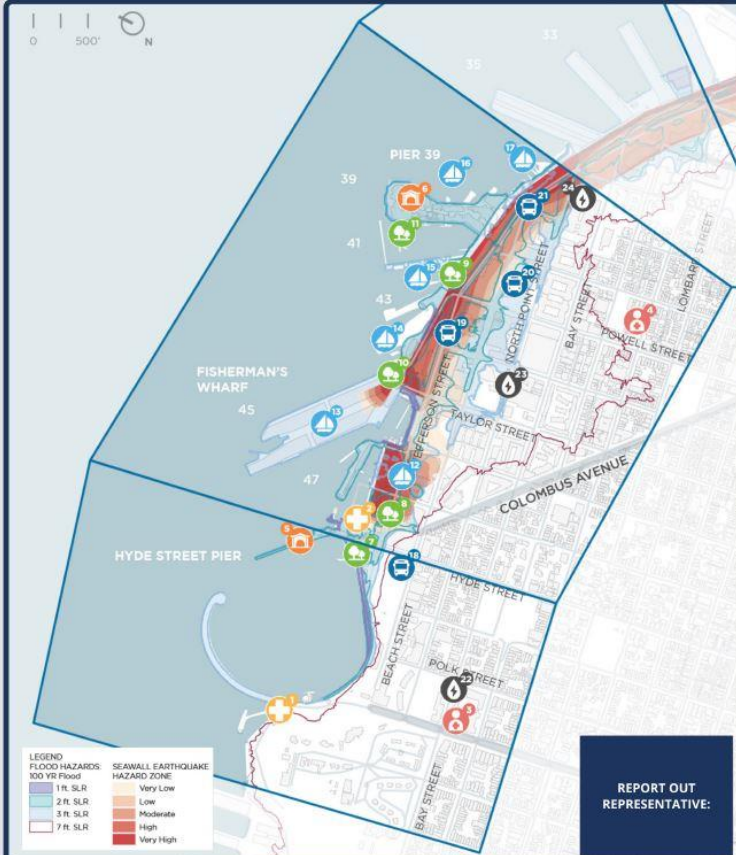
REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

2. What concerns do you have about any of the measures?

ASSET LEGEND

- + **Disaster Response**
 1. Emergency Fire Water Supply Pump Station 2
 2. Police Dept. / Port Joint Operations & Security
- Ⓢ **Critical Facilities**
 3. Galileo High School
 4. Francisco Middle School
- Ⓢ **Historic & Cultural**
 5. Hyde Street Pier
 6. Pier 39
- + **Open Space & Ecology**
 7. Dolphin Club + South End Rowing Club
 8. Bay Trail
 9. Jefferson Street Plaza
 10. Pier 43 Promenade
 11. Sea Lion Viewing Area
- Ⓢ **Maritime**
 12. Fish Alley
 13. Pier 45
 14. Red and White Fleet
 15. Belt Railroad Headhouse
 16. Pier 39 Marine
 17. Blue and Gold Ferry Terminal
- Ⓢ **Transportation**
 18. Hyde Street Cable Car Turnaround
 19. Muni E/F Line
 20. Kiosk and Yard
 21. Embarcadero Roadway
- Ⓢ **Utilities**
 22. North Point Tunnel
 23. Jackson Transp. / Storage Box
 24. North Point Wet Weather Facility and Northshore Pump Station



REPORT OUT REPRESENTATIVE:

		DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES		
FLOOD MEASURES	PHYSICAL INFRASTRUCTURE	1 LEVEES	75+ years	Low	Major Intervention	\$\$\$\$	Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features	
		2 SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Drilled Shafts, Ecological Shorelines	
		3 RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features	
		4 FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts	
ECO. INFRA.	ECOLOGICAL FEATURES	Beaches, Vegetated Terraces		10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
		Stepped Slopes (Major Intervention), Vegetated Revetments, Vegetated Crib Walls, Natural Fiber Blankets, Gabion Baskets		Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
				7 NEARSHORE BUTTRESS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$
SEISMIC MEASURES	TARGETED MEASURES	SHORELINE STABILIZATION	8 DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
			9 BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Levees, Floodwalls, Ecological Features
			10 EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures

*Must be combined with other measures to provide flood protection

OVERVIEW: WHAT WE HEARD

What are the most important considerations for evaluating measures? We heard the following general comments and feedback from the two meetings.

Design Life

- Willing to trade off higher cost for longer design life

Cost

- Willing to pay higher costs to protect iconic and cultural buildings
- Potential cost savings of building new vs. retrofitting for non-historic buildings

Impact on the Waterfront

- Limit impact on the waterfront by thinking longer-term with projects that wouldn't need to be updated or replaced
- “Do it once, do it right”

WHAT WE HEARD

What concerns do you have about any of the measures? We heard the following general comments and feedback from the two meetings.

- Are there measures that in addressing the risks of one area of the waterfront that would negatively impact others?
- What opportunities are there for federal funding?
- What opportunities are there to balance potentially lower-cost measures that could help address risks (like current flooding) with the higher costs of larger projects to address risk with uncertain timing (like an earthquake)?
- Consider total cost (societal and environmental) and not just the financial cost as part of calculations
- Maintain public access and aesthetics of the waterfront

WHAT WE HEARD

Where would you like to see measures placed on the waterfront? We heard the following general comments and feedback from the two meetings.

- Consider more expensive measures or measures requiring more intervention for historic, iconic, or culturally important areas
- Consider the effects of bay fill as part of the Nearshore Buttress measure

While the breakout rooms included discussion of where people might place certain measures, the purpose of the activity was not to determine yet which measures would be adopted and where they would be placed. That decision-making will be part of future community engagement.

Share your feedback with the online [Measures Explorer](#).

SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for Aquatic Park-Fisherman's Wharf | Thursday, September 24

MEASURES EVALUATION	COMMUNITY FEEDBACK
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Adaptability• Cost-Effective• Design Life – able to be replaced• Ecological Features combined with structural• Long-term solution needed to
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• In area of high seismic risk: willing to start over and rebuild• Different challenge than sea level rise – needs different pace of action• Minimizing disruption to identified species
Map Measure Annotations	<ul style="list-style-type: none">• Raised Marine Structure at Pier 39• Bulkhead Wharf Retrofit at Pier 45 (last vestige of working waterfront)• Seawalls at Pier 43• Drilled Shafts inland
Other Discussion Notes	<ul style="list-style-type: none">• Older buildings (non-historic) lower priority than shoreline stabilization; focusing on keep landmarks• Could these areas be parkland instead?

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for Aquatic Park-Fisherman's Wharf | Thursday, September 24

1b

AQUATIC PARK + FISHERMAN'S WHARF SUBAREAS

FACILITATORS: BRAD BENSON + LAUREN WONG

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

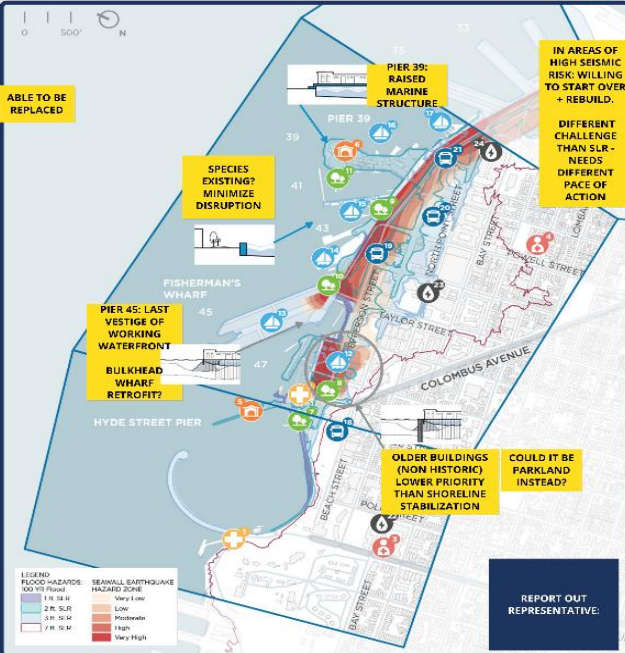
- ADAPTABILITY
- COST-EFFECTIVE
- DESIGN LIFE
- ABLE TO BE REPLACED
- ECOLOGICAL FEATURES (COMBO WITH STRUCTURAL)
- LONG TERM SOLUTION NEEDED TOO

2. What concerns do you have about any of the measures?

Empty boxes for notes.

ASSET LEGEND

- Disaster Response**
 - 1. Emergency Fire Water Supply Pumps Station
 - 2. Police Dept. / Red Joint Operations Security
- Critical Facilities**
 - 3. Sausalito High School
 - 4. Francisco Middle School
- Historic & Cultural**
 - 5. Hyde Street Pier
 - 6. Pier 45
- Open Space & Ecology**
 - 7. Green Glens + South Line Shoreline Club
 - 8. Bay Trail
 - 9. 420 Mission Street Plaza
 - 10. Pier 15 Promenade
 - 11. West End Greenway Area
- Maritime**
 - 12. Pier 45
 - 13. Pier 47
 - 14. Pier 49
 - 15. Pier 50
 - 16. Bulkhead Wharf
 - 17. Pier 51
 - 18. Pier 52
 - 19. Pier 53
 - 20. Pier 54
 - 21. Pier 55
 - 22. Pier 56
 - 23. Pier 57
 - 24. Pier 58
 - 25. Pier 59
 - 26. Pier 60
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 - 37. Pier 71
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 - 42. Pier 76
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 - 51. Pier 85
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 - 53. Pier 87
 - 54. Pier 88
 - 55. Pier 89
 - 56. Pier 90
 - 57. Pier 91
 - 58. Pier 92
 - 59. Pier 93
 - 60. Pier 94
 - 61. Pier 95
 - 62. Pier 96
 - 63. Pier 97
 - 64. Pier 98
 - 65. Pier 99
 - 66. Pier 100
- Transportation**
 - 10. 1000 Level Cable Car Turnaround
 - 20. 420 Mission Street
 - 31. Fisherman's Wharf
- Utilities**
 - 1. Water Main Tunnel
 - 2. Wastewater Tunnel
 - 3. Gas Tunnel
 - 4. Power Tunnel
 - 5. Sewer Tunnel
 - 6. Stormwater Tunnel
 - 7. Telecommunications Tunnel
 - 8. Fiber Optic Tunnel
 - 9. Cable TV Tunnel
 - 10. Data Center
 - 11. Server Room
 - 12. Network Switch
 - 13. Network Router
 - 14. Network Firewall
 - 15. Network Storage
 - 16. Network Backup
 - 17. Network Monitoring
 - 18. Network Security
 - 19. Network Maintenance
 - 20. Network Upgrade
 - 21. Network Expansion
 - 22. Network Optimization
 - 23. Network Performance
 - 24. Network Reliability
 - 25. Network Availability
 - 26. Network Scalability
 - 27. Network Flexibility
 - 28. Network Interoperability
 - 29. Network Compatibility
 - 30. Network Integration
 - 31. Network Migration
 - 32. Network Consolidation
 - 33. Network Simplification
 - 34. Network Automation
 - 35. Network Orchestration
 - 36. Network Analytics
 - 37. Network Intelligence
 - 38. Network Innovation
 - 39. Network Transformation
 - 40. Network Evolution
 - 41. Network Revolution
 - 42. Network Renaissance
 - 43. Network Reformation
 - 44. Network Reconstruction
 - 45. Network Rejuvenation
 - 46. Network Revitalization
 - 47. Network Revamping
 - 48. Network Revolving
 - 49. Network Revolving
 - 50. Network Revolving



	DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES		
FLOOD MEASURES	PHYSICAL INFRASTRUCTURE	1. LEVEES	75+ years	Low	Major Intervention	\$\$\$\$\$	Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features
		2. SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Drilled Shafts, Ecological Shorelines
		3. RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features
		4. FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts
ECO. INFRA.	ECOLOGICAL FEATURES	5. BEACHES, VEGETATED TERRACES	10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
		6. STAPPED SLOPES (MAJOR INTERVENTION), VEGETATED REVETMENTS, VEGETATED CRIB WALLS, NATURAL FIBER BLANKETS, GABION BASKETS	Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
		7. NEARSHORE BUTTRESS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
SEISMIC MEASURES	SHORELINE STABILIZATION	8. DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
		9. BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Levees, Floodwalls, Ecological Features
		10. EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures

*Must be combined with other measures to provide flood protection



SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for Aquatic Park-Fisherman's Wharf Group #1 | Friday, September 25

MEASURES EVALUATION	COMMUNITY FEEDBACK
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Adaptability• Cost• Impact on the Waterfront<ul style="list-style-type: none">• Protect wildlife• Maritime component of Fisherman's Wharf
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• Cost – can we use federal funds?• Port and maritime operations• Can Drilled Shafts be used without high cost and large program interruption
Map Measure Annotations	<ul style="list-style-type: none">• Raised Roadways to minimize traffic• Ecological interventions at Hyde Street Pier• Potential to use Breakwaters• Expand Embarcadero Promenade
Other Discussion Notes	<ul style="list-style-type: none">• De-emphasizing vehicular traffic• Prioritize people and program

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for Aquatic Park-Fisherman's Wharf Group #1 | Friday, September 25

1a

AQUATIC PARK + FISHERMAN'S WHARF SUBAREAS

FACILITATORS: LINDY LOWE + JULIE GAWENDO

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

- Protect Wildlife
- Maritime Component of Fish Wharf
- De-emphasize vehicular traffic. Prioritize people and Program

2. What concerns do you have about any of the measures?

- Cost
- Port and Maritime Operations
- Can we use federal funds?

ASSET LEGEND

- 1. Emergency Fire Water Supply Pump Station**
- 2. Police Dept. / Port Joint Operations & Security**
- 3. Cultural Facilities**
 - 1. Galileo High School
 - 4. Francisco Hotel Shops
- 4. Historic & Cultural**
 - 5. Hyde Street Pier
 - 7. Buell St.
- 5. Open Space & Ecology**
 - 6. Aquatic Club / South Pier Fishing Club
 - 8. Bay Trail
 - 9. Steeplechase Park
 - 10. Pier 42 Promenade
 - 11. Bay View Viewing Deck
- 6. Maritimes**
 - 12. Sea Wall
 - 13. Red and White Pier
 - 14. San Francisco Landmark
 - 15. Pier 39
 - 17. Bulkhead Quay Ferry Terminal
- 7. Transportation**
 - 16. Fisherman's Wharf, Cal. Turnaround
 - 18. Pier 39 Jan
 - 19. Pier 42
 - 20. Fisherman's Wharf
 - 21. Embarcadero Roadway
- 8. UTILITIES**
 - 22. Water Mains Tunnel
 - 23. Jackson Turnaround / Storage Bldg
 - 24. South Pier and Aquatic Facility and Portshore Pump Station



	DESIGN LIFE	ADAPT-ABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES		
FLOOD MEASURES	PHYSICAL INFRASTRUCTURE	1. LEEVES	75+ years	Low	Major Intervention	\$\$\$\$\$	Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features
		2. SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Ecological Shorelines
		3. RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features
		4. FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts
ECCO INFRA.	ECOLOGICAL FEATURES	5. ECOLOGICAL FEATURES	10-50+ years	Medium-High	Minor Intervention	\$+\$	All Flood Measures and Seismic Measures
		6. ECOLOGICAL SHORELINES	Decades	Medium-High	Typically Minor Intervention	\$+\$	All Flood Measures and Seismic Measures
		7. ECOLOGICAL SHORELINES	Decades	Medium-High	Typically Minor Intervention	\$+\$	All Flood Measures and Seismic Measures
SHORELINE STABILIZATION	TARGETED MEASURES	8. NEARSHORE BUTTRESS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Leaves, Seawalls, Ecological Features
		9. DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
		10. BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Leaves, Floodwalls, Ecological Features
FLOOD + SEISMIC	EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures	

*Must be combined with other measures to provide flood protection

Can these be used without high cost and large program interruption?



SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for Aquatic Park-Fisherman's Wharf Group #2 | Friday, September 25

MEASURES EVALUATION	COMMUNITY PRIORITIZATION
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Design Life• Adaptability• Cost
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• Best way to apply measures in this tight area
Map Measure Annotations	<ul style="list-style-type: none">• Raised Marine Structure at Pier 45 (historic value), Pier 47, and Hyde Street Pier• Ecological Features at Hyde Street Pier and for rowing clubs and swimming area to keep area attractive• Drilled Shafts along Embarcadero Roadway between Pier 39 and 45 as more cost effective• Drilled Shafts along Embarcadero Roadway at Pier 47
Other Discussion Notes	<ul style="list-style-type: none">• Consider rebuilding• Ecological Features: low cost is a benefit

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity Aquatic Park-Fisherman's Wharf Group #2 | Friday, September 25

1b

AQUATIC PARK + FISHERMAN'S WHARF SUBAREAS

FACILITATORS: BRAD BENSON + DAN HODAPP + LAUREN WONG

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

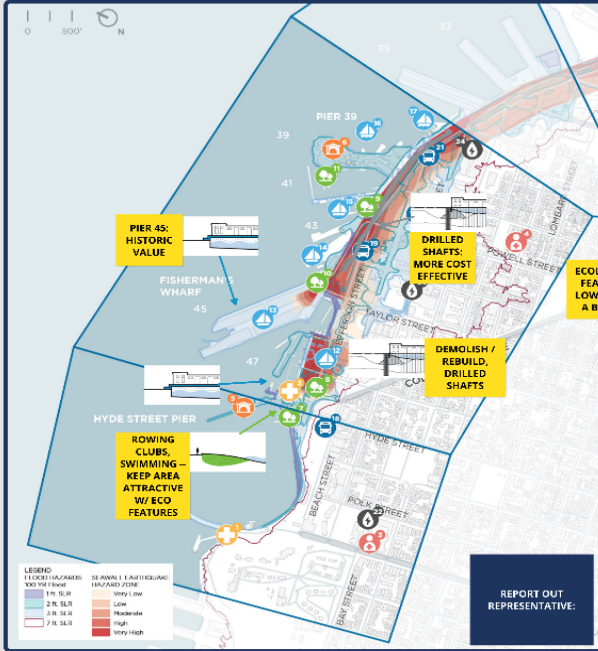


2. What concerns do you have about any of the measures?



ASSET LEGEND

- Disaster Response**
 - 1. Breaching Pier Water Control Pump Station 2'
 - 2. Tidal Cracks / Pier Joint Operations & Security
- Critical Facilities**
 - 3. Sausalito High School
 - 4. Francisco High School
- Historic & Cultural**
 - 5. Taylor Street Pier
 - 6. Pier 39
- Open Space & Ecology**
 - 7. Golden Gate Park - South Side Meeting Club
 - 8. Big Tree
 - 9. Jefferson Street Park
 - 10. Pier 39 Promenade
 - 11. San Jose Veterans Park
- Maritime**
 - 12. Fish Pier
 - 13. Pier 40
 - 14. Redwood Village Pier
 - 15. Dahl Boatyard Handhouse
 - 16. Pier 50 Handhouse
 - 17. Blue and Gold Ferry Terminal
- Transportation**
 - 18. Bay Area Rapid Transit - Cor. Tunnel Road
 - 19. Pier 40
 - 20. Kirkland Yard
 - 21. Benthic Bivalve Biodiversity
- Utilities**
 - 22. North Point Tunnel
 - 23. Golden Gate Bridge / Golden Gate Bldg
 - 24. San Francisco State University Faculty and Performance Studio Station



REPORT OUT REPRESENTATIVE:

		DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES
FLOOD MEASURES	PHYSICAL INFRASTRUCTURE					
	1. LEVEES	75+ years	Low	Major Intervention	\$\$\$\$\$	Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features
	2. SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Drilled Shafts, Ecological Shorelines
	3. RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features
	4. FLOODWALLS	30-50 years	Low	Minor Intervention	\$	Bulkhead Wharf Retrofit, Drilled Shafts
ECO. INFRA.	5. ECOLOGICAL FEATURES	10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
	6. ECOLOGICAL SHORELINES	Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
	7. NEARSHORE BUTTRESS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
SEISMIC MEASURES TARGETED MEASURES	8. DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
	9. BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$	Levees, Floodwalls, Ecological Features
	10. EMERGENCY PREPAREDNESS	20 years		No physical impact	\$	All Flood Measures and Seismic Measures

*Must be combined with other measures to provide flood protection

SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for Pier 31-35 + Northeast Waterfront | Thursday, September 24

MEASURES EVALUATION	COMMUNITY PRIORITIZATION
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Define our priority uses• Get the most lifespan for the cost• Dual function: ecological/educational• Cost is worth it if highly adaptable
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• Nearshore buttress requires filling the bay• Tradeoffs of impacts and adaptability• Aesthetic value of historic buildings• Is short-term consequence worth it for long-term value• It is already a constructed edge, so fill may not change that
Map Measure Annotations	<ul style="list-style-type: none">• Potential Nearshore Buttress between Piers 31 and 35• Ecological Shorelines near the cruise terminal• Raised Marine Structures for Piers 9 to 23• Drilled Shafts along the Embarcadero between Piers 9 and 23
Other Discussion Notes	N/A

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for Pier 31-35 + Northeast Waterfront | Thursday, September 24

2a PIER 31-35 + NORTHEAST WATERFRONT SUBAREAS

FACILITATORS: NICO WRIGHT + ILIA SAVIN

DESIGN LIFE	ADAPT-ABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES
75+ years	Low	Major Intervention	\$\$\$\$\$	Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features
50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Drilled Shafts, Ecological Shorelines
50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features
30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts
10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
30 years	Low	Minor Waterside Intervention	\$\$	Levees, Floodwalls, Ecological Features
		No physical impact	\$	All Flood Measures and Seismic Measures

REPORT OUT REPRESENTATIVE: Jamie

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

- Define our priority uses
- Get the most lifespan for the cost
- DUAL FUNCTION: ECOLOGICAL/ EDUCATIONAL
- Costly is worth it if highly adaptable

2. What concerns do you have about any of the measures?

- Nearshore Buttress = filling the bay
- Tradeoff of impacts and adaptability
- Aesthetic value of historic buildings
- Is short term consequence worth it for long term value?
- It is already a constructed edge so fill may not change that

SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for Pier 31-35 + Northeast Waterfront | Friday, September 25

MEASURES EVALUATION	COMMUNITY FEEDBACK
<p>What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)</p>	<ul style="list-style-type: none"> • Design Life: 30-50-yearr Design Life doesn't make sense (investment should be longer) • Cost – importance since it will be so huge • Impact to the Waterfront – visual, physical, and system-wide impacts
<p>What concerns do you have about any of the measures?</p>	<ul style="list-style-type: none"> • Try to avoid filling as much as possible • Regulatory hurdles • Visual impact • Grade change/different elevations • Will one action make it worse elsewhere? • Little disturbance as possible to buildings/structures
<p>Map Measure Annotations</p>	<ul style="list-style-type: none"> • Combine: Raised Marine Structures + Ecological Features > Raised Marine Structures Piers 9-23; Raised Marine Structures + Ecological Features Piers 17-23 • Potential for floating structures for Piers 31 to 35?
<p>Other Discussion Notes</p>	<ul style="list-style-type: none"> • Teaching about the effort – Exploratorium could education • Impact on the Waterfront – Exploratorium, Cruise Ship Terminal, Tunnel need to be protected; “The city by the bay” (keep the story); Experience of the waterfront (the flow of people from city to water)

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for Pier 31-35 + Northeast Waterfront | Friday, September 25

2a

PIER 31-35 + NORTHEAST WATERFRONT SUBAREAS

FACILITATORS: NICO WRIGHT + ILIA SAVIN

ASSET LEGEND

- **Disaster Response**
 - 1. Bay-Side Interarea Terminal Facility
 - 2. Pier 31
- **Critical Facilities**
 - 3. Redwood Park Open-Recreation
- **Historic & Cultural**
 - 4. ZIP Tower
 - 5. Pier 27 Club
 - 6. Argonautarium
- **Open Space & Ecology**
 - 7. Chappa, 2nd Ferry-Over-Sand
 - 8. "L&L" Trail
 - 9. Northward Wharf Plaza
 - 10. Bay Bridge
 - 11. Bay Trail - Floating
- **Maritime**
 - 12. Alcatraz Island
 - 13. Alcatraz Island
 - 14. Alcatraz Island
 - 15. Maritime Museum Complex
- **Transportation**
 - 16. "M&E" Station
 - 17. Transbay Transit Facility
- **Utilities**
 - 18. North Water Distribution Outfalls
 - 19. Interbay Energy Center
 - 20. San Francisco Public Utilities Commission
 - 21. North Water Plant

Visual, Physical, and system wide impacts

REPORT OUT REPRESENTATIVE:
Crystal

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

- Exploratorium, Cruise Ship Terminal, Tunnel Needs to be protected
- Tell a story
- Cost is important since it will be so huge
- Experience of waterfront. Flow of people from city to water

2. What concerns do you have about any of the measures?

- Try to avoid filling as much as possible. Regulatory Hurdles
- Visual Impact
- Will one action make it worse somewhere else?
- Little disturbance as possible to buildings/structures

30-50 yr Design life doesn't make sense. Investment should be longer term

		DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES
FLOOD MEASURES	PHYSICAL INFRASTRUCTURE	1 LEVEES	75+ years	Low	Major Intervention	\$\$\$\$\$ Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features
	2 SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Drilled Shafts, Ecological Shorelines
	3 RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features
	4 FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts
ECO. INFRA.	5 BEACHES, VEGETATED TERRACES	10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
	6 ECOLOGICAL SHORELINES	Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
SEISMIC MEASURES	SHORELINE STABILIZATION	7 NEARSHORE BUTTRESS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$ Levees, Seawalls, Ecological Features
	8 DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
	9 BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Levees, Floodwalls, Ecological Features
FLOOD + SEISMIC	10 EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures

*Must be combined with other measures to provide flood protection

Teaching about the effort... Exp
loratorium could educate

Few opportunities in this part of waterfront for natural features

SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for Ferry Building | Thursday, September 24

MEASURES EVALUATION	COMMUNITY FEEDBACK
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Cost-effectiveness – how do we distribute resources for everyone?• Construction and social impacts• Design Life (sea level rise projections uncertainty after 2060 – unpredictability of ice melt; target near-term solutions)• Impact on the Waterfront – to businesses and mobility
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• Uncertainty of projections – better to bet on nearer-term solutions
Map Measure Annotations	<ul style="list-style-type: none">• Bulkhead Wharf Retrofit between Piers 1 and 3• Drilled Shafts at the Ferry Building; not as effective in other areas due to bay mud• Nearshore Buttress good for Ferry Building but expensive
Other Discussion Notes	<ul style="list-style-type: none">• Explore retreat to focus on higher-use areas?• Ferry Building: protection of iconic structures vs. expense and social costs• Deep soil mixing at Ferry Building (adaptable but costly)• Do more short-term, but more certain, flood measures now for lower costs• Potentially migrate Rincon Park• How do we integrate planning for the greater Bay Area?• How is transit preserved during construction?

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for Ferry Building | Thursday, September 24

3a FERRY BUILDING SUBAREA

FACILITATORS: STEVEN REEL + KATE LENAHAN

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

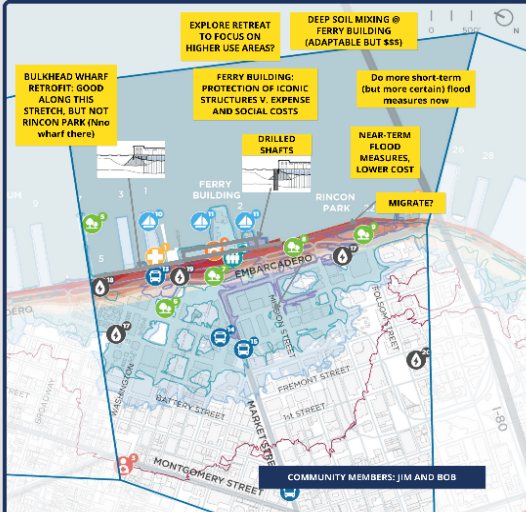
EXPENSE CONSTRUCTION + SOCIAL IMPACTS

2. What concerns do you have about any of the measures?

UNCERTAINTY OF PROJECTIONS - BETTER TO EYE ON NEAR-TERM SOLUTIONS

ASSET LEGEND

- 1. Quarters Westside
- 2. Battery Park West - Coastal One Center
- 3. Market Hotel/Luxury Fine Lodging B&B
- 4. Critical Facilities
- 5. St. Basil & St. Rita Loc. - Neuroscience School
- 6. Historic & Cultural
- 7. Ferry Building
- 8. Open Space & Ecology
- 9. Park 7
- 10. San Francisco
- 11. Bay Area, major Recreational Area
- 12. San Francisco
- 13. The Art & Performance
- 14. Truck Yard
- 15. Maritime
- 16. Port of San Francisco
- 17. Ferry Terminal
- 18. Community Assets
- 19. Transit Station
- 20. Transportation
- 21. San Francisco
- 22. San Francisco
- 23. San Francisco
- 24. San Francisco
- 25. San Francisco
- 26. San Francisco
- 27. San Francisco
- 28. San Francisco
- 29. San Francisco
- 30. San Francisco



EXPLORE RETREAT TO FOCUS ON HIGHER USE AREAS?

DEEP SOIL MIXING @ FERRY BUILDING (ADAPTABLE BUT \$\$\$)

Do more short-term (but more certain) flood measures now

NEAR-TERM FLOOD MEASURES, LOWER COST

MIGRATE?

BULKHEAD WHARF RETROFIT: GOOD ALONG THIS STRETCH, BUT NOT RINCON PARK (New wharf there)

FERRY BUILDING: PROTECTION OF ICONIC STRUCTURES V. EXPENSE AND SOCIAL COSTS

DRILLED SHAFTS

COMMUNITY MEMBERS: JIM AND BOB

REPORT OUT REPRESENTATIVE: STEVE R. / PAMELA C.

HOW DO WE INTEGRATE PLANNING FOR THE GREATER BAY AREA?		SLR PROJECTIONS UNCERTAINTY AFTER 2050 (UNPREDICTABILITY OF ICE MELT) => TARGET NEAR-TERM SOLUTIONS			TO BUSINESSES, MOBILITY		HOW DO WE DISTRIBUTE RESOURCES FOR EVERYONE?		
		DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES			
FLOOD MEASURES	PHYSICAL INFRASTRUCTURE	1 LEAVES	75+ years	Low	Major Intervention	\$\$\$\$\$	Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features		
	2 SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Drilled Shafts, Ecological Shorelines			
	3 RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features			
	4 FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts			
ECO. INFRA	5 ECOLOGICAL FEATURES	10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures			
	6 ECOLOGICAL SHORELINES	Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures			
SEISMIC MEASURES	SHORELINE BUTTRESS	100+ years	Very High	Major Intervention	\$\$\$\$\$	Leaves, Seawalls, Ecological Features			
	DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls			
	BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Leaves, Floodwalls, Ecological Features			
FLOOD + SEISMIC	EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures			

GOOD FOR FERRY BUILDING, but expensive

HOW DO WE PRESERVE TRANSIT DURING CONSTRUCTION?

NOT AS EFFECTIVE HERE DUE TO DEEP BAY MUD

*Must be combined with other measures to provide flood protection



SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for Ferry Building | Friday, September 25

MEASURES EVALUATION	COMMUNITY FEEDBACK
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Design Life: Critical area for the city – measures with longer design life and effectiveness are worth impacts and cost• Adaptability: Nature-based adaptation is important• What needs to happen now vs. long-term effects?• Ecological co-benefits – opportunity for demonstration
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• Levees can be unrealistic; Floodwalls not effective here• Can this be improved design and built in time?• Could compartmentalize flooding with raised structures for complete system• Demonstration projects – possible in some areas of the waterfront, especially near Exploratorium?• Nearshore Buttress as more effective than Bulkhead Wharf Retrofit
Map Measure Annotations	<ul style="list-style-type: none">• Raised Marine Structures at Ferry Building and Piers 1 and 3• Seawall and Ecological Features at Ferry Building and Piers 1 and 3• Ecological Shorelines at Rincon Park
Other Discussion Notes	<ul style="list-style-type: none">• Effectiveness of measures is not listed as one of the criteria in the activity; Restraints from existing construction on which measures could be implemented

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for Ferry Building | Friday, September 25

3a FERRY BUILDING SUBAREA

FACILITATORS: STEVEN REEL + KATE LENAHAN

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

DESIGN LIFE - **ADAPTABILITY** - **EFFECTIVENESS**

ECOLOGICAL CO-BENEFITS - OPPORTUNITY FOR DEMONSTRATION

CRITICAL AREA FOR THE CITY - MEASURES WITH LONGER DESIGN LIFE AND EFFECTIVENESS ARE WORTH IMPACTS AND COST

2. What concerns do you have about any of the measures?

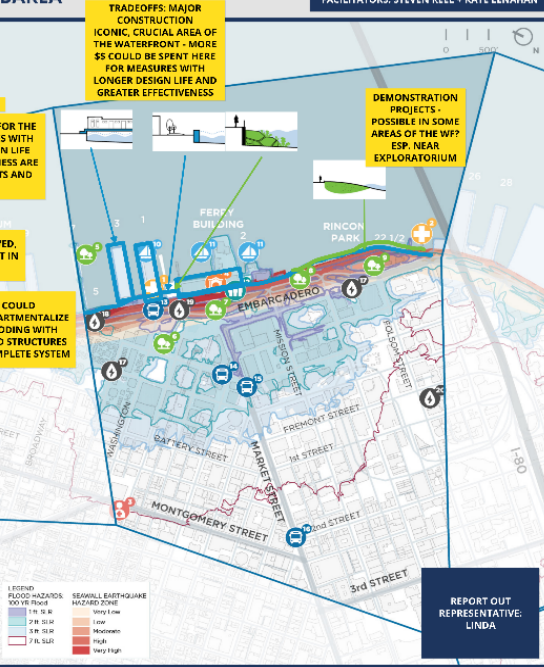
LEEVES CAN BE UNREALISTIC

CAN THIS BE APPROVED, DESIGNED, AND BUILT IN TIME?

FLOODWALLS NOT EFFECTIVE HERE

ASSET LEGEND

- 1. Disaster Response
 - 1. Marina Pier, Bus, Operations Center
 - 2. Transit, Warehouse, Fire Station
- 2. Critical Facilities
 - 3. Retail & Auto Lot (warehouse facility)
- 3. Historic & Cultural
 - 4. Ferry Building
- 4. Open Space & Ecology
 - 5. Pier
 - 6. San Francisco Bay
 - 7. Pier 29, Pier 39, Piers 39A & 39B, Piers 39C & 39D
 - 8. San Francisco Bay
 - 9. San Francisco Bay
- 5. Hazards
 - 10. Port of San Francisco
 - 11. Pier 39
- 6. Community Assets
 - 12. Summer '20
- 7. Transportation
 - 13. Rail (BART, Muni, Caltrain)
 - 14. Carlini (BART, Muni, Caltrain)
 - 15. BART (BART, Muni, Caltrain)
 - 16. BART (BART, Muni, Caltrain)
 - 17. BART (BART, Muni, Caltrain)
- 8. Utilities
 - 18. Gas
 - 19. Electric
 - 20. Water
 - 21. Sewer
 - 22. Stormwater



WHAT NEEDS TO HAPPEN NOW V. LONG-TERM EFFECTS

	EFFECTIVENESS	DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES	
FLOOD MEASURES	PHYSICAL INFRASTRUCTURE	1. LEEVES	75+ years	Low	Major Intervention	\$\$\$\$\$	Nearshore Buttriss, Bulkhead Wharf Retrofit, Ecological Features
		2. SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttriss, Drilled Shafts, Ecological Shorelines
		3. RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features
		4. FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts
		5. ECOLOGICAL FEATURES	10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
ECO. INFRA.	ECOLOGICAL SHORELINES	6. BEACHES, VEGETATED TERRACES	Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
		7. STEPPED SLOPES (MAJOR INTERVENTION), VEGETATED REVETMENTS, VEGETATED CRIB WALLS, NATURAL FIBER BULKHEADS, GABION BULKHEADS	Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
SEISMIC MEASURES	SHORELINE STABILIZATION	8. NEARSHORE BUTTRISS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
		9. DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
		10. BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Levees, Floodwalls, Ecological Features
FLOOD + SEISMIC	EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures	

*Must be combined with other measures to provide flood protection



SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for South Beach | Thursday, September 24

MEASURES EVALUATION	COMMUNITY PRIORITIZATION
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Cost• Design Life – long-term thinking and longevity of projects
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• Disruption from construction• Disruptions from construction will have to be minimal and slow
Map Measure Annotations	<ul style="list-style-type: none">• Nearshore Buttress at Brannan Street Wharf• Bulkhead Wharf Retrofit + Drilled Shafts at Piers 38 and 40
Other Discussion Notes	<ul style="list-style-type: none">• Focus on area with greatest seismic risk as priority

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for South Beach | Thursday, September 24

4a SOUTH BEACH SUBAREA

FACILITATORS: MATT WICKENS + KATE FRATER

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

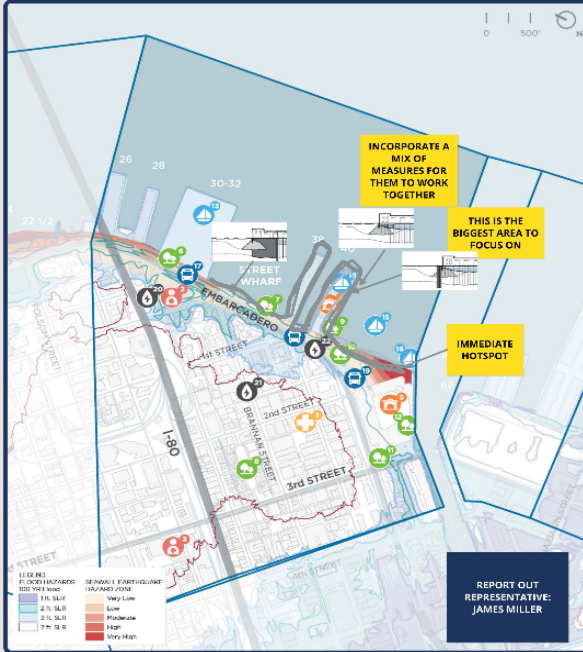
LONGEVITY **COST?** **DESIGN LIFE (LONG-TERM THINKING)**

2. What concerns do you have about any of the measures?

DISRUPTION FROM CONSTRUCTION **DISRUPTIONS WILL HAVE TO BE MINIMAL AND SLOW**

ASSET LEGEND

- Disaster Response**
 - 1. 1st-4th Floor, Headquarters and 1st-3rd Floor
- Critical Facilities**
 - 2. SFPD and Navigation Center
 - 3. SFPA Police Towers
- Historic & Cultural**
 - 4. 2nd-4th Floor, 1st-3rd Floor
 - 5. 1st-3rd Floor
- Open Space & Ecology**
 - 6. Bay Park + Promenade
 - 7. Bay Park + Promenade
 - 8. South Beach Park
 - 9. Bay Park + Promenade
 - 10. South Beach Park
 - 11. Bay Park + Promenade
 - 12. Bay Park + Promenade
- Maritime**
 - 13. Pier 20-22
 - 14. 1st-3rd Floor
 - 15. South Beach + Pier
 - 16. 1st-3rd Floor
 - 17. 1st-3rd Floor
 - 18. 1st-3rd Floor
- Transportation**
 - 19. 1st-3rd Floor
 - 20. 1st-3rd Floor
 - 21. 1st-3rd Floor
 - 22. 1st-3rd Floor
- Utilities**
 - 23. Bay Park + Promenade
 - 24. Bay Park + Promenade
 - 25. Bay Park + Promenade
 - 26. Bay Park + Promenade



	DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES	
FLOOD MEASURES	1 LEVEES	75+ years	Low	Major Intervention	\$\$\$\$	Nearshore Buttress, Bulkhead Wharf Retrofit, Ecological Features
	2 SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttress, Drilled Shafts, Ecological Shorelines
	3 RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$\$	Drilled Shafts, Ecological Features
	4 FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts
ECO. INFRA.	5 ECOLOGICAL FEATURES	10-50+ years	Medium-High	Minor Intervention	\$*	Beaches, Vegetated Terraces, All Flood Measures and Seismic Measures
	6 ECOLOGICAL SHORELINES					Stepped Slopes (Major Intervention), Vegetated Revetments, Vegetated Crib Walls, Natural Fiber Blankets, Gabion Baskets
		Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
SEISMIC MEASURES	7 NEARSHORE BUTTRESS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$	Levees, Seawalls, Ecological Features
	8 DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
	9 BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Levees, Floodwalls, Ecological Features
FLOOD + SEISMIC	10 EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures

*Must be combined with other measures to provide flood protection

SPECIFIC BREAKOUT ROOM FEEDBACK

Notes for South Beach | Friday, September 25

MEASURES EVALUATION	COMMUNITY FEEDBACK
What are the most important considerations for evaluating measures? (Design Life, Adaptability, Impact on the Waterfront, Cost, Compatible Measures)	<ul style="list-style-type: none">• Design Life<ul style="list-style-type: none">○ Consider that measures with a shorter design life may cost less money, but if they need to be replaced sooner it may ultimately be more cost-effective to choose the measures with a longer design life○ 30 years is too short of a design life• Cost – paying more for longer design life<ul style="list-style-type: none">○ “Do the project once”• Impact on the Waterfront – keep visual and public access
What concerns do you have about any of the measures?	<ul style="list-style-type: none">• There is public perception about levees as being less effective based on their performance in Hurricane Katrina• Maintenance of a levee system
Map Measure Annotations	<ul style="list-style-type: none">• Combine Seawalls with Raised Marine Structures
Other Discussion Notes	<ul style="list-style-type: none">• Include societal and environmental costs as well as financial costs as part overall cost evaluation

SPECIFIC BREAKOUT ROOM FEEDBACK

Measures Activity for South Beach | Friday, September 25

4a SOUTH BEACH SUBAREA

REPORT OUT NOTES

1. What are the most important considerations for evaluating measures?

2. What concerns do you have about any of the measures?

PLEASE INCLUDE SOCIAL, ENVIRONMENTAL, OTHER NON-FINANCIAL COSTS

DEMYSTIFY THE PUBLIC ON THE PERCEPTION OF A LEVEE

CRITICAL FACILITIES

HISTORIC & CULTURAL

OPEN SPACE & ECOLOGY

MARITIME

TRANSPORTATION

UTILITIES

RAISED ROADWAYS, LEVEES, NOT THE SAME IMPACT AS RAISED HIGHWAYS

DON'T ADD ANYMORE RAISED HIGHWAYS

WHAT ARE THE TRADEOFFS FOR DESIGN LIFE VS. COST?

IS THE FLOOD JUST BASED ON SLR OR IN CONJUNCTION WITH A 100-YEAR FLOOD?

A: 100-YEAR FLOOD + SLR

WHERE ARE THE OUTFALLS?

30 YEARS IS TOO SHORT FOR A DESIGN LIFE

HAVE THESE WORK IN CONJUNCTION

FLOATING ROADWAYS?

FACILITATORS: MATT WICKENS - KATE FRATAR

REPORT OUT REPRESENTATIVE: AMY NAGENGAST

	DESIGN LIFE	ADAPT-ABILITY	IMPACT ON THE WATERFRONT	COST	COMPATIBLE MEASURES	
FLOOD MEASURES	1 LEVEES	75+ years	Low	Major Intervention	\$\$\$\$\$	Nearshore Buttriss, Bulkhead Wharf Retrofit, Ecological Features
	2 SEAWALLS	50-100 years	Varies	Major Intervention	\$\$\$	Nearshore Buttriss, Drilled Shafts, Ecological Shorelines
	3 RAISED MARINE STRUCTURES	50+ years	Medium	Major Intervention	\$\$\$	Drilled Shafts, Ecological Features
	4 FLOODWALLS	30-50 years	Low	Minor Intervention	\$\$	Bulkhead Wharf Retrofit, Drilled Shafts
ECCO. INFRA.	5 BEACHES, VEGETATED TERRACES	10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
	6 ECOLOGICAL FEATURES	Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
SEISMIC MEASURES	7 NEARSHORE BUTTRISS	100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
	8 DRILLED SHAFTS	75+ years	Medium	Moderate Landside Intervention	\$\$\$	Raised Marine Structures, Floodwalls, Seawalls
	9 BULKHEAD WHARF RETROFIT	30 years	Low	Minor Waterside Intervention	\$\$	Levees, Floodwalls, Ecological Features
FLOOD + SEISMIC	10 EMERGENCY PREPAREDNESS			No physical impact	\$	All Flood Measures and Seismic Measures

*Must be combined with other measures to provide flood protection



WE HOPE TO SEE YOU AT A FUTURE COMMUNITY MEETING!

Embarcadero Community Meeting #6 Activity

4a SOUTH BEACH SUBAREA

REPORT OUT NOTES

- What are the most important information for you when evaluating interventions?
- What are the tradeoffs for design life vs. cost?
- What concerns do you have about any of the measures?
- What measures do you think would be most effective in the long run?
- What are the most important information for you when evaluating interventions?

DESIGN LIFE

DESIGN LIFE	ADAPT. ABILITY	IMPACT ON THE WATERSHED	COST	COMPATIBLE MEASURES
75+ years	Low	Major Intervention	\$\$\$\$\$	Restoration, Biological, Structural, Ecological Features
50-100 years	Varies	Major Intervention	\$\$\$	Restoration, Biological, Structural, Ecological Features
50+ years	Medium	Major Intervention	\$\$\$\$	Drifted Shafts, Biological Features
30-50 years	Low	Minor Intervention	\$	Ballast Water Treatment, Drifted Shafts
10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
75+ years	Medium	Moderate Landside Intervention	\$\$\$	Water Control Structures, Restrooms, Seawalls
30 years	Low	Minor Waterside Intervention	\$	Levees, Restrooms, Ecological Features
		No physical impact	\$	All Flood Measures and Seismic Measures

COMPATIBLE MEASURES

- Restoration, Biological, Structural, Ecological Features
- Drifted Shafts, Biological Features
- Ballast Water Treatment, Drifted Shafts
- All Flood Measures and Seismic Measures
- Levees, Seawalls, Ecological Features
- Water Control Structures, Restrooms, Seawalls
- Levees, Restrooms, Ecological Features
- All Flood Measures and Seismic Measures

Participants: HMD, Kate F. Port of S., Matt Wickens, Port of S., Jenny Z., Port of S.

Embarcadero Community Meeting #6 Activity

1a AQUATIC PARK + FISHERMAN'S WHARF SUBAREAS

REPORT OUT NOTES

- What are the most important information for you when evaluating interventions?
- What concerns do you have about any of the measures?

DESIGN LIFE

DESIGN LIFE	ADAPT. ABILITY	IMPACT ON THE WATERSHED	COST	COMPATIBLE MEASURES
75+ years	Low	Major Intervention	\$\$\$\$\$	Restoration, Biological, Structural, Ecological Features
50-100 years	Varies	Major Intervention	\$\$\$	Restoration, Biological, Structural, Ecological Features
50+ years	Medium	Major Intervention	\$\$\$\$	Drifted Shafts, Biological Features
30-50 years	Low	Minor Intervention	\$	Ballast Water Treatment, Drifted Shafts
10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
75+ years	Medium	Moderate Landside Intervention	\$\$\$	Water Control Structures, Restrooms, Seawalls
30 years	Low	Minor Waterside Intervention	\$	Levees, Restrooms, Ecological Features
		No physical impact	\$	All Flood Measures and Seismic Measures

Participants: Amber Shipley, Randy Quezada, Brad Benson, Kate L. Port of S., Lindy Lowe, Port of S., Brian.

Embarcadero Community Meeting #6 Activity

1b AQUATIC PARK + FISHERMAN'S WHARF SUBAREAS

REPORT OUT NOTES

- What are the most important information for you when evaluating interventions?
- What concerns do you have about any of the measures?

DESIGN LIFE

DESIGN LIFE	ADAPT. ABILITY	IMPACT ON THE WATERSHED	COST	COMPATIBLE MEASURES
75+ years	Low	Major Intervention	\$\$\$\$\$	Restoration, Biological, Structural, Ecological Features
50-100 years	Varies	Major Intervention	\$\$\$	Restoration, Biological, Structural, Ecological Features
50+ years	Medium	Major Intervention	\$\$\$\$	Drifted Shafts, Biological Features
30-50 years	Low	Minor Intervention	\$	Ballast Water Treatment, Drifted Shafts
10-50+ years	Medium-High	Minor Intervention	\$*	All Flood Measures and Seismic Measures
Decades	Medium-High	Typically Minor Intervention	\$*	All Flood Measures and Seismic Measures
100+ years	Very High	Major Waterside Intervention	\$\$\$\$\$	Levees, Seawalls, Ecological Features
75+ years	Medium	Moderate Landside Intervention	\$\$\$	Water Control Structures, Restrooms, Seawalls
30 years	Low	Minor Waterside Intervention	\$	Levees, Restrooms, Ecological Features
		No physical impact	\$	All Flood Measures and Seismic Measures

Participants: Tiza O., Port of S., Pamela C., Port of S., Matt Wickens, Port of S., Brad Benson, Port of S., Ila Savin, Port of S., Kate L., Port of S.



PORT OF SAN FRANCISCO