Scaling up a pilot project to help meet the challenge of climate adaptation in San Francisco Bay
Coastal Flooding in the Bay is a Solvable Problem

Source: USACE
Restore Complete Systems

- Pickleweed, marsh gumplant, and other native vegetation
- Pacific cordgrass
- Oysters
- Eelgrass

- Upland
- High Marsh
- Marsh Plain
- Low Marsh
- Mudflat
- Subtidal

Transition Zone
- Create spatial framework to guide nature-based adaptation strategies for sea-level rise
- “Nature’s jurisdictions”
- Pairing problems with adaptation measures in appropriate places
Horizontal levees

Method:

- For each OLU, determine crest elevation based on total water level:
  \[ \text{crest elevation} = \text{storm surge height} + \text{wave height} + \text{sea-level rise} \]
- Based on crest elevation, levee width assuming slope of 1:30
- Map horizontal levee opportunities
Oyster reef
Submerged aquatic vegetation
Mudflat augmentation
Fine and coarse beaches
Polder management
Tidal marsh restoration
Horizontal levee construction
Migration space preparation
Elevate highway and railroad

Remove levees and restore tidal marsh

Re-establish upland transition zones

Create a horizontal seepage levee

Create a depositional marsh plain

Flows into marsh ponds
Unfundable? Infeasible? Illegal?
Existing Marsh

Coarse Beaches, Reefs, Sediment Placement

Transition Zone

Realign

Lead Time

Threshold

Decision

Effective

5ft
Thank you

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