



SUSTAINABILITY & RESILIENCE DEPARTMENT

ADAPTATION & RESILIENCE DIVISION

WATERFRONT ADAPTATION PLAN

P&R Commission – March 25, 2026



CALIFORNIA
COASTAL
COMMISSION



ADAPTATION & RESILIENCE PROGRAM

Program Purpose

Help our community **prepare for current and future** climate-related hazards like sea level rise, flooding, erosion, and wildfires.



Active Major Projects

- Regional Coastal Adaptation Monitoring Program
- Wastewater & Water Systems Climate Adaptation Plan
- Waterfront Adaptation Plan
- Laguna Flood Resilience Study
- Airport Climate Adaptation Plan

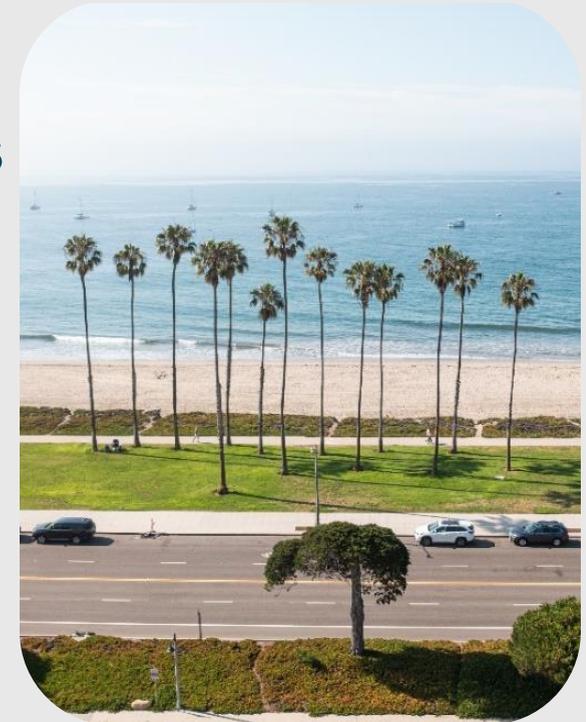


WATERFRONT ADAPTATION PLAN



Today's Topics & Objectives

- Current & Future Coastal Hazards
- Toolbox of Potential Solutions
- Opportunities to Improve the Experience
- Potential Options for Further Study
- Discussion



Waterfront Adaptation Plan Vision

Develop practical solutions to address coastal flooding and erosion for the next 30 years, **while enhancing what makes the Waterfront special**

Project Schedule

2024

2025

2026

2027



Today

Project Area



CHALLENGES TODAY & IN THE FUTURE

Beach erosion, flooding, and sea level rise

Today's Damages from the Ocean

Erosion from waves



Flooding from ocean



Storms today are causing damages and disruption - \$3M from 2023 storm alone

Today's Erosion at East Beach

November 2025

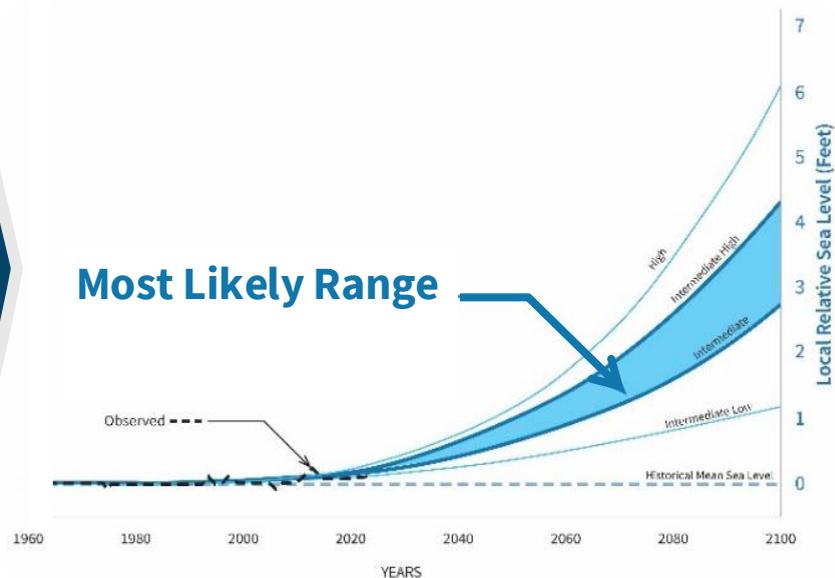
Over the last 20 years, East beach **eroded significantly** (5 ft/yr in some areas)



Increased erosion causes **more inland flooding risk**

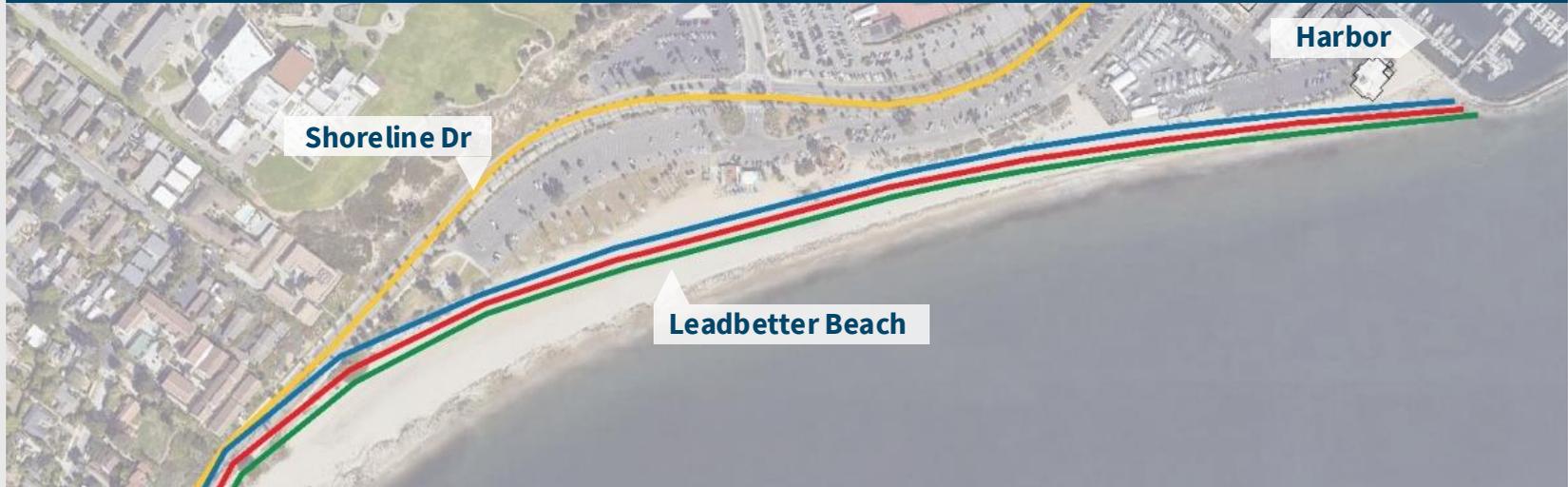
Sea Level Rise & Tomorrow's Shoreline

- Today, El Niño and big waves are biggest threat
- Sea level rise will increase storm damage and erosion
 - 3-4" of sea level rise since 2000
 - Will accelerate in coming years



Tomorrow's Waterfront Beaches (no action)

Leadbetter Beach narrows slowly



0.8' SLR ~2050

1.6' SLR ~2065

2.5' SLR ~2075

Waterfront "Hold the Line" Position

Tomorrow's Waterfront Beaches (no action)

West Beach remains wide



0.8' SLR ~2050

1.6' SLR ~2065

2.5' SLR ~2075

Waterfront "Hold the Line" Position

Tomorrow's Waterfront Beaches (no action)

East Beach narrows fast



0.8' SLR ~2050

1.6' SLR ~2065

2.5' SLR ~2075

Waterfront "Hold the Line" Position

We Need a Backstop for Ocean Flooding



THE TOOLBOX OF POTENTIAL SOLUTIONS & OPPORTUNITIES

It's not all doom and gloom; there's a toolbox

The Toolbox of Potential Solutions



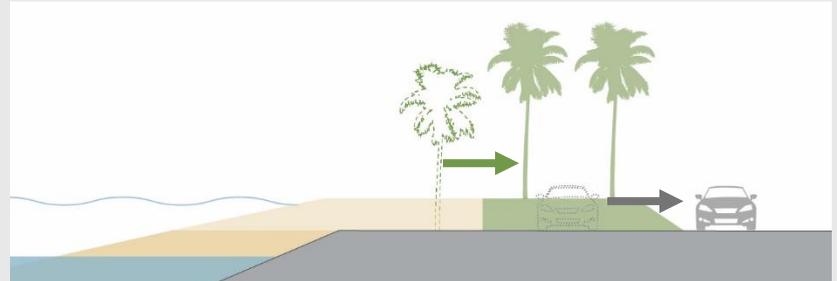
Sea Walls & Revetments



Beach Nourishment, Sand Berms, & Dunes



Groins, Headlands, & Artificial Reefs



Relocation or Removal of Development

Opportunities to Improve the Experience



Add walking & biking path



Reimagine West Beach



Improve views & entries



Add facilities



Enhance economic vitality



Expand recreation

Opportunity for Multi-benefit Solutions

Opportunity:
**New separated
walk & bike path**



Opportunity:
**Address hazard
risk**



Multi-benefit Solution:
**Elevated & separated
walk & bike path**



PUTTING THE PIECES TOGETHER

Preliminary List of Options for Further Evaluation

Waterfront-Wide Goals & Priorities



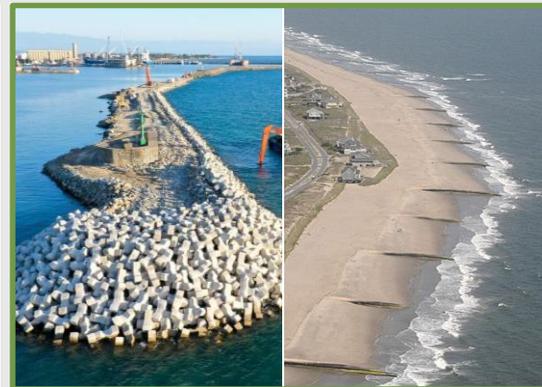
Project Categories

30-Year Plan Timeline

Quick Wins
(\$)

Core Measures
(\$\$\$)

Future Options
(\$\$\$\$\$)



LEADBETTER BEACH OPTIONS

*A sandy beach &
recreation
destination*



Leadbetter Potential Quick Wins: *Immediate safety & flooding fixes*



1 Restripe first row of parking to a walking & biking path



2 Deployable flood proofing



3 Low wall next to new path



4 Convert unused area to parking

Leadbetter Potential Core Measures:

Keep sandy beach by moving things back

1



Move parks, paths, & assets inland to keep sandy beach

2



Raise path to limit flooding

3



Relocate when replacement facilities available or flood & erosion risk reach set limits



4



Relocate parking to new parking garages at existing surface lot

5



Improve stormwater drainage

Leadbetter Potential Future Options: *Larger projects for a wider beach & more protection*



1

Keep sandy beach for longer by moving paths, parks, and facilities further inland



2

Raise path higher to reduce flood risk for higher sea levels



3

Space for park and relocated facilities



4

Headland at Harbor breakwater (not shown) with nourishment to widen beach

HARBOR OPTIONS

*A commercial
fishing,
recreation, &
public access
destination*

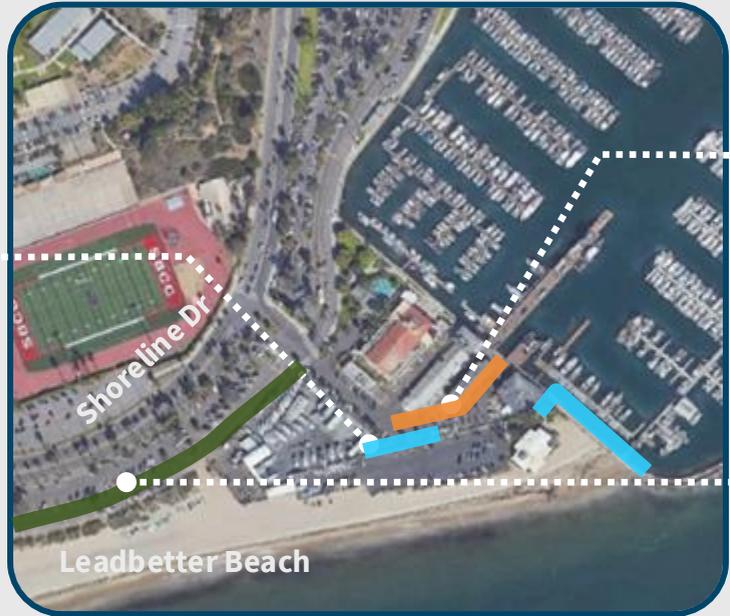


Harbor Potential Quick Wins:

Immediate safety & flooding fixes



1 Deployable flood proofing



2 Drainage improvements



3 Restripe first row of parking to a walking & biking path

Harbor Potential Core Measures:

Flood protection, prioritize public access & boating



1

Pedestrian promenade on raised revetment for flood protection & better access



2

Protect & improve Harbor Commercial area for better public access & boating



3

Enhance & raise walking & biking paths for better access & flood protection



4

Explore converting some parking for economic development

Harbor Potential Future Options: *Further protection*



1 Raise all paths and edges for greater flood protection



2 Headland with beach nourishment to widen beach



3 Sand trap to protect harbor entrance



4 Wave screen to protect marinas

WEST BEACH OPTIONS

*A premier
sandy beach
destination*



West Beach Potential Core Measures:

Premier sandy beach experience



- 1** Relocate storm drain to improve sand quality



- 2** Add restrooms, showers, café, beach concessions



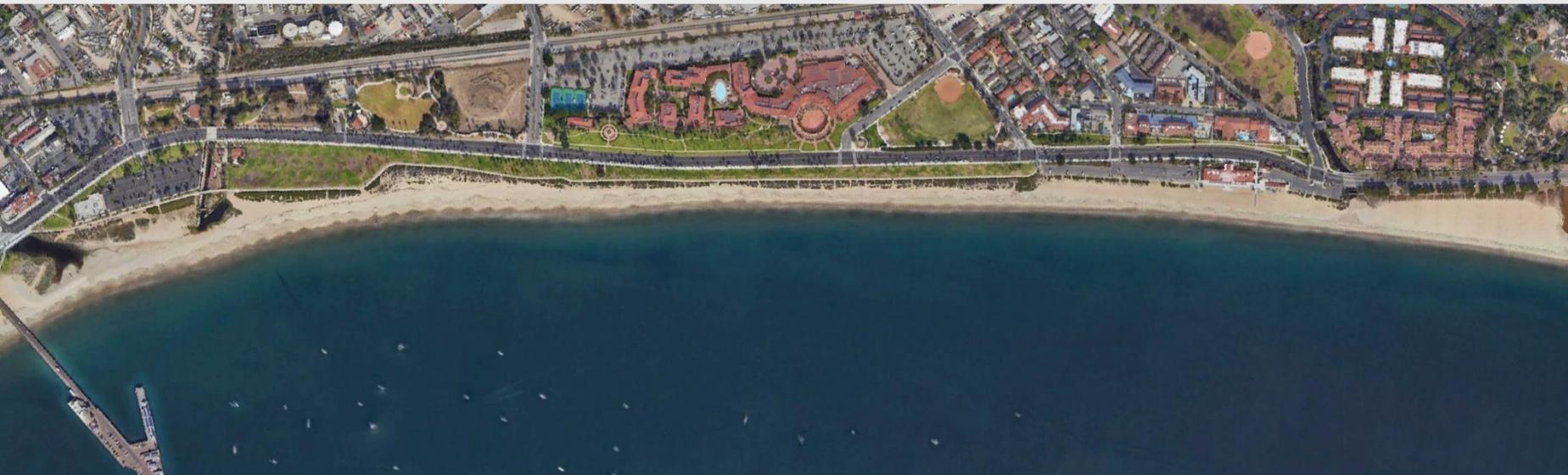
- 3** Raise walking & bike path with new adjacent park



- 4** Retain space for small boats, outriggers, tomols, etc

EAST BEACH OPTIONS

A sandy beach & recreation destination



East Beach Potential Core Measures:

Preserve as much sandy beach as possible & protect critical infrastructure



1

Keep sandy beach and park for as long as possible by moving parks, paths, & facilities inland



2

Raise & locate walking & biking path to protect Cabrillo Pavilion & inland areas



East Beach Potential Future Options:

Additional, larger projects for wider beach & increased protection



1

Improve per future
Laguna Flood
Resilience
Study



2

Potential
site for
additional
parking



3

Raise path
higher to
reduce flood
risk for higher
sea levels



Future Shoreline 2.5' ~ 2075
with nourishment



4

Explore groins,
headlands, and offshore
reefs to widen sandy beach

NEXT STEPS

Next Steps



Webpage & Contact

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Discussion Questions

1. Options headed in the right direction? Any significant initial concerns?
2. Additional options that should be evaluated?
3. Any missing objectives or priorities?
4. Key questions you want answered in detailed follow-on analysis?
5. Any initial thoughts on proposed phasing? Should we consider implementing certain projects sooner?