



Mainstreaming Adaptation:
California Coastal Commission Actions
to Prepare for Sea Level Rise

Hilary Papendick, National Adaptation Forum April 2013

California Coastal Commission

The California Coastal Act mandates the Coastal Commission to:

“Protect, conserve, restore, and enhance the state’s coastal resources.”



California Coastal Zone

- Coastal Miles (Mainland): 1,271
- 76 coastal jurisdictions (15 counties, 61 cities)
- 2010 Coastal Population: 27.8 million
- >50 million by 2050
- Coastal Economy: 83% of State's total \$1.9 B GDP

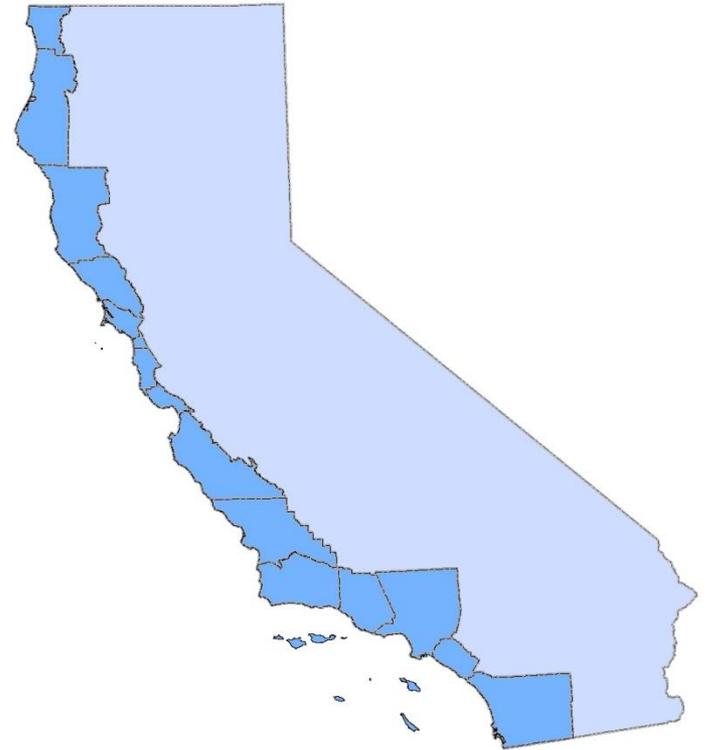
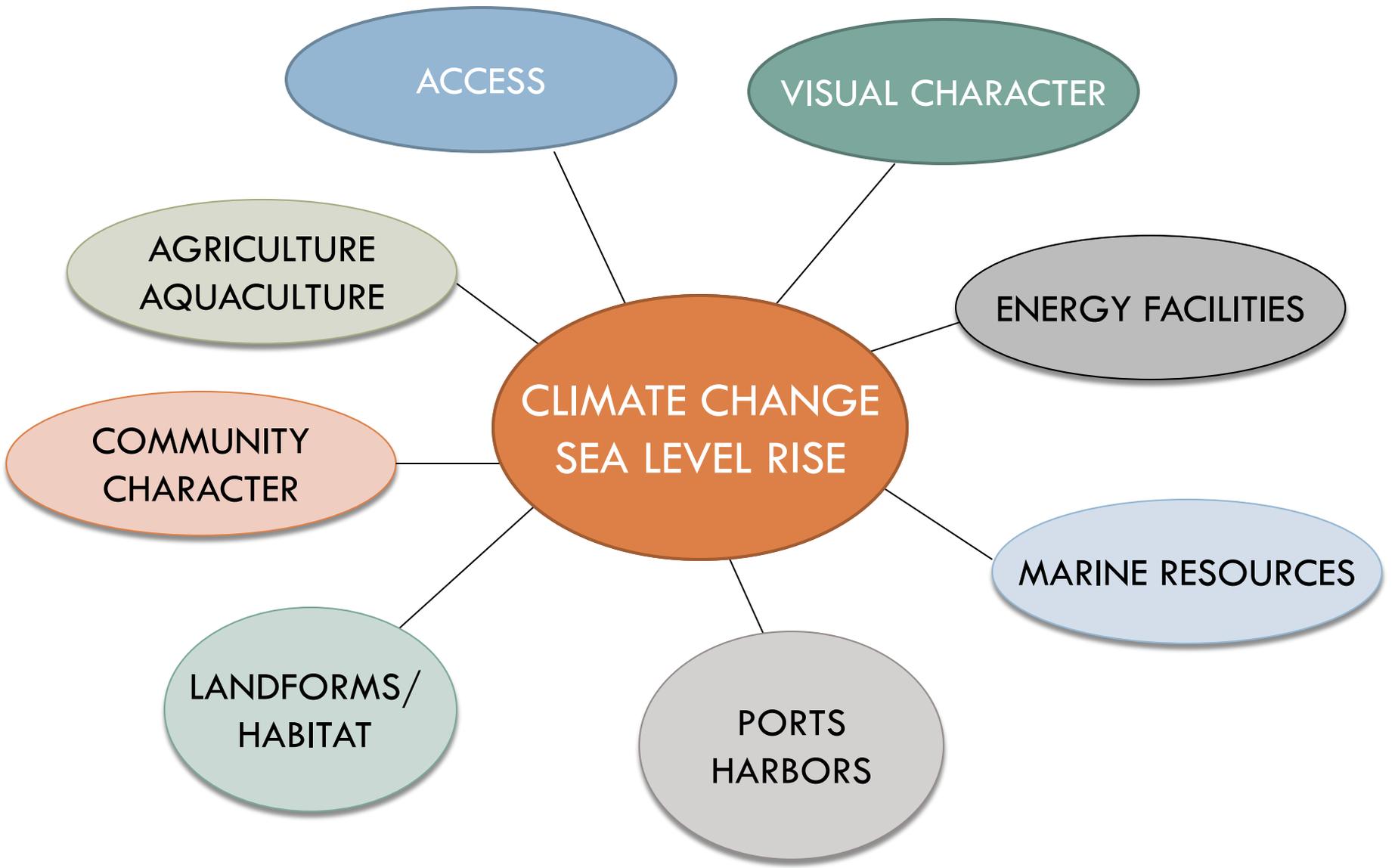


Image by California Coastal Commission



ACCESS

VISUAL CHARACTER

AGRICULTURE
AQUACULTURE

ENERGY FACILITIES

CLIMATE CHANGE
SEA LEVEL RISE

COMMUNITY
CHARACTER

MARINE RESOURCES

LANDFORMS/
HABITAT

PORTS
HARBORS

El Segundo Electric Power Plant located
at sea level



Photo by Flickr user California Pete

High tides plus waves threaten access,
roadways, and homes in Pacifica



Jack Sutton
Wildbayarea.com

Photo by Jack Sutton



Wetlands flooded at high tide at the Chula Vista Nature Center

Photo by Lisa Cox



Eroding cliffs after a
storm in
Pacifica, CA

Photo by L Ewing

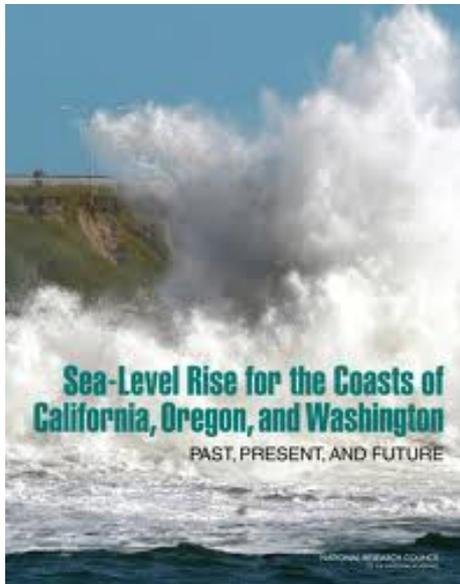
Sea Level Rise Adaptation

- Adaptation: “preparing for the likely impacts anticipated from sea level rise and climate change”
- Includes actions that increase the ability of coastal resources to cope with impacts from SLR
- Can be done before or after impacts occur (CCC focus is on before)
- Occurs at multiple scales:
 - ▣ Project/ resource
 - ▣ Community
 - ▣ Regional

Best Available Science on SLR in CA

Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future (NRC 2012)

Sea Level Rise Projections using 2000 as the Baseline



Time Period	North of Cape Mendocino	South of Cape Mendocino
2030	-4 to 23 cm (-0.13 to 0.75 ft)	4 to 30 cm (0.13 to 0.98 ft)
2050	-3 to 48 cm (-0.1 to 1.57 ft)	12 to 61 cm (0.39 – 2.0 ft)
2100	10 to 143 cm (0.3 to 4.69 ft)	42 to 167 cm (1.38 – 5.48 ft)

Public Resources
Code
Division 20

**California
Coastal Act
(1976)**



CALIFORNIA
COASTAL
COMMISSION

LOCAL COASTAL PROGRAMS
(LCP)

COASTAL PERMITS
&
FEDERAL CONSISTENCY

PARTNERSHIPS
&
WORK GROUPS

Coastal Act Hazard Avoidance

Section 30253. *New development shall do all of the following:*

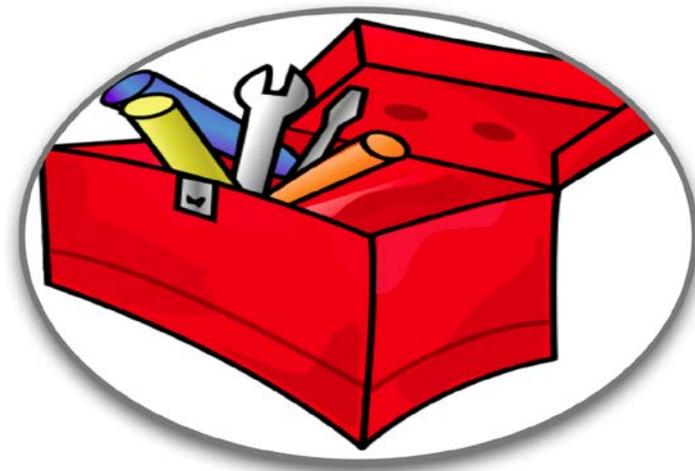
- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

CCC SLR Papers & Briefings

- 1989 Report: Planning for Accelerated Sea Level Rise along the California Coast
- 2001 Report: Overview of Sea Level Rise and Some Implications for Coastal California
- 2006 Briefing: Discussion Draft: Global Warming and the California Coastal Commission
- 2008 Briefing: A Summary of the Coastal Commission's Involvement in Climate Change and Global Warming Issues for a Briefing to the Coastal Commission
- 2008 White paper: Climate Change and Research Considerations
- 2010 Briefing: A Summary of the Coastal Commission's Involvement in Sea Level Rise Issues for a Briefing to the Coastal Commission
- 2013: Draft Sea Level Rise Policy Guidance (in development)

Coastal Adaptation Tools

- Avoid development in hazard zones
- Increase setbacks to account for erosion/ shoreline change due to SLR
- No future shoreline protection (rolling easements)
- Building modifications
- Expand buffers around sensitive habitat
- Relocate existing development (managed retreat)



1: Permit for Blufftop Residences (Frank, 2010)

- Proposal of 3 new single-family residences on 3 undeveloped contiguous blufftop lots above Hidden Beach in Santa Cruz County



Photo courtesy of California Coastal Records Project,
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1: Permit for Blufftop Residences (Frank, 2010) con't

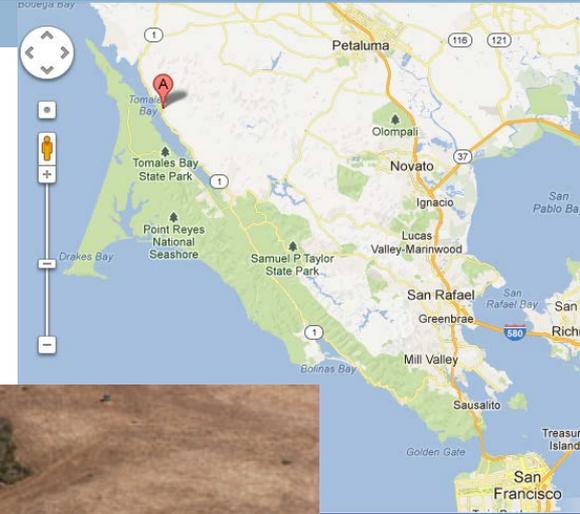
- **Issue:** Proposed properties at risk from accelerated bluff erosion due to sea level rise
 - ▣ Setback of 116 feet required
 - ▣ Only Lot 1 has sufficient space to allow for safe development

- **Actions:**
 - ▣ Approval of one structure with adequate setback, denial of two structures
 - ▣ Application withdrawn

(2010, Appeal #s: A-3-SCO-09-001, A-3-SCO-09-002, and A-3-SCO-09-003, Frank SFDs)

2: Permit for Redevelopment (Marshall Tavern, 2012)

- Proposal to redevelop abandoned historic building into a bed-and-breakfast



2: Permit for Redevelopment (Marshall's Tavern, 2012) con't

- **Issue:** Structure at risk from coastal hazards, including erosion, flooding, and wave impacts



Photo courtesy of Marin IJ

- **Actions:** Approval of bed-and-breakfast with condition that structure must be removed if any government agency determines the structure is unsafe for occupancy.

(CDP Application No. 2-06-017 (Marshall Tavern))

3: Solana Beach LCP 2012

Issue: Development on ocean bluffs vulnerable to coastal erosion

Actions:

- New development, redevelopment:
 - Waives right to future sea walls
 - Setback of 40 feet on bluff top
 - Considers sea level rise in siting and coastal hazard analysis
- Establishes 20 year limit on shoreline protection
- Homes destroyed by a disaster exempt from permit requirements only if meet all current LCP requirements
- Increases wetland buffers to allow for inland wetland migration

LCP approved by Commission with modifications, not yet certified.



Photo courtesy of California Coastal Records Project, Copyright © 2002 – 2010 Kenneth & Gabrielle Adelman

CCC SLR POLICY GUIDANCE

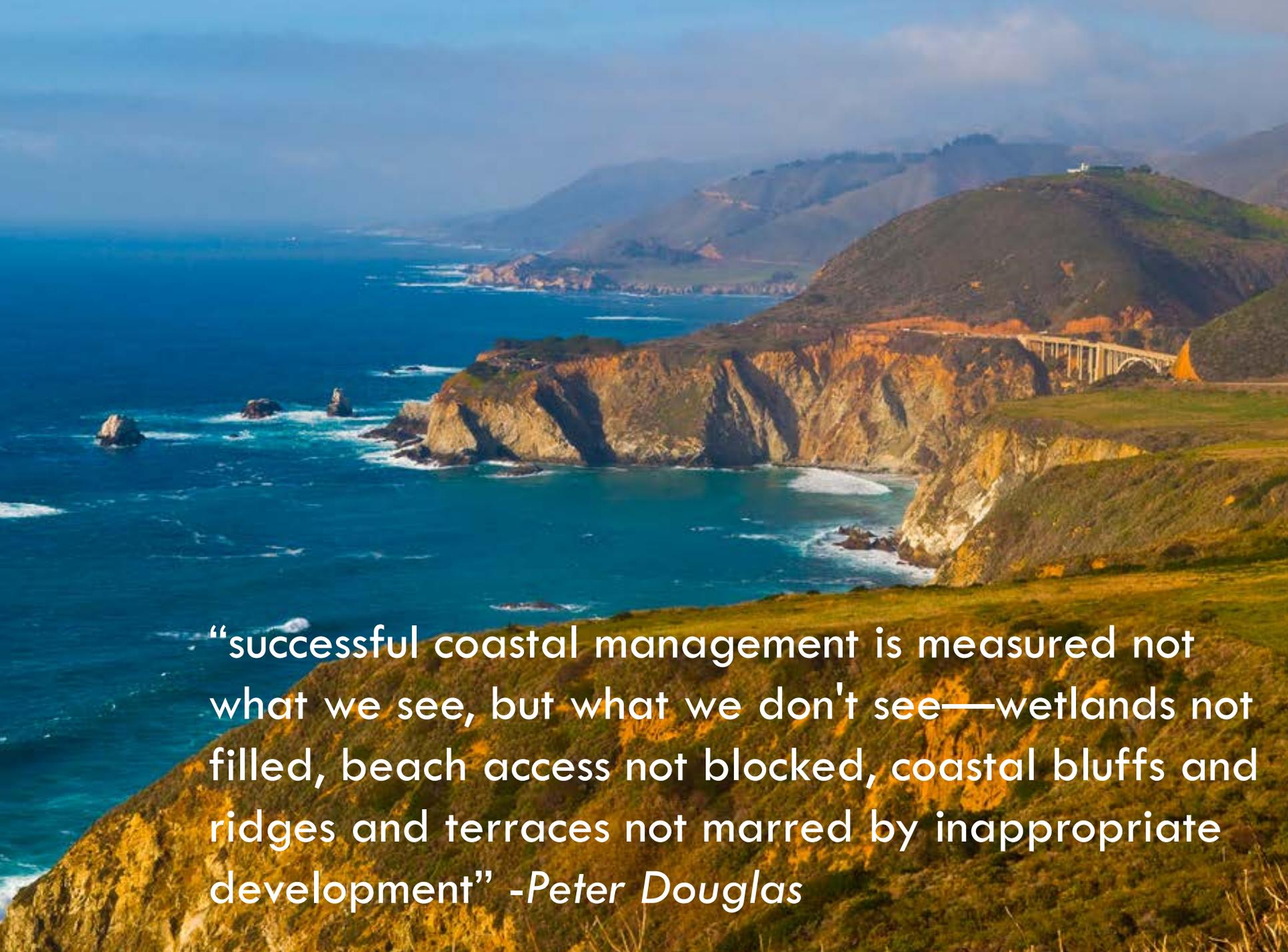
- Goal is to provide clear, accessible guidance on addressing sea level rise in LCPs, Coastal Development Permits, and other planning and regulatory actions.
- Public review draft expected early summer



Photo: Highway 1 along the Big Sur Coast
Credit: Coastal Commission staff

Conclusion

- One size does not fit all
- Partnership
 - ▣ Federal + State + Local
- Coastal Act has and will continue to provide the planning and policy framework needed to ensure resiliency in California
 - ▣ Opportunity in Updates to Local Coastal Programs
 - ▣ Local Governments already making progress
 - ▣ Grant opportunity for local governments to update LCPs
 - June 1st

A scenic view of a coastal landscape. In the foreground, a grassy hillside slopes down towards the ocean. The middle ground features a prominent concrete bridge with several arches, crossing a narrow passage between cliffs. The ocean is a deep blue, with white waves crashing against the rocky shore. In the background, rolling hills and mountains are visible under a clear sky. The overall scene is a mix of natural beauty and human infrastructure.

“successful coastal management is measured not what we see, but what we don't see—wetlands not filled, beach access not blocked, coastal bluffs and ridges and terraces not marred by inappropriate development” -Peter Douglas

Acknowledgements

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Contact:

Hilary Papendick

NOAA Coastal Fellow

Hpapendick@coastal.ca.gov

415-904-5294



NOAA Coastal Services Center
LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

Components of SLR Adaptation

- Use best available science on SLR
- Identify risks from SLR impacts
- Consider:
 - ▣ Risk tolerance
 - ▣ Timeframe
 - ▣ Adaptive capacity – ability to respond
- Develop strategies to reduce risks
- Implement, monitor, and revise

