



COMMUNITY DEVELOPMENT AGENCY

COLLABORATION: SEA-LEVEL MARIN ADAPTATION RESPONSE TEAM **(C-SMART)**
Public Kick-Off Meeting

July 10, 2014

Red Barn Classroom, Point Reyes National Seashore

Agenda

1. Welcome (Marin Supervisor Steve Kinsey)
2. C-SMART background and process overview (Jack Liebster, CDA)
3. CoSMoS model development (Patrick Barnard, USGS)
4. Our Coast, Our Future site (Michael Fitzgibbon, Pt. Blue Cons. Science)
5. Next steps regarding public participation (Jack Liebster)
6. Q & A
7. Thank you and closing

COLLABORATION: SEA-LEVEL MARIN ADAPTATION RESPONSE TEAM (C-SMART)

Public Kick-Off Meeting



Photo Credit: Dianne Arrigoni

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marinslr.org

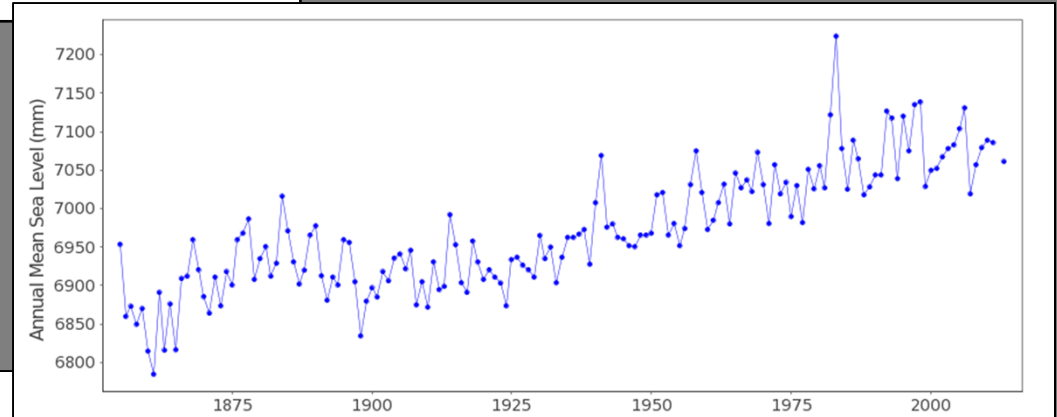
July 10, 2014

Sea-Level Rise Projections using 2000 as the Baseline

National Academy of Sciences: *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future, 2012*

Time Period	North of Cape Mendocino ³	South of Cape Mendocino
2000 - 2030	-4 to 23 cm (-1.6 to 9.1 in)	4 to 30 cm (1.56 to 11.8 in)
2000 - 2050	-3 to 48 cm (-1.2 to 18.9 in)	12 to 61 cm (4.7 to 24 in)
2000 - 2100	10 to 143 cm (3.9 to 56.3 in)	42 to 167 cm (16.5 to 65.7 in)

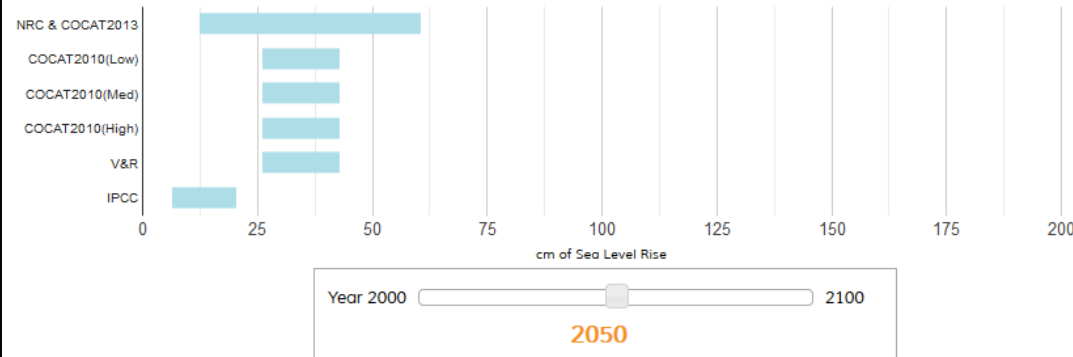
Annual Mean Sea Level, San Francisco Tide Gauge
www.psmsl.org/data/obtaining/stations/10.php



Our Coast, Our Future website
data.prbo.org/apps/ocof/

What projections are likely to occur in a given year?

Move the slider control below the graph left and right to see how different climate experts projections of sea level rise compare to one another. Hold your mouse over each bar for details.



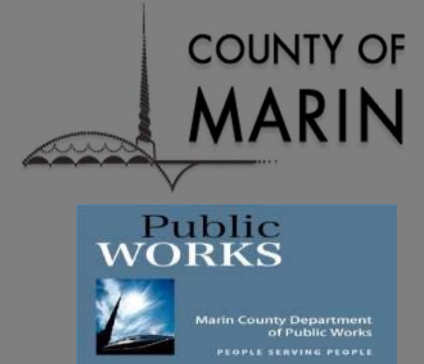
MARIN'S COASTAL FABRIC



Grant funding provided by:



Partner organizations:



Technical advisers:





COMMUNITY DEVELOPMENT AGENCY

Collaboration: Sea-level Marin: Adaptation Response Team Stakeholder Advisory Committee Application

The Collaborating on Sea-level Marin: Adaptation Response Team (C-SMART) Stakeholder Advisory Committee (SAC) will play an integral role in assisting the Marin Community Development Agency (CDA) in assessing impacts that sea level rise may bring to people, and natural and built environment resources of Marin's coastal area, and identifying adaptation strategies for consideration into the County's Local Coastal Program updates as well as other existing planning and policy processes.

We need people who are committed to actively engaging and involving the people in their community, in addition to providing their own knowledge and advice. In addition, SAC applicants must pledge to participate in three in-person meetings (tentatively October 2014, February 2015, and November 2015), and provide timely review of draft study products, and other communications as needed.

Name _____

Home Address _____

City _____ State _____ Zip _____

Primary Contact # _____ Secondary Contact # _____

Email Address _____

1) Representatives for Geographic Areas

Please select the community in which you reside and are willing to engage.

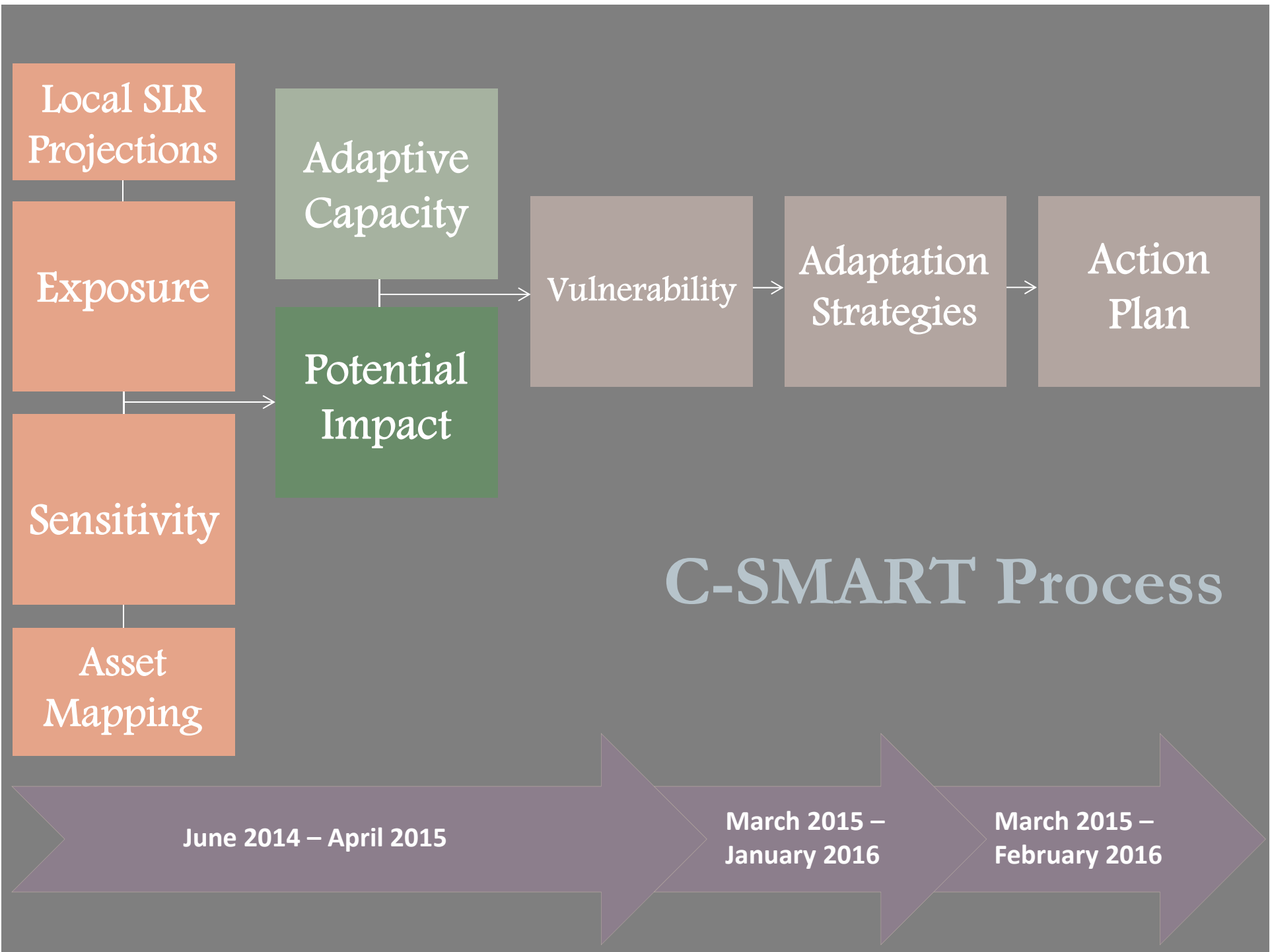
<input type="checkbox"/> Muir Beach	<input type="checkbox"/> Stinson Beach
<input type="checkbox"/> Seadrift	<input type="checkbox"/> Bolinas
<input type="checkbox"/> Inverness	<input type="checkbox"/> Pt. Reyes Station
<input type="checkbox"/> East Shore/Marshall	<input type="checkbox"/> North County

2) Representatives for Topical Concerns

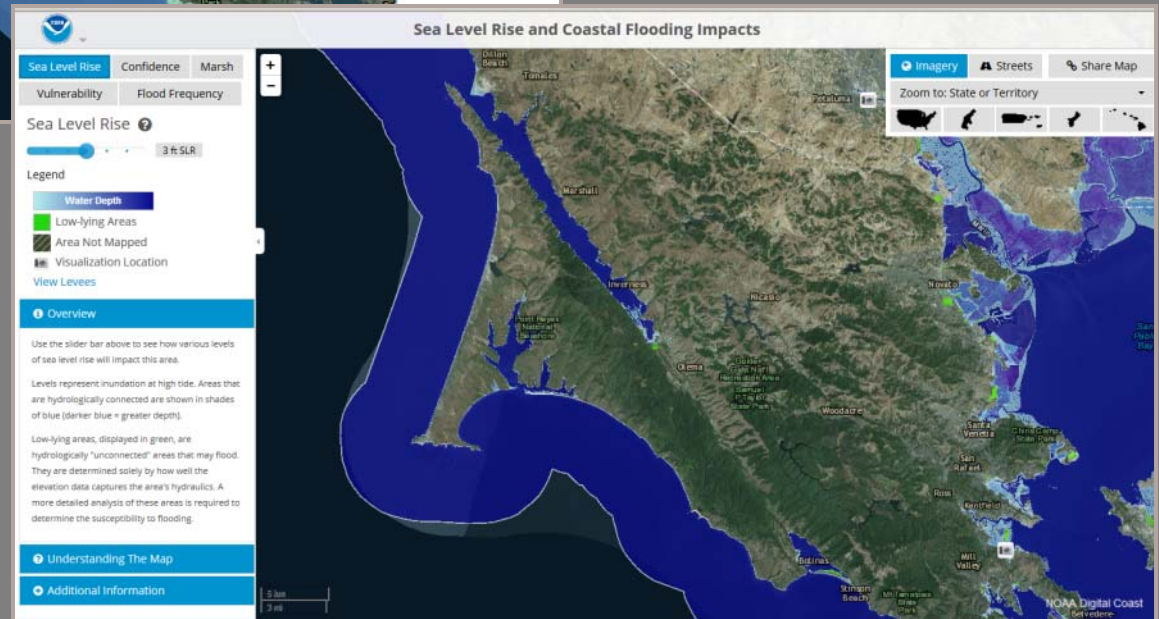
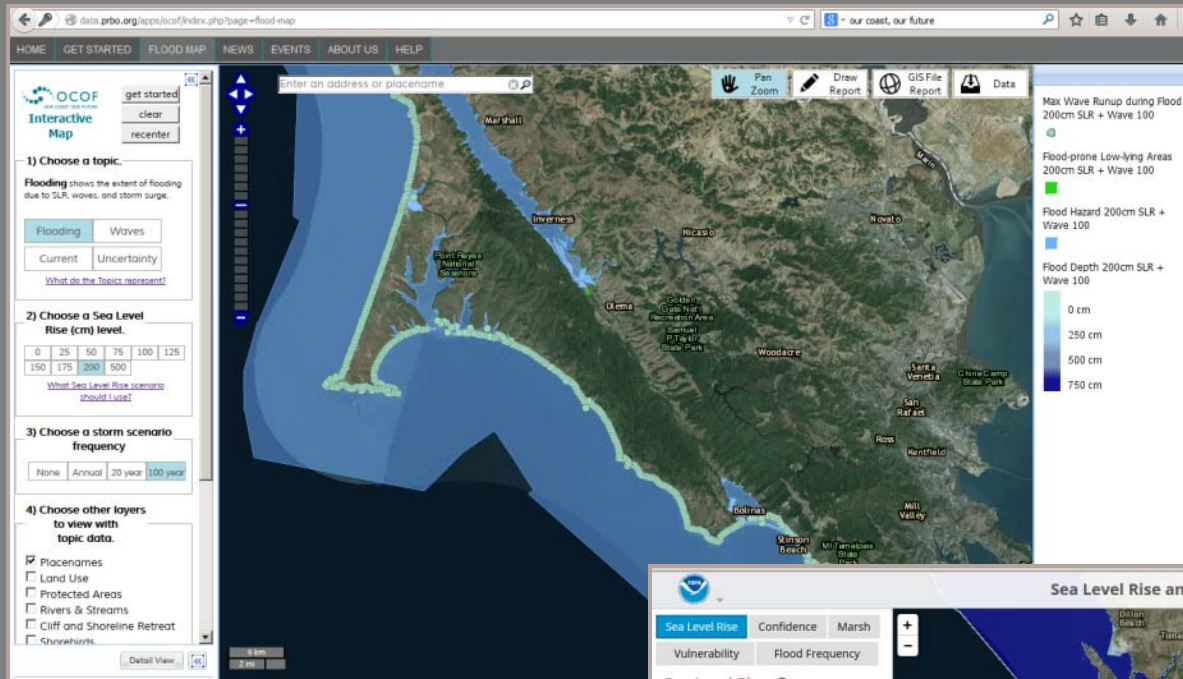
Please select from one (or more) of the following categories relevant to expertise and advocacy to describe the representation you would provide on the SAC:

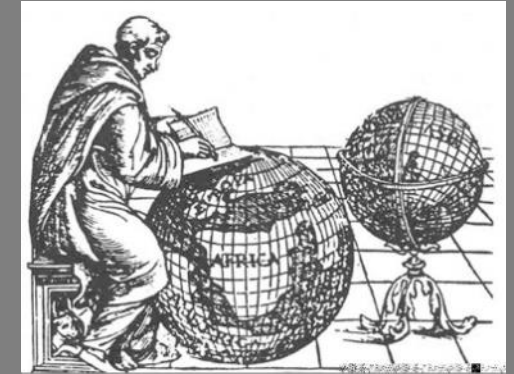
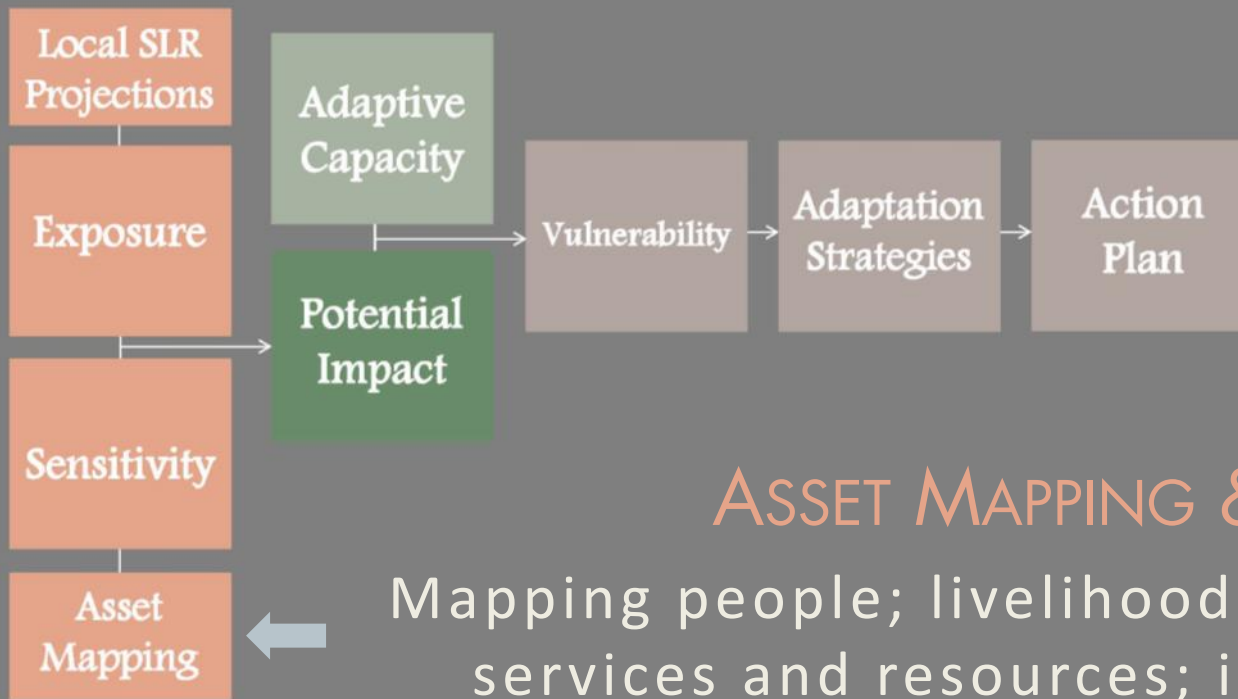
Agriculture Environment Local Businesses Recreation Other





Sea Level Rise Projections

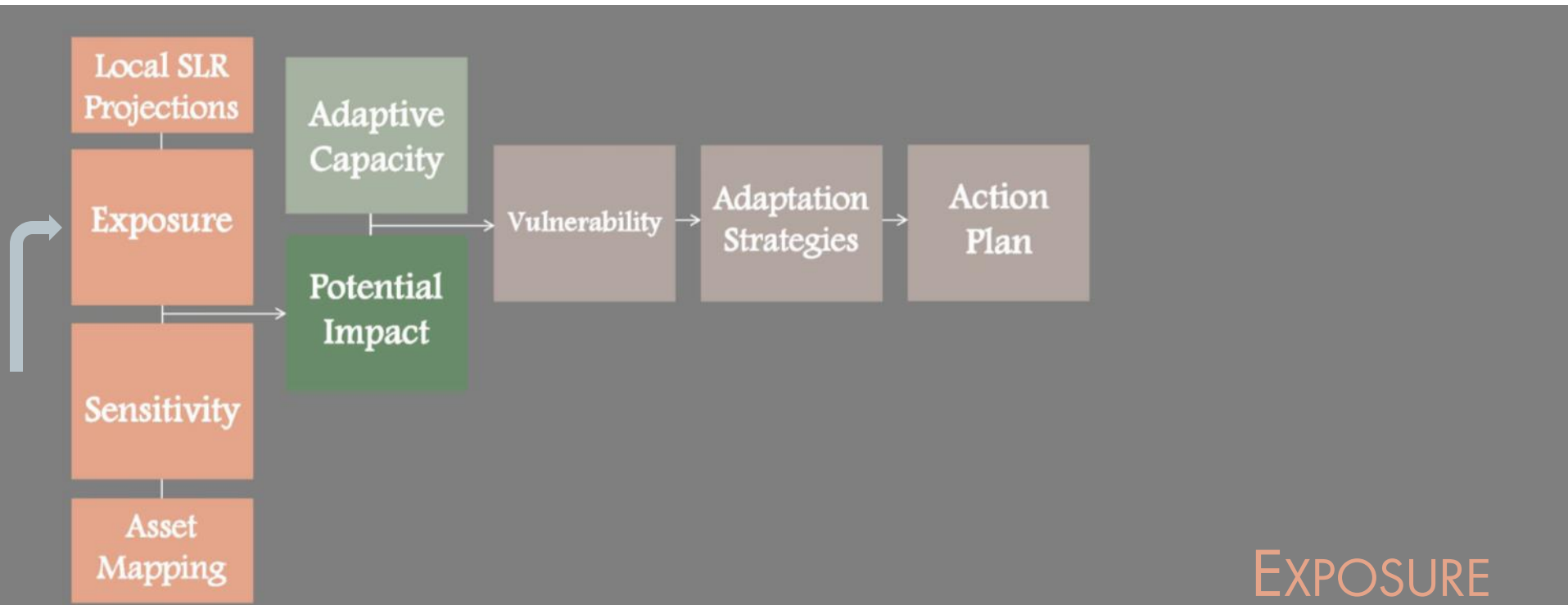




ASSET MAPPING & INVENTORYING

Mapping people; livelihoods; environmental services and resources; infrastructure; or economic, social, or cultural assets

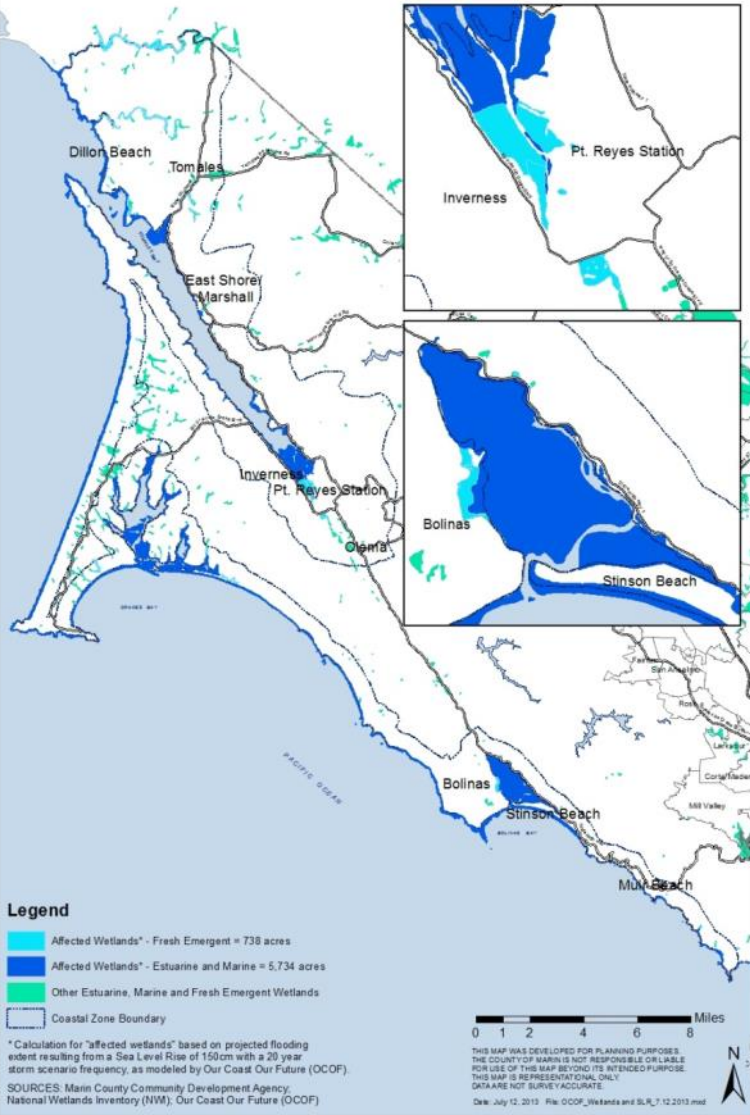
-
- Agricultural land
 - Protected areas
 - Public beaches and parks
 - Dunes
 - River & streams
 - Wetland areas
 - Habitat areas
 - Oyster beds
 - Sandspits
 - Shorebirds
 - Roads and transportation
 - Trails
 - Buildings
 - Residential development
 - Commercial buildings
 - School
 - Elderly/mobility limited facilities
 - Hotels/Motels
 - Harbors and marinas
 - Fishing, aquaculture facilities
 - Utilities & services
 - Septic leach fields
 - Water Supply wells
 - Archeological/ Paleontological sites
 - Historic sites

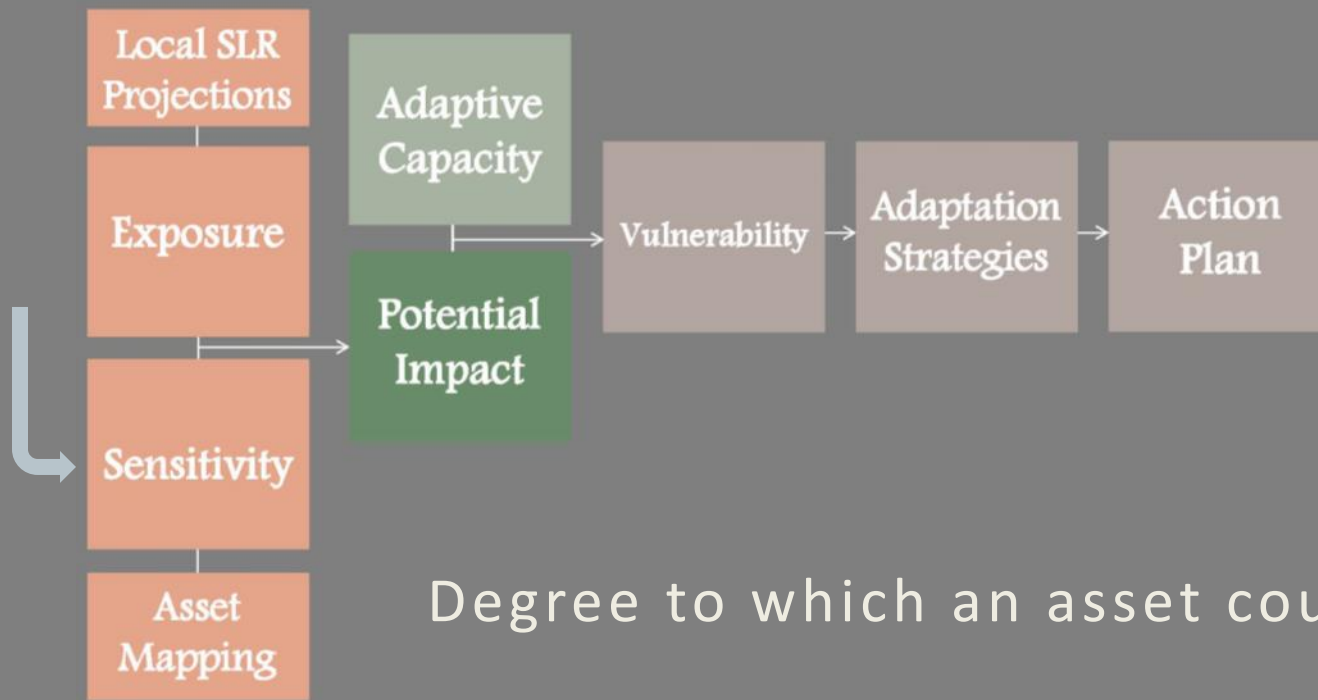


EXPOSURE

Extent to which an asset may potentially experience physical effects.

Potential Impacts of Sea Level Rise to Estuarine, Marine and Fresh Emergent Wetlands
Coastal Zone, Marin County, CA





SENSITIVITY

Degree to which an asset could be impaired by exposure.



Local SLR Projections

Exposure

Sensitivity

Asset Mapping

Adaptive Capacity

Potential Impact

Vulnerability

Adaptation Strategies

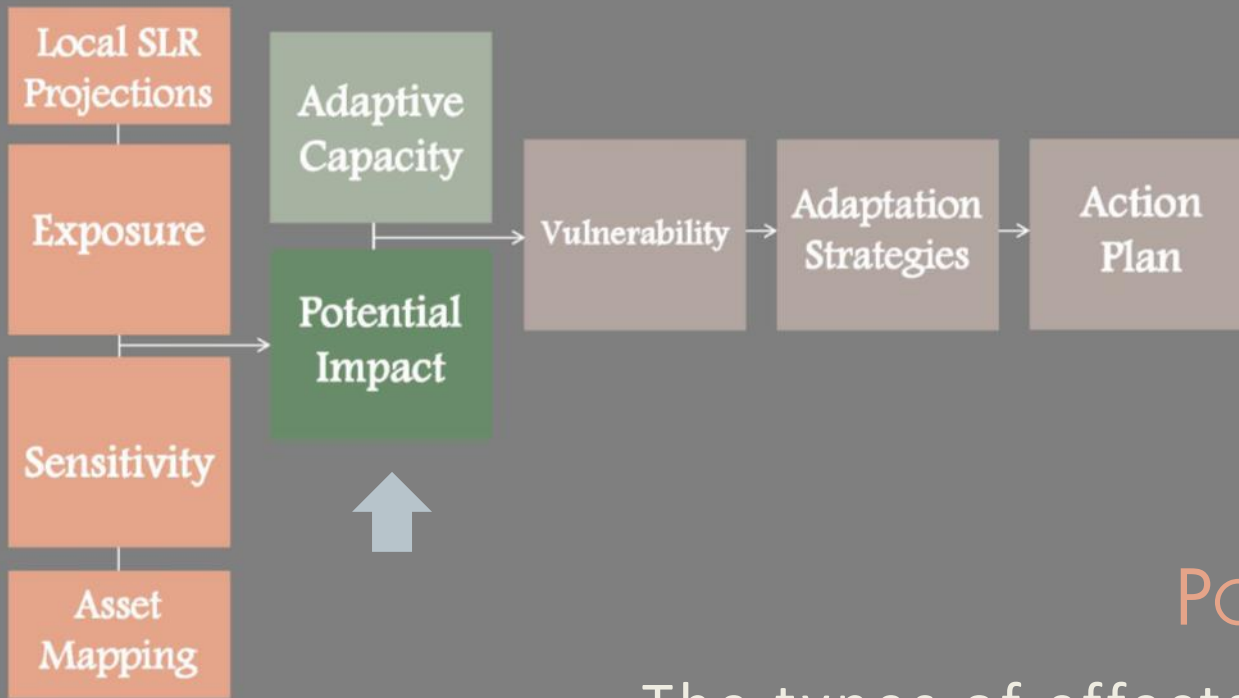
Action Plan



ADAPTIVE CAPACITY

The ability or potential of a system or asset to respond successfully to climate variability and change (IPCC, 2007).



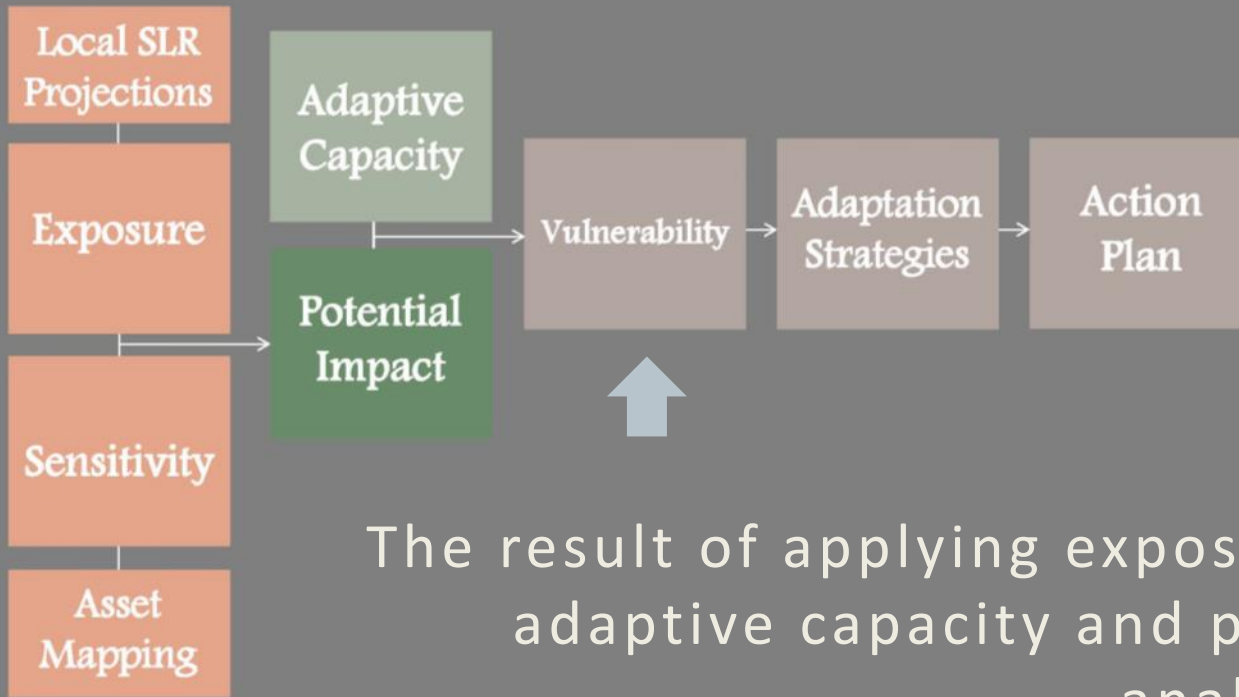


POTENTIAL IMPACT

The types of effects on human and natural systems could experience.

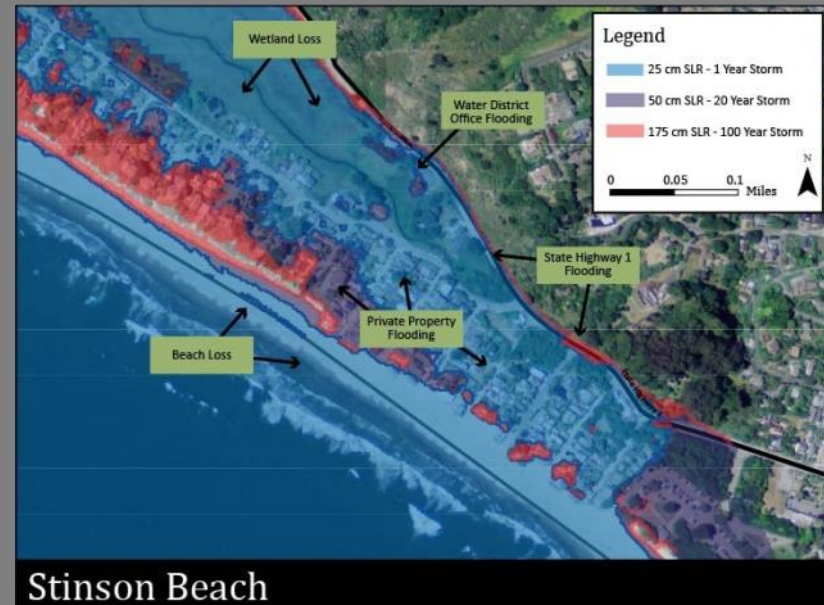
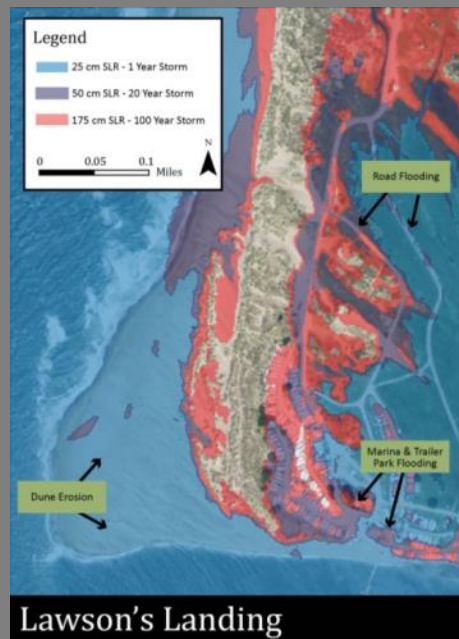


		Storm Scenario Frequency			
		None	Annual	20 Year	100 Year
Year	2010	X	X	X	X
	2030	X	X	X	X
	2050	X	X	X	X
	2100	X	X	X	X



Vulnerability

The result of applying exposure, sensitivity, adaptive capacity and potential impact analyses over time.

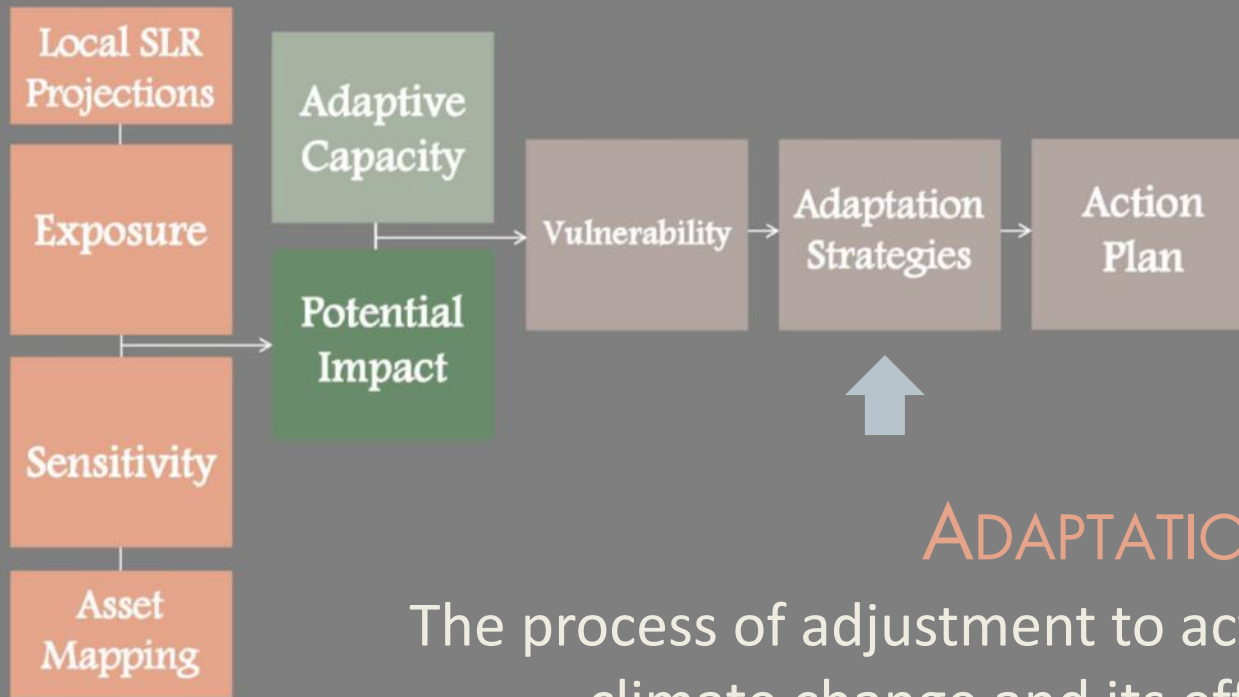


Geomorphic Change

THE COASTLINE COULD CHANGE IN RESPONSE TO HIGHER SEA LEVELS AND MORE FREQUENT OR INTENSE STORMS



Pacific Institute, The Impacts of Sea-Level Rise on the California Coast, 2009



ADAPTATION STRATEGIES

The process of adjustment to actual or expected climate change and its effects, in order to moderate harm or exploit beneficial opportunities
(IPCC, 2012)

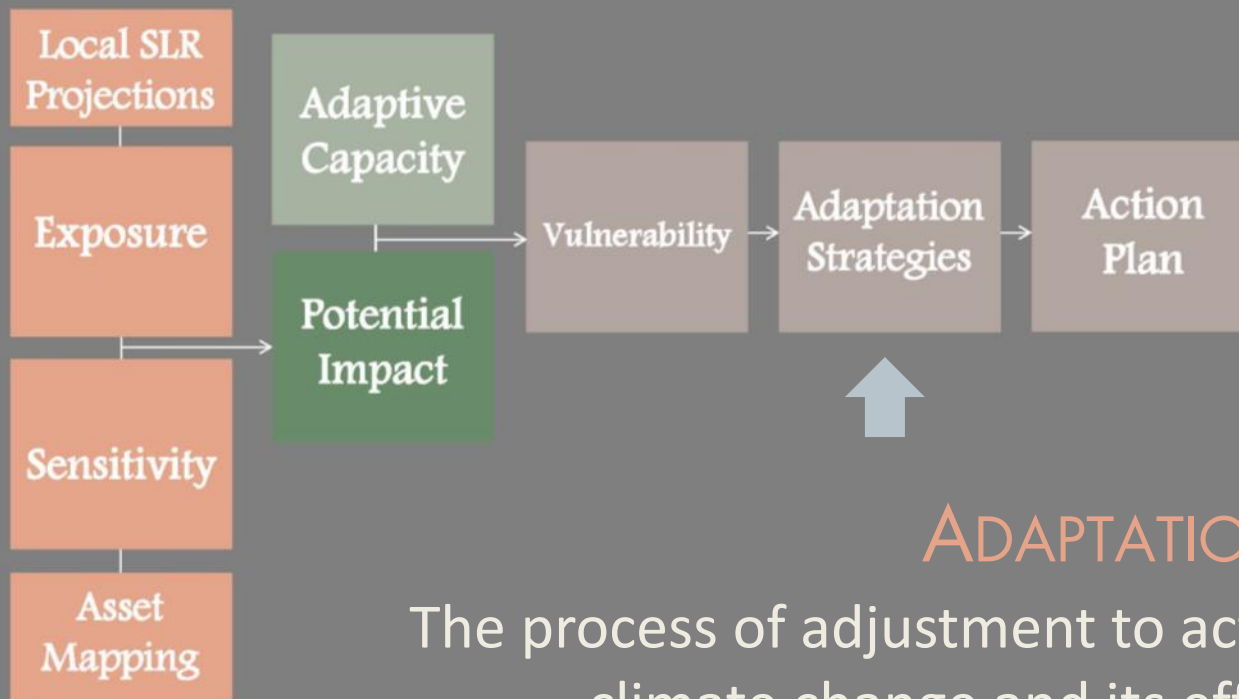
1. Elevated Development
2. Floating Development
3. Floodable Development
4. Coastal Armoring (Levees/Seawalls)
5. Living Shorelines
6. Managed Retreat

Science Serving the Community

PATRICK BARNARD, US GEOLOGICAL SURVEY

MICHAEL FITZGIBBON, POINT BLUE CONSERVATION SCIENCE



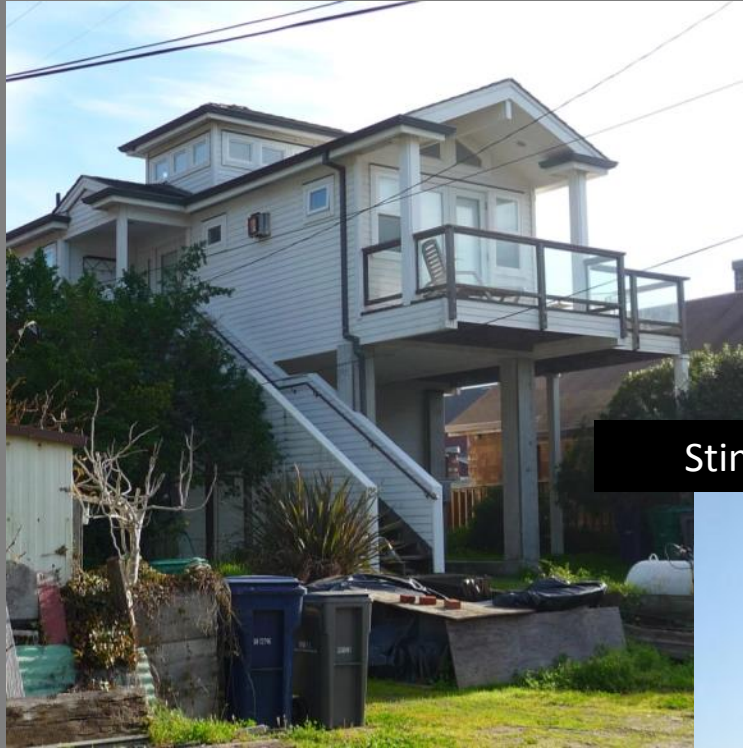


ADAPTATION STRATEGIES

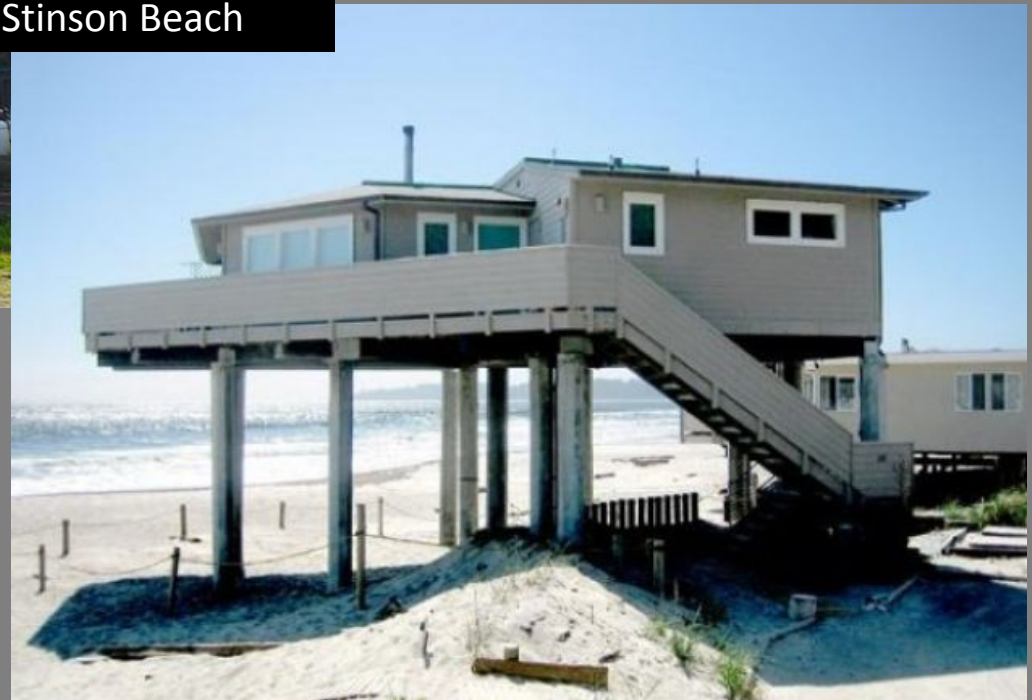
The process of adjustment to actual or expected climate change and its effects, in order to moderated harm or exploit beneficial opportunities
(IPCC, 2012)

-
1. Elevated Development
 2. Floating Development
 3. Floodable Development
 4. Coastal Armoring (Levees/Seawalls)
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1) Elevated Development



Stinson Beach



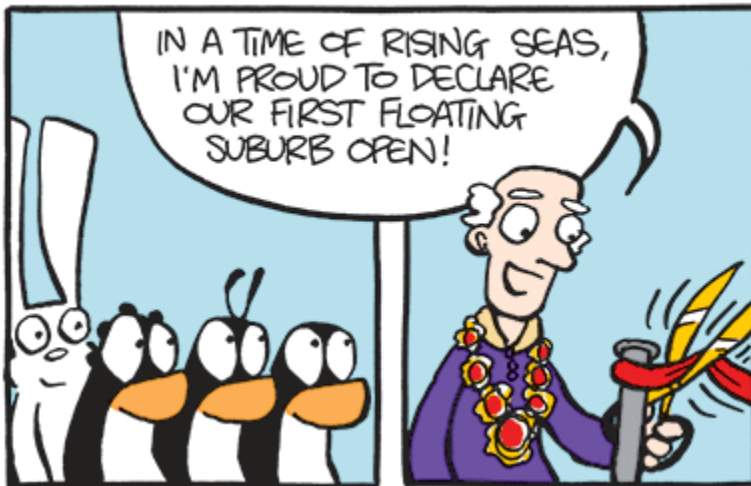
2) Floating Development



Sausalito

SF Guardian

ARCTIC CIRCLE



3) Floodable Development

Floodable Parking Garage - Rotterdam



AIA NY

Rain Garden – San Francisco



SF Environment

4) Coastal Armoring

Levee Protecting House from Mississippi



Scott Olson/Getty Images

“Super Levee” construction near Lathrop (Sacramento-San Joaquin Delta)



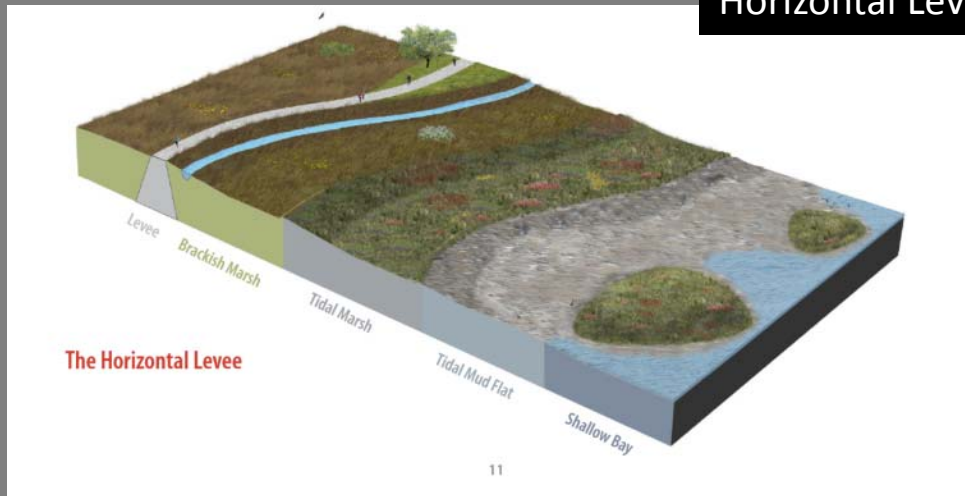
CA Department of Water Resources

Seawall - Bolinas

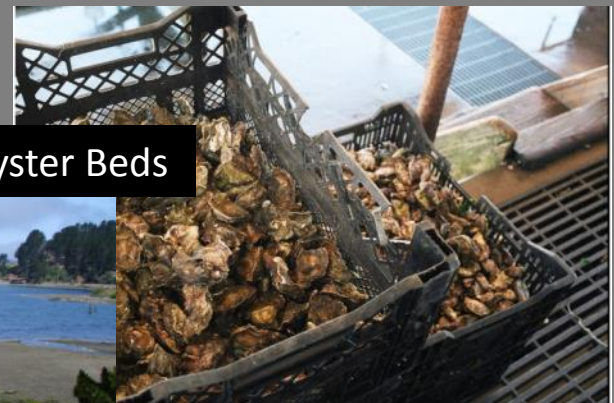


5) Living Shorelines

Horizontal Levees



The Bay Institute



Oyster Beds



6) Managed Retreat



Pacifica State Beach

ESA

Conceptual Managed Retreat Scenario, Fraser River Delta



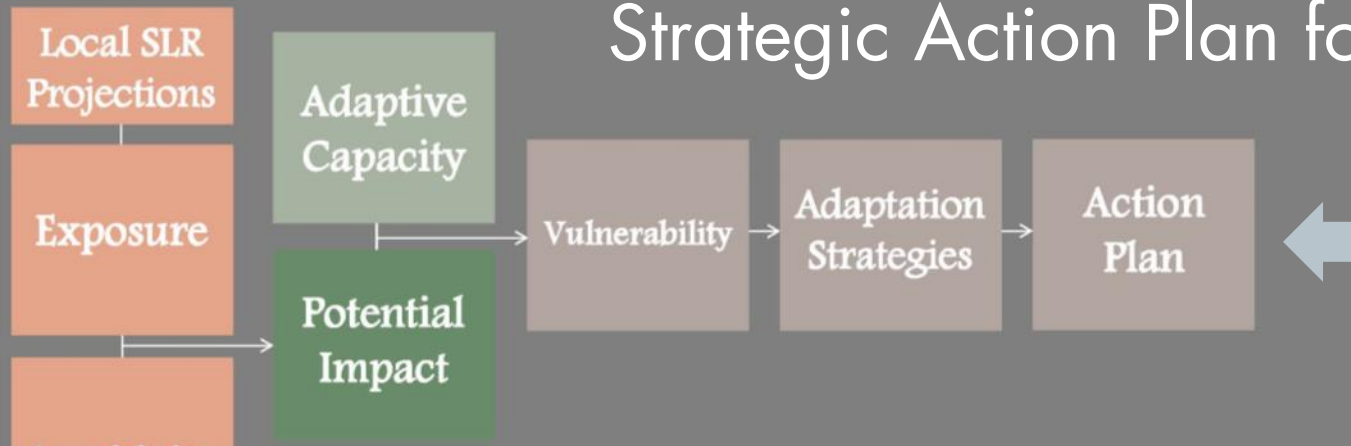
South Delta - Sea Wall View

Managed Retreat Scenario (hypothetical year 2100)

CALP CC BY-NC-ND

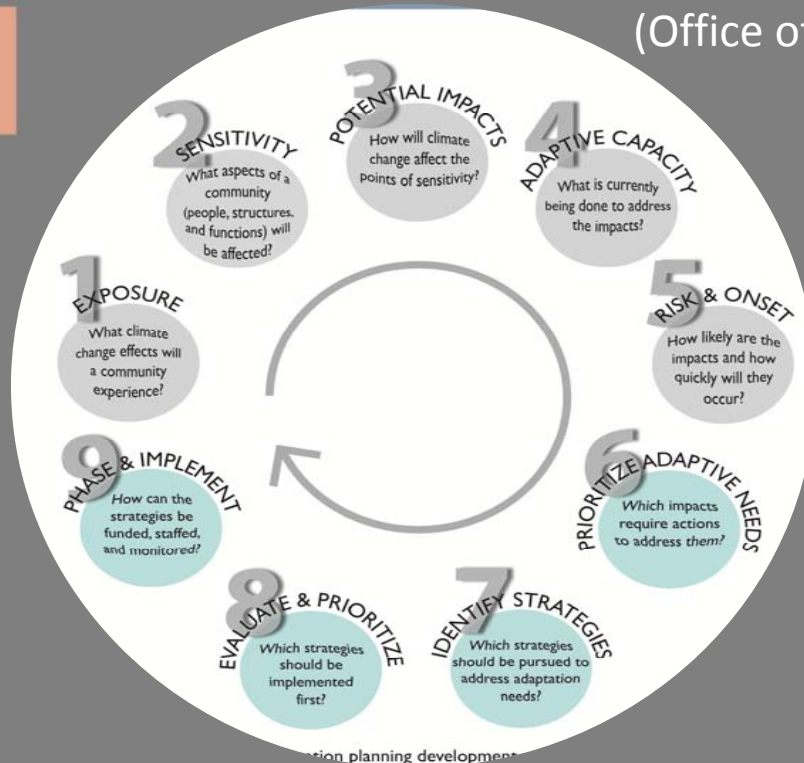
1.2 metres of sea level rise

Strategic Action Plan for Sea Level Rise



PRELIMINARY IMPLEMENTATION PLAN:

- Strategy description/recommended responsibilities (Office of Emergency Services, Department of Public Works, Local Coastal Plan Amendments, Building Codes)
- Potential funding mechanisms
- Monitoring and Evaluation Table (including adaptive management)
 - Monitoring protocol
- Periodic reviews to allow re-calibrating



Strategic action planning development

GET INVOLVED!

June 2014 – April 2015

March 2015 –
January 2016

March 2015 –
February 2016

STAKEHOLDER ADVISORY COMMITTEE (SAC)

Meeting #1

Meeting #2

Meeting #3

PUBLIC MEETINGS

Public Meeting #1

- Kick-off

Community Meetings #3

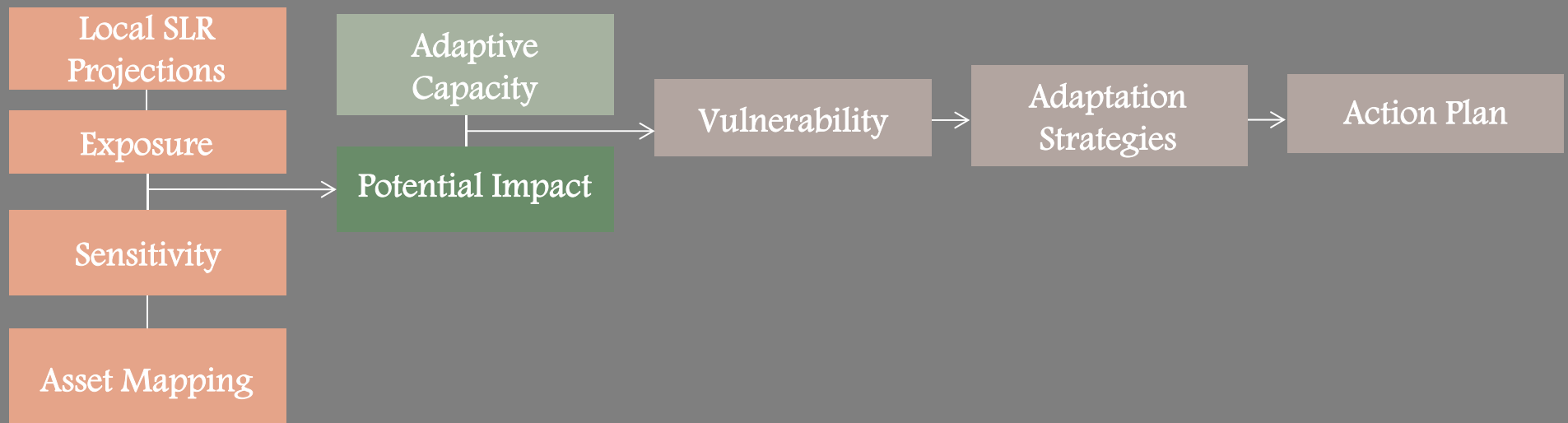
- Adaptation Strategies

Community Meetings #2

- Exposure - Sensitivity

Public Meeting #4

- Local Coastal Plan Amendments



Questions?



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