MONTEREY BAY CLIMATE VULNERABILITY ANALYSIS

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MONTEREY BAY SLR VULNERABILITY ANALYSIS

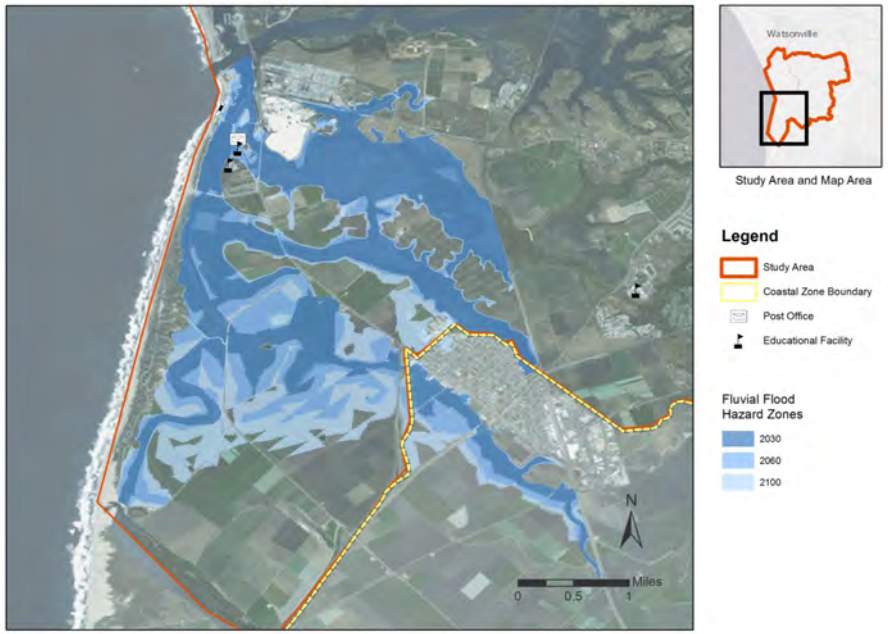
Project Goals

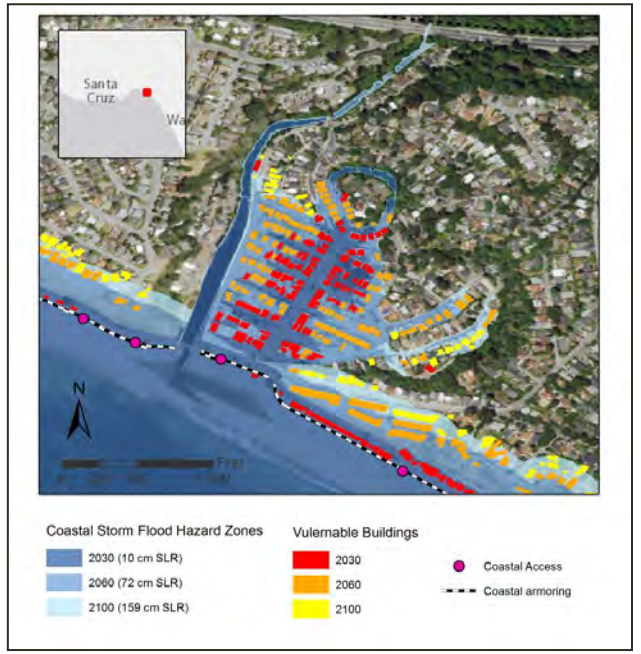
- Identify what critical coastal infrastructure may be compromised due to SLR and estimate when those risks may occur;
- Identify how fluvial processes may increase flooding risk to coastal communities in the face of rising seas; and
- Define appropriate response strategies for these risks and discuss with regional partners the programmatic and policy options that can be adopted within Community Plans, Hazard Mitigation Plans, and LCP updates

Reports at CentralCoastWetlands.org – climate change

QUESTION?

How can SLR Hazard analysis and vulnerability reporting lead to strategic adaptation planning?





CURRENT PLANNING TO ADDRESS COASTAL RISKS

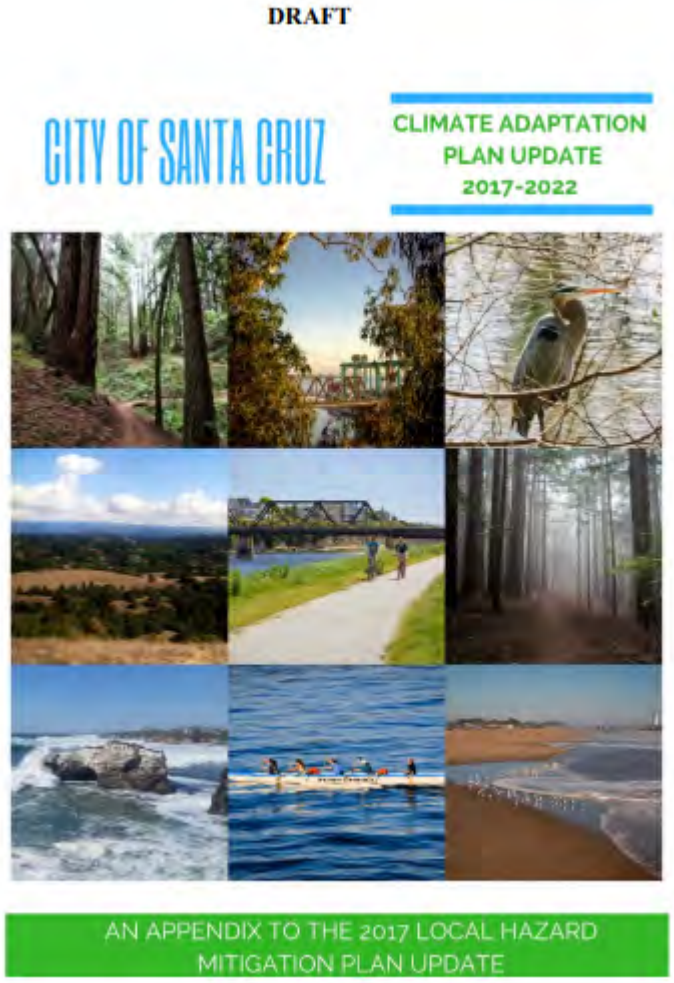
City of Santa Cruz update to Climate Adaptation Plan complete, references within LHMP, Safety Element of General Plan, West Cliff management plan, LCP update in development

Santa Cruz County LHMP and Climate Adaptation Plans complete, LCP update in progress

Capitola LCP amendment in progress, LHMP update soon, Safety Element in 2022

Monterey County will use findings for LHMP update (to include Climate Change Chapter), Moss Landing Community Plan (North County LCP)

City of Monterey: serving as the foundation of LCP Update. Draft LCP is at the Coastal Commission for review



Adaptation Response Recommendations: 2017-2030

Support Dune Restoration Activities:

- Future wave run-up is projected to undercut dune faces and funnel waves inward
- Ensure adaptive capacity of these natural dunes through proper management and habitat enhancement.

Evaluate Tide Gate Upgrades to Improve Flood Release:

- Tide gates have restricted discharge during large rain events, exacerbated by rising tides.
- Upgrades to these gates that allow overflow during large events
- Define secondary discharge pathway during watershed flooding events should be studied.

Establish Managed Retreat Policies to Support Future Adaptation:

- Facilitate and regulate the gradual move away from areas vulnerable to flooding or erosion.
- Define appropriate areas to investigate retreat options.

Improve Flood Attenuation through Creek and Wetland Restoration:

- Wetlands can act as a critical buffer for waves, tides, and erosion.
- support restoration activities within the watershed to improve climate resiliency along the coast.

Adaptation Response Recommendations : 2030-2060

Tide Gate Upgrades:

- Flood management may be significantly reduced due to the predicted 14-38 inch increase in water elevations.
- Further analysis is necessary to determine the expected reduction in service and the likely increase in water elevation behind the tide gate structures.

Hard Armor Protection:

- Strategies should be developed that identify where coastal armoring is feasible and appropriate and areas where redevelopment and retreat are more appropriate.

Identify Priority Areas for Managed Retreat:

- Protection of all properties and infrastructure identified at risk during each time horizon is likely infeasible, therefore
- Establish adaptation strategies that best meet local long-term goals. Public cost considerations, longevity of adopted strategies, and resultant changes to the community should be considered.

Where we need to go…

Integrate / Coordinate Adaptation Planning among departments and agencies

Extrapolate results of potential adaptation strategies through applicable time horizons

- Document costs and consequences of selected strategies
- Repeat for other adaptation strategies
- Describe the resulting coastlines

Initiate Public discourse (willingness to pay)

Identify future adaptation actions that support current coastal resource goals.

ADDITIONAL COORDINATION OPPORTUNITIES
MOVING TOWARDS STRATEGIC ADAPTATION PLANNING

- Virtual Reality
- Municipal/Community Engagement
- Cost Benefit Analysis
- Coastal Resource Implication Evaluation
- Willingness to Pay

Table 7. Total Value (2016 dollars) of Unincorporated Santa Cruz County Properties at Risk

ASSET	VALUE PER UNIT	2010 WITH ARMOR	2030 WITH ARMOR	2060 NO ARMOR	2100 NO ARMOR
Buildings and Facilities					
Residential	$ 958,043	$452,196,530	$509,679,140	$1,187,015,892	$1,757,051,772
Commercial	$ 930,000	$78,120,000	$81,840,000	$105,090,000	$111,600,000
Public	$500,000	$10,500,000	$11,500,000	$19,500,000	$27,500,000
Emergency Services	$2,000,000	$4,000,000	$4,000,000	$4,000,000	$4,000,000
Property losses		*$544,816,530*	*$607,019,140*	*$1,315,605,892*	*$1,900,151,772*
Transportation					
Road (ft)	$ 280	$22,222,480	$24,223,920	$33,924,520	$41,928,040
Highway (ft)	$ 4,000	$75,212,000	$77,868,000	$80,872,000	$90,884,000
Rail (ft)	$ 280	$4,069,800	$4,501,000	$4,980,920	$5,294,800
Transportation losses		*$101,504,280*	*$106,592,920*	*$119,777,440*	*$138,106,840*
Water and Utility Infrastructure					
Storm Drain conduit (ft)	$ 1,080	$68,281,250	$71,361,193	$98,226,761	$118,338,693
Waste Water conduit (ft)	$ 1,080	$57,183,523	$60,245,114	$95,901,420	$118,506,023
Drinking Water conduit (ft)	$ 189	$467,614	$743,750	$1,776,705	$2,550,379
Utility Losses		*$125,932,386*	*$132,350,057*	*$195,904,886*	*$239,395,095*
Total Combine losses		**$772,253,197**	**$845,962,117**	**$1,631,288,218**	**$2,277,653,707**