



CLIMATE ADAPTATION PLAN UPDATE PROGRESS

Central Coast Climate
Collaborative Summit
August 23, 2017

OVERVIEW

- Timeline
- Climate Hazards + Impacts
- Sea Level Rise Vulnerability Assessment
- Social Vulnerability Assessment
- Draft Climate Adaptation Strategies
- Next Steps



TIMELINE

- November 2016 Kickoff with Climate Adaptation Plan Update Team leaders
- February 2017 Consultants begin Sea Level Rise & Social Vulnerability Assessments
- May 2017 Team reviews and refines consultant work | Prepare Plan progress
- June 2017 Team develops strategies | Department Heads prioritize
- July 2017 Draft Climate Adaptation Plan Update out for review
- August 2017 Climate Adaptation Plan Update presented to City Council
- Fall 2017 Climate Adaptation Outreach Campaign begins | Funding proposals
- December 2017 Climate Adaptation Plan Update approved as part of LHMP by FEMA
- Winter 2018 Climate Adaptation Plan Update finalized & adopted by City Council

CLIMATE CHANGE HAZARDS + IMPACTS

COASTAL IMPACTS

- Erosion (Sea Level Rise)
- Rising Tides (Sea Level Rise)
- Coastal Storm Flooding (Sea Level Rise)
- Ocean acidification
- Salt Water Intrusion



NON-COASTAL IMPACTS

- Increased Wildfire Threat
- Increased Landslide potential
- Severe storm/weather events
- Drought
- Increased temperature
- Impacts to ecosystems and habitats



SEA LEVEL RISE VULNERABILITY ASSESSMENT

Impacts assessed: rising tides, coastal storm flooding + erosion

Scenarios analyzed include

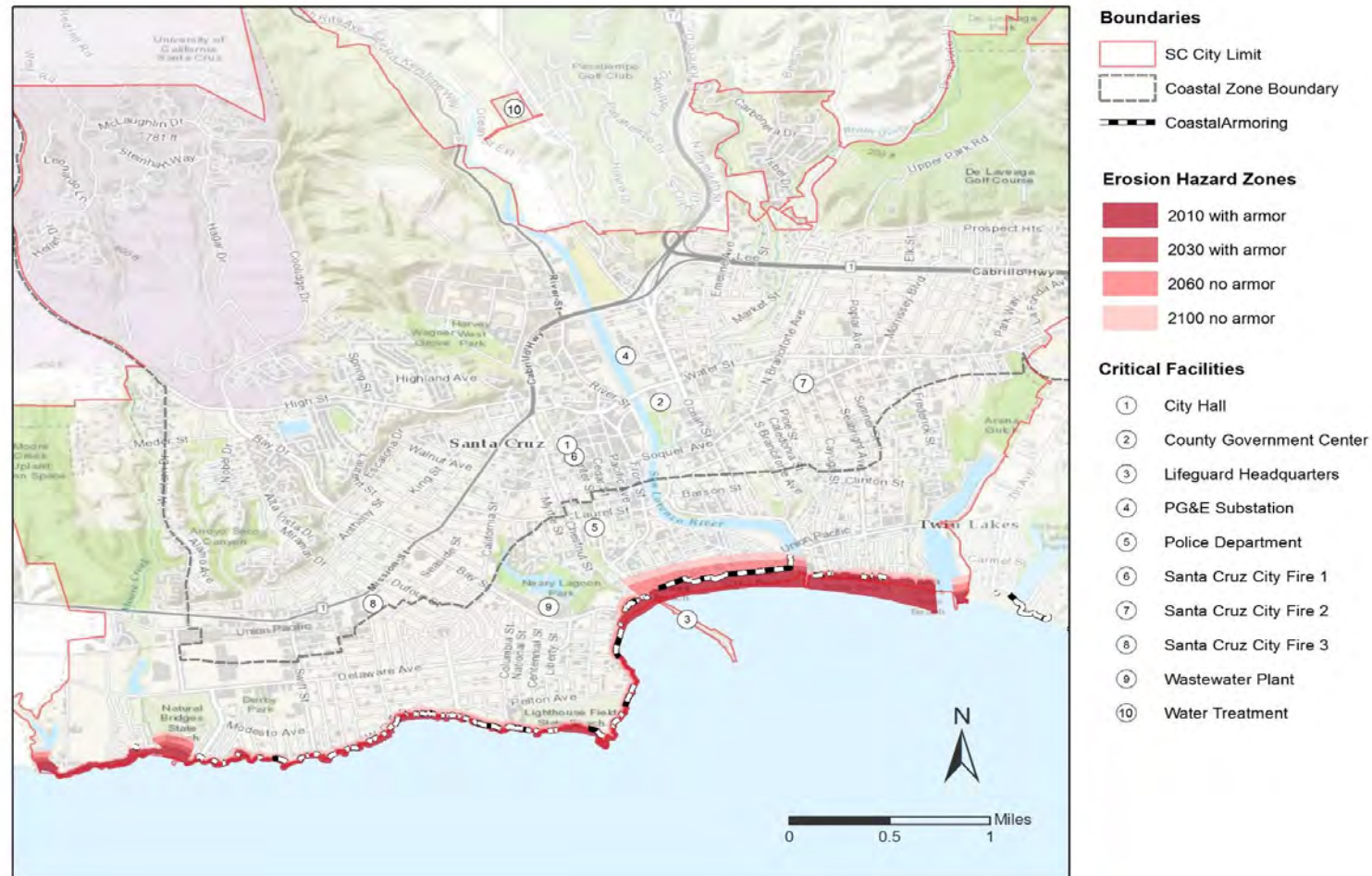
- Existing conditions (2010 water level)
- Medium sea level rise by 2030 (IPCC S1 – 4 inches)
- High sea level rise by 2060 (IPCC S2 – 28 inches)
- High sea level rise by 2100 (IPCC SS3 – 63 inches)

Outputs include SLR impact maps at each time horizon | inventory + valuation of exposed facilities + infrastructure



SEA LEVEL RISE VULNERABILITY ASSESSMENT

CITY OF SANTA CRUZ COASTAL HAZARD ANALYSIS EROSION HAZARD ZONES



SEA LEVEL RISE VULNERABILITY ASSESSMENT

CITY OF SANTA CRUZ COASTAL HAZARD ANALYSIS
COMBINED COASTAL CLIMATE CHANGE HAZARD ZONES
(areas determined to be protected or managed are removed)



Boundaries

- SC City Limit
- Coastal Zone Boundary

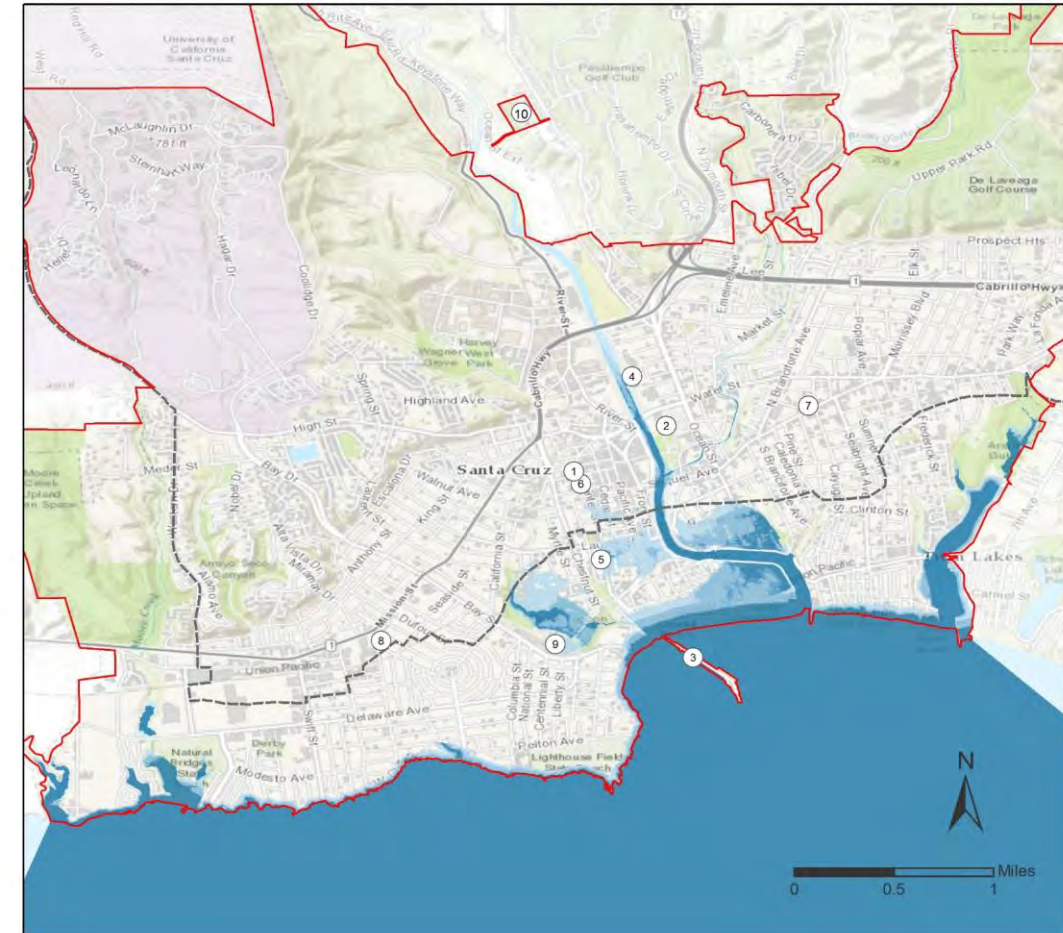
Combined Hazard Zones

- 2010 (Existing)
- 2030 (.3 ft SLR & s2)
- 2060 (2.4 ft SLR & s3)
- 2100 (5.2 ft SLR & s3)

Critical Facilities

- 1 City Hall
- 2 County Government Center
- 3 Lifeguard Headquarters
- 4 PG&E Substation
- 5 Police Department
- 6 Santa Cruz City Fire 1
- 7 Santa Cruz City Fire 2
- 8 Santa Cruz City Fire 3
- 9 Wastewater Plant
- 10 Water Treatment

CITY OF SANTA CRUZ COASTAL HAZARD ANALYSIS
COMBINED COASTAL CLIMATE CHANGE HAZARD ZONES
(includes areas determined to be protected from or managed for flooding)



SOCIAL VULNERABILITY ASSESSMENT

New GIS based assessment to improve customization of adaptation strategies and actions

Social Vulnerability Score includes

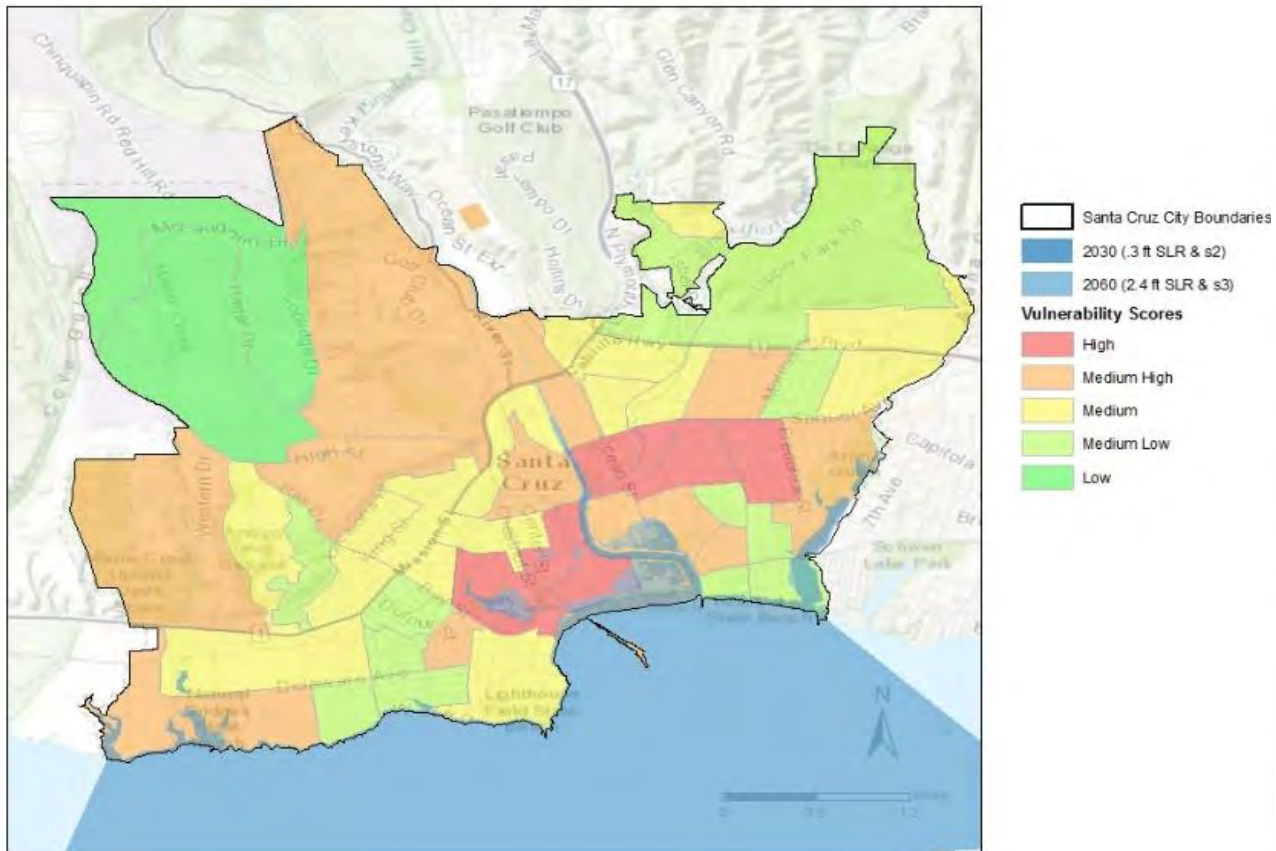
- Poverty
- Age > 65 years old
- Crime incidence
- English not spoken well or at all
- Disabled

Outputs include High Socially vulnerability census block groups with sea level rise + wildfire hazard zones

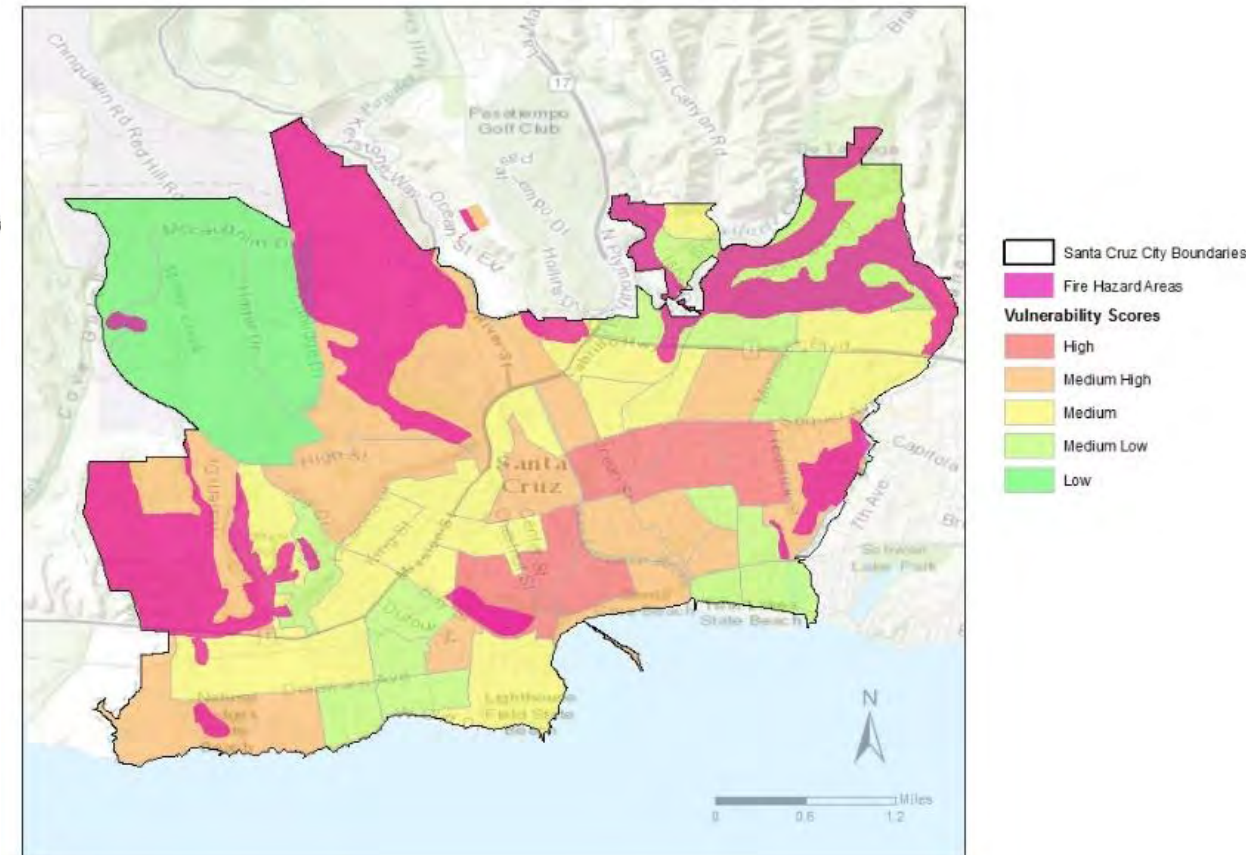


SOCIAL VULNERABILITY ASSESSMENT

SOCIAL VULNERABILITY & SLR HAZARDS



SOCIAL VULNERABILITY & WILDFIRE HAZARDS



PROGRESS ON 2011 PLAN

- Relocation of Emergency Operations Center to DeLaveaga Park
- Initiation of Local Coastal Plan Update
- Conversion of Bay Street Reservoir to 2 elevated tanks w/solar PV
- Increasing urban tree canopy through grant funded tree plantings and developing urban tree inventory as management tool
- Conducting sea level rise and social vulnerability assessments
- Raised all San Lorenzo River bridges except Hwy 1 bridge & train trestle
- Branciforte Creek Habitat Restoration Plan in progress
- 2015 Urban Water Master Plan completed
- Some coastal revegetation completed
- Beach nourishment from San Lorenzo River designed

CLIMATE ADAPTATION STRATEGIES

	Strategies		Strategies		Strategies	2011 priority	2017 priority	Lead dept
A-1+	Increase public awareness, education, and public outreach in areas with social vulnerabilities that coincide with hazard zones.	A-12+	Storm drain pump station upgrades	B-5	Prepare for new opportunities and challenges to tourism and preserve the industry as an economic base	High	High	Economic Development
A-2	Evaluate all related decisions through a climate lens	A-13	Replace Highway 1 bridge	B-6	Require setbacks for development adjacent to cliffs	High	High	Planning
A-3	Prepare for potential sea level rise throughout the City	A-14	Protect downtown and beach area from San Lorenzo River flooding	B-7	Protect natural shoreline processes from alteration	High	High	Planning
A-4+	Identify priority areas for managed retreat to retain public access and sufficient beach area for recreational use; relocate roads and infrastructure	A-15	Protect adjacent neighborhoods and commercial areas from Branciforte Creek and other stream flooding	B-8	Mitigate development in flood plains	High	High	Planning
A-5+	Adopt policies to evaluate limiting municipal capital improvements that would be at risk	A-16	Improve Water Supply Reliability	B-9	Disseminate flood hazard information and encourage participation in FFIP	High	High	Planning
A-6+	Prioritize public coastal protection structures for upgrade and replacement	A-17	Monitor open space/watershed	B-10	Wildfire prevention through regulations of new development and development limitations	High	High	Planning
A-7	Upgrade or relocate City buildings, the Wharf and infrastructure to protect and prepare for sea level rise, flooding and storm events occurring as a result of climate change	A-18	Conserve and curtail water usage	C-1	Protect, repair/replace bridges crossing the San Lorenzo River	Important	Important	Public Works
A-8	Monitor and protect wastewater facility from ground water infiltration	A-19	Protect coastline-related water infrastructure	C-2	Increase vegetation management efforts to reduce wild land fire potential	Important	Important	Fire Department
A-9	Seal wastewater pipes throughout system	A-20+	Improve resiliency to flooding along the Coast (project dependent)	C-3	Increase public awareness, education and enforcement of wild land fire threat	Important	Important	Fire Department
A-10	Seal pump gallery at wastewater treatment facility	A-21	Reduce impacts of creek and/or river flooding to water system infrastructure	C-4	Increase open space monitoring to reduce incidence of human caused wild land fire	Important	Important	Fire Department
A-11	Monitor all pumping station sites	A-22	Prepare for short-term water shortage and water emergency supply for climate related events	C-5	Prevent urban/wild land interface fire hazards in parks	Important	Important	P & R
		A-23	Rehabilitate water system infrastructure from landslides and erosion	C-6	Protect and preserve tree canopy	Very high	Important	P & R
		A-24	Establish and/or maintain cooperative fire agreements			High	High	Water
		A-25	Protection of visitor serving venues and natural resources					
		B-1	Engineer a cut off wall to protect wastewater treatment facility					
		B-2+	Investigate beach nourishment					
		B-3	Prevent risks from dam failure					
		B-4	Prepare for potential changes in water quality due to climate change					

NEXT STEPS



- Funding for year long Climate Adaptation outreach campaign
- Cost/benefit analysis of BAU vs. implementation of adaptation strategies
- LHMP/CAP Updates Adoption by City Council in early 2018
- Implementation of Plan Update & adaptation strategies
- San Lorenzo River Fluvial Analysis
- Complete Local Coastal Program Update
- Annual reporting to City Council on progress

THANK YOU + QUESTIONS?



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