It is time to proactively plan our community’s vision for a climate resilient future coastline.
A COMMUNITY IN NEED OF A COASTAL VISION

We must address...
- COASTAL ACCESS
- TOURISM + RECREATION
- TRANSPORTATION
- ECOSYSTEMS
- COASTAL INFRASTRUCTURE + POLICY
- SENSE OF PLACE + CULTURAL IDENTITY
- EQUITY

...and create...
- AN INCLUSIVE CONVERSATION
- A COMMUNITY VISION
- A LONG TERM SOLUTION
- A RESILIENT + EQUITABLE COASTLINE
RESILIENT COAST: TWO PROJECTS, ONE GOAL

West Cliff Drive Adaptation and Management Plan

$343,000 CalTrans funding; $44k match

Development of LCP Sea Level Rise Strategies & Policies to Support Beach and Public Access Protection

$200,000 Coastal Commission funding; $82k match

www.cityofsantacruz.com/ResilientCoast
COASTAL PUBLIC ACCESS IMPACTS

Boundaries
- Coastal Access
- Coastal Armoring
- City Limit

Combined Hazard Zones
- Existing
- 2030 (3 ft SLR)
- 2050 (2.4 ft SLR)
- 2100 (5.2 ft SLR)

1 inch = 3,000 feet
High Social Vulnerability to Coastal Climate Hazards driven by incidence of non-English speakers & low incomes.

Medium-high Social Vulnerability to Coastal Climate Hazards primarily driven by incidence of elderly folks.
WHAT COULD HAPPEN TO WEST CLIFF DRIVE IF WE TOOK NO ACTION TO DEAL WITH SEA LEVEL RISE?
WHAT COULD HAPPEN TO THE BEACHES IF WE TOOK NO ACTION TO DEAL WITH SEA LEVEL RISE?
ADAPTATION SOLUTION OPTIONS - BEACHES
ADAPTATION SOLUTION OPTIONS - BLIFFS

- Existing Condition
- Soil Nail Wall
- Continuedrip rap
- Retreat

Reduced habitat, maintain some beach area
Reduced habitat, intertidal only beach, surf only low tide
Allow erosion, remove rock, wide dry and intertidal beach
SHORT & LONG TERM STRATEGY DEVELOPMENT

• TAC and Dept Head workshops on exposure, future hazards, possible solutions, tradeoffs, goals and criteria
• Teams identified short and long term strategies for different beach/bluff areas
• Post workshop surveys to refine and find consensus on short and long term strategies, goal priorities and criteria weighting
• Transform workshops into Community Open Houses
• Feeds into options to be fully analyzed / CBA
### ADAPTATION PATHWAYS: TRIGGERS/THRESHOLDS

<table>
<thead>
<tr>
<th>TEMPORAL</th>
<th>ENVIRONMENTAL</th>
<th>STRUCTURAL</th>
<th>FISCAL</th>
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<tbody>
<tr>
<td>Duration of temporary loss</td>
<td>Flood elevations</td>
<td>Repetative loss</td>
<td>Cost/Benefit exceedences</td>
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<td>Future time horizon</td>
<td>Ocean levels</td>
<td>Bluff failure</td>
<td>Willingness to pay</td>
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<tr>
<td>Infrastructure resiliency</td>
<td>Salt water intrusion</td>
<td>Loss or condition of protective structures</td>
<td></td>
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<tr>
<td>Past permitted use</td>
<td>Habitat impacts or response</td>
<td>Loss of service or uses:</td>
<td></td>
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<tr>
<td>Cumulative loss of use or access</td>
<td>Beach width</td>
<td>Prescriptive setbacks</td>
<td></td>
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<tr>
<td>Hazardous conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss of public use or access</td>
<td></td>
<td></td>
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</table>

**EXAMPLE ADAPTATION PATHWAYS TRIGGERS**
ADAPTATION PATHWAYS — PROTECT IN PLACE
ADAPTATION PATHWAYS – PROTECT (SOFT), ACCOMMODATE + RETREAT
ADAPTATION PATHWAYS – RESTRICT ARMORING
EARLY EQUITABLY CENTERED ADAPTATIONS

SHORT TERM: STORM DRAIN IMPROVEMENTS, MOLD PROOFING, LEVEE SEEPAGE

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Likely</th>
<th>Justification</th>
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<tr>
<td>Business as Usual</td>
<td>Yes</td>
<td>Flooding hazards managed with pumps</td>
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<tr>
<td>Armoring</td>
<td>Yes</td>
<td>Addresses future erosion hazards</td>
</tr>
<tr>
<td>Infrastructure Resiliency</td>
<td>Yes</td>
<td>Addresses future wave hazards</td>
</tr>
<tr>
<td>Living Shorelines</td>
<td>Yes</td>
<td>Addresses future wave and flood hazards</td>
</tr>
<tr>
<td>Beach Nourishment</td>
<td>Yes</td>
<td>Addresses future wave and flood hazards</td>
</tr>
<tr>
<td>Managed Retreat</td>
<td>Yes</td>
<td>Addresses future erosion hazards</td>
</tr>
</tbody>
</table>

Figure 17. Potential Adaptation Options for Main and Cowell Beaches

LONG TERM: BEACH FLATS EQUITABLE REDEVELOPMENT PLAN (RETREAT? ELEVATE?), HABITAT RESTORATION

FACING CLIMATE CHANGE
The city of Santa Cruz graded the ability of neighborhoods to prepare for, cope with and recover from climate-change-related disasters. Some of the most vulnerable communities will also have elevated risk due to sea level rise.

* Neighborhoods were scored using five measures of social vulnerability — age, income, disability, language and crime
Source: City of Santa Cruz
RESILIENT COAST: EQUITY CENTERED

- Spend time building trust with frontline community leaders and designed meetings with them
- Academic Partnerships to bring capacity to focus long term on frontline communities
- One on one meetings with historically under represented & follow up
- Internal to City:
  - Agenda reports must highlight equity, sustainability and public health
  - Training of staff, commissioners and other leadership
  - Cross sectoral convenings
TIMELINE ON COMMUNITY OUTREACH AND ENGAGEMENT

July 2019: INTRODUCE PROJECTS + BUILD RELATIONSHIPS

Sept/Oct 2019: COMMUNITY VISIONING

Dec/Jan 2019-2020: IDENTIFY CONDITIONS + NEEDS

Spring 2020: ADAPTATION SOLUTIONS + TRADEOFFS

Aug 2020: ADAPTATION SOLUTION PRIORITIES + PREFERENCES

December 2020: DOES IT ALL MAKE SENSE?
EXTENSIVE OUTREACH

- Open Streets
- 8 Focus Groups
- 750West Cliff Drive Surveys
- 125 Interviews in Beach Flats/Lower Ocean
- 30 talks w/ community groups and students

- One-on-one meetings with Under represented groups
- Virtual Reality App Phase 1 @ Library
- TAC & DH Workshops

- VR Phase 2: Mobile Phone App
- Open House 1 & 2 (including Beach Flats)
- Check backs with Under represented Groups

COMPLETED

FUTURE
VIRTUAL REALITY SEA LEVEL RISE EXPLORER

The Santa Cruz Coastline Is Always Changing

By the end of the century, if we do nothing, sea rise could cause us to lose our iconic beaches and the bluffs will experience intensified erosion.

SUMMER 2018

The Resilient Coast Santa Cruz Initiative is proactively and collaboratively planning a community vision for climate resilient future coastline management.

PROJECTED FUTURE FLOODING

We can protect, accommodate and relocate. We are studying the coastline from Seabright Beach to

This Virtual Reality Sea Level Rise Explorer is one of many outreach methods being used to engage the public in the Resilient Coast Santa Cruz Initiative. Here is the Initiative's timeline:

APRIL 2018 JUNE 2018

PHASE 1
April - December, 2019
Summer Conference and Festival
Climate Hawaii Participant

PHASE 1
April - December, 2020
Development of Resilient Initiatives

This Virtual Reality Sea Level Rise Explorer is one of many outreach methods being used to engage the public in the Resilient Coast Santa Cruz Initiative. Here is the Initiative's timeline:

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Take a fact sheet and visit our website for more information and to learn when the next community meeting on the Resilient Coast Santa Cruz Initiative is taking place.

cityofsantacruz.com/ResilientCoast

The Resilient Coast Santa Cruz team gratefully acknowledges the project partners and funders.
THANK YOU + QUESTIONS?

https://www.facebook.com/SantaCruzClimateAction/

#ResilientCoastSC

www.cityofsantacruz.com/ResilientCoast