Marin Bay Shoreline Sea Level Rise Vulnerability Assessment

Photo of Buck's Landing during King Tides flown by LightHawk

What we did

- Marin County led a project to quantify the impacts to our communities and infrastructure from sea level rise and storms
- Involved public and private stakeholders and coordinated with all cities and towns, and with local, regional, and state agencies to understand how the impacts affect Marin



Our Coast Our Future web viewer displaying 10 inches of sea level rise with the 100-year storm, which is comparable to our winter storms.

Why we did it



Highway 37 during winter 2017 storms. The roadway was closed for a record 27 days this winter due to flooding.

- The flooding that Marin already experiences will become the "new normal"
- Rising seas will make current winter flooding conditions permanent
- Our infrastructure is aging – knowing what is at risk across the region will make planning more timely and costeffective

Why we did it

- It's a slow-moving emergency that needs our attention now
- Flooding, whether from a storm event of rising seas, knows no boundaries, and we will all be affected
- Public and private collaboration is essential to address the issues we will face as a community



Storm photos from winter 2017 from Tam Valley (above) and Gallinas Creek (below)



What is a Vulnerability Assessment?



Marin County is using State guidance to assess our vulnerability to sea level rise.

- A Vulnerability
 Assessment uses mapbased data to catalog
 what is exposed and how
 sensitive it is to sea level
 rise
- It builds a foundation for understanding and planning for sea level rise adaptation

Marin's report – what it is

- A study of the bay shoreline
- Used the best available science combined with over 100 stakeholder interviews
- A summary of the findings presented in two major sections: Assets and Locations
 - Assets include: land, buildings, transportation, utilities, agriculture, habitats and wildlife, recreation, emergency services, and cultural resources



What it isn't

- Does not change existing policies or regulations
- Does not prioritize areas or suggest adaptation measures
- Does not include flooding from creeks or stormwater systems
- Does not incorporate field work



Mid-century projections from the Vulnerability Assessment: 20 inches of sea level rise and 20 inches with the 100year storm

2: State Route 101 @ State Route 580

4: Tiburon/Belvedere



Sea level rise scenarios

Sea level rise

Near term Mid term Long term SLR + 100 year storm 46 inches 56 inches 96 inches

10 inches 20 inches 60 inches

Sea level rise scenarios used for the Vulnerability Assessment

scenarios for the bayside

- Used a statewide sea level rise model developed by the **United States Geological** Survey (Google: Our Coast Our Future to view over 40 scenarios!)
- Analyzed the impacts of 6 scenarios, ranging from 10 inches to inches of sea level rise
- Describes the impacts in text, graphics, and tables by individual assets and then lumped by community

What does it say?

- Impacts will extend beyond the flooded shoreline edge and will change our county in the future
 - Transportation, emergency services, water, sewer and other utilities, as well as many neighborhoods, commercial areas, and public areas like beaches, wetlands and our access to the water

INFACTS AT A-GLANCE. SCENARIO 2	
5,000 acres flooded @ MHHW	200,000+ residents plus commuting employees
8,000 acres flooded @ MHHW +100-year storm surge	2,000 agricultural acres (mostly ranch)
4,500 homes, businesses, & institutions	Property Owners County of Marin Municipalities Caltrans Sanitary Districts Water Districts Sausalito Police Department CHP SMART GGBHTD MTA PG&E AT&T CADFW
80 miles of wet road, 3 ferry landings, 5 marinas, 4 boat launches	
Beaches Tidal Marshes Eelgrass beds Wetlands	

What did we learn?



- There are no solutions that "fix" everything
- There is a lot to do!
- And there is also a lot we CAN do, especially if we start planning now
- We're in this together

What's happening now

- Adaptation projects are already underway, more are coming
- County staff continues to collaborate and support adaptation planning and projects
- Public review draft is available. Written comments due May 29th to Chris Choo, <u>cchoo@marincounty.org</u>





Shoreline erosion in concept (above from Peter Baye) and after construction (below at Aramburu Island) 11

What's next?



Looking north from Richardson Bay near the Sausalito on-ramp to northbound Highway 101 in winter 1973.

- Planning for adaptation will occur over time and involve the public and multiple agencies and jurisdictions
- Read the study and sign up for emails to stay involved
- Participate in developing solutions



Thank you www.MarinSLR.org