

Kenji Ma

Stewart 4°

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### **MARIN SEA LEVEL RISE ADAPTATION STRATEGIES**

- Starting facts:
  - ¼ of Marin County Properties are threatened by sea level rise
  - By 2100, sea level could rise by around 70 cm
- We know that rise in water levels *do* affect Marin County
  - 1982 Storm
- There are three types of adaptation categories:
  1. Protect
    - a. “Hard” protection: seawalls, revetments, and bulkheads
      - i. Generally paid for by taxpayers (Removal and building)
    - b. “Soft” protection: nature based solutions, horizontal levees, wetland restoration, and dune restoration
  2. Accommodate
    - a. Elevating, retrofitting, strengthening
    - b. Designation and zoning
  3. Retreat
    - a. Managed retreat: establishing thresholds to trigger demolition or relocation of structures that are threatened
    - b. Managed retreat should only happen in areas where it is cost effective and has long term benefits
    - c. Problems with managed retreat are uncertainty about who pays for what and that sometimes there is insufficient space for structures to be located
    - d. Nonprofit organizations, city, state, and federal government can all help with retreat projects
- Examples of successful managed retreat:
  - Surfers Point, Ventura, CA
    - Surfrider Foundation

- Pacifica State Beach
  - Partnered with state, fed, scientists, engineers, and non-profit organizations to retreat and protect coast
    - Restored wetlands as well
- Asset Adaptation: the goal is to identify a wide range of reasonable and effective alternatives for threatened areas
- There are many options suggested through C-SMART
  - See visual and examples provided
- C-SMART: Collaboration: Sea-level Marin Adaptation Response Team
  - Began in July 2014
  - Working to amend the Local Coastal Program
  - LCP working to ensure adaptation
  - Assess vulnerability of areas
    - Assessed based on exposure, sensitivity, and adaptive capacity

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