CAR.Committee

From: Tara Owens <taram@hawaii.edu>
Sent: Sunday, May 31, 2020 2:50 PM
To: CAR.Committee
Subject: CAR-9 presentation

Please see link below for presentation in .ppt and .pdf formats. The .ppt file is too large for email. The .ppt will be best for the presentation to support the animations.

https://drive.google.com/drive/folders/1tbqHJm5KH6fO70Hl7ehCsTawHESF3L9l?usp=sharing

Thanks!
Tara

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Working Toward Community Resilience on Maui in the Face of Sea Level Rise

Maui County Council
Climate Action & Resilience Committee
June 1, 2020

Tara Owens
Coastal Processes & Hazards Specialist
University of Hawaii Sea Grant

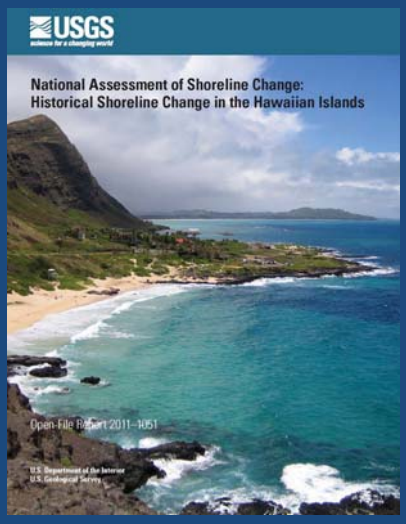
PRESENTATION TOPICS

- Coastal erosion trends and causes
- Incorporating sea level rise information into plans and assessments
- Solutions and responses to impacts from high waves and erosion
  - New research products for wave impacts in West Maui
  - Dune Restoration Program
    - Sea Grant Dune Management Coordinator (County Council funding)
    - Ongoing and upcoming projects
  - Proposed Beach Restoration Projects

South Kihei Road

EROSION IS WIDESPREAD ON MAUI

- 85% of Maui shorelines are eroding over the long-term.
- Maui's beaches are experiencing the highest rates of erosion for the Hawaiian islands.
- Maui has the highest percentage of beach loss (11% or ~4 miles).



Fletcher, Charles et. al., 2011. *National Assessment of Shoreline Change: Historical Shoreline Change in the Hawaiian Islands.* U.S. Geological Survey Open-file Report 2011-1051, 55p.

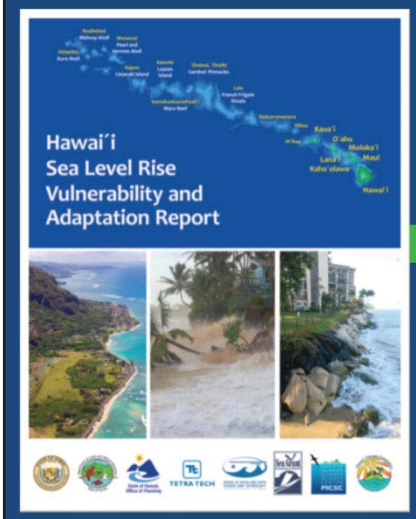
CONTRIBUTIONS TO EROSION

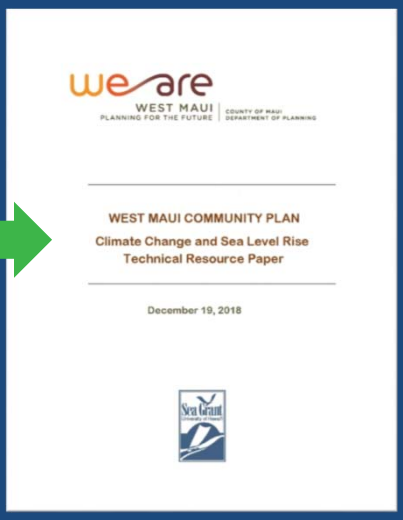
Combination of:

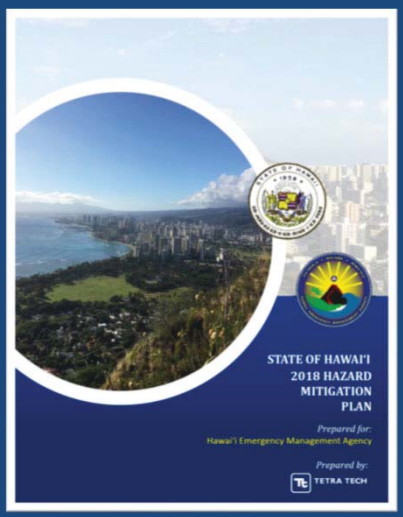
1. Sea-Level Rise *(chronic erosion)*
2. Seasonal Wave Conditions & Storms that Move Sand *(episodic erosion)*
3. Human Interventions – seawalls, revetments, and sand mining

West Maui, Nohonani Condominiums, 2014

INTEGRATING SLR INFORMATION ACROSS PLANS







RESPONSES: COASTAL MANAGEMENT TOOLBOX

preferred strategies

- Do nothing
- Managed retreat
  (i.e. setbacks, relocation)
- Adaptation
  (i.e. elevate, reconfigure)
- Beach and/or Dune restoration
- Temporary erosion control
  (i.e. sand pushing, natural or geotextile bags, erosion blanket)
- Armoring
  (i.e. permanent rock revetment or seawall)

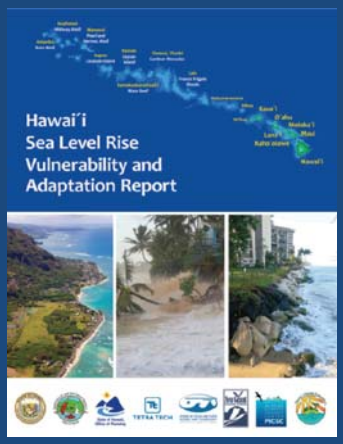

Do Nothing

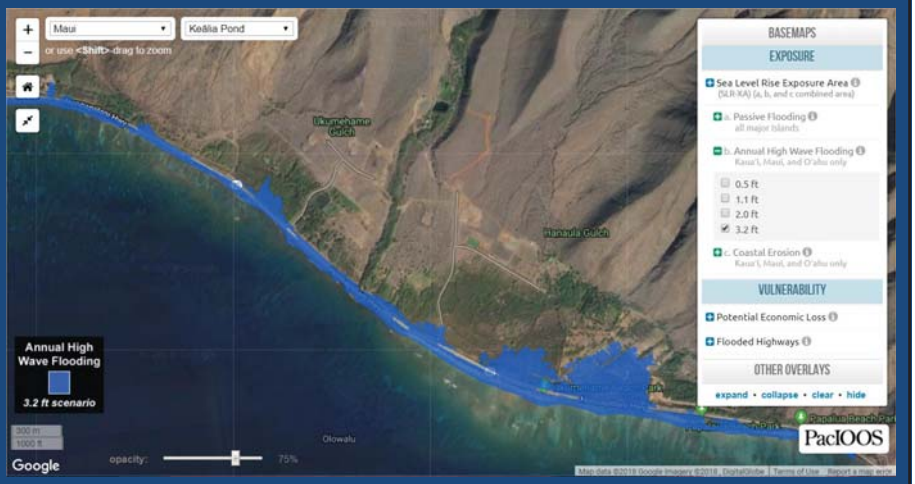

Adaptation


Armor / "Hold the Line"

SLR VIEWER: ANNUAL HIGH WAVE FLOODING

www.hawaiisealevelriseviewer.org





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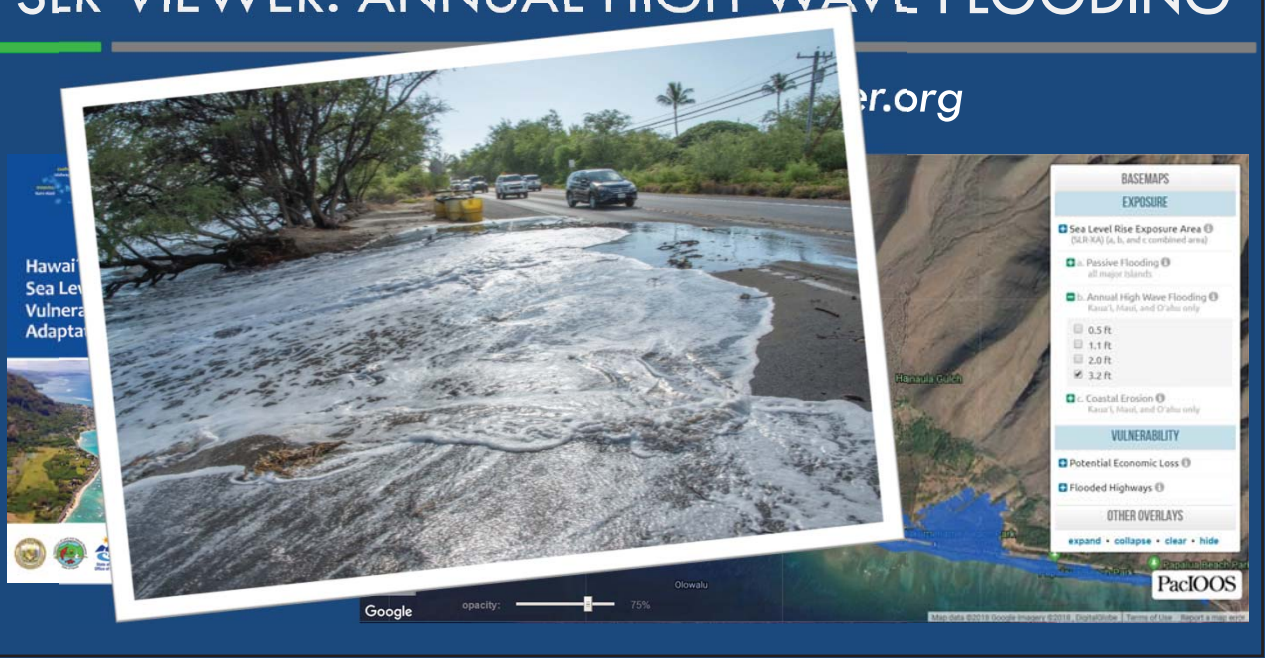
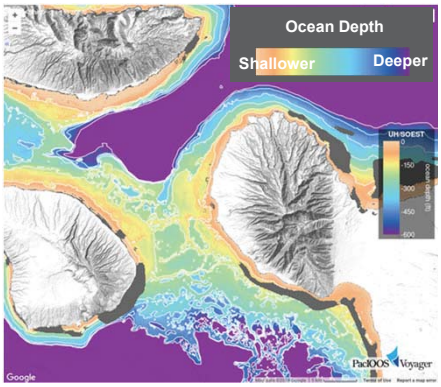
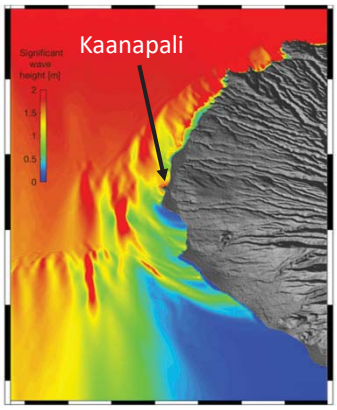
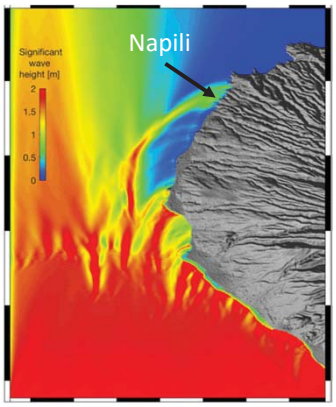


West Maui: A Special Case of Wave Impacts

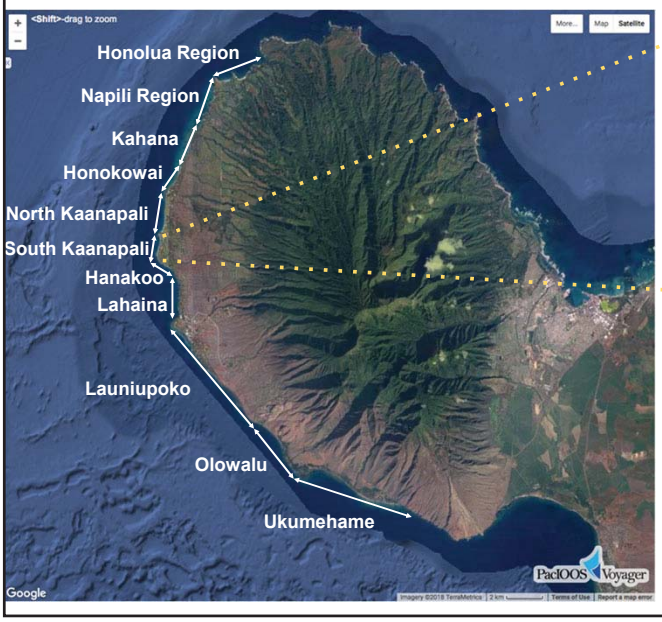
- 2017 NOAA Regional Coastal Resilience Grant award: *"Enhancing Community Resilience with Real-Time Notifications of Hazardous Wave-driven Flooding and Erosion Events"*



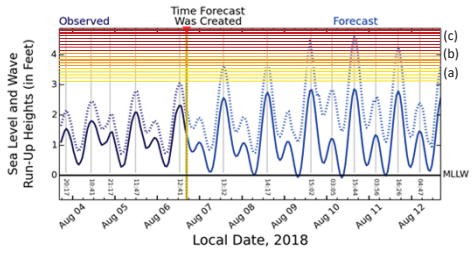




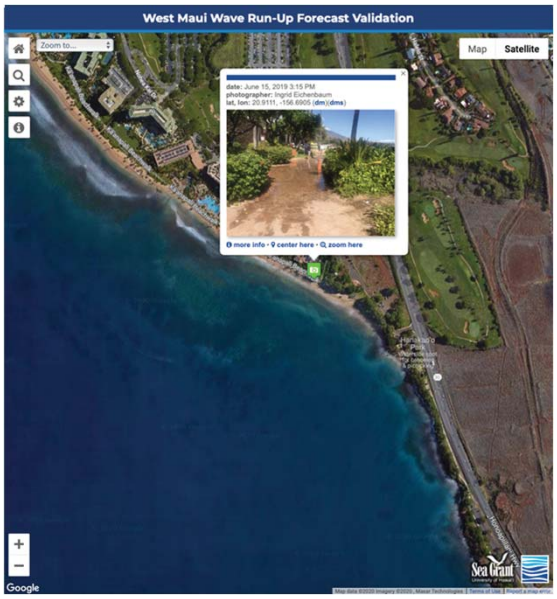
New Forecasts Will Support Resilience Actions



South Kaanapali



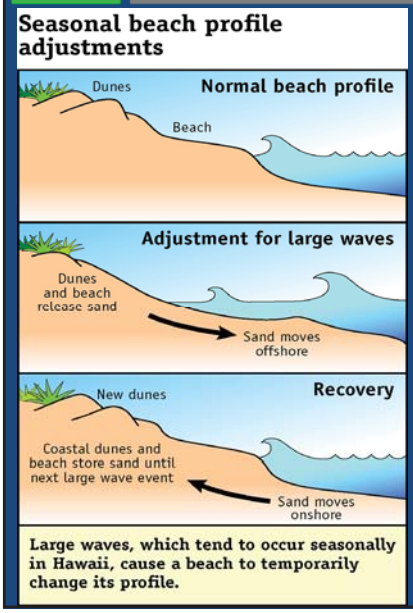
Community-Based Input Validates Impacts

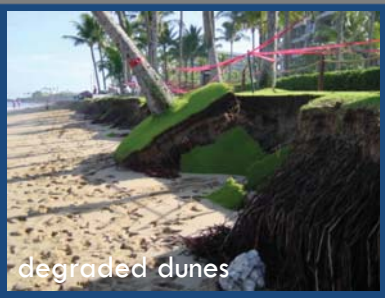


Submit photos:
www.pacioos.org/wm

View photos:
www.pacioos.org/wmm

COASTAL DUNES PROVIDE PROTECTION & MORE

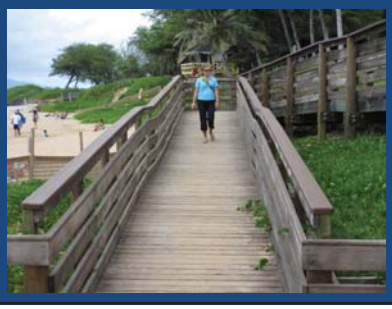


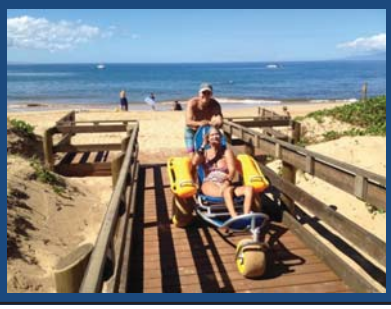


COASTAL DUNE RESTORATION PROGRAM

Strategies:

- Move anything in the way (hardscape or encroaching vegetation)
- Stabilize the sand (add sand, fencing, and/or native vegetation)
- Provide access pathways (footpaths or walkovers)
- Educate and monitor





EXAMPLE: KAMAOLE I PARK DUNE RESTORATION

- Coordination with State (DLNR DOBOR) and County on beneficial use of Kihei boat ramp sand
- Permitting (SMA, Grading, Flood Development)
- Hauling and placement of sand from Kihei Boat Ramp
- Designate shoreline access paths
- Establish native dune plants

NEW PROJECT: BALDWIN BEACH DUNE RESTORATION

- 2019 National Fish and Wildlife Foundation (NFWF) grant award: *"Restoring Maui Coastal Dunes to Improve Community Resilience and Enhance Wildlife Habitat"*

Beach Restoration Initiatives

1. Kahana Bay (regional scale)
2. Kaanapali Beach (regional scale)
3. Napili Bay (small scale)

- Existing Conditions
- Sand Source
- Project Scope & Status

4. DLNR Small Scale Beach Restoration (SSBR) Program


Kahana Beach (Valley Isle Resort), April & June 2016

Kahana Scope and Status

Project Scope	• Restore 1975 beach footprint • Sand Volume = 50,000 to 100,000 cubic yards
Sand Study	Completed in 2016 – sand source confirmed
Economic & Environmental Benefits	• Protect ~936 shoreline dwelling units • Combined value of $500+ million • Contribute over $10 million annual tax revenues • Restore coastal ecosystem & enhance recreation
EA/EIS	"EIS-Prep Notice" published July 23, 2019
Construction Cost Estimate	$15-30 million (up from $9-15 million)
Funding Mechanism	Private funding, with possible Community Facilities District (CFD)
Construction Timeline	Depending on Draft EIS and supplemental studies

Kahana: Proposed Community Facilities District

Community Facilities District (CFD) with bond:

- If cost = $24,000,000
- 1,200 owners = $20,000/unit
- 20 year bond life= $1000/year
- ~$83/month/owner for 20 years

Kaanapali Beach Hotel, January 2018

photo: Chris Conger (SEI, Inc)

Kaanapali Scope and Status

Project Scope	• Restore 1988 beach footprint • Sand Volume = 75,000 cubic yards • Dry Beach Width Increase = 42 feet
Sand Study	2008; offshore sand available & compatible
Economic & Environmental Benefits	Estimated $2 billion annually in economic impacts Restore coastal ecosystem & enhance recreation
EA/EIS	EIS-PN published July 23, 2018
Construction Cost	$11 million
Funding Mechanism	Cost-shared by KOA and State of Hawaii
Construction Timeline	Permits and construction in 2020 (?)

Napili Bay (Napili Bay Resort), August 2019

Napili Scope and Status

Project Scope	• Sand Volume = 10,000 cubic yards (more if SSBR allows) • Dry Beach Width Increase = ~20 feet
Sand Study	Updated in July 2018
Economic Impacts	• ~670 dwelling units • combined value of $400+ million • over $9 million annually in tax revenues
EA/EIS	Programmatic SSBR EA
Construction Cost	Estimated at $1-3 million (?)
Funding Mechanism	Seeking private funds
Construction Timeline	Permits and construction by late 2021 (?)

Mahalo Nui Loa

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