



HAWAIIAN HOME LANDS

HAWAIIAN HOMES COMMISSION • DEPARTMENT OF HAWAIIAN HOME LANDS

**G-2**

# **Update on Climate Change Impacts Affecting Hawaiian Home Lands, Statewide**

November 21-22, 2022



# Nov. 2022 Climate Change Update

- Brief update on sea level rise/groundwater upwelling & drought viewers, & DHHL Planning Office activities
- Presentation by Kawika Winter, Ph.D.: “Loʻi, Loko, and Climate Resilience”
  - ❖ Dr. Winter is a member of UH Biocultural Initiative of the Pacific; current project: “Linking local ecological knowledge, ecosystem services, and community resilience to environmental and climate change in Pacific Islands”  
[manoa.hawaii.edu/biocultural/category/projects/](https://manoa.hawaii.edu/biocultural/category/projects/)



# Previous HHC Informational Updates

HHC Meeting	Item No. & Title	Topics / Description
March 2022 (O'ahu)	Item G-3, The Importance of Land Stewardship in the Face of Climate Change in Hawai'i (presentation format only)	Update on climate change: temp. and atmospheric moisture trends in Hawai'i, model projections of future rainfall, landscape changes, ideas for improvements in land stewardship, by Dr. Tom Giambelluca, UHM WRRC
January 2022 (O'ahu)	Item G-5, In-Depth Update on Climate Change and Resilience Planning Affecting Hawaiian Home Lands, Statewide (presentation format only)	Climate Change "Deep Dive", Part II: 1) Carbon dioxide emissions and climate change update by Dr. Charles "Chip" Fletcher, UH Mānoa SOEST and 2) update on State of Hawai'i climate change-related land use initiatives by Leah Laramée, DLNR-DoFAW
November 2021 (Virtual)	Item G-1, In-Depth Update on Climate Change and Resilience Planning Affecting Hawaiian Home Lands, Statewide	Climate Change "Deep Dive": most recent data on climate change impacts and responses (International/UN COP26); national, state and local initiatives affecting beneficiaries, DHHL and HHC.
July 2021 (Virtual)	Item G-3, Update on Statewide Initiatives and Actions Related to Climate Change and Resilience (July 2019 to July 2021)	Reviewed federal, state & county activities, DHHL initiatives re: community resilience planning, wetland restoration, cesspool conversion, climate justice and climate adaptation ideas.
June 2019 (O'ahu)	Item G-1, Update on DHHL Efforts: Climate Change and Sea Level Rise Adaptation, Community Resilience and Hazard Mitigation on Hawaiian Home Lands, Statewide	Reviewed federal-, state- & county-level activities over previous year; focus on best practices and integration of coastal zone management, community resilience, disaster preparedness, vulnerability analysis & hazard mitigation planning.
April 2019 (Molokai)	Item G-3, Moloka'i Planning Projects Status (pages 5-15)	So. Molokai Shoreline Erosion Management Plan (SM-SEMP) Phase I; CCA & SLR planning at federal, state & county levels.
June 18-19, 2018 (O'ahu)	Item G-4, Update on DHHL Efforts: Climate Change & Sea Level Rise Adaptation, Community Resilience & Hazard Mitigation	First update, per HHC request at April 2018 meeting. Reviewed federal, state and county activities Sept. 2016 to June 2018. Continued to recommend integrated, ahupua'a based approach.



# National Climate Assessment

- **U.S. Global Change Research Program (USGCRP) is currently developing the Fifth National Climate Assessment (NCA5)**
- **NCA's help us better understand what's happening, and why, as well as what the anticipated impacts on society will be, and our response options**
- **NCA's are state-of-the-science synthesis of climate knowledge, impacts, and trends across U.S. regions and sectors to inform decision making and resilience-building activities across the country**
- **The Assessment will include a chapter specifically on Hawai'i and U.S.-Affiliated Pacific Islands, with input from University of Hawai'i at Mānoa researchers**
- **Comments on Draft NCA5 due by Jan. 27, 2023; Final ready Fall of 2023**
- **For more information, go to: [www.globalchange.gov/climate-change](http://www.globalchange.gov/climate-change)**





# Sea Level Rise Scenarios and Projections

- National Oceanic and Atmospheric Administration (NOAA) sea level rise (SLR) viewer is easy to use, but is limited in the amount of data it provides
- The NOAA SLR viewer is accessible here:  
[coast.noaa.gov/slr](https://coast.noaa.gov/slr)

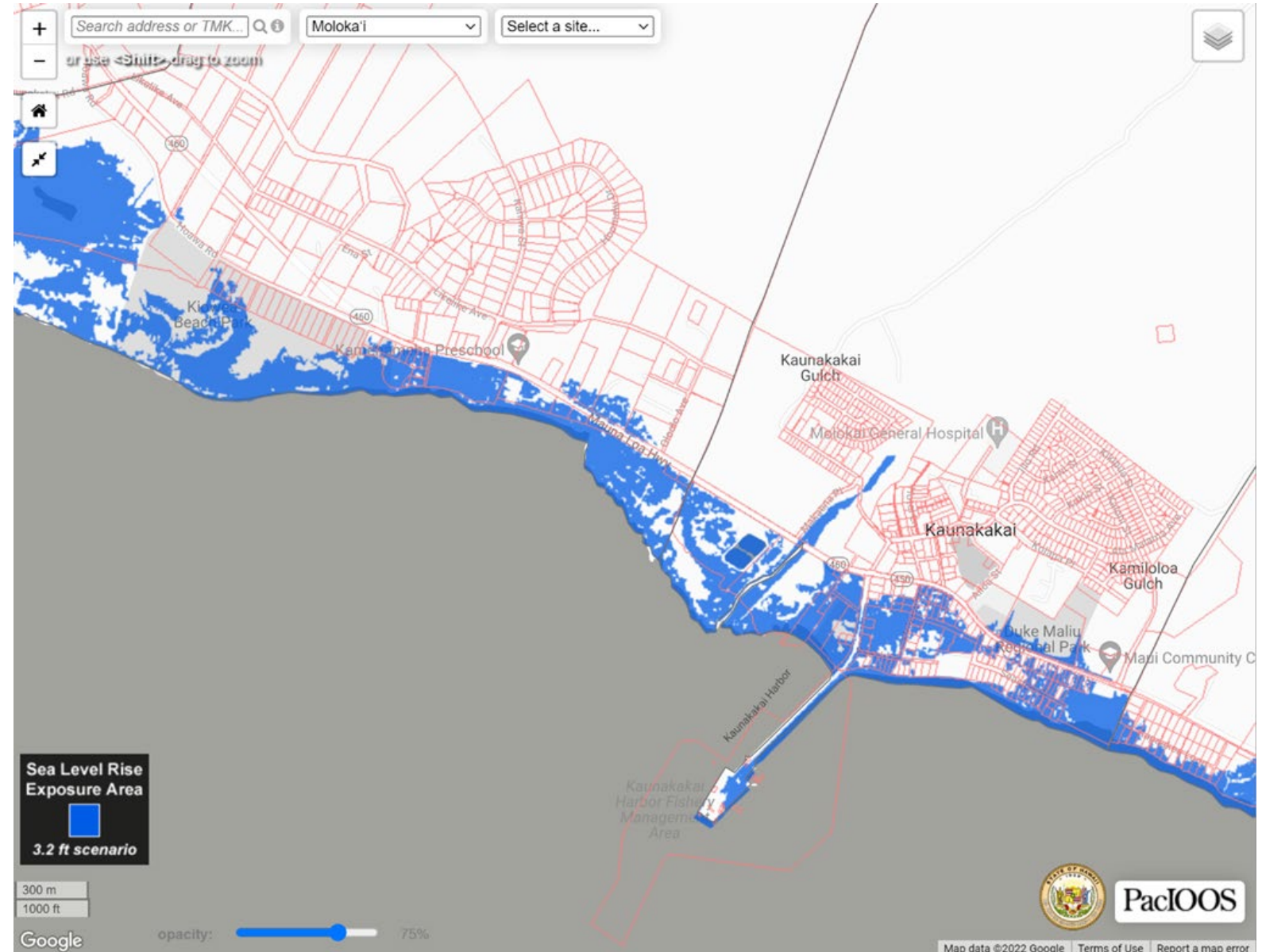


So. Shore Molokai w/3 ft. SLR



# Sea Level Rise Scenarios and Projections

- State of Hawaii PacIOOS SLR Viewer has additional data such as TMKs, flood hazard areas, vulnerability
- SOH SLR viewer is accessible here: [www.hawaiisealevelriseviewer.org](http://www.hawaiisealevelriseviewer.org)

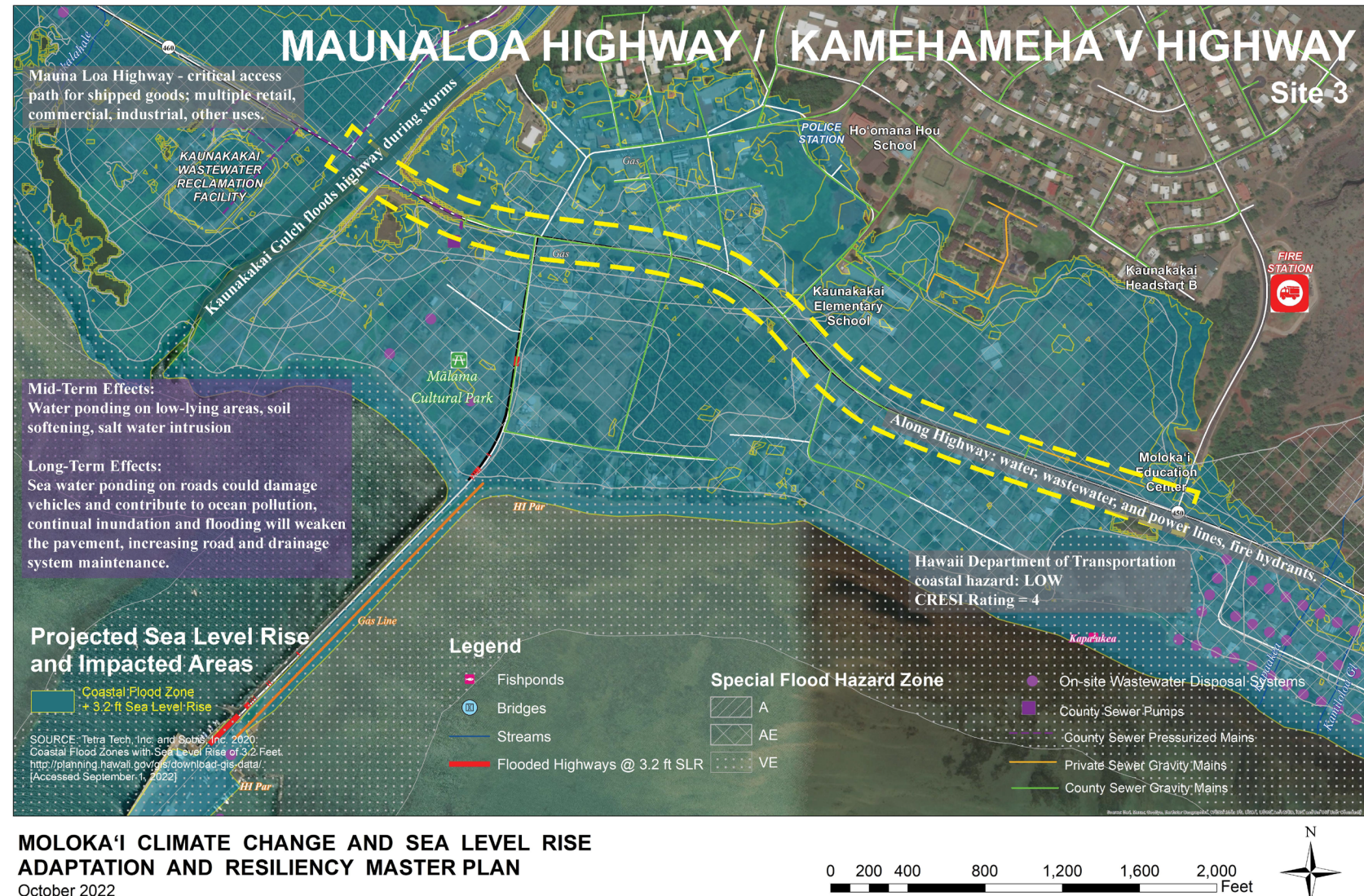






# Sea Level Rise Scenarios and Projections

- Molokai Climate Change and Sea Level Adaptation and Resiliency plan (CCSLAR) (Co. of Maui)
- Maps of priority sites show 3.2 ft. of projected sea-level rise and impacted areas
- For more info, go to: <https://www.sustainablemolokai.org/environment-natural-resources/molokai-ccslar>







# U.S. Drought Monitor (USDMD)

- Provides real-time information on drought conditions for each state
- Data provided by network of volunteer monitors, is updated weekly
- All islands of Hawai'i are currently experiencing some level of drought, as shown by the USDMD
- For more info, go to: <https://www.drought.gov/states/hawaii>

## Current U.S. Drought Monitor Conditions for Hawaii

Get Alerts When Local Conditions Change

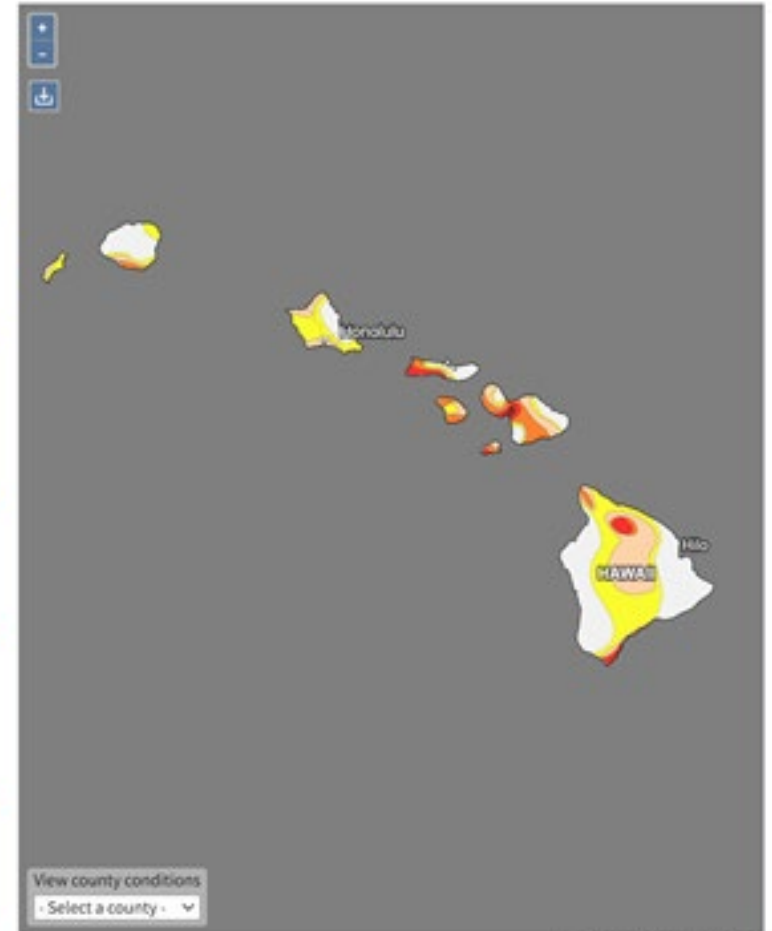
Current Last Week Last Month

The U.S. Drought Monitor (USDMD) is updated each Thursday to show the location and intensity of drought across the country. This map shows drought conditions across Hawaii using a five-category system, from Abnormally Dry (D0) conditions to Exceptional Drought (D4). The USDMD is a joint effort of the National Drought Mitigation Center, USDA, and NOAA. [Learn more.](#)

The following state-specific drought impacts were compiled by the National Drought Mitigation Center. While these impacts are not exhaustive, they can help provide a clearer picture of drought in Hawaii.

	<b>D0 - Abnormally Dry</b> <ul style="list-style-type: none"><li>• Corn quality declines; less water is available for irrigation</li><li>• Hiking trails are noticeably dry with soil erosion</li></ul>	<b>58.2%</b> of HI (D0 - D4)
	<b>D1 - Moderate Drought</b> <ul style="list-style-type: none"><li>• Pasture and crop growth is stunted; farmers are not allowed to use reservoir water for irrigation</li><li>• Concerns about fire danger increase</li><li>• Water levels decline; voluntary water restrictions are issued; reservoir levels are depleted in high elevations</li></ul>	<b>30.1%</b> of HI (D1 - D4)
	<b>D2 - Severe Drought</b> <ul style="list-style-type: none"><li>• Pasture conditions are very dry/poor; cattle health is poor; protea, coffee bean, sugar cane crops struggle</li><li>• Fire danger is high</li><li>• Reservoir levels are low; springs are dried up; mandatory water restrictions are implemented</li></ul>	<b>10.5%</b> of HI (D2 - D4)
	<b>D3 - Extreme Drought</b> <ul style="list-style-type: none"><li>• Producers cull cattle, buy supplements, and haul water for livestock</li><li>• Fires spread rapidly; outdoor burn bans are implemented</li><li>• Trees are dry and dropping leaves; feral donkeys move into populated areas</li></ul>	<b>3.3%</b> of HI (D3 - D4)
	<b>D4 - Exceptional Drought</b> <ul style="list-style-type: none"><li>• Cattle die; cattle conception rates are reduced</li><li>• Specialty crops, orchards are dying</li><li>• Hunting areas and hiking trails may be closed due to increased fire danger</li></ul>	<b>0.2%</b> of HI (D4)

Source(s): NDMC, NOAA, USDA



Updates Weekly - 11/08/22

**324,683**

people in Hawaii are affected by drought

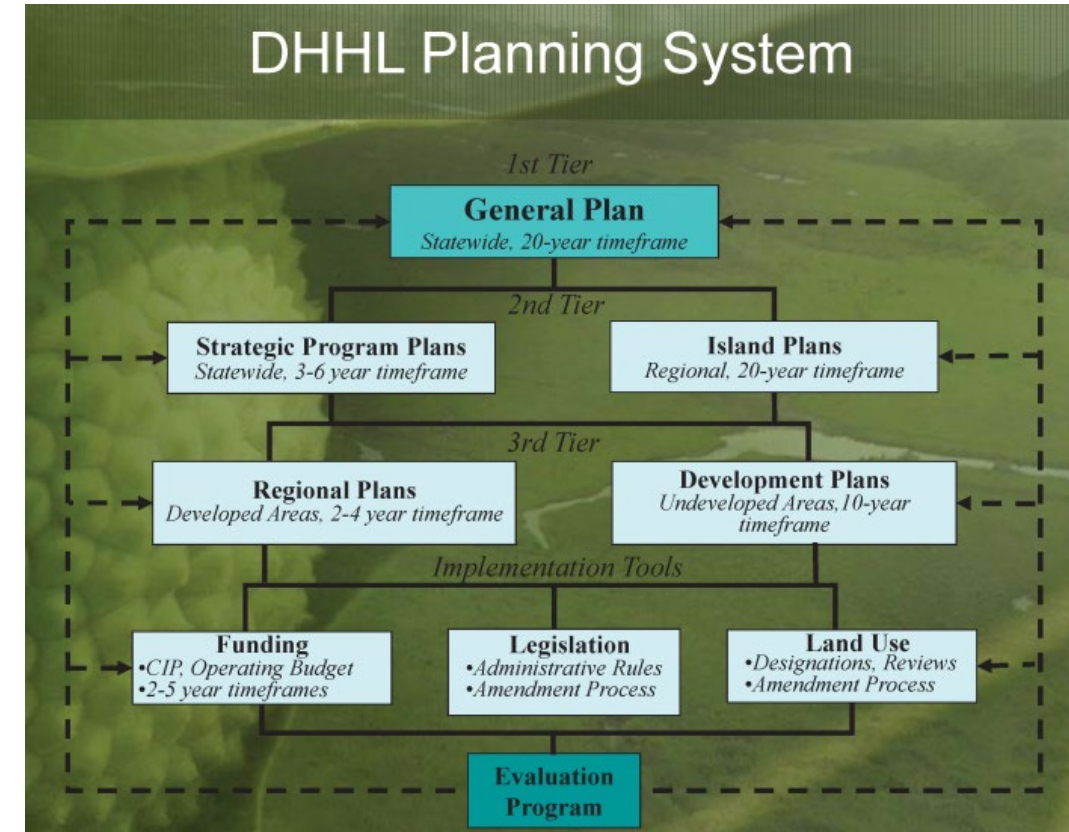
**5**

counties with USDA disaster designations



# Relationship to DHHL Planning System

- DHHL General Plan Update (Item G-1)
- Island Plans
  - Update on accelerated timeline to incorporate CC/SLR mitigation measures into Land Use & infrastructure planning
- Regional Plans
  - Prioritize disaster prep / hazard mitigation projects, e.g. emergency shelters, drainage / flood, climate change, shoreline erosion, & overall disaster preparedness & response strategies
- DHHL's Water Policy Plan / Ho'omalū Energy Policy -- revise to
  - Incorporate latest information on climate change mitigation & adaptation strategies
  - Promote efficiency measures & alternatives technologies
  - Consider ways to combine water & energy projects, e.g. hydroelectric and solar generation and storage





# Coastal Zone / Shoreline / Resilience

- Draft South Molokai Shoreline Erosion Management Plan (SM-SEMP)
  - Open House held on Molokai Nov. 14 – Comments due by Dec. 9
  - Requesting approval at Dec. HHC meeting
- “Developing Resilience for Molokai Coastal Homesteads”
  - NFWF NCRF grant-funded Community Resilience Plan to begin Q1 of 2023
- DHHL working w/ OPSD-CZM to explore options for proactive management of shoreline by DHHL







# Next Steps

- Bring a homestead-specific analysis of climate change-related risks and vulnerabilities, via GIS mapping, to the HHC in the next several months.
- Conduct a workshop for the Commission in early 2023 to generate recommendations and direction on prioritization of DHHL responses to climate change impacts, with an annual update on statewide initiatives.
- Continue to include climate change-related policies in the General Plan update process, then implement via the Island Plan and Regional Plan updates.
- Continue to work on a more coordinated approach to various disaster preparedness and community resilience planning processes, policies, and implementation activities at the federal, state and county levels.
- Schedule cross-training on climate change and community resilience planning for the Planning Office, Land Management, and Land Development Division staff.
- Continue to include considerations of sea level rise, climate change and hazard vulnerability in the criteria for evaluating land exchanges and acquisitions.



# Lo‘i, Loko, and Climate Resilience

- Presentation by Dr. Kawika Winter, Hawai‘i Institute of Marine Biology, UH Mānoa: “Lo‘i, Loko, and Climate Resilience”
- A multidisciplinary ecologist, Dr. Winter has focused his research and professional career on large scale biocultural restoration of social-ecological systems in Hawai‘i.
- His particular areas of interest include revival of traditional resource management methods.
- Former Director at Limahuli Garden and Preserve on the island of Kaua‘i, he is now the Reserve Manager at the He‘eia National Estuarine Research Reserve on O‘ahu.
- Presentation will be followed by Q&A.



# Mahalo!



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[www.dhhl.hawaii.gov](http://www.dhhl.hawaii.gov)