

In it for the Long Haul: Considering sea level rise in Kaua'i County's General Plan

As Kaua'i County works to update their General Plan (GP), sea level rise impacts and adaptation strategies are being considered for the first time in the county's long range planning.

"We were approached by the Planning Director a couple of years ago to do a technical study on coastal hazards for them because they were getting a whole bunch of studies done to inform the General Plan Update," said Ruby Pap, a Coastal Land Use Extension Agent with the University of Hawai'i Sea Grant College Program, co-located in the County of Kaua'i Planning Department. "The General Plan for the county hasn't been updated since 2000."

The study, the Kaua'i Climate Change and Coastal Hazards Assessment (KC₃HA), is groundbreaking in that it marks the first time that climate change impacts will be considered in the long range planning of the Kaua'i GP. Kaua'i County has been active in some sea level rise adaptation measures to date, but this effort will be the first time that language is included in the GP, informing actions across county departments for the next 30 years.

Sea level rise has become increasingly present on the county's radar in recent years. Prior to the KC₃HA's development, the county's shoreline setback ordinance, which was already one of the state's most protective, was undergoing an update that Pap was working on. The county's erosion rate-based setback ordinance was first written into law in 2008 in anticipation of University of Hawai'i's development of erosion rate maps for the island. Two years later, the UH Coastal Geology Group led by Chip Fletcher finished the Kaua'i Coastal Erosion Study. Formally recognizing the historical erosion data presented in this study, the County Council adopted an updated ordinance in 2014, which increased the setbacks by 20 feet to account for future accelerated sea level rise and episodic coastal events. But people were still asking, "Are we doing enough?" said Pap.

When Michael Dahilig, the Director of the Planning Department, reached out to Pap and the Sea Grant team for the study he recognized that they were not doing enough to address sea level rise. "Planning has to integrate science," said Dahilig. "When we look at sea level rise, it has a clear impact on our land use. When we're looking at a forward looking plan, we need to start thinking seriously about both public and private investments on the land that are going to be impacted by sea level rise." Sea Grant and the county have a good working relationship, allowing Dahilig to leave the design and specific content of the report up to Pap and her team.

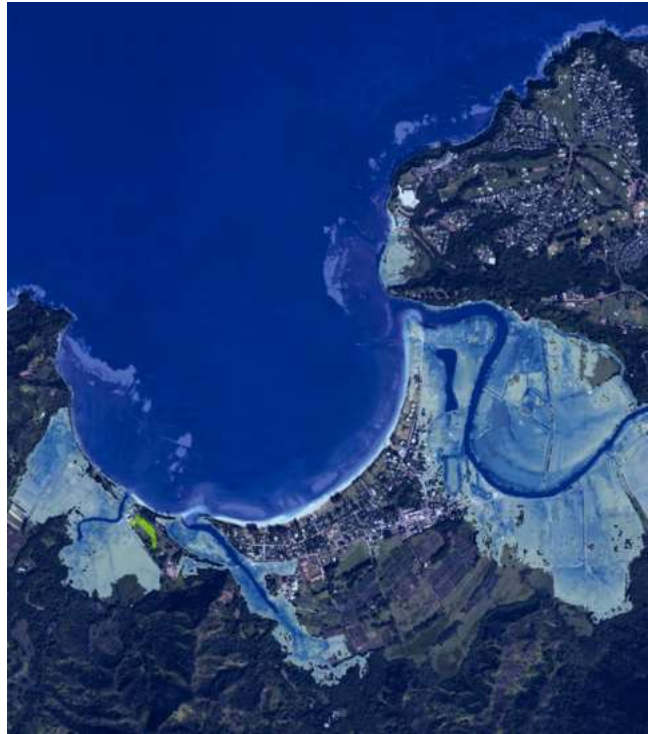


Figure 1 Projected sea level rise in Hanalei Bay shown in KC₃HA



The team of seven Sea Grant extension faculty categorized four main coastal hazards threatening Kaua'i: coastal flooding/wave inundation, erosion, inland stream flooding and wind. Instead of analyzing sea level rise or climate change as a separate threat, the team chose to present

Key Message: Sea level rise impacts can be addressed within existing planning frameworks to manage growth and new development in a changing climate.

each hazard as a combination of the existing threat compounded by projected climate change. For example, coastal erosion has been occurring across the islands. This is related to historical sea level rise, but the anticipated future effects of accelerated sea level rise due to global warming is much greater. Future accelerated sea level rise is expected to amplify erosion rates and bring the shoreline further inland, threatening coastal communities. The team chose to present the coastal hazards in this way based on recommendations from team member, Dennis Hwang who conducted a gap analysis for the implementation of hazard science on Kauai.

“It’s not sea level rise per se you’re planning for. You’re planning for the impacts associated with that,” explained Pap. “It doesn’t always make sense to add sea level rise as another hazard category to your planning or regulatory framework because it feeds into all those hazards.”

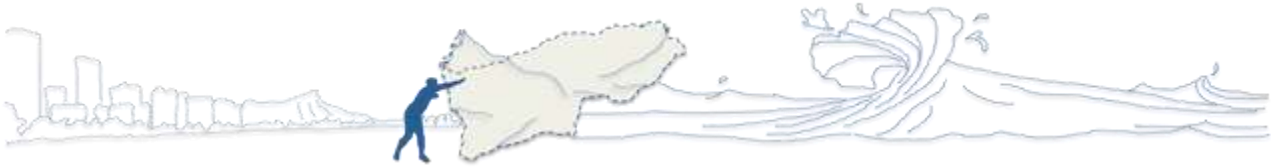
This format presents the information not as a new and unfamiliar threat to address, but an exacerbation of an existing hazard that already has a planning or regulatory program to help mitigate it. To illustrate, Counties are already mitigating these coastal hazards within existing policies such as flood programs, shoreline setbacks, and building codes. There is no need to invent a whole new program to address sea level rise if it can be addressed within these programs.

In addition to providing an overview of the current state of science, the technical assessment provides overarching policy recommendations for the GP. The team researched other counties’ and municipalities’ policies, conducted a gap analysis for Kaua’i, and created a list of possible recommendations which they whittle down to 6 categories of recommendations (see right).

The assessment recommends to start filling gaps in data about sea level rise and how it will affect their coasts. “You have to have accurate planning information before you can get very specific with planning on the ground, because you have to understand the frequency, magnitude,

Six categories of policy recommendations presented in the Kaua’i Climate Change and Coastal Hazards Assessment

1. Support the development of improved climate-related hazard planning information.
2. Conduct detailed coastal hazard, risk, and vulnerability assessments based on best available climate change science.
3. Include relevant background information and maps for climate change related coastal hazards in the General Plan.
4. Incorporate additional General Plan overarching goals/principles pertaining to planning for climate change related coastal hazards.
5. Use existing planning and regulatory programs to address climate change related coastal hazards.
6. Develop new programmatic strategies to address climate change related coastal hazards.



and extent of each hazard,” said Pap. Once you have that information an important next step will be to conduct hazard, risk, and vulnerability assessments for existing low-lying communities.

In the face of uncertainty and data gaps, there are still policies that the GP can implement, said Pap. The assessment provided a list of existing programs in the county that could be used to address sea level rise, like shoreline setbacks. The assessment also recommends including hazard information and overarching principles regarding adapting to climate change, even if actions aren’t specified down to the inch of shoreline retreat. “If it’s not mentioned in the plan, it’s hard to get public funding or traction to do something about it,” said Pap. It is also important for the GP to specifically recognize climate change as a public health and safety concern.

The incorporation of climate change adaptation into long range planning such as the County General Plan is critical for cohesive and sustained response to sea level rise. “Sea level rise is like a religion,” said Dahilig, “in that you have to have some belief and faith that this stuff is going to happen. And that’s where we’re trying to get ahead of the curve in anticipating that yes, given all the science, given everything that is pointing in this direction, we may not see it immediately now but we anticipate it and that’s just good planning in general.”

For Pap, the hardest part for communities will be having the hard conversations about what to do with developed areas that are particularly threatened. “What areas do we let go? What areas do we protect? What areas do we try and relocate? I think it will be a challenge because it is expensive, it is overwhelming and



therefore some may be tempted to put it off into the future,” said Pap. “The General Plan is good for 30 years, but when we are talking about communities, infrastructure, and structures, they last a lot longer. Now is the time to start addressing climate-change related impacts that are 50 – 100 years out, but how do we do that?”

For more information, see the Kaua’i Climate Change and Coastal Hazards Assessment at <http://seagrantsoest.hawaii.edu/sites/default/files/publications/web-8-18-14-kc3ha-final.pdf>

Written by Ali Andrews, Tetra Tech; based on an interview with Ruby Pap, Coastal Land Use Extension Agent with the University of Hawai’i Sea Grant College Program, co-located in the County of Kaua’i Planning Department October 15, 2015, and Mike Dahilig, Director of County of Kaua’i Planning Department, October 29, 2015.