Hawaii Planning and Regulatory Tools To Adapt to Sea-Level Rise

Editor's note: *This is the second installment of a three-part series on how Hawaii should address climate change and sea-level rise. To read Part 1, click here. To read Part 3, click here.*

Part 1 of this editorial series introduced climate change and sea-level rise adaptation and highlighted three major recommendations for state action to facilitate preparations for sea-level rise: adopting a sea-level rise planning benchmark, expanding climate research, and designating an agency to lead adaptation efforts. This segment details planning and regulatory tools for initiating sea-level rise adaptation.

Planning Tools

State and county decision-makers could consider using three existing planning tools — the Hawaii Coastal Zone Management Act (HCZMA), Comprehensive Plans (i.e., state plans, county general plans, and sustainable community plans), and Pre-Disaster Mitigation Plans — to prepare for sea-level rise.

Hawai'i Coastal Zone Management Act. The HCZMA, codified in Chapter 205A of the Hawai 'i Revised Statutes, is an important planning tool for regulating development and land use within the coastal zone. The Act already contains objectives and policies for protecting life and property from coastal hazards and storm surge but could be amended to more directly address sea-level rise impacts. For example, South Carolina's Coastal Zone Management Act now includes policies for retreating from the coastline to adapt to erosion caused by sea-level rise. In Rhode Island, the Coastal Resources Management Program requires consideration of 3 to 5 feet of sea-level rise by 2100 in siting, designing, and implementing coastal activities.

Comprehensive Plans. State, county, and community plans could similarly address sea-level rise. The State Office of Planning's proposed climate change adaptation priority guidelines for the 2012 legislative session could represent an important first step for initiating statewide adaptation planning. In 2010, Maui County included policies for addressing sea-level rise into the county general plan.

Pre-Disaster Mitigation Plans. Under the Pre-Disaster Mitigation (PDM) program, the Federal Emergency Management Agency provides funding to state and local governments to develop plans for preparing for and building resiliency to natural hazards. The state and four counties have participated in the program in various capacities. PDM plans could account for sea-level rise and climate change, which worsen existing coastal hazards such as erosion and flooding.

Regulatory Tools

ICAP has also identified fourteen regulatory tools for addressing sea-level rise. These tools are: zoning and overlay zones, floodplain regulations, shoreline construction setbacks, coastal construction control lines, hard armoring, rebuilding restrictions, building codes and resilient design, subdivision approvals, cluster development, land development conditions, environmental review, rolling easement statutes, non-structural armoring, and buffer zones. The following highlights a handful of tools that decision-makers could begin using now as well as those that could be effective with further information or research.

Regulatory Tools to Implement Now.

- *Shoreline Construction Setbacks.* Setbacks indicate the closest distance to the shoreline where development may be permitted. Decision-makers could replace the state maximum setback of 40 feet with setbacks that incorporate not only variable rates of shoreline erosion and the lifespan of structures, as Maui and Kaua'i counties have already done, but also sea-level rise due to climate change. This would build resiliency to current and future coastal erosion by keeping development at a safe and scientifically-based distance from the shoreline.

- *Building Codes and Resilient Design.* State and county building codes and National Flood Insurance Program (NFIP) resilient design standards include detailed requirements for building within coastal areas. These regulations could account for future increases in sea level and flooding by requiring or incentivizing more protective building practices such as increased ground-floor elevation. Under the NFIP Community Rating System, homeowners can qualify for insurance discounts and credits when counties adopt floodplain

management regulations that are more stringent than federal requirements.

- *Cluster Development.* Cluster development ordinances allow concentrated development in certain areas of a tract in exchange for preserving open space. In general, the counties allow cluster development to promote economical use of services and utilities and affordable housing development. The counties could amend ordinances to allow cluster development for the purpose of accommodating increased inundation due to sea-level rise. For example, counties could grant density bonuses for developing upland areas of a tract in exchange for preserving low-lying makai areas as open space. This approach would provide incentives for developing further landward.

Regulatory Tools Requiring Further Information or Research.

- *Sea-Level Rise Zoning and Overlay Zones.* Once the necessary research, data, and mapping becomes available so that decision-makers can identify vulnerable areas and infrastructure on a site-specific basis, the counties could consider adopting sea-level rise overlay zones for regulating shoreline development. The counties could designate: (1) protection zones, or areas containing critical infrastructure and dense urban development, where coastal armoring such as sea-walls would be permitted; (2) accommodation zones, or areas where new development would be limited and subject to more protective design requirements; (3) retreat zones, or areas where coastal armoring would be prohibited and landowners would be encouraged to relocate upland; and (4) preservation zones, or areas where natural flood buffers such as sand dunes and wetlands would be preserved and restored. This type of zoning regime would allow decision-makers to tailor adaptation approaches to accommodate area-specific resources and vulnerabilities.

- *Coastal Construction Control Lines.* Coastal construction control lines (CCCLs) could be useful for ensuring safe development along beaches subject to fluctuations such as Kailua Beach, which has been experiencing accretion in some parts and erosion in others. Under current setback laws, building lines fluctuate with shoreline changes so that if accretion occurs, structures may be built farther seaward, thus increasing exposure to coastal hazards. CCCLs could resolve these problems because, unlike setbacks, CCCLS are fixed and pre-recorded construction lines that do not change with shoreline fluctuations. The Kailua Beach and Dune Management Plan provides a model for developing CCCL programs, where appropriate, in Hawai‘i.

- *Rolling Easement Statutes.* The term rolling easement refers to a combination of land use policies that: (1) allow beaches and wetlands to migrate landward, (2) restrict hard armoring, and (3) promote removal of structures and retreat from the coastline. These elements can be achieved by combining various policy tools. Texas, South Carolina, Rhode Island, and Maine have adopted rolling easement policies. If a more comprehensive approach to retreating from the coastline is desired, decision-makers could research implementing a rolling easement policy to meet Hawai‘i’s unique needs and circumstances.

State leadership, particularly the three major recommendations for state action discussed in Part 1 of this series, would support many of these planning and regulatory tools. Decision-makers could begin implementing management tools that address imminent threats to life and safety while keeping others in mind for addressing long-term risks posed by continued climate change.

Climate change and sea level rise

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DISCUSSION: *What do you think about the planning and regulatory tools for initiating sea-level rise adaptation proposed in this op-ed? Share your thoughts below.*

About the author: As a focal point for University of Hawai'i climate law and policy expertise, the Center for Island Climate Adaptation and Policy (ICAP) serves as a two-way conduit between the university and island communities and decision-makers to catalyze climate change adaptation and resiliency. Contributors to this editorial series include ICAP affiliates from a range of backgrounds such as climate science, coastal planning, climate change law, and urban and regional planning. Much of the material was adapted from ICAP's recent publication, Sea-Level Rise and Coastal Land Use in Hawai'i: A Policy Tool Kit for State and Local Governments (available at http://icap.seagrant.soest.hawaii.edu/icap-publications), by Douglas Codiga and Kylie Wager.

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