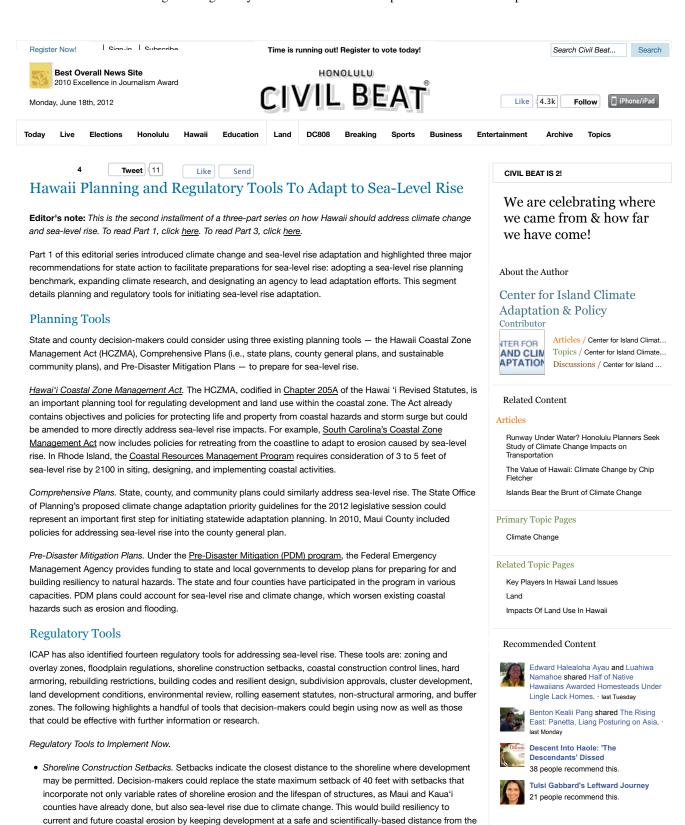
shoreline.

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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 <u>Community Rating System</u>, 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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