



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

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Agriculture and Environment
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By

Darren Lerner, Director
Sea Grant Program
School of Ocean and Earth Science and Technology
William Chapman, Interim Dean
School of Architecture
University of Hawai'i at Mānoa

SCR 75 – REQUESTING THE OFFICE OF PLANNING TO CONVENE AN INTERDISCIPLINARY TASK FORCE TO DEVELOP A FRAMEWORK FOR A SEA LEVEL ADAPTATION AND RESILIENCE PLAN FOR THE WAIKIKI DISTRICT.

Chairs Inouye and Gabbard, Vice Chairs Keith-Agaran and Nishihara, and members of the Committees:

The University of Hawai'i Sea Grant College Program (Hawai'i Sea Grant) and its Center for Smart Building and Community Design along with the School of Architecture and the University of Hawai'i Community Design Center, support Senate Concurrent Resolution 75. This resolution requests the Office of Planning to convene an interdisciplinary task force to develop a framework for a sea level rise adaptation and resilience plan for the Waikiki District.

Hawai'i is experiencing the impacts of climate change, including the effects of sea level rise and coastal erosion, which is of particular concern to the State of Hawai'i given our coastal-focused society and dense shorefront development in many areas, including Waikīkī. The Hawai'i Legislature and the Hawai'i Climate Change Mitigation and Adaptation Commission have found that Hawai'i is experiencing the impacts of a wide variety of threats to the environment and ecosystems from climate change. These threats include increasing frequency and severity of storms and drought and sea level rise. Sea level rise will lead to increasing wave overwash, flooding through storm drains, groundwater inundation, and coastal erosion, which is of particular concern to Waikīkī given the community's contribution to our economy, dense urban development, and substantial coastal exposure. The intent of the resolution is to start the process of developing a resilience plan to protect, preserve, and where desirable, create, restore or improve the quality of the environment and the associated community benefits.

As described by the City and State Climate Change Commissions, it is increasingly likely that we will see 3 feet or more of sea level rise in the latter half of this century, depending

on the greenhouse gas emission scenario and response of the Earth's polar ice caps to warming. Six feet or more of sea level rise by 2100 is plausible under some scenarios. High tide flooding will affect low-lying coastal areas like Waikīkī decades before global mean sea level reaches these benchmarks. The Honolulu Climate Commission recommends using the 3.2 ft Sea Level Rise Exposure Area from the State's Sea Level Rise Vulnerability and Adaptation Report as a hazard overlay to prepare for and adapt to sea level rise impacts. This is the type of actionable information that can be used by such a task force to anticipate and plan for predicted impacts to Waikīkī.

Sea level rise is an urgent topic for Waikīkī, as king tide floods already disrupt visitor and resident activities. Recent computer modeling of sea-level rise indicates that high tide flooding will grow exponentially over the next two to three decades until it becomes a disruptive issue by, or before, mid-century. High tide flooding interacts with high wave events and/or periods of rain to cause storm drain backflow, groundwater inundation, overflow of the Ala Wai Canal, and marine waters flowing over the beach into backshore areas. The lack of adequate drainage in Waikīkī is already problematic when the highest tides of the year occur in conjunction with high surf and/or rain.

The complex environmental and cultural history of Waikīkī is critically important in understanding the challenges, limitations, and opportunities associated with some climate adaptation and hazard mitigation strategies and adaptive planning and design approaches for Waikīkī. The role and influence of the impacts of groundwater inundation is one example of the type of predicted impact that will significantly affect land use and urban design. Due to the unique history and economy of Waikīkī there may be solutions and design approaches that are particularly well-suited for a high-density urban environment like Waikīkī that should be assessed and evaluated by the task force.

Waikīkī Special District Guidelines (WSD)¹:

Waikīkī is subject to a Special District that controls certain land uses and zoning restrictions. The purpose of a special district is to provide a means by which certain areas in the community in need of restoration, preservation, redevelopment or rejuvenation may be designated as special districts to guide development to protect and/or enhance the physical and visual aspects of an area for the benefit of the community as a whole. The Waikīkī Special District Objectives contain a total of fourteen district objectives, including promoting the Hawaiian sense of place, guiding development with optimum benefits to the community and retaining residential sector among the objectives. There is currently no specific mention of climate change, hazards, sustainability or resilience anywhere in the Waikīkī Special District Guidelines. With recent interest in revising and updating the WSD guidelines there is an opportunity for the Waikīkī Resilience Task Force to assist in the development of the revised guidelines utilizing new urban planning and architectural design concepts such as those presented here including the Waikīkī Design Flood Elevation guidelines as one example.

¹ Revised Ordinance of Honolulu Chapter 21 Section 9. Special District Regulations

The University of Hawai'i, through a collaborative research project with the School of Architecture, School of Ocean and Earth Science and Technology, and Hawai'i Sea Grant have initiated a study on long-term visioning and climate adaptation of the buildings and landscapes in Waikīkī through a series of architectural design charrettes. The research addresses the design problem of "in-place" adaptation of a coastal urban area to flooding as sea level rises in Waikīkī and is largely based on research of other U.S. municipalities' efforts to adapt to sea level rise. This research is an essential component to implementing these land use changes over time and the type of information the Resilience task force would evaluate.

The University of Hawai'i Community Design Center recently completed a two-year design research project and report on the South Shore Promenade and Open Space Network in partnership with the State of Hawai'i Office of Planning. Focused on resilience and connectivity, the work visualizes possible long-term sea level rise scenarios and nature-based living shoreline solutions for the urban center of Honolulu. It intends to further the ongoing local discourse on climate-resilient, adaptive urban waterfront development. The South Shore study's advocacy for the anticipation of climate-crisis challenges through innovative planning and ecological design that embraces dynamic conditions, such as coastal flooding, rather than preventing them—all while taking inspiration from traditional native Hawaiian biocultural land-water practices, includes many principles and lessons that are directly applicable to the upcoming resilience work for Waikīkī.

In addition to in-place adaptation strategies, the understanding of regional level impacts will be critical to a new framework. Waikīkī is the second most dense neighborhood in Urban Honolulu. A new framework and engaged process is needed to address the climate and community equity issues for the transient and permanent population that resides and works in the district.

Thank you for the opportunity to testify on this measure