

Facing Our Future

Adaptive Planning for Sea-level Rise in Maui and Hawaii Counties

University of Hawaii Sea Grant College Program
School of Ocean and Earth Science and Technology



A Report to the County of Maui and
County of Hawaii Planning Departments

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Cover: Main Photo – Construction of a new seawall in Ukumehame, Maui intended to protect the highway from coastal erosion. Photo credit: Tara Owens, July 2012. Top Right Inset Photo – Coastal erosion in Anahola, Kauai. Photo credit: DLNR Coastal Lands Program, 2006. Bottom Left Inset Photo – Waves pounding seawalls in Lanikai, Oahu. Photo credit: UH Coastal Geology Group.

Facing Our Future: Adaptive Planning for Sea-level Rise in Maui and Hawaii Counties

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EXECUTIVE SUMMARY

Five recommendations are presented in this report to provide a foundation for improving shoreline planning for coastal hazards, including sea level rise, at the local level. The recommendations were developed by shoreline planners from the Counties of Maui and Hawaii and are intentionally focused on issues that can be addressed within the context of the existing County regulatory frameworks. There is an expectation by the authors that these recommendations will induce further discussion of these topics within the Maui and Hawaii County Planning Departments and/or Planning Commissions, and related actions, such as rule revisions or requests for research, will be pursued.

As regulators on the “front lines” of coastal management, the planners who contributed to this report are uniquely positioned to understand the strengths and weaknesses of the existing County regulatory frameworks, and make recommendations to address existing and future hazards.

Coastal hazards faced by local decision-makers, communities, and property owners include storm surge, flooding, tsunami inundation, and coastal erosion. These issues coupled with increasing development pressures make the task of managing the coast extremely challenging. Maui’s erosion rates are highest compared to the islands of Oahu and Kauai, probably in part due to higher rates of local sea level rise. On the island of Hawaii, bluff failure has become a common hazard in addition to flooding of low elevation areas where local rates of sea level rise are highest in the state. Many observations and studies suggest that the impacts of these coastal hazards will be exacerbated by continuing, and likely accelerating, sea level rise.

The final recommendations contained in this report are intended to be stand alone documents that could each be considered individually for action by County decision-makers. The recommendations have been sequenced, from a planning perspective, based ideally on the way shoreline developments and activities would be reviewed and processed.

- Recommendation 1: Encourage Setback Determination in Early Planning Stages
- Recommendation 2: Strengthen the Shoreline Setback Policy
- Recommendation 3: Clarify the Purpose and Applicability of Shoreline Rules
- Recommendation 4: Refine Criteria for Minor Structures and Activities
- Recommendation 5: Review Permitting Process for Emergency Repairs to Seawalls

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*"A GOOD PLAN IMPLEMENTED TODAY IS BETTER THAN A PERFECT PLAN
IMPLEMENTED TOMORROW." – GEORGE PATTON*

PURPOSE

The County of Maui and the County of Hawaii have each developed comprehensive planning frameworks that are intended to ensure that the economic, environmental, recreational, and cultural benefits of the shoreline area are sustained for future generations. The resulting rules and plans for coastal development are often controversial because they require a difficult balancing of private and public rights. Nearly everyone has a stake in coastal management in the State of Hawaii, as the coast is the largest contributor to the tourism based economy. Healthy beaches and shorelines are essential to the quality of life along the coast, and also provide buffers for storms and critical habitats for many species of plants and animals. Yet often a thin ribbon of beach is caught between rising seas and an impenetrable line of development. A recent report characterizes the situation on Maui stating that 85% of Maui beaches are exhibiting erosion and 11% are lost completely¹. Further, Maui's erosion rates are highest compared to the islands of Oahu and Kauai, probably in part due to higher rates of local sea level rise. On the island of Hawaii, bluff failure has become a common hazard in addition to flooding of low elevation areas, where local rates of sea level rise are highest in the state due to subsidence.

Coastal hazards faced by local decision-makers, communities, and property owners include storm surge, flooding, tsunami inundation, and coastal erosion. These issues coupled with development pressures make the task of managing the coast extremely challenging. Many observations and studies suggest that the impacts of coastal hazards will be exacerbated by continuing, and likely accelerating, sea level rise. Yet it can also be acknowledged that it is not clearly known exactly how rising sea levels will have an impact, and on what scale and timeframe. Regardless, impacts of coastal hazards will continue with or without accelerated sea level rise and communities should be prepared to plan for and implement adaptation strategies. As a result, there has been a lot of activity around the State of Hawaii that is focused on the topic of adaptation, including mapping, workshops, and guidance documents (see Appendix for an annotated bibliography of recent related documents). Additionally, the

¹ Fletcher, C.H., Romine, B.M., Genz, A.S., Barbee, M.M., Dyer, Matthew, Anderson, T.R., Lim, S.C., Vitousek, Sean, Bochicchio, Christopher, and Richmond, B.M., 2011. [*National Assessment of Shoreline Change: Historical Shoreline Change in the Hawaiian Islands*](#). U.S. Geological Survey Open-file Report 2011-1051, 55 p.

2012 State of Hawaii Legislative Session involved a substantial amount of discussion around at least two proposed bills relating directly to sea level rise, one of which has been enrolled to the Governor. This bill, [SB2745](#), creates a climate change adaptation policy for the State of Hawaii by amending the Hawaii State Planning Act (Hawaii Revised Statutes, Chapter 226) to include climate change adaptation priority guidelines. It is hopeful that this bill will provide State and County decision-makers with the power to incorporate new adaptation strategies in planning and land-use decisions.

However, implementation is still largely an unmet challenge, and this report was developed specifically with a goal of implementation in mind. As regulators on the “front lines” of coastal management, the planners who contributed to this report are uniquely positioned to understand the successes and flaws of the existing State and County regulatory frameworks, and make recommendations for improvement. The recommendations presented herein are intended to provide a foundation for improving shoreline planning at the local level. The planners who contributed to this report would consider success if any part of the recommendations were to be pursued.

WORKING UNDER THE HAWAII COASTAL ZONE MANAGEMENT PROGRAM

The existing regulatory authority in the Counties of Maui and Hawaii is derived from Hawaii’s Coastal Zone Management Program. When Congress established the national Coastal Zone Management (CZM) Act in 1972, it determined that the state, rather than the federal government, was in the best position to manage the zone connecting land and sea. The reasoning was that the state exercises discretion in land use policies and holds claim to the waters and submerged lands in the territorial sea. In addition, Congress also understood that coastal states have different values and needs. The program is voluntary, though there are substantial incentives for states to participate, such as planning and administration grants as well as the privilege of administering the federal consistency review program.

Hawaii’s response to the national law was immediate. In 1973, the Legislature passed Act 164 to mandate a statewide CZM program². After several years of planning, the 1977 Hawaii CZM statute was codified in Hawaii Revised Statutes, Chapter 205A (HRS 205A). A year later, the U.S. Department of Commerce officially approved the Hawaii CZM Program. The regulatory reach of HRS 205A is the entire state, including coastal waters out to the limit of the State’s police and management authority.

² Tom, Douglas, 2009. *Coastal Zone Management and Special Management Area Permit System*. Unpublished Report.

Unique to Hawaii, HRS 205A grants individual counties with regulatory authority over designated areas of concern that are termed the Special Management Area (SMA). The SMA is much smaller than the CZM area and theoretically represents the most sensitive area of the coastal zone. From a spatial context, the SMA generally extends from the shoreline inland to the nearest highway. Within the SMA, the Counties have established rules that govern the immediate shoreline area, such as shoreline setbacks and procedures for variances. Today the SMA permit has become the most recognized component of the CZM program.

In the County of Maui, the Special Management Area is regulated according to the Department of Planning, Maui Planning Commission, “Special Management Area Rules” (Title MC-12, Subtitle 02, Chapter 202). The more spatially limited shoreline area is further regulated according to the Department of Planning, Maui Planning Commission, “Shoreline Rules for the Maui Planning Commission” (Title MC-12, Subtitle 02, Chapter 203).

In the County of Hawaii, the Special Management Area is regulated according to Hawaii Planning Commission Rules of Practice and Procedure “Rule 9. Special Management Area”. The more spatially limited shoreline area is regulated according to the Hawaii Planning Commission Rules of Practice and Procedure “Rule 8. Shoreline Setback”, establishing shoreline setback variance procedures. The shoreline area is further regulated by the Hawaii Planning Department Rules of Practice and Procedure “Rule 11. Shoreline Setback”, establishing setback lines and identifying structures and activities that are prohibited and permitted within the shoreline area.

The goal of this project was to pursue a proactive approach, focused on implementation, to address coastal management issues that are already associated with rising sea levels, or will be magnified by accelerating sea level rise. Work was concentrated on analyzing the existing framework of locally specific rules for regulating activities and development in the shoreline area, and then making recommendations to refine or improve those rules.

SEA LEVEL TRENDS AND OBSERVED IMPACTS IN MAUI AND HAWAII COUNTIES

From a global perspective, the instrumental record of modern sea level change shows onset of rising sea levels during the 19th century³. During the 20th century, global average sea level rose at a rate of about 1.7 mm/yr. Since 1993, satellite observation data has shown sea level to be rising at a rate of about 3 mm/yr. Coastal tide gage measurements confirm this record, and

³ IPCC, 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

also show that sea levels do not rise uniformly around the world. Global sea level rise is projected to accelerate during the 21st century, and studies suggest that an increase of 1 meter (~3 ft) by year 2100 is a conservative planning target.

In the Hawaiian Islands, rates of local (relative) sea level rise vary with distance from Hawaii Island because of differences in lithospheric flexure from the weight of actively growing volcanoes⁴. Direct measurements of sea level rise from NOAA tide gages show that Hawaii Island's rate of sea level rise is 3.27 ± 0.35 mm/yr⁵. The next closest island, Maui Island, has a rate of sea level rise at 2.32 ± 0.53 mm/yr. Sea level rise is roughly 65% slower around Kauai and Oahu, at 1.53 ± 0.59 mm/yr and 1.50 ± 0.25 m/yr, respectively. Unlike global records, accelerated sea level rise has not yet been detected in the Hawaii tide gage records^{6,7}.

The [Maui Shoreline Atlas](#) provides maps of coastal erosion based on trends in the positions of historical shorelines. The shoreline positions, and associated erosion rates, reflect rising sea levels that have been measured at NOAA's tide gage in Kahului Harbor. A recent update of the Atlas data, as well as the previously referenced 2012 National Assessment of Shoreline Change report for the Hawaiian Islands, indicate that at least 85% of Maui beaches are exhibiting erosion and 11% are lost completely. Further, Maui's erosion rates are highest compared to the islands of Oahu and Kauai, probably in part due to higher rates of local sea level rise. It is likely that Maui's high rate of local sea level rise contributes to the prevalence of erosion. Hawaii Island is already facing unique and extreme challenges, such as frequent flooding in the area of Kapoho in the Puna District, due to high local rates of sea level rise related to subsidence.

It is unclear exactly what scale and timeframe the Hawaiian Islands will experience accelerated sea level rise. However, there are already very clear analogs for the type of impact that can be expected. On Hawaii, entire lots and portions of the coastal road in the Kapoho region are already completely submerged during regular high tide events, and the condition can be more extreme when wind and/or waves are also factors. On Maui, the erosion experienced in Kaanapali in the summer of 2003 is another example. That summer, short-term increases in sea

⁴ Moore, J.G., 1987. Subsidence of the Hawaiian Ridge. In: Decker, R.W.; Wright, T.L., and Stauffer, P.H. (eds.). *Volcanism in Hawai'i*. Reston, Virginia: U.S. Geological Survey Professional Paper 1350, pp. 85–100.

⁵ NOAA (National Oceanic and Atmospheric Administration), 2012. Center for Operational Oceanographic Products and Services. <http://tidesandcurrents.noaa.gov/index.shtml>.

⁶ Church, J.A. and White, N.J., 2006. A 20th century acceleration in global sea level rise. *Geophysical Research Letters*, 33(L01602).

⁷ Merrifield, M.A.; Merrifield, S.T., and Mitchum, G.T., 2009. An anomalous recent acceleration of global sea level rise. *Journal of Climate*, 22(21), 5772–5781.

level were experienced as mesoscale eddies (large rotating water masses) propagated through the islands. These eddies produced tides that were 0.5 foot higher than normal. The elevated water levels coupled with a sustained south swell resulted in very high wave energy at the shoreline which transported massive amounts of beach sediment away from the shoreline. The resort area was exposed to high waves, the beach disappeared entirely at some locations, and there was high anxiety about possible infrastructure damage. Fortunately, temporary emergency protection measures were implemented and the beach recovered after a period of weeks. However, the implication is that a small increase in water level, only 0.5 foot in this case, can have substantial impacts.

A first line of defense against coastal erosion is shoreline hardening. However, it is well documented that the practice of shoreline hardening results in loss of beach, shoreline access, and culturally sensitive lands. Maui and Hawaii have both discouraged the practice of shoreline hardening over the last two decades, and in fact there have been very few instances of new seawalls during that time. However, planners are noting increased requests for seawall repairs and new seawalls and this trend is creating concern about managing continued and accelerated erosion. There is also concern among planners about the regular practice of completing major repairs to critical infrastructure (sewer mains, roads, etc.), rather than planning for relocation, within the known erosion hazard area. These practices will probably lead to the expansion of shoreline hardening as the only option to protect public investments.

RESULTS OF THIS PROJECT

In April 2010, the University of Hawaii Sea Grant College Program conducted an educational session about potential climate and sea-level rise impacts to Hawaii. The session was delivered at a meeting of the County of Maui Planning Commission, a body of nine appointed and approved citizen representatives, who promptly requested a follow-up special session devoted to the topic. The special session in July 2010 focused on the current state of climate science and included a discussion of the capabilities and limitations of the existing regulatory framework for managing the shoreline in Maui. Following the special session, Maui County and Hawaii County requested further assistance from the University of Hawaii Sea Grant College Program to examine the existing regulatory frameworks and develop policies or rule changes to support planning for and adapting to sea-level rise.

The intent of this project was to respond to the concerns and intentions of the Maui County and Hawaii County Planning Commissions with specific objectives to:

- Discuss and understand the successes and limitations of the existing regulatory framework in the context of sea level rise.

- Identify opportunities and needs for rule changes and make corresponding recommendations.

THE WORKING GROUP

A partnership was established between the County of Maui, County of Hawaii, and the University of Hawaii Sea Grant Program. Working with two Counties provided a good opportunity to analyze implementation challenges between islands with differing physical environments and regulatory frameworks. Maui Island consists of both sandy beaches and coastal palis (cliffs), and the predominant regulatory tool for limiting shoreline development relies on erosion-based setbacks. Hawaii Island provides a somewhat contrasting case study, as there are fewer sandy shorelines and the County currently uses a 40 foot shoreline setback that is not science-based.

A project working group of six primary members was assembled, included three County Planning Staff (2 from Maui and 1 from Hawaii), two University of Hawaii Sea Grant Program Coastal Hazards Specialists (1 from each county), and a legal specialist, with emphasis in coastal management, from the University of Hawaii Sea Grant Program. The role of the Sea Grant staff was to facilitate the project through the regulatory review and recommendation development, while the role of County Planning Staff was to supply institutional knowledge of the regulatory framework, case studies, and Department priorities and to develop recommendations for rule changes.

Over the life of the project, the working group (with staff from 3 islands) participated in over 25 conference calls and 3 day-long workshops, and spent countless hours developing the recommendations that are contained in this report.

IDENTIFYING AND PRIORITIZING THE ISSUES

During the first phase of the project, a thorough review was done of each County's SMA and Shoreline Rules. The working group identified, discussed, and documented 14 important issues. Knowing that all of these issues could not be fully addressed under the scope and timeframe of this project, a ranking exercise was completed by each member to identify priority issues. Since each member evaluated the issues based on personally chosen criteria ranging from the ability to implement to time involved to political context, the ranking does not directly correspond to the overall importance of the issue. Then, after much discussion over the merits of each, and considering time and staff and resources involved, a few issues were selected for further analysis and for pursuing a detailed policy recommendation. The 14 issues, their respective ranks, and those selected for policy recommendation are identified in the table below. Upon further group discussion, issue 5 (Purpose) and issue 7 (Applicability) were later combined as a

single recommendation. Ultimately, 5 individual recommendations were pursued and are presented in this report.

Average Rank	Issues Identified by Working Group	Selected for Policy Recommendation
1	<i>Strengthen the Shoreline Setback Policy</i>	✓
2	<i>Review Permitting Process for Emergency Repairs to Seawalls</i>	✓
3	<i>Encourage Setback Determination in Early Planning Stages</i>	✓
4	<i>Refine Criteria for Minor Structures and Activities</i>	✓
5	<i>Clarify Purpose of Shoreline Rules to Reflect Hazard Risks</i>	✓
6	<i>Develop Exemption Criteria for Shoreline Certifications</i>	<i>completed separately by Maui County</i>
7	<i>Clarify Applicability of Shoreline Rules</i>	✓
8	<i>Identify Options for Managed Retreat of Existing Development</i>	
9	<i>Develop Post-disaster Recovery Guidelines</i>	
10	<i>Define Hardship Criteria</i>	
11	<i>Define Fixed Shorelines</i>	
12	<i>Identify Best Management Practices for Common Activities</i>	
13	<i>Implement Coastal Construction Elevation Requirements</i>	
14	<i>Develop Drainage and Run-off Capture Criteria</i>	

DEVELOPING THE RECOMMENDATIONS

In developing draft recommendations, the working group followed a standard template format to ensure that the many facets of a particular recommendation were fully considered and to maintain consistency. Final recommendations are intended to be stand alone documents that can be pursued individually by County decision-makers.

Each member of the working group was charged with the lead role in developing a draft recommendation for one of the selected, high-priority issues. After initial development, the entire working group participated in an iterative process of reviewing and revising the recommendation until it was ultimately accepted by the group for inclusion in this final report.

There is an expectation that these recommendations will induce further discussion of these topics within the Maui and Hawaii County Planning Departments and/or Planning Commissions, and related actions (such as rule revisions or requests for research) will be pursued.

RECOMMENDATION 1: ENCOURAGE SETBACK DETERMINATION IN EARLY PLANNING STAGES

A. GENERAL RECOMMENDATION

Require a Hazard Assessment that includes a determination of the shoreline and the shoreline setback area at the earliest stages of the land use planning and development process, namely during changes to general and community plans, zoning amendments, and the subdivision process. Determining hazard buffers that are based on scientific data such as erosion rates early in the land use planning process will result in the least economic impact to the landowner while avoiding dangerous hazard risks to life and property through proper planning.

B. RATIONALE

In the past, setback requirements have traditionally been implemented late in the development process after shallow lots are created (usually when obtaining a building permit for a new structure).⁸ The creation of shallow lots during the subdivision process prevents the implementation of adequate setbacks, since often times, the shoreline setbacks, based on known coastal erosion rates over time, can extend beyond the depth of an entire lot and thus raise property rights⁹ or fairness issues.¹⁰ This will result in setbacks that are not protective

⁸ Small lots are likely to be created because there is no rigorous requirement to assess hazard risk in the zoning and subdivision process, although the requirement is implied. Thus a major determinant in lot design is maximizing the number of lots created in order to increase landowner profits. The lots are usually sold later to other parties who become the ultimate homeowner. If hazard risks are not assessed early, it will be the homeowners that face threats to life and property, along with exorbitant costs and time associated with hazards that could easily have been avoided with proper planning through an assessment early in the land use process.

⁹ Property rights issues may be raised if a setback consumes the entire lot. This can be avoided by allowing a minimum buildable area on the lot, or creating an arbitrary setback based on a lot depth table (Maui County) or just having an arbitrary small setback (Hawaii County). The problem with these solutions are that it puts the homeowner in a known hazard zone since the setback is not based on scientific data. Thus it is better to create larger lots in the general and community planning, zoning and subdivision process with the aid of a hazard assessment early in the land use process.

¹⁰ Fairness issues are raised if the landowner or homeowner buys a property with certain investment backed expectations that cannot be satisfied. For example, homeowner A buys a lot with R-3 Zoning, which allows 10,000 square foot lots, but because of the setback, can only build on 1,500 square feet. This is not a property rights

over the life of the structures from coastal erosion. Subsequent erosion, wave inundation and flooding, are likely to threaten life and property from structures that are build too close to the dynamic shore. The result of inadequate shoreline setbacks is threatened structures that will require protection at the retreating shoreline, usually remedied by revetments or seawalls.

By implementing the setback at the earliest stages of development, the impact on a landowner is minimized because potential hazards are planned for before significant time and money is spent by the landowner. Deeper lots can be created that can accommodate a scientifically based hazard setback and thus avoid future erosion, inundation and flooding problems.

Early consideration of the hazard facilitates sound hazard mitigation planning, thus reducing risk to life and property later. Problems with undermined structures from coastal erosion, resulting in armoring and emergency permits, can be avoided.

C. NEW POLICY RECOMMENDATIONS

- a) For all coastal properties that are undergoing subdivision, community plan amendment, or zoning changes, scientifically-based shoreline setbacks shall be determined by a hazard assessment and applied to these land use changes. The Hazard Assessment process is outlined in the Shoreline Rules for the Maui Planning Commission and shall be followed.¹¹

This requirement allows for the planning of hazards early in the development process, when planning is most effective and cost efficient. The requirement for an early hazard assessment is driven partly by the subdivision requirements which require that any residential lots created must be safe for their inhabitants (See section E.3).

- b) Once established for the earlier stages of development, another hazard assessment with setback determination would not be required for subsequent stages of development as the setback could be set for future land use decisions.

With this policy change, redundancy is avoided by not requiring the hazard assessment with

issue but one that can raise fairness issues. Whereas the courts are the final decision maker on property rights issues, it is the politicians that are often the final decision maker on fairness issues. Fairness issues can be avoided by conducting the hazard assessment as early as possible in the land use process.

¹¹ Consideration can be given to requiring the setback determination and hazard assessment in the Shoreline Setback Rules for the Counties or in the individual community planning, zoning and subdivision rules. For Kauai, the requirement for the hazard assessment is solely in the shoreline setback rules. Building in the requirement into the shoreline setback rules only will prevent the modification of 4 sets of rules.

each subsequent stage of development. Once the hazards are assessed, the risk in the area can be planned for and will not change as the development process proceeds. This would be true provided there is not a great amount of time between development stages. A lapse period can also be built in (see below).

D. NEW PLANNING AND MANAGEMENT ACTIONS

If hazard assessments are triggered early in the development process, the County Planning Departments should develop guidelines as to what is considered an adequate assessment. Some considerations are:

- a) An erosion zone should be determined considering an annual average erosion rate, the life expectancy of a structure, buffers for storm erosion, safety design, errors and sea-level rise. Kauai County uses a life expectancy of 70 years, safety design of 20 feet, and a default storm erosion event of 20 feet, which may possibly be adjusted by a coastal engineer for a site specific storm erosion analyses.
- b) The threats from erosion, wave inundation and flooding should be considered from whatever the cause, either working as a sole factor or in combination with other factors. A multi-hazard analysis is recommended.¹² By analyzing all hazards, sea level rise should be considered in determining the erosion zone. By analyzing sea-level rise, managed retreat strategies can be implemented in the context of hazard mitigation and the multi-hazard analysis.
- c) Guidance should be provided in the rules, or outside the rules in a policy statement or guidance document on how long the hazard assessment with shoreline setback determination is valid. Some options include:
 - i. Applicable for a fixed period of time – for example 5 years. After that period, a new shoreline certification, setback determination and hazard assessment should be done.

¹² The importance of utilizing the multi-hazard approach is demonstrated for many structures in Hawaii County. Buildings are required to elevate on piers and columns due to tsunami and high surf inundation. However they also need to be designed for earthquake shaking, otherwise the top heavy elevated structures will topple over from any strong shaking. Thus there is a need to design for all known hazards. Likewise houses on the shoreline need to factor not only erosion or flooding, but how sea-level rise will affect these risks during the expected life of the structure.

- ii. Make the hazard assessment viable for a period of time different than the erosion setback analyses. For example identification of the hazards should not change significantly over ten years. However, the erosion setback determination may need to be redone every five years since the shoreline may have changed significantly.

E. EXISTING POLICIES AND PROGRAMS

There are already existing provisions in Maui and Hawaii County's Planning, Zoning and Subdivision Regulations which imply erosion, flood and wave impacts should be determined for any zoning changes and new subdivisions.¹³ This is summarized below.

1. General and Community Planning Changes

The West Maui Community Plan notes "Protect the shoreline and beaches by preserving waterfront land as open space wherever possible. This protection should be based on a study and analysis of the rate of shoreline retreat plus a coastal hazard buffer zone. Where new major waterfront structures or developments are to be approved, preservation should be for 50-100 years by employing a shoreline setback based on the rate established by the appropriate study." This is a policy in the Community Plan which also includes more specific plans for different sites. Since these plans maybe amended by the Government or an applicant, a hazard assessment with erosion analysis should be required before there are any changes to the General or Community Plans.

2. Zoning

Both Maui and Hawaii County have specific land use zones for hazardous areas. As noted in the Hawaii Coastal Hazard Mitigation Guidebook, Maui County has the Open Space 1 or OS-1 Zone for sensitive ecological areas, such as wetlands or threatened or endangered species. Open Space Zone 2 or OS-2 is for, among other things, drainage ways and hazardous areas. For both OS-1 and OS-2 Zones, dwellings are to be prohibited and structures are to be sited and constructed in a manner to avoid flooding and other natural hazards.

¹³ However, these problems are not rigorously assessed with a hazard assessment that includes a shoreline certification and setback determination based on scientific data. As a result, structures are built too close to the shoreline and result in threats to life and property, encroachments, illegal structures, emergency permits and many other problems that are addressed in this report. Again it is easier to avoid a problem (less time and costs) through land use planning, than to mitigate the problem once a structure is built in the wrong location.

On Hawaii County the Open Zone is in part, to buffer an otherwise incompatible land use. After the town of Hilo was destroyed by the 1946 tsunami, and then again by the 1960 tsunami, the water front had to be rezoned to Open and thus kept parks.¹⁴ Thus for both Maui and Hawaii County, there is zoning designated for hazardous areas, and it is thus logical to determine if the area is indeed hazardous through a hazard assessment with erosion determination before there is any zoning change that increases density (for example from Open to Residential).

3. Subdivisions

Under the County of Maui's Subdivision Ordinance – Section 18.16.240 – the requirement to factor in erosion should already be considered as:

“All lots shall be suitable for the purposes for which they are intended to be sold and no dangerous areas subject to periodic inundation, in such a manner as to endanger the health or safety of the occupants thereof, may be subdivided for residential purposes.”

Thus it is logical to determine the setback area using scientifically based principles before a subdivision is created so that it could be determined if there are indeed dangerous areas subject to periodic inundation. Erosion affects the inundation risk. To allow a subdivision to be approved without properly determining inundation risk could expose a jurisdiction to liability from residents that encounter such problems.

Similarly in Hawaii, County Code Section 23-37 specifies that

“A lot shall be suitable for the purposes for which it was intended to be sold. No area subject to periodic inundation which endangers the health and safety of its occupants may be subdivided for residential purposes.”

Again it is logical to determine erosion risk before the subdivision is approved in order to ascertain inundation risks.¹⁵

¹⁴ To rezone a land to low density Open once it is high density Residential (Downzoning) may require compensation from the government. Thus for many of the properties in Hawaii County after the 1960 tsunami, compensation was required. However, if the area is ascertained to be hazardous while the property is low density Open, and kept Open by denying a zoning change to high density Residential (Upzoning), no compensation would be required since it would be within the jurisdictions police power (power to regulate for the health, safety and welfare of the public). Thus it is wise to ascertain hazard and erosion risks before there is any increase in density of land use by planning change, zoning or subdivision.

¹⁵ Interestingly, the Hawaii County Planning Department already used their existing authority they had under this

Guidance on designing subdivisions to reduce the threat of erosion impacts can be found in the Federal Emergency Management Agency's Coastal Construction Manual and also in the Hawaii Coastal Hazard Mitigation Guidebook.

From the above, the requirement in the Shoreline Setback rules to trigger early in the development process would be consistent with existing community plan, zoning and subdivision ordinances. The early trigger could be viewed as enforcing an existing requirement to assess if a lot is safe for habitation, versus creating a new requirement. Although it would be preferable to have the early hazard assessment requirement in the general and community planning, zoning, subdivision and setback rules, that should not be necessary as long as the shoreline setback rules are within the jurisdictions police power and are consistent with the ordinances.¹⁶

F. GENERAL COSTS AND BENEFITS

While opponents could argue that the hazard assessment is costly and time consuming, it is only a small fraction of the cost and time to respond if the hazard is discovered after development proceeds in the wrong location. Studies by FEMA indicate that for every dollar

rule to deter a new subdivision west of the Kapoho Area. Kapoho is located near the East Rift Zone and the tectonically unstable area is subsiding at almost 1 cm per year, or roughly 10 times the rate of sea level rise. Residences in the area experience flooding problems on a monthly basis. At Kapoho, one row of houses makai of the coastal road has been abandoned and the next row, just mauka experiences significant flooding problems from just normal high tides. During a hurricane, tsunami or even a simple storm event this area is at significant risk from inundation. The Planning Department used provisions in Hawaii County Code Section 23-27 to discourage a new subdivision west of the troubled Kapoho Subdivision.

¹⁶ It would be recommended that the corporation counsels office for Maui and Hawaii County review any issues regarding the reach in the shoreline setback rules to affect subdivision, zoning and general and community planning stages. If the shoreline rules come from the authority granted in HRS section 205A – then the rules should apply since Development includes “Changes to the density or intensity in the use of land, including but not limited to the subdivision of land.” Yet 205A also has an exemption for subdivisions where the lots are greater than 20 acres, or where there are less than four units with no associated construction activities. Section 205A may not be controlling, however, since the shoreline setbacks clearly apply for a single family residence, yet single family residences are not a development under 205A.

spent on hazard mitigation and preparedness, 4 to 15 dollars are reaped in future benefits.¹⁷

There are some costs to the landowner for a hazard assessment. Yet the landowner's motive may be just to sell the property to a future homeowner and make a profit. They may not have to live at the location and deal with erosion, flooding and inundation risks year round. In the long-run, over the life of the property, the costs to the ultimate homeowner living on the shoreline will be less if they can avoid financial and emotionally draining hazard issues. The benefit to the public and those living along the coasts would be a safer environment with reduced hazard risk.

G. MEASURES OF SUCCESS

Success will be determined by the number of zoning changes, general and community planning changes and subdivisions that have a hazard assessment beforehand. More specifically, success would be measured by a change in the rules.

H. FEASIBILITY ISSUES

The measures are feasible since they are partly based on existing regulations which require a determination if an area is safe for human habitation. They have also been implemented in the Kapoho area, island of Hawaii, as previously indicated and on the island of Kauai.

Cost and time for the assessment is always an issue, but these resources are a small fraction of the cost and time if future homeowners have to respond to a hazard issue identified later after a structure is built.

A major concern is with large landowners who may object to the costs or time to do an assessment. This can be addressed by realizing that large landowners do not usually live in the completed structures or experience the hazard problems which are encountered year round. Instead the homeowners downstream deal with the very distressing issue of erosion, flooding or wave inundation. If the problem is not addressed upstream, the downstream homeowners will encounter threats to life and property which will be far more time consuming and expensive than the costs encountered by upstream landowners.

One common concern is that the shoreline has already been zoned and subdivided and there

¹⁷ From "Coastal Community Resilience – Building Resilience from the Inside Out" – AWR-228 – FEMA and National Disaster Preparedness Training Center.

will be few if any zoning changes or subdivisions in the future. This issue is frequently raised when the need for early hazard assessments in the land use process is proposed. However, there are always new subdivisions arising, for instance on the North Shore of Oahu, the 400 acre Turtle Bay subdivision. Also, addressing the issues in the current land use laws will allow quicker and more resilient recovery after a natural hazard occurs. The new rules can help to recover in a more resilient manner and be part of a strategy to increase resiliency by moving away from the hazard zone.

I. KEY UNCERTAINTIES/ASSUMPTIONS

The key uncertainty is if the local jurisdiction will adopt the requirement to perform a rigorous hazard assessment early in the land use process. If framed properly, the measures will have a greater chance of being implemented. This can be done by emphasizing mitigation of multiple hazards versus climate change and managed retreat. Both intuition and the courts have indicated that hazard mitigation for life and property is the single most important reason for regulating land. In addition, emphasis should be on the cost and time of performing the hazard assessment versus the costs and time of addressing an unforeseen hazard problem that could have been avoided.

J. EXAMPLES FROM OTHER STATES OR AREAS

The requirement to do a hazard assessment and determine the setback at the earliest stages of development for community planning changes, zoning amendments and subdivision approvals is required under the Kauai Shoreline Setback Rules. Thus, a precedent has been set to implement this strategy in the State.

As mentioned in Section E, both Maui County and Hawaii County have sections of their planning, zoning and subdivision ordinances that imply the need for a hazard assessment and shoreline erosion setback determination. When discussing Maui, the other areas for comparison would be Hawaii, Kauai and Honolulu, which also have similar provisions. In the discussion for Hawaii County, the other areas that can be used for comparison would be the three other islands.

RECOMMENDATION 2: STRENGTHEN THE SHORELINE SETBACK POLICY

A. GENERAL RECOMMENDATION

Methods for determining shoreline setbacks should be reviewed by County regulators to support hazard avoidance and risk reduction for planning and siting of coastal projects. The recommendations described here are intended to strengthen the setback policy by increasing the minimum setback and improving the formula to delineate setbacks.

B. RATIONALE

Problem

Inadequate construction setbacks over the last century in Hawaii have led to a heavy reliance on shoreline armoring for developments now facing erosion crises. Along 56 miles of sandy shoreline on Maui, over 370 shore protection structures - such as seawalls, revetments and groins - have been built, nearly two thirds of which have been identified in an unpublished study as likely having a negative impact on the adjacent sandy beach. Also, since the adoption of the Shoreline Rules, private and public developments have been impacted by retreating shorelines, and planning and permitting situations have arisen that reveal limitations in the rules. In fact, County coastal planners are reporting a rise in the request for emergency permits, which may be a reflection of an increasing hazard threat. Also, recent tsunami events in 2010 and 2011 have underscored the importance of developing away from the shoreline. Finally, new science points to sea-level rise as another hazard that may accelerate risks to coastal development.

Background

Under authority extended by Hawaii Revised Statutes (HRS) 205-A, Maui County adopted Hawaii's first erosion-based shoreline setback policy in 2003. Approximately 10 years since the first erosion maps were produced by the University of Hawaii, an update to the maps in 2011 supplies a timely opportunity to review their implementation via the Maui Shoreline Rules (§12-203-6). Further, Maui provides an example of the successes and challenges of this type of policy for the other Hawaii Counties.

Solution

The adoption of an erosion-based development setback in 2003, while controversial at the

time, has been accepted by the community and appears to have been fairly successful at creating hazard buffers for new development along the shoreline. However, the erosion setback does not account for additional shoreline retreat from likely accelerated sea level rise. Also, the setback provides hazard buffers for new development, while many of the current challenges faced by shoreline planners and property owners are related to hazards faced by existing development. The purpose of this recommendation is to provide options to County decision-makers to strengthen the setback policy, particularly for new development. Other recommendations in this report will address other challenges associated with existing development.

C. NEW POLICY RECOMMENDATIONS

1. Clarify or eliminate references to “fixed shoreline”.

Planning practice on Maui and other counties equates the presence of a shoreline hardening structure (seawall or revetment) to being identified as fixed shoreline (where fixed means not subject to erosion or retreat). In these cases, the shoreline is assigned an erosion rate of 0 ft/yr, which in turn minimizes the setback determination. In reality, a



shoreline with the presence of a structure may or may not be fixed. If the shoreline is not fixed, then the prevailing erosion rate should apply regardless of the presence of a shoreline hardening structure. In the presence of a shoreline hardening structure, the determination (fixed or not fixed) should be made by a qualified coastal scientist, or through the State shoreline certification process. By not

clarifying this terminology, the continued practice will be to allow development that is too close to the shoreline and at risk from coastal hazards, and may place undue liability on County decisions. Further, this practice is inconsistent with State practice. Through the State shoreline certification process, the shoreline is delineated at the landward extent of inundation (highest wash of waves) regardless of the presence of a shoreline hardening

structure. In fact, in many cases the location of the State certified shoreline is on the mauka side of a seawall and this is becoming an increasingly common scenario as shoreline hardening structures are aging and failing, and may or may not be permitted for repairs.

2. Increase the minimum setback from the shoreline from 25 ft to at least 40 ft.

The Counties have recognized that the minimum setback of 20 ft as defined in HRS-205 is not sufficiently protective, and have extended the setback areas in different ways. Maui County has the smallest minimum setback of 25 ft compared to the other counties. In Hawaii County and Kauai County, the minimum setback is 40 ft, with an exception in Hawaii for smaller lots where the setback can be reduce to 20 ft. Similarly, on Oahu, the minimum setback is 40 ft, except for a provision for small lots where the setback can be reduced to 20ft. Also, new subdivisions on Oahu are subject to a 60 ft setback. A 25 ft buffer is in many cases not sufficient to protect development from coastal hazards such as tsunamis, high waves, and increased flooding and erosion from sea level rise. Additionally, this buffer is too minimal to protect sensitive beach/dune features and to continue to provide adequate public access into the future.

The Hawaii Coastal Hazard Mitigation Guidebook (2005) suggests at least a 40 ft setback based on two factors:

1) Safety Buffer: At least 2 counties consider a structure to be imminently threatened when within 20 ft of the shoreline. So, a margin of safety of 20 ft is minimal to ensure that a structure is never within 20 ft of the shoreline during the life of the structure.

2) Storm Buffer: The location of the shoreline can change rapidly and by a large magnitude during an extreme event, so a buffer of at least 20 ft is recommended.

3. Modify the formula for Lot-Depth setbacks to account for historical erosion (APPLIES TO MAUI ONLY).

Revise the lot-depth setback formula to use the certified shoreline, rather than the seaward property boundary, for calculating average lot depth.

Shoreline setbacks on Maui are calculated and applied as the greater of either, 1) and erosion based formula (if erosion rates are available), or 2) a lot-depth based formula. As the rules are currently applied, the seaward boundary of private property (as on record in the deed) is used to determine average lot depth, which in turn is used to determine the lot-depth based setback. However, in many circumstances, the shoreline has retreated over time and the seaward private property boundary is actually located offshore in submerged lands. Using a submerged property boundary to determine lot depth may not result in a

setback that provides an adequate buffer as intended.

4. Commission a study to identify areas of historic bluff failure and develop bluff retreat rates.

Bluff failure is a common problem in Hawaii, and the causes and conditions for bluff retreat and failure are much different than retreat along sandy shoreline. Basic research on bluff failure and retreat would provide a framework for creating science-based setback policies on Hawaii island, and to strengthen the setback policy on Maui for bluff-backed shorelines.

5. Modify the erosion-based setback calculation using one or more options described below. (APPLIES TO MAUI ONLY).

Option 1: Revise the existing erosion-based setback calculation by increasing the multiplier from 50 to 70 for smaller structures, and 100 for large structures (those greater than 5,000 sq. ft). A time period of 70 years has now been implemented on Kauai, and is recognized as a suitable period for the average life of a wood-framed house (Anderson, 1978; Heinz, 2000; Hwang, 2005).

*Example of setback calculation using existing 50 yr multiplier and a 1ft/yr erosion rate:
50yrs x 1 ft/yr +25ft = 75 ft setback*

*Example of setback calculation using existing 70 yr multiplier and a 1ft/yr erosion rate:
70yrs x 1 ft/yr +25ft = 95 ft setback*

Option 2: Incorporate the erosion rate uncertainty into the setback determination to capture extreme events that cause elevated water levels and erosion, represent the true hazard for some areas. Incorporating the erosion rate uncertainty would encompass the total extent of possible shoreline positions in the landward direction based on the historic record. The current method for determining setbacks uses the erosion rate without factoring in uncertainty, an approach that effectively assumes that all erosion is chronic and consistent. An example site where chronic, consistent erosion does not adequately represent the true hazard is south Maui where historically erosion damage has been related to event-based Kona storms that may only occur every few years but can cause severe beach erosion.

Option 3: Strengthen the erosion-based setback by also determining potential shoreline retreat from accelerating sea level rise. (Note that the existing erosion-based setback does NOT account for additional shoreline retreat from accelerating sea-level rise). One method for this is based on the Bruun Rule, which is a geometric model for sandy shorelines that

predicts shoreline retreat based on the slope of the beach profile and the expected rate of sea level rise.

As an example, according to the Bruun Rule:

a Maui shoreline with a typical slope of 1:11 (vertical:horizontal),

and a predicted sea level rise of 3.3 ft (1 m) in 100 years,

could retreat at a rate of 0.36 ft/yr...or 36 feet in 100 years...or 25 ft in 70 years (life of structure), and this value could be used as an additional buffer to the existing erosion-based setback.

As a precedent, the state of Maine adopted rules that account for 2 feet of sea level rise over 100 years. In their rules, no permits are granted for structures greater than 2,500 square feet if a 2 foot rise in sea level over 100 years would result in changes to the shoreline that are reasonably expected to erode property and cause severe damage to the project. It is up to the applicant to prove this future shoreline using the Bruun Rule or another generally accepted coastal engineering model.

6. Establish riparian buffers (setbacks along streams, ephemeral waterways, gulches).

There currently are no setbacks for development that is sometimes hazardously sited on riparian cliffs.

D. NEW PLANNING AND MANAGEMENT ACTIONS

- With the help of coastal processes specialists from the University of Hawaii, develop scenarios and decision trees for determining if a shoreline is fixed.
- To address long-term hazard issues, consider incorporating requirements for designing lots with hazards in mind. To that end, it would make sense to establish a requirement for shoreline setback determination during subdivision review and changes to zoning (see recommendation #x). This would provide better risk management, as well as establish a minimum buildable area outside of the setback for small or irregular lots.

E. EXISTING POLICIES AND PROGRAMS

- Fixed Shorelines

Maui: 12-202-12(c)(2)(D)(i)(ii), 12-203-4

Hawaii: PC Rule 9-9-10(b)(9), PD Rule 11-4(a)

State: 205A-41, 205-42(a), 205A-44(b)(5), 205A-46(3),(8),(9), 13-222-11

- Shoreline Setbacks

Maui: 12-203-6

Hawaii: PD Rule 11-5

State: 205A-41,205A-45(b)

- Summary excerpted from ICAP Whitepaper “Shoreline Impacts, Setback Policy, and Sea Level Rise”:

<http://seagrant.soest.hawaii.edu/sites/seagrant.soest.hawaii.edu/files/publications/ICAPwhitepaperGG-10-01.pdf>

- For Hawai‘i County, the shoreline setback is now at the minimum of 40 feet. In many cases, the Planning Department has imposed a much greater setback. On O‘ahu, the setback is 40 feet from the shoreline, except in the case of small lots for which the setback can be 20 feet. For new subdivisions, the setback is 60 feet. In 2003, and in later amendments, Maui recognized the importance of creating a more scientifically based setback and established a formula based on an annual erosion rate times a planning period of 50 years, plus a buffer of 25 feet. The University of Hawai‘i produced the erosion rate data.
- In 2008, Kaua‘i passed the most scientifically based shoreline setback in the country, which was based on an annual erosion rate times a planning period of 70 years plus a buffer of 40 feet. The annual erosion rate is determined by guidelines laid out in the Hawaii Coastal Hazard Mitigation Guidebook or data from the University of Hawai‘i. The 70-year period is based on engineering study to determine the life expectancy of coastal structures considering building materials, maintenance, water damage, habitability and other factors. For larger structures, greater than 5,000 feet, the chances that the structure would be made of stone increased so the planning period was increased to 100 years. The Hawaii Coastal Hazard Mitigation Guidebook was incorporated by reference into the Kaua‘i rule and required that the annual erosion rate be adjusted for future sea level rise by a default value of 10%. This 10% default increase in the erosion rate applied to coastal areas susceptible to increased sea level rise.

F. GENERAL COSTS AND BENEFITS

This policy could lead to decreased beachfront property values in some areas. Also, could result in reducing lot size to less than the minimum buildable area.

This policy would benefit long-term planning by using the best available science and data. This policy would reduce risks to human health and safety and property damage, as well as promote and preserve public access and the protection functions and habitat of dune systems and other sensitive beach/dune features.

G. MEASURES OF SUCCESS

- Reduction in occurrence of impacted infrastructure and property damage.
- Reduced demand for emergency erosion control.
- Long-term health of beach/dune system.
- Lateral beach access is restored and preserved for the next generation.

H. FEASIBILITY ISSUES

Beachfront property owners will likely oppose any further restrictions on the use of their property.

Regulators will have to consider the reasonable use of beachfront parcels in contrast to the long-term economic and environmental impacts associated with encroachment of development into the beach/dune system – a problem that was recognized in the original passage of the Maui Shoreline Rules in 2003.

In highly developed areas where lots are small, expansion of the setback area may pose a risk for a takings case. This could happen as a result of preventing a landowner from developing a lot that does not have a minimum buildable area. However, a recent analysis by ICAP (2011) indicates that expanding setbacks should withstand claims if they are used to reduce risks to human health and safety and property damage.

I. KEY UNCERTAINTIES/ASSUMPTIONS

- Magnitude and influence of sea level rise on shoreline position.
- Magnitude and influence of extreme events on shoreline position.

J. EXAMPLES FROM OTHER STATES OR AREAS

Summary excerpted from NOAA OCRM:

http://coastalmanagement.noaa.gov/initiatives/shoreline_ppr_setbacks.html

Approximately two-thirds of coastal and Great Lakes states have some type of construction setback or construction control line requiring development be a certain distance from the water's edge. Of those that do not have state-mandated setback regulations, most have delegated authority for local governments or Local Coastal Programs to establish setbacks.

The type of setback used, including how and from where it is established can vary widely. Setback lines are often measured from a specific shoreline feature such as the high-tide line, extreme high water mark, or dune vegetation line.

Some states have arbitrary setback lines. An arbitrary setback line, while the simplest to establish, does not reflect the true erosion threat to shorefront structures. For example, an arbitrary 100 foot setback may not be adequate in a highly erosive area but may be too restrictive in a very stable environment. Therefore, many coastal states, such as **North Carolina** and **Florida**, have developed setbacks based on annual erosion rates for beach-front lots. Although erosion along estuarine shores can also be problematic, setbacks based on erosion rate data are rarely used in these environments, to date. Few estuarine shorelines have sufficient annual erosion rate data to be able to calculate setbacks based on erosion rate for these shorelines.

While more realistic, establishing setbacks based on the erosion rate can be more difficult because it requires a significant amount of data on past shoreline change—something that may not be available for the entire shoreline or is costly to obtain. Erosion rates can change over time, therefore, the setback lines must also be reassessed routinely. For example, **South Carolina** updates their setback lines and erosion rate data every 8-10 years.

To overcome gaps in its erosion rate data, **Minnesota** adopted a hybrid approach to their setback lines along the North Shore of Lake Superior. Minnesota's North Shore Management

Plan establishes a setback of 50 times the annual erosion rate plus 25 feet in areas where erosion data is available and reverts to a standard 125-foot setback elsewhere.

Frequently, setback lines based on erosion rates are set 30 or 50 times the annual erosion rate. The assumption being that the structure should last long enough to pay off a 30-year mortgage. However, even a setback line set to the 30-year annual erosion rate may not be adequate. Setback lines do not factor in catastrophic storm events, such as Hurricane Katrina that hit the Gulf Coast in 2005.

Establishing new setback lines can be very controversial if the setback renders some properties unbuildable. This can result in "takings" claims, requiring the state or local government to compensate the property owner for their loss. The same can be true if the setback line is placed landward of an existing structure. While the structure can exist as is, typically, if it is significantly damaged or destroyed by a storm, it must be rebuilt to comply with the new setback line. If there is not enough space on the lot to move the structure behind the setback line, a "taking" could also result.

Setback regulations should clearly stipulate when (or if) it would be allowable for a building damaged or destroyed by a storm or chronic erosion to be rebuilt. For example, in **Maine**, if repairs will cost more than 50 percent of the structure's value, the existing structure must comply with the setback requirements. One way to avoid "takings" claims is to ensure waterfront lots are sufficiently deep to allow for relocation as the shore retreats. Rolling easements, discussed in more detail under the erosion control easement section, are another way to minimize or prevent "takings" claims.

In addition to creating clear policies on when a structure can be repaired or rebuilt, states or local governments also need to establish clear policies stating how setback lines can move as the beach naturally or artificially accretes. For example, **New Jersey's** Coastal Zone Management Rules do not allow a waiver from the setback if the beach accretes. A permit application for development within a setback area of an accreting beach would be denied. However, if an Administrative Hearing request was filed, the applicant could petition for a permit if they can show the accreted beach offers sufficient increased protection from erosion.

RECOMMENDATION 3: CLARIFY THE PURPOSE AND APPLICABILITY OF THE SHORELINE RULES

A. GENERAL RECOMMENDATION

The Purpose, Applicability, and Definition Sections of the Shoreline Rules should be reviewed so that they adequately emphasize protection of public resources and development in the face of coastal hazards, including sea level rise.

B. RATIONALE

The existing Shoreline Rules (Title MC-12, Department of Planning, Subtitle 02, Maui Planning Commission, Chapter 203, Shoreline Rules for the Maui Planning Commission) are not sufficiently clear in their purpose and in their applicability to be interpreted and applied consistently. Inconsistencies in interpretation set dangerous precedents and undermine the overarching intent of the Shoreline Rules which is to “regulate the use and activities of land within the shoreline environment in order to **protect the health, safety, and welfare of the public by providing minimum protection from known coastal natural hazards; and to ensure that the public use and enjoyment of our shoreline resources are preserved and protected for future generations...**”¹⁸

The below gaps, as they relate to the “Purpose”, “Applicability” and “Definition” Sections have been identified and should be addressed in a timely fashion. The purpose of this recommendation is to provide suggestions and recommendations of how these gaps can be addressed with the ultimate goal of having the appropriate Planning Commission amend the current Shoreline Rules.

1. **Current Rules fail to emphasize protection of life and property from coastal hazards.**

The “Purpose” section should be revised to emphasize protection of life and property from coastal hazards, as well as to incorporate new knowledge about coastal processes gained throughout the last decade of scientific research and from experience. This will help to guide development of the rules and decisions with regard to its implementation. Revisions can be achieved by reorganizing and

¹⁸ §12-203-2, Shoreline Rules, page 203-4

restructuring the existing language, developing new language, as well as adopting language from the “Purpose” section of the Kauai Shoreline Setback Rules, (Shoreline Setback Ordinance 863).

2. Current Rules offer minimal guidance for interpreting the Rule’s applicability and allow for expansion of structures already sited partially in the erosion hazard zone.

The Applicability section should be revised so that the Shoreline Rules would apply to the entire habitable “Structure” if it meets a set of predetermined criteria, such as if the footprint of the structure is already more than twenty-five (25) percent in the Shorelines Setback Area. With this new provision, expansions, such as second story additions or additional attached square footage to structures meeting predetermined set of criteria and located in the erosion hazard zone, would no longer be allowed to be processed administratively and without a Shoreline Setback Variance. This type of clarification would prevent inconsistencies in interpretation, as well as expansion of structures already partially in the Shoreline Setback Area - erosion hazard zone.

3. Current Rules lack definitions of “repair” so that nonconforming structures can be reconstructed in the hazard zone without a variance.

The Definition section should be revised to include a clear definition of what constitutes a repair. The Definition should clarify the differences between repair, renovation, remodel and reconstruction and will create a more consistent interpretation and implementation of the Shoreline Rules.

In the past several decades, Hawaii’s regulatory agencies allowed dense development to occur along the shoreline. Many structures allowed to be built several decades ago are now in (or partially in) the coastal hazard zone as delineated by the Shoreline Setback line.

Many of these structures are starting to be threatened by coastal hazards. In the coming years, and with sea-level rise, the threat will only intensify. At some point in the not so distant future, many of these structures will become inhabitable, and a danger to health, safety and welfare of the public. Some structures may have to be further protected with beach nourishment, revetments or seawalls, others may have to be moved, and still others will need to be demolished.

Meanwhile, the Shoreline Rules, continue to allow expansion of nonconforming habitable structures sited already (if only partially) in the Shoreline Setback Area. Such expansion is routinely processed administratively, without a Shoreline Setback Variance. Home owners are allowed to invest more dollars into their currently nonconforming structures and expand them

by way of adding a second story, or attaching new square footage for additional bedrooms, even though their home is already partially located in the erosion hazard zone, and perhaps only a decade away from being imminently threatened by erosion and/or sea-level rise. Due to lack of definitions, such as what constitutes allowable repair in the Shoreline Setback, homes have been allowed to be reconstructed in the erosion hazard zone as delineated by the Shoreline Setback Area under guise of “repair”.

As we move into the future and with sea-level rise as our reality, Shoreline Rules determining what happens to nonconforming structures within (or partially within) the erosion and sea level rise hazard zone will be more intensely scrutinized; their Purpose and Applicability will be re-examined by the Courts as homeowners struggling to preserve their investments litigate against the Government.

Thus, clarifying the Purpose and Applicability of the Shoreline Rules is a proactive step towards a more responsible Shoreline Management. Emphasizing protection of life and property and disallowing further expansion or reconstruction of nonconforming structures already within or (partially within) the Shoreline Setback Area without a variance are good first steps. The Shoreline Setback Variance process, as opposed to Administrative permit process, allows for public review, as well for provisions such as holding the local government harmless from and against loss, liability, claim or demand arising out of damages to said structures or activities from coastal natural hazards and coastal erosion.

C. NEW POLICY RECOMMENDATIONS

1. AMEND §12-203-2 The “Purpose” of the Shoreline Rules to emphasize the very important reason for regulating coastal property, the protection of life and property. Update the language to reflect understanding of coastal processes in light of new scientific evidence and acquired knowledge about sea-level rise.

Proposed revisions may include but are not limited to:

- Clearly stating the purpose of the Rules at the beginning of the “Purpose” section.
- Including protection of life and property from coastal hazards as a “goal”, or “shared value”.
- Avoiding language linkages that suggest shoreline hardening as the main means of protection of life and property from coastal hazards.
- Explore incorporation of language that describes movement away from the shoreline;

incorporating verbiage, such as "relocation" and "returning the environment to its natural form", as a means of protecting life and property from coastal hazards.

- Describing the detrimental effects of shoreline hardening on neighboring properties and the natural environment.
- Adding language that emphasizes proper siting early in the land development stages.
- Removing outdated, irrelevant language.

2. AMEND §12-203-3 The “Applicability” to clarify that the Shoreline Rules apply to the entire “structure” if it meets a set of predetermined criteria, such as if it is already more than twenty-five percent in the erosion hazard zone, and thus prevent expansion of partially nonconforming structures without Shoreline Setback Variance.

Proposed revisions may include but are not limited to:

- Defining what “lands within shoreline area” mean.
- Revising the Rules so that Rules would apply to the entire habitable “Structure” if it meets a set of predetermined criteria, such as if it is already more than twenty-five percent (25%) in the Shorelines Setback Area.
- Exploring adoption of Kauai Shoreline Setback Ordinance No. 863 Applicability Section, which applies Shoreline Rules to all lands located within five hundred (500) feet of the shoreline and places the burden of proof upon the applicant to demonstrate that the proposed development will not be affected by coastal hazards.

3. AMEND §12-203-4 “Definitions” to clearly define what constitutes a “repair”.

Proposed revisions may include but are not limited to:

- Defining differences between repair, renovation, remodel and reconstruction.
- Exploring potential requirement of the applicant to hold the County harmless from any damages to habitable structures from coastal natural hazards, such as sea level rise and coastal erosion.

D. NEW PLANNING AND MANAGEMENT ACTIONS

Establish a committee within the Planning Department tasked with analyzing and revising the §12-203-2 “Purpose”, §12-203-3 “Applicability”, §12-203-4 “Definitions”. Encourage the committee to model their revisions on Kauai Shoreline Setback Ordinance 863.

The Committee would be responsible for drafting required rules revisions, collecting and incorporating feedback from appropriate stakeholders and shepherding the Rule Changes through the public hearing process in front of the Planning Commission. The committee would be encouraged to use the following analysis and suggested revisions as a starting point:

Example of §12-203-2 “Purpose” Analysis and Revisions:

As it is written today, §12-203-2 “Purpose”, at its very start, enumerates six long-term “goals” or “shared values”, such as public enjoyment of the shoreline area, preservation of natural shoreline environment and adequate public access to and along the shoreline (see figure 1). This enumeration is provided at the very top of the "Purpose" section. Protection from natural hazards language is not part of the enumeration, and although it appears in the section later on, it does not hold the same prominence, as the six enumerated points/goals/values at the top. When coastal hazards language finally appears in the section, it is closely linked with shoreline hardening. The Shoreline rules read: “These hazards may also necessitate the need to harden the shoreline to protect structures which may have an adverse impact on the environment.”

This particular language sequence of coastal hazards => shoreline hardening => adverse environmental impact fails to (at least) spell out the possibility of an alternate path. Alternate path of coastal hazards => demolition or relocation of nonconforming structures where possible => return of the environment to its natural form. Also, the verbiage acknowledges that shoreline hardening may have negative impacts, however it does so only briefly, without any further explanation. Further revisions to the “Purpose” section are recommended and described in figure 2.

Figure 1. Section 12-203-2 Purpose Key Point Enumeration

§12-203-2 Purpose. One of the most important and significant natural resources of the County of Maui is its shoreline environment. Due to competing demands for utilization and preservation of the beach and ocean resources, it is imperative:

Enumeration does not include protection of life and property from coastal hazards. →

- (1) That use and enjoyment of the shoreline area be ensured for the public to the fullest extent possible;
- (2) That the natural shoreline environment be preserved;
- (3) That man-made features in the shoreline area be limited to features compatible with the shoreline area;
- (4) That the natural movement of the shoreline be protected from development;
- (5) That the quality of scenic and open space resources be protected, preserved, and where desirable, restored; and
- (6) That adequate public access to and along the shoreline be provided.

Coastal hazards are first brought up here and are linked to shoreline hardening and environmental degradation. →

These steps are necessary because development and other man-made improvements have resulted in encroachment of structures near the shoreline and, in numerous instances, erosion and other disturbances affecting the natural movement of the shoreline. Moreover, these steps are also necessary because the Hawaiian Islands are subject to coastal natural hazards such as, tsunamis, high wave action, sea level rise, hurricanes, coastal flooding, and coastal erosion that pose hazards to residences and other structures near the shoreline. These hazards may also necessitate the need to harden the shoreline to protect structures which may have an adverse impact on the environment. Further, continual

203-3

Figure 2. Proposed Example of §12-203-2 "Purpose" Revisions

Moving the last paragraph of the "Purpose" section to the very beginning.

The purpose of this chapter is to establish shoreline rules which regulate the use and activities of land within the shoreline environment in order to protect the health, safety, and welfare of the public by providing minimum protection from known coastal natural hazards; and to ensure that the public use and enjoyment of our shoreline resources are preserved and protected for future generations in accordance with the Hawaii coastal zone management law, HRS chapter 205A. [Eff 11/27/03] (Auth: HRS Chapter 205A, Parts I and III; Maui County Charter §§8-8.4, 13-2(15)) (Imp: HRS §§205A-1, 205A-2, 205A-43, 205A-43.5, 205A-43.6, 205A-45, 205A-49)

Inserting new language from Kauai Ordinance # 863.

Maui coastline is subject to a wide variety of natural hazards such as tsunamis, high surf, sea level rise hurricanes coastal flooding and coastal erosion that pose dangers to people and property located near the shoreline. Proper siting of structures based on hazard recognition and long term planning principles is critical to the protection of life and property the mitigation of coastal hazards and the preservation of coastal resources.

[Historically], development and other improvements on coastal lands have occurred without regard to erosion coastal hazards. Because chronically retreating shorelines eventually threaten these improvements there has been widespread construction of shore protection structures such as seawalls and revetments. These structures distort the natural shoreline environment often leading to accelerated erosion on adjoining properties beach loss and reduced public access.

This pattern of coastal zone development seriously degrades the natural attributes of the Maui coast.

Moving insurance reference further up in the section.

Further, continual replacement of structures damaged or destroyed by ocean conditions may cause an economic hardship to other flood insurance policy holders by the increase in premiums.

Due to competing demands for utilization and preservation of the beach and ocean resources, it is imperative:

(1) That use and enjoyment of the shoreline area be ensured for the public to the fullest extent possible;

Inserting new language.

(2) That life and property be protected from coastal hazards;

(3) That the natural shoreline environment be preserved;

(4) That man-made features in the shoreline area be limited to features compatible with the shoreline area;

- (5) That the natural movement of the shoreline be protected from development;
- (6) That the quality of scenic and open space resources be protected, preserved, and where desirable, restored; and
- (7) That adequate public access to and along the shoreline be provided.

Deleting existing language.

Deleted: These steps are necessary because development and other man-made improvements have resulted in encroachment of structures near the shoreline and, in numerous instances, erosion and other disturbances affecting the natural movement of the shoreline.

Deleted: Moreover, these steps are also necessary because the Hawaiian Islands are subject to coastal natural hazards such as, tsunamis, high wave action, sea level rise, hurricanes, coastal flooding, and coastal erosion that pose hazards to residences and other structures near the shoreline.

Deleted: These hazards may also necessitate the need to harden the shoreline to protect structures which may have an adverse impact on the environment.

Inserting new language from Kauai Ordinance # 863.

The shoreline environment is one of Maui's most important economic and natural resources. Maui's beaches provide scenic beauty and recreational opportunities for residents and visitors. They are culturally important to the people of Hawaii. Beaches, dunes, and offshore topographic features also help to minimize risks from coastal hazards by dissipating wave energy, which could otherwise cause significant damage to coastal property. Beaches provide important habitat for seabirds, turtles, monk seals, and other animals and plants. In all of the above mentioned ways, beaches and coastal areas are part of the public trust, and it is governments fiduciary responsibility to protect beaches and coastal areas.

The following revisions should be further explored:

- Avoid language linkages suggesting shoreline hardening (seawalls) as the main means of protection of life and property from coastal hazards.
- Offer beach nourishment, shore perpendicular groins capturing sand or off-shore wave energy dissipating structures as alternatives to seawalls and revetments.
- Explore incorporation of language that describes movement away from the shoreline; incorporating verbiage, such as "relocation" and "returning the environment to its natural form", as a means of protecting life and property from coastal hazards.
- Describe the detrimental effects of shoreline hardening on neighboring properties and the natural environment.
- Add language that emphasizes proper siting early in the land development stages.

E. EXISTING POLICIES AND PROGRAMS

1. Hawai'i Revised Statutes §205A-22, §205A-30, §205A-41, §205A-44(b) (5)

The amendments to the Shoreline Rules would help to implement the following objectives of the Coastal Zone Management Program (HRS 205A-2).

Objectives:

- a. Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
 - b. Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
2. Shoreline Rules for the Maui Planning Commission Chapter 203
 3. Special Management Area Rules for the Maui Planning Commission 202
 4. Hawai'i Planning Department Rules 9-10, 11-3(a), 11-8

F. GENERAL COSTS AND BENEFITS

The costs to revise the regulations are small and do not require additional studies or scientific data. The benefits of further restricting activities and structures allowed in the shoreline setback area include less property damages, less impacts to beach processes and less impacts to public access and public views along the shoreline. Further restricting development within the shoreline setback areas will also help us better adapt to changes in sea-level. However, with a further restriction on permissible activities in the Shoreline Setback Area, the recommendations may reduce the amount of property taxes collected for shoreline properties

G. MEASURES OF SUCCESS

1. Rule amendments are adopted by the Planning Commission.
2. Reduction in property damage.
3. Reduction in interferences with natural shoreline processes.
4. Better positioned to defend against potential Regulatory Takings Claims

H. FEASIBILITY ISSUES

1. The proposed regulations will be effective only if the public is fully aware of stricter limitations on activities and structures in the shoreline setback area, and therefore accepts

the risk of owning shoreline property and the additional regulations (Special Management Area, Shoreline Setback) of uses of the property.

2. Shoreline property owners will likely oppose any further restrictions on their properties.
3. Revising current regulations to further restrict activities and structures allowed in the shoreline setback area highlights the need for a managed retreat from our shorelines.
4. Expanding of the Applicability of Shoreline Rules may lead to potential lawsuits and/or controversies if a property owner loses value as a result of their inability to expand their structure partially located in the Shoreline Setback Area.

I. KEY UNCERTAINTIES/ASSUMPTIONS

The recommendation assumes that there will be support from the Planning Director and the Mayor to put further restrictions on structures located partially in the Shoreline Setback Area. If such support is not secured, the recommendation has very little chance of making it to public hearing in front of the Planning Commission unless it is brought forth, as rules amendment proposal, by members of the Public.

J. EXAMPLES FROM OTHER STATES OR AREAS

Kauai Shoreline Setback Ordinance 863 can serve as an excellent example for amending Shoreline Rules of the neighboring islands.

RECOMMENDATION 4: REFINE CRITERIA FOR MINOR STRUCTURES AND ACTIVITIES

A. GENERAL RECOMMENDATION

“Minor” activities and structures should be subject to state and county regulations that will allow for specific and reasonable uses within the shoreline setback area while minimizing negative impacts on public safety, beach processes, and public views.

B. RATIONALE

Problem

There is uncertainty about what activities and structures should qualify as “minor” and be permitted in the shoreline setback area without a shoreline setback variance. Planning Departments and land owners do not always agree on the interpretation of structures and activities considered to be minor, which can lead to lengthy permit processing and potential appeals, which are costly for both parties.

Further, this uncertainty can lead to over-regulation of uses and structures that may be suitable for the shoreline setback area; or on the contrary, it can result in the approval of uses and structures that may have negative and severe impacts to the public shoreline area and neighboring properties. These impacts will only be exacerbated by sea-level rise.

Background

While there may be legitimate reasons for permitting limited activities and structures within the shoreline setback area, the lack of definition for “minor” has led to structures and activities that may have:

- fixed the location of the shoreline,
- affected beach processes,
- caused beach loss for neighboring properties,
- blocked public views to and along the shoreline and,
- caused property damage during high wave events.

In addition, the lack of definition has created inconsistencies among the permitting agencies' and the land owners' interpretations.

Examples: These activities and structures have occurred within the shoreline setback area. Some clearly have no impact, while others will have negative impacts to the beach processes and public views to and along the shoreline.



Solution

The purpose of this recommendation is to ensure appropriate guidelines are in place to determine the circumstances under which a “minor” activity or structure should be allowed within the shoreline setback area without a shoreline setback variance. These guidelines will also help to streamline the Special Management Area approval process for those structures and activities determined to be “minor”.

C. NEW POLICY RECOMMENDATIONS

- 1) Revise Hawai‘i Revised Statutes Chapter 205A Part III to replace the term “minor” with a more descriptive term.**

The recommended language change is to use “*negligible and having no impact*” rather than “minor”, which can be interpreted as still having an impact and is also confused with the term for Special Management Area Minor permits.

- 2) Revise Hawai‘i Revised Statutes Chapter 205A Part III to clearly and consistently define what is and is not a structure (flagpoles, fences, etc.).**

The current definitions vary within HRS:

- HRS-205A-22: "Structure" includes but is not limited to any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line.
- HRS-205A-41: "Structure" includes, but is not limited to, any portion of any building, pavement, road, pipe, flume, utility line, fence, groin, wall, or revetment.

- 3) Counties revise their Shoreline Setback rules to replace the term “minor” with a more descriptive term.**

The recommended language change is to use “*negligible and having no impact*” rather than “minor”, which can be interpreted as still have an impact and is also confused with the term for Special Management Area Minor permits.

- 4) Develop criteria for “minor” activities and structures to better implement objectives and policies of Coastal Zone Management Program.**

Structures and activities may be permitted within the shoreline setback area if they meet the following criteria, *do not affect beach processes, artificially fix the shoreline and would not interfere with public access or public views to and along the shoreline, alter the existing grade of the shoreline setback area* and comply with the standard conditions listed below.

- Structures or activities are temporary and only permitted for a certain amount of time.
- Publicly owned facilities, which result in no interference with the natural beach.
- Beach nourishment or dune restoration projects approved by applicable government agencies.
- Activities which enhance public access or shoreline views and do not affect beach processes.
- Grading for prevention of run-off is permissible provided that it does not affect beach processes.
- Erosion Rate and Sea-Level Rise data are made available for the project area.
- Other applicable considerations.

5) Counties develop or refine existing lists, within the pertinent shoreline rules and based on the previous criteria, of specific activities and structures allowed with the shoreline setback area.

These lists would be made available to the general public. Landowners would be aware of the structures and activities that may be permitted in the shoreline area and be better prepared to submit a complete application. In addition, the lists would help the Planning Department staff reviewing the project to expedite the permit processing for structures or activities already determined to be appropriate.

6) Counties develop a list of structures and activities strictly prohibited without a shoreline setback variance.

There are structures and activities, such as construction of seawalls that consistently affect beach processes or public views to and along the shoreline. These structures and activities should be identified in a list of structure and activities strictly prohibited without a shoreline setback variance. These lists would also be made available to the

general public. Landowners would be aware of the structures and activities that require a shoreline setback variance and be better prepared to submit a complete application.

7) Counties adopt standard conditions for the approvals of minor structures and activities allowed within the shoreline setback area to include:

- Restrictions can be placed on the type of construction methods/materials and color schemes used to ensure the structures would be mobile and able to be relocated when needed and not cause a negative visual impact.
- Structures and activities must comply with requirements of the Federal Flood Insurance Program.
- Landscaping plans should only be approved with plantings that will not interfere with public views to and along the shoreline and that will not extend seaward of shoreline (according to projected size at maturation).
- Structures needing protection during the life of the structure are not considered “minor”.
- No erosion control devices (seawalls and the like) are allowed without a shoreline setback variance. (Kauai)
- Indemnify the County. (Kauai)
- Applicable conditions shall run with the land (recorded at the Bureau of Conveyances). (Kauai)

D. NEW PLANNING AND MANAGEMENT ACTIONS

Addressing hazard mitigation early in the development process allows for lots to be created, configured and more suitable for all hazards, including sea-level rise. Larger lots can be created to accommodate a scientifically based setback with more restrictive regulations for “minor” structures and activities allowed within that shoreline setback (refer to Recommendation # 3 Hazard Assessments and Recommendation # 1 Strengthen the Shoreline Setback Area).

E. EXISTING POLICIES AND PROGRAMS

1. Hawai'i Revised Statutes §205A-22, §205A-30, §205A-41, §205A-44(b) (5)

The new policy recommendations would help to implement the following objectives and policies of the Coastal Zone Management Program (HRS 205A-2).

Objectives:

- a. Protect, preserve, and, where desirable, restore or improve the quality of coastal and scenic resources.
- b. Reduce hazard to life and property from tsunamis, storm waves, stream flooding, erosion, subsidence, and pollution.
- c. Improve the development review process, communication, and public participation in the management of coastal resources and hazards.
- d. Protect beaches for public use and recreation.

Policies:

- a. Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.
 - b. Preserve, maintain, and where desirable, improve and restore shoreline open space and scenic resources.
 - c. Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards.
 - d. Ensure that developments comply with requirements of the Federal Flood Insurance Program.
 - e. Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion.
2. Hawai'i Planning Department Rules 9-10, 11-3(a), 11-8
 3. Maui Rules 12-203-4, 12-203-12, 12-203-11
 4. Maui internal reference list

F. GENERAL COSTS AND BENEFITS

The costs to revise the regulations are small and do not require additional studies or scientific data. However, with a further restriction on development, the recommendations may reduce the amount property taxes collected for shoreline properties.

The benefits of further restricting activities and structures allowed in the shoreline setback area include less property damages, less impacts to beach processes and less impacts to public access and public views along the shoreline. Further restricting development within the shoreline setback areas will also help us better adapt to changes in sea-level.

G. MEASURES OF SUCCESS

1. Reduction in the number of structures and activities permitted within the shoreline setback area.
2. Reduction in property damage.
3. Restored shoreline open space and scenic resources.
4. Reduction in interferences with natural shoreline processes.

H. FEASIBILITY ISSUES

1. The proposed regulations will be effective only if the public is fully aware of stricter limitations on activities and structures in the shoreline setback area, and therefore accepts the risk of owning shoreline property and the additional regulations (Special Management Area, Shoreline Setback) of uses of the property.
2. Shoreline property owners will likely oppose any further restrictions on their properties.
3. Revising current regulations to further restrict activities and structures allowed in the shoreline setback area highlights the need for a managed retreat from our shorelines.
4. Emergency permits may no longer be granted for structures within the shoreline setback area. This could lead to potential lawsuits and/or controversies if a property owner loses value as a result of their inability to erect structures within the shoreline setback area for protection of their property.
5. There are structures and activities that have been allowed within the shoreline setback areas that may continue to effect beach processes and affect public views to and along the shoreline. Regulations must also be revised so they cannot be re-built in the setback area.

6. There are public utilities and infrastructure within the shoreline setback area that cannot be easily relocated.

I. KEY UNCERTAINTIES/ASSUMPTIONS

Can counties adopt their own definitions for “minor”, without amendments to HRS 205A?

Does a “minor” structure or activity trigger compliance HRS Chapter 343 relating to Environmental Impact Statements? According to HRS CH 343-5 (a) (3) *an environmental assessment shall be required for actions that propose any use within a shoreline area as defined in section 205A-41.*

HRS 205A-41 defines shoreline area as *all of the land area between the shoreline and the shoreline setback line and may include the area between mean sea level and the shoreline...*

J. EXAMPLES FROM OTHER STATES OR AREAS

1. **Oregon:** Through its ocean shore rules the Oregon Parks and Recreation Department (OPRD) administers a permit program for ocean shore alterations, including the construction of shoreline structures. Beach front shoreline structures are only permitted to protect areas where development (development is defined in Statewide Planning Goal 18) existed January 1, 1977. If a shoreline structure is permitted, the state insists that visual impacts are minimized, coastal access is maintained, impacts on adjacent property are minimized and long-term costs are avoided.

Allowance for emergency permits are written into the state rules and regulations, however, where coastal armoring is not permitted under Statewide Planning Goal requirements; there are no exceptions – short of a Goal Exception or Amendment to Goal 18 which has never been attempted.

2. **Redmond, Washington:** Except as otherwise specifically permitted in this section (<http://www.codepublishing.com/WA/redmond/CDG/RCDG20D/RCDG20D15060.html#20D.150.60-010>), RCDG 20D.150.60-010 or in any other portion of the Shoreline Master Program, development, including clearing, grading, disturbing or altering of a stream buffer is strictly prohibited, except for the following activities that are permitted within all buffer areas:
 - a. Stormwater conveyance systems and underground utilities;

- b. Trails subject to the public access policies and regulations of the Shoreline Master Program; and
- c. Bridges which are part of a regional transit system where there is a demonstrated public need and the location has been selected through a regional transit planning process. Buffer setbacks do not apply to transportation crossings; however, buffer crossing impacts shall be minimized and mitigated.

3. **Seattle ,Washington:** Seattle provides exemptions for a substantial development permit for the following (<http://www.seattle.gov/dpd/codes/dr/DR2003-9.pdf>):

- a. Safety improvements, maintenance and repair, and tree planting on existing roadways; and maintenance, repair, and upgrading of existing underground utilities in streets.

RULE

A substantial development permit shall not be required for safety improvements to existing roadways, including traffic signals, overhead lighting, median barriers, and left turn lanes. Street tree plantings shall also be exempt from the permit requirements. Normal maintenance or repair of dedicated streets open to public travel, including improvement of existing underground pipes, conduits, etc., for public utilities, including hydrants and similar accessories above ground, shall not require a substantial development permit.

This provision is limited to the upgrading of existing roadways and/or utilities. It does not apply to the establishment of new roadways and/or utilities.

REASON

Safety improvements and repair of utilities in existing roadways are normal maintenance work. Such work shall be exempt from the requirement of a substantial development permit, as long as it is within the existing roadways.

The planting of street trees is consistent with the goals of the Shoreline Master Program to protect and enhance the natural character and resources of the Shoreline District. It is reasonable to exempt street tree planting within existing roadways.

- b. Maintenance and repair of existing pilings, piers and bulkheads.

RULE

Pilings, piers and bulkheads may be repaired without a substantial development permit. The materials used in the replacement or repair of damaged structures need not be the same as those used in the original construction, but there must be no change in size or configuration of the structures.

REASON

Regular maintenance of existing pilings, piers and bulkheads is necessary to protect the shoreline and shoreline structures from erosion, and should be permitted without a substantial development permit if no change in the size or configuration of the structures is involved.

- c. Maintenance dredging.

RULE

Dredging, in any quantity, to a depth that has previously existed, is permitted as maintenance dredging without a substantial development permit. Verification of the previously existed depth is required to qualify for the exemption.

REASON

Maintenance dredging is legitimate and necessary to ensure the safe use of navigable channels and submerged shorelines.

- d. Temporary floating repair structures.

RULE

A shoreline substantial development permit shall not be required for the temporary (three months or less) moorage of a dry-dock, work float, or floating boat paint shed when used for the repair or construction of boats, ships or vessels, and moored at a site or facility with a legally established use of boat or ship repair or construction. The exemption shall apply only to the floating repair structure, not to any pilings, dolphins, piers or other structures necessary for the safe moorage of the repair structure. Temporary moorage at a site where the use is not established would not be exempt.

The location of a floating repair structure for more than three months at the same site shall require a substantial development permit. Movement of the repair structure from one location to another within a site or facility is allowed but the total time of the structure at the site shall not extend the three-month exemption.

REASON

The temporary use of a floating repair structure is assumed to be directly related to the “operation of boats, ships and other vessels designed and used for navigation,” which is an activity exempt from the Seattle Shoreline Master Program regulation by Section 23.60.018.

However, the use of a floating repair structure for more than three months is assumed to be related to the activity of the ship repair/construction facility rather than the ships or boats being repaired. Therefore, the location of a dry-dock, repair float, or floating paint shed for more than three months falls in the category of “placing of obstructions” (Section 23.60.908), and, shall require a substantial development permit. The repair and construction of ships and boats may cause adverse impacts to the environment through noise, dust, and discharge to the water body of paint chips and construction material. The Shoreline Management Act of 1971 (RCW 90.58.020) states that:

Permitted uses in the shorelines of the State shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public’s use of the water.

Therefore, exemption for floating repair structures can only be permitted at sites where the use has already been established and the impacts of ship construction and repair on the environment and the public use of the shoreline have been evaluated through previous permits.

- e. Change of use, interior remodeling, and façade modifications.

RULE

Generally, a change of use that does not involve development exceeding the value established by Section 23.60.936 does not require a substantial development permit. The interior remodeling of structures does not require a substantial development permit, regardless of its cost. Exterior alterations to a structure or site, such as a parking expansion, changed signage, or building modifications that cost more than the limit established by Section 23.60.936 shall require a substantial development permit, unless otherwise exempted.

Minor modification of a façade, such as replacing windows, altering the size of an existing doorway, or changing the type of siding material, that do not change the existing building lines shall be considered normal maintenance and repair activities and shall not require a substantial development permit. Structural modifications within existing building lines that go beyond the scope of normal maintenance or repair or materially interfere with the normal public use of the water or shorelines of the City shall require a substantial development permit.

REASON

A change of use, or minor modifications to a façade which only involve a minimal cost, are minor in nature and in impact. Interior renovations, regardless of their cost, that do not involve a change of use, are not visible from the outside of the structure and therefore do not have any impacts on the shoreline, adjoining properties, or the Shoreline Policies.

Frequently, repair of older buildings requires the replacement of windows or doors which are not a standard size or shape, or requires slight modifications of the original structure to meet building code requirements. Although such minor changes may alter the appearance of a building somewhat, they do not significantly affect the impact of the building on the environment, and should not be considered substantial development

4. Some states have shoreline master programs that cover setbacks, permitted uses, etc.

RECOMMENDATION 5: REVIEW PERMITTING PROCESS FOR EMERGENCY REPAIRS TO SEAWALLS

A. GENERAL RECOMMENDATION

Develop an expedited permit procedure, to be included in County Shoreline Rules, for authorizing *repairs to and strengthening of existing permitted seawalls* that accommodates:

Both State and County jurisdictional permit issues;

Emergency repair procedures;

Requirements for Shoreline Setback Variances;

Preferred engineering solutions; and

Best Management Practices in order to protect the marine environment.

With Sea Level Rise adding a component of coastal erosion to older seawalls, these structures are becoming threatened at an accelerating rate.

A separate section of the County SMA Rules and Shoreline Rules is recommended to deal with this unique set of structures that require special attention due to their sensitive environmental setting.

B. RATIONALE

Purpose

The purpose is to recommend development of an expedited permit process to quickly allow for repairs and strengthening for a growing number of older, failing seawalls that protect development, prior to complete failure of the seawalls. The expedited permit will require all components of environmental mitigation into a prescriptive, yet flexible format that is authorized by local Coastal Zone Management authorities.

The Maui and Hawaii County permit process, under the current Special Management Area Rules and the Shoreline Rules, does not allow for repair of older, non-conforming structures, such as seawalls in the setback area, if the structures have been damaged by coastal hazards, without a lengthy Shoreline Setback Variance procedure.

Problem: The Planning Conundrum

The planning conundrum faced by County Planning Departments is that the current SMA permit process to properly repair and maintain sea walls is lengthy, costly and burdensome to the applicants while the emergency permit process is quicker, but wrought with potential environmental consequences. The current permit process actually rewards property owners who ignore proper seawall repair and maintenance permit procedures and wait until their seawall is in danger of failing. The County can quickly issue an SMA Emergency Permit to perform emergency repairs to failing seawalls. Usually, these emergency repairs incorporate a permanent fix to the failing seawall. Thus, the development essentially gets a permanent fix via the Emergency Permit Process and is able to circumvent the lengthy and costly Variance process.

A recent case study example of an SMA Emergency Permit within the County of Maui is detailed in section L below.

Background on Seawall Repairs and the Permit Process

This problem has arisen because many seawalls in Maui County and Hawaii County were constructed in the 1960's and 1970's to protect large condominium developments originally sited too close to the shoreline. These original structures, built 40 to 50 years ago, were often poorly constructed without the engineering knowledge and shoreline management principles and experience gained over the past several decades. As a result, many of the old seawalls have now lost structural integrity, while others are becoming physically undermined by coastal erosion. The result is these seawalls are now in need of major repair and strengthening. With the prospect of sea level rise and continuing coastal erosion, more and more seawalls are anticipated to require repairs.

The current permit procedure to repair these aging structures, through the Shoreline Setback Variance process, is lengthy, bureaucratic, and costly, when, in fact, these failing structures require immediate, approved engineering solutions to prevent the seawalls from completely failing and compromising the marine environment. A Shoreline Setback Variance is required for repairs because, under current County SMA Rules, minor SMA permits to repair and maintain seawalls are not allowed if the "structure" is a) nonconforming, meaning built prior to 1970, and b) damaged by coastal hazards – many failing seawalls fall into these two categories.

Failed sea walls also have the consequence of threatening development, lowering property values, and burdening property owners with enormous repair and reconstruction costs. Thus, emergency repairs under the SMA Rules are permitted in order to circumvent and temporarily

shorten the Shoreline Setback Variance process.

Seawall Repairs can be completed through two existing permit processes: 1) through the normal permit processing environment and 2) through the emergency permit processing environment. Both are explained below to illustrate the problem with the current systems:

1. **Seawall Repairs in the Normal Permit Processing Environment:** Currently, for applicants who desire to maintain and repair aging seawalls, the Maui County and State of Hawaii permitting process for repairs to aging sea walls can be complex, cumbersome, protracted, and expensive. These permits can take one-to-two years to complete. The reason for the complexity of the permit process is that the applicant is working in the sensitive shoreline area and marine ecosystem that requires both a full understanding of the scope of work as well as the potential impacts to the ecosystem. The shoreline jurisdiction is bifurcated between State and County regulations at the high wash of waves, determined by the State Certified Shoreline. Repairs are subjected to the:

- *Coastal Zone Management Act Special Management Area Guidelines and County Shoreline Rules* which require a
- *Special Management Area User Permit* which involves a Public Hearing (HRS 91, Administrative Rules), including a
- *Shoreline Setback Variance* that triggers an
- *Environmental Assessment* under Chapter 343, Hawaii Revised Statutes, Environmental Impact Statements and often a
- *State Conservation District Use Permit* and
- State Department of Health Clean Water Act, Section 402, *National Pollutant Discharge Elimination System Permit*.

2. **Seawall Repairs in the Emergency Environment:** However, Applicants who ignore their seawall problems and wait for the seawall to deteriorate to a near-state of failure or collapse, are able to circumvent the normal complex permit processing procedures, outlined above, and gain approval for the seawall repairs completed quickly under a *County Special Management Area Emergency Permit*. Thus, the County is rewarding Applicants with poor behavior.

Six significant problems can occur with the current Emergency Permit process:

- Engineering solutions for emergency repairs to seawalls are often hastily designed to meet the short-time demands in order to save the seawall.
- Emergency solutions may compromise the environment if proper mitigation has not been properly included in the project conditions and explained and trained to the contractors performing the work.
- Applicants who perform emergency seawall repairs are still required to complete the normal permit process, above, only in an after-the-fact manner. When a seawall is damaged, work is completed and then followed by long paperwork process for approval of a Shoreline Setback Variance and other permits, long after the work has been completed.
- The after-the-fact workload to the Planning Department is burdensome and lengthy.
- To accomplish these Emergency Permits, County planners must “drop everything” and service the applicant, with some emergency permit workloads requiring up to one month of concentrated effort, to the detriment of other pending permit applications.
- Emergency scenarios are not well-defined. Developers and homeowners apply for emergency permits under scenarios of chronic erosion (as opposed to event based). What is an “emergency” to the applicant is not necessarily an emergency for the Planning Department.

C. NEW POLICY RECOMMENDATIONS

1. **Develop Policy:** As a new policy, Counties should categorically recognize that: 1) seawalls are built most often to protect habitable structures and that most seawalls are eventually compromised or damaged by coastal hazards; 2) older seawalls require periodic maintenance and repair; 3) older seawalls can be compromised or become structurally unsound suddenly; and, as such 4) the required periodic maintenance, repair, or emergency strengthening for legal seawalls that clearly protect habitable structures and that have deteriorated due to years’ of continuous coastal hazard exposure (waves and salt), should be repaired as part of normal repairs permit procedures in an expedited manner, as opposed to requiring Shoreline Setback Variance requirements.

2. To accommodate expedited repairs to compromised or failing legal seawalls, develop an expedited permit procedure, for authorizing ***Multi-jurisdictional Shoreline Setback Variance Permits for Emergency Repairs to Existing, Permitted Seawalls***.
 - a. The expedited permit procedure should be incorporated into County Shoreline Rules as a separate, stand-alone section in order to eliminate the need for a costly and lengthy Shoreline Setback Variance process. Currently, the Shoreline Setback Variance process can take one-to-two years to process and complete, either prior to repairs, or in an after-the-fact manner, to accommodate emergency repairs to failing seawalls.
 - b. The expedited permit procedure would incorporate a range of preferred engineering solutions for seawall repairs as well as standardized Best Management Practices to protect the marine environment. These preferred engineering solutions and Best Management Practices should be developed and concurred upon by professional engineers, construction contractors, and coastal geologists.

D. NEW PLANNING AND MANAGEMENT ACTIONS

Develop an expedited permit procedure, to be included in County Shoreline Rules, for authorizing ***repairs to and strengthening of permitted seawalls*** that accommodates:

- Both State and County jurisdictional permit issues;
 - Emergency repair procedures;
 - Requirements for Shoreline Setback Variances;
 - Preferred engineering solutions; and
 - Best Management Practices in order to protect the marine environment.
1. Create a *Seawall Repair & Strengthening Expedited Emergency Permit/Shoreline Setback Variance/Environmental Assessment Policy* that is signed off by all parties of authority, including State, Federal, and Local Governments.
 - Involve a collaborative planning process between the Planning Department, Public Works Department, the Maui Planning Commission and State Department of Land and Natural Resources, State Department of Health, and State Office of Planning;
 - Collectively, develop a set of *Best Management Practices for Protecting the*

Marine Environment that will be implemented for all projects (note that many of these BMPs exist from State Conservation District Use Permits);

2. Planning Department to meet with engineers, contractors, scientists to define common seawall failure modes and associated repair schemes. Provide a range of acceptable engineering repair and strengthening solutions that would be permanent in nature rather than temporary solutions.
3. Develop a Policy and Memorandum of Understanding for Permitting Seawall Repairs and Improvements, for common Engineering Solutions. Complete one Environmental Assessment and Shoreline Setback Variance, with a common set of Best Management Practices that can be applied to all common emergency seawall repairs. Include common options for strengthening older, poorly constructed seawalls in order to eliminate intermediate repairs in the future.
4. Create a Seawall Repair Program that is a public-private collaborative
 - o Create a training program for Seawall Engineering Solutions and administer to local contractors and engineers interested in participating in future seawall repairs.
 - o Create a list of all approved Engineering Companies that are trained and follow Best Management Practices for Protecting the Marine Environment.
 - o The County will work with the State to jointly permit as many seawall repairs as possible.
5. Develop a Seawall Repair Reporting process to the Planning Commissions.

E. EXISTING POLICIES AND PROGRAMS

Maui Planning Commission 12-202-16 Special management area emergency permit procedures] 12-203-15 (Similar Rules for Maui islands of Molokai and Lanai)

Special Management Rules for the Maui Planning Commission, Subchapter 3, Variances, 12-202-14 and 15. (Similar Rules for Maui islands of Molokai and Lanai)

Hawaii Planning Commission Rule 9-14 [Special Management Area Emergency Permits] and Hawaii Planning Department Rule 11-7 (b), (c)

F. GENERAL COSTS AND BENEFITS

- After-the-Fact permits can take up to two years and cost upwards of \$50,000. These funds to applicants could be minimized by implementation of this recommendation.
- County Planning Department Permit processing time will significantly decrease with implementation of this recommendation.

G. MEASURES OF SUCCESS

- New rules in place and seawall repairs acted on.

H. FEASIBILITY ISSUES

To write and vet these proposed new permit rules can be done with dedicated resources over a six month time from. Development of engineering solutions for seawalls would require several workshops and desk review of available engineering solutions over a one year period. New rules could be enacted within one year of development, following Best Management Practices

I. KEY UNCERTAINTIES/ASSUMPTIONS

Ability to complete a categorical Environmental Assessment for a category of seawall repairs (speak with Office of Environmental Quality Assessment about possibility of categorical Environmental Assessment).

J. EXAMPLES FROM OTHER STATES OR AREAS

- The County of Maui has a program for recommending officially sanctioned and vetted mediators. These individuals are on an approved list and are the limited list of approved mediators that can be used by parties during interventions and contested case hearings. Use this model for developing a Certified List of Qualified Engineers and Contractors.
- Advice for Condo Owners

<http://www.condovoice.com/scoop/management/510-sea-walls-if-they-go-everything-goes>

- General Permit for Minor Seawall Repairs, Connecticut

http://www.ct.gov/dep/lib/dep/Permits_and_Licenses/LandUse_General_Permits/Long_Island_Sound_General_Permits/seawall_gp.pdf

K. BARRIERS OR CONCERNS

Not all seawall repairs are the same. It is difficult to develop all seawall repairs into one policy. The seawall repairs should be a guidelines referred to by the Expedited Permit Procedures.

L. CASE STUDY EXAMPLES FROM MAUI AND HAWAII

- 1. Old seawalls in Hawaii are commonly failing from weathering as the shoreline retreats towards seawalls. Many seawalls, with inadequate footings are now being undermined by wave action along the retreating shoreline.** A recent example of this situation occurred at the Makani Sands Condominium in West Maui (Figure 1).
- 2. Owners ignore repairs until the old seawalls are compromised and imminently ready to fail.**
- 3. Seawall repairs often must be done in a very short time frame to save the seawall from collapse.** Thus, engineers are summoned and provide quick-fix solutions that usually become de-facto permanent solutions. Some engineers do not understand the implication to marine resources and near-shore environmental damage and best management practices required to operate in the marine environment.



Figure 1. The shadow of the Makani Sands AOA Condominium, Honokawai, West Maui, Hawaii, overlooks the seawall and attached concrete lanai that has been undermined by wave action, awaiting potential collapse and triggering a Maui County Special Management Area Emergency Permit.

- 4. Seawall repairs often require both seaward and landward actions**, involving both State (seaward/makai) and County permits (landward/mauka) interventions. These permits take time to process, to ensure mitigation to marine resources (Figures 2 and 3).

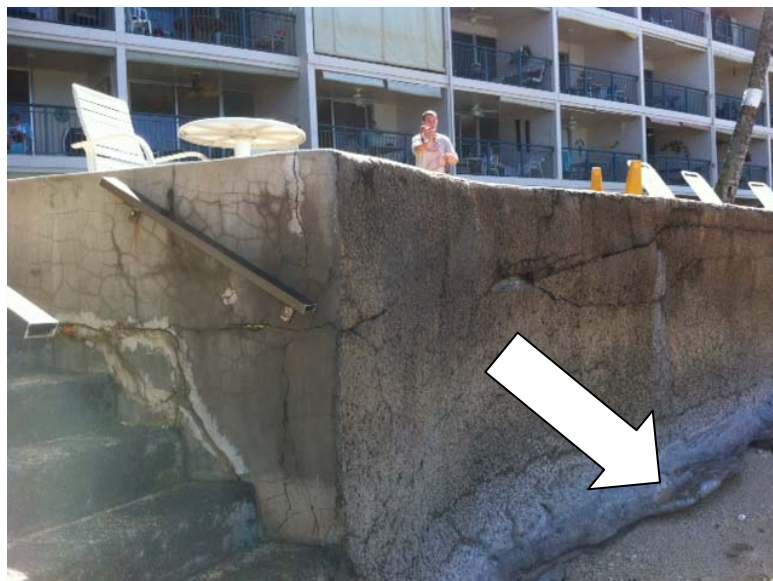


Figure 2. Makani Sands AOA Condominium, Honokawai, West Maui, Hawaii. Compromised seawall showing extensive cracking and wave-generated cavity at base of seawall where waves enter under seawall (arrow).



Figure 3. Behind seawall, showing cavity undermining base of the concrete slab lanai (arrow) above.

5. **Repairs often require significant engineering solutions that must be conducted in the marine environment.** Thus, impacts to the marine environment must be evaluated and minimized by the Planning Department and State of Hawaii Department of Land and Natural Resources. Both agencies must “drop everything” to address these imminent mitigation solutions, stressing available and limited resources.
6. **Costly repairs in the shoreline setback area often trigger various environmental permits, including:** 1) a State Conservation District Use Permit (for working in the Conservation District marine environment managed by the State; 2) Shoreline Setback Variance, managed by the County; 3) which triggers an Environmental Assessment, and Special Management Area Public Hearing in front of the Maui Planning Commission. These three permit processes take time and must be completed, regardless if the work is done before the repairs or after the repairs.

7. However, through the Emergency Permit process, these permits are temporarily circumvented and a temporary engineering solution can be implemented quickly, as shown in Figure 4:

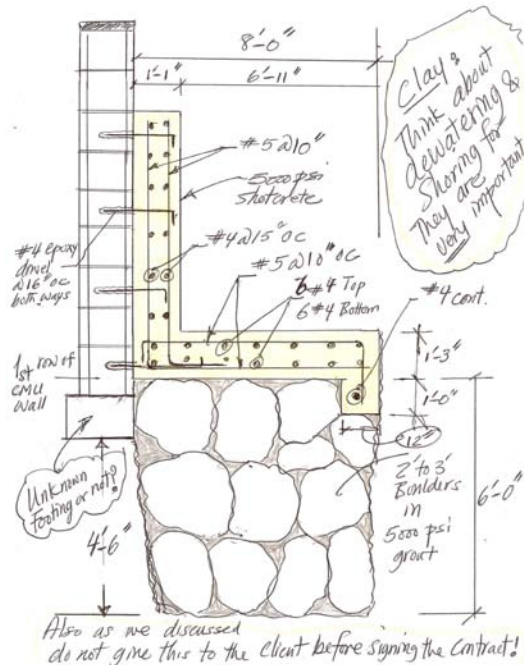


Figure 4. Proposed Temporary Solution. Engineering drawing for work to be completed mauka of the existing seawall. For most projects designs, the “emergency” engineering solution is often a permanent solution.

8. More Examples:

- Kapoho Vacationland, Hawaii - Many requests to build higher due to subsidence. Sea level rise will cause similar problems.
- Lahaina Roads AOA, Maui - repairs are deemed necessary for safety purposes (building is tied to wall and thus threatened), but wall is damaged by coastal hazards.
- Hololani AOA, Maui - temporary protection in place, and now adjacent properties are requesting emergency temporary protections; what is the regional solution, goes to what is desired policy on seawalls.
- Banyan Tree Condos, Hawaii - Recent approval for repair and maintenance and reconstruction of a seawall destroyed by the tsunami, contractor may have enlarged the mauka portion of the wall.

APPENDIX: RECENT GUIDANCE DOCUMENTS RELATED TO PLANNING FOR SEA LEVEL RISE

With its mission to facilitate a sustainable, climate-conscious future for Hawai'i through interdisciplinary research for island decision makers, The Center for Island Climate Adaptation and Policy (ICAP) has recently published several important guidance documents related to potential impacts from sea level rise. Selected ICAP publications that are useful to the County of Maui and Hawaii Planning Departments for shoreline planning include:

- [Sea-Level Rise and Coastal Land Use in Hawaii: A Policy Tool Kit for State and Local Governments](#) (December 2011)
The purpose of this Tool Kit is to identify and explain key land use policy tools for state and local government agencies and officials to facilitate leadership and action in support of sea-level rise adaptation in Hawai'i.
- [Executive Summary and Action Matrix from Sea-Level Rise and Coastal Land Use in Hawaii: A Policy Tool Kit for State and Local Governments](#) (December 2011)
- [Climate Change and Regulatory Takings in Coastal Hawaii](#) (September 2011)
A critical aspect of the interaction between climate change and the law is the requirement under the U.S. and Hawai'i Constitutions that the government compensate private property owners for unpermitted "takings" of their properties. This report assesses the current state of takings law in Hawai'i and its impact on coastal development and shoreline retreat.
- [Hawaii's Changing Climate Briefing Sheet](#) (March 2010)
Prepared by Dr. Chip Fletcher of the Department of Geology and Geophysics of the University of Hawai'i at Mānoa, this briefing sheet describes how global climate change is influencing Hawai'i's climate, as published in peer-reviewed scientific journals and in government reports and websites.
- [A Framework for Climate Change Adaptation in Hawaii](#) (November 2009)
Prepared by ICAP and the Hawai'i Ocean Resources Management Plan (ORMP) Working Group, the Framework encourages and facilitates coordinated climate change adaptation planning for state and local agencies, policy-makers and federal, business and community partners.

- [Shoreline Impacts, Setback Policy, & Sea Level Rise](#) (April 2009)
ICAP prepared this white paper at the request of Hawai'i State Senator Shan Tsutsui, whose office sought a technical evaluation of Senate Bill 468, 2009 relating to shoreline setbacks. The document includes an overview of county setback policies in Hawai'i and a review of setback rules adopted by other US states, as well as policy solutions and strategies to enact better measures.