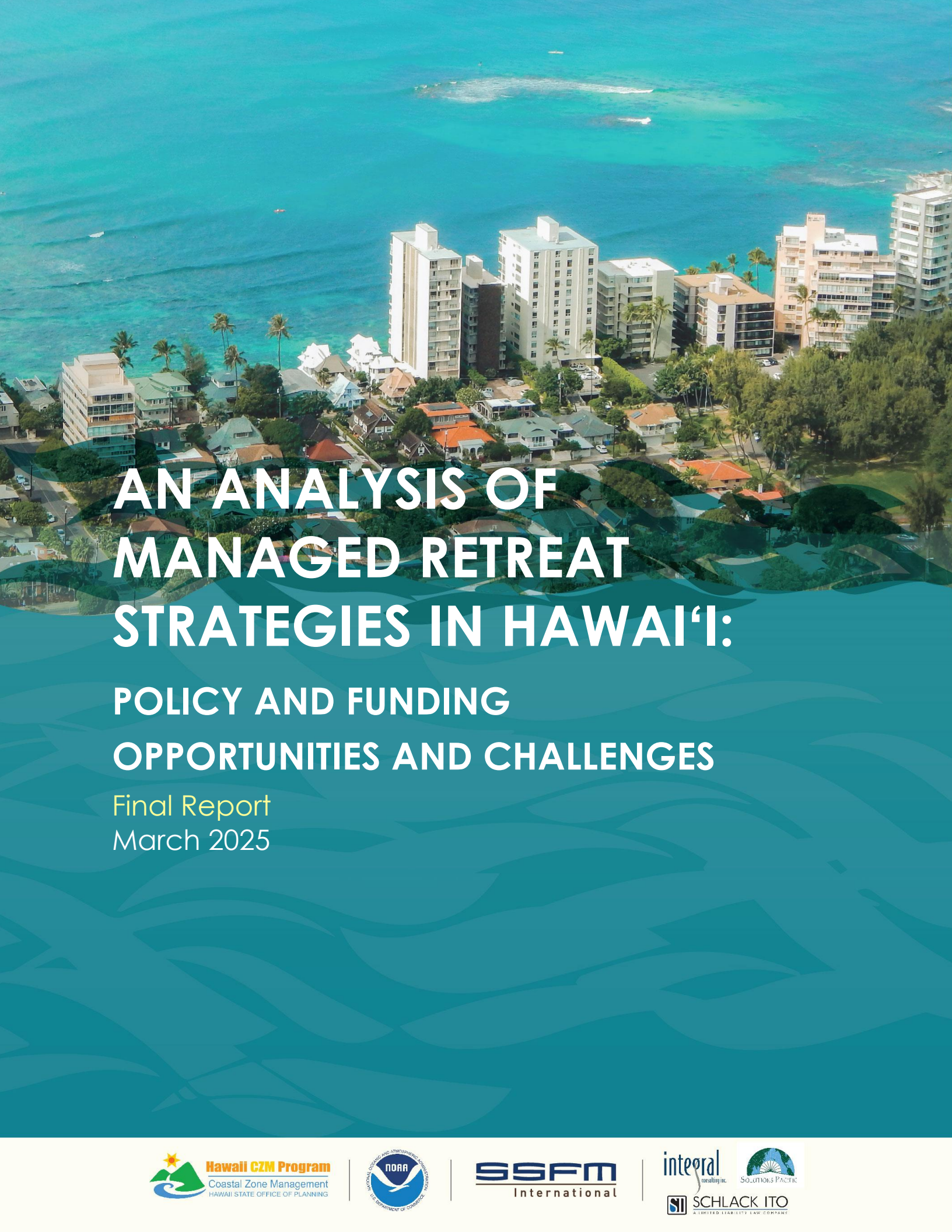




AN ANALYSIS OF MANAGED RETREAT STRATEGIES IN HAWAI'I: POLICY AND FUNDING OPPORTUNITIES AND CHALLENGES

Final Report
March 2025

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The project team was led by the Office of Planning and Sustainable Development (OPSD) Coastal Zone Management Program (HICZMP), with support by a team of consultants led by SSFM International.

The project team engaged a wide range of stakeholders, including decisionmakers, government agencies, private industries, researchers, community groups, and private citizens involved in coastal zone management. These stakeholders were instrumental in sharing knowledge and on-the-ground experience in shoreline issues and management. The team would like to thank all those who contributed.

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An Analysis of Managed Retreat Strategies in Hawai'i: Policy and Funding Opportunities and Challenges

EXECUTIVE SUMMARY



The purpose of this project is to guide future state initiatives around managed retreat as an adaptive response to climate change induced coastal hazards including sea level rise (SLR), erosion, and flooding. This project identified specific legal, policy, and funding opportunities and challenges to implementing managed retreat as part of the State's overall climate adaptation framework, and included: **1) an analysis of relevant existing policies, laws, and regulations; 2) an analysis of potential strategies to implement and finance managed retreat; 3) identification of challenges to implementation including practical and legal issues; and 4) recommendations for potential solutions to address those challenges.**

PROPOSED PROGRAM

This report proposes a program focused on strategies for managed retreat where shorelines with eroding sandy beaches exist. In these areas, retreat is likely to be a key component of the adaptation strategy due to accelerating coastal erosion; the presence of high value ecological, cultural, and recreational public trust resources; and the consequences of not adapting proactively, including threats to public trust resources as well as public health and safety.

The recommendations center around the creation of a **Beach Resilience Program (BRP)** focused on regions with eroding sandy beaches that have been identified as priority areas for adaptation. Many of the recommendations in this report could also have broader applicability for climate adaptation in other contexts.

The BRP uses an Adaptation Pathways approach to facilitate place-based planning and adaptation within designated Beach Resilience Planning Areas (BRPAs).

Adaptation Pathways is an approach that can be used to prioritize strategies for adapting to climate change that are place-based, flexible, and responsive to changing conditions. Pathways provide a phased adaptation approach based on area-specific thresholds, triggers, and sequencing of adaptation strategies. Pathways are not prescriptive about which actions to take when. Instead, once the pathway is in place, conditions are monitored and when triggers are reached, the next adaptation strategy is initiated.

This approach acknowledges that adaptation must occur at a local level and be informed by scientific and technical study as well as community input and traditional ecological knowledge (TEK).

The program also proposes funding sources, voluntary relocation options, and a regulatory framework for facilitating adaptation in BRPAs.

CHALLENGES AND OPPORTUNITIES

There are many challenges to implementing managed retreat, particularly around community acceptance, political will, planning frameworks, agency capacity, and funding. Perhaps the greatest challenge limiting the ability to implement managed retreat lies in evolving the current approach to coastal planning and management in Hawai'i from an approach that is piecemeal, reactive, and enforcement driven to one that is proactive, holistic, transparent, equitable, and consistently implemented. This will require systemic change and sustained commitment at many levels.

Despite such challenges, opportunities also exist, afforded by the strength of Hawai'i's public trust doctrine, climate adaptation policy, Native Hawaiian TEK and community values. TEK can inform climate adaptation by centering the public trust and reframing sea level rise as an opportunity to reimagine and restore spaces for the community, rather than focusing on losses and damage to private property.

PROPOSED PROGRAM FRAMEWORK

The Beach Resilience Program would enable the designation of Beach Resilience Planning Areas (BRPAs) that would be subject to:

- ▲ Area-specific study and adaptation planning
- ▲ Community engagement and education
- ▲ Development and monitoring of adaptation pathways
- ▲ Strengthened regulations and enforcement
- ▲ Funding for beach management and adaptation
- ▲ Options and incentives for removal or relocation of development
- ▲ Beach management and restoration

The BRP aims to provide a transparent process for adapting development in coastal areas to the impending impacts from sea level rise, which include accelerated erosion, worsening storms, and decreased capacity to address coastal hazards. **A transparent process would help property owners, government, and the general public understand the future options for these areas and engage in planning and visioning for how to adapt their communities.**

BEACH RESILIENCE PROGRAM ELEMENTS

- ▲ Establishing Policy to Implement BRP
- ▲ Clarifying Jurisdiction
- ▲ Establishing a Planning Framework
- ▲ Strengthening Regulations
- ▲ Establishing Funding Sources and Incentive Programs
- ▲ Developing Land Management Options
- ▲ Community Engagement and Education
- ▲ Beach Management and Restoration

LEGAL BASIS FOR BEACH RESILIENCE PROGRAM

The legal basis for the BRP is supported by the public trust doctrine, HRS Chapter 205A, existing case law, and other foundational legal principles and powers of the state. Collectively these provide a strong basis for enabling proactive adaptation of coastal areas through planning, regulation, and enforcement that is expected to withstand legal challenges including takings claims.

CONSIDERATIONS FOR PROGRAM SUCCESS



IMPLEMENTING RECOMMENDATIONS

The report identifies **20 recommendations** for implementing the BRP, developed through research, stakeholder consultation, and analysis of legal, policy, and funding considerations. Recommendations are grouped into six topics:

POLICY

Strengthen the legal basis for the program and enable implementation

JURISDICTION

Assign authority and responsibility for the program

PLANNING

Guide area-specific adaptation planning in Beach Resilience Planning Areas and alignment with land use plans and designations

REGULATORY

Align regulations in eroding sandy beaches with public trust priorities and long-term adaptation needs

FUNDING

Establish dedicated, sustainable funding sources for adaptation of eroding sandy beaches and identify financial incentives for coastal property owners

LAND MANAGEMENT

Provide solutions for transfer of land in eroding sandy beach areas, relocation of displaced residents, and management and restoration of beaches

CASE STUDY APPLICATION

The report applies the BRP recommendations to two hypothetical case study areas: **1) Sunset Beach, North Shore O'ahu**, and **2) Kahana Sunset Building F, West Maui**. The report compares outcomes under the current status quo vs. the recommended program.

Under the proposed BRP, both case study areas would have been part of designated BRPAs, long



before reaching their current state, and the implications of this would have been communicated to owners in the area. Area specific Beach Resilience Plans would have identified site-specific adaptation pathways with associated adaptation actions and

triggers, as well as potential near-term options for beach/sand management to mitigate erosion.

Front line property owners with damaged or threatened structures would already have been issued red tags (Notice to



Vacate), indicating specific actions to take (removal, modification, or retreat) when a critical adaptation pathway trigger is reached, such as distance of a structure or cesspool from the erosion line. Enforcement for non-compliance would proceed according to the BRP regulatory program (fines, mandatory removal, etc.) .

Owners behind the front line would be issued yellow or orange tags corresponding to their distance from the

projected erosion line and other criteria established in the Beach Resilience Plan. Depending on their eligibility, owners may have various options for relocation or transferring their properties, including buyout-leasebacks, tax incentives, sale or transfer of development rights, conservation easements, access to low interest mortgages elsewhere, and/or purchasing a lot in a designated receiving area.

Following removal of development, the areas would have been restored for public shoreline access as feasible.

The transparency of this program would provide options while setting clear expectations on what process owners must follow and the consequences for not doing so. Additionally, the regulatory basis of this framework in statute should head off most, if not all, contested cases and potential legal challenges.



PHOTO CREDIT: ROB WALKER

ACRONYMS

ACRONYM	DEFINITION
ACT	Action Team
AMI	Area Median Income
APA	American Planning Association
ARH	Affordable Rental Housing
BFE	Base Flood Elevation
BLNR	Board of Land and Natural Resources
BRA	Beach Resilience Authority
BRF	Beach Resilience Fund
BRP	Beach Resilience Plan/Program
BRPA	Beach Resilience Planning Area
CD	Congressional District
CDP	Community Development Plan
CDUA	Conservation District Use Application
CFD	Community Facilities District
CMSS	Charlotte-Mecklenburg Storm Water Services
CPR	Condominium Property Regime
CWG	Coordinated Working Group
CZMA	Coastal Zone Management Act
DBEDT	Department of Business, Economic Development, and Tourism
DFE	Design Flood Elevation
DHHL	Department of Hawaiian Home Lands
DLNR	Department of Land and Natural Resources
DOH	Department of Health
DOT	Department of Transportation
DPP	Department of Planning and Permitting
DRB	Development Rights Bank
DRIP	Drought Resilience Interagency and Partners
DWR	Department of Water Resources

EJ	Environmental Justice
EPA	Environmental Protection Agency
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency
FY	Fiscal Year
GIS	Geographic Information Systems
HAR	Hawai'i Administrative Rules
HCDA	Hawai'i Community Development Authority
HICZMP	Hawai'i Coastal Zone Management Program
HHFDC	Hawai'i Housing Finance and Development Corporation
HIEMA	Hawai'i Emergency Management Agency
HILT	Hawai'i Land Trust
HOA	Homeowners' Association
HRS	Hawai'i Revised Statutes
HTA	Hawai'i Tourism Authority
HUD	Department of Housing and Urban Development
IBC	International Building Code
ICAC	Interagency Climate Adaptation Committee
LA SAFE	Louisiana Strategic Adaptations for Future Environments
LCP	Local Coastal Program
LUC	Land Use Commission
LUD	Land Use District
MACZAC	Marine and Coastal Zone Advocacy Council
MOU	Memorandum of Understanding
NDPTC	National Disaster Preparedness Training Center
NFIP	National Flood Insurance Program
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NOV	Notice of Violation
OCCL	Office of Conservation and Coastal Lands
OCCSR	Office of Climate Change, Sustainability, and Resiliency
OHA	Office of Hawaiian Affairs

OLU	Operational Landscape Unit
OPC	Ocean Protection Council
OPSD	Office of Planning and Sustainable Development
ORMP	Ocean Resources Management Plan
OSDS	On-Site Sewage Disposal System
PDR	Purchase of Development Rights
PLT	Public Land Trust
ROH	Revised Ordinances of Honolulu
RPT	Residential Property Tax
RSM	Regional Shoreline Management
SB	Senate Bill
SBCC	State Building Code Council
SCC	State Coastal Conservancy
SID	Special Improvement District
SCP	Sustainable Communities Plan
SLR	Sea Level Rise
SLR-XA	Sea Level Rise Exposure Area
SMA	Special Management Area
SSBR	Small Scale Beach Restoration
TAT	Transient Accommodation Tax
TDR	Transfer of Development Rights
TEK	Traditional Ecological Knowledge
TOD	Transit Oriented Development
TPL	Trust for Public Land
TRPA	Tahoe Regional Planning Agency
UC	University of California
UH	University of Hawai'i
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
WBIDA	Waikiki Business Improvement District Association

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1 . PROJECT OVERVIEW

1.1 PROJECT PURPOSE AND GOALS

This is the final report for a project led by the State of Hawai'i Office of Planning and Sustainable Development (OPSD) Coastal Zone Management Program (HICZMP) to analyze policy, legal, and financial implications of managed retreat for the State of Hawai'i. This assessment was supported by a consultant team led by SSFM International with support from Integral Consulting, Schlack Ito, and Solutions Pacific.

The purpose of this project is to guide future state initiatives around managed retreat as an adaptive response to climate change induced coastal hazards including sea level rise (SLR), erosion, and flooding. It builds upon a prior 2019 assessment of managed retreat in Hawai'i, which identified high level factors and considerations influencing the feasibility of retreat. The current project seeks to identify specific legal, policy, and funding opportunities and challenges to implementing managed retreat as part of the State's overall climate adaptation framework, and included: 1) an analysis of relevant existing policies, laws, and regulations; 2) an analysis of potential strategies to implement and finance managed retreat; 3) identification of challenges to implementation including practical and legal issues; and 4) recommendations for potential solutions to address those challenges.

▲ The project and its recommendations seek to uphold and advance the following objectives:

1 Preserving and restoring public trust resources	4 Adapting to climate change impacts
2 Protecting public health and safety	5 Enhancing public access to coastal areas
3 Mitigating the risk of coastal hazards to people and structures	6 Minimizing harm to coastal environments and nearshore waters resulting from the breakdown of structures and infrastructure





The recommendations included in this report were developed and refined through a combination of research, stakeholder consultation, and analysis over a period of eighteen months. The approach included:

- *Research on Hawai'i laws, policies, and regulations*
- *Research on example programs, policies, and best practices from outside Hawai'i*
- *Review of academic literature on climate adaptation, managed retreat, and coastal processes*
- *Interviews with State and County government agencies*
- *Coordination with the Ocean Resources Management Plan (ORMP) Action Team, comprised of representatives from State and County agencies, the University of Hawai'i, and Sea Grant*
- *Consultation with the OPSD Marine and Coastal Zone Advocacy Council (MACZAC), comprised of 12 advisory members with diverse backgrounds recruited from the islands of Kaua'i, O'ahu, Maui, Moloka'i, Lāna'i, and Hawai'i*
- *Consultation with the ORMP Coordinated Working Group (CWG), comprised of agency administrators and program manager-level members representing Federal, State, and County agencies across islands*
- *Focus groups with subject matter experts in the following areas: 1) Cultural; 2) Legal; and 3) Real Estate*
- *Interviews with stakeholders managing cultural and historical resources at the shoreline*
- *Research, consultation, and GIS analysis to develop profiles and apply proposed recommendations to the two case study areas as described in Section 4*

Three initial assessment reports were prepared to describe the existing policy, legal, and financing landscape related to managed retreat in Hawai'i and identify high level barriers and opportunities to implementing retreat. These assessments are included as Appendices A, B, and C. Case study profiles were also developed to summarize background information on each site (Appendices D-E).

This final report synthesizes the findings of the project, culminating in a set of recommendations for integrating managed retreat as a component of climate adaptation and coastal management in Hawai'i.

While the scope of this project stops short of recommending a prescriptive plan or framework for implementing managed retreat, this report hones in on what the key elements of such a framework could look like and identifies concrete recommendations for consideration based on research, stakeholder consultation, and analysis of legal, policy, and funding considerations.

It also identifies and discusses the significant gaps and immense ground that will need to be made up to implement managed retreat, particularly in the realms of political will, planning frameworks, agency capacity, and funding. Despite these challenges, significant opportunities also exist, afforded by the strength of Hawai'i's public trust doctrine, climate adaptation policy, traditional ecological knowledge, and community values.

1.2 RETREAT IN THE CONTEXT OF HAWAI'I

The term managed retreat derives from coastal land use planning, natural hazards management, and engineering and refers to the physical movement of existing structures and shifting of future development patterns away from areas subject to coastal hazards (Esteves, 2014; Hino et al., 2017). Managed retreat may also be thought of as a proactive strategy for protecting coastal resources that are held within the public trust. In Hawai'i, the public trust doctrine is enshrined in the Hawai'i Constitution, which states, "All public natural resources are held in trust by the State for the benefit of the people" (Hawai'i State Constitution §11.1). Coastal waters are, for the most part, also part of the public trust doctrine, and thus the waters and land up to the high water mark are the State's to hold in trust on behalf of the citizens of Hawai'i (Hawai'i Revised Statutes [HRS] Chapters 115-4, 115-5).

Traditional Ecological Knowledge (TEK), rooted in centuries of Native Hawaiian environmental stewardship, offers critical insights into the design and implementation of managed retreat. TEK embodies a holistic understanding of land, sea, and climate interactions, emphasizing resilience through adaptive practices. For instance, ahupua'a systems highlight the sustainable management of resources across diverse ecological zones. By addressing the interconnectivity between upland, coastal, and marine environments, ahupua'a systems demonstrate how resource stewardship ensures long-term ecological and cultural sustainability. Along the coastline, those with generations of knowledge within the places their 'ohana have stewarded offer unique insights into understanding appropriate uses within an area, tidal cycles, species habitats, and understanding of how changes in the ecosystem may impact the natural and cultural resources. These principles can inform appropriate land use planning by emphasizing the restoration of

natural coastal processes and prioritizing community well-being. Incorporating TEK into managed retreat not only ensures ecological alignment but also fosters cultural integrity, bridging contemporary strategies with culturally informed knowledge. Indigenous knowledge strengthens ecological resilience by fostering co-management and emphasizing the importance of reciprocity in resource use. Furthermore, TEK offers an opportunity to reframe SLR from a problem impacting private property to an acceptance of natural processes, viewing retreat and climate adaptation as an opportunity to reimagine our relationship to coastal spaces to one more closely aligned with stewardship and the public trust.

Managed retreat is but one strategy for adapting to the impacts of sea level rise and other natural hazards, and the context and need for retreat depends on many factors. In most cases, retreat is the last resort after other options have been identified and utilized for as long as possible. In some cases, retreat is the only short-term option due to shifting sands, bluffs, and seas. The decision on if, where, when, and how to retreat will ultimately need to be made on a localized scale. This decision making should occur as part of a larger framework for coastal adaptation that includes scientific study of physical landscapes and natural processes, in-depth community and stakeholder engagement, and analysis of potential solutions and strategies to arrive at a pathway for adaptation that is based on site-specific conditions and needs. This pathway should be implemented as part of a larger a program that clearly communicates risks, options, and incentives to affected parties and strikes an acceptable balance between adapting development and infrastructure, mitigating risks, protecting the public trust, and preserving public health and safety as well as serving other aspects of the public good.



Retreat may be considered for areas experiencing severe coastal hazards, such as Kahana Sunset Building F in West Maui, November 2023 (Photo Credit: SSFM)

At the present time, Hawai'i benefits from strong policies supporting the need for climate adaptation, as well as sound climate science and projections to inform decision making. However, it lacks a framework for planning and implementation of coastal adaptation. There are no consistent planning thresholds established for sea level rise, no entities that are clearly responsible for management and restoration of coastal areas or the preparation of climate adaptation plans, no adopted standards or guidelines for how adaptation planning should occur, and insufficient staff and funding dedicated to support these needs within current county and state agencies and programs. These gaps, as well as best practices to consider in addressing them, are addressed in greater detail in the Policy Assessment (Appendix A).

Further, it is difficult given the diversity of conditions around Hawai'i's coastline to create a framework that comprehensively address all cases where retreat may be appropriate, and speak to how it can be implemented across those diverse situations. Examples where retreat may be considered as part of an overall adaptation strategy vary widely, as do the timeframes and circumstances around them. In some places, rising groundwater and flooding will cause incremental inundation of development and infrastructure in inland neighborhoods as well as coastal areas. In all cases, the calculation of whether to invest in

adaptation or retreat, and where, when, and how it should happen, is highly context dependent.

Rather than try to speak to all of these situations simultaneously, **this report and its recommendations propose, as a starting point, to focus strategies for managed retreat on sandy beach areas where retreat is likely to be a key adaptation strategy due to accelerating coastal erosion; where high value ecological, cultural, and recreational public trust resources exist; and where the consequences of not adapting proactively pose great risks to the public trust as well as public health and safety.** Still, many of the recommendations in this report have broader applicability and could help to inform the integration of managed retreat into a comprehensive climate adaptation framework for Hawai'i by presenting strategies for shifting development out of vulnerable areas and analyzing them through policy, legal, and financial lenses.

The following sections describe in general terms the existing relationship between beach loss and coastal development in Hawai'i and the current status quo for coastal management and adaptation, followed by a discussion of the rationale for shifting to a proactive, beach-focused coastal management and adaptation program.



A house collapses onto the beach near Sunset Beach on the North Shore of O'ahu, September 2024 (Photo Credit: Rob Walker/Integral Consulting)

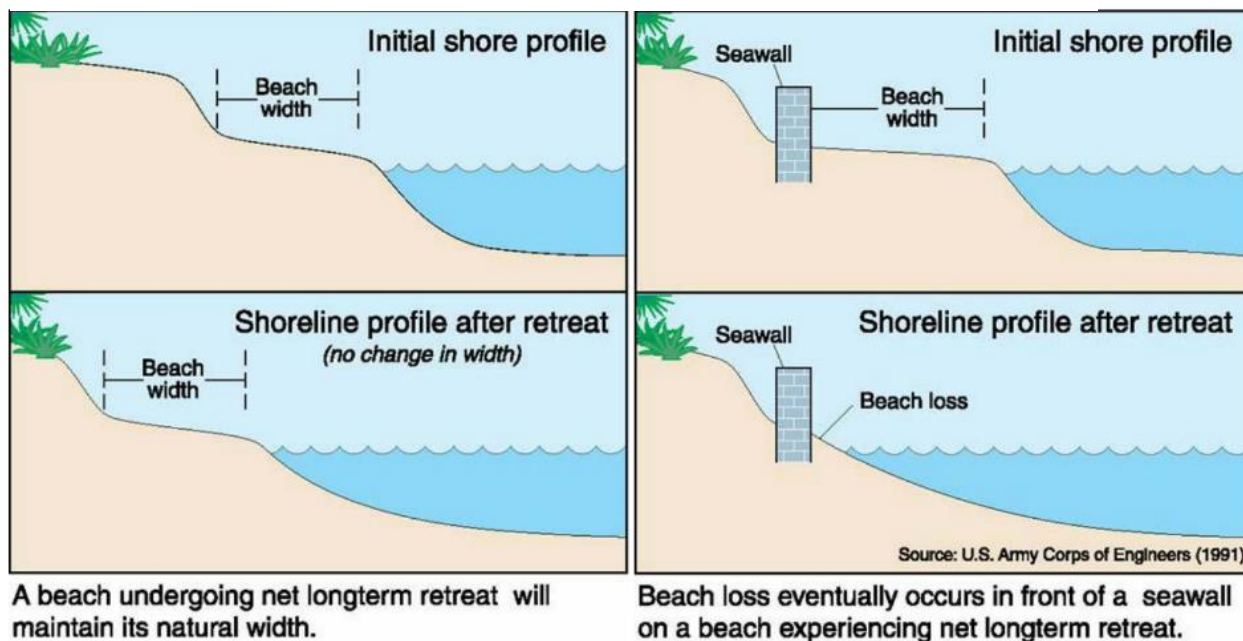
1.2.1 Beach Loss and Coastal Development in Hawai'i

Decades of development built too close to the shoreline has resulted in houses, condominiums, resorts, infrastructure, and other structures being built on top of frontal sand dunes, thereby locking up sand so that it can no longer replenish the beach (University of Hawai'i Sea Grant College Program, 2022). It is estimated that in the past century, a quarter of beaches on O'ahu, Maui, and Kaua'i have been lost (Ngu et al., 2020). Approximately 70 percent of beaches on those islands are experiencing long-term erosion (Fletcher et al., 2012). Once sand is lost, it is usually difficult and prohibitively expensive to recover it offshore for beach nourishment.

Not all beaches are eroding; in fact some are stable or even accreting, and areas of sand accumulation can occur close to areas experiencing erosion (University of Hawai'i Sea

Grant College Program, 2022). Likewise, seasonal beach movement can result from episodic erosion followed by periods of replenishment, provided the sand is able to move freely. But for chronically eroding sandy beaches, any type of fronting shoreline hardening results in worsening erosion and subsequent beach loss (Romine and Fletcher, 2012). Shoreline hardening encompasses a range of shore-parallel structures that fix the shoreline in place including buildings, seawalls, revetments, geotextile sand burritos, and tarps. Sea level rise (SLR) accelerates the typical process of coastal erosion as tides rise and more wave energy reaches the shore (Anderson et al., 2015).

FIGURE 1: SHORELINE ARMORING LEADS TO BEACH LOSS ON ERODING SANDY BEACHES



SOURCE: UNIVERSITY OF HAWAI'I SEA GRANT COLLEGE PROGRAM, 2022

1.2.2 Status Quo for Coastal Adaptation and Management

Although there are various beach management across the state, the current regulatory approach to coastal adaptation and management in Hawai'i can be described as piecemeal, inconsistent, mostly reactive, and primarily driven by development proposals or complaints leading to enforcement actions. There are limited tools available for implementing proactive adaptation, and no existing framework or funding mechanism for adaptation planning or beach management.

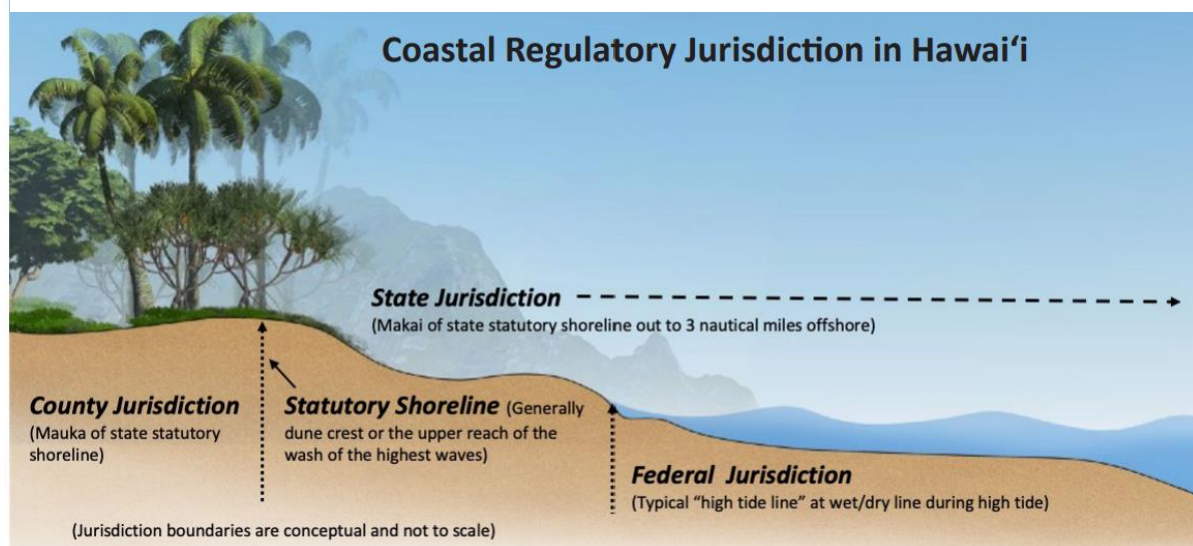
Hawai'i's shoreline represents a jurisdictional boundary whereby land makai (seaward) of it is within the state Conservation District and is typically under a combination of state and federal jurisdiction. Immediately mauka (landward) of the shoreline is usually under the jurisdiction of the counties and is part of the Special Management Area (SMA) (Figure 2). Where the shoreline is eroding or otherwise dynamic, the jurisdictional line is constantly moving, but coordination between the state and counties around shoreline regulation and enforcement is informal and ad hoc, sometimes leading to delays, inconsistencies, and confusion.

The location of the shoreline is not consistently identified or monitored, nor are encroachments into it. Where encroachments are legally

permitted through an easement or other mechanism, the associated fees, terms, and conditions are not reflective of the value of the easement nor of the impacts to public trust resources. The state has limited power over legal nonconforming structures, such as seawalls that pre-date Hawai'i's CZM law and Conservation District rules, unless certain permitting thresholds are triggered. Homeowners along eroding beaches are able to apply for emergency permits for temporary shoreline protection under certain circumstances, but often those materials are not removed at the end of their permitted life, resulting in violations, safety hazards, and further damage to beaches and public shoreline access. These conditions, combined with inconsistent enforcement, signaled a relatively lax approach to coastal regulation that persisted for decades, contributing to distorted perceptions of risk and what is allowable, as well as miles of beaches being diminished or permanently lost to hardening.

Within the last decade, climate science has begun to more significantly inform policy and regulation in Hawai'i. As a result, coastal zone management regulations and their interpretation by county and state agencies are becoming more stringent in favor of protecting beaches and the public trust, with Act 16 in 2020 adding a prohibition on private shoreline hardening where sandy beaches exist to HRS

FIGURE 2: COASTAL REGULATORY JURISDICTION IN HAWAI'I



SOURCE: UNIVERSITY OF HAWAI'I SEA GRANT COLLEGE PROGRAM, 2022

205A, and the state attorney general's 2017 opinion that state ownership shifts along with the shoreline. Counties are updating their Special Management Area (SMA) and shoreline setback requirements to reflect sea level rise and increasing coastal erosion rates, pushing the allowable development area further mauka and adding new restrictions and permit conditions.

The State Department of Land and Natural Resources Office of Conservation and Coastal Lands (DLNR OCCL) has become more proactive in enforcing illegal shoreline protection, resulting in numerous violations and millions of dollars in fines. Rulings on recent violations and other coastal adaptation proposals by the Board of Land and Natural Resources (BLNR) indicate a pro-public trust stance that places the costs of coastal adaptation squarely on private landowners. Combined with new disclosure laws around sea level rise and coastal hazards, these actions are sending clearer market signals of risk to coastal property owners and potential buyers.

As the screws have tightened on coastal regulation and enforcement, legal challenges and contested cases have mounted, brought forth by coastal landowners faced with increasingly limited options as well as environmental and community groups demanding protection of public trust resources. This has delayed action even as the risks become more imminent and damages to beaches and other resources persist. Since 2022, two homes have fallen onto the beach on the North Shore of O'ahu, and others are at imminent risk of doing so (see Appendix D). The Kahana Sunset condominium Building F in West Maui perches precariously on the shoreline, unsafe to occupy and structurally unsound, while its fate is mired in contested case proceedings (see Appendix E).

The situation is urgent and apparent to all stakeholders, from agencies and elected officials to homeowners and communities. Several projects and proposals are aiming to offer solutions, this project included. Several current and recent efforts have the potential to



Sandbags and other geotextile materials may act as a temporary emergency measure to protect backshore infrastructure until a better solution can be implemented, but their presence often exacerbates erosion on sandy beaches. (Photo credit: SSFM)

lay significant groundwork for a more proactive approach to coastal management and adaptation, as discussed in this report. Yet there remains a critical disconnect between the perceived urgency of the situation and the political will and needed allocation of resources to address it. As a result, the onus is on agencies to find piecemeal funding sources to address coastal management and adaptation, resulting in similarly piecemeal projects. Most legislative proposals aimed at coastal adaptation and retreat have failed, and the ones that succeeded came with little to no funding.

1.2.3 Need for Proactive Coastal Adaptation

Perhaps the greatest challenge limiting the ability to implement managed retreat lies in evolving coastal adaptation in Hawai'i from an approach that is piecemeal, fractured, reactive, and enforcement driven to a system that is proactive, holistic, transparent, equitable, and consistently implemented.

Accomplishing this will require structural changes to current agency structures and authorities, planning frameworks, funding and financing mechanisms, laws and regulations, and land management approaches. This is a highly ambitious shift to envision, much less attempt, yet it is change that many stakeholders involved in coastal issues have long called for, and that this report attempts to further through its recommendations.

The details of these proposals will be covered in later sections, however it is worth highlighting here a foundational approach that is key to developing a proactive program for adaptation that may include managed retreat: adaptation pathways.

Adaptation pathways are an approach to developing a response to climate change that allows decisionmakers to prioritize strategies, build adaptive capacity, maintain flexibility, and communicate critical issues to a community (ResilientCA, n.d.). Pathways provide a phased adaptation approach based on specific thresholds, triggers, and sequencing of actions, which are often identified with the help of community and stakeholder input (FIGURE 3). Strategies are designed to be phased in gradually over time based on a range of possible future conditions. Monitoring is a critical component of this approach, as specific triggers are identified ahead of time as critical junctures for taking action. Policymakers can identify triggers before they happen, often through a process of stakeholder engagement, and develop strategies and actions to implement as those thresholds become reality. Outreach should include kanaka maoli with ancestral ties to land and knowledge of place. In

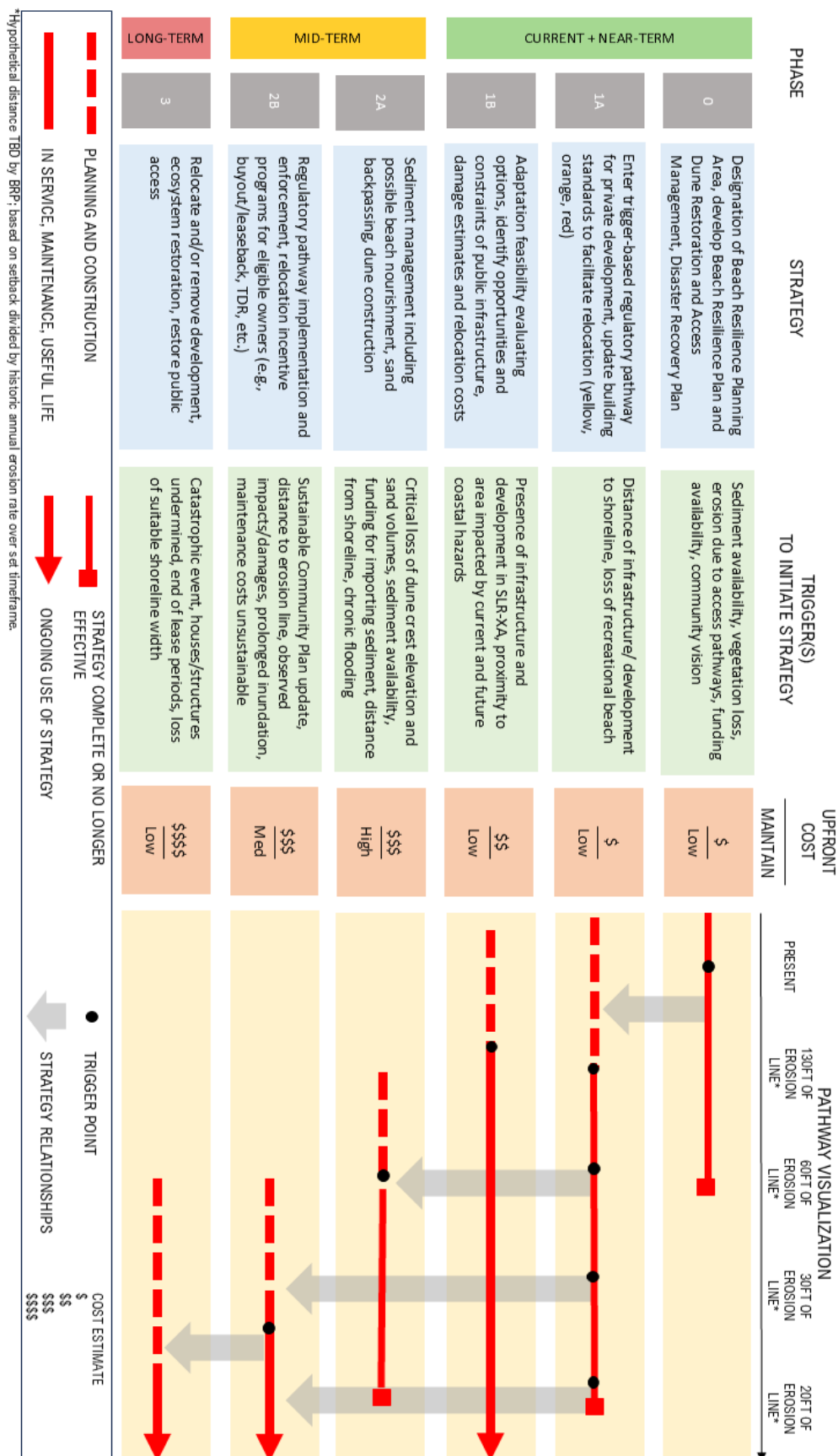
this way, the phased adaptation pathway allows for proactive planning and preparation in the face of uncertainty and changing conditions.

Adaptation pathways have become an increasingly popular approach to plan for climate adaptation (Werners et al., 2021) and have been shown to be effective in planning for SLR (Barnett et al., 2014). Adaptation pathways provide a holistic method of evaluating a range of adaptation options, including methods to adapt-in-place prior to retreating, and incorporate place-specific conditions and community knowledge into the development of adaptation strategies.

In Hawai'i, adaptation pathways have been utilized in adaptation planning efforts on Maui, O'ahu, and statewide and are a recommended approach in the Climate Ready O'ahu adaptation strategy. There was a bill proposed to the 2024 Hawai'i State Legislature (S.B. 2184 SD 1) to institutionalize adaptation pathway planning at the state level, but it did not pass. Several similar bills related to adaptation pathway planning for SLR were introduced in 2025 (H.B. 314, S.B. 1598, H.B. 1245 and S.B. 237), however none survived.

The program proposed in this report utilizes adaptation pathways to facilitate place-based planning and adaptation, acknowledging that adaptation must occur at the local level, informed through scientific and technical study as well as community input and traditional ecological knowledge (TEK). Adaptation pathways also leave room for flexibility in considering available options, rather than presupposing that adaptation will always result in retreat.

FIGURE 3: AN EXAMPLE ADAPTATION PATHWAY FOR A BRPA



1.3 ORGANIZATION OF REPORT

This report is organized as follows:



- ▲ **Section 1** introduces and frames the project and final report. It lays out the project purpose and goals, the context for retreat in Hawai'i, the approach to developing recommendations, and the report organization.



- ▲ **Section 2** outlines a proposed framework for a Beach Resilience Program (BRP) in Hawai'i, focusing on adaptation of the built environment near eroding sandy beaches, including managed retreat of imminently threatened areas. This section describes the program and its rationale, program elements, legal basis for protecting and restoring sandy beaches, and considerations for success.



- ▲ **Section 3** lays out 20 specific implementing recommendations. Recommendations are organized by topic area and cover those pertaining to Policy, Jurisdiction, Planning, Regulatory, Funding, and Land Management.



- ▲ **Section 4** focuses on applying the implementing recommendations to two case study areas: 1) Sunset Beach, North Shore, O'ahu; and 2) Kahana Sunset, Building F, West Maui.

Appendices: This final report draws heavily from research and analysis included in the foundational assessment reports for the project (Appendices A-C), and these assessments can be consulted for further detail on the concepts and strategies presented in the report. Appendices D and E provide further background on the North Shore O'ahu and West Maui case studies, respectively.



2 PROPOSED PROGRAM

2.1 PROGRAM DESCRIPTION AND RATIONALE

The program recommendations are centered around the proposed development of a Beach Resilience Program (BRP) that focuses on eroding sandy beach areas. The program's focus on eroding sandy beaches was determined based on:

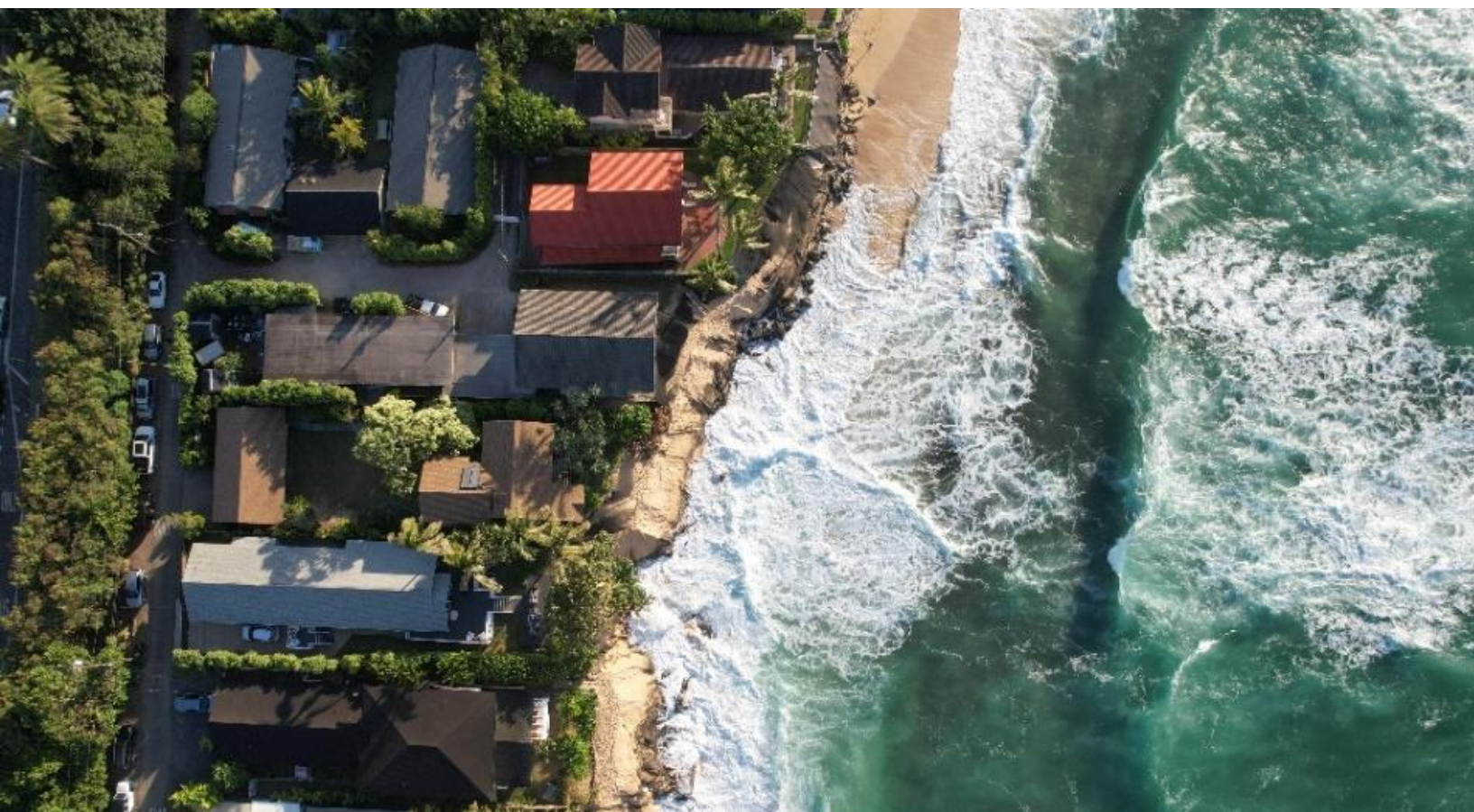
- > The complex jurisdictional issues and regulatory challenges posed by a dynamic shoreline
- > The importance of preserving and restoring sandy beaches as a public trust resource
- > The State's inchoate interest in areas landward of the shoreline and future submerged lands
- > The need for timely, transparent, and coordinated solutions where eroding shorelines threaten existing development
- > Restrictions on private shoreline hardening in areas with sandy beaches means that these areas will likely require eventual retreat of existing development as the shoreline moves inland

The proposed BRP focuses on the preservation and restoration of sandy beaches through proactive management of shoreline resources and adaptation of adjacent development. Such a program combining proactive coastal management with the adaptation of development has been envisioned for Hawai'i at least as far back as the early 1990s (Hwang & Fletcher, 1992).

The program is designed for inherent flexibility to allow adaptation measures to be customized according to the characteristics of each place, with the recognition that beach conditions and processes vary throughout Hawai'i, as will the response of each sandy shoreline to different kinds of adaptation. In some areas, the backshore dune may be substantial enough that moving development out of the way will allow the beach to naturally migrate inland, keeping the volume of sand relatively intact in the near- to mid-term. In others, the inland substrate may be hard and impermeable, requiring a different set of strategies to maintain the sandy beach.

In Hawai'i, sand movement is generally described within the context of littoral cells, a self-contained unit of sand found between two

Beach loss from coastal erosion poses risks to development on O'ahu's North Shore, September 2024 (Photo Credit: Rob Walker/Integral Consulting)



rocky headlands or other physical or process-defined boundaries (University of Hawai'i Sea Grant College Program, 2022). However, for the purposes of planning, policy, and regulation, there is no planning framework in place that adequately encompasses localized coastal geomorphological processes. Therefore, the proposed program proposes the designation of Beach Resilience Planning Areas (BRPAs) in regions with eroding sandy beaches that have been identified as priority areas for adaptation. BRPAs would be subject to:

- > Area-specific study and adaptation planning
- > Community engagement and education
- > Development and monitoring of adaptation pathways
- > Strengthened regulations and enforcement
- > Funding mechanisms for beach management and adaptation
- > Options and incentives for removal or relocation of development
- > Beach management and restoration

While the methodology to designate BRPAs is outside the scope of this project, it should be based on defined criteria including physical characteristics, vulnerabilities, and other ecological, social, cultural, and economic factors. There are recent and ongoing projects that could point to potential methods for defining BRPAs. These include the statewide Regional Shoreline Management (RSM) Scoping Study (OPSD) and the forthcoming North Shore Beach Management Plan (UH Sea Grant).

A central goal of the BRP is to provide a transparent process for adapting development in coastal areas to impending impacts from SLR, which include accelerated erosion, worsening storms, and decreased capacity to deal with coastal hazards. A transparent process would help property owners, government, and the general public understand the future options for these areas and engage in planning and visioning for how to adapt their communities.

2.2 PROGRAM ELEMENTS

The proposed Beach Resilience Program (BRP) entails the following elements:

ESTABLISHING POLICY	CLARIFYING JURISDICTION
The proposed BRP would be enacted through establishing overarching policy within HRS Chapter §205A or other applicable regulations to enable the program and establish or expand authority within the appropriate agencies.	The proposed BRP provides several options for clarifying jurisdictional issues along eroding sandy beaches to enable coordinated, consistent, and proactive planning, regulation, and enforcement.
ESTABLISHING A PLANNING FRAMEWORK	
The BRP proposes a planning framework for eroding sandy beach areas that includes designating Beach Resilience Planning Areas (BRPAs) in priority locations and conducting holistic, location-specific planning to identify adaptation strategies and develop adaptation pathways that can be implemented over time. Adaptation pathways provide a phased adaptation approach based on specific thresholds, triggers, and sequencing of actions. Adaptation pathways are developed through a combination of scientific study and technical analysis as well as community input and traditional ecological knowledge.	

STRENGTHENING REGULATIONS

A regulatory program specific to BRPAs and based on identified adaptation pathways and triggers is proposed to facilitate adaptation of shorelines and development over time. Areas are also identified where existing regulations can be strengthened to ensure proactive management of eroding shorelines.

ESTABLISHING FUNDING SOURCES AND INCENTIVE PROGRAMS

Potential funding sources are identified to establish and sustain the BRP over time. Financial programs and incentives for relocation of development in BRPAs are also discussed.

DEVELOPING LAND MANAGEMENT OPTIONS

The BRP identifies several possible land-based mechanisms for enabling the relocation or removal of development from BRPAs and facilitating the restoration of beaches and shoreline environments.

COMMUNITY ENGAGEMENT AND EDUCATION

The BRP must be implemented with community support and involvement. The program as proposed reflects the input of diverse stakeholders from both the private and public sector, however implementing the program will require building support for substantial policy changes and funding commitments. This can only be accomplished through participation, input, and buy-in from the greater community. In addition, education and engagement of property owners in BRPAs will be critical to communicating risks and options to inform decision making.

BEACH MANAGEMENT AND RESTORATION

The goal of the BRP is to ensure public health and safety while maintaining public access to beaches and other public trust resources. Proactive beach management and restoration is integral to this vision. The BRP suggests partnerships and entities that could facilitate proactive beach management and restoration as part of the implementation of BRPA adaptation pathways.

2.3 LEGAL BASIS

Successful implementation of the BRP will require legal support that is not only sufficient to overcome any legal challenges to the program, but is also aligned with fundamental legal principles in Hawai'i that are equal to the task of addressing the challenges and opportunities resulting from SLR. It will be necessary to clarify the legal basis for the BRP accordingly.

The "legal basis" refers to sources of law that may be expected to support establishment and implementation of the BRP, or conversely may support legal challenges to the program. These sources of law include the key provisions from the U.S. and Hawai'i constitutions, as well as Hawai'i state law statutory provisions and administrative rules that implement those statutes. They may refer to law from the Kingdom of Hawai'i, which continues to be recognized in Hawai'i jurisprudence. It also includes relevant reported judicial decisions or case law from federal and state courts outside of Hawai'i, as well as Hawai'i circuit and appellate court decisions. The following provides additional background regarding the legal basis for the BRP.

First, it should be emphasized that the legal basis for the BRP will be definitive or authoritative according to the degree of specificity of the BRP. The BRP is offered as an initial proposal which will require further review and development and is not final or fully developed at this time. The legal basis provides an assessment of legal issues that is correspondingly subject to further refinement as the BRP elements evolve and are implemented.

Second, the legal basis for the BRP is supported by and draws from the Legal Assessment (Appendix B) and this report's recommendations. The Legal Assessment was completed prior to development of the BRP and provides more detailed and thorough support for the BRP (and is incorporated by reference, to the extent it is relevant). Similarly, this report includes individual recommendations, including a recommendation establishing the policy basis for

the program (Recommendation #1). The legal basis is founded in fundamental authority and responsibility the State of Hawai'i has towards the public trust, public trust lands, and customary practice together with acknowledgement of how private property rights are analyzed and incorporated. The recommendation contains further discussion and analysis which also supports and describes the legal basis for the BRP. Each individual recommendation also includes a brief legal analysis discussion which further confirms the legal basis for the BRP. In depth discussion of the legal issues, potential claims, and areas of open law can be found in the Appendix B: Legal Assessment.

Third, the legal basis for the BRP may also be further developed as the BRP elements themselves are further refined. As described elsewhere in this report, the elements of the BRP include establishing policy, clarifying jurisdiction, strengthening regulations, establishing a planning framework, establishing funding sources and incentive programs, developing land management options, community engagement and education, and beach management and restoration. To the extent the BRP is adopted and further developed, the legal basis for each of these elements can expect to be further articulated and established.

Finally, the legal basis for the BRP is also expected to be further developed and refined through future legal processes on a fact-specific and case-by-case basis. Examples include review of BRP enabling legislation through the legislative process; amendments to HRS Chapter 205A, also through the legislative process; litigation of key aspects of the BRP through potential lawsuits brought by landowners, government agencies and other stakeholders in federal and state court; and administrative trials or contested case proceedings before the State of Hawai'i Board of Land and Natural Resources, county planning commissions and county councils, and other government agencies.

2.3.1 The BRP Is Generally Expected to Withstand Takings Challenges

An important conclusion of this report is that the legal basis for the BRP properly focuses on the strengths and opportunities presented by the public trust doctrine and TEK, rather than legal challenges to the BRP based on takings claims. While the latter is meaningfully represented and evaluated, the former is rooted in all areas of law that governs land management and would likely have a central role in legal discussion of this recommendation. This is consistent with the rationale in support of the BRP of focusing on benefits to the public from increased beach access, greater opportunities for engagement with Native Hawaiian traditional and customary practices, mitigation and reduction of harm to natural resources, as well as the protection of the environment and public health and safety. This forward-looking approach to securing public benefits through SLR adaptation is intended to reinforce alignment with relevant sources of law.

First, although this report puts forward that takings claims are unlikely to create a major impediment to the BRP and related efforts, takings claims can be expected to be brought – to the extent the BRP relies on measures that are not purely voluntary – and thus defenses to takings claims should be considered in evaluating the BRP. To further illustrate this point, the development of this report included the convening of a Legal Focus Group which gathered input from a select group of legal practitioners working in areas of law relevant to managed retreat and the BRP. In discussing takings claims, it was suggested that such claims may, in certain instances, be a ‘red herring,’ i.e., may not necessarily be the proper focus of concern with regard to legal challenges to managed retreat programs, and this report broadly shares that general view. Although takings claims may not present a strong legal barrier as some may express, such claims continue to merit scrutiny as SLR impacts to private property continue to increase in frequency.

Second, and as relevant background to evaluating potential takings claims regarding

BRP elements, understanding the underpinnings and legal analysis for takings law is critical in giving proper weight to these claims. Under the U.S. and Hawai'i Constitutions, the government must compensate private property owners for unpermitted “takings” of their properties pursuant to the “Takings Clause” of the Fifth Amendment to the U.S. Constitution, which states that property shall not “be taken for public use, without just compensation” (U.S. Const. amend. V). The Hawai'i State Constitution similarly provides that “[p]rivate property shall not be taken or damaged for public use without just compensation” (Haw. Const. art. I §20).

With regard to the BRP, it should be emphasized that the takings clause does not prohibit government from taking private property; rather, it requires that property owners be compensated for the value of the property taken, when there is in fact a taking. According to the U.S. Supreme Court, the takings clause “was designed to bar government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole” (*Armstrong v. United States*, 1960). The threat of required compensation, whether a taking claim in fact or not, may thwart or delay government action including the implementation of managed retreat strategies.

Third, the BRP elements generally do not rely on the government exercise of eminent domain power and thus the legal concern would be around complete or partial regulatory takings (as discussed below), rather than condemnation of private property. In theory, managed retreat strategies may involve the acquisition of shoreline properties impacted by coastal hazards or otherwise suitable to be included in the implementation of managed retreat strategies, especially when regional planning is seeking to create an area of access rather than a parcel-based approach. This could be done by the government based eminent domain statutory law and implemented through its powers of condemnation. In such instances, private property owners may file inverse condemnation actions seeking compensation from the government. The first analysis is to determine

whether such condemnation and taking of a pre-existing legal right has actually occurred. If it has, a key issue in such inverse condemnation actions would be whether the government has identified a sufficient public purpose to justify the condemnation (*Kelo v. City of New London*, 2005; *Berman v. Parker*, 1954; *Hawai'i Housing Authority v. Midkiff*, 1984). Another factor is whether the government has offered just compensation to the private property owner (*City and County of Honolulu v. Market Place, Ltd.*, 1973).

Fourth, separate and apart from inverse condemnation claims, BRP elements may be subject to legal challenges based on regulatory takings claims that the BRP reduces allowable uses, diminishes private property values, or unfairly requires the owner to provide a public benefit. As the U.S. Supreme Court recognized long ago, "government hardly could go on if to some extent values incident to property could not be diminished without paying for every such change in the general law..." At the same time, however, "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking" (*Penn Central Transportation Co. v. New York City*, 1978).

Generally, government is able to pass laws and regulatory regimes without threat of a legal taking. The U.S. Supreme Court has developed several tests to determine when a regulation moves beyond and becomes a regulatory taking (*Lingle v. Chevron*, 2005). Most relevant are the "total loss of all beneficial use" test set forth in the Court's seminal *Lucas v. South Carolina Coastal Council* (1992) decision, and the three-factor test set forth in *Penn Central*. It is also noted that any regulatory takings claims regarding BRP elements would be addressed on fact-specific and case-by-case basis; as noted by the U.S. Supreme Court, "we have frequently observed that whether a particular restriction will be rendered invalid by the government's failure to pay for any losses proximately caused by it depends largely upon the particular circumstances of that case" (*Penn Central Transportation Co. v. New York City*, 1978).

Fifth, regulatory takings claims based on the *Lucas* total loss test are unlikely to impede implementation of the BRP elements. In *Lucas*, the South Carolina legislature enacted a Beachfront Management Act which prevented plaintiff Lucas from erecting any permanent habitable structures on two residential oceanfront lots. Lucas challenged the state law to the U.S. Supreme Court, which held that an action that denied "all economically beneficial or productive use of the land" was a "categorical" taking that requires compensation to the landowner. As a practical matter, regulatory decisions rarely leave property deprived of all economically beneficial use and therefore few regulatory actions by government officials violate the *Lucas* "total loss" takings test.

In addition, the *Lucas* "total loss" does not apply if the regulated activity is already prohibited or constrained by "background principles" of the state's common law regarding property and nuisance – which for purposes of this assessment of the BRP would most notably include the Hawai'i public trust doctrine. Under the public trust doctrine, as set forth in Article VI, section 1 of the Hawai'i State Constitution, "all public natural resources are held in trust by the State for the benefit of the people." In Hawai'i, beaches are public trust resources (*County of Hawai'i v. Sotomura*, 1973). The public trust doctrine therefore encompasses loss of beaches and harm to beach systems from coastal development. As mentioned above, under *Lucas* there is no taking where "background principles of nuisance and property law," such as the public trust doctrine, prohibit the uses that the state regulates. In such instances, no taking may be found even if the regulation leaves a property with no economically beneficial use because the regulation or restriction "inheres in the title itself, [and] in the restrictions that background principles of the State's law of property and nuisance already place upon land ownership" (*Lucas v. South Carolina Coastal Council*, 1992).

The Attorney General Opinion Letter No. 17-01 issued by the Hawai'i Attorney General's office on the issue of "Shoreline Encroaching Easements" reinforces this understanding of

potential future implementations of BRP elements that could trigger takings claims. Opinion Letter No. 17-01 concluded that “under Hawai’i law, the State holds an inchoate (i.e., partial) right to land that may pass to it by erosion or sea level rise. This is an inherent aspect of the State’s ownership of land, already owned by the State (and by the Territory before it). Ripening of that inchoate right is not ‘acquiring’ or ‘acquisition’ of real property...” and thus not a taking of a pre-existing property ownership right. Importantly, Opinion Letter No. 17-01 also concluded that there are no “viable federal [takings] claims” associated with shoreline erosion because “the possibility that private littoral land may pass into public ownership is an inherent part of the State’s ownership of land” (*County of Hawai’i v. Sotomura*, 1973). Relying on and quoting *Lucas*, the Attorney General found that there is no viable federal taking claim because “the logically antecedent inquiry into the nature of the owner’s estate shows that the proscribed use interests were not part of his title to begin with... thus there is no taking.”

Sixth, rather than the *Lucas* total loss test, legal challenges are more likely to be based on regulatory takings claims evaluated under the three-part *Penn Central* test which focuses on the economic impact of the regulation, the character of the government action, and the landowner’s reasonable, investment-backed expectations. As noted above, the BRP must be adopted, further developed and then applied on a fact-specific and case-by-case basis. Thus, legal conclusions regarding application of the three *Penn Central* factors to the BRP should be viewed in that context.

Seventh, takings claims asserting the economic impact of the regulation is impermissibly harmful appears unlikely to create a major impediment to adoption and implementation of the BRP elements. A relatively severe economic impact is necessary for a taking to be found. The court must weigh the public interest, which includes but is not limited to the health, safety and general welfare of the public, in the government action against the interest of the

private owner (*Miller v. Schoene*, 1928). A reduction in the value of the regulated property is insufficient, standing alone, to establish a compensable regulatory taking (*K&K Construction, Inc. v. Dept. of Environmental Quality*, 2005).

Eighth, for similar reasons the BRP appears unlikely to fail under the second *Penn Central* factor. Generally, there is a hierarchy of government purposes, ranging from protecting public health and safety to promoting scenic views and aesthetics. As the U.S. Supreme Court has declared, “[i]f there is a hierarchy of interests the police power serves – and both logic and prior cases suggest there is – then the preservation of life must rank at the top.” Preventing loss of life and property due to flooding carries more weight than protecting aesthetic values (*First English v. Los Angeles*, 1989). Protection of the public interest is central to the BRP. The BRP elements focus not only on reducing threats to public health and safety from coastal hazards exacerbated by sea level rise, storm surge and erosion, but also on environmental protection and the preservation of public access and use of sandy beaches – including the practice of traditional and customary rights by Native Hawaiians.

Finally, the third factor regarding reasonable investment-backed expectations is also not expected to become a major impediment to future implementation of the BRP elements. The reasonable investment-backed expectations factor generally relates to whether an owner knew or should have known that laws or regulations would affect the property’s value at the time the owner acquired the property. Expectations are “investment-backed” if the property owner has invested financial and other resources in property development plans. Importantly, the Hawai’i Legislature has amended HRS Chapter 508D requiring realtors to disclose SLR projections in real estate sales, providing owners with constructive notice which may impact claims based on their “reasonable investment-backed expectations.” In an illustrative case, a Hawai’i landowner was allowed to construct only a triangle-shaped

house on a shoreline parcel due to the subdivision code and county setbacks. The Hawai'i Supreme Court denied the appeal primarily because there was ample opportunity to construct a structure on the unimpacted portion of the property (*Brescia v. County Planning Commission*, 2007).

It should be noted, however, that in circumstances where a landowner has acted on certain expectations that were later impacted or negated by subsequent government regulatory action, the owner may be able to assert vested rights to support a claim of government interference with reasonable investment-backed expectations. Equitable estoppel regarding the reliability of government representations or approvals may also work to delegitimize the reasonableness of subsequent government action.

2.3.2 The Public Trust Doctrine and TEK Provide Legal Support for the BRP

Like the public trust doctrine discussed above, custom and TEK may similarly provide a defense against regulatory takings claims arising in response to future implementation of the BRP.

First, the state has an affirmative duty to preserve and protect traditional and customary Native Hawaiian rights under Article XII Section 7 of the Hawai'i Constitution and a series of cases culminating in *Ka Pa'akai o ka 'Āina v. Land Use Commission* (2000). Increasing shoreline erosion from sea level rise may lead to increased acknowledgment that legal land boundaries on the shoreline, such as the high water mark, are subject to change over time (*In re Application of Ashford*, 1968; *County of Hawai'i v. Sotomura*, 1973). As per Opinion Letter No. 17-01, discussed above, lands that are submerged due to sea level rise become State public trust lands. This effectively extends the affirmative duty of the state to preserve traditional and customary rights and TEK associated within those submerged lands.

Second, under *Ka Pa'akai*, the state must demonstrate compliance with a four-part test which reinforces the protection of traditional

and customary rights in the context of the BRP and similar managed retreat strategies. Under this framework, the state must identify the scope of "valued cultural, historical, or natural resources" including the extent to which customs are exercised in the area; evaluate the proposed action's potential impacts; assess alternatives; and impose mitigation requirements to reasonably protect Native Hawaiian rights. To demonstrate compliance with the requirements of this four-part test, it is necessary to consult with impacted communities, community resources, key leaders, and experts in TEK – especially the Native Hawaiian community which may serve as a valuable, and in many cases, unbroken lineage of critical information that lends to the analysis of all four Ka Pa'akai factors. Some have suggested that a reverse Ka Pa'akai analysis might go to the TEK experts to identify opportunities for enriching cultural and ecological space through managed retreat strategies for identifying areas ripe for future visioning and planning processes. This could serve as an opportunity to envision public trust spaces to meet the needs of communities, stakeholders, and residents. As one stakeholder acknowledged: "*Kanaloa is rising. How will we meet him?*"

Third, a separate but equally important factor in engaging communities is the potential for 'iwi kūpuna, Native Hawaiian burial remains, to be uncovered in the retreat process. This further underscores and is aligned with the expanded protection of natural and cultural resources promoted by the proposed BRP. Shorelines and sand dunes were regular sites for burials. The federal government and the State of Hawai'i have explicit procedures and recommendations in place for activities that may disturb or uncover burials that engage community in the Native American Graves Protection and Repatriation Act, HRS Chapter 6E and HAR §13-300.

Fourth, the public trust doctrine frames the State of Hawai'i's affirmative duty to protect public resources such as the beaches and dune systems, ocean resources, and rights holders' access – all consistent with the purpose and intent of the BRP. The Hawai'i Constitution

specifically obligates the State of Hawai'i to "conserve and protect Hawai'i's natural beauty and all natural resources, including land, water, air, minerals and energy sources" (Hawai'i Constitution §11.1) and to "protect, control and regulate the use of Hawai'i's water resources for the benefit of its people" (Hawai'i Constitution §11.7). Under the precautionary principle, the state must act in a proactive manner to prevent environmental degradation when there are present or potential threats of serious damage to natural resources, even in the absence of full scientific certainty (*Waiahole Ditch Combined Case*, 2004).

Fifth, TEK is similarly foundational and interrelated with the development and advancement of the public trust doctrine in the context of managed retreat strategies such as the BRP. For example, potential legal claims may arise from the impacts that failure to mitigate the impacts of SLR may have on the exercise of traditional and customary rights. Similarly, laws related to and supportive of restoring or enhancing public access to and use of shoreline areas and coastal resources as an outcome or byproduct of managed retreat may emerge. TEK reinforces the public trust doctrine by framing resource management as a shared responsibility rooted in both legal and cultural precedents. Hawaiian names, mele, and mo'olelo around places provide important insights into traditional uses, ecological features, and cultural practices important to understand, to understand a place. Generational knowledge of sediment transport, seasonal wave shifts, and nearshore fisheries has long informed sustainable management practices, reinforcing the necessity of preventing artificial barriers such as seawalls or private encroachments that disrupt natural coastal processes. TEK also offers insight into how communities have historically adapted to shoreline changes. Coastal fishery and shoreline vegetation management demonstrate the symbiotic relationship between Native Hawaiian communities and coastal ecosystems. Promoting sustainable fish harvesting while maintaining water quality and coastal resilience illustrates how cultural practices can fulfill public trust obligations. Shoreline vegetation management

reinforces TEK's role in stabilizing dunes and preventing erosion. Native species not only protect shorelines but also support habitats for species such as nesting seabirds and endemic insects. TEK-informed restoration projects have been shown to enhance biodiversity and mitigate erosion risks. The longstanding recognition of Native Hawaiian practices, codified in Article XII, Section 7 of the Hawai'i Constitution and clarified through cases discussed in the following section, affirms that access to natural resources is more than a public right; it is a legally protected, historically embedded necessity for the continuation of subsistence and cultural traditions. As the coastline shifts due to sea level rise and increasing erosion, the role of custom and TEK in shaping and defending shoreline access laws becomes even more pronounced.

Finally, TEK-related case law may ultimately support future implementation of the BRP. For example, in *Public Access Shoreline Hawai'i v. County of Hawai'i Planning Commission* (1995) the Hawai'i Supreme Court held that the state must protect the reasonable exercise of traditional and customary rights, in compliance with Article XII, section 7 of the Hawai'i Constitution. Similarly, in *Kalipi v. Hawaiian Trust Co*, the Court recognized the existence of traditional and customary rights on private lands. Thus, T&C rights are firmly established and protected under state law, and within that framework the state has an affirmative duty to protect those rights. Traditional and customary practices are inherently tied to access—whether for nearshore fishing, gathering limu, or religious ceremonies. The courts have affirmed that these practices require not only the right to access, but the right to engage in meaningful interaction with shoreline resources. This understanding strengthens the public trust doctrine by underscoring that the coastline is not just a place of recreation, but a living space where knowledge systems and cultural identities are maintained.

In summary, TEK is foundational and interrelated with the exercise of traditional and customary practices, and therefore with the application of

the public trust doctrine in the context of managed retreat strategies. It is important to note that TEK may support BRP, including taking a place-based approach that respects existing stewardship and responsibilities to land, which may be more complex in some areas and may inform managed retreat as more or less appropriate depending upon various factors. Planning efforts must consult communities and give equitable weight to consultation with Native Hawaiian communities that perpetuate TEK in place-based practices. As agencies evolve in their understanding around this knowledge, building capacity will be a critical component of future success. Hiring internally those with TEK, relationships with community practitioners, and knowledge for how to navigate legal and cultural skills, will all be critical. As that capacity is being built, community-based consultants, experts, and partners will be important partners to engage. A deep understanding of indigenous-based and indigenous-led strategies for coastal area management and preservation is required to protect access to and natural resources within these areas, which are maintained in equilibrium by TEK. This may ultimately lend support to any legal challenges that may arise in response to future implementation of the BRP.

2.3.3 HRS Chapter 205A Provides Statutory Support for the BRP

Although this report proposes amendments to HRS Chapter 205A to strengthen public trust protections of sandy beaches and dunes consistent with the BRP, even without such amendments HRS Chapter 205A provides legal support for the BRP.

First, the State of Hawai'i Coastal Zone Management Program (HICZMP) was established in 1977 and codified as HRS Chapter 205A. The purpose of the HICZMP is to "provide for the effective management, beneficial use, protection, and development of the coastal zone," which is aligned with the intention of the BRP. In Hawai'i, the coastal zone encompasses all land areas and extends three miles offshore to the edge of the state's jurisdiction (HRS §205A-1). The HICZMP provides a framework for

state action and guidance to the counties through the Special Management Area (SMA) and shoreline setback regime. The HICZMP is also responsible for protecting, creating, and enhancing public access to the coast (HRS §205A-2).

Second, the HICZMP objectives and policies set forth in HRS 205A-2 outline a comprehensive policy direction for coastal zone management that emphasizes protection and restoration of coastal ecosystems for public benefit, consistent with the purpose of the BRP. These include:

- > Controls on development in areas subject to coastal hazards through regulation and enforcement, planning, and zoning;
- > Communicating risks and impacts of coastal hazards and development to the public and facilitating public participation in planning and review of development proposals;
- > Directing economic uses to appropriate designated areas, and designing them to minimize exposure to coastal hazards and adverse impacts in the coastal zone;
- > Locating new structures inland from shoreline setbacks;
- > Prohibiting construction of private shoreline hardening structures and minimizing construction of public shoreline hardening structures at sites with sandy beaches and where hardening structures interfere with existing recreational and waterline activities; and
- > Prohibiting private property owners from creating a public nuisance through cultivating, inducing, or allowing the owners' vegetation to encroach upon a beach transit corridor.

Finally, currently absent from the HRS Chapter 205A objectives and policies is any specific provision for managed retreat as proposed in the BRP. Given the acceleration of coastal erosion and sea level rise, further policy direction is needed to facilitate managed retreat. This includes identifying where retreat may be appropriate and how government intervention will occur, particularly as proposed in the BRP.

2.3.4 Key Legislation Also Supports the BRP

Through progressive legislation, the State of Hawai'i has established clear policy recognizing the threat of climate change and codifying a statewide commitment to mitigate and adapt to it. This policy is broadly supportive of the elements of the BRP.

First, in 2012 the State Legislature expanded the focus of climate change policy to incorporate adaptation with the passage of Act 286, which mandated the creation of climate change adaptation priority guidance and its incorporation into the statewide planning system. Act 286 was codified into state law as HRS §226-109, which amended the State Planning Act and requires the consideration of climate change policy in all state and county land use, capital improvement, and programmatic decisions.

Second, Act 83 in 2014 (the Hawai'i Climate Adaptation Initiative Act) established an Interagency Climate Adaptation Committee (ICAC, which later became the statewide Climate Change Mitigation and Adaptation Commission) and called for the preparation of a Hawai'i Sea Level Rise Vulnerability and Adaptation Report, which was completed in 2017 and updated in 2022. Act 83 further authorized the OPSD to coordinate development of statewide climate adaptation planning and to use the SLR Vulnerability and Adaptation Report as a framework to address the effects of climate change.

Third, Act 16 in 2020 amended coastal zone management laws to further protect beaches against impacts of sea level rise and coastal erosion and reduce residential exposure to coastal hazards. The Act effectuated changes to HRS Chapter 205A to increase the minimum shoreline setback to prohibit structures or activities within the shoreline area for shoreline processes, public access and shoreline open space; prohibit private shoreline hardening structures, including seawalls and revetments where sandy beaches are present; and add permitting requirements for residential

development exposed to coastal hazards such as waves, storm surges, high tide, or shoreline erosion.

Fourth, Act 179 passed in 2021 requires all property sellers to disclose whether their property lies within the 3.2 ft. sea level rise exposure area (SLR-XA).

Fifth, Act 208, passed in 2022, expanded the purposes for which counties may create Special Improvement Districts to include climate change and SLR adaptation.

Sixth, Act 223 in 2022 expanded the authority of the counties to transfer development rights to address areas at risk of sea level rise, coastal erosion, storm surge, or flooding associated with climate change.

Finally, Act 231 in 2023 requires disclosure of all existing permitted and unpermitted erosion control structures on the parcel in real estate transactions when residential real property is within anticipated inundation areas.

2.4 CONSIDERATIONS FOR SUCCESS

The implementation of the BRP represents a significant commitment to changing existing policies, governance structures, and funding priorities. A number of key factors will be critical to the program's success.



LEGAL CHALLENGES

Managed retreat strategies have raised questions regarding when the requirement under the U.S. and Hawai'i Constitutions is triggered requiring that the government compensate private property owners for "takings" of their properties. However, Hawai'i and U.S. jurisprudence setting a high bar for regulatory takings claims, together with Hawai'i's robust public trust doctrine, support managed retreat in the context of potential takings claims that indicate fears far outweigh reality. This is particularly the case where regulations are rooted in public health and safety or options for retreat are voluntary. There is the potential for test cases to set additional standards for untested areas going forward. See the Legal Basis section above for further discussion.



FUNDING

Implementing the BRP will require the dedication of significant funding and staff to provide for proactive planning, monitoring, and enforcement, some of which may require expanding the authority of existing agencies or creating new ones. External funding sources alone will not be sufficient to support what is needed (a high level estimate is \$100M per year), though some potential sources of such funding are identified herein. Rather, it will require a bold and sustained commitment to allocating resources from general funds to build agency capacity, while also carving out a portion of tax revenues to establish a dedicated funding source.



POLITICAL WILL

Implementing the BRP will require sustained support from the state legislature and the county councils. This will require working with lawmakers to prioritize these efforts and conduct widespread education and engagement around the urgent need and long-term benefits of coastal adaptation. The BRP's focus on sandy beaches and areas that are imminently threatened by erosion will help to elevate this issue as a legislative priority.



INTEGRATION OF TEK

The implications of integrating TEK into evaluating options for coastal adaptation mean considering systemic transformations in resource governance and ecological restoration. TEK-informed economic models emphasize reciprocity, sustainability, and resilience, and disrupting extractive paradigms in favor of regenerative economies. These models honor traditional practices, such as fishpond restoration and intertidal zone management, as economic processes that contribute to coastal resilience, food security, biodiversity conservation, and cultural revitalization. By aligning economic with ecological imperatives, TEK frameworks construct a paradigm of resilience that prioritizes long-term sustainability over short-term gains, ensuring that coastal adaptation strategies, including retreat, are both economically viable and culturally grounded.



EQUITY

Social equity should be a fundamental consideration in the process of identifying Beach Resilience Planning Areas, developing adaptation strategies and pathways, designing relocation assistance and incentives, and implementing the program outcomes. Disenfranchised and marginalized communities often have barriers to accessing information and lack the capacity for civic participation, which can result in underrepresentation in planning and decision-making processes. In the BRP context, vulnerabilities may prevent some beachfront owners from being able to participate in proactive adaptation, while wealthier landowners can afford to take action. Intentional inclusion and consideration of vulnerable populations in considerations around climate adaptation can build the resilience and adaptive capacity of communities as a whole.



COMMUNITY ENGAGEMENT AND VISIONING

Robust public participation and engagement throughout the process of establishing and implementing the BRP will be critical to raise awareness of risks, educate the public, and engage a wide range of stakeholders in participatory visioning and planning. Stakeholder engagement should seek and incorporate diverse perspectives, including those of coastal property owners as well as shoreline users, vulnerable populations, community organizations, shoreline dependent business interests, agencies, and the general public.



MARKET FACTORS

Market signals such as property values and insurance costs impact the process of retreating developed coastlines. If market signals are distorted to inflate coastal property values and downplay risks, programs aimed at voluntary relocation are likely to be less effective and more costly. Market factors can also be unpredictable and disruptive, changing the landscape for coastal adaptation and retreat.



COMPETING POLICY GOALS

Retreat can often be viewed as competing with other critical priorities such as affordable housing and preservation of agricultural lands and open space. However, there are significant opportunities to strategically align retreat efforts with these and other policy priorities. For example, retreat efforts could contribute to addressing long-term housing needs through land use shifts to develop and intensify residential housing in safer areas. Policies to enforce against illegal vacation rentals can also be furthered by managed retreat, as many shoreline properties are second homes that are used as short-term rentals, which has inflated property values and impacted affordability in coastal communities.



3 . IMPLEMENTING RECOMMENDATIONS

The Beach Resilience Program recommendations are intended to provide a transparent, equitable process by which development along eroding sandy beaches can be adapted over time and ultimately be removed or relocated in a way that prioritizes public safety, upholds the state's obligation to the public trust, and facilitates beach protection and restoration.

The recommendations are organized into six topic areas with the following objectives:

POLICY	JURISDICTION
Strengthen the legal basis for the program and enable implementation	Assign agency authority and responsibility for the program
PLANNING	REGULATORY
Guide area-specific adaptation planning in Beach Resilience Planning Areas and alignment with land use plans and designations	Align regulations in eroding sandy beaches with public trust priorities and long-term adaptation needs
FUNDING	LAND MANAGEMENT
Establish dedicated, sustainable funding sources for adaptation of eroding sandy beaches and identify financial incentives for coastal property owners	Provide solutions for transfer of land in eroding sandy beach areas, relocation of displaced residents, and management and restoration of beaches

There are 20 recommendations in total, listed in Table 1 along with the entities that would lead and support implementation. Each recommendation includes a description of the recommendation, a discussion of associated considerations, identification of key implementation steps, and analysis of legal and financial considerations. Also included throughout are text boxes highlighting examples of similar efforts or programs in Hawai'i and elsewhere.

Some overlap exists between recommendations in different categories and this overlap is noted where applicable in the recommendation description. It should also be noted that not all the recommendations are interdependent. In some cases, recommendations represent different approaches that can be considered to achieve the desired objective. Others require or would benefit from being linked to the implementation of other recommendations. These relationships between recommendations and the core elements of the proposed program are depicted in Figure 4.

FIGURE 4: RECOMMENDATIONS AND KEY PROGRAM ELEMENTS

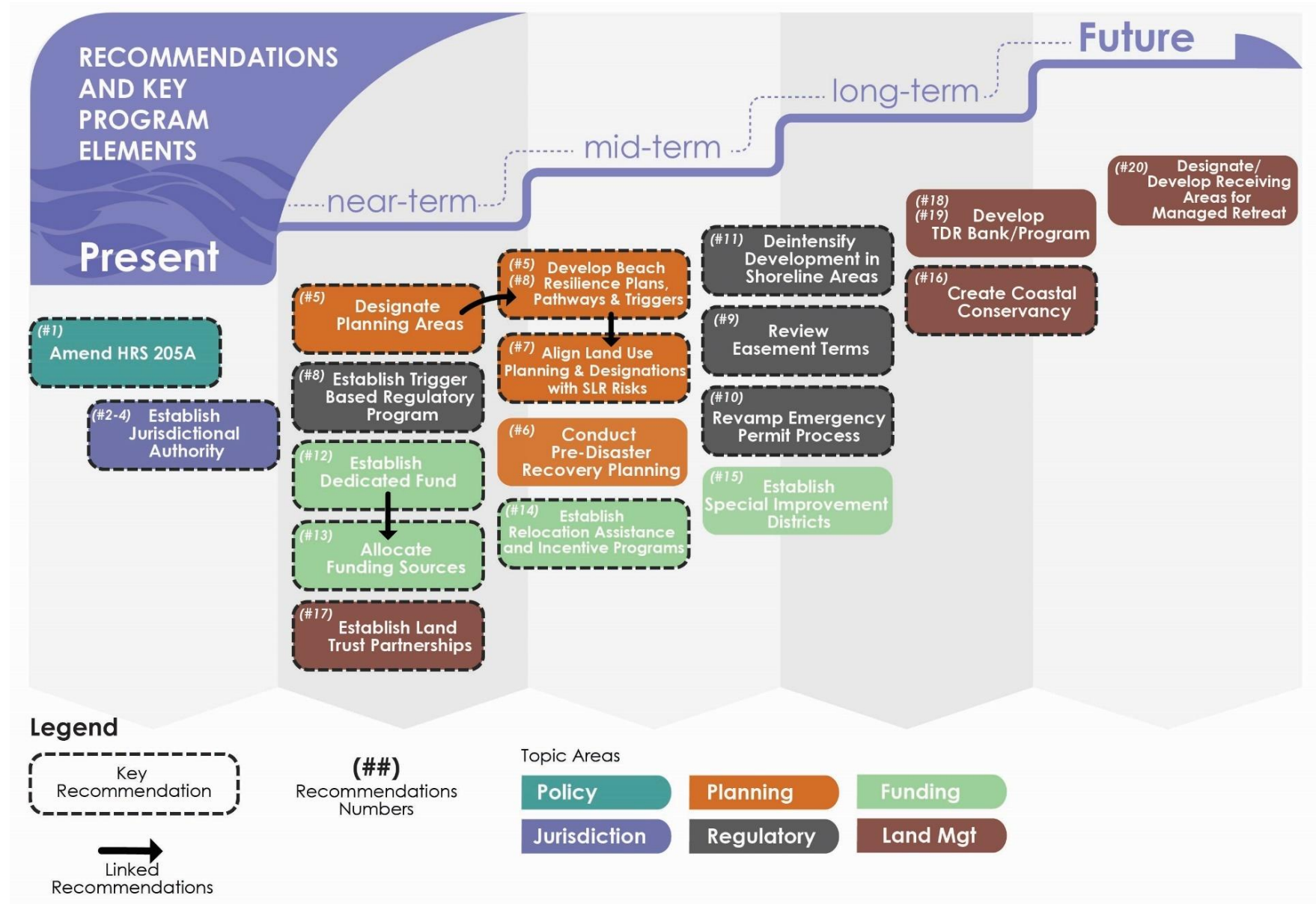


TABLE 1: RECOMMENDATIONS AND IMPLEMENTING ENTITIES

	NO.	RECOMMENDATION	IMPLEMENTING ENTITIES
	#1	Amend HRS Chapter 205A to Strengthen Emphasis on Protection of the Public Trust	OPSD ; DLNR OCCL; County Planning Departments
	#2	Improve Interagency Coordination	Hawai'i Climate Change Mitigation and Adaptation Commission ; OPSD HICZMP; DLNR OCCL; County Planning Departments; USACE; NOAA; FEMA; USFWS; DOH; DOT; HIEMA; UH Sea Grant; County Parks Departments; DHHL; HTA
	#3	Establish DLNR as the Beach Resilience Authority Within Beach Resilience Planning Areas	DLNR ; OPSD HICZMP; County Planning and Parks Departments; other State agencies (DOT, DOH, etc.); Federal agencies (NOAA, USACE, USFWS, etc.); Hawai'i Climate Change Mitigation and Adaptation Commission
	#4	Create New Integrated State Coastal Management Authority	OPSD ; County Planning Departments; DLNR OCCL
	#5	Establish a Beach Resilience Planning Framework	OPSD; Hawai'i Climate Change Mitigation and Adaptation Commission ; DLNR OCCL; DLNR; HTA; DOT; County Planning Departments; UH; scientific and technical experts
	#6	Conduct Pre-Disaster Recovery Planning	OPSD ; County Planning Departments and Resiliency Offices; HIEMA; NDPTC; FEMA
	#7	Align State and County Land Use Planning with SLR Risks	County Planning Departments ; OPSD; DLNR OCCL; LUC; BLNR; DLNR; DHHL; State Legislature; Planning Commissions; County Councils
	#8	Develop Trigger-Based Regulatory Program for BRPAs	Beach Resilience Authority as specified by program implementation (Recommendations #2-4); OPSD; DLNR OCCL; County Planning Departments
	#9	Review And Update Shoreline Easement Terms	DLNR Land Division ; County Planning Departments
	#10	Revamp Emergency Shoreline Permits	DLNR OCCL ; County Planning Departments; OPSD
	#11	Address Nonconforming Structures	OPSD; DLNR OCCL ; County Planning Departments

NO.	RECOMMENDATION	IMPLEMENTING ENTITIES
#12	Establish a Beach Resilience Fund	Legislature; OPSD; DLNR OCCL; County Planning Departments
#13	Allocate Transient Accommodations Tax toward a Beach Resilience Fund	Legislature; OPSD; DLNR OCCL; HTA
#14	Establish Voluntary Relocation Assistance and Incentive Programs	Coastal Conservancy (Recommendation #16); County Planning Departments; DLNR OCCL; BLNR; DLNR Land Division; County Councils; Land Trusts
#15	Establish Special Improvement Districts for Coastal Adaptation	County Planning Departments; OPSD CZMP; County Councils; MACZAC; Residents
#16	Establish a State Coastal Conservancy	DLNR OCCL, OPSD; Conservancy NGOs, Land Trusts
#17	Partner with Existing Land Trusts	OPSD; DLNR; Land Trusts
#18	Utilize Transfer of Development Rights (TDR)	County Planning Departments; OPSD; DLNR; Coastal Conservancy; HCDA
#19	Create Development Rights Bank	Beach Resilience Authority as specified by program implementation (Recommendations #2-4) or Coastal Conservancy (Recommendation #16); County Planning Departments; OPSD; OCCL
#20	Designate and Develop Receiving Areas For Managed Retreat	OPSD; HCDA; Legislature; LUC; DLNR; HHFDC; County Planning Departments; Planning Commissions; OCCL

3.1 POLICY

The purpose of this section is to identify recommended policy changes to both strengthen the legal basis for the program and enable the mechanics of its implementation. The primary focus is on amendments to HRS Chapter 205A as the statute enabling Hawai'i's Coastal Zone Management Program. However, additional amendments to HRS 205A and other applicable laws may be needed to enable specific elements of the Beach Resilience Program proposed in this report.

Since the recommendations collectively provide a range of options for implementation rather than a prescriptive program structure, considerations for amending applicable law are discussed under each recommendation following this initial Policy section as appropriate.

Recommendation #1:

Amend HRS Chapter 205A to Strengthen Emphasis on Protection of the Public Trust



This recommendation identifies and discusses potential amendments to Chapter 205A, Hawai'i Revised Statutes, "Coastal Zone Management" ("Chapter 205A"). The purpose of the amendments is to strengthen the policy emphasis in Chapter 205A on explicit protection of sandy beaches and public trust resources in the coastal zone, consistent with the recommendations of this managed retreat project, the intent of existing law including Chapter 205A as amended by Act 16 and the Hawai'i State Constitution, and existing case law. A further purpose of the amendments is to establish statutory law broadly supportive of the proposed Beach Resilience Program. It should be noted that for purposes of this recommendation the potential amendments to Chapter 205A are discussed in concept, with the understanding that certain amendments may provide the basis for specific draft legislation in upcoming legislative sessions.

TIMEFRAME

- Next 1-2 Legislative Cycles

LEAD ENTITY

- OPSD

COORDINATING ENTITIES

- DLNR OCCL;
- County Planning Departments

Description

Adopted in 1977, Chapter 205A is a legal cornerstone in Hawai'i regarding law and policy affecting sandy beaches, the shoreline, and coastal areas throughout the Islands. The CZM Act and Hawai'i's State CZM Law are founded on the public trust doctrine. The statutory provisions and related policy mandates under this law have guided the protection, use, and development of shorelines in Hawai'i for decades. This legal cornerstone is increasingly confronted, however, with challenges arising from climate change impacts, including sea level rise. With these impacts come new challenges such as accelerated coastal erosion that imminently threatens some coastal development, forcing regulatory decisions on how and whether to allow protection of private property, particularly when it comes at the expense of public trust resources that are Constitutionally protected, including beaches and public shoreline access.

Existing case law and recent amendments to HRS Chapter 205A through Act 16 in 2020 strongly support the prioritization of public trust resources in these cases, particularly where sandy beaches exist. However, HRS 205A currently lacks any specific mention of the public trust doctrine or of the need for adaptation, including retreat, in response to climate change impacts, particularly as it relates to the protection of public trust resources, such as sandy beaches. Although Act 16 was a significant advancement, further potential amendments to this foundational statutory law are needed to ensure corresponding shifts in law and policy that are equal to the task of addressing significant climate change impacts - especially given the state's emphasis on protecting beaches as a public trust resource. An example can be drawn from the California Coastal Act, which integrates the public trust doctrine and expresses the state's inchoate interest in coastal lands as the shoreline moves landward (see text box in this section).

Recommended updates to HRS Chapter 205A are presented in the following sections.

General Comments on Amending Chapter 205A

- It is well established that the shoreline area is a public trust resource under Article XI, section 1 of the Hawai'i Constitution, and the protection of shoreline public trust resources should (i) be specifically identified as a general basis for the protection of shoreline resources under Chapter 205A, (ii) be referenced in specific provisions of Chapter 205A as necessary and appropriate, and (iii) be established as a foundational basis for the protection of native Hawaiian traditional and customary rights in the shoreline area. See for example *Akau v. Olohana Corp.*, 65 Haw. 383, 652 P.2d 1130 (1982) (Chapter 205A passed to provide and manage adequate public access to the shore); see also Hawai'i Attorney General Opinion Letter No. 17-01 re Shoreline Encroaching Easements ("Opinion Letter No. 17-01").
- Chapter 205A should be amended to clarify and affirmatively state that lands makai of the shoreline, including sandy beaches and intertidal areas, are owned by the state and protected under the public trust doctrine.
 - Updating Chapter 205A to be in line with the definition in Chapter 171-1 would affirm the existing statute that beach and coastal areas and submerged lands are indeed public land. Chapter 171-1 states "Unencumbered public lands include, but are not limited to, beach and coastal areas, submerged lands, and mountainous nonforest reserve, wildlife, or park areas." Additionally, Chapter 171-2 includes submerged lands and lands accreted after May 20, 2003 in the definition of public lands.
- Act 16 added provisions to Chapter 205A prohibiting private shoreline hardening structures on shorelines with sandy beaches. Chapter 205A should be amended throughout in a manner that reinforces and supports all of the mandates and requirements of Act 16.
- The environmental consequences of shoreline hardening—including habitat loss and disruption of natural sediment flow—underscore the importance of integrating TEK into coastal adaptation, particularly with regard to the constitutional basis for protecting both Native Hawaiian traditional and customary practices and public trust resources. Native Hawaiian customs offer proven methods for sustaining shoreline resilience. Amendments to Chapter 205A that leverage TEK can mitigate ecological degradation while supporting biodiversity and cultural landscapes, fostering a holistic approach to environmental stewardship while codifying the importance of indigenous ecological understanding.

- Cultural and archaeological resources, including potential burial and funerary objects, are often found throughout coastal zones. Engagement with TEK experts within an area, lineal descendants, and those with generational knowledge and stewardship can offer critical insight.

General Comments on Amending Chapter 205A

- Chapter 205A should be amended to require state and county agencies to consider impacts to shoreline public trust resources in their actions. The Hawai'i Water Code includes a Declaration of Policy in HRS 174C which the Hawai'i Supreme Court has held describes a "statutory public trust." See *In re Water Use Permit Applications*, 94 Haw. 97, 9 P.3d 409 (2000); see also *Ching v. Case*, 145 Haw. 148, 449 P.3d 1146 (2019); *In re Maui Elec. Co.*, 141 Haw. 249, 408 P.3d 1 (2017). Although constitutional mandates may be considered as independent from statutory provisions, such a requirement would be consistent with, but more specific than, the general requirement under the public trust doctrine that agencies consider impacts to public trust resources. For example, this requirement could apply to actions of the State of Hawai'i Department of Land and Natural Resources (DLNR) in implementing its duties with regard to Conservation District lands, given that lands makai of the shoreline are zoned as Conservation District lands. As another example, this requirement could apply to agencies designated as accepting agencies for purposes of review and acceptance of environmental review documents for shoreline development projects under Chapter 343, Hawai'i Revised Statutes, "Environmental Impact Statements."

Preamble or General Policy Language

As noted above, this recommendation proposes amendments in concept. In the future, these concepts may be converted to legislative amendments introduced in a bill and the bill will likely include a preamble. Although the preamble would be tailored for the specific amendments proposed in the bill at that time, the following may provide key points for a future preamble:

- The legislature finds that the threat of sea level rise and associated coastal hazards is well documented and already impacting various locations throughout the state. The 2023 National Climate Assessment states that for Hawai'i and the U.S. Affiliated Pacific Islands, climate change, particularly sea level rise will continue to negatively impact the natural and built environment and will harm numerous sectors of the islands' economies. The strategies required to address the emerging threat must consider the physical and social context and require thoughtful, community-engaged, location-based planning and consideration to be most effective.
- The legislature aims to support and safeguard vulnerable communities and to protect and conserve public trust resources, such as sandy beaches and dune systems, as well as public access to them. Sandy beaches and dune systems are invaluable for public use and enjoyment, cultural importance, ecosystem services, and as a natural defense against the impacts of sea level rise and associated coastal hazards.
- The legislature finds that ad hoc emergency responses to coastal hazards are detrimental to the public's long-term interests and that planned adaptation to sea level rise and coastal hazards will better protect communities, development, and public trust resources, such as sandy beaches and dune systems.

Preamble or General Policy Language

- The legislature finds that adaptation to sea level rise and coastal hazards is best achieved via planned adaptation pathways with triggers for successive adaptation measures over time. The legislature further finds that it is in the public interest for the state and county governments to engage in holistic and proactive location-specific adaptation planning which may include the modification of and ultimate relocation of private and public development and infrastructure away from areas that are or will be critically impacted by coastal hazards including coastal erosion and flooding associated with sea level rise, particularly from sandy beach areas with high ecosystem, cultural, and public recreational resource value and to reduce risk to life and property from sea level rise and associated coastal hazards.
- The legislature finds that state common law dictates that as the shoreline migrates inland with sea level rise or coastal erosion, ownership of the land makai of the upper reach of the high wash of the waves directly transfers by force of law to the state for public use, and therefore that the state has a constitutional duty to plan for sea level rise in a way that conserves and protects public trust natural resources for future generations.

Amendments to Specific Provisions

- §205A-1, "Definitions," should be amended to include a definition of the term "Shoreline public trust resources" consistent with Hawai'i Constitution provisions, any applicable statutory provisions and case law. Although Constitutional mandates exist apart from statute, this type of definition would strengthen legal protection of coastal public trust resources in the face of increasing climate impacts.
- §205A-1, "Definitions," should also be amended to include definitions of key adaptation-related terms including "climate adaptation," "sea level rise," "managed retreat," and "resiliency" and other terms necessary to enable and implement the Beach Resilience Program.
- §205A-2, "Coastal zone management program; objectives and policies," should be amended throughout to add new objectives and policies consistent with the objectives of the protection of public trust resources and the need for adaptation, including managed retreat, particularly in areas with sandy beaches.
- Under subsection 9 of section 205A-2, "Beach protection," a range of protective measures are identified, including prohibitions of shoreline hardening structures. This list of measures and objectives should be updated to be consistent with current climate adaptation and sea level rise policies. See Recommendation #10 for suitable examples of temporary shoreline protection.
- Under subsection 9 of section 205A-2, suggestions could be added on how to deal with existing beachfront structures. For example, language could be added along the lines of: "Remove or relocate the existing shorefront structures inland from the shoreline to conserve open space, minimize interference with natural beach processes, and reduce risk to life and property due to erosion, storm surges, and sea level rise."
- §205A-2 should be amended to support adaptation pathways as a planning approach for localized climate adaptation.

Amendments to Specific Provisions

- §205A-3, “Lead agency,” should be amended to be consistent with the recommendations of this project. Under §205A-1, the term “Lead agency” is defined as the office of planning, i.e., the State of Hawai'i Office of Planning and Sustainable Development (“OPSD”). This project, for example, recommends the establishment of a Beach Resilience Program to be overseen by a Beach Resilience Authority. The Jurisdiction recommendations in this report provide several options for establishing authority over such a program. Depending on how the BRA is established, this provision should be amended accordingly.
- §205A-4, “Implementation of objectives, policies, and guidelines,” stipulates that agencies shall give full consideration to ecological, cultural, historical, esthetic, recreational, scenic and open space values. This provision should be amended to highlight the need to protect public trust resources and native Hawaiian traditional and customary practices, as discussed more generally above.
- §205A-5, “Compliance,” requires “all agencies” to enforce the objectives and policies of Chapter 205A. This should similarly be updated to reflect public trust doctrine-based protection of resources and cultural practices.

Considerations

- The amendments to HRS Chapter 205A discussed in this recommendation are linked to other potential additions and amendments to Hawai'i statutory law and policy regarding the protection of sandy beaches and shoreline areas. Amendments and additions to the applicable laws will need to be coordinated.

Key Implementation Steps

- An initial key implementation step is for decisions to be made in support of drafting and introducing legislation consistent with this recommendation. The subsequent implementation step will be to engage in the legislative process. If the amendments are adopted into law, a range of corresponding obligations and actions to be taken by OPSD and other agencies implicated by the amendments will need to be undertaken to comply with the amended law.

Legal Analysis

- The Legislature retains full authority to amend HRS Chapter 205A consistent with this Recommendation, as shown by the Act 16 amendments in 2020. The direct relevance of the amendments, and how they can support the goals of the Beach Resilience Program and this project, are illustrated by a recent legal action brought by the State against a North Shore landowner.
- The state Office of Conservation and Coastal Lands (OCCL) filed a complaint to the First Circuit Court on O'ahu to request the award of damages to the state for removing unauthorized erosion control measures and debris after a house collapsed onto the beach in 2024. As part of the complaint, OCCL asked the court to confirm by a declaratory judgment that the state owns state land at issue (i.e., the location of debris from the residence that collapsed onto the beach) "as a public trust unencumbered by any other claim or interest." *State of Hawai'i v. VanEmmerik*, 1CV-24-000-1360 (Sept. 24, 2024). These types of legal determinations would be in statute at such time that Chapter 205A is amended consistent with this recommendation. Importantly, more clearly linking HRS Chapter 205A to the public trust doctrine and the protection of public trust resources may contribute to strengthening the law governing increasingly complex and challenging legal issues in impacted shoreline areas.

Funding/Financing Considerations

- The funding considerations arise primarily from the need to fund any increased obligations or responsibilities to the agencies required to implement changes based on the statutory amendments. Further strengthening of the protection of public trust resources and enforcement of measures to prevent illegal hardening of the shoreline may affect local property markets, with implications for property tax and conveyance tax revenues. These may be offset by increases in amenity values accruing to non-beachfront properties.



BEST PRACTICE EXAMPLE:

CALIFORNIA EFFORTS TO ADDRESS PUBLIC TRUST LANDS IN LAND USE PLANNING AND REGULATORY REQUIREMENTS

The California Coastal Act requires the provision of maximum public access to the shoreline, including through recognition of a California [constitutional right to access to state tidelands](#) (ARTICLE X WATER [SECTION 1 - SEC. 7]):

PRC 30210: In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

30214(b): It is the intent of the Legislature that the public access policies of this article be carried out in a reasonable manner that considers the equities and that balances the rights of the individual property owner with the public's constitutional right of access pursuant to Section 4 of Article X of the California Constitution. Nothing in this section or any amendment thereto shall be construed as a limitation on the rights guaranteed to the public under Section 4 of Article X of the California Constitution.

The California Coastal Commission has long recognized the need to protect public trust tidelands, including for public shoreline access. In 2023 the Commission adopted a Public Trust Guiding Principles & Action Plan to describe how the public trust doctrine relates to the Coastal Commission's and local governments' planning and regulatory work addressing sea level rise under the [Coastal Act](#). The guidance is premised on the fundamental observation that "[c]limate change and sea level rise are moving the public trust landward."

In recent years, the Coastal Commission has incorporated protection of public tidelands into its planning and regulatory actions, including requiring recorded deed restrictions on new shoreline development that acknowledge the potential need to remove or relocate development that may come to be located on public tidelands, including due to sea level rise, for example:

Future Impacts to Public Trust Lands. By acceptance of this permit, the applicant agrees that the development approval does not permit encroachment onto public trust lands and any future encroachment must be removed unless the Coastal Commission determines that the encroachment is legally permissible pursuant to the Coastal Act and authorizes it to remain. (6-23-0285, T-1 Associates, LLC, 2023).

3.2 JURISDICTION

The recommendations in this section (#2-4) are intended to establish a Beach Resiliency Authority within the appropriate agency or agencies to oversee implementation of the proposed Beach Resilience Program. Given the complexities involved in changing existing agency powers and establishing new agencies or entities, a range of possibilities are presented in order of relative complexity and difficulty of implementation.

While the recommendations are geared toward the proposed BRP, they could also be considered more broadly applicable to coastal management across Hawai'i, potentially helping to clarify agency responsibilities and coordination around coastal management and adaptation in a variety of contexts.

It should also be noted that there will be significant roles and responsibilities for entities outside of the proposed Beach Resilience Authority in the implementation of the proposed BRP. These entities will include but may not be limited to the State Climate Commission, other state agencies, the counties, land trusts, and potential new entities such as a Coastal Conservancy (see Recommendation #16). These roles are discussed throughout this report under individual recommendations.

Recommendation #2:

Improve Interagency Coordination



Establish a framework for interagency coordination around planning, monitoring, regulation, enforcement, and management at the shoreline, particularly in sandy beach areas subject to accelerating coastal erosion that are designated as Beach Resilience Planning Areas.	TIMEFRAME - Next 1-2 Legislative Cycles LEAD ENTITY - Hawai'i Climate Change Mitigation and Adaptation Commission COORDINATING ENTITIES - OPSD HICZMP; DLNR OCCL; County Planning Departments; USACE; NOAA; FEMA; USFWS; DOH; DOT; HI-EMA; UH Sea Grant; County Parks Departments; DHHL; HTA

Description

Currently, coordination between the state and counties around regulations and enforcement in shoreline areas takes place on a relatively informal, ad hoc basis. In areas where erosion is accelerating and the shoreline is becoming more dynamic, a more formalized approach is needed to allow expeditious action, particularly when public trust resources are imminently threatened by beach loss or the collapse of failed structures. The need for a more coordinated approach to shoreline management is widely recognized among agencies and stakeholders (Tetra Tech, 2023). Additionally, identifying roles and positions with specific focus and experience around adaptation strategies, including the incorporation of TEK, as well as interagency and stakeholder coordination is important to integration and capacity building.

A bill proposed in the 2024 legislative session that did not pass (H.B. 1545/S.B. 2184 SD1, Relating to Adaptation Pathways Planning) outlined an approach to formalizing agency roles and improving interagency coordination in areas subject to SLR. The bill would have required DLNR, in coordination with appropriate state and county agencies and together with affected communities, to prepare and implement adaptation plans. The bill would also have appropriated funding for this purpose.

Similar companion bills were introduced in the 2025 legislative session (H.B. 314 and S.B. 1598) which incorporated and further expands upon the framework for interagency coordination around adaptation planning in shoreline areas. These bills did not survive, however they could be reintroduced next legislative term. The bills identified the Hawai'i Climate Change Mitigation and Adaptation Commission as the coordinating body to establish climate change mitigation and adaptation strategies and goals, and provide policy direction, facilitation, coordination, and planning among state and county agencies, federal agencies, and other partners as appropriate.

The draft bills would require the Hawai'i Climate Change Mitigation and Adaptation Commission to develop a framework for and engage in long-term adaptation pathways planning together with impacted communities, to facilitate natural resource conservation, limit damage to public and private development, and reduce cost to taxpayers for impacts associated with SLR and associated coastal hazards. This would be accomplished by:

- 1) Requiring the Climate Change Mitigation and Adaptation Commission to develop a strategy and framework for collaborative governance to prepare adaptation pathway plans;
- 2) Requiring the Climate Change Mitigation and Adaptation Commission to coordinate efforts to prepare plans to facilitate implementation of adaptation measures, including modification of and relocation of development and infrastructure away from certain high-risk areas;
- 3) Requiring the appropriate state and county agencies with representation on the Commission to implement the adaptation pathway plans developed by the Commission; and
- 4) Appropriating funds.

The proposed updates would be accomplished by amending HRS §225P ("Hawai'i Climate Change Mitigation and Adaptation Initiative") to include a section on "Sea level rise adaptation pathways planning." It would require that the process for assessment and implementation of adaptation pathways is completed by December 31, 2026, while at least one regional plan per county is completed by December 31, 2030.

The 2025 draft bills do not expanding the authority of any one agency, instead reiterating that climate adaptation planning is within the purview of OPSD, the counties maintain the authority and jurisdiction to prohibit structures within the shoreline area and manage and regulate development within the SMA, and DLNR manages and regulates land use makai of the shoreline. Similar approaches have been used in California and elsewhere to establish interagency collaborative task forces around a specific issue (see text box).

Had one of these draft bills passed, it would have initiated a process by which the Commission could improve and potentially formalize interagency coordination through the development of a collaborative governance strategy. Whether additional steps would have been taken to expand the authority of one or more agencies over these areas (see Recommendation #3), or to create a new regulatory entity to do so (see Recommendation #4), a formalized collaborative governance strategy would further the ability of agencies with shoreline jurisdiction to take expeditious action in situations where public trust resources and private development are imminently threatened.

Considerations

- The development of a formalized interagency coordination framework would help to address key jurisdictional challenges at the shoreline, including permitting and enforcement. However, as an adaptation pathway planning framework is developed, additional gaps will quickly emerge that would be difficult if not impossible to overcome without further clarification or expansion of the authority of key departments. For example, a key component of most adaptation pathways is beach management, which is not currently in any agency's official purview. Similarly, it is not currently in any one agency's purview to prepare or implement adaptation plans or beach management plans, nor to restore coastal lands, including dune environments, in retreat areas.
- Sea Grant has a relatively long history in contributing to and developing beach management and restoration plans and projects. Its role would continue to be science extension, guidance, and added capacity through cost-share positions such as at OCCL and counties. For example, the 2024 Legislature passed a measure directing the University of Hawai'i Sea Grant Program to complete a Beach Management Plan for a portion of the North Shore, allocating \$1M in funding for the initial phase of the plan (H.B. 2248, 2024). The initial phase will involve conducting location specific engineering analysis to identify and vet beach and sand management strategies that can be integrated into future climate adaptation planning. Given this, Sea Grant may be considered as a potential lead for the identification of beach management strategies, and should be included as a partner in coordination alongside other state and county partner agencies.
- The Hawaii Ocean Resources Management Plan (ORMP) and its Coordinated Working Group, led by OPSD HICZMP, is an example of interagency collaboration focused on coastal management issues. In 2021, under the ORMP Coordinated Working Group, OPSD HICZMP established the Hawaii Silver Jackets Interagency Collaboration Team. Silver Jackets is a national program focused on reducing coastal risk, and the local team is focused on actions to implement the vision, mission and goals of the 2020 ORMP, including interagency coordination around shoreline decision making. Participating agencies include county planning departments, FEMA, NOAA, USACE, DLNR, HI-EMA, OP, OCCL, and Sea Grant. The Hawai'i Silver Jackets team could be included as a stakeholder group or potential model for improving interagency coordination in shoreline areas.

Key Implementation Steps

- 1) Pass Adaptation Pathways Planning bill in an upcoming legislative session.
- 2) Convene the Climate Change Mitigation and Adaptation Commission to develop a strategy and framework for collaborative governance to prepare and implement adaptation pathway plans.
- 3) Appropriate legislative funds to develop and implement adaptation pathways plans.

Legal Analysis

- Because this recommendation would keep jurisdictional authorities largely as is, it is not likely to need additional legal vetting. However, as the Climate Commission undertakes development of a collaborative governance strategy, it may become necessary to clarify or expand existing agency authority through amendments to applicable rules or statutes.

Funding/Financing Considerations

- This recommendation would require the allocation of funds to support more formalized ongoing coordination between agencies, including the establishment of standard operating procedures, workflows, and communication channels. This may create additional staffing requirements within key agencies, which would require budgetary consideration at the department, county and state levels.

BEST PRACTICE EXAMPLE:

CALIFORNIA'S DROUGHT RESILIENCE INTERAGENCY & PARTNERS (DRIP) COLLABORATIVE



The California Department of Water Resources (DWR) established an interagency task force focused on drought and water shortage. This task force, created under Senate Bill 552 (2021), brings together the State Water Board and other relevant agencies and stakeholders to facilitate proactive state planning and coordination for pre-drought planning, emergency response, and post-drought management. A key focus of the group is developing strategies to enhance cross-sector collaboration.

The 26-member group includes appointees from state agencies, local governments, community-based organizations, Tribal representatives, subject matter experts, the public, and various other water user groups. The group meets regularly to maintain close working relationships. Meetings also give members the chance to ask questions informally and gain a better understanding of partners' workflows.

The DRIP Collaborative develops actionable recommendations on coordinating proactive planning, emergency response, and post-drought management to improve water resilience by providing data and resources to small water suppliers and rural communities needed to address future water shortages. The DRIP Collaborative serves as a public forum with state and non-state agency members to advance the state's drought strategies and continue building resilience in an increasingly arid future.

Recommendation #3:

Establish DLNR as the Beach Resilience Authority Within Beach Resilience Planning Areas



Establish DLNR as the Beach Resilience Authority within designated Beach Resilience Planning Areas (BRPA). This authority can be considered an overlay to DLNR's existing jurisdiction over the Conservation District, providing additional authority and responsibility over designated BRPAs in order to facilitate more streamlined planning, regulation, and enforcement in these dynamic areas while integrating TEK and cultural and historic resources and providing for continued coordination with OPSD, the Counties, and other entities.

TIMEFRAME

- Next 1-2 Legislative Cycles

LEAD ENTITY

- DLNR

COORDINATING ENTITIES

- OPSD HICZMP; County Planning and Parks Departments; other State agencies (DOT, DOH, etc.); Federal agencies (NOAA, USACE, USFWS, etc.); Hawai'i Climate Change Mitigation and Adaptation Commission

Description

DLNR as the Beach Resilience Authority would be charged with overseeing the development of a Beach Resilience Plan for each Beach Resilience Planning Area in coordination with OPSD and the Counties (see Recommendation #5), monitoring the adaptation pathway and triggers developed for each BRPA, and administering regulations and enforcement associated with BRPAs (see Recommendations #8). The Beach Resilience Authority could also have a role in implementation, or at minimum, oversight of measures such as sand management, beach nourishment, and dune restoration.

The Beach Resilience Authority would not have the authority to acquire private lands, implement eminent domain, or administer incentive programs for coastal landowners (that could be handled through another program or entity as described in other recommendations), though it could play a role in education and community engagement around Beach Resilience Planning Areas.

Two agencies were considered for the potential role of Beach Resilience Authority:

- ▲ Department of Land and Natural Resources (DLNR), which owns the public trust beach lands and controls land use makai of the shoreline through the Conservation District Use Application process.
- ▲ Hawai'i Community Development Authority (HCDA), which has the authority to acquire, develop, zone, and regulate lands under its control (Kaka'ako, Kalaeloa, etc.).

DLNR's existing jurisdiction within shoreline areas and its focus on natural resource management makes it more naturally suited to the role; additionally, its responsibilities related to cultural and historical resources as the agency that houses the State Historic Preservation Division and Burial Councils allows for greater coordination with key stakeholders. However, the way that HCDA's authority is structured may prove instructive for establishing DLNR as the Beach Resilience Authority within designated BRPAs (see text box). HCDA as a redevelopment authority could also potentially play a role in the acquisition and development of "receiving area" lands, where displaced development from shoreline areas could be shifted in conjunction with coastal retreat (see Recommendation #20).

Considerations

- Given the overarching goal of protecting the public trust beach lands, it is fitting that the primary jurisdictional authority over eroding sandy beach areas (and areas where sandy beaches will move inland over time) should rest with the State of Hawai'i, as lands within these areas will become the property of the State as the shoreline recedes over time.
- While DLNR is recommended as the lead agency given its inchoate interest in shoreline lands and regulatory jurisdiction over the Conservation District, there are other agencies and entities that will need to play a key role in the designation, planning, and administration of BRPAs. For example:
 - > The Hawai'i Climate Change Mitigation and Adaptation Commission is a coordination body to establish climate change mitigation and adaptation strategies and goals, and provide policy direction, facilitation, coordination, and planning among state and county agencies, federal agencies, and other partners.
 - > OPSD is responsible for climate adaptation and sustainability planning and coordination, as well as overall administration and coordination of the HICZMP and its network partners.
 - > The counties maintain authority to prohibit structures landward of the shoreline and manage and regulate development within Special Management Areas. The relocation or removal of existing beachfront development and structures that are under risk of erosion, storm surge, and sea level rise would require direct involvement by the counties to integrate adaptation priorities into community plans, land use policies and regulatory permitting.
 - > County parks departments own and/or have a role in managing and maintaining many beach parks across the state.

In order to effectively serve as the Beach Resilience Authority, DLNR may need to consider building up its coastal engineering and scientific capacity.

- Consequently, the process for designating, planning, and administering BRPAs will need to be designed in consultation with these entities, and in areas where designated Beach Resilience Planning Areas overlap with the SMA, jurisdictional authority will need to be further clarified and processes for coordination formalized. Areas where regulations for BRPAs and the Conservation District may differ will also need to be identified and processes for administration and enforcement clarified.

Key Implementation Steps

- 1) Conduct further legal analysis of DLNR's existing authority and structure to determine where the authority would be housed within DLNR and what additional powers are needed.
- 2) Prepare legislation under HRS Chapter 198E and other applicable laws to establish DLNR as the Beach Resilience Authority to plan, regulate, and enforce uses within designated Beach Resilience Planning Areas.
- 3) Designate funding for the establishment, staffing, administration, and operations of functions related to the Beach Resilience Authority.

Collaborate with OPSD, County Planning and Parks Departments, and other entities with applicable jurisdiction to integrate existing planning, regulatory, and enforcement processes with the development of Beach Resilience Plans and the BRPA-specific regulatory and enforcement regime.

Legal Analysis

- Much of this may already be within the scope of BLNR and thus they can likely delegate it to a subsidiary division. If the goal is to be semi-autonomous, it would require statutory language to establish and manage the new Beach Resilience Program within DLNR. This may require enabling legislation for amendments to HRS Chapter 198E, Chapter 205A, and other state laws. Setting it up as an office/program at first and then separating out into a separate agency is one potential policy strategy as well.

Funding/Financing Considerations

- General Funds will be required to set up the Beach Resilience Program with staff and resources. Counties receive a large proportion of their residential property tax (RPT) revenue from properties within the likely boundaries of the BRPA. Decisions made within the BRPA that have potential to impact property values may lead to conflicts between the State and the Counties, and some form of compensation may be necessary to ensure compliance. Note that any impacts on RPT receipts due to implementation and enforcement of managed retreat policies would likely be temporary, and offset by uplift of properties in the broader region that benefit from greater security of beach access.

BEST PRACTICE EXAMPLE:

HAWAI'I COMMUNITY DEVELOPMENT AUTHORITY



The Hawai'i Community Development Authority (HCDA) is a state agency established by the Legislature in 1976. Its purpose is to promote and coordinate public and private sector community development in underutilized urban areas defined as "Community Development Districts." Upon HCDA's creation, the legislature designated Kaka'ako as the first Community Development District, seeing the potential to provide housing, parks, commercial space, and other urban amenities in this industrial area located close to Honolulu's urban core.

In 2002, HCDA assumed the role of redeveloping the 3,700-acre Kalaeloa Community Development District. In 2011, their purview was once again expanded to include over 400 acres of meadowlands in He'eia.

HCDA continues to oversee land development, implement strategic plans, and manage affordable housing programs in these Community Development Districts with the aim to foster economic opportunities and create vibrant communities. The Authority achieves this by collaborating with other State, county, and federal agency partners.

Recommendation #4:

Create New Integrated State Coastal Management Authority



Create a new state agency or authority to plan for and regulate development to facilitate coastal management and adaptation, including managed retreat. The scope and jurisdiction of this authority is envisioned to extend beyond the scope of the proposed Beach Resilience Program, but would include planning, regulatory, and enforcement authority within BRPAs.

TIMEFRAME

- Next 1-2 Legislative Cycles

LEAD ENTITY

- OPSD

COORDINATING ENTITIES

- County Planning Departments;
DLNR OCCL

Description

The recommendation contemplates modeling the authority and structure of a new coastal management and adaptation entity after the California Coastal Commission as established under the California Coastal Act. Similar to Hawai'i's Coastal Zone Management Program under HRS Chapter 205A, California's Coastal Act establishes statewide policies and a permit requirement for new development in the coastal zone, implemented through local land use planning and regulation. Unlike Hawai'i though, the Coastal Act vests the California Coastal Commission (a regulatory body with fifteen voting members appointed by the Governor, Senate Rules Committee, and Speaker of the Assembly), with direct permit authority over local development. This authority is maintained until such time as a county or city completes a Local Coastal Program (LCP), which includes a land use plan and zoning ordinances. Once an LCP is approved by the Commission as meeting state policy requirements, development permit authority above the mean high tide transfers to the local jurisdiction. Certain development approvals, such as along the immediate shoreline and adjacent to wetland resources, are subject to the continuing appeal authority of the Commission. The Commission also continues to review and approve any amendments or updates to LCPs. Coupled with its permit authority over development below the mean high tide, the state Commission thus plays an on-going authoritative role in planning and regulating development along the shoreline, in collaboration with local government.

This recommendation would consider whether to modify or replace existing authorities exercised by OPSD, DLNR and Hawai'i's counties with a more consolidated planning and regulatory framework under the overarching control of a state agency (see text box). Establishing a new agency would entail transferring certain current responsibilities away from OPSD and DLNR to the new entity, and the creation of new development planning and regulatory authority over County land use in the new entity. As an alternative, existing authorities in OPSD and DLNR could be amended to accomplish the same objectives without creating a new entity. Given OPSD's current role in NOAA's coastal zone management program and the coordination of coastal planning through the Special Management Area, OPSD would be a logical institutional home for an expanded state authority in local land use planning and regulation statewide. In the case of designated BRPAs, however, expanding DLNR authority may make more sense given their existing regulatory and enforcement powers over the coastal area (pursuant to Recommendation #3).

Considerations

- This would amount to a significant change in political authority of the state over local land use planning, which could be difficult to accomplish and implement given Hawai'i's status as a home rule state.
- New state agency authority would overlap or conflict with current/historic state agency authorities (OPSD, DLNR), requiring significant change in those existing authorities.
- Would require establishing a new jurisdictional area integrating land mauka and makai of the shoreline, including designated BRPA's, as the current coastal zone applies to the entire state of Hawai'i.
- A separate entity would still likely be needed to administer functions that are related to beach management and restoration, as well as relocation assistance and incentives for property owners including buyouts/leasebacks, transferrable development rights programs, and other mechanisms. The California Coastal Conservancy provides this role in California, and a similar entity could be established for Hawai'i (see Recommendation #16).

- Could potentially leverage existing programs (such as OPSD SMA program) with less disruptive, incremental changes in state land use responsibilities.
- Members of a new coastal commission would need to have relevant qualifications and be paid commensurate to their regulatory role, as opposed to many of the voluntary boards and commissions that exist in Hawai'i.
- Each model should consider how it will coordinate inter- and intra-governmentally and ensure the capacity it needs for success. This might include identifying roles and positions with specific focus and experience around adaptation strategies, including the incorporation of TEK, as well as interagency and stakeholder coordination.

Key Implementation Steps

- 1) Establish a state-local task force/commission to create a legislative proposal. Alternatively, task the Hawai'i Climate Change Mitigation and Adaptation Commission with this.
- 2) Task force identifies key authorities and functions of the new or reconfigured agency. This includes geographic jurisdiction (e.g., SMA combined with intertidal to mean lower low water or extent of state waters); planning and regulatory functions (e.g., land use planning, development regulation, enforcement); and sector policy coverage (beach protection/erosion, public access, flooding, etc.).
- 3) Ensure all positions have an understanding of the public trust responsibilities of the State. Recommend the inclusion of at least one seat dedicated to a person with experience with TEK and/or kuleana for cultural or historical places.
- 4) Task force identifies where those authorities and functions currently reside in state and local government. This includes identifying which agency/agencies currently exercise these authorities and functions, their staffing capacities and budgetary requirements/allocations, and the related legislative and administrative frameworks.
- 5) Draft legislation necessary to create a new state agency and authorities, including changes to existing authorities and programs.
- 6) Consider redirection/reallocation of staffing and budget(s), as well as implications for federal funding that is currently directed to the OPSD HICZMP.
- 7) Identify implementation mechanisms to launch new state program.
- 8) Conduct public hearings/outreach in runup to legislative process.
- 9) Adopt legislation creating a new state coastal management authority.

Legal Analysis

- Much of the necessary legal analysis would be related to transfer and modification of existing state and local government authority, such as current requirements for local governments to implement the policies of HRS Chapter 205A through the SMA permit program, and DLNR OCCL regulation and permitting of beach erosion and management activities, to a new or reconfigured state agency. Given existing precedents for state coastal zone management authorities under federal and state statutory and administrative law, little analysis of more basic legal framing questions may be needed. Legal analysis of substantive policy objectives related to adaptation and managed retreat may more likely be needed (see Recommendation #1).

Funding/Financing Considerations

- Creation of a new authority would require a general fund or allocated funding source, and depending on configuration could entail reduction and/or transfer of budget allocations from OPSD and DLNR to the new entity, or expansion of the budget for one or both of those agencies.

The new entity may also have a role in managing or administering funds, including federal monies and funds from the proposed Beach Resilience Fund (see Recommendation #12). However, it would be more appropriate for a separate entity, such as the Coastal Conservancy envisioned in Recommendation #16, to act as the administrator of relocation assistance and incentives for property owners including those outlined in Recommendation #14. Separating regulatory and financing functions between different entities follows best practice in minimizing conflict of interest between the two. As with some previous recommendations, a state authority would have potential to make policy decisions that impact county RPT revenue, so there may be opposition to establishing such an entity.

3.3 PLANNING

The recommendations in this section address how adaptation planning will occur within designated Beach Resilience Planning Areas, how those areas could be established, and how Beach Resilience Plans could be incorporated into existing land use plans and designations. The need for pre-disaster recovery planning in BRPAs is also noted to address the possibility of a significant natural disaster and ensure that recovery aligns with community vision and resiliency goals.

The planning framework envisioned for BRPAs could also help to inform a broader framework for coastal adaptation planning in Hawai'i. The designation of BRPAs could help to prioritize areas for place-specific adaptation planning, however a similar planning approach could be utilized in other coastal areas as part of a regional shoreline management program. Similarly, pre-disaster recovery planning and integration of climate adaptation considerations into land use plans and designations are needs that extend beyond eroding sandy beaches, and the recommendations included here may speak to those broader contexts as well.

Recommendation #5:

Establish a Beach Resilience Planning Framework



A context-sensitive planning process will be conducted within each designated Beach Resilience Planning Area (BRPA) to characterize the physical landscape and processes, identify vulnerable assets, formulate a community vision, identify and vet adaptation strategies, and develop an adaptation pathway with associated triggers that can be monitored over time. This planning framework and the resulting adaptation pathway will provide the basis for implementing phased adaptation and retreat, as well as for offering options and incentives to affected property owners.

The designation of BRPAs will need to occur prior to initiating planning and should take place through a multi-stakeholder effort with the input of scientific and technical experts, state and county agencies, and affected communities. The methodology for identifying shoreline subregions included in OPSD's Regional Shoreline Management Study (ongoing as of the time of writing) should be used as a starting point for identifying areas that share similar physical shoreline characteristics and processes. From there, criteria can be developed for the designation of BRPAs. This process is similar to one used in the San Francisco Bay Area (see text box).

While this report does not prescribe specific criteria for designation of BRPAs, the intent of the proposed Beach Resilience Program is to prioritize planning in locations where public and private built assets are most at risk, and where there is the greatest threat to sandy beaches and other high value public trust resources due to accelerating coastal erosion. Within these areas, priority should also be given to locations where the removal of built assets over time would facilitate the continued presence of sandy beaches. Additional criteria will be important to consider in delineating BRPAs, including but not limited to landscape and geologic characteristics, projected impacts, cultural resources and practices, traditional ecological knowledge, traditional land use divisions, jurisdictional boundaries, and existing development and infrastructure.

TIMEFRAME

- Next 2-3 Legislative Cycles

LEAD ENTITY

- OPSD, Hawai'i Climate Change Mitigation and Adaptation Commission

COORDINATING ENTITIES

- DLNR OCCL; DLNR; HTA; DOT; County Planning Departments; UH; scientific and technical experts

Description

The elements of a planning framework for Beach Resilience Planning Areas would generally include:

- > Identification of shoreline areas with rapidly eroding sandy beaches.
- > Within those areas, identification of priority zones where the retreat of built assets would allow for the ongoing presence of a sandy beach.

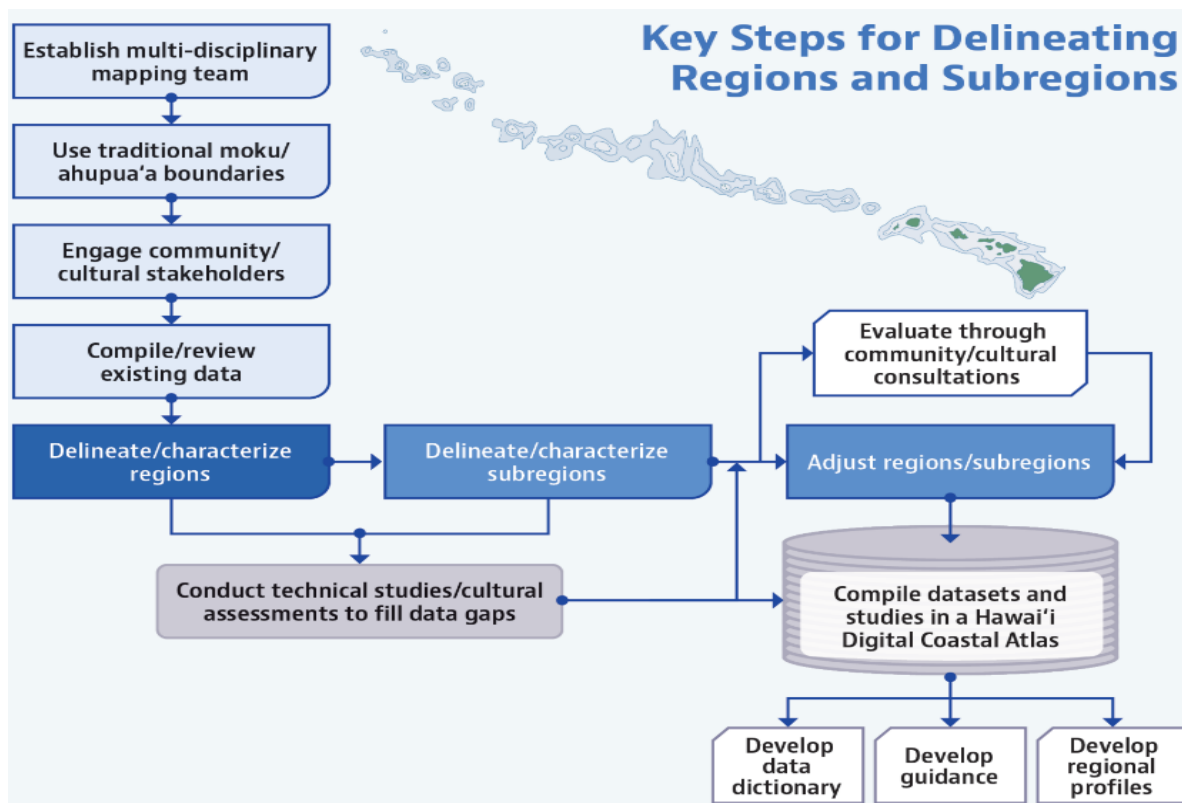
- > Delineation of a Beach Resilience Planning Area (BRPA) that encompasses the shoreline area, priority zones, and a planning area that extends mauka of the shoreline, taking into account various considerations including the extent of projected impacts, physical shoreline characteristics, cultural traditions including traditional ecological knowledge, development and land use patterns, natural resource constraints, and other geographic planning considerations such as ahupua'a, watersheds, jurisdictional boundaries, and existing planning efforts.
- > Implement a planning process that includes identification of community vision and planning goals, scientific study of shoreline characteristics and processes, identification and vetting of adaptation strategies, and the development of adaptation pathways and triggers that address vulnerabilities of the built, natural, and social environment through phased adaptation actions.
- > Align the proposed adaptation pathway by updating existing land use plans and designations (see Recommendation #7)
- > Implement and enforce the outcomes of the planning process through identified adaptation measures; a trigger-based regulatory program (see Recommendation #8); and voluntary relocation assistance and incentive program (see Recommendation #14).

The proposed approach for designation of BRPAs and the preparation of Beach Resilience Plans is discussed further below.

Delineation of Beach Resilience Planning Areas

Areas with eroding sandy beaches should first be identified through the OPSD Regional Shoreline Management (RSM) process. A 2023 scoping study identifies the methodology for delineating shoreline regions and subregions under the RSM process, which requires iterative, systematic mapping informed

FIGURE 5: STEPS FOR DELINEATING SHORELINE MANAGEMENT REGIONS AND SUBREGIONS



SOURCE: OPSD RSM SCOPING STUDY, 2023

by data on shoreline types, ecosystem services, development patterns, and cultural resources (Figure 5). Within the regions and subregions identified through the RSM methodology, further analysis should be undertaken to determine areas where the removal of built assets would allow for the ongoing presence of sandy beaches, particularly sandy beaches with high public trust value, as well as lands deemed to have exceptional value under criteria outlined for acquisition by the Legacy Land Conservation Commission under HRS §173A-2.6.

Once those regions are identified, BRPAs should be delineated by expanding inland to include geographic areas mauka of the shoreline. Additionally, the delineation of BRPAs should involve stakeholder engagement and consider a number of factors such as historical erosion transects, projected erosion and SLR exposure areas, local topography, natural barriers such as ridges and dunes, development features such as neighborhood and community boundaries and roads, and administrative layers such as community planning regions. As in the RSM scoping process, community input, existing planning documents, and place-based Traditional Ecological Knowledge (TEK) should also inform the identification process for BRPAs. Native Hawaiian spatial markers such as ahupua'a and traditional place names provide important insights on geomorphic processes, though BRPAs could be a portion of or extend across multiple ahupua'a. The integration of TEK within managed retreat planning underscores the importance of participatory frameworks that establish indigenous knowledge systems as central to adaptive governance.

Development of Beach Resilience Plans

Beach Resilience Plans should be developed for each BRPA through a context-sensitive planning process informed by scientific study, community input, traditional ecological knowledge, and technical analysis. The preparation of the plans should be overseen by a designated entity such as the State Climate Commission (see Recommendation #2), a designated Beach Resilience Authority (see Recommendation #3), or a new entity such as a state Coastal Commission in partnership with the Counties (see Recommendation #4).

The BRP planning process should be scoped (and funded) to include scientific analysis of the existing shoreline area and its processes (e.g., sand transport, erosion, sand supply, etc.), as well as an assessment of vulnerable assets and modeling of potential vulnerabilities to them over time. These elements will help to inform the identification of feasible adaptation strategies for each area.

A menu of adaptation strategies should be developed for BRPAs that are consistent with the goal of preserving and restoring sandy beaches and with laws prohibiting shoreline hardening for private purposes along sandy beaches. These strategies would be further vetted in the planning process for each BRPA. Suitable adaptation strategies for BRPAs could include:

- > Sand management including beach nourishment, dune restoration, and/or sand redistribution.
- > Reduction of wave energy offshore including reefs, coral restoration, fishponds, wave energy converters with a preference for more natural features.
- > Relocation of existing structures and below-ground infrastructure mauka on existing lots or off-site.
- > Removal of portions of or whole structures encroaching into the public shoreline.
- > Elevation and floodproofing of existing structures above the base flood elevation (BFE) or an established design flood elevation (DFE). (Note: this would only apply to structures that are not encroaching into the public shoreline area).
- > Building standards that allow for more easily relocated structures.
- > Transfer of land ownership or development rights to the appropriate government agency or land trust for restoration purposes.

Once adaptation strategies are identified and vetted through technical analysis, benefit-cost assessment, and community input, a BRPA-specific adaptation pathway will be developed, with a phased sequence of adaptation strategies associated with estimated timeframes and triggers (FIGURE 3).

Triggers and adaptation options will vary based on the local coastal characteristics of the BRPA, community preferences, and feasibility/costs of implementation and will address site-specific planning challenges within each area over time. For example, a commonly used trigger for relocation or removal of a structure would be some measure of distance to the erosion line or dune crest. Other triggers could focus on impacts to the beach, for example a certain amount of sand lost from the beach or keeping the lateral public access corridor to a minimum width. Triggers could also be temporal (i.e., when a lease period expires, or a set number of years within which to develop and implement a TDR program) and/or based on repetitive loss events (e.g., a structure experiences flooding three times).

The main requirements of triggers are that they would be clearly identifiable, site-specific, monitored at little to no cost, and be agreed upon through a community-based and scientifically-informed process. The triggers should be set well ahead of the observed impact, to allow time to plan, permit, finance and implement the next adaptation action. The trigger-based adaptation pathway could also change over time, depending on observed changes in site conditions. Monitoring of triggers would need to be overseen by the relevant jurisdictional authority, supported by partners and/or community members where appropriate.

Once Beach Resilience Plans are completed, all private property owners within the BRPA would be subject to the requirements of a trigger-based regulatory framework, described in Recommendation #8. There may also be more stringent regulations or permit conditions applicable to BRPAs, as described in recommendations #9-11.

Considerations

- The BRPAs will need to be designated by the legislature and the adaptation pathway regulatory scheme adopted in law to make Beach Resilience Plans implementable and enforceable by DLNR or another jurisdictional authority. This planning framework also requires designating the appropriate agency to prepare Beach Resilience Plans and allocating funding and staff to do so. The preparation of Beach Resilience Plans will require technically and scientifically rigorous study, as well as extensive community engagement. Significant coordination will also need to occur with other agencies and stakeholders that would be affected by the adaptation strategy for each area. In some cases, designated BRPAs may include highways, infrastructure, and other critical facilities that need to be considered in determining the appropriate adaptation pathway. Careful consideration of secondary consequences of the various adaptation strategies in the pathway need to be discussed and tradeoffs deemed acceptable. Some program specifics could be fleshed out in an initial pilot project.

In addition, coordination with the counties will be needed to align BRPs with other applicable plans including long-range Community Plans, and to determine where and how land use designations such as zoning and easements should be updated. The State Climate Commission, as the coordinating body of climate adaptation pursuant to HRS §225P-3, could play a role in facilitating this coordination (see Recommendation #7). Alternately, OPSD could facilitate this

coordination per HRS 225M-2(b)9.

- OPSD's recent effort to catalog adaptation strategies, "Hawai'i Coastal Adaptation Strategies Resource," can serve as a starting point to identify strategies. This informational resource identifies over 40 adaptation strategies that could be suitable for Hawaii's coastlines to protect from coastal hazards such as erosion, storm flooding, wave impact forces and sea level rise flooding. Each strategy includes information on advantages and disadvantages, relative cost for implementation and maintenance, ideal scale and site conditions, as well as potential permits that might be required.

Key Implementation Steps

- 1) Establish a process and criteria for designating BRPAs and designate them. Consider piloting the program with a specific area as an example.
- 2) Designate the agency/ies responsible for preparing Beach Resilience Plans and specify requirements for their content.
- 3) Allocate funding from the Beach Resilience Fund to conduct Beach Resilience Plans for each BRPA.
- 4) Complete BRPs and develop adaptation pathways with triggers.
- 5) Implement adaptation within BRPAs according to the adaptation pathway and monitor/regulate/enforce according to the trigger-based regulatory framework.
- 6) Integrate BRPAs and associated adaptation pathways into Community Plans and land use designations.

Legal Analysis

- Requires statutory authority to manage the new Beach Resilience Program (see Jurisdiction recommendations for options on how to achieve this). The relationship to existing County planning frameworks may need further specificity in statute, as would the requirement for integration of Beach Resilience Plan areas and adaptation measures into County plans.

Funding/Financing Considerations

- General Funds will be required to set up the appropriate agency/ies with staff and resources to designate and conduct planning processes within BRPAs. The state will need to work toward developing a persistent and robust funding source for operational and capital expenses associated with implementation via the multiple funding streams identified in the Beach Resilience Fund (BRF) (Recommendation #12), which could then be targeted to specific locations and actions.

Funds expended from the BRF would be restricted to the BRPAs, providing an incentive to complete the planning processes necessary to identify the extent of those regions. Further conditions, such as a requirement for match funding, could be incorporated to encourage counties to establish Special Improvement Districts (Recommendation #15) or other means of financing coastal management interventions.

BEST PRACTICE EXAMPLE:

SAN FRANCISCO BAY OPERATIONAL LANDSCAPE UNIT FRAMEWORK



In 2019, the San Francisco Bay Estuary Institute and The Aquatic Science Center developed the [San Francisco Bay Shoreline Adaptation Atlas](#). The Atlas provides a science-based framework for identifying adaptation strategies that are appropriate for site-specific contexts. The Operational Landscape Units (OLUs) framework was developed as a way to manage complexity at the shoreline. The OLU framework divides the bay into geographic areas based on common physical characteristics. OLU's cross traditional jurisdictional boundaries such as cities and counties. A key function of OLU's is to identify where nature-based adaptation solutions would be best utilized to adapt to SLR.

The 30 distinct Bayland OLU's identified by the project consist of landscape features such as rivers, floodplains, and wetlands, as well as elements of the built environment such as parking lots, landfills, and residential neighborhoods.

The OLU framework has been used for education and outreach, adaptation planning, and habitat connectivity analysis.

Recommendation #6:

Conduct Pre-Disaster Recovery Planning



Develop pre-disaster recovery plans that identify a long-term community vision in the event of a disaster to further community resilience. Pre-disaster recovery planning is discussed here for facilitating managed retreat in BRPAs, but is also more broadly recommended and applicable to facilitating climate adaptation and overall community resilience.

TIMEFRAME

- Next 3-4 Legislative Cycles

LEAD ENTITY

- OPSD

COORDINATING ENTITIES

- County Planning
Departments and Resiliency
Offices; HI-EMA; NDPTC;
FEMA

Description

Pre-disaster recovery planning involves anticipating potential future disaster events and their impacts, and before they occur, working with a community to identify a vision and plan for how to recover in a way upholds community values and furthers future resilience. This may include developing one or more scenarios for types and scales of disasters and their associated impacts. Post-disaster actions envisioned in a recovery plan may include acquiring and/or retreating high risk properties, infrastructure and development to support a swift recovery and maximize the benefit of available disaster relief funding. The stakeholder engagement must include a diverse range of stakeholders, including government agencies, community leaders, businesses, residents, and property owners to ensure a comprehensive approach, and ongoing public outreach and education will be needed to inform the community about disaster preparedness, refine the community vision in relation to potential disaster scenarios, and outline the recovery process.

The BRP proposes investing significant resources in proactive adaptation and coastal management in response to incremental climate change impacts due to SLR and coastal erosion. However, a natural disaster has the potential to disrupt even the most carefully considered adaptation pathway. Further, a natural disaster, if declared as such by the federal government, also opens up avenues of federal funding and options that would not be available under other circumstances. For example, federally declared disasters can come with funds earmarked specifically for buying out vulnerable properties. Similarly, an emergency proclamation following a disaster can greatly accelerate the ability (and need) to rebuild and repair infrastructure and development, while also taking measures to make it more resilient. Having a pre-disaster recovery plan in place helps to ensure that these resources can and will be used in alignment with the community's vision for the long-term adaptation of a place. As such, in BRPAs where adaptation pathways are in place that include retreat, pre-disaster plans should seek to establish clear policies and procedures for assessing impacted properties and determining whether they can rebuild in some fashion or whether retreat is necessary and by what means.

Considerations

- Pre-disaster recovery planning creates another layer of planning that needs to be assigned to an appropriate agency, budgeted for, implemented, and integrated into other plans such as County land use plans and Multi-Hazard Mitigation Plans. To be effective, the plan would need to anticipate and develop recommendations for multiple scenarios, providing guidance to inform a broad range of actions. It also needs to be continually championed, promoted, monitored, and refreshed to ensure that when the time comes, it is still considered reflective of community vision and values and can be implemented with confidence.

With uncertainties around the timing, type, and impacts of future disasters, pre-disaster recovery plans must strike a balance between being broad enough to cover different possibilities and being specific enough to direct recovery actions. Some disasters, such as the Maui wildfires of 2023, are difficult to envision and anticipate. Yet the fact remains that pre-disaster recovery planning has a relatively low cost and potentially high payoff when compared to the high costs and long-term social impacts of unplanned post-disaster recovery. In addition, having a pre-disaster recovery plan in place can increase the availability of federal funds post-disaster. To this end, the City and County of Honolulu (CCH) has developed a Long-Term Disaster Recovery Plan (2024) that provides a roadmap for long-term disaster recovery before a disaster strikes. Pre-disaster recovery planning has also been considered for Waikīkī (see text box).

- Pre-disaster planning has been conducted on Maui and is underway on Kaua'i at the time of this writing. The University of Hawai'i Sea Grant published "Guidance for Disaster Recovery Preparedness in Hawai'i" in 2019. That guidance was developed to help state and county planners: 1) Improve governance structure for recovery functions; 2) Identify pathways to pursue critical disaster recovery preparedness activities to support resilient recovery and reconstruction; and 3) Encourage integration of disaster recovery preparedness efforts among related plans and policies (Courtney et al., 2019).
- TEK experts and resources should be integrally involved in the planning processes. Expertise and generational knowledge can provide invaluable insights into the natural ecology of lands, historical adaptation following disaster events, and suitable future uses of land given the knowledge of the particular environment, species, habitats, historical knowledge, cultural practices, and other key factors.

Key Implementation Steps

- 1) Obtain funding for preparation of pre-disaster recovery plans and designate a lead agency.
- 2) Identify potential hazards and vulnerabilities that could impact the community using historical data, expert input, modeling projections and community/expert input to inform this assessment.
- 3) Evaluate natural conditions and physical processes, looking for opportunities to restore landscape connectivity, habitats, and hydrology.
- 4) Educate the community about the recovery plan and promote disaster preparedness through workshops, informational materials, and community events.
- 5) Create a comprehensive recovery plan that outlines strategies, roles, responsibilities, and procedures. This should include:
 - Damage assessment protocols
 - Communication strategies
 - Resource allocation plans
 - Recovery timelines
 - Restoration of natural hydrological and sediment transport processes
 - Designate priority areas for conversion of residential or commercial properties to public open space
 - Identify and allocate resources including personnel, funding, equipment, and facilities.
 - Establish agreements with partners for shared resources and support.
 - Develop and include pro-forma applications for funding from the Beach Resilience Fund or for federal disaster relief, including letters of support from relevant state agencies and other key stakeholders.
- 6) Coordinate the recovery plan with emergency response plans and other relevant plans and policies. This integration helps create a seamless transition from emergency response to recovery efforts.
- 7) Acknowledge that each disaster is unique. Ensure that the recovery plan is flexible enough to adapt to unforeseen challenges and evolving circumstances, including the scale of the disaster.
- 8) Continue to champion the plan and communicate the importance of preparedness and resilient post-disaster recovery.

Legal Analysis

- This recommendation should have legal force provided it is sufficiently integrated into the local hazard mitigation plans and discussed widely in the community. Persons with TEK expertise within specific areas will be critical to engage. Identified procedures, timelines, and financial support, as well as protocols and procedures, are also needed.

Funding/Financing Considerations

- Financing a pre-disaster recovery plan involves securing funding and resources to ensure that a community can respond effectively when a disaster occurs. There are several strategies for financing such a plan:

Government Funding

- > Federal Grants and Programs: Programs such as FEMA's Pre-Disaster Mitigation Grant Program and Hazard Mitigation Grant Program provide funding to reduce risks before a disaster and prepare communities for recovery.
- > State and Local Budgets: The State and Counties can allocate funds specifically for pre-disaster planning and recovery efforts. This could be an approved expenditure type under the Beach Resilience Fund suggested in this project.
- > Block Grants: Federal Department of Housing and Urban Development Community Development Block Grants can be used for disaster resilience, particularly in low- and moderate-income areas.

Private Sector Partnerships

- > Insurance: Communities can encourage businesses and residents to carry adequate disaster insurance, reducing the financial burden on public resources. In some cases, municipal governments may take out insurance policies to protect critical infrastructure.
- > Public-Private Partnerships: Partnering with private companies can help fund infrastructure projects or recovery resources. Businesses may also contribute to recovery efforts through Corporate Social Responsibility initiatives.
- > Resilience Bonds: These are similar to catastrophe bonds but are designed to fund resilience projects that reduce the impacts of disasters.

Philanthropic Organizations and Nonprofits

- > Many nonprofit organizations and philanthropic foundations provide grants and technical assistance to help communities prepare for and recover from disasters.

Tax Incentives and Special Districts

- > Tax Increment Financing: Municipalities can use future gains in taxes to finance current improvements that will reduce disaster risk.
- > Special Improvement Districts: Communities can create districts where property owners pay additional taxes or fees specifically for disaster preparedness and recovery funding.
- > Tax Credits: Governments can offer tax credits to businesses and individuals who invest in adaptation actions.

Resilience and Green Bonds

- > Communities can issue bonds specifically for projects that enhance resilience, such as upgrading infrastructure or protecting flood-prone areas. Some of these may be categorized as "green bonds" if they have an environmental benefit.
- > By leveraging a combination of these sources, communities can ensure they have the financial resources needed to effectively implement and sustain their pre-disaster recovery plans.



BEST PRACTICE EXAMPLE:

WAIKĪKĪ PRE-DISASTER RECOVERY PROJECT

The [Waikīkī Pre-Disaster Recovery Project](#) is a pilot recovery planning initiative conducted through a partnership between the Waikiki Business Improvement District Association (WBIDA) and the National Disaster Preparedness Training Center (NDPTC) at the University of Hawai'i at Mānoa. The project aimed to understand potential impacts from disasters in Waikīkī and plan for recovery. While not a formalized plan, the final report was intended to provide guidance to decisionmakers.

Phase I of the report outlines the need for recovery planning along with site-specific recommendations, and also includes a vulnerability assessment, a disaster debris management plan, a business recovery guide, and other disaster recovery planning resources.

Phase II focused on lessons learned from Puerto Rico, recovery operations mapping, and providing outreach to small businesses in Waikīkī. The recovery operations mapping identified relevant stakeholders and outlined roles, responsibilities, and processes that could be used to recover from future disasters.

Recommendation #7:

Align Land Use Planning and Designations with SLR Risks



Integrate projected risks from SLR, flooding, and coastal erosion into long-range land use plans and land use designations at the state and county level. This includes aligning county land use plans and zoning with adaptation pathways identified for BRPAs.

TIMEFRAME

- Next 3-4 Legislative Cycles

LEAD ENTITY

- County Planning Departments

COORDINATING ENTITIES

- OPSD; DLNR OCCL; LUC; BLNR; DLNR; DHHL; State Legislature; Planning Commissions; County Councils

Description

Hawaii has a two-tiered land use system involving state and county authorities. The State Land Use Commission (LUC) classifies all land into four districts (Urban, Rural, Agricultural, and Conservation), with designated permitted uses. The counties regulate zoning within Urban, Rural, and Agricultural districts, while Conservation lands remain under state jurisdiction. County land use planning includes county-wide General Plans, regional Community Plans, and special district plans. These plans provide the framework for changes to building and zoning codes and are guiding documents for how each community envisions the future. The state Department of Hawaiian Home Lands (DHHL) also conducts land use planning through its own framework. Integration of climate change considerations including SLR and coastal erosion into land use plans is supported through state law and policy, and many general and community plans across Hawai'i have begun integrating information and discussion on climate change impacts into their planning processes and resulting policies.

Once the Beach Resilience Program is in place and Beach Resilience Plans are developed for designated BRPAs, coordination with the counties will be needed to ensure that any future updates to community and general plans reflect and incorporate the intent of these areas through their policies and land use maps. Community planning processes also provide an opportunity for gathering community input on vulnerable areas that should be prioritized for adaptation planning, including designation as BRPAs.

Zoning and land use designations are intended to conform with county land use plans. Any future development proposed within each planning district is also required to demonstrate conformance with the community plan. In reality, zoning and State Land Use Districts have not been updated in most areas to reflect risks from sea level rise or erosion hazards. Development in coastal areas has primarily been regulated through other means including the SMA and shoreline setback requirements, however land use designations are another important tool to communicate appropriate land uses and that can facilitate de-intensification or removal of development from vulnerable areas. In Hawai'i, the SLR-XA spatially illustrates the extent of future SLR-associated hazards, and has been used as a basis for establishing mandatory disclosure requirements for real estate transactions as well as for updating shoreline setbacks in some counties, but Kaua'i is the only county that has integrated it into zoning through the adoption of a SLR Constraint District (see text box). There are additional opportunities to utilize the SLR-XA as the basis for updating land use designations, which could be done through several approaches as described below:

- > **Option #1: New State Land Use Designation.** At the state level, the SLR-XA could inform creation of a new Land Use Designation to be applied statewide.
- > **Option #2: Rezoning coastal areas to existing County designation.** At the county level, areas within the SLR-XA could be rezoned to an existing, less intensive zoning designation (downzoning).
 - This would involve changing zoning to the equivalent of Preservation (allows no development), or a very low density Residential designation.
 - Downzoning residential parcels could be implemented in conjunction with a TDR program (see Recommendations #15 and #19). By offering property owners the ability to sell unusable development rights, the counties could mitigate regulatory takings liability. Legal analysis would be needed to vet such a TDR program.
- > **Option #3: Adopt a new zoning overlay that can be applied over existing zoning.**
 - Zoning overlays are superimposed over existing zoning districts to add another layer of regulation without changing the underlying zoning. Zoning overlays exist within county codes already for purposes such as cultural and historic preservation, transit oriented development, and community character and design. Kaua'i's Sea Level Rise Constraint District and Special Treatment Coastal Edge overlay are examples of zoning overlays for coastal hazards (see text box).

Considerations

- Use of the SLR-XA to guide policy and planning is well established as a best practice. The 2017 Hawai'i Sea Level Rise Vulnerability and Adaptation Report identifies it as Recommendation 1.1, "Recognize the SLR-XA as a state-wide vulnerability zone" (Hawai'i Climate Change Mitigation and Adaptation Commission, 2017). However, using the extent of the SLR-XA as the basis for changing land use and zoning designations comes with challenges. As climate science and modeling evolves and emissions scenarios change, the SLR-XA may also change in timing and extent. This may require periodic updating of land use maps and associated regulations. There may be other technical and legal considerations associated with using the SLR-XA as a regulatory layer. More appropriately, it could be used as a starting point and then further vetted against local conditions and other planning considerations to create a regulatory layer that incorporates SLR hazards and can be adopted into the zoning ordinance. Kaua'i's Special Treatment Coastal Edge overlay is an example that is informed by the SLR-XA but does not correspond to it exactly.

Regarding the options presented above for integrating SLR as state Land Use Districts and/or county zoning, there are the following implementation considerations:

- > **Option #1** for creating a new State Land Use Designation (SLUD) would require a time consuming process that includes: amending HRS Chapter 205 through the state legislative process, creating administrative rules for the new designation, conducting environmental review and stakeholder engagement, reclassifying existing lands through SLUD boundary amendments by the LUC, and coordinating with counties to amend land use plans and zoning ordinances.
- > **Option #2** would require the involvement of the BLNR and potentially the LUC, as well as DLNR and OCCL to zone and manage the uses in the new conservation district subzone. The administrative rules governing Conservation District subzones (HAR Title 13, Chapter 5) would need to be amended to describe the subzone, establish criteria for its application, and identify allowable uses. Stakeholder consultation and environmental review would also be needed to accomplish this, with final approvals from the BLNR and Governor.
- > **Option #3** would require a county ordinance to define and adopt a new zoning overlay for incorporation into the zoning code. Zoning code updates can also be time consuming and politically fraught, however Kaua'i's example demonstrates that it is possible.

Key Implementation Steps

Option #1: New State Land Use Designation

- 1) Legislative amendments to HRS Chapter 205 to establish the new district.
- 2) Creation of administrative rules.
- 3) Environmental review under HRS Chapter 343.
- 4) Stakeholder engagement.
- 5) SLUD reclassification and boundary amendments through the LUC.

Option #2: Rezoning coastal areas to existing County designation

- 1) Update regional land use plans and land use maps to indicate a desired change in future land use (this is optional, but helps facilitate the process).

- 2) Obtain LUC approval for SLUD boundary amendment (if applicable).
- 3) Submit applications for rezoning through county planning departments.
- 4) Gather public input through stakeholder engagement and public hearings.
- 5) Obtain approval from the appropriate Planning Commission and County Council.
- 6) Amend zoning maps.

Option #3: Adopt a new zoning overlay that can be applied over existing zoning

- 1) Draft an ordinance for the new zoning overlay that identifies its purpose, criteria, and associated standards for new and existing development within the proposed overlay zones.
- 2) Gather public input through engagement and public hearings.
- 3) Obtain approval from the County Council.
- 4) Apply the zoning overlay through community planning processes or through adoption of the ordinance that specified its application.

Legal Analysis

- The legal processes associated with changes to zoning and SLUD are well established, however they are also onerous and often contentious and subject to legal challenges. Required legislation and rule changes that would undergo the legal process are described in the implementation steps.

Funding/Financing Considerations

- Significant agency capacity would be needed to implement any of the three options. Staff time would be needed to prepare legislation and rule changes, conduct public outreach, and liaise with partner departments and agencies. Additionally, funding and staff capacity would be needed to complete land use analysis necessary to implement any of the three options. Of the three, the adoption of a zoning overlay (Option 3) is likely to be the least costly and time-consuming, and it has already been accomplished to some degree on Kaua'i. Options 1 and 2 would be the most costly and time-consuming and would likely require economic analysis in addition to legal vetting.

**BEST PRACTICE
EXAMPLE:**

**COUNTY OF KAUA'I SEA LEVEL RISE
CONSTRAINT DISTRICT**



In 2021, the County of Kaua'i convened a team of academic and technical consultants to analyze and inform the creation of a new constraint district to regulate development in areas projected to be impacted by sea level rise hazards. The constraint district incorporates scientific modeling for climate change induced hazards into the County of Kaua'i land use regulations under the Comprehensive Zoning Ordinance. This means that the new ordinance is proactive and based on scientific projections, rather than historic trends as is typical of zoning codes.

The SLR constraint district is based on the Sea Level Rise Exposure Area (SLR-XA) developed by the University of Hawai'i Climate Resilience Collaborative. The County of Kaua'i used this data to delineate sea level rise flood elevations for passive flooding and high wave run up impacts specifically for the island of Kaua'i. Alongside this data, the project team reviewed best practices and existing codes to establish criteria and design standards for new development within the Sea Level Rise Constraint District. The standards are intended to mitigate annual high wave run up and passive flooding associated with SLR.

The standards include a requirement for the lowest floor of all new residential construction to be elevated two feet above the highest SLR-adjusted base flood elevation. All new non-residential construction and substantial non-residential improvements are required to be elevated at least one foot above the highest SLR-adjusted base flood elevation (BFE).

3.4 REGULATORY

Regulatory recommendations are geared toward better aligning existing development regulations and permit conditions with public trust purposes. A trigger-based regulatory framework for BRPAs is also proposed that provides transparent requirements and options for adapting development over time.

Recommendation #8:

Develop Trigger-Based Regulatory Program for BRPAs

Develop and implement a regulatory program specific to eroding sandy beaches designated as Beach Resilience Planning Areas (BRPAs) as part of adaptation pathway implementation. The regulatory framework would clarify the process to identify, regulate, and enforce adaptation options within BRPAs. This program is modeled after the bluff adaptation policy in Isla Vista, CA (see Figure 6 and text box at the end of this section).

Each BRPA would be subject to site-specific adaptation pathway planning, in which a sequence of events, or “triggers,” would be identified through a collaborative community-based planning process informed by scientific and technical analysis (see Recommendation #5). After the pathway was developed, ongoing monitoring would enable the Beach Resilience Authority to identify when triggers are met. Monitoring would be conducted by the relevant jurisdictional authority in collaboration with the community. As predetermined triggers were reached, specific actions would become available and/or mandatory per the adaptation pathway.

TIMEFRAME

- Next 2-3 Legislative Cycles

LEAD ENTITY

- Beach Resilience Authority as specified by program implementation (recommendations #2-4)

COORDINATING ENTITIES

- OPSD; DLNR OCCL; County Planning Departments

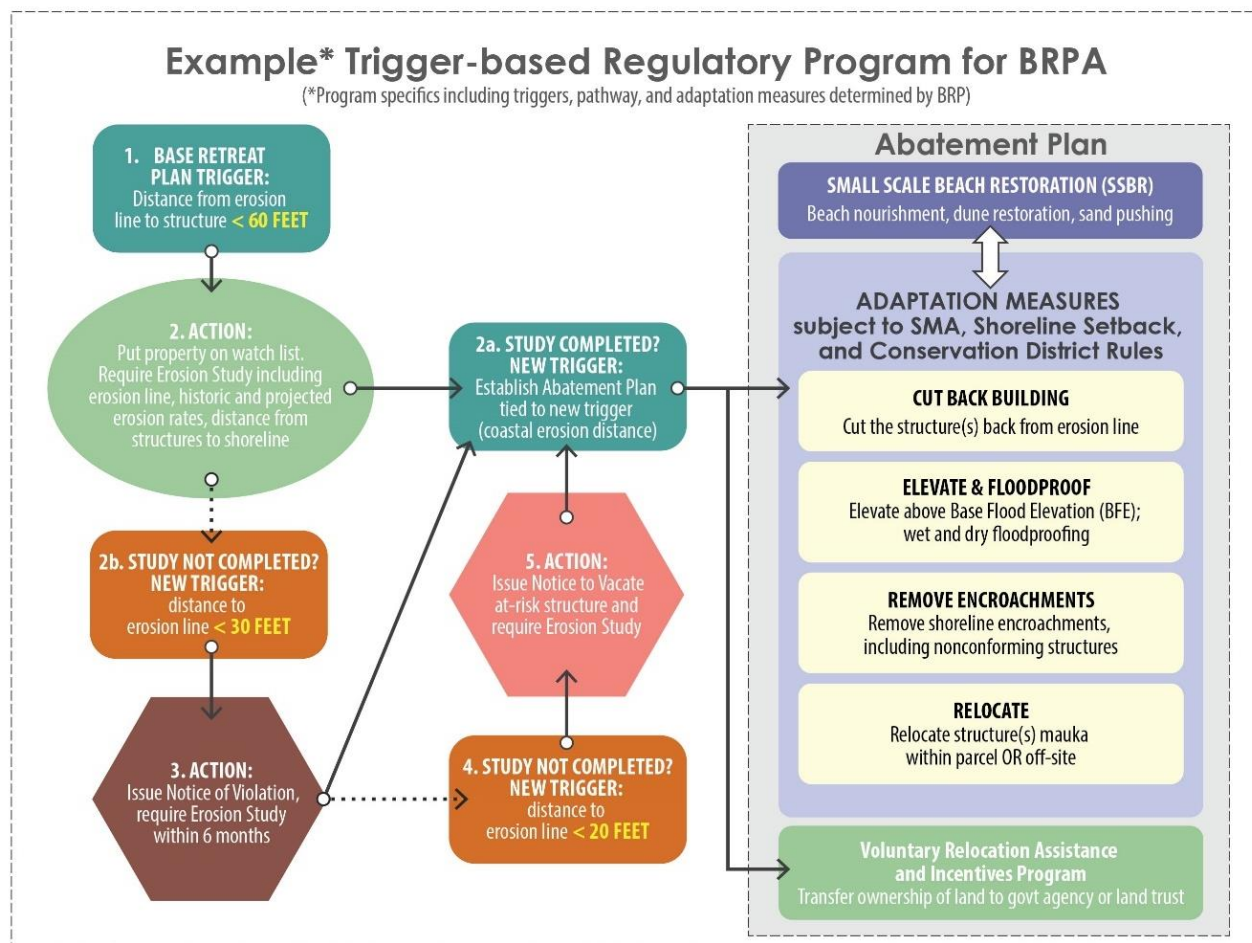
Description

The proposed regulatory program, coupled with implementation of one of the jurisdiction recommendations (#2-4), is intended to help streamline enforcement and provide a transparent set of requirements and options for property owners and government agencies alike within BRPAs.

Enforcement of this trigger-based regulatory program would be aligned with building codes and other applicable County and State rules and engineering safety guidelines. Enforcement would be implemented through a progressive property tagging system where tags would be issued to owners based on monitoring of adaptation pathway triggers (e.g., distance from the erosion line or dune crest, etc.). Tags would follow a progression from Yellow (prepare) to Orange (take action) to Red (unsafe to occupy; retreat), in alignment with the regulations and identified pathway for each area.

An example flow chart of a trigger-based regulatory program for a BRPA is shown in Figure 6. Note that program specifics such as triggers, pathway, and adaptation measures elements would be customized in a community-based planning process under the BRP framework.

FIGURE 6: EXAMPLE TRIGGER-BASED REGULATORY FRAMEWORK FOR BEACH RESILIENCE PLANNING AREAS



Considerations

- In order to make the program enforceable, the regulatory framework and enforcement powers need to be enabled in law. Whether this occurs through county ordinances, state legislation, or a combination will depend in part on the which model of jurisdictional authority is adopted for BRPAs (see choice between recommendations #2-4). State and county authority for regulating structures determined to be unsafe or unfit for occupancy is discussed below.

State Authority

To guide amendments to create a yellow, orange, and red tagging framework at the state level, the definition of “Unfit for occupancy” found in HRS §127A-30 could be used and expanded upon. Expanding this definition to pertain specifically to yellow, orange, and red tagging in BRPAs and enable enforcement capabilities will require a legislative amendment. “May be Unfit for Occupancy” would define the yellow tag; “Will be Unit for Occupancy” would define the orange tag; and “Unfit for Occupancy” would define the red tag, in addition to those definitions of unsafe structures found in County codes. The definitions are below, with proposed amendments underlined:

-
- > “May be Unfit for Occupancy” means that a building or residential dwelling unit is located in a zone that will be impacted by sea level rise given current erosion rates and should prepare to take adaptive action.
 - > “Will be Unfit for Occupancy” means that a building or residential dwelling unit is located in a zone that will be impacted by sea level rise in the medium- to near-term given current erosion rates, and should take adaptive action now.
 - > “Unfit for occupancy” means that a building or residential dwelling unit has been damaged to the extent that the appropriate county agency determines that the unit creates a dangerous or unsanitary situation and is dangerous to the occupants or to the neighborhood. (HRS §127A-30)

There are additional protections on the lateral access provided by sandy beaches, which can be enforced if structures block beach access. Beach transit corridors are also protected by State law (HRS §115-5, HRS §205A-1) and DLNR has the power to fine property owners for encroachments into them under HRS §183-7.

County Building Codes

While building codes generally apply to new construction, there are also rules pertaining to unsafe structures that become a public nuisance. These rules could potentially provide a basis for enforcing the trigger-based regulatory program, once the role of the counties is determined. For example on O’ahu, ROH Chapter 16 (Hawai’i State Building Code) Sections 116.1 to 116.4 describe the ability of the Building Official to stop entry into unsafe buildings, give orders to property owners or occupants to fix issues, and mitigate issues that pose significant harm at the expense of the property owner. The definition of unsafe buildings includes those that are structurally unsafe and dangerous to human life, which arguably would cover houses imminently threatened by coastal erosion, but the definition could potentially be expanded through legislative amendments to add language specific to coastal erosion.

ROH Chapter 16 specifies:

- > The definition of “unsafe buildings” as those which are structurally unsafe, are dangerous to human life, or constitute a hazard to safety, health, or public welfare due to inadequate maintenance, dilapidation, obsolescence, fire hazard, or abandonment (§116.1)
 - > Declares unsafe buildings to be public nuisances that can be abated by repair, rehabilitation, demolition, removal, or other methods ordered by the Building Official (§116.1)
 - > Allows for the Building Official to issue an order restricting or prohibiting the use of and access to unsafe structures (§116.2)
 - > Allows for the Building Official to order the owner or occupants of an unsafe building to take action deemed necessary to reduce or eliminate the risks associated with the building, including but not limiting to vacating the structure, securing the structure from entry, immediate repairs, and demolition and removal (§116.2)
 - > The Building Official may enter into consent orders with the responsible people to require specific mitigating actions and pay agreed upon penalties (§116.2)
 - > The Building Official can post signs prohibiting entry except to make repairs, labeled “DO NOT ENTER. UNSAFE TO OCCUPY. DEPARTMENT OF PLANNING AND PERMITTING, CITY AND COUNTY OF HONOLULU” (§116.3)
 - > If the property owner does not comply with an order listed §116.2 or if immediate action is needed to prevent significant harm to persons or property, the Building Official can secure an unsafe structure from entry, repair the structure, or demolish the unsafe structure, at the cost of the property owner (§116.4)
-

Other counties provide similar rules in their building codes pertaining to unsafe structures:

- > Maui County
 - §16.25.113 - Violations
 - §16.25.115 - Unsafe structures and equipment
- > Kaua'i County
 - Chapter 12 – Building Code
- > Hawai'i County
 - Chapter 5A – Building Code

For the counties that adopt the International Building Code (IBC), which include Kaua'i and Hawai'i counties, there is similar language pertaining to right of entry (§104.6), giving notice and recording violations (§114.2; §116.2; §116.3), unsafe conditions (§116.1), and abatement (§116.5). Building code amendments to include structures threatened by coastal erosion in these provisions could also be proposed at the State level to provide consistency in codes across islands.

Further clarification is also needed to enable county officials to enter the site to perform inspections if the homeowner refuses entry. While there is language in the county building codes that stipulates the process by which inspectors can gain entry and even mitigate hazards in the case of imminent risk to public health and safety, officials have not fully utilized these capacities. This has led to situations where a landowner takes actions on their property that has a negative impact on the adjacent public trust beach lands (Broder Van Dyke, 2022).

Key Implementation Steps

- 1) Determine the jurisdictional structure and authority for enforcement of the Beach Resilience Program, according to one of the options in recommendations #2-4. Clarify or expand enforcement authority for the appropriate agency to mitigate hazards created by beachfront structures that become undermined due to coastal erosion and enable the red, orange, and yellow tagging framework.
 - a. Pass legislation at the County and/or State level, depending on the regulatory authority of BRPAs.
 - b. Alternatively, the tagging system regulatory program may be able to be passed as part of the BRPA program legislation to streamline implementation.
- 2) Pass legislation to amend the definition of “unsafe buildings” or “unsafe conditions” in the appropriate laws to add a category for buildings undermined by coastal erosion.
- 3) Designate funding to hire additional inspections and enforcement staff in applicable agencies to ensure timely and proactive enforcement of violations of shorefront properties and structures within BRPAs.
- 4) Create processes for monitoring triggers within BRPAs and enforcing prescribed adaptation actions based on BRPA-specific adaptation pathways plans.
- 5) Pass legislation to implement real estate disclosures as part of the tagging process. If a property has ever been yellow, orange, or red tagged, that should form part of the real estate disclosure requirements, including the full notice and conditions for remedying the hazards so identified.

Legal Analysis

- The current process to appeal violations issued by enforcement agencies gives the options to homeowners to use the contested case process. Given the resources needed to litigate each enforcement appeal on a case-by-case basis, there is a need to move people from the contested case hearing process into this yellow, orange, red tagging pathway. However, there may be legal issues around homeowners' constitutional right to due process under this tagging system.

Funding/Financing Considerations

- General funds are required to set up the program with staff and resources. Inspection and monitoring activities may be funded as one identified expenditure category for the Beach Resilience Fund. Additional funds are needed to hire more monitoring and enforcement staff, although this staffing capacity would not be directly funded via the BRF, which is geared more towards operational and capital expenses. Staff capacity is a current impediment to timely enforcement of current regulations, and this would be exacerbated by adding new responsibilities. Alternatively, the onus and financial responsibility for this process could be handed to landowners, as per the Isla Vista Bluff Policy (see Best Practice example).
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BEST PRACTICE EXAMPLE:

ISLA VISTA BLUFF POLICY (2024 UPDATE)



Isla Vista is an unincorporated community in Santa Barbara County, CA with a population of about 15,000. The coastal bluffs were developed in the 1960s, primarily due to demand for student housing for UC Santa Barbara. In 2004, Santa Barbara County established the Isla Vista Bluffs Policy to address safety and welfare concerns for occupants of the houses abutting the coastal bluff. The bluff experiences chronic erosion as well as dramatic collapse events during large swells and storms. These collapse events have caused portions of houses to fall into the beach 30 feet below and endangered public safety.

The policy requires property owners to take specific actions once certain triggers are met. Triggers are based on distance between structures and the bluff face. When the first trigger is reached, the property owner must retain the services of a licensed professional to assess the safety of their structure. The policy originally used a 15 foot distance between the bluff face and a structure's foundation as the first trigger, and a 5-foot single collapse event as a threshold for planning and regulatory purposes. However, in 2017 a single event collapse exceeded the 5-foot width, causing policymakers to evaluate the adequacy of the policy.

A 2024 update to the policy doubled the threshold to a 10-foot width maximum collapse event, with a focus on maximum single collapse events rather than frequency of collapse events as was previously the case. The policy update also updated the original threshold so that the County would send a request to complete a geotechnical study to any house within 20 feet of the bluff face, up from 15 feet. All measurements must be completed by a licensed surveyor or a licensed civil engineer and are submitted to the County Building Safety Division. For those houses within 20 feet, measurements to the bluff face are required to be submitted twice a year, shifting responsibility to the property owner to remain proactive and easing the County's regulatory burden.

The County works with the property owner to create an Abatement Plan based on available adaptation options suitable for the structure's foundation type. The options may include cutting back the structure or moving the structure inland. Permits, including land use approvals and building permits, are required to perform any demolition or alteration to structures.

The thresholds are as follows:

Within 20 feet of the bluff - County sends a Notification Letter to the property owner requesting a geotechnical study specific to the site in question. Property owner must hire licensed professional to measure distance from structure to bluff face and submit to County twice a year (April and October).

Within 15 feet of the bluff - County issues a Notice of Violation (NOV) to the property owner requiring a geotechnical study specific to the site in question.

Within 10 feet of the bluff - County issues a Notice to Vacate those specific portions of the structure that are within the 10-foot threshold. The property owner is required to hire a geotechnical engineer to prepare a site specific study to establish the maximum collapse width during a single event for that site.

Recommendation #9:

Review and Update Shoreline Easement Terms



Inventory and impose additional terms and restrictions on shoreline encroachment easements for shoreline parallel structures within BRPAs with the goal of phasing them out. Limit the duration of new easements and update the shoreline easement fee structure to ensure that valuation of rental bonds and easement considerations accurately reflects the true value of the easement, the impacts to public trust resources, and any off site impacts. When existing easements expire, determine whether to renew them and impose appropriate terms and fees to ensure compatibility with the BRPA's adaptation pathway.

TIMEFRAME

- Next 4-5 Legislative Cycles

LEAD ENTITY

- DLNR Land Division

COORDINATING ENTITIES

- County Planning Departments

Description

Implementation of the Beach Resilience Program should include measures that restrict or provide disincentives to allow the continued encroachment of shoreline parallel structures such as seawalls in BRPAs where it is found that these structures negatively impact the public trust and/or hamper the objectives of beach preservation and restoration.

The current system for calculation of monthly rentals for right-of-entry and revocable permit during the assessment of easement applications results in relatively low charges that fail to act as a disincentive for continued occupation of eroding shorelines, and can lead to low levels of revenue recovery over a protracted period of assessment of the easement application. The process does not fully consider the extent to which the easements convey value to the adjacent property, but is based upon the average value of the adjacent property, with a discount applied to submerged lands. Further, the current system applies a discount to submerged lands and does not account for impacts of encroachments on the public trust or adjacent properties. Easement fees should be restructured to consider:

- > The true value of the easement when climate impacts are considered
- > The loss of public trust resources immediately makai of the easement boundary due to granting of the easement
- > The loss of public enjoyment for subsistence, cultural, recreational, and other purposes
- > Any off site impacts

The monthly rental fee and fair market value of an easement consideration should be appraised by looking at properties with and without the easement/structure, and with/without the access or protection provided by the structure located within the easement. This is similar to the process employed by the Hawai'i Department of Transportation (DOT) to estimate the added value of road access. A regional standard uplift percentage should be calculated, and rent should be calculated on that basis. E.g., if a property with an easement is worth 20% more than without the easement, then monthly rent for revocable permits during consideration of easements should be that 20% uplift value (i.e., property value *0.2), divided by 12 (months in a year), divided by 25 (years on a lease). This would help

ensure that the state has sufficient funds to remove the structure in the event that: a) the easement is not granted; b) the landowner becomes delinquent with monthly rent payments; and/or c) the structure causes offsite impacts. Forecasted increases in value of the property over time, or avoided losses of value, should also be incorporated into this calculation.

Easement leases should also incorporate some measure of rent or compensation for the loss of or damage to public trust resource, and this should be incorporated into the removal bond. This requires an estimate of the spatial value of the area occupied by the easement, impacts on adjacent features such as beaches and the adjacent marine environment, and also the impacts it may have on the ability to use or traverse adjacent areas. This should include a projected impact at the end of the easement period, including SLR impacts and a design storm erosion event (e.g. 1-in-100 year average return interval).

In designated BRPAs, due to the importance of public trust resources, easements should incorporate offsite impacts of the easement, including upon adjacent residential properties and on the beach and nearshore environment. This should be implemented in the form of a bond, which can only be refunded once any impacts have been offset or restored.

The timeframe of an easement is also a consideration. The goal within BRPAs would be to phase out shoreline parallel encroachments over time that would hamper the ability of a natural beach to migrate inland or otherwise impede the implementation of the adaptation pathway. While the duration of easements has recently been reduced from 55 to 25 years, this may still be too long if located within a rapidly eroding location. Calculation of the benefits and value of the easement should incorporate allowances for the way the benefit provided by that easement increases over time, as the shoreline seeks to recede past the easement position. In calculation of the easement consideration, there should also be an escalation of the annual easement fee due to the increased geophysical benefits over time. Easement terms in BRPAs should reflect the site-specific conditions by including site-specific term lengths, and allow for early termination (without compensation of the easement fee that was paid in advance) in the event that the nonconforming structure must be removed early. Disclosure requirements should also include a statement to the effect that there is no guarantee that pre-existing easements located within a BRPA would be reissued.

Considerations

- The approval process for easements, which requires approval by the Legislature, adds time, cost and complexity to the process. This can extend the period within which the rental payments apply. Within BRPAs, a standard rule for easements that considers site-specific would reduce uncertainty and send clear market signals to purchases of beachfront property in those locations (see text box).

Equity issues may arise, because not everyone can afford to go through the process of obtaining an easement or paying the associated fees. If continued occupation is desired, some portion of the Beach Resilience Fund (BRF) (see Recommendation #12) could be dedicated to support people with limited resources who are attempting to obtain legal easements.

In addition, the current process for approving easements is through the state legislature, which adds to the complexity and time required, and may not support consistent implementation. Further legal analysis would be needed to determine whether the authority to approve easements could be transferred to the agency designated as responsible for BRPAs.

- Agencies will need to ensure engagement with households in all areas, especially where stewardship has taken place over generations. Access and easements may have been established overtime through practice that need to be maintained to ensure cultural and traditional access and the ability to continue land stewardship. Hiring staff or consultants familiar with traditional land use and land access within shoreline communities can help to navigate these challenges and ensure that all families are equitably engaged.

Key Implementation Steps

- 1) Inventory existing encroachments within each BRPA and determine whether easements exist. This may require the completion of a shoreline certification.
- 2) Conduct analysis of the value of an easement within each BRPA using the before and after valuation method used by most professional appraisers¹.
- 3) Establish a representative spatial value of public trust resources within each BRPA.
- 4) Work with easement holders to update easement terms where possible.
- 5) For expiring easements, evaluate whether they should be renewed and add appropriate terms and conditions to ensure compatibility with the adaptation pathway.
- 6) Conduct enforcement actions and levy fines as needed to require removal of unpermitted encroachments.

Legal Analysis

- The ability to obtain an easement acts as a “relief valve” for property owners unable to provide immediate compliance of their property. It may also mitigate filing of potential takings claims in the current regulatory system, which even if unsuccessful, can absorb considerable resources to defend, particularly the de-facto ban on hard structures on sandy shorelines due to their harmful impact on public lands. Further restricting easements could lead to a test case, i.e., a lawsuit filed by an advocacy organization with the intention of making law on a particular issue. The establishment of BRPAs may facilitate the adoption of relatively more stringent rules in the BRPAs, especially given the presence of eroding sandy beaches.

Funding/Financing Considerations

- Easement fees and encroachment fines provide an additional source of revenue for the BRF and can be an effective tool to strengthen the risk disclosure process, thereby disincentivizing ongoing occupation of beachfront areas subject to erosion risk. Additionally, to address equity concerns, consideration should be given to allocating BRF funds to support individuals with limited resources who wish to comply but face financial barriers, and to standardize the process for easements within a BRPA.

¹ This process seeks to identify comparable properties that have already had an easement granted (or removed), comparing the market or assessed values both with and without the easement, and thereby calculating the value of the easement.

**BEST PRACTICE
EXAMPLE:**

**CALIFORNIA STATE LANDS COMMISSION
RENTS AND BENCHMARKS**



The California State Lands Commission has broad discretion in all aspects of leasing state lands, including the method or amount of rent that is most appropriate, and how rent should be adjusted during the term. The Commission may issue leases up to 49 years, though some may run as short as several months. The cost of rent for an easement is generally based on a percent of the land value or an established benchmark appraisal, which are calculated for different regions. For each area, two types of benchmarks are calculated:

- Category 1, generally applied to private docks, piers, and buoys
- Category 2, generally applied to areas of fill, cantilevered decks, sundecks, or other non-water dependent uses

Rents must be in the best interests of the State, and may be based on one or more of the following methods (or another method altogether):

- 9 percent of the appraised value of the leased land; a percentage of annual gross income, where the percentage is based on an analysis of the market for like uses and other relevant factors;
- a comparison to rents for other similar land or facilities;
- benchmarks for regions with large concentrations of similar facilities, with benchmark rental rates to be based on analysis of similar or substitute facilities in the local area;
- other such methods or information that are based on commonly accepted appraisal practices and principles; and for leases for recreational piers or buoys, rent shall be based on local conditions and local fair annual rental values.

The use of benchmarks is intended to provide transparency, efficiency and consistency in calculating lease rents within geographic areas. Benchmark calculations are updated about every five years, with staff reports showing calculation methods and results posted publicly on the [State Lands Commission website](#).

Recommendation #10:

Revamp Emergency Shoreline Permits



Revamp the emergency shoreline permit rules and permitting process at the state and county levels to: 1) differentiate between incremental processes such as sea level rise and coastal erosion and emergency situations, such as storm events with an annual return interval of more than 10 years; 2) confer all liability for temporary structures to the property owner, including liability for that structure's impacts on public trust resources; 3) require property owners applying for temporary shoreline protection to provide a long-term plan for adapting their property and restoring the beach, and provide additional guidance for doing so; 4) specify acceptable materials and methods for emergency protection (e.g., further guidance on materials, slope requirements and other design guidelines); and 4) consider imposing financial conditions in addition to performance bonds to require maintenance of the structure should it impact the public trust or become a nuisance, as well as to pay for the removal of the temporary structure at the time of expiration of the permit. Consideration could also be given to prioritizing primary residences in the approval process.

This recommendation has applicability statewide, not just to designated BRPAs. Within designated BRPAs, emergency permits related to SLR-enhanced erosion would either be phased out or incorporated as part of an area-specific adaptation pathway as a temporary adaptation option, with appropriate conditions attached.

TIMEFRAME

- Next 4-5 Legislative Cycles

LEAD ENTITY

- DLNR OCCL

COORDINATING ENTITIES

- County Planning Departments;
DLNR OPSP

Description

Emergency permits are intended to provide temporary protection to shoreline properties in an emergency, as defined in County and State law. However, in practice, they are seen and used as a “relief valve” for coastal landowners whose properties are facing short-term impacts due to shoreline erosion. Many have come to expect and rely upon their approval both in the short and long term, to the point that property owners frequently threaten lawsuits if these discretionary additional rights are not extended. Due to factors such as the cost and difficulty of obtaining permits for activities within the SMA and shoreline setback areas, the historic lack of enforcement around temporary shoreline protection in Hawai'i, and the absence of conditions that place clear legal and financial burden on the landowners around the placement of the temporary material in the shoreline area, the current system perversely incentivizes landowners to wait until they qualify for an emergency permit to take action to protect their property (Cocke, 2020).

Historically, shoreline landowners have left temporary shoreline protection measures, including sandbags, tarps and “sand burritos,” in place well beyond their permitted timeframe and often for years, causing damage to beaches and nearshore environments, hindering public access, and creating a public nuisance and safety hazard (Cocke, 2022a). Although temporary structures can be more easily removed than seawalls or revetments, sandbags, tarps and “burritos” can still create cleanup problems,

and they essentially function as coastal armoring and similarly exacerbate erosion on sandy beaches (Romine and Fletcher, 2012). The current rules include no requirement or mechanism for private landowners that install temporary shoreline protection to compensate the public for damage to public trust resources. Further, enforcement of expired shoreline protection has sometimes been hampered by legal challenges and political pressure (Broder Van Dyke, 2024; Cocke, 2022a; Cocke 2022b).

With the now-widespread availability of sea level rise and erosion data, including historic shoreline changes and future projections of how the shoreline is anticipated to move as sea level rises across Hawai'i, it is no longer appropriate to treat the incremental process of sea level rise and associated coastal erosion as an emergency for the purposes of issuing permits for temporary shoreline protection. It is also not appropriate to consider annual erosion events due to winter storms as emergencies, as these are expected and frequent occurrences.

Considerations

- Makai of the shoreline, the State DLNR OCCL regulates emergency permits under the Conservation District administrative rules (HAR §13-5-35). DLNR OCCL has introduced proposed rule changes to HAR §13-5 that would advance this recommendation (see text box).

Mauka of the shoreline, the respective county is responsible for emergency permits under its SMA regulations. HRS Chapter 205A provides guidance for the counties on SMA emergency permits, which are defined as granting development in cases of emergency requiring immediate action to prevent substantial harm to people and property, as long as the threatened structures were previously in compliance with the National Flood Insurance Program (HRS §205A-22).

Maui County has taken steps to improve its emergency permit process to be more proactive and long-term solution oriented. Changes in 2024 to §12-202-16 of Maui County's SMA rules added further conditions to emergency permits involving coastal erosion, including limiting them to 180 days and requiring applicants to provide a plan for alternative long-term solutions within 90 days.

Guidance for appropriate materials and solutions to be used in emergency protection can be informed by best practices from other places. For example, Oregon treats sandbags, sand burritos, and other geotextile approaches as hard structures and generally does not permit them to be used except as the core of a constructed dune system. Oregon also provides design guidelines to homeowners for how geobags should be assembled, including slope requirements and the USACE guidance that they should be tethered, so that if the bags rupture they are easy to clean up.

Key Implementation Steps

- 1) Adopt DLNR OCCL's proposed amendments to administrative rules relating to the Conservation District (HAR §13-5).
- 2) Amend HRS Chapter 205A emergency permit guidance to counties to improve alignment with DLNR OCCL's rule changes.
- 3) Develop additional guidance on authorized temporary measures for shoreline protection, including appropriate technologies and materials that will minimize harm to beaches and public trust resources and adjacent properties.

Legal Analysis

- Implementation would require changes to existing rules and permit review processes at the State and County level within existing programs. The availability of emergency permits, or lack thereof, has given rise to administrative contested case hearings and related litigation and judicial appeals. The legal policy and process for granting or denying emergency permit applications is no longer capable of suitably addressing more widespread and harmful climate impacts. The Hawai'i Constitution provides broad support for reforming emergency permit regimes to protect public trust resources, but those principles should be reflected in “on-the-ground” procedures involving emergency permits. At the same time, proactive planning and management with adaptation pathways, as proposed by the BRP, is necessary to prevent or mitigate shoreline emergencies creating the demand for these types of temporary solutions.

Funding/Financing Considerations

- Property owners will have varying levels of ability to implement emergency measures. To address this, mechanisms for providing technical advice and/or funding support to disadvantaged sectors of the community are advised. For example, licensed coastal engineering consultants or contractors should be engaged to generate estimated removal costs based on unit measures and construction type, for example an estimate of removal costs per linear yard and/or vertical extent of shoreline frontage, for each structure type. Additionally, funds within the BRF should be earmarked to support community members who lack the financial resources to apply for emergency permits. The BRF could also allocate funds to support compensation mechanisms and/or provide legal support to those low-income residents seeking injunctive relief via legal action against non-compliant properties that have impacted their property directly. To ensure that emergency measures remain temporary, permits should be time limited. One example of this would be restricting the validity of the permit to the relevant season.

BEST PRACTICE EXAMPLE:

DLNR OCCL's HAR §13-5 PROPOSED RULE CHANGES



In December 2020, the DLNR OCCL proposed changes to HAR Ch 13-5 include creating a new “temporary shoreline hardening” use that would replace the current practice of issuing emergency permits. These would be considered for areas impacted by incremental processes such as coastal erosion where the situation has become an “unmanaged hazardous condition” rather than an emergency (DLNR OCCL, 2022). To apply for permits for temporary shoreline hardening, applicants would need to demonstrate that they were also working towards a long-term solution, such as relocation, abandonment, or beach restoration.

Under the proposed rule changes, “emergency shoreline hardening” would apply only to emergency situations that are not part of an incremental process, such as severe storm events.

The proposed changes would also allow OCCL to require a surety bond or other legal or financial assurance to guarantee the removal of the temporary structure at the end of its permitted time. While the rule updates have not yet passed, they are supportive of managed retreat in that they send a clear signal to coastal property owners that climate change is an incremental process that can be planned for, and that the state intends to require owners to take a proactive approach in planning for and mitigating projected impacts.

Recommendation #11:

Deintensify Development in Shoreline Areas



This recommendation focuses on approaches for deintensifying development in shoreline areas, in particular those that are vulnerable to sea level rise and/or coastal erosion. The risks associated with maintaining development in vulnerable shoreline areas have become increasingly apparent as impacts intensify, insurance and mortgage providers exit, and the real estate market responds to regulatory and policy signals, such as hazard and violation disclosure requirements.

This recommendation builds upon Recommendation #7, which seeks to align land use planning and designations with SLR risks. The focus of this recommendation is on structures mauka of the current shoreline that are in the path of the shoreline's future projected landward movement due to coastal erosion and SLR. Current encroachments onto state public lands are discussed in Recommendation #10.

This recommendation identifies several levers to deintensify development within designated BRPAs in a manner that would: 1) further restrict the issuance of permits and variances for construction, repair, and rebuilding of structures; 2) ensure that structures are not repaired or reconstructed in a way that would change future erosion patterns; 3) preclude the future construction of shoreline protection; 4) place time limits on permits for new structures, while requiring the identification of adaptation measures and plans for eventual removal in submitted permits and plans for new structures; and 5) assign liability for any damages and nuisance related clean ups to the owner of the structure.

TIMEFRAME

- Concurrent with Beach Resilience Planning Area Designation

LEAD ENTITY

- OPSD; DLNR
OCCL

COORDINATING ENTITIES

- County Planning Departments

Description

Hawai'i's coastal zone management policy and regulations subject new development to multiple layers of regulation designed to prevent impacts to the coastal zone, mitigate hazards, and reduce risks to life and property. However, much of Hawai'i's existing coastal development predates the establishment of the national Coastal Zone Management Act (CZMA) of 1972. While regulation and enforcement processes are clear around development that encroaches onto state lands, there are limited regulatory tools and guidance available to enable proactive planning around existing structures that are projected to become encroachments in the future due to impacts from coastal erosion and SLR. Further, legal protections on nonconforming structures, defined and protected in statute and administrative rules, add complications to removing structures that are deemed legally nonconforming (see Considerations below). Proactive planning and regulation is needed to prevent further loss of public trust resources, particularly in designated Beach Resilience Planning Areas (BRPAs). This is particularly important for structures with deep and substantial foundations, which would potentially accelerate the loss of public trust beaches located makai of their footings (or between those footings if they are widely spaced).

Conservation District, Special Management Area (SMA), and shoreline setback regulations are levers that can be used to deintensify and ultimately phase out development in vulnerable shoreline areas over time. Conditions can be placed on Conservation District permits and SMA permits to make them more restrictive. Permit conditions can incorporate more consideration of future impacts by requiring future adaptation measures that account for erosion and SLR projections, including phasing out and removal, and adding explicit time limits to ensure that the structures are eventually removed at the applicant's expense. Including these conditions as a precondition for building new structures or making repairs would ensure that new development in BRPAs considers future SLR projections. Permit conditions could also require that repairs do not increase public hazards adjacent to the property by virtue of their location. The City & County of Honolulu has already started incorporating conditions such as these into their SMA regulations in ROH Chapter 25.

In addition to adding permit conditions, the issuance of variances should be minimized. Besides public interest, hardship is the only potential criteria for issuing a shoreline setback variance. While Act 16 (2020) prohibits private shoreline hardening structures at sandy beaches, county ordinances still allow for variances to be issued for the purpose of hardship, defined as resulting when the regulation deprives the applicant of all reasonable use of their land (Lee, 2021). Hardship variances are still granted by the counties post-Act 16, though obtaining them has gotten more challenging. Lee (2021) argues that counties in Hawai'i have a duty to protect beaches as a public trust resource and as trust land under the Hawai'i public trust doctrine. Removing hardship from shoreline setback ordinances as a standard by which variances can be issued could be one way to limit the development of new structures in the shoreline area.

Considerations

- Nonconforming uses and structures are defined and protected by statute in HRS §205-8 and HRS §183C and further clarified in administrative rules under HAR §19-170-64 and HAR §13-5-7. Generally, nonconforming structures are defined as those which were legal when they were built, but do not conform to more recent regulations. In the Conservation District, the definition of nonconforming applies to any structure legally built prior to October 1, 1964 or before its inclusion in the Conservation District (HRS §183C).
 - There are legal protections on nonconforming structures. A nonconforming structure may remain in place as long as it is "otherwise lawful," though it cannot be expanded in any way that increases its nonconformity. If damage to the structure is valued at more than 50% of its replacement value at the time of destruction, it cannot be reconstructed (HAR §13-5-7). However, this poses a barrier to removal or relocation of existing structures unless the 50% replacement threshold is met. DLNR OCCL has introduced proposed rule changes to HAR §13-5 that would remove the word "continuance" from §13-5-7-a, which may signal that nonconforming land uses may be able to be phased out over time. However, it does not propose to reduce the replacement cost threshold, which remains at 50%. The proposed changes also incorporate specific references to floodplain regulations, erosion and flooding. While the proposed changes take incremental steps towards disallowing nonconforming land uses, they stop short of proactively working to phase out these uses.
 - Due to the protective language around nonconforming uses, amendments to statute may be necessary to allow stricter regulation around nonconforming uses in BRPAs. Updating the statute would allow updates to administrative rules to follow.

- Amending the replacement cost threshold to state no more than 50% of original construction costs could be another way to limit replacement as this cost threshold would impact most construction that is more than 10 years old, due to rising housing and construction costs.
- Within the Special Management Area, the respective county is responsible for regulating development. Existing county plans and policies such as the Kaua'i County General Plan (2018) and the Hawai'i County Integrated Climate Action Plan (2023) have called for increasing restrictions around nonconforming structures in the SMA, and the County of Kaua'i is exploring the possibility of lowering the repair threshold to 40% of replacement value, indicating that counties are supportive of further restrictions on non-conforming uses.
- Removing the hardship variance from county ordinances would be one way to restrict the ability of landowners to develop nonconforming structures with the potential to infringe on public trust land. Hawai'i's public trust doctrine outlines a duty for both the state and counties to protect beaches as a trust resource (see Section 2.3). Lee (2021) argues that counties would not be liable to coastal landowners for regulatory takings because coastal landowners do not have the right to destroy public trust beaches and the counties do not have the right to permit landowners to do so.
- Counties already have rules in their ordinances outlining criteria and conditions for issuing permits, shoreline setback variances, and SMA variances, including definitions of hardship used in issuing variances. Despite similarities, counties define and apply the principles of hardship differently. The conditions that may be added to variances and/or permits also differs between counties. For example, Honolulu County ROH §26-1.9 outlines the conditions imposed on shoreline setback variances, which includes the appropriate conditions under which variances can be issued, the regulatory authority of the director, and clarifies that the city is not liable for any damages or losses caused by variance structures. County SMA and shoreline setback rules can be further analyzed for consistency and clarity to ensure they align with statewide efforts to protect public trust resources in BRPAs. Amendments may be needed to ensure that officials have the authority to impose additional conditions to help deintensify development in these areas over time.

Key Implementation Steps

- 1) Consider amendments to statute to allow stricter regulation around nonconforming uses in BRPAs, particularly in cases where nonconforming uses would conflict with public trust obligations.
- 2) Adopt DLNR OCCL's proposed amendments to administrative rules relating to the Conservation District HAR §13-5. Provide model permit conditions for counties to use (see text box). Explore the removal of hardship variances in county shoreline setback regulations.
- 3) Mandate the inclusion of future adaptation measures, including phasing out and removal, in the permit conditions for new structures.

Legal Analysis

- As has been described throughout this section, the responsibilities the State of Hawai'i has under the Public Trust Doctrine and the Hawai'i State Constitution, taking these steps are a legally supported, and might be argued – required, action in fulfilling its trust obligations to maintain and protect natural resources for the people of Hawai'i as well as for Native Hawaiians specifically. Where safety and nuisance are at play, they provide additional justification for such actions.
- The inclusion of mandates or prohibitions on future permits or actions, renewals, or other prospective applications likely do not amount to regulatory takings as they do not impact rights that the landowner had prior to the action. Typically, non-conforming use acknowledges that a use is out of conformance with the zoning or appropriate uses of a parcel and provides notice for the anticipation to bring the parcel into conformance at some point in time. Where changes are made to existing permitted rights, the *Lucas* and *Penn Central* tests described in the legal section should be considered.
- Given the prospective nature of this recommendation, in the event of legal disputes the issue of “ripeness,” or whether a matter is ready for judicial determination, may be considered. The legal doctrine of ripeness, stemming from Article III, Section 2 of the U.S. Constitution, limits federal courts to adjudicating real “cases or controversies,” rather than hypothetical or future issues.

Funding/Financing Considerations

- Implementation would require changes to existing rules and permit review processes at the state and county level within existing programs. Modifying the definition of the value threshold for permitted repairs to make the cost of initial construction the relevant basis for comparison would make it more difficult to qualify to repair or replace older structures, particularly where the increased level or risk exposure would require more substantial structures or foundations. Funds from the BRF could be provided on an equity basis to assist with increased conformity, for property owners who have limited funds and have otherwise complied with the objectives and requirements of the BRP.

BEST PRACTICE EXAMPLE:

CALIFORNIA COASTAL COMMISSION SPECIAL PERMIT CONDITIONS



California Coastal Commission staff have begun adding Special Conditions into their permit recommendations that specifically prohibit the future construction of shoreline protection devices such as seawalls. One recent example for the redevelopment of a house in the second row from the beach demonstrates how staff are inserting this language to proactively address future encroachments onto tidelands, even for houses that are not currently oceanfront. The staff recommendation report reads:

Condition: No Future Shoreline Protective Device. By acceptance of this Permit, the applicant agrees, on behalf of itself and all successors and assigns, that no bluff or shoreline protective device(s) shall ever be constructed to protect the development approved pursuant to Coastal Development Permit No. 6-23-0761 including, but not limited to, the residences and foundation in the event that the development is threatened with damage or destruction from waves, erosion, storm conditions, bluff retreat, landslides, or other coastal hazards in the future. By acceptance of this Permit, the applicant hereby waives, on behalf of itself and all successors and assigns, any rights to construct such devices that may exist under applicable law.

a. By acceptance of this permit, the applicant further agrees, on behalf of itself and all successors and assigns, that the landowner shall remove all or a portion of the development authorized by this permit and restore the site, if:

- i. Any government agency has ordered that the structures are not to be occupied due to any of the hazards identified above, or if any public agency requires the structures to be removed.
- ii. Essential services to the site can no longer feasibly be maintained (e.g., utilities, roads).
- iii. The development is no longer located on private property due to the migration of the public trust boundary.
- iv. Removal is required pursuant to LCP policies for sea level rise adaptation planning; or,
- v. The development would require a shoreline protective device that is inconsistent with the coastal resource protection policies of the Coastal Act or certified LCP. In the event that portions of the development fall to the beach before they are removed, the landowner(s) shall remove all recoverable debris associated with the development from the beach and ocean and lawfully dispose of the material in an approved disposal site. Such removal shall require a coastal development permit.

b. Approval of CDP No. 6-23-0761 does not allow encroachment onto public trust lands. Any future encroachment onto public trust lands shall be removed unless authorized by the Coastal Commission. Additionally, encroachment onto public trust lands is subject to approval by the State Lands Commission or other designated trustee agency.

3.5 FUNDING

The preferred means of funding government policy choices is through a permanent allocation of general funds, ideally via legislation. Broad based taxes that have low mill rates and are equitably and progressively distributed are preferred means of revenue generation. This section discusses other potential sources of funding, drawing on the Funding and Financing Assessment (Appendix C), and seeking to align with the Considerations for Success in Section 2.4. These considerations include a desire for stable and sufficient funding, equitable distribution of the benefits and sources of revenue, and alignment with BRP objectives.

A further funding consideration that is not discussed at length but is worth noting is the fact that the state is legally obligated to set aside 20% of funds raised from public lands for the betterment of Native Hawaiians, administered by the Office of Hawaiian Affairs (OHA) (Office of Hawaiian Affairs, n.d.). This fiduciary duty is outlined in the State Constitution, and Article XII, Section 6 requires OHA Trustees to manage and administer income and proceeds from a variety of sources, including a “pro rata portion” of the PLT, though the amount is not specified. The 20% share was codified in 1980 in state law in HRS §10-13.5. However, recent analysis finds that this obligation remains underfunded (Office of Hawaiian Affairs, n.d.). The Public Land Trust (PLT) refers to approximately 1.4 to 1.7 million acres of land conveyed to the State of Hawai'i by the federal government in 1959 under the Hawai'i Admissions Act. These lands, originally “ceded lands” from the Hawaiian Kingdom, are held by the state as a public trust for native Hawaiians and the general public (Article XVI, Section 7). Any funds which are raised from the Public Land Trust (PLT) lands, which may include coastal lands relevant to BRPAs, should account for this legally mandated obligation. Further, while it is outside the scope of this project, it is expected that SLR will cause some PLT lands to be lost, impacting this obligation and associated revenue. The values associated with use of the PLT lands may not be proportional to their spatial area, as allowing for managed retreat in more natural sandy beach areas can serve to maintain the presence of those beaches in a way that preserves their cultural and recreational values. As other areas of coastline experience coastal squeeze between rising sea levels and hard structures or natural barriers, the relative importance of these PLT lands may in fact increase over time.

Recommendation #12:

Establish a Beach Resilience Fund



Establish a dedicated special fund, the Beach Resilience Fund, utilizing multiple revenue streams. The fund would be used to support the implementation of the Beach Resilience Program and other recommendations.

TIMEFRAME

- Next 2-3 Legislative Cycles

LEAD ENTITY

- Legislature

COORDINATING ENTITIES

- OPSD;DLNR; County Planning Departments;

Description

Implementation of managed retreat requires establishing a discrete and persistent source of sufficient funds to implement the desired actions. In establishing this Beach Resilience Fund (BRF), it is important to identify the sources of funding, the entity responsible for collection, allocation and administration of those funds, and the rules for when and where the funds could be used. This template outlines steps that the Legislature, with input from OPSD, DLNR, and other relevant entities, can take towards creating funding mechanisms for managed retreat programs.

The funding and financing assessment (Appendix C) recommended establishing a new special fund, rather than modifying the objectives and financing arrangements of existing funds with similar objectives such as the Beach Restoration, Special Land and Development, Natural Area Reserve and/or Land Conservation Funds.

Considerations

- In implementing this strategy, the Legislature should tie the establishment of this fund to the rationale of protecting the public trust and risk reduction. This would be established via a regulatory amendment, with coordination and input from OPSD and DLNR OCCL, as well as other relevant entities. The rationale for the fund's establishment includes the social importance of public trust resources, the economic value of beaches for recreation and tourism, public health benefits, and disaster risk reduction. The types of expenditures permissible from the fund will be a key point of debate, as there is limited support for using taxpayer funds to purchase homes from wealthy resident and non-resident owners. Additionally, consideration should be given to utilizing the fund for essential components necessary for the effective execution of projects aimed at protecting the public trust and minimizing risk. These components may include staffing, the establishment of a development rights bank, and the hard costs associated with property acquisition. By setting clear and specific guidelines, the fund can be reserved specifically for public trust protection and disaster risk reduction. An example of a grant fund established in California for SLR adaptation planning is provided in the text box.
- Rules for the fund would require considerable integration with other recommendations, such as a voluntary relocation assistance and incentive program (Recommendation #14), or a development rights bank (Recommendation #19).

Key Implementation Steps

- 1) Establish the priorities of the Beach Resilience Fund.
- 2) Identify rules for which types of activities would be eligible for funding, and in which locations.
- 3) Establish special fund, specifying multiple sources of funding, and how it would be managed.
- 4) Identify process for selecting projects for funding.

Legal Analysis

- Establishing and adequately resourcing a fund to implement managed retreat will require negotiation between elected officials and relevant government agencies. It would be part of a broader regulatory amendment via a bill that establishes the priorities for managed retreat, regions in which it would be applicable, and rules for the types of activities that could be funded by the BRF. Hawai'i Revised Statutes Chapter 237D-6.5 would need to be modified to authorize the redirection of funds from State TAT revenue.

Funding/Financing Considerations

- The Legislature should establish multiple alternative revenue streams for the dedicated fund, to provide resilience and increase available resources. Funding streams could be used directly, or to service interest and repayments associated with government borrowings via municipal bonds. The following funding mechanisms for the BRF are suggested, in order of relevance and revenue raising potential:
 - > Allocation from General Funds
 - > Reallocation of State TAT revenue (see Recommendation #13)
 - > Establishing Special Improvement Districts, which could raise funds directly via ad-valorem taxes or use those funds to finance revenue bonds (see Recommendation #15)
 - > Encroachment fines and easement Fees (see Recommendation #9)

BEST PRACTICE EXAMPLE:

CALIFORNIA SENATE BILL 1 SEA LEVEL RISE ADAPTATION PLANNING GRANT PROGRAM



California's Senate Bill 1 (SB 1, 2021) directs the State to provide funding to local and regional governments to develop SLR adaptation plans and implementation projects. The program, which is administered by the Ocean Protection Council (OPC), aims to build resilience to SLR along the entire coast of California and the San Francisco Bay (Ocean Protection Council, 2024).

The SB 1 Grant Program contains two funding tracks: one for pre-planning, data collection, and planning phases (Track One), and one for the project phase (Track Two). OPC has awarded funds to a wide range of Track One and Track Two projects across all four phases of SLR adaptation.

Additionally, the SB 1 Technical Assistance Program targets eligible SB 1 applicants facing significant and imminent SLR threats, prioritizing applicants based on the following criteria:

- > Environmental Justice Communities
- > Federally Recognized Tribes
- > Small and Rural Communities
- > Other locally-specific barriers to SLR planning, including the absence of a SLR vulnerability assessment or adaptation strategy within the local jurisdiction

The FY 24-25 Budget maintained \$77 million in funding for the SB 1 Grant Program, with \$36.8 million delayed for allocation in 2026. Along with funds allocated in the annual Budget Act, SB 1 is funded in part by proceeds from the sale of state-owned allowances from quarterly cap-and-trade auctions for greenhouse gases that is distributed to various state agencies by the Legislature once a year.

Recommendation #13:

Allocate Transient Accommodations Tax toward a Beach Resilience Fund



Allocate a portion of the state Transient Accommodations Tax (TAT) to a dedicated Managed Retreat Fund.

TIMEFRAME

- Next 2-3 Legislative Cycles

LEAD ENTITY

- Legislature

COORDINATING ENTITIES

- OPSD; DLNR OCCL; HTA

Description

The state Transient Accommodations Tax (TAT) applies to gross revenues from short-term rental properties (hotels, houses, rooms, apartments etc., occupied for less than 180 consecutive days). Currently, the state's proceeds are directed to the general fund. As part of the establishment of a dedicated Beach Resilience Fund (BRF), it is recommended that a portion of the TAT be allocated toward such a fund.

Considerations

- The funding and financing assessment (Appendix C) identified dedicating a portion of state TAT revenues to Beach Resilience programs as a key strategy. House Bill 862 CD1 ceased the transfer of State TAT to the counties, in response to budget pressures experienced during the COVID-19 pandemic. In 2021, a total of \$103 million from the state's TAT collections was diverted from the counties and deposited into the state government's general fund. House Bill 862 CD1 also authorized counties to establish and administer their own TAT at a maximum rate of 3%, which was implemented by all counties. The ability of the counties to raise equivalent revenues to those previously provided by the state varies.

As the counties can collect their own TAT, the state TAT revenue can be allocated without county intervention which makes it flexible. Note that this reallocation would need to be weighed against other potential uses of those funds.

Key Implementation Steps

- 1) Establish the Beach Resilience Funds through a legislative action and define its purpose, sources of revenue, and rule for expenditure.
- 2) Amend HRS Chapter 237D-6.5 to authorize redirection of funds.

Legal Analysis

- As noted above, to dedicate a portion of the state's TAT revenues to the BRP, HRS Chapter 237D-6.5 will need to be amended to authorize this dedication of funds. It is also necessary to first establish the BRF to receive the funds, which would require a bill to establish the fund, and to define via legislation the purpose of the fund, sources of revenue, and rules for expenditure of funds.

Funding/Financing Considerations

- One important consideration for using State TAT as a main vehicle for funding the Beach Resilience Program is that, given the current budget climate, the state may be reluctant to give up revenue from their general fund. A potential motivator for the state would be the ability to require some level of match funding from the counties before they are eligible to access BRF funds, thereby reducing their overall exposure to coastal hazards. This would provide the state with an additional means to encourage efficient and effective coastal management plans at the county level.

Additionally, this strategy will require a mechanism for protecting this fund from diversion of funds to general revenue or other pressing needs, as occurred with the Maui managed retreat revolving fund (see text box). Another consideration is that funding for the BRF may result in lower levels of funding to other funds and competing interests, and thus may be subject to requests for returning funds to general revenue when state budgets are tight.

BEST PRACTICE EXAMPLE:

MAUI MANAGED RETREAT REVOLVING FUND



The Maui Managed Retreat Revolving Fund was created in 2022 (Bill 68, CD 1). The Fund was allocated 20 percent of the County TAT. It contained \$12 million in Fiscal Year 2024 and was set to receive an infusion of an additional \$12 million in Fiscal Year 2025. However, a bill to pause payments and re-allocate the fund passed unanimously in June 2024, citing concerns over the housing shortage following the 2023 Lahaina fire and need to reappropriate funds to build permanent, affordable housing (Bill 78, 2024).

The original legislation that created the Maui Managed Retreat Fund was praised as innovative (Ravella & Buckingham, 2022). However, its subsequent pause and reallocation of monies highlights the difficulties inherent in earmarking money for managed retreat in light of competing priorities such as affordable housing and infrastructure needs (Dobbyn, 2024). Additionally, the way the fund was structured would have made it difficult to use to retreat individual properties due to language restricting the fund being used to purchase, acquire, or rehabilitate privately-owned property unless approved by an affirmative vote of two-thirds of the members of the council by resolution (Ord. 5442, 2022).

Recommendation #14:

Establish Voluntary Relocation Assistance and Incentive Programs



Develop a program and associated eligibility criteria to provide financial assistance to relocate families that are owner-occupants of affected homes. The program would provide financial incentives for property owners to donate or sell affected properties to the government or a land trust. Develop criteria to determine eligibility (e.g., owner occupancy, length of residence, income, distance from erosion line, etc.). Leaseback options, in which the seller (or another party) enters into a lease agreement to continue to occupy the property for a limited time after a buyout, may be offered to certain occupants (see text box). Other financial incentives could include access to low-interest loans to take out a mortgage elsewhere, or additional tax incentives.

TIMEFRAME

- Next 3-4 Legislative Cycles

LEAD ENTITY

- Coastal Conservancy (see Recommendation #16)

COORDINATING ENTITIES

- County Planning Departments; DLNR OCCL; BLNR; DLNR Land Division; County Councils; Land Trusts

Description

These proposed voluntary relocation assistance programs would be based on the general format of a buyout-leaseback structure. Buyout and leaseback programs allow willing sellers to either sell their property outright to a purchaser (buyout) or sell their property to a purchaser who then leases the asset(s) to the seller or another party (buyout-leaseback) for a period of time. In the case of government acquisition of real estate, a buyout would consist of a transaction between a willing constituent and the government to purchase their real estate assets for an agreed value. The resident(s) would then vacate the premises, which could be demolished, rezoned, or put under a conservation easement to prevent new development and create/restore public open space. In the case of a leaseback, the property owner would sell the property, but then enter into a lease agreement—allowing continued occupation by the seller or another party—where they rent from the government in exchange for continued occupation of the property, for a period to be capped based on expected erosion rates and minimum property setbacks or safety considerations (see text box). Land trusts may also acquire property through donation or sale and enter into leaseback agreements.

Considerations

- Transfer of ownership from private to public has logistical advantages where homes are expected to be condemned or even destroyed by erosion, flood or storm in the foreseeable future. The fact that the property has already been transferred means that the administrative and legal legwork of condemnation or incremental adaptation and enforcement (see Recommendation #8) would be simplified or need not occur. With leaseback agreements in particular, constituents have the flexibility to take their time in finding new accommodations in addition to having financial resources for relocation or other life expenses. Access to low-interest loans on a mortgage to purchase elsewhere may be a powerful incentive to relocate, though the government may not want to be in the position of lending money to private landowners.
- The application of this method in other areas has focused on post-disaster situations (e.g. SBAs disaster loans for relocation), not incremental processes like coastal erosion. Although a retreat-focused program is less likely to receive government funds to augment incentives as compared to disasters, from a practical, administrative position the incremental nature of retreat may work in its favor; it avoids the processing of a deluge of applications at any given time, thus less likely to overwhelm the program and more likely to provide satisfactory outcomes for constituents.
- Unless the total value of lease payments in a leaseback agreement exceeds the original purchase price, these programs are not designed to create revenue, but to reduce risk and complexity while efficiently and voluntarily moving people and structures away from the shore. In some cases, foreign property owners along the shoreline, especially trusts and corporations, that may currently retain their properties for tax purposes, may even opt to donate their property to such a program in exchange for the ability to use it for a period of time.
- The government would need to agree on various lease conditions including which properties are eligible, who is eligible, and at what price the transaction may occur. Incorporating these considerations will help create a program that is efficient, equitable, strategic, and more palatable to the public overall.
 - > **Eligible properties:**
 - Properties located in a Beach Resilience Planning Area, identified as being adjacent to an eroding sandy shoreline, but with a minimum number of years of expected safe occupancy remaining. Expected safe occupancy will need to be determined by a State study of the beach in question (including a buffer period to be determined by BRP policy.) This will require integration with adaptation pathway triggers (see Recommendation #8) and the development of a Beach Resilience Plan (see Recommendation #5)
 - > **Prioritization options:**
 - Single family or multi-family properties, primary residence (owner-occupants) only
 - Low-income applicants
 - Date of purchase (e.g., before real estate disclosure laws came into effect; before CZM laws)
 - Multi-generational owner-occupants

> **Price:**

- Many, if not all, of the properties to be considered for these programs are priced at levels that do not reflect their erosion risk. If the program is voluntary, it is unlikely that homeowners will sell for under the market value, and thus participation would be low if prices were set at a “climate risk adjusted value.”
- To help address this disparity between the market value and “climate risk adjusted value”, several pricing schedules could be tailored to meet various ends. For example, purchase price could be linked with adaptation pathway triggers to decrease as triggers are met. The outcome would be a schedule that incentivizes people to sell in accordance with erosion risk levels and not to wait until the risks increase.

> **Lease Terms:**

- Duration and payback period
- Post-removal activities – Establish post-removal procedure that determines the change in land use and ownership (e.g., open space, government land, land transferred to a land trust, land used for conservation easement)
- Payback period – The payback period must not be longer than the anticipated condemnation date of the home. Establish payback period guidelines that provide for lease extensions should the home be safely occupied past its expected condemnation date and terms for early condemnation should the erosion progress faster than anticipated, using the trigger process defined in Recommendation #8. These guidelines should include, for both scenarios, provisions for: transfer of liability, lease termination, and occupancy rights.
- Liability – Define liability between parties in the buyout scenario and the leaseback scenario. In the buyout scenario, define the point of transfer of liability from owner to land trust or State, presumably at the time of purchase in its entirety. In the case of unexpected condemnation during a leaseback period, liability can be shared in a couple different ways. It can be borne in its entirety by either party, or it could be shared in such a way that incentivizes owners to sell in the first place but minimizes state exposure. The proportionality will depend on the State’s relative restoration discount and the owners’ transaction costs.
- Triple Net Lease Terms – Incorporate Triple Net Lease terms into the lease agreement. These terms limit the lessor's responsibilities to maintaining adequate safety and sanitation of the property. The lessor is not responsible for other costs or services, such as maintenance or improvements.
- Special circumstances – Establish protocol for facilitating early lease termination by a tenant, including assigning financial responsibility for providing compensation to the owner for the remaining balance of the lease and options for re-leasing or demolishing the property after a tenant vacates.

> **Financial Incentives:**

- Provide access to low-interest mortgage loans to relocate
- Reinforce pre-existing tax incentives associated with donating or selling land to a land trust (see Recommendation #17).

Key Implementation Steps

- 1) Establish potentially eligible market and estimate needed funds, taking into consideration nature/duration of home ownership, homeowner assets, proximity to erosion risk, and eligible land designations.
- 2) Establish acquisition and lease arrangements, taking into consideration eligible participants, price, and lease terms.
- 3) Allocate necessary funds from the BRF.
- 4) Hire staff and/or consultants with experience in engaging with communities, integrating TEK into programs, and working with internal and external stakeholder groups.
- 5) Engage in meaningful discussion with impacted communities to ensure the program is structured to achieve the intended results and not create unintended harm.
- 6) Advertise the State's interest in purchasing property and educate eligible homeowners on options.
- 7) Allow constituents to respond to inquiries.

Legal Analysis

- Under this recommendation, these programs would be voluntary, thus there are not likely to be concerns over regulatory takings claims under the U.S. and Hawai'i constitutions . The public trust doctrine may contribute to legal defenses to any regulatory takings claims that may be asserted. There may be equity concerns if this results in displacement of low-income residents and longtime local residents, which is why criteria based on income and duration of ownership are recommended.

Funding/Financing Considerations

- The main obstacle is the ability for the State to allocate funds for this purpose. There currently exists no mechanism for spending taxpayer funds on private property acquisition for the purpose of erosion impact mitigation. A special fund would need to be created in order to spend funds for this purpose legally.

Although buyouts are an approved use of various disaster relief funds, these funds are not specifically designated for the long-term, slow-paced disaster of erosion. Because disaster relief funds cannot be used for buyouts or leasebacks in this context at present, a program of this nature will have to rely on the designated Beach Resilience Fund mentioned previously.

An important consideration is the potential for initial loss of property tax revenue by the counties. This could be offset by integrating that property tax loss into the lease revenue calculations. Additionally, the State may need to provide compensation to the counties for this lost tax revenue, until it is erased by increases in value in "second row" properties and broader increases throughout the region.

BEST PRACTICE EXAMPLE:

CHARLOTTE-MECKLENBURG STORM WATER SERVICES FLOODPLAIN BUYOUT PROGRAM



Charlotte-Mecklenburg Storm Water Services (CMSS), a county-wide regional utility in North Carolina, implemented a Floodplain Buyout Program to relocate vulnerable residents out of flood prone areas. Under this program, CMSS purchased over 400 vulnerable homes and businesses and enabled 700 people to relocate out of the floodplain. CMSS also supported a number of leasebacks on a case-by-case basis to boost participation and off-set program costs. Under the leaseback system, residents remained in their homes for a set amount of time in exchange for paying rent. Leasebacks were used in select cases where residents did not want to take the buyout, such as for elderly residents who did not want to move, or residents who needed additional time to find another place to live.

Generally, CMSS avoided long-term lease terms to facilitate managed retreat out of the floodplain. In some cases, CMSS used a triple net lease, in which certain events or “triggers” such as the death of the homeowner or major flooding event automatically ended the lease (Spidalieri et al., 2020).

Leasebacks were a small part of the voluntary buyout program; between 2008 and 2019, only a dozen were granted. However, having the option provided flexibility to program administrators to work with landowners who refused to leave. The program employed social workers to help with outreach and education.

Though the buyout project was partially federally funded, federal funds are not allowed to be used on leasebacks; thus federal funds were appropriated only to buyouts of other properties.

Recommendation #15:

Establish Special Improvement Districts for Coastal Adaptation



Establish Special Improvement Districts to raise funds for coastal adaptation. Special Improvement Districts may coincide with BRPAs or be defined according to different criteria. Proceeds would be directed to the Beach Resilience Fund and/or managed by the counties, Coastal Conservancy, or an NGO for the benefit of constituents in the district.

TIMEFRAME

- Next 4-5 Legislative Cycles

LEAD ENTITY

- County Planning Departments

COORDINATING ENTITIES

- OPSD HICZMP; County Councils; Residents

Description

Special Improvement Districts (SIDs) are an economic development tool that creates a geographically bounded private organization to provide public services funded by mandatory assessment fees of property owners and/or businesses (Hoyt and Gopal-Agge, 2007). SIDs are similar to Community Facilities Districts (CFDs), which generate money for publicly owned capital improvement projects through the sale of bonds that can be repaid by special taxes levied on property owners within the district. For the purposes of this recommendation, both are discussed as possibilities and the terms are used interchangeably.

State legislation (H.B. 1672) was passed as Act 208 in 2022 to revise the rules on Special Improvement Districts to expand the purpose for which they can be created. Specifically, Act 208 amended HRS §46-80.5 to enable counties to establish SIDs for the purpose of providing, financing, and coordinating federal, state, and county efforts to engage in (1) Supplemental maintenance and security services; (2) Environmental research, restoration, and maintenance; (3) Natural resource management; (4) Natural hazard mitigation; (5) Climate change and sea level rise adaptation; and (6) Other improvements, services, and facilities per specific guidelines outlined in the HRS. This revision enables the Counties to create SIDs through separate ordinances for the purpose of climate change and SLR adaptation.

The Counties may create a governing board or association to provide management for the SID, pursuant to HRS §414D (Hawai'i Nonprofits Corporation Act). HRS §46-8.5 further stipulates that the counties may levy and assess a special assessment on properties located within the SID to finance the maintenance and operation of supplemental services benefitting properties within the SID's geographical boundary. The counties can also issue and sell bonds to finance improvements. It is possible that levied assessments could be directed towards the Beach Resilience Fund (BRF) discussed previously. However, doing so could raise an issue with County-derived funds being directed to a State entity and may require a legislative update.

Community Facilities Districts (CFDs) are another mechanism for funding special improvements within a defined district that are allowed under HRS §46-80.1 and regulated by the counties. The counties can levy and assess a special tax on property located within a district, and issue and sell bonds to raise funds for improvements. The state can also issue and sell revenue bonds for CFD improvements under HRS §201H-72. While all four counties have adopted ordinances enabling the creation of CFDs, to date only one CFD has formed statewide (Dobbyn, 2022). A CFD was discussed by Kahana Bay residents to fund erosion mitigation measures including beach nourishment, berm enhancement, and shoreline stabilization structures like T-groins (Kahana Bay Steering Committee, 2021). However, a CFD was never enacted, partly due to concerns over County ownership of the proposed T-groins, which is legally mandated by CFDs (Maui County, 2019). While the county is responsible for maintenance of the improvement structures, a private-public partnership can be used to cost share ongoing maintenance costs.

Further clarification is needed to determine whether proceeds raised from a SID or CFD created for a BRPA could be directed to the Beach Resilience Fund (BRF), and/or if funds could be managed by a Coastal Conservancy (see Recommendation #17). In a CFD, funds are managed by the county; in a SID, funds are generally managed by a non-governmental board or association pursuant to HRS §414D.

Considerations

- Existing SIDs in Hawai'i include the Waikiki Special Improvement District, which was formed in 2015 by a County ordinance (Bill 82, 2015). Other improvement districts in Hawai'i are found in Chinatown, Kailua Village, and Fort Street Mall. However, while the Waikiki SID includes within its membership fee simple owners, ground lessees, and commercial tenants in the district boundary, there are no SIDs in the state that cover a purely residential neighborhood. This makes the use of SIDs to fund climate adaptation in residential neighborhoods unprecedented statewide. Nationally, SIDs are typically found in commercial areas, where assessment fees from business owners fund shared improvements such as sidewalk furniture, lighting, holiday decorations, landscaping, and security services that benefit all contributing business owners.
- CFDs are generally focused more funding public infrastructure improvements. The only CFD operating statewide was formed to fund road improvements and potable water infrastructure in the master planned resort community of Kukui'ula in Po'ipū, Kaua'i. The CFD was formed in 2008 and the County of Kaua'i sold its first bond in 2012 (County of Maui, n.d.). Future Kukui'ula CFD projects include civil defense and shoreline recreational improvements.
- Where SIDs or CFDs are established would depend on several factors, among them: proximity to areas identified as priority areas for managed retreat, the property tax base of the community, and the likelihood of it being approved by residents. The rating structure, spatial extent and intended use of the levy would all need to be specified in advance, as SIDs must be supported by the community subject to the additional tax impost, and for issuing revenue bonds, if applicable. This would require alignment with the overall definition of managed retreat objectives, and the BRF.
- The SID's boundaries may align with areas already delineated, such as Special Districts, Beach Resilience Planning Areas, or the Special Management Area. This could streamline the process of selecting sites, but would still require stakeholder and community buy-in. Alternatively, SIDs need not be constrained to lands proximal to the shoreline, or to areas of the shoreline that are potential locations for managed retreat. To support the development of receiving areas for displaced development, SIDs could be created for designated receiving areas or other inland neighborhoods and towns that could benefit from infrastructure and public services to accommodate the expected increase in population and development.
- The community's resources should be considered when implementing an SID so that the rate reflects both the community's needs and its willingness to pay for those needs. This may require adopting similar exemptions and discounts to those applied to real property taxes. It would also require a differential rating structure that reflects the proportional benefits received by those within the area subject to the SID. For example, beachfront property owners may be levied at a differential rate, to include the protective and visual amenity benefits they receive from beach management actions, in addition to the public trust benefits that accrue to all visitors to the location (see text box). In addition to being thoughtful in how these funds are accrued and by whom, special considerations for equity should be made to how these funds are spent within the district.

- SIDs are established at the county level, whereas the BRF is administered at the State level. Although this could be a potential legal obstacle, this incongruity could be used to OPSD's advantage. It would be possible to encourage Counties to establish SIDs by having a match-funding requirement in BRF contributions.
- If the funds are dedicated to the proposed BRF, without proper separation, the proceeds from increased taxation from that one area would effectively be redistributed to provide managed retreat related services to many areas, not necessarily in the SIDs from which the funds are accrued. This could be desirable from the perspective of equity, but may cause issues with achieving public support and adoption. The constituents of the area in question would have to vote for the levying of new taxes upon themselves. This could be a stumbling block if the perception is that funds would be spent elsewhere. To avoid this, funds from SIDs that go into the BRF could be required to be compartmentalized and spent in the districts from which the funds were raised.

Key Implementation Steps

- 1) Identify potential SIDs with the above considerations in mind and get community buy-in through an outreach process.
- 2) Find project champions in impacted communities and at the respective County Councils to pass ordinances to establish each SID. For an example ordinance, see City & County of Honolulu Bill 82 (2015).
- 3) Pass ordinance at the County level to enable each SID. The ordinance should stipulate:
 - a. Whether program is a SID or CFD.
 - b. Geographical boundaries of District.
 - c. Whether the County designates a Board or Council to govern the SID, and if so, its membership scheme.
 - d. Membership structure for property owners (e.g. if membership will be segmented into tiers, per Best Practice Example text box).
 - e. How assessment fees will be calculated.
 - f. What services the SID will fund, specifically related to climate change and SLR adaptation.
 - g. Proposed budget.
- 4) Spend funds in the community based on managed retreat objectives as defined by the enabling ordinance and other regulations.

Legal Analysis

- It is important the funds be directed back into the community to comply with the rules on SIDs as required by HRS §46-80.5. Furthermore, the SID would need to be managed either by the County or by a Council of the County, pursuant to HRS §414D. These established rules governing the SID structure and use of funds restricts their use for managed retreat, but could remain an applicable tool to fund and direct climate adaptation actions in specific geographic areas. Additional clarification is needed to determine if changes to statute would be needed to direct funds raised through a SID or CFD to a State BRF.

Funding/Financing Considerations

- Equity should be a consideration in structuring a SID or CFD to pay for adaptation measures. Where possible, funds should be prioritized for those without resources to engage in the process of incrementally adaptation. Further funding and financing considerations are discussed in detail in the above sections.

BEST PRACTICE EXAMPLE:

BEACH MAINTENANCE LEVY IN NOOSA, AUSTRALIA

Differential tax rates were applied to raise funds for a sand recycling program in Noosa, Australia in 2024. Those businesses located directly on the beachfront, and those benefiting from tourist revenue, were required to pay 70% and 30% of the levy, respectively. These funds were allocated for ongoing restoration and maintenance of Noosa Heads Main Beach, via a sand recycling system. The estimated cost of the 10-year levy was AU\$5,600,000. Restoration projects were scheduled to begin the year the levy went into effect and each year after.



3.6 LAND MANAGEMENT

The recommendations in this section identify several possible land management mechanisms for enabling the relocation or removal of development from BRPAs and facilitating the restoration of beaches and shoreline environments.

Recommendation #16:

Establish a State Coastal Conservancy



Create a new state coastal conservancy to facilitate education and community engagement and identify and fund the acquisition and restoration or improvement of key lands for facilitating shoreline adaptation and managed retreat.

TIMEFRAME

- Next 5-6 Legislative Cycles

LEAD ENTITY

- DLNR OCCL; OPSD

COORDINATING ENTITIES

- Conservancy NGOs; Land Trusts

Description

This recommendation proposes a new state coastal conservancy to identify and fund the acquisition and restoration or improvement of key lands for facilitating coastal adaptation and managed retreat. The recommendation considers the authority and structure of the California State Coastal Conservancy (SCC) as a potential analogue (see text box). The SCC was established in 1976, in tandem with the California Coastal Commission. It was widely thought the establishment of a strong planning and regulatory agency for the coastal zone required the creation of a separate but complementary agency that would facilitate property acquisitions and improvements to proactively achieve the protection goals of the planning and regulatory program. Inasmuch as coastal planning and regulation can significantly affect property values, it was understood that keeping the regulatory and acquisition functions separate from each other was critically important to assure no fundamental conflicts of interest.

The SCC provides technical assistance and grant funding to local communities, tribes, nonprofit organizations, other government agencies, businesses, and private landowners to implement multi-benefit projects that accomplish multiple coastal resource protection objectives. Over the years it has been primarily funded through general obligation bonds approved by California's voters. It has spent more than \$1.3 billion in bond funding on state projects, and the agency states that it has leveraged far more from federal, local government, and private sources, particularly federal funding. As described by the SCC, over the last nearly 50 years, the agency has "built hundreds of miles of trails and preserved hundreds of thousands of acres of wildlife habitat, coastal farmland, and scenic open space." In the arena of climate adaptation, the SCC has been funding vulnerability assessments, adaptation plans, nature-based solutions, and property acquisitions and restorations to protect and facilitate adaptation to natural shorelines.

Considerations

- Creation of a conservancy could fill a gap in the existing framework for coastal adaptation and beach management by providing resources, capacity, and incentives for proactively implementing beach restoration and adaptation strategies, including managed retreat.
- It would be important to coordinate new conservancy functions and policy objectives with the policy and programmatic objectives of OCCL, OPSD, counties, and other state agencies working in the coastal zone, as well as the NGO sector, such as with the Hawai'i Land Trust or Trust for Public Land. This might include creating and updating an acquisition priority plan and outlining a process for transfer of acquired lands to land trusts, if appropriate.
- A significant new source of state funding is required, particularly if shoreline property acquisition and managed retreat are core program objectives. The Beach Resilience Fund recommendation (# 12) outlines multiple sources of potential funding.
- A conservancy could be more politically attractive and feasible than some other interventions as it would be a “softer” proactive state strategy for engaging the managed retreat and beach protection issue. Such a program could build on and supplement the land conservation strategies of OCCL and work collaboratively, through partnerships with NGO conservancies, and with willing sellers, supporting and facilitating managed retreat by private parties and the restoration and management of vacated areas.
- Focusing the conservancy on beach preservation and restoration/management in alignment with the proposed Beach Resilience Program could be more effective and feasible from a messaging standpoint than focusing it on managed retreat as the end goal, which is not always the case.

Key Implementation Steps

- 1) Establish a state-local task force/commission to create a legislative proposal to:
 - a. Identify key legislative objectives and functions of the new agency, such as planning, acquisition, and grant-making functions.
 - b. Identify where those authorities and functions currently reside in state and local government or in the NGO sector, and how these new responsibilities may relate to existing coastal management functions, such as planning and land use regulation.
 - c. Draft legislation necessary to create a new state agency and authorities, including any changes to existing authorities and programs.
 - d. Identify financing mechanisms to support the launch of a new state program.
 - e. Craft a bond measure with initial funding for the new conservancy
- 2) Conduct public hearings/outreach in runup to legislative process.

Legal Analysis

- Legal analysis of other conservancies, such as the California SCC, could support initial design of program structure and activities. Given the nature and scale of its duties and actions, the conservancy would likely require enabling legislation which could be modeled on the California SCC enabling legislation, California Public Resources Code, Division 21, State Coastal Conservancy. In addition to enabling legislation, the legal basis for the conservancy should be established in a manner consistent with Hawai'i law on county home rule. In short, the Hawai'i State Constitution and statutes give counties home rule powers over the structure and organization of county government, although county home rule powers do not limit the power of the state to enact laws of "statewide concern" (*Kunimoto v. Kawakami*, 1976). It may be necessary to establish the conservancy as needed based on SLR and climate impacts as a matter of statewide concern if any counties assert objections to such a conservancy based on home rule. In addition, certain functions of OCCL or OPSD may be better housed in a new coastal conservancy. This would need to be further researched.

Funding/Financing Considerations

- Creation of a new authority would require perhaps an initial general fund or allocated funding source for startup and operations, as well as significant public funding, such as through public bonds, to finance the acquisition and other strategic measures. Initial funding may be best established by a bond measure, while the BRF or component funding streams of that fund could be dedicated to the operations of the conservancy as conceived in the initial scoping activity.

BEST PRACTICE EXAMPLE:

COASTAL CONSERVATION LAND ACQUISITION

The California State Coastal Conservancy (SCC) is a strong model for best practices in this area. The SCC was established with the recognition that coastal planning and regulatory objectives would benefit from the presence of a state acquisition role and implementation of coastal restoration projects. This may be particularly true with managed retreat, where a collaborative state strategy that incentivizes shoreline property owners to voluntarily sell property could soften an increasingly restrictive regulatory presence in the face of growing shoreline hazard and erosion risks.



Recommendation #17:

Partner with Existing Land Trusts



Partner with existing land trusts to acquire important coastal lands in fee simple ownership and/or conservation easements. The relevant jurisdictional authority could hold or transfer coastal lands to relevant state and/or county agencies for management.

TIMEFRAME

- Next 2-3 Legislative Cycles

LEAD ENTITY

- OPSD

COORDINATING ENTITIES

- DLNR; Land Trust

Description

Land trusts, such as the Trust for Public Land (TPL) and Hawai'i Land Trust (HILT), are typically non-profit 501(c)(3) organizations with a mission of protecting land from development. Land trusts may operate at the local, state, or regional level.

Land trusts work with willing landowners to preserve their land in exchange for monetary compensation. In addition to the purchase price, landowners may also receive tax benefits for conserving their land in the form of reduced property taxes, a federal tax deduction, reduced estate taxes, and any state tax credits available in the local jurisdiction. These benefits may apply to an initial donation that includes a change in ownership, or to ongoing benefits provided by privately held lands covered by conservation easements.

Land trusts can be gifted or purchase land, either holding it themselves or transferring ownership to a state or county agency. However, land trusts often use conservation easements to restrict development while the land remains privately owned. Conservation easements are legal agreements that run in perpetuity with the property regardless of whether the property is sold. The conservation easement stipulates permitted private and/or public uses. Permitted uses may include agriculture, recreation, habitat restoration, subsistence fishing, public access, and other functions as outlined in the terms of the easement. Often but not always, these terms restrict the development of permanent structures. Some easements allow for installation of visitor management or recreational amenities.

Additionally, some land trusts take a more active stewardship role on the lands they help to preserve. Land trusts also often provide an educational function, advising landowners on preservation.

Considerations

- In Hawai'i, conservation easements are addressed in HRS §198-1 and defined as an interest in real property created by deed, restrictions, covenants, or conditions, the purpose of which is to:
 - > *Preserve and protect land predominantly in its natural, scenic, forested, or open-space condition;*
 - > *Preserve and protect the structural integrity and physical appearance of cultural landscapes, resources, and sites which perpetuate indigenous native Hawaiian culture;*
 - > *Preserve and protect historic properties as defined in section 6E-2, and traditional and family cemeteries; or*
 - > *Preserve and protect land for agricultural use.*

Hawai'i state regulations further specify that conservation easements in Hawai'i are perpetual in nature and may not be acquired through eminent domain. HRS §198-1 does not explicitly identify vulnerable shoreline areas in its definition of conservation easement purpose, nor does it mention SLR adaptation or hazard vulnerability. Although the first two subsections may encompass these concerns, in order to be widely and specifically used as a tool for managed retreat, HRS §198-1 may need to be modified or legally interpreted to include those purposes, with explicit mention of preservation of resources for recreational, environmental and cultural use.

- Currently at least 14 states or territories provide a state income tax credit in addition to the federal tax credit, but Hawai'i does not (Land Trust Alliance, 2022). Further economic analysis and consultation is needed with Treasury, land trust and real estate entities to identify mechanisms to encourage land donations, prior to the point at which they become a financial and legal liability.

Key Implementation Steps

- 1) Enact a state income tax credit for conservation easement donations.
 - a. Suggest credit of 50% of the fair market value of the land, up to a maximum personal deduction of \$100,000.
- 3) Partner with existing land trust(s) such as TPL or HILT to identify and achieve conservation goals under a managed retreat framework. Formalize the partnership, perhaps through a memorandum of understanding (MOU).
- 4) Provide funds to land trusts for the purposes of conservation that meets certain requirements on reducing risk from SLR and coastal hazards, either for acquisitions or for conservation easements. Funds can range from grants up to multi-year dedicated funds to key land trust partners.

Legal Analysis

- Legal analysis is needed to determine whether it is necessary or advisable to amend HRS §198-1 to modify its definition of conservation easement purpose to more expressly and explicitly include language on vulnerable shoreline areas, SLR adaptation and hazard vulnerability.

Funding/Financing Considerations

- Land trusts fund acquisition of property or conservation easements through combinations of federal, state, county, and private funds. Partnering with land trusts would increase their capacity to fund managed retreat by creating stronger grant applications and providing additional sources of matching funding. There is a high level of community support for land trusts in Hawai'i, which may ease concerns about property acquisitions, if the purchased properties would be placed under management by the trusts.

Some federal funds provide substantial sums of money for conserving land that meet certain criteria, including but not limited to:

- > Army Compatible Use Buffer Program – Funds land purchases surrounding army lands, where development may be incompatible with training activities.
- > NOAA Coastal and Estuarine Land Conservation Program – Provides grants to states or local governments to protect coastal and estuarine lands.

Both of these programs are typically focused on acquisition of undeveloped lands. Additionally, the state provides sources of funding for conservation, including but not limited to:

- > Legacy Land Conservation Program – Provides grants to community organizations and government agencies to purchase and protect land for public benefit.

Counties also provide funding for land acquisition, which also largely focus on undeveloped lands or low impact agricultural use:

- > City & County of Honolulu: Clean Water and Natural Lands Fund – Conveys 0.5% of real property tax revenue towards acquisition of lands that meet certain criteria, such as protection of watershed lands; preservation of forests, beaches, and coastal areas; public access and open space; and protection of significant habitats.
- > Kaua'i County: Public Access, Open Space and Natural Resources Preservation Fund – Conveys 0.5% of the County's certified real property taxes to purchase properties from willing landowners for public use. The allocation was raised to 1.5% but lowered after a decade due to the accumulated money not being spent. This was due to difficulty finding willing landowners on properties submitted by the public for protection.
- > Maui County: Open Space, Natural Resources, Cultural Resources, and Scenic Views Preservation Fund – Conveys 1.0% of real property tax for acquiring properties for open space.
- > Maui County: Managed Retreat Revolving Fund – Allocates 2.0% of the Maui County Transient Accommodation Tax towards optimizing opportunities to shift development inland through the physical movement of existing structures. This fund may not be used for the purchase, acquisition, or rehabilitation of privately-owned property unless approved by an affirmative vote of two-thirds of the members of the council by resolution.
- > Hawai'i County: Public Access, Open Space and Natural Resources Fund – Conveys 2.25% of real property tax towards this fund. Initially approved at 2.0% of property taxes, 0.25% was later added towards maintenance of the purchased properties.

Like any other nonprofit, land trusts may face challenges around covering operational costs. Grant funding usually carries stipulations that only a small percentage can be applied towards staff salaries and overhead. For a land trust to take on additional roles and responsibilities, the state should provide multi-year, guaranteed funding in the state budget. This would have the added benefit of providing available matching funds that could be used by the land trust to procure additional grant monies.

Land trusts could continue to have a role in facilitating managed retreat and education regardless of whether the state elects to form a Coastal Conservancy. The Coastal Conservancy (Recommendation #16) outlines potential interactions between that proposed agency and land trusts, which could be recipients and trustees of lands purchased by the Conservancy.

BEST PRACTICE EXAMPLE:

KAHUKU KAWELA FOREVER



On the North Shore of O'ahu, one of the island's last remaining undeveloped coastlines stretches five miles between Kawela Bay and Kahuku Point, surrounding Turtle Bay Resort. The area is frequented by recreational users including families, fishers, and surfers, and provides crucial habitat and nesting area for marine species including Hawaiian monk seals, Laysan albatross, green sea turtles, and offshore whales.

Despite its secluded and rural character, the land had past entitlements allowing to up to five new hotels, thousands of resort residences, and commercial centers. In 2015, after decades of community opposition, land trusts were able to leverage a collaborative approach to complete a conservation agreement with the landowner, the State of Hawai'i, and the City and County of Honolulu.

The Trust for Public Land (TPL) and the North Shore Community Land Trust (NSCLT) negotiated the \$45 million conservation easement, which covers 630 acres of coastal land. The terms of the easement ensure public trail access as well as public parking. NSCLT has led ongoing stewardship of the property, which includes habitat restoration and nest management for an emerging Laysan albatross colony.

Recommendation #18:

Utilize Transfer of Development Rights (TDR)



Enable voluntary transfer of development rights (TDR) programs in BRPAs to allow coastal homeowners to sell development rights to developers, land trusts, or government redevelopment agencies to conserve and restore coastal land for public use. Provide technical assistance to counties in setting up TDR program specifics to maximize success. Utilize TDR in tandem with any zoning changes in coastal areas to provide a potential “relief valve” for regulatory takings claims. Provide outreach and education to property owners to facilitate community acceptance.

TIMEFRAME

- Next 5-6 Legislative Cycles

LEAD ENTITY

- County Planning Department

COORDINATING ENTITIES

- OPSD; DLNR; Coastal Conservancy; HCDA

Description

Transfer of development rights (TDR) is a market-based mechanism designed to transfer development from designated “sending areas” to designated “receiving areas” in a way that would not be permissible under existing zoning regulations. Owners of parcels in the sending area can decide to sever development rights from association with their parcel and sell those rights to a developer. The developer then uses those development rights to build to an extent not otherwise allowed in the receiving area, usually by exceeding floor area ratio (FAR) or other density or zoning restrictions. Once the development rights have been transferred, a restrictive deed, covenant, or conservation easement is placed on the sending area parcel to restrict future development up to whatever amount is permitted by remaining development rights.

As a voluntary market-based mechanism, TDR only works if buyers and sellers of development rights agree on a price. If developers can get their desired density in the receiving area for free, there is no reason for them to incur an additional cost by purchasing development rights. Restrictive zoning in the sending area serves to lower the price a seller can reasonably expect for their development rights. Conversely, restrictive zoning in the receiving area may increase demand for development rights by creating market demand for bonus development above permitted levels (see Table 2).

Creating a functioning market for TDR necessitates choosing an appropriate allocation ratio for transfer credits, in other words the ratio at which development rights transfer from sending area properties to receiving area properties (Nelson et al., 2011; Pruetz, 2003). When the sending area has a higher market value than the receiving area, a conversion coefficient greater than 1 must be applied, increasing the baseline of development rights transferred (Bruno et al., 2023; Renard, 2007).

TDR can be supplemented with the use of a TDR bank, in which a government or independent entity purchases and holds development rights for future retirement or sale (see Recommendation #19). TDR banks are associated positively with program outcomes by allowing more flexibility on transaction timing. Other agencies such as conservancies or redevelopment agencies can also take an active role in ensuring a program’s success (see text box). While conservancies usually purchase and retire

development rights, redevelopment agencies can purchase and use development rights to complete housing and commercial projects. The government can also play an active role in facilitating demand for development rights in receiving areas through rezoning and/or playing an active role in the redevelopment of receiving areas. Recommendation #20 envisions a state-led redevelopment effort in designated receiving areas.

Considerations

- In 2022, H.B. 1436 was signed into state law as Act 223, amending HRS §46-163 which authorizes the counties to regulate the transfer of development rights for climate change adaptation. Specifically, Act 223 added language to expand the counties' use of TDR for the purpose of protecting from development lands at risk of sea level rise, coastal erosion, storm surge, or flooding associated with climate change. TDR programs have been considered by several counties and Kaua'i has drafted a TDR ordinance, but no ordinances have yet passed (McLean et al., 2024; Chris Hart & Partners, 2007).

TDR has been proposed as a managed retreat strategy by multiple sources including the Environmental Protection Agency (EPA), American Planning Association (APA), Georgetown Climate Center, and the California Coastal Commission (California Coastal Commission, 2018; Environmental Protection Agency, 2017; Pruetz, 2020; Spidalieri & Bennett, 2020). However, despite the potential of TDR to facilitate managed retreat from developed coastlines at a minimal public cost, the method has not been widely adopted for this purpose. This is due to several reasons:

- 1) The high desirability and subsequent cost of coastal real estate makes development rights expensive to developers/purchasers of the development rights.
- 2) Often, developers are able to achieve their desired density for free in receiving areas without purchasing development rights, either through existing zoning, programs or variances.
- 3) Most TDR programs target undeveloped sending areas. Demolishing existing development in sending areas requires additional programmatic mechanisms that have not been widely used (see the Best Practices text box for an example). Any TDR program that involves demolition should be part of a cohesive plan at the neighborhood or BRPA scale, to ensure that there is not a patchwork of properties that hinders achievement of the outcomes of managed retreat.
- 4) Most jurisdictions will still want some review and approval of the activity in the receiving area, which limits the value of the purchased development right.

Given the difficulties inherent in creating a functioning TDR market using urban receiving areas where density is often available for free and the development right value is lower than in desirable sending areas, some programs have shifted towards designating urban fringe, or even rural areas as receiving areas (Linkous & Chapin, 2014). Rural receiving areas may include greenfield lands that are currently undeveloped or lands that are not currently zoned for residential development, such as agricultural lands. These lands may face significant development pressure, making TDR more attractive to developers who can use purchased development rights to bypass restrictive zoning. However, greenfield development can have negative environmental impacts and requires public expenditure both initially and over time on infrastructure. The conditions needed to make a TDR marketplace function should be weighed against other environmental and social costs.

TABLE 2 TDR SUCCESS FACTORS

Importance	Factor
<i>Essential</i>	Demand for bonus development above permitted levels
	Customized receiving areas
<i>Important</i>	Strict sending area regulations
	Few alternatives to TDR
	Market incentives
<i>Helpful</i>	Certainty of TDR Use
	Strong public preservation support
	Simplicity
	Promotion and facilitation
	TDR bank

SOURCE: PRUETZ & STANDBRIDGE, 2008

The state can potentially assist by communicating guidance to counties on enacting TDR ordinances in support of the BRP. In addition to the program factors associated with success (Table 2), guidance should include the following considerations:

- > **Sending Area:**
 - Should be in high-risk areas adjacent to eroding high value sandy beaches that would be preserved or restored if retreat were to occur (such as BRPAs).
- > **Receiving Area:**
 - Should have sufficient market demand to incentivize developers to pay for development credits; if a developer can use available FAR or development allowances such as variances for free, there is no reason to incur additional costs.
 - Many urban areas have an excess of unused density available to developers for free; further analysis is needed to identify where there would be market demand for development credits.
 - While greenfield areas such as agricultural lands adjacent to urban lands may be attractive receiving areas (see Recommendation #20), further study should be done along with community engagement to develop appropriate criteria (proximity to infrastructure, non-prime agricultural land, etc.), analyze market demand, determine availability of suitable land, and ensure any new development is sited appropriately. Such lands would also have to go through the process of rezoning and redesignation at both the state and county levels.
 - In addition to additional FAR, the ability to exceed height limitations and setbacks should be considered as potential applications of purchased development rights.
 - Should be outside of areas vulnerable to SLR and coastal hazards.
 - Should be able to accommodate additional development. This should consider traffic impacts and demands on utilities and associated infrastructure and receiving environments.

> **Price:**

- Price of development rights is set by market demand. Any policies which decrease the development value of coastal properties, including enforcement of demolition actions, disclosures, or downzoning, will make a TDR program more affordable for developers.
- Developers pay for development rights, however, government should do its own fiscal analysis on associated public costs, such as increased costs related to infrastructure, and loss of tax revenue. Note that while there may be an initial reduction in tax revenue, the intent would be to have at least as many taxable properties once the transfer has taken place. As discussed in the next section, the aggregate number and value of parcels may increase substantially.

> **Administration:**

- Programs may be set up in a variety of ways. Many programs use square feet as the unit for development rights. Others use number of dwellings. The best method will depend on local zoning regulations.
- In programs where the sending area property value is higher than the receiving area property value, a conversion coefficient greater than 1 must be applied to transferred development rights. This is known as the allocation or transfer ratio. For example, analysis may find that a ratio of 1:4 is needed to ensure transactions – this would mean that the development rights for one dwelling in the sending area would convert to four dwellings in the receiving area. The allocation ratio is an important program function and should be set after property value analysis in the proposed sending and receiving areas (Pruetz, 2003).
- The creation of a TDR bank by the county should be considered to cut down on transaction costs and facilitate transactions. The bank can buy development rights directly from sending area property owners and administratively hold them before selling them to a developer. The sale would incorporate appropriate transfer ratios. See Recommendation #19 for further details.
- Other entities, such as non-profit land trusts or conservation agencies, may additionally purchase and retire development credits. This has been shown to be an effective strategy to achieve conservation objectives in other TDR programs (see text box).
- A conservancy could also assist in purchasing and retiring development rights. This is discussed further in Recommendation #16.
- Terms of conservation easements, if used, should restrict private use of sending areas properties. Demolition of structures should be considered as a precondition for transferring development rights, although it may raise the cost of development rights.
- Making TDR by right is associated with positive program outcomes. By right means that purchasers of development rights know with certainty that they can use purchased credits without going through an additional approval process. Analysis should be conducted to identify a flow of permitting that would allow for developers to know with certainty that they could use TDR credits to build their projects. Analysis should include interaction between state and county land use regulations.
- Besides density, other options such as expedited permitting, zoning changes (e.g., from residential to resort), exceeding height limits and setbacks should be considered as further incentivization for developers to utilize such a program.

- There are several existing programs that give developers incentives in exchange for community benefits/improvements such as affordable housing (McLean et al., 2024). Incentives include density bonuses, height bonuses, expedited permitting, and tax incentives. Analysis would need to be conducted to understand how TDR would interact with these programs. Those programs include:
 - HRS 201H (Statewide) – Allows Hawai'i Housing Finance and Development Corporation to administer incentives for affordable housing, including density and height bonuses.
 - Transit Oriented Development (TOD) (City & County of Honolulu) – Provides increases to baseline FAR and height in designated areas surrounding rail stations.
 - ROH 32 Projects (sometimes called “Bill 7”) (City & County of Honolulu) – Provides relaxed development standards, expedited permitting, and financial incentives to developers for Affordable Rental Housing (ARH) projects. ARH projects require a minimum of 80% of the dwelling units to be rented to those earning no more than 100% of Honolulu's Area Median Income (AMI) for a minimum of 15 years.
- Overlay zoning or identification of certain areas such as Special Districts and BRPAs could also be used to designate sending and receiving areas (see Recommendation #7).
- > **Equity Considerations:**
 - Defining sending and receiving areas should be done with public input. Ideally, a stakeholder committee should serve in an advisory capacity throughout the process (Pruetz, 2003).
 - Any TDR program should consider other housing goals, policies, and programs. TDR works because development is restricted in receiving areas. Any policies which aim to spur the creation of affordable housing by loosening those restrictions, for example, may have a negative impact on program outcomes, though positive outcomes for housing supply overall. There may also be opposition to that increased development from neighboring communities.

Key Implementation Steps

- 1) Establish a planning process to identify sending and receiving areas at the County level in accordance with BRPAs.
 - a. Public participation is critical, through both an advisory committee and wider outreach efforts.
 - b. Spatial and market analysis should be conducted to identify suitable sending and receiving areas.
 - c. In addition to density, a permitting flow should be identified to make TDR by right if possible.
 - d. Analysis should be done to determine how TDR would interact with existing policies and programs targeting affordable housing development.
- 2) Provide guidance to the counties on best practices and considerations for TDR programs to assist them in writing enabling ordinances.
- 3) Identify partners, such as nonprofit land trusts or State conservation agencies, that would be interested in purchasing and retiring development rights (this could also be handled through a Coastal Conservancy, if established, see Recommendation #16).
- 4) Allocate funds for program administration.

Legal Analysis

TDR is sometimes used as a legal “release valve” regarding regulatory takings claims in conjunction with downzoning. If the program is voluntary, TDR provides one avenue to address potential issues of regulatory takings. However, it should be noted that the Supreme Court has never ruled definitively on the issue of takings in TDR. While the method was first established in the Supreme Court case *Penn Central Transportation Co v. New York City* (1978), a subsequent case in 1997, *Suitum v. Lake Tahoe Regional Planning Agency* revisited the method of evaluating the takings issue in *Penn Central*, and re-emphasized the ambiguity of applying the same analysis to future TDR takings claims (Miller, 1999). Therefore, any regulatory takings claims are likely to be evaluated by the courts on program specifics to analyze potential economic loss.

Funding/Financing Considerations

As a market-based mechanism, TDR is funded by developers (with costs ultimately paid by purchases of the developed properties), though there are some public costs associated with administering the program and providing public services to new development in the receiving area. Market analysis would be needed to determine the best allocation/transfer ratio to incentivize transactions. If a government agency serves as the redevelopment authority, as proposed in Recommendation #20, all program costs would be borne by the public. For private development, public redevelopment costs may be able to be offset through designating a portion of the receiving area to the state to develop additional housing or development that it can sell to recoup costs.

Please see Recommendation #19 for more information on development rights banking.



BEST PRACTICE EXAMPLE:

TAHOE REGIONAL PLANNING AGENCY, LAKE TAHOE, CALIFORNIA

Lake Tahoe is a popular tourist destination in Northern California. The 1960s Winter Olympics spurred a rush of development in meadows and marshlands that threatened water quality. This caused Congress to pass the Tahoe Regional Planning Compact in 1969, creating the bi-state Tahoe Regional Planning Agency (TRPA) for the purpose of regulating development by setting land use policy.

Transfer of development rights (TDR) is one tool used in the region to ensure that development does not impede on ecological function. TRPA administers a complex land use system under which all new development requires both a development right and an allocation. A maximum threshold of allocations is set annually by TRPA. Removing improper development in a sending site and restoring it to natural habitat creates both a development right and an allocation, which can be traded or sold.

The success of the program is due in part to the involvement of the California Tahoe Conservancy, a state agency that leads restoration by acquiring and managing land for public benefit. The Conservancy also maintains a land coverage and restoration credit inventory and price list on its website.

Additionally, the city-level South Lake Tahoe Redevelopment Agency took a proactive role in acquiring properties with nonconforming structures and either redeveloping them or banking rights by demolishing the structure and restoring the site. Their \$230 million redevelopment effort was recouped in part through the sale of development rights.

Recommendation #19:

Create Development Rights Bank



Create a development rights bank that would allow the government to act as a brokerage between willing sellers and buyers of development rights. This would reduce transaction costs between smaller buyers and sellers, and allow large developers to buy in bulk. This recommendation would be utilized in concert with a transferable development rights (TDR) program (see Recommendation #18). This TDR program could be applicable to designated BRPAs, at least as a starting point, before expanding it to other areas subject to coastal hazards.

TIMEFRAME

- Next 5-6 Legislative Cycles

LEAD ENTITY

- Beach Resilience Authority as specified by program implementation (Recommendations #2-4) or Coastal Conservancy (see Recommendation #16)

COORDINATING ENTITIES

- County Planning Departments; OPSD; OCCL

Description

This innovative approach would allow the state government to act as a brokerage between willing sellers and buyers of development rights. Unlike a cap-and-trade system where development rights are transferred between buyers and sellers directly, this would allow willing sellers to sell directly to the government and buyers to buy directly from the government without any restrictions on the quantity of rights available to be traded. This would make the trade of rights more efficient and attractive to smaller buyers and sellers because of the reduced transaction costs and attractive to large developers because they can buy in bulk. A development rights bank (DRB) allows the state to achieve development goals with a voluntary, cost-neutral, and market-forward approach. For the purposes of facilitating the BRP, The BRA, or potentially a Coastal Conservancy or land trust could manage the bank. They would purchase development rights, and then sell those rights to interests seeking to increase the development levels of other locations (targeted or receiving areas). This would ensure the trade of development rights is guided by the goals of the HICZMP and the Beach Resilience Program (BRP). Purchases of rights could be financed using the Beach Resilience Fund (BRF) or through issuance of government bonds.

Considerations

- It is important to note that a DRB could not exist without the backbone of a transferable development rights program at large. Please see Recommendation #18 for more detail on TDR, its current legal status, and potential benefits and drawbacks of their use. See the text box in Recommendation #18 for an example of a TDR program that used a DRB to help achieve conservation outcomes.

Certain development rights could be favored by the bank by offering transformations or scaling factors for credits based on location, or type of development sought. For example, development rights from a shoreline property that allow development of a second story could be traded to allow for upward expansion of inland property by two stories, or a similar doubling in allowable floor area. This would incentivize new development in target areas, while also incentivizing removal of properties at greatest risk. There could also be scaling factors employed to encourage development of affordable housing, or more sustainable building practices. In a more targeted approach, the State could restrict sale of development rights to designated sending areas (i.e., BRPAs), and purchase of development rights (PDR) from the DRB to individuals or entities developing in targeted receiving areas (see Recommendation #20). A key benefit of this strategy is that it is theoretically cost neutral. The costs associated with managing the fund could be made up by profits from the sale of development rights, or even trading fees. Importantly, a price will need to be set for these credits. This will most likely require some experimentation until a market equilibrium price is established between sellers and buyers. These prices will need to be communicated to the public, which requires a trading platform of some kind. This could be as involved or autonomous as the administering entity would like.

There would need to be foreign investment restrictions to prevent outside entities from monopolizing the development rights and shutting out domestic investment. Other restrictions on trading may be based on the intended area of development (as discussed above) and the type of development the credits will be purchased for (to be coordinated with the approving agency).

The DRB would speed up development in these targeted receiving areas but not necessarily incentivize those already established along the coast to move inland, unless coupled with other programs (see Recommendation #14, for example). This would increase the development of receiving areas, curb new development in sending areas, and potentially move people away from the shore.

Key Implementation Steps

- 1) Establish a managing entity inside the BRA (or a Coastal Conservancy - see Recommendation #16).
- 2) Identify management cost recoupment strategy(ies) (e.g., trading fees, profit structures, etc.).
- 3) Coordinate with the development permitting agency to determine what the credits can and cannot be traded for.
- 4) In concert with counties and land management agencies, develop trading restrictions (e.g., foreign actors, types of developers, areas of credit generation (purchases) and credit use (targeted receiving areas).
- 5) Set up a trading platform.
- 6) Determine source of funds for purchasing credits.
- 7) Purchase target properties.
- 8) On-sell development rights.

Legal Analysis

- Potential legal issues regarding transactions would need to be considered based on a determination of what types of development actions are rights that can be traded. The marketing or transacting interests in general must comply with environmental as well as public health and safety laws and standards.

Funding/Financing Considerations

- The development rights bank as described above is meant to be cost-neutral in that the principal amount used to purchase credits is never diminished despite the transactions in the long run. However, funds will still be required to make the credit purchases. This money could be allotted from the BRF, borrowed, or dedicated from the general fund. The intention is for these costs to be recouped with a small margin of profit so that the principal amount does not change and, ideally, fund management is able to sustain itself on the small profit margin of each sale.

Recommendation #20:

Designate and Develop Receiving Areas For Managed Retreat



Engage in state-level land use planning to identify and designate receiving areas that may be suitable to accommodate people and development displaced by sea level rise and coastal erosion. Pursue state acquisition and redevelopment of identified receiving areas with the intent of providing relocation options for homeowners in vulnerable coastal areas in a manner that is voluntary and furthers additional policy goals such as increasing affordable and workforce housing. A redevelopment authority such as HCDA could play a role in the acquisition and development of “receiving area” lands, where displaced development from shoreline areas could be shifted in conjunction with coastal retreat.

TIMEFRAME

- Next 6-7 Legislative Cycles

LEAD ENTITY

- OPSD; HCDA; Legislature; LUC

COORDINATING ENTITIES

- DLNR; HHFDC; County Planning Departments; Planning Commissions; OCCL

Description

In addition to considering which areas to adapt or retreat from as sea level rises, it will be important to identify options for residents and property owners that are displaced. It is estimated that roughly 8,700 acres of land within the Urban State Land Use District will be inundated with 3.2 ft of SLR, and 20,000 residents will be displaced (Hawai'i Climate Change Mitigation and Adaptation Commission, 2017). One approach the state could take to replace development potential and provide options for residents at risk of displacement would be to identify vacant and underutilized Agricultural zoned lands that may be suitable for reclassification to the State Urban designation. This would require developing criteria for receiving areas (e.g., lands that are not in active agricultural use or designated as prime agricultural lands, that are outside hazard zones, are close to existing infrastructure and development, etc.), and conducting an analysis of potentially available lands. Areas meeting the defined criteria could then be designated as receiving areas, purchased by the state, developed, and offered to landowners that are within designated sending areas. Given the existence of large tracts of fallow agricultural lands owned by former sugar and pineapple plantations, the state could work directly with willing landowners to purchase portions of their lands for this purpose.

A redevelopment authority such as HCDA would purchase the land, acquiring more land area than required for accommodating displaced homeowners, and use the remaining portions of the land to develop affordable and workforce housing in partnership with public housing agencies and/or private developers. Focusing on areas that are not currently within the Urban district will also contribute to revenue by allowing the state to purchase the lands at the Agricultural value and then change the Land Use Designation to Urban. Lots could potentially be sold to sending area property owners at Agricultural land rates to provide a relocation incentive, while lands elsewhere in the receiving area could be developed and sold at Urban values, with proceeds from the sale of the Urban properties being used to fund removal and cleanup of vacated coastal development.

Coastal landowner participation would be entirely voluntary, but would be conditional upon owners vacating their coastal property and placing it under a permanent conservation easement. The incentives for coastal landowners would be: 1) the ability to purchase a lot at Agricultural value, thereby providing significant savings over purchasing a property at Urban value; 2) removal of their responsibility for cleanup and removal of their coastal structure; and 3) mitigation of the various risks associated remaining in a coastal area that is projected to be impacted by coastal erosion and SLR.

Another potential benefit of this coordinated approach would be that government agencies responsible for transportation and utility infrastructure improvements could plan for capital improvement projects in conjunction with the receiving area designations. Developers could also be required to contribute to the costs of these improvements through contributions linked to purchases of the surplus lots.

Considerations

- The rezoning of Agricultural land is not to be taken lightly, and will surely result in significant public and political opposition. There are many competing needs and policy goals vying for use of Hawai'i's limited land base. In an ideal situation, this recommendation would not be implemented in isolation, but as part of a larger statewide and/or county-scale land use planning exercise aimed at anticipating future needs and challenges, including sea level rise, and optimizing land use designations to meet those needs while aligning with other policy goals such as renewable energy, food self-sufficiency, and affordable housing. This would also need to be coordinated and integrated through county land use plans, many of which contain policies opposing or limiting the redesignation of Agricultural lands.

Community-led planning processes could help to vision how these receiving areas could go beyond housing needs and incorporate more comprehensive community interests including creating community gardens and food forests, recreational spaces, cultural practices, commercial activity, open space, and integrated transportation (see text box). Serving as a new model for a master-planned community that centers resilience strategies, traditional knowledge, and community needs could be an opportunity when pursuing community-wide rather than parcel-by-parcel strategies.

The designation of receiving areas would need to follow the legal process for reclassifying State Agricultural lands, which includes Land Use Commission review, environmental compliance, and a public hearing. County zoning would also need to be changed following the state level reclassification. This process would take years and require significant public involvement in identifying suitable areas, as well as in mitigating impacts to communities that are identified for relocation, whether as sending or receiving areas. Coordination with the counties would also be needed to integrate the objective of accommodating people and development displaced by sea level rise into county land use plans and planning processes.

Finally, there is no guarantee that private landowners of suitable receiving area parcels will participate or be able to come to agreement on terms that would make the program feasible.

Key Implementation Steps

- This recommendation would require conducting analysis of land use designations and available lands, as well as working with each of the counties to identify vacant/fallow Agricultural zoned lands determined suitable to replace the Urban lands vulnerable to being lost to sea level rise. This could be done at a statewide and/or regional level. This process would require significant public involvement in identifying suitable areas for development, as well as in mitigating impacts on communities that are identified for relocation, whether as sending or receiving areas. Coordination and potential rule changes would also be needed to align county land use plans and planning processes with the objective of accommodating people and development displaced by sea level rise.

The process for creating receiving areas would involve the following steps:

- 1) Establish criteria for designating receiving areas with broad stakeholder input. General criteria could be established statewide, with input from counties and communities on county-specific criteria.
- 2) Identify qualifying sending areas, such as BRPAs.
- 3) Quantify the area, zoning, and development potential of the sending areas to identify what would need to be accommodated in the receiving areas.
- 4) Identify suitable receiving areas based on criteria and developable area.
- 5) Approach landowners of potential receiving areas to determine willingness to sell at Agricultural value and negotiate terms.
- 6) Prepare and master plan and obtain cost estimates to subdivide and install infrastructure improvements to each subdivided lot.
- 7) Submit legislation and budget requests to acquire the lands, redesignate them as State Land Use Urban, and install the required infrastructure. Legislation should include language that would allow for the:
 - a. Property to be up-zoned to Urban once the acquisition is complete.
 - b. Creation of a Special Fund to acquire the lands, install infrastructure, and deposit revenue from the sale of the lots. The Special Fund is intended to be revenue neutral or positive (i.e., the cost of the land acquisition and infrastructure would be recaptured through the sale of the lots to property owners from sending areas).
- 8) Offer the finished lots to coastal property owners whose property is being or will be impacted by sea level rise.
 - a. Owners of rapidly eroding lots would probably not be compensated for the “land value” as there is no current mechanism to appraise rapidly eroding property. These property owners would be allowed, first preference, to purchase a lot from the state for the acquisition and development costs (i.e., soft and hard costs), to create the improved-vacant lots.
 - b. Additional criteria may be considered for participation in the program (e.g., owner occupants, income thresholds, etc.).

- 9) Sell the surplus lots to individuals/developers to build more housing at market or affordable rates.
 - a. The revenue from the sale of the surplus lots will be used to remove structures on shoreline lots that are eroding and where landowners have retreated.
- 10) Implement a conservation easement on lots vacated by coastal property owners participating in the program and utilize the proceeds to pay for removal and cleanup of the remaining coastal development.

Legal Analysis

- Most steps involved in implementing this recommendation could be implemented under existing agency authority. For example it is within HCDA's authority to acquire, redevelop, and sell properties to individual buyers. The authority, criteria, and process for the identification and designation of sending and receiving areas would need to be established in State law, probably in HRS Chapter 205. Rules/statutes around County land use plans (HRS §46-4) may also need to be modified to require the consideration of SLR adaptation and consideration of areas to accommodate displaced people and development.

Funding/Financing Considerations

- General funds would be required to set up the Program with staff and resources. While the program would be designed to be revenue positive or neutral, the state would potentially have to make substantial initial outlays for purchases of agricultural lands and provision of infrastructure or capital improvement projects. It may be more economically feasible to have developers bid for the right to develop newly rezoned areas, including provision of infrastructure, in exchange for returning a proportion of the lots to the state for sale. Similarly, there could be a public-private partnership that results in the state retaining ownership of developed parcels that could be used for affordable housing, with profits used to finance additional future purchases of beachfront properties.

BEST PRACTICE EXAMPLE:

LOUISIANA STRATEGIC ADAPTATIONS FOR FUTURE ENVIRONMENTS (LA SAFE)



LA SAFE is a collaborative initiative aimed at helping Louisiana's coastal communities adapt to sea level rise with holistic solutions that address land loss due to SLR and coastal erosion. The program focuses on providing resources and planning strategies to six parishes impacted by Hurricane Isaac.

Program administrators overlaid demographic and economic data with physical risk data about SLR and flooding. This analysis was used to identify three levels of flood risk, from low to high, overlaid on geographic areas. The state characterized low-risk areas as having relatively favorable future flood risk projections for 0–3 feet in a 100-year or one-percent-chance flood event over a 50-year planning horizon. These low-risk areas were then recommended as potentially suitable receiving areas for new development.

LA SAFE emphasizes community involvement in creating resilient communities through strategic land use planning and policy recommendations (Spidalieri & Bennett, 2020).



4 . CASE STUDY APPLICATION

The following sections apply the proposed recommendations to two desktop analyses of different areas already experiencing impacts from flooding and coastal erosion: 1) Sunset Beach, North Shore, O'ahu, and 2) Kahana Sunset Building F, West Maui. These case study areas were determined at the onset of the project and selected in part for the different ownership structures present at each site. Whereas the Sunset Beach area consists mostly of single-family homes, Kahana Sunset is a condominium with a governing homeowners' association (HOA) and board of directors.

Both of the case study areas have reached the final stage in what would be a phased adaptation approach. The current situation reflects one in which buildings are imminently threatened and few if any other options are available. In the North Shore case, most if not all other options such as sand pushing and temporary geotextile structures have been used for years. Kahana Sunset Building F has already been rendered uninhabitable. Both of the case study areas demonstrate the need for proactive planning before more structures collapse on the beach and break up in nearshore environments, causing further environmental damage and risks to public health and safety.

Analysis of the two areas is not meant to result in site-specific recommendations or solutions for each site, but rather is intended to be illustrative of how regulations, ownership structures, and coastal processes in different areas across the state would interact with the proposed Beach Resilience Program. The sections below present high level background information on current conditions at each site, followed by a discussion of how the proposed Beach Resilience Program could be applied to each situation. Additional background information on each site is included in Appendices D and E.

Disclaimer: The case studies specified for this project focused on locations with actual shoreline erosion issues that are complex both from the standpoint of the physical processes at work, and legally because of ongoing contested cases in both areas. In addition, both areas have already experienced impacts that have damaged structures and in some cases made them uninhabitable. The intent of the proposed BRP would be to implement a proactive framework that would be put in place **prior** to structures collapsing or becoming safety hazards. Therefore this analysis attempts to illustrate what may have happened if the BRP framework had been in place prior to the current emergency conditions and contested cases in these locations.

4.1 NORTH SHORE O'AHU CASE STUDY



The coastline of the study area near Sunset Beach experiences seasonal erosion that has undermined homes in recent years, September 2024 (Photo credit L-R: Rob Walker, Integral Consulting; Dolan Eversole, UH Sea Grant)

Location	Sunset Beach (Paumalū), O'ahu (see Figure 7)
Case Study Area	~7.5 ac / ~0.25 miles long
Ownership	Single family homes; some condominium property regime (CPR) parcels with multiple dwellings
Year Built	Majority 1940-1960, some newer build infill development
County Zoning	R-5 Residential in the neighborhood makai of Kamehameha Highway; Preservation on the beach
State LUD	Urban
FEMA Flood Zones	VE and AE
SMA	Site is fully within SMA
Assessed Value	See Appendix D
Plan Area	O'ahu General Plan (2021)
Sub Plan Area	North Shore Sustainable Communities Plan (SCP) (2011)
Other Key Plans & Studies	- North Shore SCP Update (ongoing) - Surfrider Foundation North Shore Coastal Resilience Working Group - Adaptive Coastal Management Recommendations, Actions and Strategies (2022) - UH Institute for Sustainability and Resilience - A Study of Shoreline Regulations and Managed Retreat for Hawai'i: A Cost Analysis for Paumalū, O'ahu (2023)
Key Adjacent Features	Ke Nui Rd, Kamehameha Highway, Sunset Beach Park
Key Vulnerabilities	- Coastal erosion, flooding, and storm surge, exacerbated by SLR - Kamehameha Highway, which provides the only road access to the study area, is projected to be inundated in portions under 3.2-ft SLR-XA

SUMMARY/KEY POINTS:

>	Entire case study area built on sand dunes deposited by waves and wind.
>	Large seasonal variation in swell direction and size leads to seasonal variation in beach width.
>	High winter surf events sometimes cause flooding of properties and roadways.
>	Sand pushing has been ongoing in this area since at least 2013-2014, however, the sand pushing efforts have not been effective in slowing the long-term erosion in this area and questions remain about potential impacts on neighboring shorelines.
>	Four homes in the study area are involved in contested case hearings before the State Board of Land and Natural Resources (BLNR) and have been collectively assessed over \$4million in fines as of the time of this writing.
>	Houses collapsed onto the public beach in March 2022 and September 2024.
>	All properties contain on-site sewage disposal systems (OSDS), a majority of which are cesspools.
>	Community input strongly supports shifting development and infrastructure away from the coast, based on recommendations from the North Shore Community Resilience Working Group (2023) and results of the North Shore Sustainable Communities Plan Issues and Trends Survey (2021).
>	After a large erosion event in the winter of 2017 washed part of the bike path at nearby Sunset Beach Park into the shorebreak, the bike path was relocated slightly mauka into an existing parking area and a community-based dune restoration project undertaken through a public-private partnership was successful in mitigating erosion and raising awareness of the need to manage sediment at beach parks.
>	Recognizing the urgency of the situation, the 2024 State legislature appropriated funds to conduct a North Shore Beach Management Plan to identify near-term sand management solutions for this stretch of coastline. The project will begin in 2025 and will include the revival of the North Shore Community Resilience Working Group.

FIGURE 7: NORTH SHORE CASE STUDY AREA



North Shore Project Area

0 0.05 0.1 0.2 Miles



4.1.1 Current Conditions

For homeowners whose properties are imminently threatened by SLR, there are limited options under current laws, which prohibit private hardening fronting sandy beaches and limit the duration of emergency shoreline protection measures. Those with space on their parcel can move their homes back on the existing parcel by obtaining the necessary permits and moving or reconstructing the house on a different part of their property. In 2024, the City and County of Honolulu added provisions to the SMA rules via Ordinance 23-4 which provides exemptions for the relocation of dwelling units away from the shoreline to make this process easier. Those with no space to move their structures are faced with removal or bringing the current structure into compliance through modifications, if space allows.



Geotextile burritos, sandbags and skirts have exacerbated beach loss in the study area. This home was moved back and elevated in response to the erosion threat. (Photo credit: DLNR)

While some of the property owners along this stretch of the North Shore may want to dispose of their investment, there are currently few readily available ways to do so, except for dedicating their property to a community land trust to conserve the property in perpetuity, or selling on the private market. Prospective purchasers will encounter the same issues around erosion and flooding, and also receive information about past erosion impacts and shoreline encroachment violations due to the new disclosure rules. Both of these options are being exercised to different degrees in other parts of the North Shore, and home prices are starting to reflect a heightened perception of risk (Hiraishi, 2024; Tarui et al, 2023). In 2023, the State passed Act 239 which requires sellers to disclose all permitted and unpermitted erosion control structures on the parcel or on state land adjacent to the parcel which may begin to have impact on house prices. As time passes and the impacts continue to increase, the market value of properties will continue to decline, the beach environment and public access will be further degraded, and as violations and fines mount, the prospect of selling and recouping their investment becomes more remote.

There are multiple contested cases making their way through the court system around beachfront homes in this case study area. In 2024, DLNR OCCL filed complaints for declaratory and injunctive relief against homeowners whose houses had fallen in (HNN Staff, 2024). OCCL has also used temporary restraining orders against homeowners to limit their ability to place illegal hardening measures on public trust property. Additionally, the Board of Land and Natural Resources levied maximum fines on homeowners for violating emergency permit conditions and placing illegal structures on State Land. Combined fines for the parties in contested cases exceeded \$4M in 2023 and 2024.

The current process, being largely reactive and enforcement driven with few available options for affected homeowners, has led to an ongoing stalemate where the beach continues to erode, homeowners are unable to stop the erosion

from undermining their properties, and contested cases delay the implementation of solutions that would enable adaptation or removal. Meanwhile, emergency protection measures accelerate beach loss and erosion on adjacent properties, impede public access, and create public nuisances and safety hazards. The ultimate result is that without proactive action by the homeowner to adapt or remove their property in compliance with the law, homes will collapse onto the beach, leaving dangerous, toxic debris, and in some cases cesspools, on the beach and in the ocean. Since 2022, two homes have collapsed onto the beach and there are others in imminent danger of doing so.

This ongoing situation has elevated the sense of urgency within the community to identify solutions, resulting in several recent and ongoing initiatives. Among them is the North Shore Coastal Resilience Working Group, a community-based group convened by Surfrider Foundation, UH Sea Grant, and SSFM International to bring together stakeholders including government agencies, non-profits, elected officials, beachfront property owners, and North Shore residents. A recommendations report was released in 2022, and the group is planning to reconvene in 2025. In addition, a North Shore Beach Management Plan was recently funded by the state legislature to better characterize coastal processes along this section of coast and identify short term solutions for sand management. This study approximates some of the components envisioned to be included in a Beach Resilience Plan for a designated BRPA. By establishing a scientific basis for the understanding of coastal processes and the feasibility of sand solutions, this plan could help to inform the development of adaptation pathways and triggers in a subsequent phase.

4.1.2 Beach Resilience Program Application

This section describes the sequence of events that might have occurred if the BRP was in place for the North Shore Case Study Area. It is also shown graphically in Figure 8. For simplicity, it is assumed that there are no contested cases active in this area, because the proposed BRP would have been in place prior to contested cases being levied, thereby providing a clearer pathway for both regulators and homeowners to follow.

Under the proposed BRP, the case study area would be part of a designated BRPA and the implications of this would have been communicated to owners in the area. An area specific Beach Resilience Plan would have identified an adaptation pathway with specific adaptation actions and triggers, as well as potential near-term options for beach/sand management to mitigate erosion. The BRP would be based on the specific geomorphology of the BRPA and the expected impacts to the shoreline from wave action and shoreline erosion. For this specific area it is expected that the dune-based system will continue to be seasonally dynamic and will trend toward moving farther inland as sea level rises and storm events worsen. These dynamics, as well as sand transport and available sand sources, would inform the development of the adaptation pathway and triggers. The BRP and its recommendations would be integrated into the ongoing update of the North Shore SCP.

Front line property owners would already have been issued red tags (Unfit for Occupancy), indicating specific actions to take (removal, modification, or retreat) when existing development reaches a critical distance from the erosion line as specified in the adaptation pathway. Enforcement for non-compliance would proceed according to the regulatory program (fines, mandatory removal, etc.).

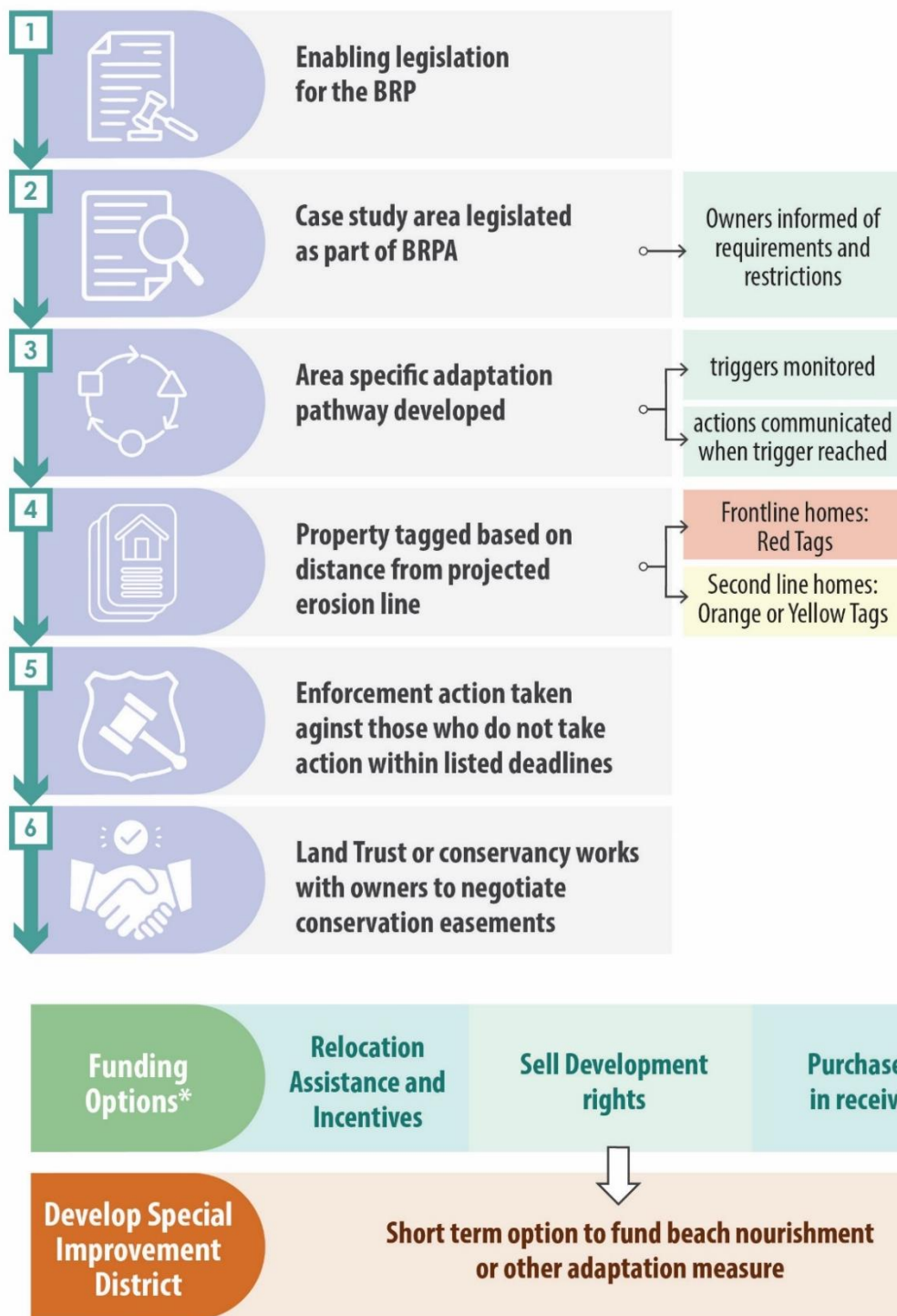
Owners behind the front line would have been issued yellow or orange tags corresponding to their distance from projected erosion line and other criteria established in the BRP. Depending

on their eligibility, owners may have various options available including buyout-leasebacks, tax incentives, sale of development rights, and/or purchasing a lot in a designated receiving area. Owners could also explore the formation of a Special Improvement District to fund near-term adaptation and beach management (pursuant to existing laws and compatibility with BRPA objectives) to buy additional time. Note that these funding options would not be available to red tagged homeowners under the program. A red tag means that the structure is imminently threatened or uninhabitable and therefore would not be deemed a safe investment by the state until the terms of the red tag are met.

Because this particular beach provides high public trust value, a land trust or conservancy could also work with willing owners to negotiate conservation easements over their properties to prevent future development. The terms of the conservation easement could stipulate that homeowners are responsible for demolishing and removing existing structures before the conservation easement is finalized. For those houses that have already fallen onto the beach whose owners are now facing steep fines, a deal could be reached where the homeowner transfers ownership of their property to a land trust in exchange for avoiding the fines and other enforcement actions. A similar deal was reached in July 2024 for a 5-acre coastal parcel in Kahuku facing steep fines for Conservation District violations, the terms of which allowed the owner to transfer ownership to the North Shore Community Land Trust in exchange for immunity from violations that were expected to incur \$1.5 million in fines (Hiraishi, 2024).

The transparency of this program would provide options while setting clear expectations on what process owners must follow and the consequences for not doing so. Additionally, the regulatory basis of this framework in statute should head off most if not all contested cases and potential legal challenges.

FIGURE 8: APPLICATION OF THE BRP TO THE NORTH SHORE CASE STUDY AREA



(*Note that all funding mechanisms may not be available to all homeowners.)

4.2 WEST MAUI CASE STUDY



Kahana Sunset has experienced beach erosion that has rendered Building F uninhabitable, shown here in November 2023 (Photo credit L-R: EagleView CONNECTExplorer; SSFM)

Location	Kahana Sunset Building F, Maui (See Figure 9)
Year Built	1973
Case Study Area	~11,000 sf
Ownership	Condominium - 10 owners, all non-owner occupied
County Zoning	R3 – Residential
State LUD	Urban
FEMA Flood Zones	VE and AE
SMA	Site is fully within SMA
Assessed Value	Each unit in Building F assessed at \$50,000 in 2023 at request of property owners (much lower than other buildings); total \$885,500
Plan Area	Maui Island Plan (2012)
Sub Plan Area	West Maui Community Plan (2022)
Other Key Plans & Studies	• Maui County Climate Action and Resiliency Plan • Kahana Bay Erosion Mitigation Draft EIS
Key Adjacent Areas	Ka'ōpala Bay, Lower Honoapi'ilani Road
Key Vulnerabilities	• Coastal erosion, flooding, and storm surge, exacerbated by SLR • Large waves wash through Building F • Structural damages to the building and undermining of the seawall that constitutes the makai wall of the lanai • Waves crash on fronting seawall, posing safety risks for beachgoers • Structure has been declared uninhabitable since 2021

SUMMARY/KEY POINTS:

- > Case study area is within a protected bay with two rock headlands that limit sand transport from the wider littoral cell.
- > High winter surf events have caused undermining and structural damage to Building F and high surf regularly overtops the seawall and floods the property.
- > Most of the beach fronting the property has been lost since the construction of the Kahana Sunset in the 1970s.
- > The building is currently in a contested case before the Maui Planning Commission regarding a sinkhole under Building A and the County's granting of emergency permits.
- > Kahana Sunset submitted a Managed Retreat Plan to the Maui County Council and Planning Department in January 2024, and an annual report update in August 2024. Annual reports are to be submitted in August to the County Council and Planning Department.
- > Updates to County shoreline setback rules in 2024 resulted in 50% of the property being within the shoreline setback, and 100% of Building F.
- > There is strong community sentiment to support managed retreat and limit the impacts of coastal development on public trust lands in West Maui.

FIGURE 9: WEST MAUI CASE STUDY AREA



4.2.1 Current Conditions

Current Conditions

Erosion and undermining has impacted Kahana Sunset Building F to the point that the building was deemed structurally uninhabitable in 2021. The seawall fronting Building F is failing and the seawall fronting Building A is also being undermined. Adjacent properties in Keonenui Bay have also seen their coastal armoring fail due to undermining.

The beach at Keonenui Bay where Kahana Sunset is located has been eroding since the late 1970s after the construction of Kahana Sunset and the seawall. Erosion rates for Keonenui Bay have been measured at around 1.15ft per year (Board of Land and Natural Resources, 2014). Further study would be required to determine what would be needed to restore the beach to its former level, however it is likely that this would require some level of beach nourishment given the lack of upland sand sources and the headlands to the east and west which cut Keonenui Bay off from the wide Kahana Bay sand source.



A historic photo compared with a recent photo shows the extent of beach erosion fronting the Kahana Sunset (Photo credit L-R: Kahana Sunset archives; Expedia).

4.2.2 Beach Resilience Program Application

This section describes what could have occurred if the BRP was in place for Kahana Sunset Building F. This is also depicted graphically in Figure 10Figure 10.

If the proposed Beach Resilience Program was in place, the area would be part of a designated BRPA and the implications of this would be communicated to owners in the area. An area specific BRP would have identified an adaptation pathway with specific adaptation actions and triggers, as well as potential near-term options for beach/sand management to mitigate erosion. The BRP would be based on the specific geomorphology of the BRPA and the expected impacts to the shoreline from wave action and shoreline erosion. For this specific BRP the geomorphology of Keonenui bay is a basalt base with overlying clay deposits (Board of Land and Natural Resources, 2014). There are no significant sandy resources mauka of the shoreline. This information would help inform the adaptation pathway and triggers.

Building F would have been red-tagged and removal or relocation would now be required, with enforcement implications if not followed. Other options (buyout/leaseback, development rights, etc.) would now be precluded by the issuance of a red tag. This would have occurred well before the current request for emergency permits and would have precluded those permits from being issued.

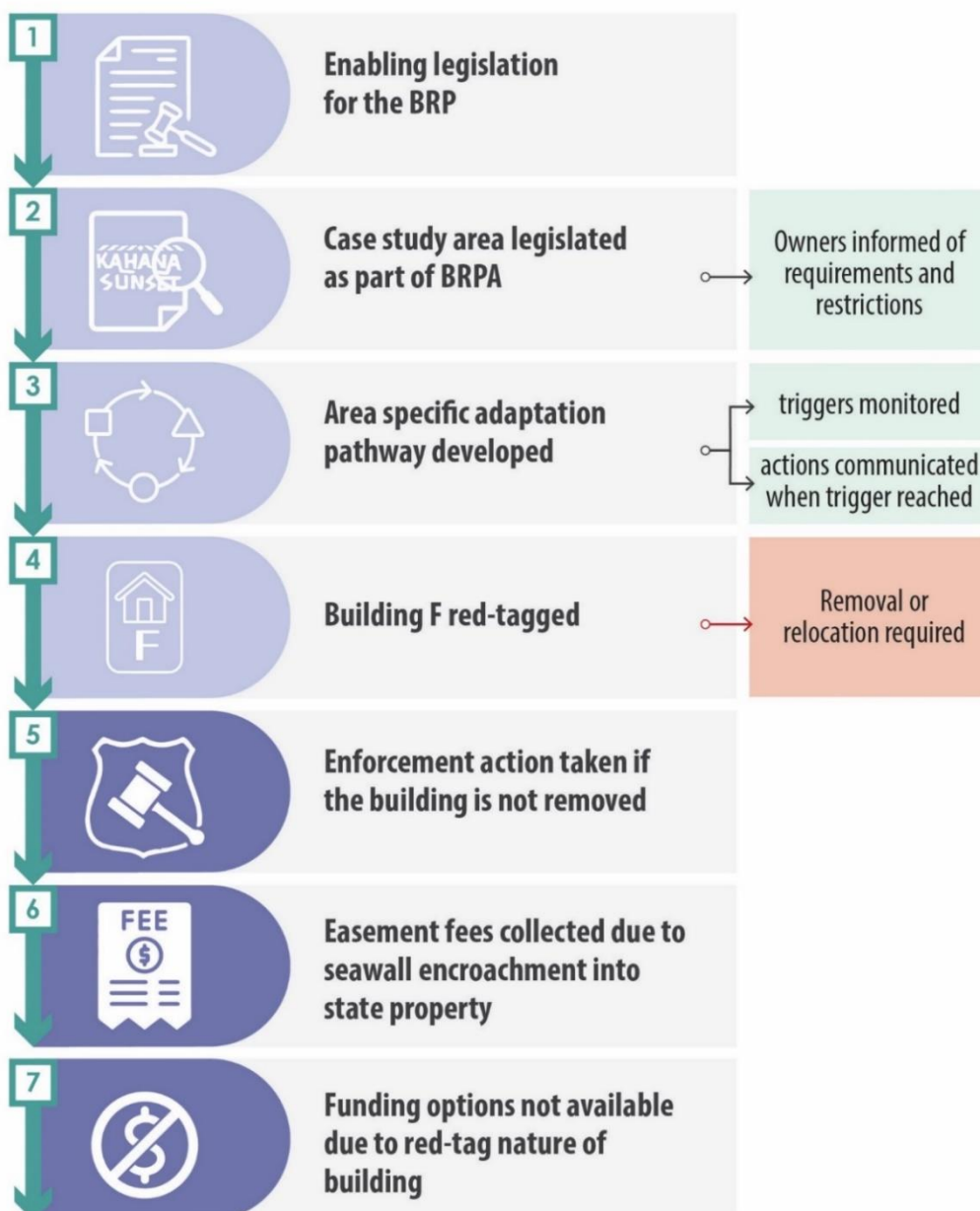
While removal is being planned and implemented, easement fees would be collected due to the building's encroachment into the shoreline.

It should be noted that the proposed BRP as envisioned would apply to structures regardless of ownership regime. Kahana Sunset is a condominium with multiple owners, but this does not change the pathway for Building F. The building would receive a red tag, and all affected owners would need to comply. In the case of a condominium, this would involve the process established in HOA bylaws along with other applicable condominium laws to

determine the course of action to respond and implement adaptation measures. It was noted in stakeholder consultations that this type of action by a condominium association can be very difficult to implement due to the requirement of obtaining consensus among a minimum % of owners. Typically, buildings need at least 67% of the owners to agree to a change to the Condominium Property Regime or Bylaws per HRS §514B. If the condo building was to be bought out or removed from the Condominium Association then 100% of the owners within the association would need to agree to this.

In the case of Kahana Sunset, 100% of the property owners would need to agree if the building were to be demolished. However, there are countless examples where significant actions have been accomplished by buildings with many owners, including the Royal Kahana condominium just up the coast from the Kahana Sunset, and the Marco Polo condominium in Honolulu, both of which have hundreds of individual owners (Fujimori, 2018; Dobbyn, 2022). Therefore, the BRP does not propose to treat condominiums differently than single-ownership structures.

FIGURE 10: APPLICATION OF THE BRP TO THE WEST MAUI CASE STUDY AREA



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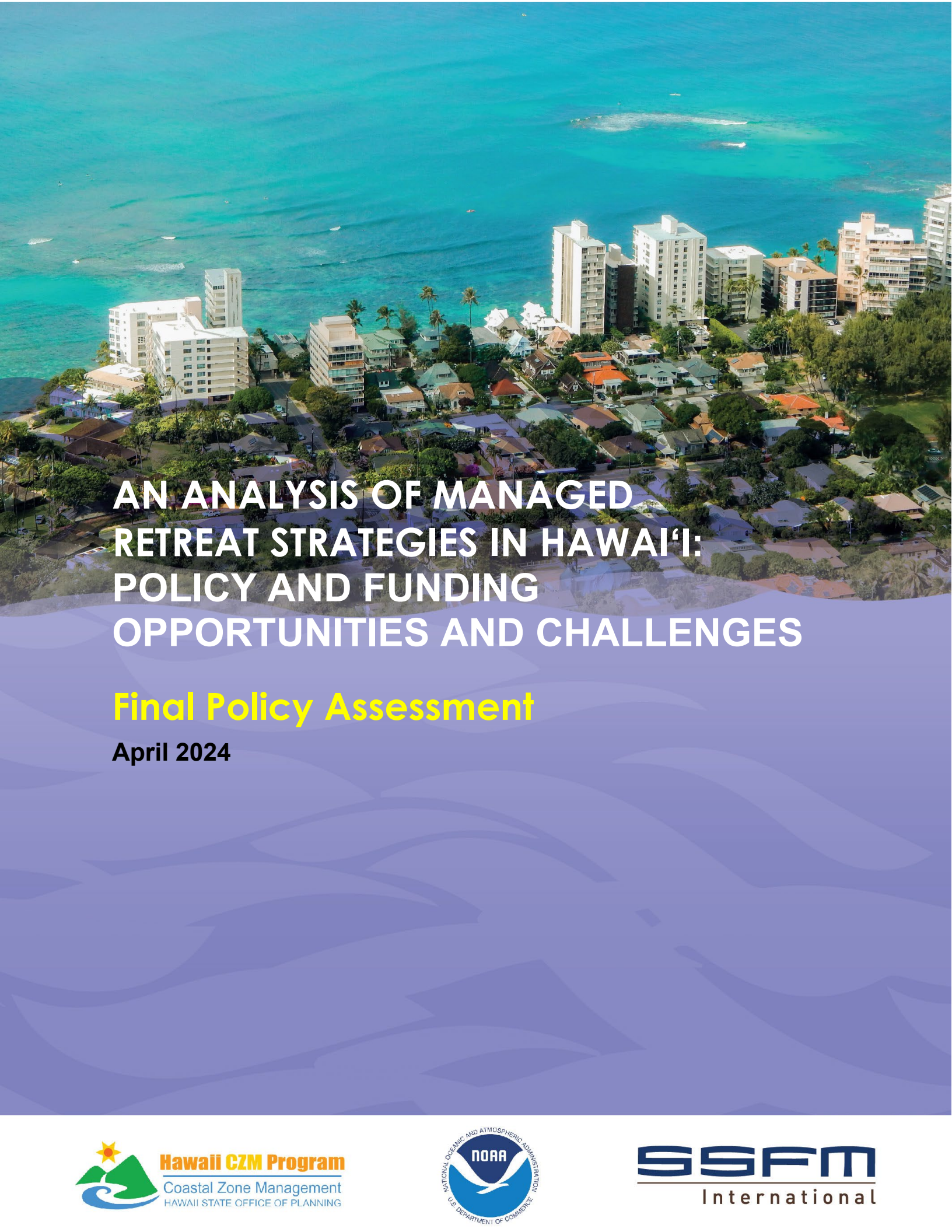
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APPENDICES

APPENDIX A: POLICY ASSESSMENT



AN ANALYSIS OF MANAGED RETREAT STRATEGIES IN HAWAII: POLICY AND FUNDING OPPORTUNITIES AND CHALLENGES

Final Policy Assessment

April 2024

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ACRONYMS

ACRONYM	DEFINITION
ACT	Action Team
ASCE	American Society of Civil Engineers
BFE	Base Flood Elevation
BLNR	Board of Land and Natural Resources
BRIC	Building Resilient Infrastructure in Communities
BWS	Board of Water Supply
CDBG	Community Development Block Grant
CDP	Community Development Plan
CDRZA	Community Disaster Resilience Zones Act
CDRZ	Community Disaster Resilience Zones
CDUA	Conservation District Use Application
CIP	Capital Improvement Program/Project
COEMAP	Coastal Erosion Management Plan
COH	County of Hawai'i
CZMA	Coastal Zone Management Act
DBEDT	Department of Business, Economic Development, and Tourism
DHHL	Department of Hawaiian Home Lands
DLNR	Department of Land and Natural Resources
HHCA	Hawaiian Homes Commission Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency

FIRM	Flood Insurance Rate Map
HAR	Hawai'i Administrative Rules
HDOT	Hawai'i Department of Transportation
HEPA	Hawai'i Environmental Policy Act
HICZMP	Hawai'i Coastal Zone Management Program
HILT	Hawai'i Land Trust
HRS	Hawai'i Revised Statutes
HUD	Housing and Urban Development
HICZMP	Hawai'i Coastal Zone Management Program
IBC	International Building Code
ICAC	Interagency Climate Adaptation Committee
LUC	Land Use Commission
MACZAC	Marine and Coastal Zone Advisory Council
NDPTC	National Disaster Preparedness Training Center
NEPA	National Environmental Policy Act
NFIP	National Flood insurance Program
NOAA	National Oceanic and Atmospheric Administration
OCCL	Office of Conservation and Coastal Lands
OCCSR	Office of Climate Change, Sustainability, and Resiliency
OPSD	Office of Planning and Sustainable Development
ORMP	Ocean Resources Management Plan
PDR	Purchase of Development Rights
SFHA	Special Flood Hazard Area
SLH	Session Laws of Hawai'i
SLR	Sea Level Rise

SLR-XA	Sea Level Rise Exposure Area
SMA	Special Management Area
TDR	Transfer of Development Rights
TDZ	Tsunami Design Zone
TEK	Traditional Ecological Knowledge
UH	University of Hawai'i
UN SDG	United Nations Sustainable Development Goals
VCAPS	Vulnerability, Consequences, Adaptation, Planning Scenarios
WRAP	Waikiki Resilience and Sea Level Rise Adaptation Project

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1 INTRODUCTION

Global sea level rise (SLR) and its associated impacts will necessitate new and innovative climate adaptation measures in coastal communities. Adaptation is often categorized as protection, which fortifies structures in place; accommodation, in which structures are altered to better withstand flooding impacts; and retreat, which seeks to move structures away from hazardous areas (Dedekorkut-Howes et al., 2020). This policy assessment analyzes the applicability of current policies and regulations to facilitating managed retreat in Hawai'i.

This assessment is part of a project led by the State of Hawai'i Office of Planning and Sustainable Development (OPSD) Coastal Zone Management Program (CZMP) to analyze policy and funding opportunities and challenges around managed retreat in Hawai'i. Two additional assessments were prepared to complement this policy assessment: a legal assessment and a funding and financing assessment of managed retreat.

Preparation of the policy assessment included review of existing plans and frameworks, policy and regulatory documents, scientific studies, and academic literature. Interviews with representatives from county and state government agencies were also conducted to inform an understanding of existing policy needs and challenges. The objectives of this policy assessment are to: 1) identify existing policies and regulations that could shape a managed retreat framework for Hawai'i, and 2) provide preliminary analysis of whether these existing policies and regulations are supportive or limiting of managed retreat. It should be noted that this assessment as well as the others primarily focus on strategies for retreat of private development; but retreat of public infrastructure is not central to the current project at this time. Similarly, climate change mitigation (i.e., measures to reduce greenhouse gas emissions contributing to climate change and sea level rise), while relevant to the overall need for climate adaptation and managed retreat, will not be examined in these assessments.

This policy assessment and the accompanying legal and financing assessments will aim to lay a foundation for the identification of promising strategies for further analysis. The synthesis of this analysis will result in recommendations for specific policy, legal, and financing mechanisms that can be employed to facilitate managed retreat of private development in Hawai'i.

1.1 DEFINING MANAGED RETREAT

The term managed retreat derives from coastal land use planning, natural hazards management, and engineering and refers to the physical movement of existing structures and shifting of future development patterns away from areas subject to coastal hazards (Esteves, 2014; Hino et al., 2017).

Retreat may be implemented as a response to incremental hazards from climate change and SLR, which lead to increased and repetitive coastal erosion, high tide flooding, groundwater inundation, and passive flooding. Retreat may also be implemented in response to episodic hazards such as natural disasters and extreme storm events, which will be worsened with climate change. Retreat is considered to be the most effective long-term adaptation strategy in areas subject to severe, worsening, and/or repetitive coastal hazards (Dyckman et al., 2014; Hino et al., 2017). Considering strategic, planned retreat as part of a larger process of community planning and visioning around climate change adaptation can help communities respond to climate change impacts more effectively and equitably (Mach & Siders, 2021).

Managed retreat may also be thought of as a proactive strategy for protecting resources that are held within the public trust. In Hawai'i, the public trust doctrine is enshrined in the Hawai'i Constitution, which states, "All public natural resources are held in trust by the State for the benefit of the people" (Hawai'i State Constitution Section 11.1). Coastal waters are, for the most part, also part of the public

trust doctrine, and thus the waters and land up to the high water mark are the State's to hold in trust on behalf of the citizens of Hawai'i (Hawai'i Revised Statutes [HRS] Chapters 115-4, 115-5).

Managed retreat is an intentional process that can be implemented through a variety of tools including land use and coastal planning, regulations of development within hazardous areas, acquisition of hazard-prone land, physical removal of property, and voluntary or mandatory relocation of structures and infrastructure (Bragg et al., 2021; Dedekorkut-Howes et al., 2020; Dyckman et al., 2014; Hino et al., 2017; Siders, 2013). In contrast, "unmanaged retreat" is an ad hoc process by which people move away from hazardous areas in a non-strategic and reactive manner. Unmanaged retreat can be driven by major disasters, economic pressures, or piecemeal government enforcement and intervention.

As an example of the latter, structures may be protected under temporary emergency permits until they are abandoned as they are subject to worsening impacts from SLR, without a clear plan in place to clean up remaining debris. Unmanaged retreat is arguably the main process by which retreat occurs in Hawai'i now (Coffman et al., 2024). This reactive approach puts the onus on government to actively monitor and enforce violations, which can lead to costly legal challenges, delays, and permanent damage to public trust resources. The lack of an overall framework guiding where and how retreat can occur incurs social and economic costs to the public, and can exacerbate existing disparities as residents with more resources are better able to advocate for their needs (Siders et al., 2019). Furthermore, unmanaged retreat misses the opportunity to align with a community's overarching vision, goals, and objectives.

The State of Hawai'i Assessing the Feasibility and Implications of Managed Retreat Strategies for Vulnerable Coastal Areas in Hawai'i Final Report (OPSD CZMP, 2019) cites the National Oceanic and Atmospheric Administration's (NOAA) description of managed retreat, as presented in an archived 2015 version of the NOAA website:

"managed retreat typically involves establishing thresholds to trigger the demolition or relocation of structures threatened by coastal hazards or sea level rise. This approach is frequently coupled with several other planning and regulatory techniques including:

- > Shoreline planning, to identify high-risk areas where this type of policy would be the only cost-effective, long-term solution.*
- > Regulating the type of structure allowed near the shore to ensure that buildings are small enough and constructed in a way to facilitate relocation when needed.*
- > Instituting relocation assistance and/or buy-back programs to help with relocation costs or compensate owners when their property becomes unusable."*

Inherent in this description is the understanding that there are a variety of strategies to implement managed retreat that span planning, policy, regulatory, fiscal, financial, and programmatic approaches. This description also implies that strategies for retreat may occur at different temporal and geographic scales and may be part of a phased adaptation approach based on specific thresholds, triggers, and sequencing of actions – sometimes referred to as adaptation pathways (Barnett et al., 2014). Thoughtful planning and development of these triggers and pathways will be essential in ensuring steady progress toward retreat in the face of uncertainty while avoiding an "evacuation mindset" or reactive approach.

The rationale and objectives for retreat can vary depending on location, community vision and other factors. However, in general there are a few common reasons for considering retreat. These include:

- > Reducing risk to people and assets from coastal hazards*

- > Preventing public health hazards created by structures, wastewater systems, and other coastal development from encroaching into and damaging shoreline environments
- > Preserving, restoring, or preventing further degradation of environmental and public trust resources including beaches, open space, shoreline access, surf breaks and others
- > Allowing natural coastal processes to proceed unimpeded.

1.2 ENVISIONING A FRAMEWORK FOR MANAGED RETREAT

While the scope of this project stops short of outlining a comprehensive framework or program for managed retreat, it envisions what the key components of such a framework might include and uses that understanding as the basis for identifying and analyzing relevant policies and regulations. A framework or program for managed retreat would likely be nested within an overall framework for climate adaptation that includes the following elements:

1. **Assessing Vulnerability:** This involves using the latest climate science to identify affected areas, quantifying the expected impacts over time, conducting vulnerability and exposure assessments, and establishing benchmarks to be used in policy, planning, and regulations. This assessment provides a high level discussion of climate science. For more in depth information, please refer to the Hawai'i Sea Level Rise Vulnerability Assessment Report.
2. **Communicating Risk:** This includes outreach, education, and market-based mechanisms for communicating climate risks to the public. This can include public-facing educational tools such as the Hawai'i Sea Level Rise Viewer, risk disclosure requirements for real estate transactions of vulnerable properties, adjusting tax assessed values and insurance rates to more accurately reflect risk, updating hazard zone designations, and changes to zoning or land use designations. This is covered in the funding and financing assessment.
3. **Updating Policy, Planning, and Recovery Frameworks:** This includes establishing clear state and county level policies articulating the goals of climate adaptation and managed retreat; integrating climate risks into long-range community plans, hazard mitigation plans, functional plans, and other types of plans; defining a consistent framework and methodology for climate adaptation planning; and strengthening disaster recovery frameworks to incorporate climate adaptation and resilience. Integration into long-range community planning will help facilitate a community vision-driven approach to identifying and prioritizing areas for retreat, as well as areas to relocate to. This is addressed in Section 3 of this assessment.
4. **Strengthening Regulations and Enforcement:** This involves ensuring that regulations governing land use and coastal zone management are clear and support a proactive approach to climate adaptation, including managed retreat where determined necessary through community engagement and adaptation planning. Some regulations may need to be revised to remove loopholes or perverse incentives to encouraging or enabling development to persist or intensify in vulnerable areas. Coordination between the state and counties may need to be clarified or responsibilities more clearly assigned to facilitate effective regulation and enforcement. This is addressed in Section 3 of this assessment.
5. **Addressing Legal, Equity, and Cultural Concerns:** This involves the acknowledgement and integration of equity, traditional cultural knowledge and practices, cultural and historic resources, and foundational legal principles such as the public trust doctrine, constitutional takings, and due

process as driving considerations in decisions around climate adaptation and retreat. This is addressed in the legal assessment.

6. **Shifting Land Use and Rethinking Coastal Management:** This includes identifying and institutionalizing strategies for shifting land use patterns away from vulnerable areas while balancing other needs and considerations including housing, cost of living, community connections to place, agricultural lands, and social, environmental, and cultural impacts. It also includes working with communities and government agencies to re-envision the use and management of vulnerable coastal areas for the benefit of the public trust and the community. This is addressed in Section 3 of this assessment. Land management following retreat is outside of the scope of this assessment and remains an area of further needed study.
7. **Increasing Funding & Institutional Capacity:** This includes obtaining the funding to staff, administer, and enforce programs and regulations for implementing climate adaptation and retreat. Responsible agencies will need to be identified and funded on a sustainable basis. This is addressed in the funding and financing assessment.

1.3 ORGANIZATIONAL CONTEXT

The State Office of Planning and Sustainable Development (OPSD) is responsible for coordinating the management of Hawai'i's coastal zone and the state planning approach to climate adaptation. Within the OPSD is the Hawai'i Coastal Zone Management Program (HICZMP). The CZMP derives its authority from the federal CZM Act, which states that coastal states must anticipate and plan for SLR caused by global warming (16 U.S.C. § 1451).

The purpose of the HICZMP is to provide for the “effective management, beneficial use, protection, and development of the coastal zone” (OPSD, 2023; 16 U.S.C. § 1451). The HICZMP works with a network of state agencies and county governments to administer enforceable laws, regulations, and policies that protect the coastal zone (OPSD HICZMP, 2020). HRS 205A is the State Coastal Zone Management law which defines Coastal Zone Management as further discussed in **Section 3.2**.

The flagship document created by the HICZMP is the Ocean Resource Management Plan (ORMP), a guiding document for agencies with responsibilities relating to marine and coastal zone management. The ORMP is a long-term plan for the coastal and marine environment. Most recently updated in 2020, the ORMP has three main focus areas: 1) Development and Coastal Hazards; 2) Land Based Pollution; and 3) Marine Ecosystems.

Under the Development and Coastal Hazards focus area, managed retreat is featured as a key component of success in achieving the goal of strategically addressing impacts to Hawai'i's shorelines from coastal development, climate change and sea level rise, erosion, and other chronic coastal hazards. See Section 3.3.2 for further discussion of the ORMP.

In 2019, the HICZMP conducted the state's first managed retreat study: Assessing the Feasibility and Implications of Managed Retreat Strategies for Vulnerable Coastal Areas in Hawai'i. The project included four case studies illustrating a variety of different scenarios and considerations related to implementing managed retreat, and a statewide symposium. Environmental, cultural, legal, financial, and other



considerations were explored. This policy assessment incorporates and builds upon the findings of the previous study by providing additional policy analysis and documenting updates to policies and regulations since the study's publication in 2019.

2 JURISDICTIONAL CONTEXT FOR MANAGED RETREAT IN HAWAI'I

An understanding of the regulatory jurisdictions and land use systems applicable to shoreline management in Hawai'i is important to provide context for the exploration of potential managed retreat strategies. These jurisdictional systems can pose challenges for managed retreat, as there is a constant interplay between state and county jurisdictions that is need more collaboration among the state, counties, and federal governments, and in some cases, timely enforcement.

2.1 HAWAI'I'S LAND USE SYSTEM

Hawai'i's existing land use system is governed by the State Land Use Law (HRS Chapter 205) which defines what activities are permissible and where they are allowed to occur. Development is also required to comply with county zoning ordinances, general plans, and regional-level plans. Additional layers of regulation exist for lands within the Special Management Area (SMA) and state Conservation District, both of which encompass the state's coastal areas (the county-regulated SMA begins inland of the shoreline and the state-regulated Conservation District seaward of the shoreline). Historic preservation regulations also apply where cultural and historic sites are present. Lands under the jurisdiction of the Department of Hawaiian Home Lands (DHHL) are largely exempt from both state and county land use regulations. The DHHL applies its own land use system as articulated in the DHHL General Plan (2022). Federal land users, such as the Department of Defense, Fish and Wildlife Service, and National Park Service, are outside of state and county jurisdictions. Each entity manages its jurisdiction uniquely based on a variety of local factors and agency needs.

The State Land Use Law establishes various land use districts, including urban, rural, agricultural, conservation, and rural districts. Each district has specific regulations governing the types of land uses permitted within its boundaries. The State Land Use Commission (LUC) has the authority to classify and reclassify land into different districts based on factors such as population growth, economic development, environmental conservation, and community needs (Hawai'i Administrative Rules [HAR] Title 15 Chapter 15). Reclassification typically involves a formal process that includes public hearings and consideration of relevant criteria. The law establishes the boundaries of each land use district and provides mechanisms for defining and modifying these boundaries as needed. Development projects within the state land use districts are subject to permitting and review processes to ensure compliance with applicable regulations. Projects may require permits from both the LUC and local county planning departments.

County zoning ordinances for each of Hawai'i's four counties—Honolulu, Hawai'i, Maui, and Kaua'i—specify how land can be used, including regulations for residential, commercial, industrial, agricultural, and conservation purposes. These are required to follow the permissible uses in each state land use district as defined in HRS 205-2. Zoning laws also dictate parameters such as building heights, setbacks, and density. The counties are responsible for ensuring that development projects comply with zoning ordinances and county-specific building codes, permit processes, and other land use regulations.

Hawai'i's patchwork of land use regulations creates complexity in navigating permitting requirements and necessitates constant state/county coordination around regulations and enforcement. Nowhere is this more evident than along Hawai'i's coastlines, as discussed in the next section.

2.2 COASTAL REGULATORY JURISDICTIONS

In Hawai'i, all land makai (seaward) of the shoreline is the jurisdiction of the state and managed as a public trust resource (*In re Sanborn*, 1977). This tradition dates back to pre-contact Native Hawaiian

customary law. In the traditional system, common ownership extended from the ocean up to the highest wash of the waves, usually visible as the line of vegetation or ocean debris in the sand (*Diamond v. State, Bd. Of Land and Nat. Res*, 2006). Royal patents describe this line as “ma ke kai” (*In re Application of Ashford*, 1968).

The Federal Coastal Zone Management (CZM) program was created through the CZM Act in 1972, and the Hawai'i CZM program was approved in 1977 and codified in law as Hawai'i Revised Statutes (HRS), Chapter 205A. The shoreline definition in HRS 205A states that:

“Shoreline” means the upper reaches of the wash of the waves, other than storm and seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth, or the upper limit of debris left by the wash of the waves (State of Hawai'i, HRS 205A-1).

State law recognizes the shoreline as a dynamic line which is subject to change and may be altered by erosion and sea level rise. In 2017, the Hawai'i Attorney General issued a formal advisory opinion stating, “when the shoreline migrates [mauka] due to erosion or sea level rise, the dividing line between public and private ownership also migrates mauka” (Wynhoff & Chin, 2017). Everything makai of the shoreline to three nautical miles offshore is within the state’s jurisdiction and is regulated by the State Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) through the state Conservation District rules (HAR Chapter 13-5). Makai of the high tide line (the wet/dry line during high tide) is also under federal jurisdiction. Therefore, both state and federal jurisdictions apply in this zone (Figure 1).

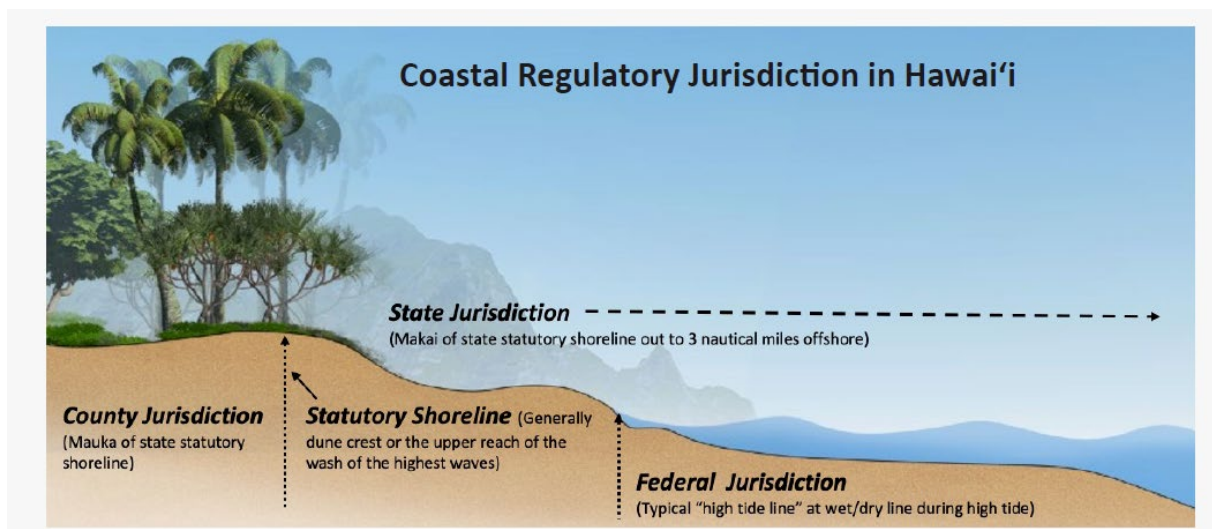
Where the shoreline is artificially fixed by a seawall or other man-made structure, the determination of the shoreline location is complex and has not been definitively settled by case law (State of Hawai'i, 2021; Wynhoff & Chin, 2017). For structures experiencing wave overwash, the shoreline is legally mauka of the structure unless the waves hitting the structure are caused by “storm or other seismic waves.” For permitted seawalls, the location of the shoreline is undetermined unless the waves overwash the structure or undermine it, in which case the structure is encroaching onto state property (State of Hawai'i, 2021; Wynhoff & Chin, 2017).

Immediately mauka (landward) of the shoreline is under the jurisdiction of the counties and is part of the Special Management Area (SMA) as defined by the state and implemented by county governments. Development in the SMA is subject to additional permits and controls to avoid impacts to shoreline resources and loss of public access. Each county also has shoreline setback rules and ordinances that generally prohibit structures and activities within the shoreline area.

The jurisdictional overlap at the shoreline necessitates collaborative governance between state and county partners. Currently, there is no formalized avenue for state/county coordination around permitting and enforcement. There can also be confusion over which agency takes the lead where the shoreline boundary is unclear, or a shifting shoreline has resulted in structures that used to be under county jurisdiction encroaching partially or fully onto state land. Both state and county agencies have expressed the need for greater clarity and coordination of responsibilities. Given the state’s inchoate interest in coastal land that is eroding or becoming inundated, there may also be an argument that the state should have greater regulatory influence in determining the appropriate course of enforcement and corrective action around threatened structures in the coastal zone. The Hawai'i Silver Jackets Team

(see text box) was established through the HICZMP in 2021 to facilitate inter-agency coordination around decision-making and agency responses to chronic coastal hazards.

FIGURE 1: COASTAL REGULATORY JURISDICTION IN HAWAI'I



SOURCE: (UNIVERSITY OF HAWAI'I SEA GRANT COLLEGE PROGRAM, 2022)



BEST PRACTICE EXAMPLE: JURISDICTIONAL COORDINATION

HAWAI'I SILVER JACKETS TEAM

- > The Hawai'i Silver Jackets Team was officially formed in 2021. The Team's first initiative, approved in 2022, is to improve cross agency coordination related to decision-making along the shoreline. This includes two facilitated workshops with participants from relevant county and state planning/regulatory agencies. The first workshop identified and prioritized challenges and roadblocks to cross-agency communication. Workshop 2 will be to identify tools and resources to address the priority challenges.
- > The CZMP will collaborate with county planning departments, DLNR OCCL, Hawai'i Emergency Management NOAA Office for Coastal Management, and the U.S. Army Corps of Engineers. The program aims to align agency responses to chronic coastal hazards and provide homeowners, developers, and planners with predictability on what mitigation strategies are acceptable, keeping in mind Hawai'i's diverse coastal geologies, hydrodynamics, and development patterns.

2.3 ASSESSMENT OF JURISDICTIONAL CONTEXT FOR MANAGED RETREAT

ASSESSMENT:

Hawai'i's encompassing definitions of the coastal zone (all land areas of the state out to three miles offshore), the shoreline (the highest wash of the waves), and the designation of all land makai of the shoreline as a public trust resource owned by the State, collectively support proactive management, protection, and restoration of the coastal zone.

Hawai'i's patchwork of land use regulations creates complexity in navigating permitting requirements and necessitates constant state/county coordination around regulations and enforcement. Coastal zone management in particular has historically faced a challenge of determining jurisdiction and coordinating regulation and enforcement in a dynamic coastal environment. Under SLR and accelerated coastal erosion, this challenge is compounded, requiring increased levels of coordination and perhaps, further clarification and direction around state and county jurisdictions and enforcement activities in coastal areas.

SUPPORTIVE ELEMENTS:

- ✓ Hawai'i law clearly establishes all land seaward of the high wash of the waves as under state ownership, which provides a powerful basis for shoreline management and managed retreat.
 - ✓ Coordination between the state and counties around shoreline regulation and enforcement is occurring on an ongoing, yet informal basis.
 - ✓ There are recent efforts to improve jurisdictional coordination, such as the Silver Jackets Team.
-

CHALLENGES:

- ✓ It can be difficult to determine the location of the shoreline, and therefore the jurisdictional boundary, in a dynamic coastal environment.
 - ✓ Where the shoreline is fixed by an illegal seawall or structure, it is difficult to determine the shoreline location.
 - ✓ There is a lack of formality and clarity around the process for coordination of regulations and enforcement at the shoreline.
 - ✓ The state has limited ability to direct or influence enforcement actions by the counties at the shoreline.
-

3 REVIEW OF POLICIES, PLANNING FRAMEWORKS, AND REGULATIONS APPLICABLE TO MANAGED RETREAT

This section provides an overview of policies, plans, regulations, codes, and land use mechanisms that have a nexus to the implementation of managed retreat. Each section includes a description of the policy, plan, regulation, or tool and the current state of its implementation in Hawai'i, followed by an assessment of its supportive and limiting elements with regard to managed retreat.

3.1 CLIMATE ADAPTATION POLICY AND GUIDANCE

Hawai'i has recognized climate change as a serious threat since 2001 and has taken bold policy action in the ensuing decades, directing the state and counties to plan for SLR and climate change and designating entities for coordination including OPSD and the Hawai'i Climate Change Mitigation and Adaptation Commission. There is still progress to be made at both the state and the county level in advancing policy and mechanisms for climate adaptation and managed retreat, however by many accounts Hawai'i continues to be a leader in advancing climate resilience, and in particular managed retreat, nationwide (Gaskell et al., 2023). This section provides a summary of state and county level policy and guidance that has been adopted in recent years and a discussion of how it relates to the implementation of managed retreat.

3.1.1 State Legislation

Through progressive legislation, the State of Hawai'i has established clear policy recognizing the threat of climate change and codifying a statewide commitment to mitigate and adapt to it:

- > Hawai'i was the first state to a climate emergency (State Concurrent Resolution 44, 2021).
- > Act 73 in 2010 established the environmental response, energy, and food security tax, otherwise known as the barrel tax, to provide resources for addressing the effects of climate change.
- > In 2012, the State Legislature expanded the focus of climate change policy to incorporate adaptation with the passage of Act 286, which mandated the creation of climate change adaptation priority guidance and its incorporation into the statewide planning system. Act 286 was codified into state law as HRS 226-109, which amended the State Planning Act and requires the consideration of climate change policy in all state and county land use, capital improvement, and programmatic decisions.
- > Act 83 in 2014 (the Hawai'i Climate Adaptation Initiative Act) established an Interagency Climate Adaptation Committee (ICAC, which later became the statewide Climate Change Mitigation and Adaptation Commission) and called for the preparation of a Hawai'i Sea Level Rise Vulnerability and Adaptation Report, which was completed in 2017. Act 83 further authorized the OPSD Coastal Zone Management Program to coordinate development of statewide climate adaptation planning and to use the SLR Vulnerability and Adaptation Report as a framework to address the effects of climate change.
- > With the passage of Act 32 in 2017, Hawai'i became the first U.S. state to pass legislation upholding the goals of the Paris Climate Agreement. The Act outlined priority actions, including the need for a statewide response to climate change through collaboration and cooperation. Part II of the Act amended Act 83 to establish the ICAC as a state commission and expand its mission and scope. Further discussion on the Hawai'i Climate Change Mitigation and Adaptation Commission is included in Section 3.1.3.

Additional notable policy developments since the 2019 Managed Retreat report was published include:

- > Act 16 in 2020 amended coastal zone management laws to further protect beaches against impacts of sea level rise and coastal erosion and reduce residential exposure to coastal hazards. The Act effectuated changes to HRS Chapter 205A to increase the minimum shoreline setback for development; prohibit private shoreline hardening structures, including seawalls and revetments where sandy beaches are present; and increase permitting requirements for residential development exposed to coastal hazards.
- > Act 178 in 2021 requires OPSD, in cooperation with each state agency having operational responsibilities over state facilities, to identify existing and planned facilities that are vulnerable to sea level rise, flooding impacts, and natural hazards; assess a range of options to mitigate the impacts of sea level rise to those facilities; and submit annual reports to the Governor, Legislature, and Hawai'i Climate Change Mitigation and Adaptation Commission regarding the vulnerability and adaptation assessments for state facilities and the progress made in implementing sea level rise adaptation in future plans, programs, and capital improvement needs and decisions. The Act also amended the Hawai'i State Planning Act to include sustainable development, climate change adaptation, and sea level rise adaptation as objectives for facility systems.
- > Act 179 passed in 2021 requires all property sellers to disclose whether their property lies within the 3.2 ft. sea level rise exposure area (SLR-XA) (see Section 3.1.3 for description of the SLR-XA).
- > Act 208, passed in 2022, expanded the purposes for which counties may create Special Improvement Districts to include climate change and SLR adaptation.
- > Act 223 in 2022 expanded the authority of the counties to transfer development rights to address areas at risk of sea level rise, coastal erosion, storm surge, or flooding associated with climate change.
- > Act 221 in 2023 requires the Hawai'i Community Development Authority to consider the impacts of climate change, sea level rise, and climate-resilient development in the design and siting of buildings in the Kaka'ako and Kalaeloa community development districts.
- > Act 231 in 2023 requires disclosure of all existing permitted and unpermitted erosion control structures on the parcel in real estate transactions when residential real property is within anticipated inundation areas.

As understanding and awareness of climate change progresses, agencies and environmental groups continue working to codify climate change adaptation and mitigation measures through legislation. Several measures were put forth in the 2023 legislative session specifically relating to managed retreat, but did not advance:

- > H.B. 756 HD2/S.B. 1032 proposed an Act to implement some of the key recommendations identified in OPSD's 2019 managed retreat study. The Act would have appropriated funds and required DLNR to prepare plans and a program to facilitate voluntary relocation of residential development away from certain at-risk areas; establish a SLR relocation special fund; allow exchange of public lands for private lands for transferring development rights or land exchanges to relocate private development away from high risk areas.
- > H.B. 1092/S.B. 1390 proposed to expand the authority of the state and the counties and develop funding to begin utilizing managed retreat as an option for voluntarily moving residential development and associated infrastructure away from critically vulnerable areas to locations

outside of sea level rise and coastal flooding exposure areas. The measure included a proposal for a managed retreat pilot program on the North Shore of O'ahu.

- > H.B. 1052 HD1/S.B. 1350 proposed to establish a Climate Impact Special Fund by allocating five cents from the Environmental Response, Energy, and Food Security Tax to the Fund. The measure also proposed to appropriate funds to the Hawai'i Climate Change Mitigation and Adaptation Commission to address impacts of climate change and to mitigate further impacts on the state through carbon sequestration and resiliency planning, and would have allocated funds to a Sea Level Rise Voluntary Relocation Fund.
- > H.B. 993 HD1/S.B. 1291 would have required and appropriated funds for OPSD, in cooperation with each state agency having operational responsibilities over state facilities, to develop a standardized process to conduct vulnerability assessments for facilities at risk from sea level rise and guidance to agencies on how to conduct the vulnerability assessments for their facilities. Funding for this process was provided to OPSD in the state budget but had not been released at the time of writing.
- > H.B. 770/S.B. 69, on the other hand, proposed a number of policy changes to the Coastal Zone Management Program that would "balance public and private interests in implementing sea level rise adaptation." The policy changes including allowing shoreline construction if it were determined to preserve, protect or rehabilitate the beach or be considered vital development, requiring the county Planning Commissions to allow proposed development within the shoreline area and SLR-XA under certain circumstances, and providing that no variance be denied for lawful non-conforming structures with exceptions. It was not supported by OPSD and did not pass.

The following bills were considered in the 2024 legislative session related to managed retreat:

- > H.B. 2636 proposes to establish a Hawai'i Coastal Commission and Shoreline Buyback Program which permits the Commission to purchase eligible shoreline properties and make those properties available for affordable rental housing. This measure did not become legislation.
- > H.B. 1545/S.B. 2184 SD1 proposes to expand the authority of the state and counties to develop adaptation pathways plans to modify and relocate infrastructure away from critically threatened areas to locations outside SLR and coastal flooding exposure areas. This measure did not become legislation.
- > H.B. 2371/S.B. 3060 SD1 would require OPSD to develop and publish a statewide climate adaptation and resilience implementation plan and appropriates funds accordingly. This measure did not become legislation.
- > H.B. 2180 would prohibit development in special management areas unless the development is first found to not be located in a sea level rise exposure area. This measure did not become legislation.
- > H.B. 1052/S.B. 1350 SD 1 would appropriate funds to the Hawai'i Climate Change Mitigation and Adaptation Commission to address impacts of climate change and to mitigate further impacts on the State through carbon sequestration and resiliency planning. It also allocates funds to a Sea Level Rise Voluntary Relocation Fund. This measure did not become legislation.
- > H.B. 1546/S.B. 2183 SD 1 would amend the definition of "beach restoration" used in laws governing the Board of Land and Natural Resources' powers to engage in beach restoration to include activities undertaken to improve eroded beaches and degraded dune systems and to

remove abandoned and remnant manmade materials that pose a risk to the health of the public and ecosystem. This measure is expected to become legislation.

- > H.B. 2248 from 2023 proposed the appropriation of funds to UH Sea Grant for the development of a North Shore Beach Management plan for the North Shore of O'ahu. The measure did not pass into legislation in 2023 but was resurrected in the 2024 session and passed into legislation.

In addition to legislation, administrative rule changes are also being proposed to address gaps and strengthen existing policies related to coastal zone management and the state Conservation District. These are discussed later in this report under the relevant sections.

The significant body of existing policy and legislation that has been introduced in recent years indicates a growing awareness and sense of urgency around the need for proactive climate adaptation and managed retreat. State policy provides clear direction on who is responsible for coordinating climate adaptation, however significant gaps remain in identifying appropriate mechanisms for retreat and in providing funding for the implementation of those mechanisms.

A 2023 survey of Hawai'i elected officials indicated an overwhelming consensus among the 32 respondents around the imminent threats posed to the state by SLR and the state's current lack of preparedness. However, despite this sense of urgency, the great majority of respondents did not identify addressing SLR as a top priority (UHERO, 2023). This further highlights the disconnect between articulated state policy and action to fund and implement climate adaptation.

3.1.2 Hawai'i Sea Level Rise Vulnerability and Adaptation Report and the Sea Level Rise Exposure Area (SLR-XA)

In 2017, DLNR and OPSD released the Hawai'i Sea Level Rise Vulnerability and Adaptation Report and Hawai'i Sea Level Rise Viewer as mandated by Act 83 (Session Laws of Hawai'i (SLH) 2014). The report and viewer used climate science and modeling to identify a Sea Level Rise Exposure Area (SLR-XA) for the entire state. The SLR-XA is a combined exposure area that aggregates coastal erosion, passive flooding and high wave flooding at benchmarks of 0.5 ft., 1.1 ft., 2.0 ft., and 3.2 ft. above current sea level.

In 2020, the state published a supplement to the 2017 SLR report, Guidance for Using the Sea Level Rise Exposure Area in Local Planning and Permitting Decisions (Romine et al., 2020). A Hawai'i Climate Adaptation Portal and interactive web-based guidance tool were also developed to incorporate sea level rise considerations into planning and permitting. In 2020, the state and Hawai'i Sea Grant published Guidance for Addressing Sea Level Rise in Community Planning in Hawai'i (Courtney et al., 2020).

3.1.2.1 Use of the SLR-XA in Policy and Regulations

The state has not officially adopted the SLR-XA as a vulnerability zone as was recommended in the 2017 report. However, since its release, the SLR-XA has been widely used as planning guidance for the state and counties and has been integrated into a number of planning documents, policies, and regulations. A non-exhaustive review of how SLR-XA is being used and adopted at state and county levels follows:

- > The City and County of Honolulu Mayor's Directive 18-02 in 2018 directs all City departments to use the latest climate commission guidance as well as the SLR-XA in managing assets, reviewing permitting requests, and assessing project proposals. A Maui Mayoral Proclamation (Arakawa, 2018) was also issued directing County departments to use the state SLR report, viewer, and SLR-XA in plans, programs, and capital improvement decisions.

- > The SLR-XA has been integrated into a number of long-range community plans at the county level, including the West Kaua'i Community Plan, Draft Primary Urban Center Development Plan (O'ahu), East Honolulu Sustainable Communities Plan, Ko'olau Loa Sustainable Communities Plan (O'ahu), Draft Hawai'i County General Plan, South Maui Community Plan, and West Maui Community Plan.
- > Infrastructure agencies including the State of Hawai'i Department of Transportation (HDOT) and City and County of Honolulu Board of Water Supply are also integrating the SLR-XA and other climate change impacts into their planning and asset management systems.
- > The counties have begun pursuing updates to zoning codes, shoreline setbacks, and special management area policies based on the SLR-XA. The County of Kaua'i adopted a SLR Constraint District into its Comprehensive Zoning Ordinance based on the SLR-XA boundaries, and the City and County of Honolulu adopted an erosion-based shoreline setback that incorporates SLR-XA. Maui County is proposing to use the SLR-XA erosion hazard line as the basis of its shoreline setback policy. The SLR-XA is also beginning to be employed in the review of county level permit applications.
- > The SLR-XA has been incorporated into key state climate legislation such Act 179 (SLH 2021), which requires property sellers to disclose whether their property lies within the 3.2 ft. SLR-XA (HRS 508D-15). It also factored into Act 16, which updated the State CZM Act (HRS 205A) and integrated SLR considerations into planning and permit review. Additional legislation that has been introduced but not passed has included proposals to limit or prohibit development within the SLR-XA (H.B. 2180, 2024 legislative session).
- > State rules for environmental assessments (HAR 11-200.1 under HRS Chapter 343) were updated through State Act 17, SLH 2018, which directed the State Environmental Council to adopt rules requiring all environmental assessments and environmental impact statements to include consideration of climate change and sea level rise.
- > The DLNR OCCL is also proposing rule updates for the Conservation District (HAR 13-5) that would require expanded consideration of future conditions with SLR.

The establishment of the SLR-XA and SLR Vulnerability and Adaptation Report can be credited with fueling a paradigm shift in Hawai'i planning and policy around climate adaptation. It provides a scientifically rigorous basis for policy and regulatory action around adaptation. Yet, while guidance and best practices abound, a clear state-level policy adopting SLR-XA as an exposure zone, establishing consistent SLR planning benchmarks, and directing their application in regulations, planning, and permitting has not emerged. As a result, integration and application of the SLR-XA has occurred on a piecemeal and sometimes inconsistent basis across Hawai'i. There are also a number of gaps in implementation of the 2017 report's recommendations, which are discussed in the following section.

3.1.2.2 2022 SLR Vulnerability and Adaptation Report Update

An update to the Sea Level Rise Vulnerability and Adaptation Report was provided to the State Legislature in 2022. In addition to providing an update on progress made toward the nine recommendations in the 2017 report, the 2022 update identified several additional recommendations and modifications to the 2017 recommendations and actions that are relevant to managed retreat:

1. Recognize the SLR-XA as a statewide exposure zone (rather than a vulnerability zone as suggested in the 2017 report).
2. Set a revised planning and policy benchmark of 4 ft. (up from the 2017 guidance of 3.2 ft.) as the minimum scenario for all planning and design based on updated modeling showing an

intermediate (mid-range) scenario of 3.9 feet of sea level rise for Hawai'i by 2100, and apply a 6 ft. benchmark for planning and design of public infrastructure projects and other projects with low tolerance for risk based on an updated Intermediate High scenario for Hawai'i of 5.9 feet of sea level rise by 2100.

3. Implement the recommendations of the 2019 HICZMP report on Assessing the Feasibility and Implications of Managed Retreat Strategies for Vulnerable Coastal Areas in Hawai'i.
4. Conduct long-term strategic planning for maintenance, repair and replacement of critical infrastructure within the SLR-XA in advance of emergent need.
5. Incorporate existing and emerging scientific data in updates to shoreline setback ordinances.
6. Improve guidelines and regulations for planning and design in the SLR-XA and FEMA Special Flood Hazard Zones.
7. Establish a "willing seller" program to move development away from beaches.
8. Explore the use of FEMA funding to support moving homeowners away from flood zones in support of a comprehensive managed retreat plan.
9. Explore legislative and policy mechanisms to designate funding for priority coastal lands and enable the use of a variety of practices and tools and utilize existing programs to acquire beaches and other coastal lands for recreational, cultural, ecosystem and resilience objectives.
10. Incorporate community-scale vulnerability assessments and adaptation planning into the 2027 update of the Sea Level Rise Vulnerability and Adaptation Report.
11. Improve cooperation between state and county government agencies to strengthen enforcement and compliance with existing coastal laws.
12. Increase state agency capacity to enforce existing laws and regulations.

The 2022 update further recommended focusing on the following unmet needs as priority action areas for 2023-2027:

- > Facilitate interagency coordination for holistic adaptation planning (e.g., comprehensive consideration and planning for natural resources, roads, communities; and improved communications between government agencies) (2017 Recommendation 9, 2022 Recommendation 1).
- > Conserve and adapt Native Hawaiian cultural resources and sites (2017 Recommendation 5).
- > Integrate equity and justice considerations into vulnerability assessments and adaptation planning and actions (2017 Recommendation 2).
- > Address and stop the loss of shoreline access (2017 Recommendation 4).
- > Integrate economic valuation and ecosystem co-benefits of natural coastal resources into planning and actions (2017 Recommendations 4, 5 and 8).
- > Make managed retreat a viable option and identify funding mechanisms for adaptation (2017 Recommendations 2 and 7).
- > Implement phased adaptation to sea level rise (2017 Recommendation 1, 2, 7).

3.1.3 Climate Commission Guidance

The Hawai'i Climate Change Mitigation and Adaptation Commission was formed in 2017 through Act 32. The Commission is co-chaired by the DLNR and OPSD. Members include directors of various state departments, members of the Hawai'i legislature, and the directors of each county planning department. The mission of the Commission is to promote ambitious, climate-neutral, culturally

responsive strategies for climate change adaptation and mitigation in a manner that is clean, equitable, and resilient. The Commission issues statements and reports on topics related to climate change and state policy. In 2018, the Commission issued its Recommendations for Countering Impacts of Sea Level Rise report, which outlined recommended strategies for SLR adaptation statewide. Recommended strategies included:

- > Support legislation for disclosure for private property and public offerings located in areas with potential exposure to sea level rise.
- > Request all new development, redevelopment and modifications be directed away from beach areas.
- > Urge counties to incorporate the 3.2 ft. sea level rise exposure area (SLR-XA) into their general and development plans.
- > Encourage agencies and non-governmental utility providers to identify and prioritize assets within the 3.2 ft SLR-XA or more as described in the state's Sea Level Rise report, identify adaptation measures, and to provide a status update on this activity annually to the Climate Commission.
- > Support legislation that funds state programs to meet mitigation goals, and to bring resources to assist in planning and implementation for sea level rise and other climate related impacts.

In 2019, the Commission released a Statement on Climate Equity, establishing climate equity as one of three primary considerations for all climate action.

Additionally, there is a Climate Change Commission for the City and County of Honolulu which was created by a 2016 Charter Amendment. The five person Commission is charged with gathering information on projected climate impacts for O'ahu, and providing advice to the mayor, City Council, and executive departments. Commission members are appointed by the mayor and confirmed by the City Council. The Commission issued its first Sea Level Rise Guidance document in 2018, which was updated in 2022. The 2022 guidance followed the recommendation of the updated State SLR Vulnerability and Adaptation Report (2022) to set a planning benchmark of 4 ft. of SLR by 2100 for most construction, and 6 ft. of SLR as the planning benchmark for public infrastructure and other projects with low tolerance for risk. The Honolulu Climate Commission also issued Shoreline Setback Guidance to inform updates to Revised Ordinances of Honolulu (ROH) Chapter 23, "Shoreline Setbacks."

3.1.4 County Policy and Ordinances

Hawai'i is a home rule state, which provides governing authority to the counties to enact policies and ordinances through county councils, among other powers designated by the state constitution. There have been a number of county level ordinances enacted related to climate adaptation and managed retreat. Some of the most relevant ordinances include:

- > The City and County of Honolulu Office of Climate Change, Sustainability, and Resiliency (OCCSR) was established in the City Charter in 2017, increasing institutional capacity for coordinating actions and policies to improve community resilience to climate change and sea level rise impacts and integrating sustainable and environmental values into City plans, programs, and policies.
- > The City and County of Honolulu updated its shoreline setback ordinance (Ordinance 23-3, 2023) to increase the minimum shoreline setback and establish an erosion-rate-based shoreline setback formula. The ordinance prohibits shoreline hardening unless necessary for coastal restoration or where it would result in a clear public benefit.

- > The City and County of Honolulu updated its Special Management Area rules (Ordinance 23-4, 2023) to provide additional protections against the impacts of coastal hazards, including sea level rise and coastal erosion.
- > The City and County of Honolulu updated the description and responsibilities of OCCSR (Ordinance 20-47, 2020) to include the establishment of several programs, including a climate resilience and equity program and a coastal and water program. The latter is tasked with coordinating climate change adaptation, community resiliency, beach and coastal protection, integrated water and forest resources management, and development of resilient infrastructure. OCCSR was also tasked with coordinating hazard mitigation planning and long-term disaster recovery planning with the City Department of Emergency Management.
- > Ordinance 20-47 (2020) further established a One Water policy for the City and County of Honolulu and provided a framework for interagency collaboration around climate resilience and adaptation between all city infrastructure agencies.
- > The Honolulu City Council approved adding a question to the 2024 general election ballot to ask if voters want to dedicate 0.5% of estimated real property tax towards a new Climate Resiliency Fund (resolution 23-162, 2023). If approved by voters, 1.5% of real property tax currently split between the Clean Water & Natural Lands Fund and the Affordable Housing Fund in each year's fiscal budget and capital program would be split three ways instead of two. The new fund would focus on financing preventative, mitigating, and educational measures focused on improving climate resiliency.
- > Kaua'i County amended its Comprehensive Zoning Ordinance in 2023 to include a SLR Constraint District, which articulates additional regulations for new development within the SLR-XA.
- > Maui County adopted Ordinance 5264 in 2021 to add "mitigate climate change and work toward resilience" as a goal of its Countywide Policy Plan, the Maui County 2030 General Plan.
- > Maui County established an Office of Climate Change, Resiliency, and Sustainability in 2022, which led the development of a Climate Action and Resiliency Plan for Maui (NOTE: this office no longer exists under the current mayoral administration).
- > Maui County adopted Ordinance 5442 in 2022 which established a Managed Retreat Revolving Fund in 2022 to help homeowners manage coastal erosion and address climate change. The fund directs 20% of the county's transient accommodations tax to support shoreline improvements and the inland relocation of infrastructure owned by the county and private entities.
- > Hawai'i County adopted Bill 48 in 2023 to approve the creation of the Office of Sustainability, Climate, Equity and Resilience for Hawai'i Island.

3.1.5 Assessment of Climate Adaptation Policy and Guidance for Retreat

ASSESSMENT:

There is a strong policy basis for climate adaptation initiatives at the state level. The 2023 legislative session saw multiple efforts to pass managed retreat policy, however all efforts were stalled, and lawmakers were quoted as needing more time to understand the mechanisms of managed retreat before they would be willing to implement policy. This may indicate a reluctance at the legislative level to pass policy that unnerves property owners and developers given the dependence of the Hawai'i economy on tourism and property development, as well as the state's affordable housing shortage. Funding is often

provided for planning but not for implementation, which has a much greater cost. Well-designed plans are key to managed retreat; however, implementation will require consistent, multi-year funding.

County Councils have been more proactive in implementing elements of managed retreat programs, such as the County of Kaua'i SLR Constraint District and the County of Maui Managed Retreat Revolving Fund, both of which are example components of a broader managed retreat program. Updates to shoreline regulations have also occurred to bring SMA and shoreline setback ordinances into consistency with Act 16 updates to the state CZM law (HRS 205A). The City and County of Honolulu is the only county with a dedicated resiliency office and a climate commission, and this has enabled significant progress in policy and planning.

The progress of managed retreat and climate adaptation as a whole is hampered by factors including: 1) a shortage of funding committed to supporting the state's climate adaptation policy goals; 2) the lack of clear statewide policy on managed retreat; 3) a political process that rewards short-sighted decisions, and 4) the absence of the official adoption of the SLR-XA and of statewide planning benchmarks for SLR to use in planning and regulation. Additionally, coastal property owners either cannot retreat (due to a lack of space on the parcel), cannot afford to retreat, or are dependent on beach-related tourism and therefore resist the idea of retreat. There are opportunities to examine potential amendments to the Hawai'i Revised Statutes to strengthen policy around climate adaptation and managed retreat and provide further direction to the Counties on the application of the SLR-XA. The State Legislature, Climate Change Mitigation and Adaptation Commission, OPSD HICZMP, DLNR OCCL, University of Hawai'i (UH), and other co-authors of the Hawai'i SLR Vulnerability and Adaptation Report are key to advancing these initiatives.

SUPPORTIVE ELEMENTS:

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- ✓ State law articulates strong support for climate adaptation and retreat and delegates clear responsibility for coordination of climate adaptation efforts. This was initially strengthened through Act 16 and its updates to HRS 205A.
 - ✓ The SLR-XA and SLR Vulnerability and Adaptation Report provides a strong and scientifically rigorous basis for crafting policy and communicating coastal hazard risk to the public.
 - ✓ The State and Honolulu Climate Commissions have provided important policy guidance related to SLR and retreat, which has been influential in the integration of climate adaptation and resilience into planning and regulations.
 - ✓ County Councils have passed legislation to further key aspects of managed retreat, including the Kaua'i SLR Constraint District and the Maui County Managed Retreat Revolving Fund.
 - ✓ The establishment of the Honolulu Office of Climate Change, Sustainability and Resiliency has enabled significant progress in planning and policy around adaptation and retreat on O'ahu.
 - ✓ The 2022 update to the Hawai'i SLR Vulnerability and Adaptation Report identified a priority action to make managed retreat a viable option and identify funding mechanisms for adaptation.
 - ✓ Multiple pieces of legislation were introduced in the 2023 and 2024 legislative sessions to advance managed retreat and climate adaptation, indicating that awareness and sense of urgency is building.
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CHALLENGES:

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- ✓ The SLR-XA has not been officially adopted as an exposure zone, and official planning benchmarks for SLR have not been adopted by the state and counties.
 - ✓ The use of the SLR-XA and State and Honolulu Climate Commission guidance is not backed up by mandates nor by enforcement, and thus its use and application is piecemeal and inconsistent across state and county agencies.
 - ✓ The legislature has thus far not passed measures to develop managed retreat mechanisms, nor has it appropriated substantial funding to support climate adaptation and retreat.
 - ✓ Honolulu and Hawai'i Counties are the only counties that have established and sustained offices dedicated to climate change and resiliency. Honolulu County is the only county that has instituted a climate commission to support policy development.
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3.2 COASTAL ZONE MANAGEMENT POLICY AND REGULATIONS

Hawai'i's coastal zone management framework is grounded in federal and state law and implemented collaboratively through federal, state, and county agency coordination. Coastal zone management policy prioritizes the protection and restoration of coastal ecosystems and associated public trust resources, including public access, scenic views and open space, recreation, historic resources, economic uses, and natural protection against coastal hazards (particularly afforded by dunes and sandy beaches).

Furthermore, Hawai'i has a strong public trust doctrine, enshrined in the state constitution since 1978, which states that "all public natural resources are held in trust by the State for the benefit of the people" (Hawai'i Constitution, Article XI Section 1-11). Beaches, as a public natural resource, are protected under this framework. The right to public access encompasses the right to access the beach, as well as the right of transit along the beach corridor (State of Hawai'i, HRS 115). The Constitution also contains broad protections for traditional and customary practices by Native Hawaiians. The legal assessment discusses the public trust doctrine and its legal applications for managed retreat in additional detail.

Preservation and restoration of the coastal zone is supported by additional layers of regulation for environmental review, endangered species, cultural resources, and historic preservation. The Hawai'i State Constitution mandates protection of the natural environment for the benefit of the public (Section XI-1) and is considered one of the most progressive in the nation in regards to environmental protection (Webb, 2021). Additionally, the state has its own version of the National Environmental Policy Act (NEPA), the Hawai'i Environmental Policy Act (HEPA) (HRS Chapter 343). There are also state level programs that mirror federal programs for historic properties (HRS Chapter 6E) and endangered species (HRS Chapter 195D).

This section will discuss how existing policies and regulations pertaining to the coastal zone relate to and potentially support or facilitate managed retreat.

3.2.1 Federal Coastal Zone Management Act

The framework for coastal zone management in Hawai'i is grounded in the federal Coastal Zone Management Act (CZMA), which was passed by Congress in 1972 and is administered by the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management. The goal of the Act is

to “preserve, protect, develop, and where possible, to restore or enhance the resources of the nation’s coastal zone.” NOAA maintains a voluntary partnership with States and territories with approved CZM programs, and disburses funds to support program activities through a cooperative agreement.

3.2.2 Hawai'i Coastal Zone Management Program

The State of Hawai'i Coastal Zone Management Program (HICZMP) was established in 1977 and enacted into Hawai'i state law through HRS 205A. The program was approved by NOAA in 1978. The purpose of the Hawai'i HICZMP is to “provide for the effective management, beneficial use, protection, and development of the coastal zone.” In Hawai'i, the coastal zone encompasses all land areas and extends three miles offshore to the edge of the State’s jurisdiction (HRS 205A-1).

The HICZMP is housed in the State Office of Planning and Sustainable Development (OPSD), in the State Department of Business, Economic Development and Tourism (DBEDT). It is a network program, meaning that it works collaboratively with state and county government agencies to administer laws, regulations, and policies to protect the state’s coastal zone.

The HICZMP provides a framework for State level action, while providing guidance to the Counties in regulating the Special Management Area (SMA). Furthermore, the HICZMP is responsible for protecting, creating, and enhancing public access to the coast (HRS 205A-2). The objectives and policies of the HICZMP are binding on all agencies within the network program, as discussed in the next section.

3.2.3 Coastal Zone Management Law (HRS 205A)

The HICZMP objectives and policies outlined in HRS 205A-2 outline a comprehensive policy direction for coastal zone management that emphasizes protection and restoration of coastal ecosystems for public benefit. Of particular relevance to managed retreat, the policies (paraphrased below) support:

- > Controls on development in areas subject to coastal hazards through regulation and enforcement, planning, and zoning;
- > Communicating risks and impacts of coastal hazards and development to the public and facilitating public participation in planning and review of development proposals;
- > Directing economic uses to appropriate designated areas, and designing them to minimize exposure to coastal hazards and adverse impacts in the coastal zone;
- > Locating new structures inland from shoreline setbacks;
- > Prohibiting construction of private shoreline hardening structures and minimizing construction of public shoreline hardening structures at sites with sandy beaches and where hardening structures interfere with existing recreational and waterline activities; and
- > Prohibiting private property owners from creating a public nuisance through cultivating, inducing, or allowing the owners’ vegetation to encroach upon a beach transit corridor.

Currently absent from the objectives and policies is any specific provision for managed retreat or climate adaptation. Given the acceleration of coastal erosion and SLR, further policy direction is needed to facilitate managed retreat. This includes identifying where retreat is most applicable and how government intervention will occur.

Another limitation is that existing policies are geared toward new construction, but do not provide direction for existing development (including seawalls) that may be placed close to the shoreline and are at risk of impacting public trust resources. There is clear regulation around structures that have already

encroached into the public realm, but further support and direction is needed to allow proactive planning and regulation around the movement of existing nonconforming structures away from high-risk areas before they become a public nuisance or a threat to public health and safety.

Finally, interviews with agency staff have indicated a need for further clarity and direction around CZM policies and objectives and their use in permit application review. As written, the policies and objectives have a strong thrust toward coastal protection, however there are ambiguities that have been cited in challenges to permit decisions, such as the provision in HRS 205A-2(c)(5)(C) to permit coastal development for economic uses outside designated areas when “the use of designated locations is not feasible; adverse environmental effects and risks of coastal hazards are minimized; and the development is important to the state’s economy.”

3.2.3.1 SMA Regulations

Immediately mauka of the shoreline is the Special Management Area (SMA), which is delineated on maps filed with the HICZMP and regulated by the counties through ordinances. In implementing the SMA, the legislature found that “special controls on developments within an area along the shoreline are necessary to avoid permanent losses of valuable resources and the foreclosure of management options, and to ensure that adequate access, by dedication or other means, to public owned or used beaches, recreation areas, and natural reserves is provided. The legislature finds and declares that it is the state policy to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai’i” (State of Hawai’i, HRS 205A-21).

HRS Ch205A provides guidance and authority to the Counties in regulating the SMA. Under HRS § 205A-28, no development is allowed in the SMA without obtaining an SMA permit through rules adopted by the counties. HRS § 205A-26 outlines guidelines for the counties to consider in regulating development within the SMA. The guidelines focus on maintaining access to public beaches and protecting coastal resources by mitigating impacts from development. The counties may amend the SMA boundaries with approval from OPSD.

Regulation of development within the SMA is supportive of managed retreat, as it enables the counties to impose restrictions on new development to mitigate coastal hazards. However, jurisdictional and enforcement challenges are mounting as the shoreline becomes more dynamic and more development becomes threatened and impacted. There is a need for clearer protocols and more formalized coordination around state and county regulation and enforcement. These challenges are compounded by a shortage of staff and resources on both sides. With coordination and agreement between the state and counties, the SMA permit process could become a vehicle for facilitating managed retreat through measures such as the inclusion of permit conditions that place time limitations on development or redevelopment or identify triggers within the SMA permitting process which would require existing development to be moved or removed.

3.2.3.2 Shoreline Setback Regulations

Shoreline setback regulations restrict development within a certain distance from the shoreline as determined by the counties. Counties use shoreline setbacks to prohibit new development close to the shoreline, regulate repairs and modifications on existing structures in the shoreline setback area, grant hardship variances, and set and enforce fines for violations. Shoreline setback regulations were strengthened through the passage of Act 16 in 2020, which increases the minimum setback inland from the shoreline from 20-feet to 40-feet. Structures within the shoreline area that were built before Act 16, SLH 2020 are considered nonconforming and are subject to county rules on repairs and reconstruction. Act 16 also amended HRS 205A-44 to ensure that permitted structures within the shoreline setback may

not be rebuilt or replaced without a variance. Specifically, it states that “permitted structures may be repaired, but shall not be enlarged, rebuilt, or replaced within the shoreline area without a variance.”

Shoreline setback regulations are adopted across all counties, though the calculation of the setback varies across jurisdictions, and sometimes even across parcels within a jurisdiction. The City and County of Honolulu, County of Kaua'i, and County of Maui have all adopted setbacks that take into account annual erosion rates (Honolulu Ordinance 23-003, 2023; Kaua'i County Ordinance No. 979, 2014; Maui County Code Chapter 203). The City and County of Honolulu recently increased its minimum setback to 60 ft. with additions based on historic rates of erosion up to a total of 130 ft. (Ordinance 23-003, 2023). While the County of Hawai'i (COH) is geologically younger than the other islands and does not have as many sandy beaches, COH is also currently considering increases to shoreline setbacks.

In order to implement shoreline setback regulations, it is necessary to determine the location of the shoreline. The shoreline is officially determined through the process of shoreline certification under HAR Chapter 13-222. Coastal property owners can request shoreline certifications, which may also be required to apply for an SMA permit and shoreline setback variance. Shoreline certifications are conducted by licensed land surveyors and once complete need to be reviewed by state land surveyors and certified by the Board of Land and Natural Resources (BLNR). Maps and photos of the certified shoreline are posted publicly. Shoreline certifications are valid for 12 months, taking into account dynamism at the shoreline due to coastal processes.

Setbacks are a well-established and effective tool for regulating shoreline development. As climate science improves, setback regulations will need to be reviewed and updated to ensure they accurately reflect risk. Implemented by the counties under authority of the state, setbacks provide another example of where implementation of managed retreat relies on the state and counties being aligned and coordinating on regulation and enforcement. Shoreline setbacks, including the requirements and conditions imposed through the issuance of variances, could be another vehicle to facilitate and implement managed retreat.

3.2.3.3 Shoreline Hardening Regulations

Strong protections against shoreline hardening in front of existing sandy beaches are an important component of managed retreat, as seawalls have been shown to cause beach narrowing and loss on eroding shorelines (Fletcher et al., 1997). The state adopted a “no tolerance” policy stance on shoreline hardening in 1999, due in part to the publication of the DLNR Coastal Erosion Management Plan (COEMAP). However, in practice exemptions were often granted for shoreline hardening (Cocke, 2020). With the passage of Act 16 in 2020, the construction of new private seawalls, revetments, and other shoreline hardening structures is prohibited at sites with sandy beaches, while public shoreline hardening is strongly discouraged unless it is clearly demonstrated to be in the public interest (HRS 205A-2). Public interest is determined on a case by case basis that includes 1) public safety and/or public health; 2) protection of public infrastructure in response to the risk of coastal hazards; 3) beach protection/sand retention for coastal ecosystems, public use and recreation.

Nonconforming uses and structures are defined and protected by statute in HRS 205-8 and HRS 183C and further clarified in administrative rules under state law under HAR 19-170-64 and HAR 13-5-7. Generally, nonconforming structures are defined as those which were legal when they were built, but do not conform to more recent regulations. In the Conservation District, the definition of nonconforming applies to any structure legally built prior to October 1, 1964 or before its inclusion in the Conservation District (HRS 183C). For existing, legally nonconforming seawalls, jurisdiction depends on the current location of the shoreline, which can be difficult to determine when the shoreline is artificially fixed by a

seawall or other man-made structure (Motion for Partial Summary Judgment, 2021; Wynhoff & Chin, 2017). In most cases, seawalls fall within the SMA and are regulated by the counties. For cases where the shoreline has moved mauka of the seawall through erosion or SLR and the structures is subject wave overwash, the seawall falls under state jurisdiction and requires an easement since it occupies state land. In recent years the Board of Land and Natural Resources (BLNR) has changed its practice to grant 25-year easements, down from 55 years, in light of SLR projections, citing as one of its reasons to “facilitate a process of managed retreat from the shoreline” (BLNR Submittal D-5, 2022). For seawalls on state land, jurisdictional issues are complicated by the fact that the structure the seawall was built to protect is typically still within the SMA. In these cases, additional coordination is needed between state and county agencies to provide regulatory oversight of seawalls and the structures they are protecting.

Repairs on nonconforming seawalls are allowed up to a certain point. Repair consists of fixing existing construction, but not expanding or adding to the structure in any way (HICZMP, 2021). For seawalls in the SMA, the counties regulate these repairs under rules pertaining to nonconforming structures. For example, in the City and County of Honolulu, these structures can be repaired as long as the repairs do not increase the nonconformity in any way (i.e., by expanding the structure), and if the value of the repairs or alterations does not exceed: a) 50% of the replacement cost over a 10-year period if located within 40 feet of the setback; or b) 75% of the replacement cost over a 10-year period if located over 40 feet away from the shoreline (ROH 26-1.6). If damage exceeds 50% of the replacement cost at the time of destruction, it is no longer considered a repair, and would be subject to current SMA and shoreline setback regulations.

The jurisdictional issues around seawalls highlights the complexity of regulating existing development at the shoreline. While current rules aim to move beachfront development back over time, existing structures including legally nonconforming seawalls contribute to erosion and beach loss at a rate in which existing regulations and enforcement cannot keep up. The requirement for seawalls on state land to obtain easements may provide a nexus for greater regulation and enforcement. For example, the state could explore imposing further conditions on easements, or raising the cost of such easements to fund larger scale adaptation and retreat.

The differential treatment of public versus private shoreline hardening can also complicate enforcement and messaging around climate adaptation and managed retreat. If public hardening is determined to be in the public interest, that hardening may also have the effect of protecting private structures and enabling private development to persist in vulnerable areas, while adjacent, privately owned shoreline areas would be denied permits to protect their properties. Any type of hardening can create beach loss, and these exceptions send a mixed message about the state’s policy commitment to protect sandy beaches and other public trust resources, leaving the state to walk a fine line in defining what is really in the “public interest.” As an example, the BLNR recently approved hardening along a portion of Kamehameha Highway on the Windward Coast of O’ahu, where the highway is subject to chronic erosion and wave overwash (Hawai’i News Now, 2024).

3.2.3.4 Emergency Permits

Emergency permits allow for the urgent and short-term protection of development under immediate threat of coastal hazards. Jurisdiction over emergency permits depends on the location of the temporary structure in question, which can include sandbags or fabric “sand burritos.” On the makai side of the shoreline, the State DLNR OCCL regulates emergency permits under the Conservation District administrative rules (HAR § 13-5-35). On the mauka side of the shoreline, the respective county is responsible for emergency permits under its SMA regulations (see Section 3.4.5 for further discussion of county emergency shoreline permits). HRS Chapter 205A provides guidance for the counties on SMA

emergency permits, which are defined as granting development in cases of emergency requiring immediate action to prevent substantial harm to people and property, as long as the threatened structures were previously in compliance with the National Flood Insurance Program (HRS § 205A-22).

While emergency permits are intended to provide protection in an emergency, in practice, they are seen and used as a “relief valve” for coastal landowners whose properties are facing short-term impacts due to shoreline erosion. Due to factors such as the cost and difficulty of obtaining permits for activities within the SMA and shoreline setback areas, the historic lack of enforcement around temporary shoreline protection in Hawai'i, and the absence of conditions that place clear legal and financial burden on the landowners around the placement of the temporary material in the shoreline area, the current system perversely incentivizes landowners to wait until they qualify for an emergency permit to take action to protect their property (Cocke, 2020). Many shoreline homeowners have left these “temporary” measures, which include sandbags, tarps and “sand burritos,” in place for years (Cocke, 2022a). Although temporary structures are more easily removed than seawalls or revetments, sandbags, tarps and “burritos” function as coastal armoring and exacerbate erosion on sandy beaches (Romine and Fletcher, 2012).

A decade ago, many more emergency permits were issued, leaving a backlog of enforcement for OCCL and the counties and arguably instilling a false sense of security for coastal property owners (Cocke, 2020). In some cases, political pressure and threats of lawsuits have complicated efforts to enforce the removal of emergency structures (Cocke, 2022c). Several high profile cases that have come before the BLNR on the North Shore of O'ahu highlight the difficulties in enforcing emergency permit regulations at the shoreline (Broder Van Dyke, 2024; Cocke, 2022a; Cocke 2022b).

Enforcement tools available to OCCL include the ability to levy fines against owners whose temporary structures are not removed, as well as to place liens on property and to issue temporary restraining orders on unpermitted work. While fines can help defray the costs to the state of enforcement and defense against lawsuits, there is currently no mechanism in place for private landowners who employ unpermitted measures to compensate the public for damage to public trust resources. Furthermore, there is no mechanism in place to require beachfront owners to pay for removing temporary structures that fall into the ocean or the beach, which can result in considerable degradation of coastal environments. Further discussion of fines and other ways of financing retreat is included in the funding and financing assessment.

In December 2020, the DLNR OCCL announced proposed changes to HAR Ch 13-5 include creating a new “temporary shoreline hardening” use that would replace the current practice of issuing emergency permits. These would be considered for areas impacted by incremental processes such as coastal erosion where the situation has become an “unmanaged hazardous condition” rather than an emergency (DLNR OCCL, 2022). To apply for permits for temporary shoreline hardening, applicants would need to demonstrate that they were also working towards a long-term solution, such as relocation, abandonment, or beach restoration.

Under the proposed rule updates, “emergency shoreline hardening” would apply only to emergency situations that are not part of an incremental process, such as severe storm events. The proposed changes would also allow OCCL to require a surety bond or other legal or financial assurance to guarantee the removal of the temporary structure at the end of its permitted time. While the rule updates have not yet passed, they are supportive of managed retreat in that they send a clear signal to coastal property owners that climate change is an incremental process that can be planned for, and that the state intends to require owners to take a proactive approach in planning for and mitigating projected impacts.

Maui County has also taken steps to improve its emergency permit process to be more proactive and long-term solution oriented. Proposed changes to §12-202-16 of Maui County's SMA rules would add further conditions to emergency permits involving coastal erosion, including limiting them to 180 days and requiring applicants to provide a plan for alternative long-term solutions within 90 days.

3.2.4 Public Shoreline Access Rights

The public has a right of access to, and transit along, the area seaward of the shoreline, which is defined as a beach transit corridor by HRS § 115-5(a). Shoreline access for Native Hawaiian traditional and customary rights is guaranteed by law, HRS § 1-1, 7-1, and is protected by Hawai'i's Constitution, Article 12 Section 7, as discussed further in the next section. Public access rights do not extend to federal military lands, some of which exist in beach and shoreline areas. Military properties are governed by national homeland security laws and the Supremacy Clause in Article VI of the U.S. Constitution, both of which preempt state laws (OPSD-CZM 2014).

Several authorities have shoreline access responsibilities in the state including creation, maintenance, and protection of public accessways. Counties have the primary authority and duty to develop and maintain public access to and along the shorelines, per HRS §§ 46-6.5, 115-5 and 115-7. Each county also maintains a shoreline public access inventory. The minimum required beach transit corridor width varies by county, from 10 ft. (Kaua'i County Code Chapter 9-2.9; Hawai'i County Code Chapter 34), to 12 ft. (City and County of Honolulu, ROH 22-6.4), up to 15 ft. (Maui County Code, Title 18.16). There are no clear standards establishing required or desirable intervals between mauka-makai accesses, or identifying where continual lateral access may be desirable.

The strong protections for shoreline public access enshrined in Hawai'i's Constitution and established in case law support the need for managed retreat as SLR and erosion threaten beach transit access corridors. Establishing further standards related to public access and consistency in minimum beach transit corridor widths across the state may be areas for improvement. Further discussion of case law and legal applications related to shoreline access rights are included in the legal assessment.

3.2.5 Traditional and Customary Rights

Traditional and customary rights in Hawai'i are enshrined in Article XII, Section 7 of the Hawai'i State Constitution:

"The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who were descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778."

Case law has supported and upheld the protection of traditional and customary rights of Native Hawaiians, including fishing and other shoreline activities. Case law and legal applications of traditional and customary rights are explored further in the legal assessment.

The state's commitment to protect its cultural and historic resources is also articulated in HRS 205A-2, which provides that one of the CZMA's objectives is to protect and preserve "those natural and manmade historic and prehistoric resources in the coastal management area that are significant to Hawaiian . . . history and culture."

Traditional and customary rights and the strong body of case law underpinning them provides a strong basis for regulatory measures to maintain and restore access to the shoreline.

3.2.6 Environmental Protection

Activities within the state's coastal zone are also subject to state and federal environmental protection regulations and environmental review requirements. Those with a particular nexus to managed retreat are discussed here.

3.2.6.1 Environmental Review Requirements

The state Environmental Review Program facilitates the environmental review process in Hawai'i under HRS Chapter 343, the Hawai'i Environmental Policy Act (HEPA). Under the Environmental Review Program, projects are assessed for environmental impact. Some projects are considered exempt from environmental review based on lists of pre-qualified projects developed by each state and county agency. These are often routine maintenance tasks such as roadway repairs. If a project is not exempt, then it must begin the Environmental Assessment or Environmental Impact Statement process. An Environmental Assessment (EA) is for projects deemed to have no significant impact or mitigatable impacts, while Environmental Impact Statements (EIS) are for projects with significant impacts.

The rules governing the environmental review process (HAR Chapter 11-200.1) were updated in 2019, in part to fulfill the mandate of Act 17, SLH 2018, which called for the state to promulgate rules for EAs and EISs to examine SLR. Included among the updates was the integration of sea level rise into the significance criteria. Under significance criterion 11, proposing and approving agencies are required to consider whether a proposed action is likely to have a substantial adverse effect on or is likely to suffer damage by being located in a sensitive area such as the SLR-XA (e.g., exacerbating coastal erosion or increasing exposure to hazards such as inundation). Agencies must also consider whether the proposed action will be impacted by sea level rise and include SLR-XA maps as documentation (State of Hawai'i Environmental Council, 2019).

Inclusion of SLR and climate change considerations in HAR Chapter 11-200.1 and HRS 343 is a significant step in furthering awareness and action around climate adaptation. By requiring disclosure and analysis of SLR and other coastal hazard risks, proposing and approving agencies may be prompted to integrate mitigation and adaptation measures as part of their projects. The rules stop short of explicitly requiring analysis of climate adaptation and mitigation measures, which may be an area for future policy change. To further support this, managed retreat could be specifically mentioned as one of the key strategies for climate adaptation that should be examined in EAs and EISs in relation to the projected impacts.

3.2.6.2 Conservation District Rules

Areas makai of the shoreline to three nautical miles offshore are within the State Conservation District. The DLNR has adopted and administered land use regulations for the State Conservation District since 1964 under Act 187 of 1961. The DLNR OCCL provides administrative support and enforcement. Under Act 187, conservation is defined as protecting watersheds and water supplies; preserving scenic areas; providing park lands, wilderness and beach reserves; conserving endemic plants, fish, and wildlife; preventing floods and soil erosion; forestry; and other related activities. Regulation of the Conservation District is governed by HAR Title 13 Chapter 5 and HRS Chapter 183C.

There are five (5) subzones of the Conservation District, in order of most protective to least: Protective, Limited, Resource, General, and Special. Lands and waters seaward of the shoreline may be within the Protective, Limited, or Resource subzone. Conservation District rules support robust regulation of activities in shoreline areas through the issuance of Conservation District Use Permits (CDUP's), the

requirements for which vary by subzone and the nature and intensity of the activity. The types of CDUP's issued include Departmental permits, Board permits, emergency permits (see Section 3.2.3.4), temporary variances, site plan approvals, and management plans or comprehensive management plans.

The current Conservation District rules generally support managed retreat through providing a strong basis for regulating development in shoreline areas. The current rules, however, make no mention of SLR or climate change related hazards. Further, similar to shoreline regulations in HRS 205A, Conservation District rules have provisions allowing for the repair of nonconforming structures up to a certain threshold (HAR 13-5-7), which poses a barrier to removal or relocation of existing structures unless that threshold is met. Permit conditions may be a potential lever for placing further restrictions or time limits on existing nonconforming development. Conservation District regulations could also be updated over time to further restrict development in areas subject to repeated flooding and inundation.

3.2.6.3 Wetland Regulations

Hawai'i has approximately 35 square miles of coastal lowland wetlands, which provide ecological and societal benefits including mitigating flood risks, capturing sediment and nutrients to protect nearshore waters from pollution, wildlife habitat, and carbon sequestration (University of Hawai'i College of Tropical Agriculture and Human Resources, 2008). It is estimated that nearly 50,000 acres, or 15%, of natural wetlands have been lost statewide, due mostly to urban development (Van Rees & Reed, 2014). O'ahu, as the most populated island, lost the highest proportion of its wetlands at 65%. The majority of wetland losses were concentrated in coastal areas on all islands, reflecting development patterns statewide.

Pre-European contact, Native Hawaiians extensively managed and in some cases expanded and augmented wetlands to maximize food production while maintaining ecosystem function and biodiversity, a process which has been termed "ecomimicry" (Winter et al., 2020). While the scope of these practices has declined, resource managers still employ these techniques to manage wetlands and other coastal areas including aquaculture ponds or fishponds (loko i'a).

At the state level, coastal wetlands are defined under Hawai'i Administrative Rules Title 11 Chapter 54 and regulated by the Department of Health. Federally, wetlands have been regulated under Section 404 of the Clean Water Act since its passage in 1972 (U.S. Army Corps of Engineers, 2022). When there are unavoidable development impacts to wetlands and other aquatic resources covered under Section 404 of the Clean Water Act or a similar state or local wetland regulation, mitigation banking may be used to mitigate those impacts (EPA, 2023). Mitigation banks are wetlands, streams, or other aquatic resource areas that have been restored, enhanced, or preserved as a way to offset development impacts on another site.

Mitigation banks are created through formal agreements between a government agency, corporation, nonprofit organization, or other entity and a regulatory agency. Mitigation banking can help to preserve and restore coastal wetlands, which provide important ecological functions but are threatened by SLR (Georgetown Climate Center, n.d.). Hawai'i state law allows the DLNR to establish and operate aquatic mitigation banks as a way to allow compensatory mitigation for damages (HI Rev Stat § 187A-41, 2022). A bill introduced in the 2023 legislative session expanded the language around the types of habitat suitable for mitigation banking, but the bill did not pass (S.B. 1030, 2023). Mitigation banking could be one mechanism of preserving this habitat type and thus limiting development of these important coastal resources.

The strength of existing wetland protections helps to facilitate managed retreat by preventing further filling in and development of coastal lowlands. Further, the Hawai'i State Commission on Water

Resources Management supports the development of constructed wetlands on suitable parcels, which could be used to divert floodwaters away from coastal areas. This could support more resilient coastal communities and facilitate managed retreat if constructed wetlands were developed along coastal areas following retreat.

3.2.7 Historic Preservation and Cultural Resources

The Constitution of the State of Hawai'i recognizes the value of conserving and developing the historic and cultural property within the State for the public good. HRS 6E further establishes the state's policy to "provide leadership in preserving, restoring, and maintaining historic and cultural property, to ensure the administration of such historic and cultural property in a spirit of stewardship and trusteeship for future generations, and to conduct activities, plans, and programs in a manner consistent with the preservation and enhancement of historic and cultural property" (HRS 6E-1). Potential impacts to cultural and historic resources are required under federal and state law to be considered in a wide variety of activities, including private development, government undertakings, and ground-disturbing activities.

Historic and cultural resources are considered part of the public trust in Hawai'i, and historic preservation laws will likely apply to any private or government-initiated action related to managed retreat. Consideration of historic and cultural resources may influence decisions about where retreat is implemented, and where historic and cultural sites are threatened, there will need to be an exploration of potential adaptation options to protect these sites. In some cases, retreat of historic and cultural sites may be necessary to preserve their integrity. These determinations will need to be made through engagement with cultural representatives, Native Hawaiian organizations, and appropriate agencies.

While discussions with stakeholders have indicated awareness around this issue and the need for further guidance around adaptation and retreat of historic and cultural resources, there have not been studies or publications devoted to this topic to date. This is a gap that deserves further attention in furthering managed retreat and one which was also identified in the state's 2022 update to the SLR Vulnerability and Adaptation Report. The Pacific Islands Climate Adaptation Science Center (see text box) is one entity that may be able to support research, engagement, and capacity building around integration of cultural considerations into climate adaptation.

The remainder of this section discusses key elements of the existing framework for historic preservation and cultural resource management in Hawai'i.



BEST PRACTICE HIGHLIGHT: INTEGRATION OF CULTURAL RESOURCES INTO CLIMATE ADAPTATION

PACIFIC ISLANDS CLIMATE ADAPTATION SCIENCE CENTER

- > The Pacific Islands Climate Adaptation Science Center (PI-CASC) is one of eight U.S. Department of the Interior regional Climate Science Centers that partners with natural and cultural resource managers to develop actionable research products promoting socio-ecological responses to climate change (Laursen et al., 2018). It was established in 2011 and spans the Pacific from Hawai'i to the U.S.-affiliated islands of the South Pacific. The goal of PI-CASC is to "provide natural resource managers and cultural stewards in federal, state, and local arenas access to the best science available on climate change and other stressors impacting the region's natural and cultural resources."
- > Through PI-CASC's Manager Climate Corps program, which was launched in 2016, climate researchers and natural and cultural resource managers on Hawai'i Island collaboratively developed research products and strategies to address climate change (PI-CASC, n.d.). In a study interviewing participating managers, many were concerned with restoring and conserving natural landscapes that support historical, cultural, and archaeological sites while adapting to climate impacts (Laursen et al., 2018). Finding additional ways to strengthen relationships between climate researchers and on-the-ground resource managers can increase adaptation capacity for cultural and historic resources to SLR.

3.2.7.1 State Historic Preservation Division

Administratively located within DLNR, the State Historic Preservation Division (SHPD) oversees the Burial Sites Program, the Certified Local Government Program, the Historic Preservation Program, maintenance of the Hawai'i and National Register of Historic Places. Under the authority of Section 106 of the National Historic Preservation Act of 1966 and HRS Chapter 6E, SHPD has a key role in reviewing the following types of activities to identify potential impacts on archaeological, architectural, and cultural resources:

- > Alterations to privately owned properties listed on the Hawai'i Register of Historic Places.
- > Projects that require a state or county permit, certificate, land use change, subdivision, or other entitlement for use, which may affect a historic property.
- > State or county projects with potential to affect historic properties.
- > Projects with a federal nexus that have potential to impact historic properties.

The review and compliance process culminates in a determination of effect on historic properties, which may include: buildings, structures, sites, objects, districts, artifacts, records, remains, and properties of traditional cultural and/or religious importance to indigenous communities, including Native Hawaiian

organizations. Civil and administrative penalties apply for any unauthorized taking, appropriation, excavation, injury, destruction, or alteration of historic property or aviation artifacts (HRS 6E-11).

3.2.7.2 Burial Councils

An important consideration for activities in coastal areas is the possibility of impacting iwi kupuna, or ancestral remains. Burial sites are often unmarked, and sand dunes tend to have a greater likelihood of containing iwi kupuna (State Historic Preservation Division, 2013). Natural disturbances such as high surf and erosion can expose burials, as can excavation work. As the shoreline continues to move inland with SLR and increasing erosion, the possibility of impacting traditional burial sites will increase.

State law with respect to prehistoric and historic burial sites is primarily found in HRS Chapter 6E and HAR Chapter 13-300. Federal law also provides protection for Native Hawaiian burial sites through the Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001). Five Island Burial Councils engage in a collaborative process together with the relevant agencies, lineal descendants, and applicants to:

- > Determine whether previously identified Native Hawaiian burial sites that appear to be over 50 years old should be preserved in place or relocated.
- > Make recommendations regarding appropriate management, treatment, and protection of Native Hawaiian burial sites, and on any other matters related to Native Hawaiian burial sites.
- > Decide whether to recognize a claimant to Native Hawaiian burials as a lineal or cultural descendant.
- > Assist the DLNR and the SHPD in with the inventory and identification of Native Hawaiian burial sites.
- > Maintain a list of appropriate Hawaiian organizations, agencies, and offices to notify regarding the discovery of Native Hawaiian burial sites.

Planning for managed retreat will need to include consideration for the impacts to burials that may be uncovered as part of natural shoreline processes, removal of structures, and/or shoreline management activities following retreat. Collaboration with SHPD, the Island Burial Councils, and other cultural stakeholders will be critically important. Again, existing policy and literature in Hawai'i has not specifically addressed this issue, indicating that further efforts are needed.

3.2.7.3 'Aha Moku System

The 'aha moku system was established by law in 2012 through Act 288, which formally reintroduced the traditional 'aha moku land and ocean resource management system dating back to the 9th century ('Aha Moku, *n.d.*). The current system comprises of an eight-member 'Aha Moku Advisory Committee under DLNR representing their respective 'Aha Moku Island Councils. The 'aha moku system is based on indigenous resource management practices and ensures a community consultation process that prioritizes place-based traditional ecological knowledge (TEK) (DLNR, 2022). While not currently incorporated into SLR response, the 'aha moku system could provide a meaningful avenue to connect to community members, including kūpuna, long-term residents and cultural practitioners (Coffman et al., 2024).

3.2.8 Assessment of Coastal Zone Management Policy and Regulations for Retreat

ASSESSMENT:

Federal, state, and county laws and regulations around coastal zone management, environmental protection, public access, Native Hawaiian traditional and customary rights, and the protection of cultural and historic resources collectively provide a strong basis for limiting private uses in coastal areas to protect public trust resources and facilitate managed retreat. There may be opportunities for strengthening key laws and regulations to more explicitly recognize managed retreat as a strategy for achieving policy goals. In addition, further study and policy direction is needed around adaptation for cultural and historic resources, including burials, that are located in threatened coastal areas.

Hawai'i's coastal zone management policy and regulations subject new development to multiple layers of regulation designed to prevent impacts to the coastal zone, mitigate hazards, and reduce risks to life and property. However, much of Hawai'i's existing coastal development predates the establishment of the CZM law. While regulation and enforcement processes are clear around development that encroaches onto state lands, there are limited regulatory tools and guidance available to enable proactive planning around existing structures that are nonconforming or are projected to be impacted by future SLR.

As shoreline regulations are currently positioned, development along eroding shorelines with sandy beaches will be forced to retreat as the shoreline moves mauka, making retreat the de facto regulatory approach in these areas. The challenge will be shifting from a reactive, enforcement-driven approach to a proactive approach, or set of approaches, for managed retreat.

There may be opportunities to amend SMA and shoreline setback regulations and/or utilize existing permit, easement, and variance processes to impose additional conditions or threshold-based requirements on existing development. In addition, SMA and shoreline setback regulations should be monitored and updated as improved climate science and understanding of projected impacts becomes available. The process of issuing emergency permits for temporary shoreline hardening structures is also in need of re-vamping to better communicate the need for proactive action around climate change and remove perverse incentives for property owners to wait until the situation is dire to pursue solutions.

Finally, the suite of enforcement tools available to DLNR OCCL could be broadened to ensure costs are not unduly born by the state and public, and regulations should be consistently implemented and enforced to send a clear message about expectations for coastal landowners.

SUPPORTIVE ELEMENTS:

- ✓ HRS 205A and the HICZMP provide a comprehensive and collaborative framework for shoreline management, including a strong definition of the shoreline that favors preservation and restoration of coastal environments as well as public access and traditional and customary rights.
- ✓ The Act 16 updates to HRS 205A greatly strengthened prohibitions against shoreline hardening and reinforced protections of coastal environments and public trust resources.
- ✓ SMA and shoreline setback regulations are effective at restricting new development in shoreline areas and are being actively updated to incorporate coastal erosion and SLR considerations. Conditions placed on SMA permits and shoreline setback variances could be an effective vehicle for provisions to further managed retreat.

- ✓ The issuance of Conservation District Use Permits and/or shoreline easements for encroaching structures could be a vehicle for imposing conditions that facilitate the structure's eventual removal.
- ✓ Beach transit corridors as required by law could present an opportunity for placing additional standards around shoreline development.
- ✓ In recent years, DLNR OCCL has started implementing more consistent enforcement and is exploring additional enforcement strategies.
- ✓ Proposed updates to HAR Ch13-5 would greatly improve the emergency permit program by distinguishing incremental climate change impacts from emergencies and requiring proactive planning for climate change.
- ✓ The 'Aha Moku system and programs like the Pacific Island Climate Adaptation Science Center may help build awareness and capacity for integration of cultural issues and traditional ecological knowledge into climate adaptation.

CHALLENGES:

- ✓ The HICZMP policies and objectives in HRS 205A-2 do not explicitly reference climate adaptation or managed retreat, and contain some direction that is ambiguous and difficult for the counties to regulate. Further policy direction is needed to clarify the state's position on managed retreat and provide guidance on where and when it may be applicable..
- ✓ Differential rules for public and private shoreline hardening complicate messaging and enforcement efforts.
- ✓ Existing regulations have limited applicability to remove or relocate existing nonconforming development, including seawalls. Further support is needed for proactive planning and regulation in this area to prevent further loss of public trust resources.
- ✓ The state has an enforcement backlog and is in the process of shifting to a more proactive enforcement stance, which brings new lessons and challenges.
- ✓ There is a lack of clear coordination pathways between county planning departments and the state over the dynamic shoreline zone to conduct proactive enforcement over potential encroachments or structures that may become hazardous.
- ✓ There are significant gaps in the emergency permit process that have historically incentivized owners to wait for an emergency to act, and that have resulted in temporary structures remaining in place for years due to a lack of enforcement. While rule changes are proposed to address this, the persistence of temporary structures such as sandbags or sand burritos is continuing to negatively degrade beaches, public trust resources, and public access.
- ✓ Environmental review laws do not currently require analysis of climate adaptation strategies or managed retreat.
- ✓ There is a need for further consultation and study around climate adaptation for cultural resources, including burials in the shoreline area.

3.3 PLANNING FRAMEWORKS

Hawai'i's existing planning frameworks span diverse jurisdictions and topical areas. Planning frameworks exist to guide policy and capital improvement project prioritization around land use, resource management, infrastructure, and other topics. The state's overarching planning framework is articulated in HRS Chapter 226, the Hawai'i State Planning Act, which requires the preparation of state functional plans, county general plans and development plans, a state sustainability plan, and state programs, including the HICZMP as well as the Land Use Commission and BLNR.

Many existing county and state level plans have a nexus to managed retreat, and to climate adaptation more broadly. Planning frameworks in Hawai'i that incorporate policies and spatial data related to coastal areas, SLR, climate adaptation, and retreat include state program plans such as the Ocean Resources Management Plan, state and county sustainability and resiliency plans, county and DHHL general and regional land use plans, resiliency and sustainability plans, hazard mitigation plans, disaster recovery plans, functional plans, and resource management plans. Many existing plans in these categories integrate policies and actions that are supportive of climate adaptation and managed retreat, and these are catalogued in Appendix A. Each also presents opportunities for strengthening policy direction and actions for managed retreat, as discussed in this section.

While integration of supportive policies into existing planning frameworks is key to advancing managed retreat, a larger issue is that a place for managed retreat and climate adaptation planning is not currently defined within existing planning frameworks. This type of planning is therefore taking place on a piecemeal and inconsistent basis. Climate adaptation planning requires different considerations and technical analyses than other kinds of planning efforts, and often needs to take place at different scales and timeframes than other existing plans. Building this new function into county and state planning frameworks will require additional funding, technical skills, and agency capacity. It would also require amendments to existing laws including the Hawai'i State Planning Act (HRS 226) and County Charters. To some extent, climate adaptation planning can also complement and leverage existing planning frameworks such as county land use plans, which similarly require a high level of community involvement, attention to land use patterns, and integration of community needs and vision.

3.3.1 Climate Adaptation Plans

As noted above, climate adaptation plans are distinct from existing planning processes in a number of ways, including their scale, focus, timeframe, and technical requirements. They are also similar in some ways and can therefore incorporate planning best practices for community engagement, equity analysis, and incorporation of traditional ecological knowledge (TEK). This section describes components and best practices for adaptation planning and provides examples of adaptation planning efforts across Hawai'i.

3.3.1.1 Adaptation Planning Approach and Best Practices

The IPCC defines adaptation as "the process of adjustment to actual or expected climate and its effects" (IPCC 2014, cited in Bucchin & Tuley, 2022). Climate adaptation plans are efforts that are undertaken to anticipate and reduce vulnerability to current and future climate impacts. Climate adaptation necessarily takes place at a local scale to address threats to a particular community, neighborhood, or facility (Bucchin & Tuley, 2022).

Adaptation plans typically identify vulnerable areas and assets and explore various types of adaptation strategies, which can generally be bucketed into the categories of protection (defensive measures such as hardening); accommodation (mitigation measures including retrofitting of structures and incorporation of green infrastructure); retreat (moving or removing structures and uses out of vulnerable areas); and

avoidance (guiding new development away from high-risk areas) (Bucchin & Tuley, 2022) . There are many localized factors that impact the feasibility and effectiveness of adaptation strategies, including shoreline conditions, coastal processes, technical feasibility, cost, laws and regulations, land use patterns, and socioeconomic characteristics. Evaluation of adaptation strategies against these factors can require adaptation planning teams to have expertise in areas such as coastal science, engineering, and economic analysis in addition to the traditional skillsets of planning.

Given the changing situation around global greenhouse gas emissions and the evolving science around understanding climate impacts, climate adaptation plans need to be regularly revisited and updated to incorporate new information. They can also build in flexible adaptation pathways that provide decision processes for action in response to changing climate conditions (see text box). This approach is referred to as adaptive management (Bucchin & Tuley, 2022) .

Social equity needs to be a fundamental consideration in the process of selecting adaptation strategies and evaluating the resulting outcomes (APA, 2022). Disenfranchised and marginalized communities often have barriers to accessing information and lack the capacity for civic participation, which can result in their exclusion from planning and decision-making processes. Their vulnerabilities also make them less resilient and able to recover from shocks and stressors. Intentional inclusion and consideration of vulnerable populations in adaptation planning can build the resilience and adaptive capacity of communities as a whole.

Robust public participation is a best practice for planning in general. It has been shown to lead to more ambitious and transformational climate adaptation planning, particularly when a diverse group of community stakeholders are given meaningful opportunities to engage in a local planning process (Cattino & Reckien, 2021). Many coastal managers in Hawai'i believe that broadening community participation in decision-making at the shoreline would benefit adaptation planning in coastal areas (Coffman et al, 2024).

Integration of indigenous knowledge and ways of understanding the natural environment, also called traditional ecological knowledge (TEK), is another emerging best practice for climate adaptation planning. Given the localized scale of adaptation, place-based indigenous knowledge can be valuable in understanding historic (and sometimes pre-historic) climate conditions, as well as identifying place-based approaches to land management that mitigate hazards and increase resilience. Indigenous values and social structures can also be instructive for building community resilience and capacity for responding to change (Hosen et al., 2020).



BEST PRACTICE HIGHLIGHT: USE OF ADAPTATION PATHWAYS IN CLIMATE ADAPTATION PLANNING

- > Adaptation pathways are an approach to developing a response to climate change that allows decisionmakers to prioritize strategies, build adaptive capacity, maintain flexibility, and communicate critical issues to a community (ResilientCA, n.d.). Pathways provide a phased adaptation approach based on specific thresholds, triggers, and sequencing of actions, which are often identified with the help of community and stakeholder input. Strategies are designed to be phased in gradually over time based on a range of possible future conditions. Monitoring is a critical component of this approach, as specific triggers are identified ahead of time as critical junctures for taking action. Policymakers can identify triggers before they happen, often through a process of stakeholder engagement, and develop strategies and actions to implement as those thresholds become reality.
- > Adaptation pathways have become an increasingly popular approach to plan for climate adaptation (Werners et al., 2021) and have been shown to be effective in planning for SLR (Barnett et al., 2014). Adaptation pathways provide a holistic method of evaluating a range of adaptation options, including methods to adapt-in-place prior to retreating, and thus may help legitimize managed retreat as a long-term strategy within a broader decision making framework.
- > In Hawai'i, adaptation pathways have been utilized in adaptation planning efforts on Maui, O'ahu, and statewide and are a recommended approach in the Climate Ready O'ahu adaptation strategy. There is a bill currently before the Hawai'i State Legislature (S.B. 2184 SD 1) that would institutionalize adaptation pathway planning at the state level.

3.3.1.2 Status of Climate Adaptation Planning in Hawai'i

In Hawai'i, planning efforts for climate adaptation are taking place at widely varying geographic scales, planning timeframes, and levels of specificity. These range from high-level county adaptation plans to regional, neighborhood, and facility-specific adaptation plans initiated by state, county, and private entities. There are also infrastructure adaptation planning efforts being led by both state and county agencies. The HICZMP has taken steps to further climate adaptation planning through the development of tools, guidance, and technical studies, some of which are highlighted below:

- > The [Guide to Coastal Hazard Adaptation Strategies Suitable for Hawai'i's Coastlines](#) (2023) is an informational resource that outlines potential coastal adaptation strategies for Hawai'i. Each strategy has an information card describing the strategy's pros and cons, appropriate site conditions, potential permits, and other considerations.
- > A [Regional Shoreline Management Scoping Study](#) (2023) is ongoing to develop and outline an approach for defining regions and subregions for shoreline management based on environmental characteristics and conditions. It was commissioned partly to address the challenges that arise

from the dynamic and multi-jurisdictional nature of the shoreline. Acknowledging that a parcel-by-parcel approach to enforcement is inadequate, the study aimed to identify another level of geographic scale – regions and subregions – at which coastal policies could provide effective, appropriate, and place-based solutions. This study could also help to define the appropriate geographic scale for adaptation plans and the implementation of managed retreat.

- > [Identifying and Understanding Hawai'i's Coastal Communities to Inform Equitable Policy](#) is an ongoing project that analyzes where social vulnerability risk factors overlap with coastal hazard exposure to identify communities that are most at-risk to the effects of sea level rise and coastal erosion. This may help in prioritizing areas for climate adaptation planning statewide.
- > The previous [feasibility study of managed retreat](#) (2019) and current study on policy and funding opportunities and challenges around managed retreat are intended to inform the implementation of managed retreat as part of the state's overall climate adaptation strategy.
- > [Sea Level Rise Adaptation for State Facilities](#) is an ongoing effort to identify state facilities vulnerable to sea level rise and other natural hazards and identify potential adaptation options.

3.3.1.2.1 County Level Climate Adaptation Plans

County level climate adaptation plans provide high level policy direction for climate adaptation. Elements may include the identification of vulnerable areas and assets, adaptation planning priorities and generalized strategies for adapting land use, private development, and public infrastructure to climate related hazards.

O'ahu is the first of the counties to adopted a climate adaptation strategy, Climate Ready O'ahu (2024). At the time of this writing, Kaua'i County is readying to publish a draft of its Kaua'i Climate Adaptation Plan. Maui and Hawai'i Counties have not as yet developed plans specific to climate adaptation, although they have produced broader planning documents geared toward resiliency and/or climate action (see Section 3.3.3).

Specific to managed retreat, county level climate adaptation plans can establish policy supporting retreat as an adaptation strategy, and in some cases can identify specific mechanisms or strategies for retreat that can be incorporated into county laws and regulations. As an example, the Climate Ready O'ahu document includes the following strategy and actions:

Strategy 11: Reduce flood risk and coastal erosion by directing development to safer and higher ground.

11.1 Update Flood Ordinance to require freeboard in certain special flood hazard areas.

11.2 Assess the adoption of a sea level rise overlay zone.

11.3 Critically evaluate the costs of relocating infrastructure out of the sea level rise exposure area versus maintaining and repairing infrastructure in place.

11.4 Develop priority options for resilient redevelopment and managed retreat in areas vulnerable to sea level rise.

One drawback of county level climate adaptation plans is their high-level nature. Further technical study and community engagement will be required to identify feasible and appropriate adaptation measures at the neighborhood and community scales. However, these plans can lay important groundwork for regional and community-scale planning efforts by prioritizing areas for adaptation, providing overarching policy direction, and identifying potential adaptation strategies.

3.3.1.2.2 Regional and Neighborhood Scale Adaptation Planning

Regional and neighborhood scale climate adaptation plans provide a higher resolution of adaptation planning through focusing on identification and vetting of adaptation strategies for a particular district, community, or neighborhood. There is no set framework for the appropriate scale or methodology for adaptation planning at this level, and different approaches are currently being taken across Hawai'i. These efforts have been initiated by various stakeholders, including state agencies, county agencies, and private landowners.

Regional/Planning District Scale

- > The [Moloka'i Climate Change and Sea-Level Rise Adaptation and Resiliency \(CCSLAR\) Master Plan](#) is an example of a regional scale, community-led climate change and SLR adaptation planning effort. The planning process is ongoing, led by a community-based non-profit with support from planning and technical consultants. Work products to date include maps identifying areas at risk from SLR and priority areas for adaptation and potential relocation. The island of Moloka'i is delineated as a regional planning district within Maui County, and funding for the project was allocated by the Maui County Council.

Neighborhood/Special District Scale

- > There are currently two planning efforts underway for the Waikiki Special District, one of which was initiated by the state ([Waikiki Resilience and Adaptation Project](#) – WRAP) and the other of which was initiated by the City and County of Honolulu (Adapt Waikiki 2050). The boundaries of the Waikiki Special District are defined by the City (ROH Chapter 21 Article 9). While both plans cover the same geographical area, they have different timelines and levels of specificity. The WRAP project takes a longer view, examining impacts and exploring generalized adaptation strategies for Waikiki to 2100. The Adapt Waikiki 2050 project, while incorporating and acknowledging longer-term projected impacts, focuses on developing recommendations for adaptation of private development and infrastructure within the next 25 years, to the year 2050. Both of these plans provide an example of utilizing an existing special district as the planning area.
- > The [Coastal Resilience and Erosion Management Plan for Mā'alaea Village](#) on Maui (2023) was initiated by the County of Maui and Mā'alaea Village Association property owners to proactively explore shoreline erosion mitigation options. This plan evaluates land- and marine-based adaptive management and planning strategies, for improved coastal resilience for Mā'alaea Village. The plan does not provide a recommendation for specific actions, however it does provide potential conceptual adaptation pathways with coastal hazard triggers for action implementation, including a long-term adaptation pathway for the potential future relocation of Mā'alaea Village buildings and infrastructure. These pathways can serve as a basis for further discussion with the Mā'alaea Community.
- > The Department of Hawaiian Home Lands (DHHL) prepared a [South Molokai Shoreline Erosion Management Plan](#) in 2022. The plan covers the Hawaiian Homestead Communities of Kalama'ula, Kapa'akea, and Kamilolua-One Ali'i on Molokai's south shore, with the goal of proactively managing shorelines vulnerable to erosion to make them more resilient to the effects of SLR. One of the key recommendations of the plan is to "prepare for the relocation or retirement of structures out of areas threatened by SLR and coastal erosion." While the geographical extent planning area was largely delineated by DHHL's landholdings in the region, the plan also recognizes and incorporates littoral cells as units of study for the purpose of analyzing coastal processes. The plan also incorporates traditional ecological knowledge (TEK) gathered from the

native Hawaiian homesteaders and lineal descendants in the project area and utilizes the Hawaiian ahupua'a system as a geographic construct to better understand the interdependent relationship between South Molokai's land and ocean ecosystems.

- > The [Waimea 400 Conceptual Master Plan](#) (2022) is a master plan for a 417-acre parcel between Kekaha and Waimea that was purchased by the County of Kaua'i in 2019 with the intent to develop affordable housing and other uses. The Master Plan integrates the principles of adaptation planning in anticipation of sea level rise, flooding, groundwater intrusion and climate change impacts within the vulnerable areas of the property. Preliminary zones were created based on existing information on potential inundation and future flooding. Appropriate uses for the conditions of each zone were identified. This plan provides an example of proactive adaptation planning for a future planned community.

Private/Parcel Scale

- > The [Kahana Sunset Managed Retreat Plan](#) (2024) was prepared for The Association of Apartment Owners of Kahana Sunset (AOAO) by Ke Kai Planning. The report was prepared to fulfill a condition of for obtaining a SMA emergency permit for micropiles to secure the building in 2010. When the report was not forthcoming for over a decade, preparation and submission to the County was enforced as part of a contested case hearing. The purpose of the report was to set out the Kahana Sunset understanding of managed retreat, current conditions and future planning, as well as perceived barriers to managed retreat as considered by property owners and the board of directors for the project. This plan provides an example of private adaptation, in this case in response to a mandate attached to an emergency permit. There is no way to enforce the plan and it does not have a place within the regulatory structure, therefore implementation will be voluntary or enacted through the settlement of the contested case process.

The adaptation planning that is presently occurring at regional and neighborhood scales approximates the type of adaptation planning that will be needed in vulnerable communities statewide. These planning efforts require a significant level of technical study and community engagement to identify and achieve buy-in around adaptation options. However, while some go as far as outlining potential adaptation pathways with triggers and thresholds for different adaptation options, most stop short of providing detailed analysis of costs, benefits, and technical feasibility, which would be required as next steps to move toward implementation. The question of appropriate scale for adaptation planning is also still unresolved, with approaches ranging from the use of existing planning district boundaries, to approaches informed by property ownership, shoreline and environmental conditions, traditional land divisions, and other factors.

3.3.1.2.3 Infrastructure and Facility Adaptation Planning

Infrastructure adaptation plans focus on adapting public infrastructure to better withstand projected climate change impacts. The ability to adapt public infrastructure will be a key driver of climate adaptation and managed retreat, and adaptation planning will be required to understand the ability of current infrastructure systems to continue to serve coastal areas.

Infrastructure agencies at the state and county level have differing mandates and programmatic capacities around long-range planning and asset management, which are key elements of climate adaptation. Some agencies have long-range planning functions and sophisticated asset management systems, while others (often at the county level) are more siloed, with planning, construction, and management functions separated under different departments or even different agencies.

The Hawai'i Department of Transportation (HDOT) Highways Division has established a leading example within the state around climate adaptation. HDOT conducted a Statewide Coastal Highway Program Report in 2019 to assess the susceptibility of state coastal highways to erosion and structural degradation due to ocean hazards including SLR. The report identified priority areas for further study. In 2021, HDOT released its Hawai'i Highways Climate Adaptation Action Plan to help guide decision making and investment in light of climate change projections. The Plan includes statewide highway exposure assessments and a hazard viewer, as well as recommendations for HDOT to institutionalize key procedures and build capabilities to prepare for climate change (HDOT Highways Division, 2021). HDOT also partnered with Google Cloud to launch a [Climate Insights for Infrastructure](#) data platform. HDOT tracks its resiliency and climate adaptation initiatives through its annual Act 100 reports, available on the HDOT website. As of the 2024 report, 59% of HDOT's active projects, 334 projects in total, included a resiliency component (State of Hawai'i Department of Transportation, 2024). This includes two managed retreat projects that are in the environmental clearance phase:

- > [Laniākea is a small realignment project](#) along Kamehameha Highway on the North Shore of O'ahu, with construction expected to start in September 2024.
- > [Honoapi'iliani Highway](#) on Maui is being realigned in the vicinity of Olowalu. The project is in the environmental review phase and assesses managed retreat options. This project was awarded funds through a federal RAISE grant and is anticipated to start construction in 2024.

At the county level, there are a couple notable examples of adaptation planning for public infrastructure and facilities:

- > Honolulu has established a [One Water Panel](#) consisting of City infrastructure agencies to coordinate management and adaptation of infrastructure island wide. The One Water Panel members signed an MOU in 2022 and set a three-year work plan. The One Water Panel has two ongoing pilot projects – one for infrastructure adaptation in Mapunapuna, and the Adapt Waikiki 2050 plan that is being led by the Department of Planning and Permitting. Funding and a consultant have also been procured for the preparation of a One Water Plan for the City.
- > The County of Maui has completed Phase 1 of a [Maui Beach Park Vulnerability and Adaptation Study](#) to assess vulnerability and prepare shoreline adaptation strategies for 65 beach parks across Maui. The first adaptation plan arising from the study is currently underway for Hoaloha Beach Park in Kahului. The adaptation planning process will include the development of adaptation pathways for strategies including retreat of existing structures.

Trends in infrastructure adaptation across Hawai'i and nationally include the use of adaptation pathways as a planning approach and an adaptive design approach to strengthen infrastructure against future hazard risks (American Society of Civil Engineers Committee on Adaptation to a Changing Climate, 2018). Adaptation planning efforts for infrastructure in Hawai'i have gone further than regional and neighborhood scale adaptation planning in incorporating technical feasibility analysis and cost-benefit analysis to vet adaptation strategies. At the HDOT level, several adaptation and retreat projects have progressed into design and construction phases. These methods and outcomes can be instructive for how to approach adaptation planning at the neighborhood and community scale.

3.3.2 Hawai'i Ocean Resources Management Plan

The 2020 Ocean Resources Management Plan (ORMP): Coastal Zone Management Mauka to Makai provides guidance for a focused effort to improve State policies for ocean resources by addressing

management gaps in the State. One of the guiding principles of the ORMP is to adapt to changing conditions:

Mitigate the projected impacts of global climate change by reducing the vulnerability of the built and natural environments to rising sea levels and extreme weather.

The ORMP planning process intentionally sought out and incorporated principles of traditional ecological knowledge (TEK) in the planning process and the development of strategic focus areas (see text box).

Integration of Traditional Ecological Knowledge into the ORMP Focus Areas

The 2020 ORMP sought to integrate principles of TEK into its strategic focus areas through:

- ➔ Designing a level of flexibility into policies that allows translation into place-based management strategies and programs.
- ➔ Developing long-term collaborative relationships between government and communities.
- ➔ Incorporating systematic processes and methods for regular and consistent consideration of Native Hawaiian traditional practices and knowledge.

As an example, the Pueo – the Hawaiian short-eared owl – is one of the traditional Hawaiian ‘aumākua, ancestor spirits, that provide traditional ways of knowing through consultation that involves observation. Planners and decision-makers can incorporate observation (listening before telling) methods by identifying individuals with kuleana to a place, practice, or resource and consulting with those individuals at regular intervals through a planning process.

The ORMP identifies three key focus areas to prioritize the allocation of resources for implementation: 1) Development and Coastal Hazards; 2) Land-Based Pollution; and 3) Marine Ecosystems. Within the focus area of Development and Coastal Hazards, the goal is to develop a statewide integrated shoreline management strategy to address the compounding impacts to Hawai'i's shorelines of coastal development, climate change and sea level rise, erosion, and other chronic coastal hazards. The plan emphasizes the identification and use of adaptation strategies to reduce pressures on public trust resources and nearshore ecosystems, shifting away from shoreline hardening and toward the use of natural infrastructure such as beach nourishment, dune management, and planting of native coastal species to reduce erosion.

The Plan also lists proposed components for success in achieving the goal of this focus area, based on closing identified management or knowledge gaps. Each of the identified components is supportive of furthering climate adaptation and managed retreat:

- > Inventory and analyze critical infrastructure assets along the shoreline threatened by chronic and episodic coastal hazards and future sea level rise projections. Conduct vulnerability assessments and assess options for protection, accommodation, and retreat of public infrastructure as sea levels rise.
- > Identify suitable geographic scale for shoreline adaptation planning based on coastal processes.
- > Determine barriers to proactive shoreline adaptation and actionable policy strategies to surmount them.

- > Examine barriers to beach nourishment, including impacts to coastal habitats (offshore sand sources, sandy beach ecosystems), cost, and regulatory requirements (i.e., dewatering of sand).
- > Study the feasibility of utilizing 'nature-based solutions' on Hawai'i's high-energy shorelines to manage and mitigate erosion.
- > Study the impacts of sea level rise projections on cultural and archeological resources, such as gathering sites, loko i'a, fishponds or fish traps, heiau, place of worship, shrine, and ki'i pohaku, petroglyphs.
- > Incorporate a managed retreat or strategic relocation analysis in all action team projects/studies to help develop criteria for this adaptation strategy.

To further collaborative implementation of the ORMP, the HICZMP established a formalized governance structure through the Hawai'i Ocean Partnership Agreement, which includes the following entities and associated responsibilities:

- > **Council on Ocean Resources:** Sets partnership priorities and provides leadership and direction to the Coordinated Working Group on implementation of the ORMP.
- > **Coordinated Working Group:** Identifies resources, recommends implementation strategies, reports progress of implementation, and communicates/coordinates/integrates implementation activities across Action Teams.
- > **Action Teams (ACTs):** Multi-agency groups charged with implementation of specific ORMP priorities, goals, and actions.
- > **Marine and Coastal Zone Advisory Council (MACZAC):** Advisory council with twelve members from the islands of Kaua'i, O'ahu, Maui, Molokai, Lāna'i, and Hawai'i with diverse backgrounds. Advocates for a comprehensive management system to restore, preserve and protect Hawai'i's marine and coastal environment.

The ORMP action framework provided the basis for the current and previous managed retreat studies by OPSD, and therefore this plan is highly supportive of advancing managed retreat in Hawai'i.

3.3.3 Resiliency, Sustainability, and Climate Action Plans

Sustainability, resiliency, and climate action plans exist at state and county levels in Hawai'i, establishing broad policy guidance on ensuring sustainable resource use and management and increasing the resilience of communities to withstand shocks and stressors, including climate change. Climate action plans specifically establish policies actions to reduce emissions of greenhouse gases, which is important as a driver of the need for climate adaptation, yet has limited applicability to the implementation of climate adaptation and managed retreat. Selected plans are summarized below.

The [Hawai'i 2050 Sustainability Plan](#), last updated in 2020, guides the coordination and implementation of Hawai'i's sustainability and climate adaptation goals, principles, and policies, pursuant to HRS 226-65. It further aligns the State's goals, policies, and actions with the United Nations Sustainable Development Goals (UN SDGs) and identifies recommended sustainability and climate change actions for 2020–2030. There are several strategies and actions in the Sustainability Plan with a nexus to managed retreat. For example, Strategy 17 calls for integrating climate change adaptation and resilience considerations into planning and implementation, and includes an action to "incorporate regional managed retreat or strategic relocation analysis into planning." Another action calls for the development of a statewide

Climate Adaptation and Resilience Implementation Plan, which is the focus of a bill being proposed in the 2024 legislative session (H.B. 2371/S.B. 3060 SD1).

In 2019, the City and County of Honolulu released its [O'ahu Resilience Strategy](#), which uses the City Resilience Framework of 12 drivers of resilient cities to define four key themes of health and wellbeing; economy and society; infrastructure and environment; and leadership and strategy. The 44 proposed actions are aligned with the UN SDGs and are intended to support long-term affordability and economic opportunity; disaster preparation, response, and recovery; climate change mitigation and adaptation; and community awareness and capacity building. Honolulu has also adopted a Climate Action Plan and the Climate Ready Climate Adaptation Strategy, the latter of which was described in Section 3.3.1.2.1 and has a more direct bearing on managed retreat.

Maui and Hawai'i counties have also adopted plans that address sustainability, resiliency, and climate action (Maui Climate Action and Resiliency Plan (2022); Hawai'i County Integrated Climate Action Plan (2023)).

Sustainability and resiliency plans in Hawai'i generally include policies that are supportive of advancing managed retreat and climate adaptation, however they situate these needs within a much broader and more holistic context of sustainability and resilience that reaches to the county, state, and even global scale through integration of the UN SDGs. This underscores the need for adaptation planning efforts that focus in on addressing and mitigating impacts at a localized scale.

3.3.4 Long-Range Land Use Plans

Land use planning is largely within the purview of the counties, and includes county-level General Plans, regional Community Plans, and special district plans. These documents provide the framework for changes to building and zoning codes and are guiding documents for how each community envisions the future. DHHL also conducts land use planning through its own framework, which includes a statewide General Plan and Regional Plans for each homestead area.

These documents establish a community vision and policies to guide land use, infrastructure, resource management, and other considerations for a defined area over a period of 20-30 years, and thus have an important nexus to managed retreat and climate adaptation. Integration of climate change considerations into land use plans is supported through state law and policy, as previously discussed, and many general and community plans across Hawai'i are integrating information and discussion on climate change into their planning processes and resulting policies.

These planning efforts provide a significant opportunity to further managed retreat by identifying priority areas for retreat and adaptation planning, incorporating policies for managed retreat and controls of coastal development, identifying areas that will be impacted by shoreline erosion, high wave flooding, and sea level rise, and shifting land use patterns to direct future development away from coastal areas. However, long-range land use planning processes are not typically scoped or funded to accommodate the additional outreach needed to educate the public on climate change science and facilitate in-depth discussions on policy and adaptation strategies, or the technical analysis required to assess community vulnerability and evaluate climate adaptation strategies in detail. County planning departments have limited staff and resources and struggle to keep general and community plans regularly updated and responsive to changing conditions. Therefore, the extent to which these plans can support and further managed retreat is often limited by available funding and capacity.

3.3.4.1 County General and Community Plans

There are two types of long-range plans at the county level in Hawai'i that are updated roughly every 10 years. The first is the County General Plan. The General or Island Plan provides the framework for planning within each county. These are high-level, long-term policy documents that establish a community vision for the next 20-30 years, guide where growth is expected to occur, and establish policy direction in key areas such as land use, infrastructure, resources, and protection of open space. All county general plans in Hawai'i have undergone updates or amendments in recent years and have incorporated language on SLR, coastal hazards, and/or development controls near the shoreline to varying degrees (see Appendix A). However as discussed previously, while guidance exists for integration of SLR considerations into planning in Hawai'i, the state lacks clear overarching policy direction and planning benchmarks for SLR, which would further promote consistency in long-range plans.

The second level of plan is at the community scale. Either called Community Plans, Community Development Plans, or Sustainable Communities Plans, these cover smaller geographic areas of each island that are typically established in county ordinances as planning districts for regional planning purposes. There are seven planning districts on Hawai'i Island, nine in Maui County (six on Maui, and one each for Kaho'olawe, Lāna'i, and Moloka'i), eight on O'ahu, and five on Kaua'i.

Community level plans are an important vehicle to ensure communities develop in a manner consistent with their vision and values. Community plan update processes include robust community outreach to establish a shared vision for the district, meaning the plans are reflective of the community wants and needs. Recent community planning efforts in all counties have shown that Hawai'i communities care deeply about planning for climate change and recognize the urgency to adapt.

While nearly all recently updated community plans include policies supportive of climate adaptation and some more explicitly address the need for managed retreat (see Appendix A), the strength and implementation of those policies can be constrained by available resources for education, technical study, and outreach in the planning process. Implementation of community plan policies can also be constrained by the need for policy, regulatory, and/or code updates at the county or state level.

The community planning process for West Kaua'i (see text box) illustrates how a separately funded community vulnerability assessment conducted prior to the community plan update provided a strong basis of community support for climate adaptation. This enabled the county to integrate adaptation policies into the Community Plan policies and land use map, including establishing a new zoning overlay for vulnerable coastal areas. This ultimately led to adoption of the overlay and a new SLR constraint district within the County zoning code.

Another example is the [North Shore Coastal Resilience Working Group](#), which was convened by the Surfrider Foundation, University of Hawai'i Sea Grant, and SSFM International during the update process for the North Shore Sustainable Communities plan to enable deeper conversations around coastal resilience and explore adaptation strategies along Sunset Beach. The recommendations from the working group are being integrated into the community plan update, which is ongoing. One of the key recommendations related to managed retreat is to "Establish a statewide managed retreat program, with the North Shore as a pilot area, to provide a pathway for affected landowners to voluntarily vacate affected properties and utilize shoreline areas for public benefit" (Surfrider Foundation, 2022).



BEST PRACTICE EXAMPLE: CLIMATE CHANGE INTEGRATION IN LAND USE PLANNING - WEST KAUA'I COMMUNITY-BASED VULNERABILITY ASSESSMENT

- > The [West Kaua'i Community-Based Vulnerability Assessment](#) (2020) was undertaken by Hawai'i Sea Grant, the University of Hawai'i Department of Urban and Regional Planning, and County of Kaua'i. The two-year planning process involved extensive community engagement and utilized the Vulnerability, Consequences, Adaptation, Planning Scenarios (VCAPs) decision support tool to document resources, places, and facilities in West Kaua'i that are vulnerable to hazards and to identify adaptation options.
- > The County of Kaua'i incorporated the results of the vulnerability assessment into the West Kaua'i Community Plan, the long-range land use plan for the district, which was adopted in 2020. While the assessment was not billed as an adaptation plan, it identified high level adaptation options with community input, which laid important groundwork for the West Kaua'i long-range community planning process, ultimately enabling the county to adopt a zoning overlay limiting future development (see Section 3.4.1).
- > This example illustrates how climate adaptation planning can complement and be leveraged by community planning processes to result in meaningful policy change that furthers retreat.

3.3.4.2 DHHL General Plan

As noted previously, the Department of Hawaiian Home Lands maintains its own land use planning system and is exempt from certain land use regulations at the county and state level. DHHL was established to administer the federal Hawaiian Homes Commission Act (HHCA) of 1920, which gives DHHL authority of the management and administration of its lands for the benefit of native Hawaiians. DHHL owns approximately 200,000 acres of lands across Hawai'i, including coastal lands.

The DHHL General Plan, updated in 2022, is the first to establish a statewide system of land use planning to be implemented across all DHHL lands. The General Plan includes a Technical White Paper on Climate Change Impacts and Adaptation Planning with climate change adaptation strategies for SLR, erosion, and flooding. The General Plan also incorporates climate change mitigation and adaptation concepts and measures into the agency's long-term vision, goals, objectives and policies, as well as DHHL's statewide land use designations, which include designations that can be applied to areas subject to sea level rise and other climate-related hazards.

The semi-autonomous nature of DHHL and its land use authority separate from the state and counties adds another level of complexity in coordinating climate adaptation and managed retreat across the state. While DHHL regularly coordinates with the state and counties, its primary focus is on serving its native Hawaiian beneficiaries as defined in the HHCA. There are several areas where DHHL homestead communities are being impacted by SLR and coastal erosion, including Anahola, Kaua'i and the south shore of Moloka'i, as discussed in Section 3.3.1.2.2.

At the time of this writing, OPSD has obtained federal grant funding for a project to coordinate with DHHL around the integration of coastal zone management in Hawaiian Home Lands to mitigate coastal hazard risk, and is in the process of procuring a consultant (State of Hawai'i Solicitation No. RFP-24-02-OPSD).

3.3.5 Functional Plans

Functional plans are short-term plans prepared at the state and county levels. In Hawai'i, there are twelve state functional plans mandated by the State Planning Act (HRS 226). Some county infrastructure agencies also prepare functional plans. Functional plans typically focus on one topic, for example, agriculture, conservation lands, education, employment, energy, housing, tourism, water, wastewater, drainage, or transportation. While most of the state level functional plans have not been updated since the late 1980s or early 1990s, the State Housing Functional Plan was updated in 2017.

Functional plans are meant to focus on short-term (two- to six-year) strategies and to provide overarching guidance for infrastructure investments, which are often funded through the Capital Improvement Program (CIP). The CIP budget is set each fiscal year by the state and counties, which then release the funds to be used by departments. Ideally there should be alignment between infrastructure investments and overarching objectives, including climate adaptation and managed retreat. In practice, infrastructure planning is often siloed across departments and many departments base their CIP needs on reactive, short-term needs rather than longer-term policy objectives.

While public infrastructure is not the focus of this policy assessment, infrastructure planning impacts private development. For example, as outlined in the 2017 State Housing Functional Plan, lack of infrastructure capacity is a major factor limiting new housing development across the State (State of Hawai'i, 2017). Moving development to safer inland areas as part of managed retreat would require development of infrastructure. Therefore, functional plans are important to consider in an overall retreat framework.

3.3.6 Hazard Mitigation Plans

Hazard mitigation Plans are intended to identify risks and vulnerabilities associated with natural hazards and develop long-term strategies for protecting people and property from future hazards. Hazard mitigation plans are mandated by FEMA in order for communities to receive federal hazard funding. Each county in Hawai'i has a multi-hazard mitigation plan, as does the state. Plans are required to be updated every five years to maintain access to funding. This provides ample incentive to ensure plans remain updated, as well as an opportunity to integrate new information and climate change and hazards. The most recent updates of the state and county hazard mitigations all incorporate expanded consideration of climate change and sea level rise hazards into risk assessment, vulnerability and mitigation planning (see Appendix A).

In general, hazard mitigation plans provide high level assessments of potential hazards, which are often numerous and varied. Managed retreat is typically not the focus of proposed actions, but may be indirectly supported by the plan's recommendations. Hazard mitigation plans instead often highlight the need to adjust zoning and building codes and design standards in response to climate threats. This supports the implementation of a managed retreat framework, even if the plan itself does not identify the creation of a managed retreat program as an action. For example, the Kaua'i Multi-Hazard Mitigation and Resilience Plan includes actions to pursue beach and dune restoration and continue to update shoreline setbacks with SLR projections, though no actions specifically mention retreat (Kaua'i Emergency Management Agency, 2021). Plan objectives also include reducing repetitive property loss from flooding and SLR through acquisition, retrofitting, design, and updated construction and land use regulations, all of which would support a managed retreat program.

The hazard mitigation plans at the state and county levels would benefit from greater coordination and integration with other planning frameworks, such as community plans, climate adaptation plans, and resiliency plans. If the multi-hazard mitigation plans were to identify the creation and development of a

managed retreat program as an action, then the action would likely be eligible for some level of federal funding which could benefit implementation of a managed retreat program.

3.3.7 Disaster Recovery Plans

Pre- and post-disaster recovery plans are critical for developing community resilience and helping to set the foundation for a recovery process that is well-executed and inclusive (Department of Homeland Security, 2016). Pre-disaster planning helps to define roles, responsibilities, and partnerships; establish policies and procedures; incorporate hazard mitigation strategies; and coordinate within larger planning frameworks at multiple scales of governance.

Post-disaster recovery planning is intended primarily to guide decision-making and helps to implement and adapt established pre-disaster priorities and policies. The federal government provides guidance to disaster-impacted states, tribes, territorial and local jurisdictions through its National Disaster Recovery Framework, which encompasses both pre- and post-disaster plans. A major purpose of the National Disaster Recovery Framework is to match local need with various federal partners and funding sources beyond the more traditional disaster assistance funds (Department of Homeland Security, 2016).

Pre- and post-disaster recovery plans are separate from federal disaster declarations, which are linked to funding. However, there are a variety of potential funding sources linked to the disaster recovery framework, some of which do not require a federal disaster declaration. Post-disaster recovery plans are required to receive disaster assistance, including buyouts. Additionally, there are federal grants available to help fund the creation of a pre-disaster recovery plan. Funding mechanisms are explored further in the funding and financing assessment.

Even without funding sources tied to the Disaster Recovery Framework, there are benefits to creating such plans. Pre-disaster recovery plans can identify potential funding sources and requirements ahead of time, thus streamlining the process of applying for assistance from multiple sources (Federal Emergency Management Agency, 2017). Furthermore, having a pre-disaster plan in place enables communities and government to articulate their vision and values to guide rebuilding efforts with long-term resilience in mind rather than reverting to how things were done before the disaster. To this end, pre-disaster recovery plans can identify criteria or delineate specific areas where development should not be rebuilt or should be rebuilt to different standards. They can also identify receiving areas for displaced residents. A buyout program for areas that should not or cannot be rebuilt can also be outlined in a recovery plan, making it more likely to be supported by federal funds.

While disaster recovery planning requires substantial effort and community involvement, it is becoming more critical as climate change increases the risk of exposure to major disasters. The 2023 Maui wildfires are the most recent example of a major federally declared disaster in Hawai'i, and demonstrate how difficult it can be to have conversations around resilient community rebuilding in a recovery situation when there are many competing and often more pressing needs (Yerton, 2024). The 2018 Kīlauea Volcano Eruption, while not climate change related, is another example of a federally funded recovery effort that has involved buyouts of highly vulnerable properties (Dobbyn, 2022). Hurricanes are also expected to increase in frequency and intensity as climate change progresses (Chu & Murakami, 2022).

Hawai'i has taken significant steps in recent years toward improving disaster recovery preparedness:

- > The Hawai'i Emergency Management Agency's 2020-2025 Five Year Strategic Plan recognizes development of disaster recovery frameworks as a key element in meeting preparedness goals.

- > Hawai'i Sea Grant in partnership with DLNR and OPSD established [Guidance for Disaster Recovery Preparedness in Hawai'i](#), which identifies resilience-focused recovery practices to enable communities to recover quickly, recommended preparedness activities, and model planning and policy resources.
- > The City and County of Honolulu OCCSR is currently developing a Long-Term Disaster Recovery Plan and tools to help O'ahu organize and recover more quickly from a disaster.
- > The County of Kaua'i has obtained funds to develop a pre-disaster recovery plan.
- > A pre-disaster recovery planning effort for Waikiki was completed in 2018 through a partnership between the Waikiki Business Improvement District Association and the National Disaster Preparedness Training Center at the University of Hawai'i.

In the event of a major disaster, disaster recovery plans ultimately facilitate a smoother and more rapid implementation of recovery while moving the needle forward on managed retreat. These plans will better position Hawai'i to receive funding assistance and guide recovery efforts to increase community resilience. The funding for preparing Honolulu and Kaua'i's disaster recovery plans has been provided through grants, indicating that outside funding sources can be obtained to support the additional planning effort required.

3.3.8 Resource Management Plans

3.3.8.1 Beach Management and Coastal Erosion Plans

There have been a number of planning efforts around beach management and coastal erosion, however the state lacks a cohesive framework and dedicated resources for addressing erosion and SLR through proactive beach management through beach nourishment, dune restoration, and other measures to prevent beach loss and restore coastal areas. DLNR's Coastal Erosion Management Plan (COEMAP), developed in 1999, is an example of a planning effort that laid important groundwork by providing a framework for addressing coastal erosion in beach loss across the state. It outlines recommendations, tools, and mechanisms to protect and restore Hawai'i beaches, several of which resulted in meaningful developments including the establishment of the DLNR Office of Conservation and Coastal Lands, and later, the development of the Hawai'i SLR Vulnerability and Adaptation Report (DLNR OCCL interview, 2024).

OCCL, UH Sea Grant, and other agencies have also established shoreline monitoring programs to track changes in beach morphology, erosion rates, and coastal dynamics over time. These monitoring efforts provide valuable data for understanding coastal processes, identifying erosion hotspots, and informing climate adaptation decisions.

At the county level, only Maui has a beach management plan to address issues related to erosion, public access, recreational use, and habitat conservation (University of Hawaii Sea Grant Extension Service & County of Maui Planning Department, 1997). It was prepared in 1997 and updated in 2008 and therefore does not include current SLR projections, however it acknowledges that:

The retreat of the shoreline - and associated loss of coastal lands-is the natural response of the beach to rising sea levels (Tait and Griggs, 1990) and has been the underlying premise of coastal engineering theory for over thirty years (e.g., "The Bruun Rule", Bruun, 1962).

The lack of an organizational and planning framework for addressing coastal erosion and beach management is a significant gap in preparing for climate adaptation. The plans that do exist are outdated and typically have been one-off efforts with no requirements for regular update. The result is that current erosion mitigation and beach management efforts are taking place in a piecemeal and often reactive fashion, driven by localized proposals and impacts rather than by proactive planning and attention to larger-scale coastal processes. The state's policy goals around climate adaptation, and the implementation of managed retreat, would be greatly furthered by a policy planning framework for addressing coastal erosion and beach management that integrates coastal science, climate change projections, community input, and coordination with state, county, and federal agencies to identify priorities and implement management strategies. The Regional Shoreline Management Study that OPSD is currently conducting (see Section 3.3.1.1) may help to provide a basis for establishing the needed planning and programmatic framework.

3.3.8.2 Water Resource Plans

Water resource plans estimate future water needs, identify water supply sources, and outline strategies to protect freshwater quality and quantity, often incorporating stakeholder engagement. In Hawai'i, the State Water Code is codified in HRS Chapter 174C, which identifies the Hawai'i Water Plan as the primary mechanism for comprehensive statewide water planning. The Hawai'i State Water Plan consists of five parts: 1) Water Resource Protection Plan, 2) Water Quality Plan, 3) State Water Projects Plan, 4) Agricultural Water Use and Development Plan, and 5) Water Use and Development Plans prepared by each county. The county water plans may be developed by creating smaller district plans, as in the case of the Honolulu Board of Water Supply (BWS), which creates district-level watershed management plans that collectively comprise the O'ahu Watershed Management Plan.

Climate change will impact freshwater resources in a number of ways, including altering rainfall patterns, increasing evapotranspiration through warmer air temperatures, saltwater intrusion into freshwater aquifers as sea level rises, and changes to watershed ecosystems. As sea level rises, groundwater levels will also rise, causing inundation of underground utilities and eventually surface flooding in areas where the water table is close to the surface (Habel et al., 2020). Groundwater inundation damages underground infrastructure such as water pipes, sewer lines, septic tanks and cesspools, disrupting service and degrading nearshore coastal water quality. In some areas, groundwater inundation is anticipated to cause surface flooding that make roads impassable. Periodic surface flooding of this nature is already visible in some areas, such as Mapunapuna on O'ahu.

As water resource plans are updated, they are integrating considerations of climate change and SLR on water supplies and infrastructure and beginning to identify the need for adaptation and managed retreat. The O'ahu Watershed Management Plans in particular are incorporating analysis, projects and implementation strategies to prepare for and adapt to SLR (see Appendix A). The draft East Honolulu Watershed Management Plan includes a future "Ultimate" scenario for water demand for the year 2100 that takes into account SLR and the potential retreat of some developed areas (SSFM International for the City & County of Honolulu Board of Water Supply and the Department of Planning and Permitting, 2024).

3.3.9 Assessment of Planning Frameworks for Managed Retreat

ASSESSMENT:

The state and counties currently lack a defined framework for climate adaptation planning, yet that has not hampered adaptation planning efforts from being initiated at various scales by a variety of state, county, and private entities. Best practices in adaptation planning are emerging, including the use of adaptation pathways in identifying and evaluating the feasibility of adaptation strategies through technical analysis and community input. Intensive community involvement is key in adaptation planning, along with consideration of cross-cutting issues including social equity, cultural resources, and public access.

The state and counties would benefit from establishing a clearly defined planning framework for climate adaptation, with managed retreat as one of the adaptation strategies. Central to this will be articulating where climate adaptation fits within existing planning frameworks, determining the agency or agencies responsible, identifying the appropriate scale for adaptation planning efforts, developing a prioritization framework for determining which areas require detailed adaptation planning and pathway development, and allocating funding, resources, and expertise to agencies charged with climate adaptation planning. Establishing these planning functions at the state and county level would require amendments to existing laws including the Hawai'i State Planning Act (HRS 226) and the County Charters.

Most of Hawai'i's existing planning frameworks have a nexus to managed retreat and are moving in the direction of including policies that are supportive of managed retreat and climate adaptation. The lack of statewide policy and planning benchmarks on the integration of SLR and climate adaptation into planning means that there is inconsistency in how these topics are addressed across plans. Another significant gap is the lack of a defined planning framework for addressing coastal erosion and beach management. Having this in place would be extremely beneficial in establishing science-backed policy and adaptation strategies for coastal areas and could help establish criteria and priorities for implementing managed retreat.

SUPPORTIVE ELEMENTS:

- ✓ Many climate adaptation planning efforts are underway in Hawai'i and are informing the development of best practices, despite the absence of an overall planning framework.
- ✓ Numerous existing plans contain supportive policies for managed retreat, and as plans get updated, they often add relevant objectives or actions that are supportive of climate adaptation or development restrictions in hazardous areas more generally.
- ✓ Planning frameworks provide a way to incorporate broader stakeholder feedback, including community engagement, into recommendations.
- ✓ Climate adaptation and managed retreat planning can leverage and complement existing planning frameworks. They can incorporate planning best practices for public participation and integration of social equity and indigenous perspectives, thereby increasing overall engagement with the community.
- ✓ Climate adaptation plans take place at a localized level and can develop concrete solutions to increase the resilience of neighborhoods and communities.

CHALLENGES:

- ✓ The state and county lack a planning framework for climate adaptation and managed retreat. Establishing this will require law changes and the allocation of substantial resources and capacity building for the responsible agencies.
- ✓ There is no state law or policy requiring consistent integration of climate change considerations and SLR planning benchmarks into plans, therefore plans are addressing it inconsistently.
- ✓ There is a need for greater coordination of policy around managed retreat across plans, including long-range plans, hazard mitigation plans, resiliency plans, and others.
- ✓ Additional support is needed to promote disaster recovery planning, which is key to ensuring that the community can build back in a resilient manner following a disaster.
- ✓ The layering of planning and land use authorities in Hawai'i can lead to confusion and the need for coordination between different jurisdictional entities, including the state, counties, and DHHL.
- ✓ The lack of a planning framework for coastal erosion and beach management is a significant gap. Having a holistic management policy grounded in coastal science would greatly benefit climate adaptation planning efforts and ensure that they do not take place in a vacuum.

3.4 DEVELOPMENT CODES AND STANDARDS

Development codes and standards define where development can be located and the standards to which development must be constructed. Development codes and standards are defined at multiple levels of government including federal, state, and county. These regulatory tools help to define what types of development are appropriate in various locations around Hawai'i. In simple terms, zoning codes define the types of uses allowed in a specific area, while building codes define the types of construction allowed. Zoning codes are updated on an ad hoc basis and have to be approved by County councils. Model building codes are updated every three to six years and then need to be approved for adoption with or without revisions by County councils. There are also floodplain regulations embedded within county zoning ordinances that regulate development within existing floodplains, including coastal flood hazard areas. All of these have an important role in determining the feasibility of managed retreat by placing controls on development in hazardous areas and by communicating climate risks to the public.

3.4.1 Zoning Codes

County Councils for the four counties in Hawai'i are responsible for enacting zoning ordinances. Zoning ordinances govern permissible land uses and development standards and identify where specific land uses can occur. As the primary instrument that can be used to restrict and guide development in relation to coastal hazard zones, zoning ordinances are particularly relevant to managed retreat.

Zoning ordinances also include development and design standards, specifying characteristics such as location, height, size of structures, density and open space, traffic and amount and type of parking, property line setbacks, outdoor lighting, and zoned uses. These standards apply by zoning designation, as well as by type of occupancy and economic activity. Zoning can be used to support retreat through modifying existing zoning maps to limit or de-intensify development in vulnerable areas. Counties may also adopt overlay zones which impose additional requirements in certain areas without impacting the underlying zoning designation.

The practice of rezoning land to a less intensive use is referred to as downzoning. For example, a parcel currently zoned to allow commercial uses could be downzoned to only allow residential uses. Along vulnerable coastline areas, parcels could be downzoned to preservation or open space to de-intensify or prohibit development. There could be legal ramifications to such decisions, and this is explored further in the legal assessment.

The County of Kaua'i is the first in the state, and among the first in the nation, to implement a zoning overlay based on SLR through the addition of a new SLR Constraint District. The Constraint District applies to all land in the SLR-XA on Kaua'i and imposes specific conditions on new and redevelopment. Conditions include the requirement to raise structures above the projected passive flooding elevation (see text box). The SLR Constraint District does not apply to retreat from coastal erosion.

While zoning is among the most powerful regulatory tools for implementing managed retreat, updating and reforming zoning ordinances and implementing overlay zones can be a time consuming and politically fraught process. Comprehensive zoning code updates have been underway for several years in Honolulu, Maui, and Hawai'i counties, and have been subject to repeated delays and objections by the public, building industry, and elected officials (Downey, 2022; Riker, 2023). Additionally, changing the zoning code does not solve the issue of existing structures that become nonconforming through the zoning change and may have long lifespans.

Kaua'i County was able to succeed in adopting its SLR Constraint District perhaps because it was a single, targeted change to the zoning ordinance rather than a wholesale update, and furthermore was backed by science, research, and robust community engagement.



BEST PRACTICE EXAMPLE: INTEGRATION OF SLR INTO ZONING CODES

COUNTY OF KAUA'I SEA LEVEL RISE CONSTRAINT DISTRICT

In 2021, the County of Kaua'i convened a team of academic and technical consultants to analyze and inform the creation of a new constraint district to regulate development in areas projected to be impacted by sea level rise hazards. The constraint district incorporates scientific modeling for climate change induced hazards into the County of Kaua'i land use regulations under the Comprehensive Zoning Ordinance. This means that the new ordinance is proactive and based on scientific projections, rather than historic trends as is typical of zoning codes.

The SLR constraint district is based on the Sea Level Rise Exposure Area (SLR-XA) developed by the University of Hawai'i Climate Resilience Collaborative. The County of Kaua'i used this data to delineate sea level rise flood elevations for passive flooding and high wave run up impacts specifically for the island of Kaua'i. Alongside this data, the project team reviewed best practices and existing codes to establish criteria and design standards for new development within the Sea Level Rise Constraint District. The standards are intended to mitigate annual high wave run up and passive flooding associated with SLR.

The standards include a requirement for the lowest floor of all new residential construction to be elevated two feet above the highest SLR-adjusted base flood elevation. All new non-residential construction and substantial non-residential improvements are required to be elevated at least one foot above the highest SLR-adjusted base flood elevation.

The SLR Constraint District was recognized with awards from the national and Hawai'i chapters of the American Planning Association in 2023.

3.4.2 Building Codes and Design Standards

Building codes and design standards define and regulate how buildings are constructed by setting minimum requirements for aspects of construction such as plumbing, heating, and structural systems. The building code tells developers what is needed, and design standards tells developers how to construct what is needed. Many codes are started from model codes which provide common draft language that can be updated for the needs of the state. These model codes are updated every three to six years by the International Code Council, which are then adopted and modified, and enforced at the state and county level.

Adopting new building and construction codes takes time and can be a political process. Hawai'i has consistently lagged behind other states when updating to the latest building codes. Hawai'i is currently using the 2018 International Building Code (IBC), though there is a 2021 version available. Hawai'i did not switch from the 2012 IBC until 2018, through there was a 2015 version released in 2014. Despite passing a rule in 2018 that the state had to adopt the most recent codes within one year of publication, and the counties within two years of that (HRS 107-24), neither the state nor the counties have kept up

with this schedule. A bill currently before the 2024 state legislature (H.B. 2089 HD2 SD 1) would extend the building code adoption cycle further to six years rather than the current three years, on the rationale that compliance with current building codes hampers the development of urgently needed affordable housing. The bill is not supported by the International Code Council, American Institute of Architects, and more than a dozen other national and local groups (Heaton, 2024).

Having older building codes means that developers are not required to include the most up to date building science in their construction, and older building codes do not include provisions for considering climate change. Outdated building codes can also limit Hawai'i's eligibility for federal resiliency funds such as BRIC (Building Resilient Infrastructure in Communities) grants by deducting points from grant applications, although the BRIC program now offers funding of up to \$2M per state to implement updated codes or enhance existing codes (Federal Emergency Management Agency, 2023a).

Most current codes and design standards in Hawai'i and across the nation do not currently incorporate future projections of SLR or other hazards that will change or worsen with climate change (U.S. Government Accountability Office, 2016). The modeling underlying these codes is based on averages from historical weather events and does not acknowledge the widely established climate science that shows that the climate is already changing and will continue to change in significant ways over the useful life of buildings and infrastructure being designed today. The model IBC codes used in the United States are developed through a consensus-based process and has not resulted in the use of the latest climate science and hazard-resistant design practices (Congressional Research Service, 2023). Further, until very recently there has been an dearth of technical and policy guidance on how to integrate climate resilience considerations into codes.

With 4 to 6 feet of SLR anticipated by 2100, assets built today will be significantly impacted if designed to current codes, undermining capital investments, impeding critical services, and generally contributing to the eventuality of unmanaged retreat in some places. This puts the onus on design professionals, states, and municipalities to come up with a technical basis for updating existing codes and standards to better anticipate and mitigate climate risk. This can be a significant effort, and many municipalities nationwide are taking incremental steps toward it by establishing resilient building design guidelines that outline best practices and recommendations, but often stop short of imposing regulations.

The City and County of Honolulu has taken steps to advance resilient design guidelines through the development of Climate Adaptation Design Principles for Urban Development (2021). The Honolulu Department of Design and Construction is also developing a climate change hazard exposure screening tool for capital projects and a checklist of mitigation and adaptation strategies.

The state OPSD has undertaken technical studies to help provide a basis for building code amendments that improve resilience to coastal hazards and climate impacts (Chock, 2015; Coastal Zone Management Program, Office of Planning and Sustainable Development, 2020), and is currently conducting a study to develop probabilistic tsunami design zone maps (see text box).

There are also industry-led efforts to establish design guidelines for resilience that go beyond existing codes, such as the Resilience-Based Design Initiative (REDI), led by Arup. To date, REDI has published guidelines for earthquakes (2013), floods (2023), and windstorms (2022). The American Society of Civil Engineers (ASCE) also released a new online toolkit, Pathways to Resilient Communities, in 2023.

Considerations around flood resilience and measures being undertaken to update floodplain regulations are discussed in the next section.



BEST PRACTICE EXAMPLE: RESILIENCE INTEGRATION INTO CODES - PROBABILISTIC TSUNAMI DESIGN ZONE MAPS

- > A current initiative of the OPSD CZMP is the development and adoption of comprehensive, high resolution probabilistic Tsunami Design Zone (TDZ) maps for O'ahu, Maui, Kaua'i and Hawai'i islands to address coastal hazards. These maps are intended to provide data for incorporation of the IBC 2021 and American Society of Civil Engineers (ASCE) 7-2022 standards, which include tsunami loads and effects, into future iterations of the state and county building codes. The TDZ maps are also intended to provide guidance for siting new critical infrastructure.
- > The tsunami design provisions will be adopted by the counties pursuant to HRS Chapter 107 Part II. As a result of the building code adoption process, once the probabilistic TDZ maps and tsunami design provisions are adopted at the state level as administrative rules, they will become the minimum performance objectives acceptable throughout the state.
- > The proposed strategy is similar to a previous successful project spearheaded by the CZMP, in which wind design standards were adopted into the state building code after a long process of data collection and analysis which resulted in the creation of wind design maps (CZM, 2020). It resulted in the ASCE 7 Standards Committee revising the 2005 Edition of ASCE 7 by designating the State of Hawai'i as a Special Wind Region, as well as the adoption of the wind design standards in the State Building Code as administrative rules (Hawai'i Administrative Rules, Title 3, Subtitle 14, Chapter 180).

3.4.3 Floodplain Regulations

Floodplain management regulations are enacted on a county basis. Each of the four counties have adopted floodplain management ordinances (HCC Chapter 27, ROH Chapter 21A, KCC Chapter 15, MCC Chapter 19.62). All four counties are voluntary participants in the FEMA National Flood Insurance Program (NFIP) and have adopted floodplain regulations that meet or exceed federal standards (44 CFR §60.3).

Floodplain management regulations specify requirements for land use and development within Special Flood Hazard Areas (SFHA), defined by the NFIP as areas with a 1% or greater risk of flooding every year. The NFIP produces maps depicting flood hazard information, known as the Flood Insurance Rate Maps (FIRMs). The FIRMs identify various flood zones based on the type of flooding, including zones for coastal flooding and stream or riverine flooding. The FIRMs are then adopted into local building codes and floodplain management ordinances. By law, FEMA can only map flood risk that will be used for land use regulation or insurance rating based on historical data (44 CFR §60.3). Therefore, like the IBC, the national standards underpinning local floodplain regulations do not reflect or incorporate the risks of SLR or climate change. Further, by subsidizing flood insurance rates for homeowners in flood prone areas, the NFIP largely works against managed retreat by providing a perverse incentive for owners to remain in high-risk areas. There have been steps taken to more accurately reflect risk in recent years and to provide more options for properties that have been impacted by repetitive losses, which help the

cause for managed retreat. The NFIP and its implications for managed retreat are explored further in the funding and financing assessment.

The inability at the federal level to adopt climate change projections into FEMA FIRMs puts the onus on local governments to incorporate resilience into floodplain regulations. In Hawai'i, there have been efforts to model the 1% annual chance coastal flood zone with SLR (Bohn & Courtney, 2020), and the resulting spatial data was incorporated into the State of Hawai'i SLR viewer, however it has not been adopted or applied in codes or regulations to date.

The design standards contained within floodplain ordinances are based on parameters defined by the NFIP, including the 1% chance annual storm event (100-year storm), as well as the Base Flood Elevation (BFE) which based on the existing FIRMs. Requirements to mitigate flood risk in the SFHA can direct the siting of sensitive uses, use of flood-resistant materials and flood-proofing, elevating of structures and equipment above the BFE ("freeboard"), and structural design to accommodate projected flood loads. Since 2015, the IBC has required at least one foot of freeboard to be incorporated into elevation requirements, designed with reference to the elevation of current assessments of the 1%-annual-chance flood.

An approach used in Hawai'i and elsewhere in the U.S. has been to develop updated parameters for BFE and for 100-year storms which integrate the projected impacts of SLR and climate change and can then be integrated into existing floodplain regulations. Locally, the County of Kaua'i worked with the University of Hawai'i to identify projected flooding depths with SLR and establish SLR-adjusted BFE's across the county. These adjusted BFE's provided the basis for design standards associated with the County's SLR Constraint District (see Section 3.4.1). As of yet, similar efforts have not been undertaken by the other counties.

FEMA has taken steps toward establishing higher standards around flood resilience, pursuant to Executive Order 13690, which, among other things, established a Federal Flood Risk Management Standard for federally funded projects that require a higher level of flood resilience. Rather than relying on the BFE floodplain, the Executive Order required that the floodplain be determined by one of three methods: 1) a freeboard value approach (The elevation and flood hazard area that result from adding an additional 2 feet to the base flood elevation for non-critical actions and by adding an additional 3 feet to the base flood elevation for critical actions); 2) a 0.2% annual-chance (500-year) flood approach (the area subject to flooding by the 0.2% -annual-chance flood); or 3) a climate-informed science approach (the elevation and flood hazard area that result from using the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding based on climate science). FEMA has commenced rulemaking to implement this Executive Order, and its approach may provide a way forward for strengthening floodplain regulations at other levels (Federal Emergency Management Agency, 2023b).

3.4.4 Natural Hazard Zones

In addition to the SLR-XA and Special Flood Hazard Areas discussed in previous sections, there are other delineated hazard zones that are used for emergency and hazard mitigation planning, land use decision-making, and public safety purposes in Hawai'i. These are often created through collaboration among multiple agencies, researchers, and stakeholders, utilizing scientific data, modeling techniques, and historical information to assess risks and vulnerabilities associated with natural hazards. Hazard zones in Hawai'i include tsunami evacuation zones, wildfire risk areas, and lava hazard zones. These zones have been integrated to varying degrees into plans, policies, and regulations. A detailed review of hazard zone integration into existing policies and regulations is beyond the scope of this assessment, however it

is worth noting that hazard zones provide an important mechanism for communicating risk, and can serve as a vehicle for driving changes to policies and regulations. If the SLR-XA is officially adopted as recommended in the 2022 Hawai'i SLR Vulnerability and Adaptation report update, it may strengthen the use of SLR as a hazard zone similar to others that have been used across Hawai'i.

The federal government is also looking at hazard risk as a way of prioritizing investments in community resilience. The Community Disaster Resilience Zones Act (CDRZA) of 2022 established a program to identify and designate communities most at risk from natural hazards. It authorized the President to increase the federal cost share under Section 203 of the Stafford Act—Pre-disaster Hazard Mitigation—to 90% for CDRZA-designated communities. The CDRZA requires FEMA to identify and designate Community Disaster Resilience Zones (CDRZs), and to review and update them every five years. At a minimum, CDRZs must include the 50 census tracts assigned the highest individual hazard risk ratings nationwide. The CDRZA also directed FEMA to ensure geographic balance by considering designations in coastal, inland, urban, suburban, rural areas and tribal lands, with not less than 1% of census tracts in each state assigned high individual risk ratings designated as CDRZs. As of the time of this writing, there are three census tracts designated as CDRZs, all on Hawai'i Island (Federal Emergency Management Agency, n.d.).

3.4.5 Enforcement of Codes and Standards

A strong and consistent enforcement program supports the implementation of managed retreat by making sure that development complies with zoning law and development codes. However, the capacity for enforcement is limited by funding and staffing levels. Code enforcement positions for each county in Hawai'i are underfunded and under capacity. As a consequence, enforcement programs are typically reactive and driven by complaints, leading to piecemeal and inconsistent enforcement.

Powers of enforcement around shoreline violations can also be unclear when the shoreline has moved and a structure is encroaching into the state's jurisdiction. The process for enforcement is phased and offers multiple opportunities for corrective action by the homeowner. In the City and County of Honolulu it looks something like this:

- > A complaint is called in and an inspector from the Department of Planning and Permitting (DPP) Code Enforcement Branch goes out to investigate it. Usually the inspector will also contact DLNR-OCCL for shoreline complaints, as the issue may involve state jurisdiction.
- > The inspector determines if there is non-compliant action or notifies DLNR OCCL if the issue appears to be fully on state land. If there is non-compliant action, a warning is issued. At this time, the inspector may also determine if the structure is unsafe to occupy and/or eligible for an emergency permit.
- > If no remedy is taken by the homeowner in response to the warning, a Notice of Violation is submitted by inspector. The property owner has 30 days to take corrective action.
- > If no action is taken in response to the Notice of Violation, a Notice of Order levying associated fines is issued by the DPP Land Use Permits Division.
- > Once a Notice of Order is issued, the landowner has the option to file a contested case with the Zoning Board of Appeals.

As noted, county planning departments can designate structures unsafe for habitation if inspectors find that the structure is no longer safe. This designation, like the notice of violation, provides the homeowner with time to take corrective action. DPP has made efforts to facilitate corrective responses

by homeowners through exempting the relocation of existing dwellings inland from SMA permit requirements, so long as any updates to the structure are limited to code compliance (ROH Chapter 25).

If the dwelling is imminently threatened, an emergency permit may be issued with a defined process for the homeowner to follow for re-posting the foundation and filing proper permits. None of the counties in Hawai'i currently have a "red tag" process whereby structures can be deemed permanently uninhabitable and/or subject to immediate removal, however the authority to establish such a process may exist at the state level, as identified in HRS Chapter 127A on Emergency Management. This law defines "unfit for occupancy" as "a residential dwelling unit that has been damaged to the extent that the appropriate county agency determines that the unit creates a dangerous or unsanitary situation and is dangerous to the occupants or to the neighborhood."

The State DLNR OCCL has its own process for enforcement of shoreline development violations as outlined in HRS 205A and discussed further in Section 3.2.3. At both the state and county level, enforcement efforts take significant time and resources and are challenged by available capacity. The enforcement process, with multiple time periods for corrective action and contestation built in, also does not lend itself to efficient resolution. Particularly in areas with actively eroding shorelines, there is a risk of permanent damage to public trust resources while waiting for owners to take corrective action or being held up in contested case hearings. Another gap is that current regulations do not assign responsibility for cleanup or removal of structures that collapse into the ocean due to coastal erosion, high waves, or storm surges. Amendment of shoreline regulations and/or the inclusion of permit conditions to improve the efficiency of enforcement processes and identify liability and responsibility for cleanup could be a way to better support managed retreat.

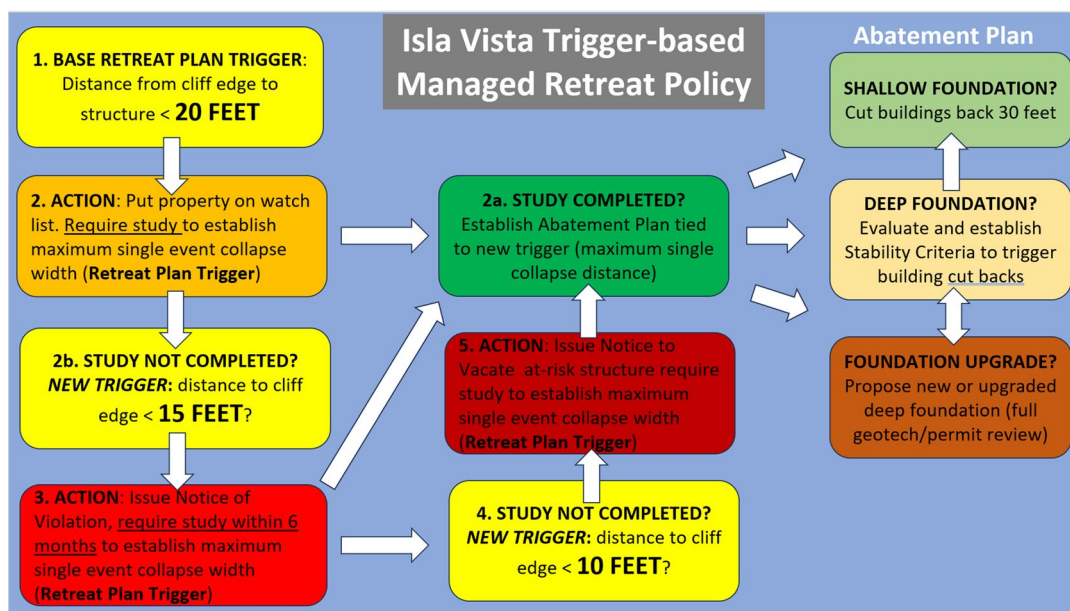
A proactive approach to enforcement rather than the current reactive model will be key to furthering managed retreat. Ideally, the process of enforcement will be clearly established in state and county land use policies, with triggers that can be easily assessed and monitored and associated regulations for each trigger. An example of this type of program in action is Isla Vista, CA, which has established a trigger-based managed retreat policy for properties along eroding coastal bluffs (see text box).



BEST PRACTICE EXAMPLE: PROACTIVE TRIGGER-BASED ENFORCEMENT

ISLA VISTA, CA TRIGGER BASED MANAGED RETREAT POLICY

- > The County of Santa Barbara developed the Isla Vista Bluff Policy in 2004 to mitigate hazards posed by actively eroding shoreline bluffs. The policy sets forth triggers for action based on the distance of the structure to the bluff face (see graphic below). A geotechnical study was conducted to provide a technical basis for the policy, and owners are also required to conduct site specific geotechnical studies when their distance from the bluff reaches less than 20 ft.
- > The policy establishes a proactive, transparent approach to managed retreat that communicates options clearly to property owners. The policy can be viewed at <https://www.countyofsb.org/plndev/building/bluffs.sbc>



3.4.6 Assessment of Development Codes and Standards for Retreat

ASSESSMENT:

Development standards and building codes are powerful tools to implement managed retreat. However, they have generally not kept pace with the rapidly changing understanding of climate change and SLR. Furthermore, federal floodplain maps and therefore local floodplain regulations do not incorporate shoreline erosion and SLR projections. Federally subsidized floodplain insurance effectively incentivizes people to stay in flood prone areas. However, the Hawai'i HICZMP has found success in incorporating scientific modeling of natural processes and coastal hazards into the building code, and there is potential to further incorporate shoreline erosion and SLR projections to support retreat. Additional guidance for integration of climate resilience into codes and standards is being developed at the national level. Enforcing development standards and building codes is another major challenge due to staffing capacity at the state and county level.

SUPPORTIVE ELEMENTS:

- ✓ Zoning codes are an important component of land use policy, and existing codes can be used to support managed retreat objectives through downzoning.
- ✓ Zoning overlays and constraint districts have been adopted in Kaua'i and elsewhere in the U.S. to add requirements to development within areas impacted by SLR.
- ✓ Honolulu is taking steps to incorporate resilience into the design of the built environment through the development of guidelines and principles for resilient design.
- ✓ Hawai'i has taken steps to model the 1% annual chance coastal flood zone with SLR, and there is an opportunity to use that modeling to update development codes and regulations.
- ✓ HICZMP funds can be used to conduct technical analysis to support building code updates, such as the Probabilistic Tsunami Design Zone maps that are currently underway.
- ✓ New FEMA standards for flood resilience in federal projects may point the way toward updating regulations at the state and county levels.
- ✓ Hazard zones have been identified for multiple hazards in Hawai'i and are regularly used in policy and land use decisions. Adopting the SLR-XA would further its use in this way.
- ✓ The state and the counties have enforcement powers to levy fines and designate structures unsafe for habitation. These can be integrated into a framework for managed retreat.

CHALLENGES:

- ✓ Downzoning may have legal ramifications, and updating zoning codes can be a time consuming and politically fraught process.
- ✓ Hawai'i has been slow to adopt updated building codes, and there is a perception that doing so works against the ability to build affordable housing.
- ✓ Building codes and floodplain regulations do not incorporate projections or mitigation measures for climate change and SLR.

- ✓ Floodplain regulations do not reflect projected flood risks with climate change and SLR.
- ✓ Programs like the NFIP tend to incentivize people to stay in place rather than retreat from hazardous areas.
- ✓ Enforcement is currently reactive and complaint-driven due to limited staff and resources. A more proactive approach will be necessary for implementing managed retreat.
- ✓ Current shoreline enforcement processes are time consuming, require cross-jurisdictional coordination, and can result in drawn-out proceedings, which increases the chance of permanent damage to beaches and public trust resources.

3.5 LAND USE MECHANISMS

Retreat is fundamentally about relocating structures and infrastructure away from vulnerable coastal areas. This requires not only finding ways to move development out of coastal areas, but also identifying places to accommodate displaced people and uses. Relocating development away from coastal areas also shifts the responsibility for management of once privately-owned lands into the public realm, necessitating decisions about what will happen to them, and how they can and should be managed for the greatest public good in the future.

Voluntary retreat is the ideal outcome, but achieving this is difficult given the emotional, psychological, and financial implications for residents of leaving an existing home, business, neighborhood, community, and valued connections to people and places. If adjustments to rising seas are reactive and taken by individuals as changes occur, there are likely to be costs for society as a whole (Kousky, 2014). Further, relying only on voluntary relocation can be a long, incremental process, accompanied by gradual degradation of community character and public trust resources. There are costs and benefits to different ways of achieving retreat, as explored further in the funding and financing assessment for this project and other recent studies (Han et al., 2023).

This section discusses land use tools that could be used to enable managed retreat in Hawai'i. It does not cover issues around management of the land following retreat, which is largely outside the scope of this study but is an important area for further analysis. The funding and financing assessment contains some discussion of this as it pertains to different types of funding and land acquisition programs.

3.5.1 Land Acquisition

Mechanisms for land acquisition using buyouts and other financial mechanisms are discussed below, and are also explored in detail in the funding and financing assessment. Legal implications of various land acquisition tools are also explored in the legal assessment. From a policy perspective, the authority for the state and counties to acquire land through various means is well established.

3.5.1.1 Eminent Domain

Eminent domain involves the condemnation of private property by the government and transfer of title for "public use" as authorized by the State of Hawai'i under HRS Chapter 101. A detailed discussion on eminent domain and its legal implications is included in the legal assessment. Eminent domain has not yet been used in Hawai'i to acquire coastal properties for managed retreat, and while highly effective, it could be difficult to implement given that it requires "just compensation" to property owners and is a forced, rather than voluntary, solution to retreat. That said, condemnation may be viewed as a potential way out by property owners whose structures are imminently threatened or uninhabitable, and may be

financially justified if property values are adjusted to accurately reflect risks and damages. The financial considerations around condemnation are explored further in the funding and financing assessment.

3.5.1.2 Buyout Programs

Buyout programs are typically voluntary programs designed to provide a way for residents who no longer want to live in high-risk areas to sell their homes and move to safer locations. Buyout programs are often funded by federal or state dollars and managed at the state or county level (Freudenberg et al., 2016). In post-disaster circumstances, buyout programs are funded through FEMA's Hazard Mitigation Grant Program and the Department of Housing and Urban Development (HUD)'s Community Development Block Grant (CDBG) Program. Buyouts have occurred in vulnerable coastal areas and in floodplains through the U.S. In Hawai'i, they have occurred following the 2018 Kīlauea Eruption, which was a federally declared disaster and received approximately \$107M in HUD CDBG Disaster Recovery funds to purchase vulnerable properties. Nearly 300 properties were acquired as part of the program as of March 2024 (Hawai'i County, n.d.).

The NFIP also provides funding for buyouts of Severe Repetitive Loss properties that meet certain criteria, though the funding amounts are capped (National Flood Insurance Program, 2024). Federally funded buyouts for flooding are subject to a number of requirements and have a track record of taking years to complete (Han et al., 2023).

Buyouts of coastal properties in Hawai'i are generally considered politically unpalatable, inequitable, and financially infeasible, with the possible exception of post-disaster situations involving federal funds. Hawai'i's coastal property values are among the highest in the nation, and with climate risks mounting and now required to be disclosed in property transactions, the prevailing sentiment is that beachfront owners are knowingly assuming these risks and the public should not have to bail them out (Angarone, 2023; Cocke, 2023). Additionally, voluntary or full market buyout programs can incentivize a moral hazard among homeowners/buyers where a buyer knowingly purchases in a hazard zone in order to receive a buyout, limiting their level of risk exposure while allowing them to benefit from beachfront living. Innovative approaches such as buyout and lease back programs may offset costs to the public to some extent but do not always pencil out. The financial considerations around different kinds of buyout programs are explored further in the funding and financing assessment.

3.5.1.3 Acquisition of Open Space and Legacy Lands

Programs exist at both the state and county level for acquiring land for conservation and open space purposes, and have been used to acquire lands in coastal areas. Acquisition of coastal lands by the state for managed retreat, including acquisition of conservation easements through purchase or transfer of development rights, could align with the criteria established in these existing programs to ensure that the acquisition is in the public interest.

As an example, priorities for public land acquisition by the state Legacy Land Conservation Commission (HRS §173A-2.6) direct the Commission and the BLNR to prioritize the acquisition of:

- (1) *Lands having exceptional value due to the presence of:*
 - (A) *Unique aesthetic resources;*
 - (B) *Unique and valuable cultural or archaeological resources; or*
 - (C) *Habitats for threatened or endangered species of flora, fauna, or aquatic resources;*
- (2) *Lands that are in imminent danger of development;*

- (3) Lands that are in imminent danger of being modified, changed, or used in a manner to diminish its value;*
- (4) Lands providing critical habitats for threatened or endangered species that are in imminent danger of being harmed or negatively impacted;*
- (5) Lands containing cultural or archaeological sites or resources that are in danger of theft or destruction; and*
- (6) Lands that are unique and productive agricultural lands.*

As written, these priorities could be utilized to acquire coastal lands to facilitate managed retreat providing other criteria are met. There may be an opportunity to strengthen them through explicitly including lands that are threatened by coastal erosion or SLR, or lands with actively eroding sandy beaches in the list of priority lands for acquisition.

Land acquisition by the Legacy Lands Commission and county open space programs is discussed further in the funding and financing assessment.

3.5.1.4 Submerged Lands

Under HRS 171-53, any submerged public land or land between tidal waters cannot be reclaimed by abutting private property owners without approval of sale or lease from the BLNR. Besides shortening the lease term as described in the Shoreline Hardening Regulations section, BLNR has also made it a practice to grant non-exclusive easements for structures on submerged lands, rather than exclusive easements which were granted previously (e.g., in the Kāneʻohe Bay Amnesty Program, Act 261, SLH 2000). BLNR can also attach conditions to leases, such as removal bonds or performance bonds. Lease amounts are determined by an independent appraisal. Lessees remain responsible for paying taxes on and maintaining the submerged lands. However, leases must be approved by the legislature via resolution, and the legislature has declined to hold hearings in years, leaving money on the table from property owners while allowing the structures to remain on public land without consequence (DLNR OCCL interview, 2024). State submerged lands are considered “ceded” lands, making OHA entitled to 20% of the pro rata share of revenue generated from rent payments for structures on submerged land such as piers or seawalls (*Grant of Term, Non-Exclusive Easement to Robert Howard Merriman and Cynthia Louise Merriman*, 2024). Revenues from lease payments are deposited into the Beach Restoration Special Fund, described in more detail in the Funding and Financing Assessment.

Easements or leases on submerged state land remain attractive to the state due to the shift of responsibility of maintenance and upkeep to private actors, while retaining title to the land. Further exploration of conditions attached to easements, such as removal bonds, can be explored to facilitate managed retreat. However, this requires cooperation from the legislature in approving the leases, which has not been forthcoming in recent years.

3.5.2 Land Use Changes

Shifting development away from vulnerable coastal areas can be accomplished using existing land use tools including zoning codes and the State Land Use Districts. As discussed in Section 3.4.1, downzoning involves changing existing zoning designations to a less intensive use (for example, from Residential to Agriculture or Preservation). Zoning overlays are another tool to impose additional requirements on development without changing the underlying zoning.

To promote managed retreat, there are opportunities for the state and counties to collaborate to identify appropriate areas across the state to downzone or rezone lands or to amend existing State Land

Use District boundaries (see Section 2.1 for discussion on what this involves). In accordance with restricting development in coastal areas, inland areas not currently designated for residential use may be considered as receiving areas for shifting populations. In areas designated as agriculture or even conservation under the State Land Use Districts, redistricting to urban to allow residential development would require the approval of the State Land Use Commission. Any change in zoning would need to balance other land use objectives, such as conservation, historic preservation, and agricultural production, with the need to retreat from the coastline in vulnerable areas. There may also be legal implications, as explored further in the legal assessment.

3.5.3 Transfer of Development Rights

Transfer of development rights (TDR) is a market-based mechanism designed to transfer development from designated “sending areas” to “receiving areas” in a way that would not be permissible under existing zoning regulations (Pruetz, 2003). Owners of parcels in the sending area can decide to sever development rights associated with their parcel and sell those rights to a developer. The developer would then use those development rights to build to an extent that would not otherwise be allowed in the receiving area, usually by exceeding floor area ratio (FAR) or other density restrictions, as specified by the program. Once the development rights have been transferred, a restrictive deed, covenant, or conservation easement is typically placed on the sending area parcel to restrict future development and remove existing structures. TDR has most commonly been used to preserve environmentally sensitive habitats, agricultural land, open space, and historic buildings, while focusing development in urbanized areas that have adequate infrastructure to support a growing population.

Sea Level Rise and Coastal Land Use in Hawai'i: A Policy Tool Kit for State and Local Governments (Codiga & Wager, 2011) recommends that all counties in Hawai'i adopt ordinances for TDR programs to support SLR adaptation strategies. The study provides the following implementation steps:

- > Designate sending areas (e.g., areas vulnerable to SLR and coastal hazards, areas containing natural flood buffers, or areas that have experienced repeated or heavy storm damage);
- > Designate receiving areas (e.g., areas located upland or inland that would be more desirable for development);
- > Calibrate credit values by balancing the market value of lots in receiving areas with the market value of lots in sending areas;
- > Develop a pool of development rights that are legally severable from the land; and,
- > Establish a procedure for transferring rights from one party to another (either through private transactions or a publicly owned and operated TDR bank).

In 2022, the State passed H.B. 1436, which amended the scope of the counties to implement TDR programs specifically in the case of protecting land from sea level rise, coastal erosion, storm surge, and flooding associated with climate change. TDR programs have been considered by several counties, but no ordinances have passed.

Despite the potential of TDR to facilitate managed retreat from developed coastlines at a minimal public cost, the method has not been widely adopted for this purpose, likely due in part to the high cost and desirability of coastal real estate (Robb et al., 2020; Williams, 2014). Additionally, most TDR programs identify undeveloped sending areas to protect rather than including mechanisms to remove structures from developed sending areas, which is a decidedly more complicated process. Furthermore, in many cases developers are able to achieve their ideal density for free in receiving areas without purchasing

TDR credits (Pruetz and Standbridge, 2008). For example, the City and County of Honolulu has already upzoned many areas around planned rail stations as part of its Transit Oriented Development planning to allow higher densities along the rail corridor. Other areas would need to be considered as receiving areas, where demand for additional units is in high enough demand as to incentivize developers to pay for development credits.

TDR is covered further in the funding and financing and legal assessments for this project. Other related programs, such as Purchase of Development Rights (PDR), in which the state or counties purchase and bank development rights, could be considered in addition to or in lieu of TDR. A PDR program would function similarly to conservation easements and could also be implemented by non-governmental land trusts. Any projects would need to demonstrate compliance with state and county regulations governing the SMA, including shoreline setbacks and floodplain regulations.

3.5.4 Land Swaps

Land swaps could be used as a way to secure coastal lands while compensating property owners in-kind. Through this mechanism, property owners would exchange property rights in their coastal properties in exchange for property rights in upland public lands. This at minimum would require designating appropriate public lands, subdividing lots, and obtaining development entitlements that can be swapped. Lots may also need to be development-ready and serviced with infrastructure.

While government agencies frequently engage in land swaps with other agencies, there are limited examples of land swaps with private entities. HRS Chapter 171 governs the disposition of state land, subject to certain limitations. Swaps would likely be most successful where there is comparable and available public land, and when larger tracts of land are involved. A single large landowner would be the simplest scenario; however, land swaps could also work if multiple landowners agree to be involved, as in a condominium or subdivision. Land swaps are discussed further in the funding and financing and legal assessments for this project.

3.5.5 Conservation Easements

A conservation easement is a legally binding agreement that is used to preserve land for public benefit in perpetuity. Nonprofit land trusts, such as the Trust for Public Land and Hawai'i Land Trust (HILT), acquire and hold development rights for privately owned land through voluntary agreements with landowners, and sometimes take a more active stewardship role. In return, the property owner receives a reduced property tax assessment for their land and can continue limited private use as outlined in the terms of the conservation easement, often enforced through a deed restriction. Conservation easements restrict development while allowing prescribed private and/or public use. Prescribed activities could include agriculture, recreation, subsistence fishing, and other such functions that do not require development of permanent structures. The key function of a conservation easement is the fact that it runs in perpetuity. This means that even if the landowner sells the property, the land will continue to be protected from development and the subsequent owner is bound by the same set of easement conditions.

According to the National Conservation Easement Database (accessed April 2024), there are 49 conservation easements in the State of Hawai'i, totaling 46,366 acres. Hawai'i County has the most acreage protected, with more than 23,169 acres.

In Hawai'i, conservation easements are addressed in HRS 198-1 and defined as an interest in real property created by deed, restrictions, covenants, or conditions, the purpose of which is to:

- 1) *Preserve and protect land predominantly in its natural, scenic, forested, or open-space condition;*
- 2) *Preserve and protect the structural integrity and physical appearance of cultural landscapes, resources, and sites which perpetuate indigenous native Hawaiian culture;*
- 3) *Preserve and protect historic properties as defined in section 6E-2, and traditional and family cemeteries; or*
- 4) *Preserve and protect land for agricultural use.*

Hawai'i state regulations further specify that conservation easements in Hawai'i are perpetual in nature and may not be acquired through eminent domain. HRS 198-1 does not explicitly identify vulnerable shoreline areas in its definition of conservation easement purpose, nor does it mention SLR adaptation or hazard vulnerability. In order to be widely used as a tool for managed retreat, HRS 198-1 may need to be modified or legally interpreted to include those purposes.

3.5.6 Rolling Easements

Rolling easements are a set of land use policies and regulations that work together to restrict hard armoring, limit uses in coastal areas, and enable the shoreline (and associated land ownership boundary) to migrate inland (Titus, 2011). Codiga and Wager (2011) describe the typical elements of rolling easements:

- > Prohibit shoreline hard armoring;
- > Establish a rolling design boundary, seaward of which the owner's property rights are reduced;
- > Prohibit new structures seaward of the rolling design boundary;
- > Encourage or require removal of existing structures when erosion leaves them seaward of the rolling design boundary;
- > Warn prospective buyers of the regulations;
- > Provide provisions for public access; and,
- > Indicate whether beach nourishment or adding sand dunes are permitted.

Hawai'i's shoreline law and coastal zone management policies collectively establish the elements of a rolling easement policy, though there are challenges and room for improvement, particularly around proactively enforcing the shoreline ownership boundary and requiring removal of existing and encroaching structures (Han et al., 2023).

A potential way to expand rolling easements in Hawai'i would to increase the width of public land mauka of the shoreline. For example, a rolling easement could be set to encompass 10 feet of width mauka of the public shoreline as the beach transit corridor, which could be implemented through a conservation or shoreline easement. This could be a benefit to a managed retreat program by maintaining a non-developable setback between the shoreline and a portion of the landowners property. Such a mechanism has not been used before in Hawai'i and would need to be vetted both practically and legally before implementation. One question would be how such a rolling easement would differ from, and interact with, existing shoreline setback regulations. Another question would be what the cost would be to the public to pay for such an easement, as private property owners would expect to be compensated for their development rights. Rolling easements are also discussed in the financing and funding assessment and legal assessment.

3.5.7 Assessment of Land Use Mechanisms for Retreat

ASSESSMENT:

Land use mechanisms are an integral component of a managed retreat framework. Land acquisition tools should be used judiciously and carefully evaluated against costs and benefits to the public. Buyout programs for coastal landowners are generally not considered politically palatable or socially equitable in Hawai'i, particularly as climate risk disclosure policies are strengthened. Market-based instruments, such as TDR, can be combined with other forms of land protection such as conservation easements to achieve land use goals, however there must be an adequate market demand to support them. Any large scale retreat from the coastline would also do well to consider receiving area communities, the designation of which may require redistricting on the state level and rezoning on the county level.

SUPPORTIVE ELEMENTS:

- ✓ The authority for the state and counties to acquire land through various means is well established.
- ✓ Existing programs for legacy lands and open space acquisition can help identify criteria under which coastal properties may be acquired for the public good, and these programs may also be able to be used for managed retreat.
- ✓ Market-based instruments such as TDR have low governmental cost if implemented effectively.
- ✓ Conservation easements protect land in perpetuity while compensating landowners and are voluntary in nature, which makes them a non-adversarial method of protecting land from development. They have also been widely used in Hawai'i.
- ✓ The state land use system provides authority for changing land use district boundaries, and this could be done strategically in coordination with the counties to support the identification of sending and receiving areas for retreat while balancing other considerations.
- ✓ State laws and policies regarding public ownership makai of the shoreline and management of the coastal zone function as a de facto rolling easement program.

CHALLENGES:

- ✓ Hawai'i's high property values make acquisition of coastal properties financially infeasible in many cases. Coastal property values remain high despite increasing signals about SLR and climate change risks.
- ✓ Criteria for open space and legacy land acquisition programs do not explicitly mention threatened shoreline properties or eroding beaches.
- ✓ As a voluntary market-based mechanism, TDR requires market conditions to align with implementation. These market conditions may be difficult to attain given development constraints and statewide affordable housing goals.
- ✓ Market based mechanisms such as TDR may have low governmental cost but costs may be pushed towards new homebuyers by developers.

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- ✓ There are limited precedents for swaps of public land with private owners. Providing public land that can be used for residential land swaps would require identifying available developable land and could require significant permitting and site preparation.
-
- ✓ Conservation easements require the purchasing of development rights from the landowner, which may be difficult for desirable coastal parcels.
-
- ✓ Downzoning and changes in land use designations could lead to legal issues such as regulatory takings claims.
-
- ✓ Redistricting to shift development out of high-risk coastal areas would require a comprehensive and likely controversial process to consider and balance different land use objectives at the state and county level.

4 CONCLUSIONS

Hawai'i has made significant progress on managed retreat over the past decade. Nationally, Hawai'i is viewed as a leader in the space, with multiple programs underway which serve as models for other states and municipalities (Gaskell et al., 2023). Efforts such as the County of Kaua'i Sea Level Rise Constraint District zoning overlay, county efforts to incorporate erosion rates into shoreline setbacks, the state effort to create a regional shoreline management framework, and Hawai'i's strong public trust doctrine and prohibition on seawalls provide a strong basis for a managed retreat program. However, significant barriers remain.

Some barriers are ones that Hawai'i does not have much control over. Programs such as the National Flood Insurance Program are controlled by the federal government and, as currently administered, hamper managed retreat efforts by incentivizing people to stay in vulnerable coastal areas and distorting market signals. Further, the model codes and Flood Insurance Rate Maps underpinning Hawai'i's development and floodplain regulations do not account for future SLR and climate change, putting a significant burden on state and county governments to fill in the technical and regulatory gaps.

Most other barriers to managed retreat could be addressed through efforts at the state and county level. Coastal zone management policy and regulations, development standards, and planning frameworks represent key areas for improvement, though there is also consistent progress along all of these fronts. With a clear statewide policy, defined planning framework, development regulations that reflect climate risk, and proactive and streamlined shoreline permitting and enforcement processes, Hawai'i could implement a strong and effective managed retreat program. Some of these changes would require amendments to existing laws, and all would require a stronger commitment to funding and to building up agency capacity for planning, regulation, and enforcement.

There are also a number of existing policies and regulations in Hawai'i that are supportive of managed retreat. Existing shoreline laws, enforcement powers, and land use tools already provide a strong basis for moving development away from the shoreline with minimal to no changes to existing laws. Utilizing these tools more strategically and proactively will also be an important component of managed retreat.

4.1 KEY OPPORTUNITIES

The following are identified as key policy-related opportunities for advancing managed retreat in Hawai'i. These and other preliminary recommendations from the legal and funding and financing assessments will be explored further to inform the development of recommendations in the final report for the project.

Establish the SLR-XA as a statewide exposure zone and establish consistent SLR planning benchmarks. Direction from the state level to identify common benchmarks for SLR and requirements to include planning for retreat in existing planning frameworks would benefit the counties and provide a uniform approach across the state. This would need to include a mechanism to update exposure zones as climate science is updated. Such updates could occur on a regular update cycle basis such as every 5 or 10 years.

Add policy direction on managed retreat to HRS 205A. A strong policy position from the state on managed retreat and its application for protecting the public trust would be of great benefit to the development of an effective managed retreat program. It would also help to provide clear guidance to the counties.

Strengthen coordination and clarify roles between the state and counties on regulation and enforcement. Jurisdictional overlap at the shoreline, coupled with the challenges of a shoreline shifting

inland due to SLR, necessitates effective coordination between the state and county agencies that are tasked with regulation and enforcement of coastal areas. While coordination is already happening, it can be strengthened through formal agreements and frameworks. The state could also provide further direction and clarification around state and county roles and stronger guidance on regulation and enforcement processes to bring them into greater alignment.

Strengthen regulations for existing shoreline development. The majority of the shoreline in Hawai'i is already developed. This means that new development conditions, while beneficial, are often not triggered, and it is existing development that is most in need of a process for retreat. Policy changes or permit conditions to impose requirements on existing nonconforming development, particularly seawalls, are needed to facilitate retreat while preventing further degradation to public trust resources.

Implement proposed updates to HAR Ch13-5. These updates will help to revamp the emergency permits process and make critical distinctions between emergencies and incremental, anticipated impacts from climate change.

Update HRS 343 to require consideration of climate adaptation options, including retreat. State environmental review laws could go a step further in requiring projects in the SMA to identify and assess different adaptation strategies and to identify retreat as a potential option.

Shift from reactive to proactive and streamlined enforcement. Shifting from unmanaged retreat to managed retreat requires a commitment to proactive planning, regulation, and enforcement that communicates a clear and orderly process for moving development out of high-risk areas over time. Existing enforcement powers and mechanisms can provide a basis for developing a phased, trigger based regulation and enforcement program to achieve this.

Build capacity for consideration of cultural and historic resources and the integration of traditional ecological knowledge into climate adaptation. This is an area of critical consideration that would benefit from capacity building within the Native Hawaiian community as well as within agencies that administer historic and cultural resource laws.

Establish planning frameworks for climate adaptation and beach management. Establish within the state and county planning system a framework for adaptation planning that identifies the responsible agency or agencies, denotes the appropriate scale for adaptation planning, identifies a prioritization framework for determining which areas require detailed adaptation planning and pathway development, and allocates funding, resources, and expertise to agencies charged with climate adaptation planning. Address existing gaps in planning for beach management and coastal erosion.

Integrate climate change risks into development codes and standards. Work with UH, private industry, and county and state governments to update codes and regulations around development using current climate science. Adopt climate resilient design guidance as an incremental step toward this.

Strengthen political will and funding. Developing and implementing managed retreat policy and programs requires the support of the State Legislature and the County Councils. This will require continued efforts to raise awareness and educate lawmakers around the urgency for climate adaptation and consideration of managed retreat. Continued efforts by agencies, UH, and other partners to identify federal funding and outside grants can make it easier for legislative bodies to commit matching funds.

Align retreat with other policy priorities. Retreat can often be viewed as competing with other critical priorities such as housing and preservation of agricultural lands and open space. However, there are significant opportunities to strategically align retreat efforts with these and other priorities. For example, retreat efforts could contribute to addressing long-term housing needs through land use shifts

to develop and intensify residential housing in safer areas. Policies to enforce against illegal vacation rentals can also be furthered by managed retreat, as many shoreline properties are second homes that are used as short-term rentals, which has inflated property values and impacted affordability. The [New York Office of Resilient Homes and Communities](#) is an example of a program that combines housing and resilience initiatives.

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APPENDIX A1: PLANS RELEVANT TO MANAGED RETREAT AND SELECTED RECOMMENDATIONS, ACTIONS, AND STRATEGIES

COUNTY	PLAN	SELECTED RECOMMENDATIONS, ACTIONS, STRATEGIES
STATEWIDE	Hawai'i Sea Level Rise Vulnerability and Adaptation Report: 2022 Update (2022)	2022 Recommendation 1: Conduct a full update of the Sea Level Rise Vulnerability and Adaptation Report in 2027. Action 1.1: Develop a next-generation State of Hawai'i Sea Level Rise Viewer and complete a more extensive update of the Hawai'i Sea Level Rise Vulnerability and Adaptation Report in 2027 utilizing the latest and best-available climate change and sea level rise scientific information and sea level rise exposure map data (e.g., Climate Resilience Collaborative at the University of Hawai'i). The state should allocate funding to complete a comprehensive report in 2027 with a focus on community-level impacts and actions and implementation of identified adaptation recommendations from 2017. This recommendation builds on the existing mandate for a review and update every five years by proposing that the 2027 Report include a full vulnerability assessment and documentation of ongoing initiatives to reduce vulnerability and increase resiliency and adaptation. Contracting and drafting for the 2027 Report should begin at least two years in advance of the reporting deadline mandated by Act 32, SLH2017. Current progress towards developing the next-generation Sea Level Rise Viewer is detailed in the Next Steps Section, below. Action 1.2: Develop a centralized tracking system to coordinate all efforts that are responsive to the 2017 and 2022 Report Recommendations. Establish a position within DLNR, in coordination with the Climate Commission, to improve cooperation and coordination between State and county agencies for all issues relating to sea level rise mitigation and adaptation, and to raise the visibility and understanding of these efforts to the public and across the state and county government agencies. The state should create a reporting tool potentially housed by the State Climate Commission, to consolidate reporting of progress towards meeting the objectives and recommendations of the 2017 Report and this Update. Ongoing accounting for the initiatives and progress from state and county agencies will enable greater visibility between agencies and will support the completion of the 2027 Report. This Recommended Action also aligns with 2017 Recommended Action 9.4 Develop a monitoring and evaluation plan with benchmarks and indicators to support the 5-year update process. Action 1.3: Identify emerging issues and unmet needs for sea level rise adaptation and mitigation not addressed by the 2017 Report. State and county agencies, in coordination through the State Climate Change Commission, should review current and ongoing initiatives to determine unaddressed issues for consideration in the 2027 Report. Action 1.4: Conduct an updated and more detailed vulnerability assessment within the SLR-XA: As part of the 10-Year Update the state should conduct a full review of all actions taken in response to these recommendations and the 2017 recommendations to determine the changes in vulnerability within the SLR-XA as a factor of exposure, sensitivity, and adaptive capacity. The vulnerability assessment should include a detailed analysis of socioeconomic factors including community sensitivity and adaptive capacity. 2022 Recommendation 2: Continue to implement the 2017 Recommendations with minor edits as outlined in the 2022 Report Update. Action 2.1: Identify gaps in progress since 2017. State agencies should work towards completing and where necessary, revising the recommendations from the 2017 Report with a particular focus on areas where significant progress is lacking in the past five years. The

		state should ensure that agencies are adequately resourced to implement programs and policies to address the increased risk of sea level rise.
STATEWIDE	Hawai'i Sea Level Rise Vulnerability and Adaptation Report (2017)	Recommendation 1: Support sustainable and resilient land use and community development Action 1.1 Recognize the SLR-XA as a state-wide vulnerability zone Action 1.2 Seek opportunities to plan new development outside of the SLR-XA under long-term, comprehensive managed retreat strategy Action 1.3 Conduct an inventory of existing lands designated for urban use that are located outside of the SLR-XA and prioritize these areas for new development Action 1.4 Strive to balance managed retreat strategies from vulnerable urban areas with preservation of agriculture and conservation lands by relying on state planning act policies and tools and the State Land Use Commission boundary review process. Action 1.5 Integrate sea level rise adaptation plans and policies into state, county and community plans Action 1.6 Develop shoreline protection, conservation, and restoration priorities and guidelines Recommendation 2: Prioritize smart urban redevelopment outside the SLR-XA and limit exposure within the SLR-XA Action 2.1 Evaluate existing policies and institutional capacity of implementing smart redevelopment Action 2.2 Identify priority areas for smart redevelopment as part of a managed retreat strategy Action 2.3 Conduct a market study for priority redevelopment areas Action 2.4 Develop detailed redevelopment strategies for priority areas and incentivize development Action 2.5 Update capital improvement planning to incorporate sea level rise and prioritize infrastructure improvements for priority redevelopment areas Action 2.6 Develop design standards for existing and proposed land uses that limits urban growth and increases flood resiliency within the SLR-XA Action 2.7 Require the design and siting of planned new development and capital improvement projects to include an in-depth analysis of sea level rise impacts based on elevation, tolerance for risk, and lifetime of the structure Action 2.8 Develop State and County guidance and a checklist for developers to assist with the integration of sea level rise in project design and encourage the use of best management practices for incorporating green and sustainable approaches in all stages of project development Action 2.9 Develop guidance on integrating sea level rise and climate change in the environmental review process and incorporating environmental justice considerations Action 2.10 Integrate sea level rise vulnerability considerations into the Hawai'i Coastal Zone Management (CZM) Act Recommendation 3: Incentivize improved flood risk management Action 3.1 Adopt higher flood standards to account for sea level rise Action 3.2 Consider adopting V zone construction standards in the Coastal A Zone Action 3.3 Provide technical and financial support to a state-wide Community Rating System program Action 3.4 Encourage property owners at risk to coastal flooding to purchase flood insurance Action 3.5 Incorporate sea level rise into state and county hazard mitigation plans Action 3.6 Adopt a state-wide program that supports the BCEGS program for insurance rating Action 3.7 Develop pre-disaster recovery frameworks at state and county levels that incorporate opportunities to adapt to sea level rise through disaster recovery Action 3.8 Perform a study to identify what other incentives could be utilized to promote improved flood risk management.

		Recommendation 4: Enable legacy beaches to persist with sea level rise Action 4.1 Conduct a state-wide assessment to identify legacy beach conservation priorities Action 4.2 Establish a “willing seller” program to move development away from legacy beaches Action 4.3 Amend the State Legacy Lands Act to set aside funding for priority coastal lands and enable the use of a variety of practices and tools Action 4.4 Expand the area of national, state, and county parks and wildlife refuges to preserve critical coastal wildlife habitats Action 4.5 Prioritize coral reef preservation to buffer the impacts of coastal hazards with sea level rise Action 4.6 Develop public-private partnerships for coastal land acquisition, beach management, and reef protection Recommendation 5: Preserve Native Hawaiian culture and communities with sea level rise Action 5.1 Develop an archipelagic-wide inventory of Native Hawaiian cultural resources and practices impacted by sea level rise Action 5.2 Work with Native Hawaiian Communities to develop a culturally-based adaptation process and protocols to preserve iwi kūpuna and Native Hawaiian cultural resources and practices with sea level rise Action 5.3 Develop adaptation plans to preserve access to coastal lands and water within Native Hawaiian communities with sea level rise Recommendation 6: Protect nearshore water quality from sea level rise impacts Action 6.1 Identify hazard mitigation measures to address coastal flooding of hazardous material/waste storage facilities, underground storage tanks, and on-site sewage disposal systems vulnerable to sea level rise Action 6.2 Review existing environmental regulations, guidance documents, and best management practices Action 6.3 Update guidance and propose legislative amendments to existing environmental regulations Recommendation 7: Develop innovative and sustainable financing and incentives to support adaptation to sea level rise Action 7.1 Conduct more detailed financial and economic analysis of sea level rise impacts in the SLRXA Action 7.2 Develop a multi-pronged financing strategy at federal, state, county, private sector, and philanthropic levels to address costs of adaptation to sea level rise Action 7.3 Require mandatory disclosure for private properties and public offerings located in areas with potential exposure to sea level rise Action 7.4 Explore the use of transfer of development rights and purchase of development rights programs that facilitate managed retreat and legacy beach preservation Action 7.5 Consider the feasibility of a buy-out program for residential property owners vulnerable to sea level rise Recommendation 8: Support research, assessment, and monitoring to support adaptation to sea level rise Action 8.1 Update coastal hazards modeling and vulnerability assessment as needed based on new climate science, sea level rise projections, and methods Action 8.2 Engage communities in monitoring the impacts of sea level rise Action 8.3 Conduct in-depth assessment of vulnerability and evaluation of adaptation strategies for critical infrastructure throughout the State Action 8.4 Develop a sea level rise research, assessment, and monitoring agenda to support the 5-year update process Recommendation 9: Promote collaboration and accountability for adapting to sea level rise

		Action 9.1 Develop sea level rise adaption priorities for the Hawai'i Climate Commission Action 9.2 Continue to support the Office of Planning and DLNR, OCCL to provide leadership, technical support, education and outreach, and interagency coordination to the Hawai'i Climate Commission and other stakeholders for sea level rise Action 9.3 Develop a multi-agency, multi-media, and multi-stakeholder education and outreach program as part of a long-term commitment to building an informed and active constituency on climate change mitigation and adaptation Action 9.4 Develop a monitoring and evaluation plan with benchmarks and indicators to support the 5-year update process
STATEWIDE	Assessing the Feasibility and Implications of Managed Retreat Strategies for Vulnerable Coastal Areas in Hawai'i (2019)	Key Question: What criteria should be used to determine when to retreat and what are the priorities for retreat? • Community Agreement / Understanding • Retreat Should Use a Local / Regional Approach • Retreat Should Not Result in Fractured Communities Key Question: What are the monetary costs for retreat and tax implications of treat and who should be responsible for shouldering the financial burden of retreat? • Catastrophic Events Result in a Greater Impetus for Retreat -> Retreat Is Only One Adaptation Option -> Buyouts to Facilitate Retreat Are Problematic • Chronic Coastal Hazards Result in Less of a Catalyst for Retreat -> Retreat from chronic coastal hazards may take decades to implement -> The political will to implement retreat is difficult to find absent a catastrophic event • Funding Mechanisms Will Have To Be instituted by the Government for Retreat to Occur Key Question: Where are the available lands by State and county land use to retreat to? • State and County Long-Range Plans Must Provide for Managed Retreat • State and County Land Use Must Also Determine Where It Is Possible to Retreat To -> Land in Hawai'i to Retreat to is Limited -> State and County Long-Range Plans Must Determine Relocation / Retreat of Critical Infrastructure -> Areas Retreated From Should Be Left as Open Space for a Resilient Coastline Key Question: What are the myriad of legal issues surrounding retreat? • Political and Legal Action Will Be Needed To Facilitate Retreat After A Catastrophic Event And In Response to Chronic Conditions
STATEWIDE	State Climate Commission Statement on Adaptation to Impacts of Sea Level Rise (2018)	The recommended strategies or steps agreed upon by the Climate Commission include: • Support legislation for disclosure for private property and public offerings located in areas with potential exposure to sea level rise. • Request all new development, redevelopment and modifications be directed away from beach areas. • Urge counties to incorporate the 3.2 ft. sea level rise exposure area (SLR-XA) into their general and development plans. • Encourage agencies and non-governmental utility providers to identify and prioritize assets within the 3.2 ft SLR-XA or more as described in the State's Sea Level Rise report, identify adaptation measures, and to provide a status update on this activity annually to the Climate Commission. • Support legislation that funds State programs to meet mitigation goals, and to bring resources to assist in planning and implementation for sea level rise and other climate related impacts.

STATEWIDE	Hawai'i 2050 Sustainability Plan (2021)	Recommended Actions: Focus Area: Improve Climate Resilience Strategy #17: Integrate climate change adaptation and resilience considerations into planning and implementation Strategy #19: Implement actions that improve the state's resilience to climate change Focus Area: Institutionalize Sustainability Government Capacity to Address Sustainability Strategy #29: Update state policies to reflect sustainability and climate change priorities. Focus Area: Preserve the Natural Environment Marine Resources & Ecosystems Strategy #33: Establish policies to protect Hawai'i's unique marine ecosystems Strategy #34: Manage climate change impacts to marine resources Natural Resource Protection Strategy #36: Continue to adopt strategies that protect land-based natural resources
STATEWIDE	Hawai'i Ocean Resources Management Plan (2020)	Focus Area I: Development & Coastal Hazards Goal: Develop a Statewide integrated shoreline management strategy to address the compounding impacts to Hawai'i's shorelines of coastal development, climate change and sea level rise, erosion, and other chronic coastal hazards. Proposed Components for Goal Success: • Inventory and analyze critical infrastructure assets along the shoreline threatened by chronic and episodic coastal hazards and future sea level rise projections. Conduct vulnerability assessments and assess options for protection, accommodation, and retreat of public infrastructure as sea levels rise. • Identify suitable geographic scale for shoreline adaptation planning based on coastal processes. • Determine barriers to proactive shoreline adaptation and actionable policy strategies to surmount them. • Examine barriers to beach nourishment, including impacts to coastal habitats (offshore sand sources, sandy beach ecosystems), cost, and regulatory requirements (i.e. dewatering of sand). • Study the feasibility of utilizing 'nature-based solutions' on Hawai'i's high-energy shorelines to manage and mitigate erosion. • Study the impacts of sea level rise projections on cultural and archeological resources, such as gathering sites, loko i'a, fishponds or fish traps, heiau, place of worship, shrine, and ki'i pohaku, petroglyphs. • Incorporate a managed retreat or strategic relocation analysis in all action team projects/studies to help develop criteria for this adaptation strategy as identified in Assessing the Feasibility and Implications of Managed Retreat Strategies for Vulnerable Coastal Areas in Hawai'i (OP-CZM 2019a).
STATEWIDE	Coastal Erosion Management Plan (1999)	Strategic Recommendations: 1. Develop, fund, and empower the Coastal Lands Program at DLNR as the Lead Agency for coastal erosion management. 2. Encourage state and county decision-makers to consider erosional trends and processes, and other coastal hazards, at the zoning and subdivision stages of land development so that structures can be safely and properly located away from hazard areas. 3. Develop a Technical Guidance Manual that provides direction for the development, restoration, and redevelopment of the coastline. 4. Enhance Interagency Coordination. 5. Implement a Pilot Shoreline Hazard Mitigation Project Using Beach and Dune Restoration. 6. Establish a continuous data stream, and formalize an enduring data source from the UH-SOEST by creating a branch of the NOAA Coastal Services Center. 7. Establish a broad, pervasive and enduring public education and awareness-building campaign in coordination with the Ocean

		Resources Management Plan and other resource management efforts such as MHI-MRI (DLNR) and the Polluted Run-off Program (DOH). 8. Evaluate the applicability of “willing user,” community-based performance standards and/or planning districts as erosion management tools at erosion hotspots. 9. Establish a Fund for Land Acquisition – Ho’opono Kahakai. 10. General Permit for Restoration. 11. Restoration is not a Permanent Solution – Plan for Renourishment and Redevelopment. 12. Adopt, or alter for adoption, the environmental assessment guidelines of the DOH-OEQC that were submitted for public commentary in the November 23, 1995 OEQC Environmental Notice. 13. Focus Regulatory Efforts, build local awareness among agency personnel. 14. Decision-making Criteria. 15. Create a system of Research Products resulting from technical studies of coastal processes and sand resources. 16. Small-scale Nourishment Projects. 17. Interim Controls. 18. Implement an “Erosion Control” approach where feasible. 19. Analysis of Economic Factors. 20. Integrate Hazard Mitigation and Coastal Conservation. Initial Implementing Actions: 1. Establish, empower, and fund the Coastal Lands Program and the creation of new erosion management, beach conservation, and hazard mitigation programs. 2. Enhance interagency collaboration, build an organized and consistent system of erosion management among CZM, CLP, OEQC/DOH, and the counties and federal COE. 3. Institutionalize a source of high-quality data and research products at the UHSOEST that would be available to all public and private entities (government sector and commercial sector) for improving understanding of coastal processes and reducing the costs associated with data acquisition. 4. Introduce legislation to fund and support the necessary statutory and rule changes and program operations that will implement the concepts and approach embodied in COEMAP, and consistent with aspects of Chapter 205-A and derivative efforts. 5. Simplify and streamline the regulatory and permitting system of the coastal zone. 6. Implement an improved technical basis for decision-making as outlined in earlier recommendations. 7. No-Tolerance Policy. 8. Fines and Revocable Easements. 9. Build Consensus. 10. Special Fund for CLP Programs. 11. Publicize the New Policy. 12. Identify Federal Funding Sources. 13. Review Management Plans. 14. Distribution of Report. 15. Public Awareness Campaign. 16. Community Input. 17. Interim Coastal Lands Protection System. 18. Implementing Beach Nourishment Plans.

		19. Small-Scale Nourishment. 20. Evaluate Viability of Concepts. 21. Plan the creation of a Technical Guidance Manual for eventual use by all coastal stakeholders including agencies and NGO's to improve our system of erosion and coastal hazard management.
STATEWIDE	State Hazard Mitigation Plan (2023)	2023-014— Managed retreat analysis and recommendations Problem: Managed retreat is a potential mitigation action to be considered to mitigate the impacts of flood and sea level rise; however, managed retreat concepts are fraught with legal, financial, and planning obstacles. Action: Provide an analysis of ways to achieve managed retreat in Hawai'i that will include 1. An analysis of relevant existing policies, laws, and regulations 2. An analysis of potential strategies to implement and finance managed retreat 3. Identification of challenges to implementation including practical and legal issues 4. Potential solutions to address those challenges. The desired outcomes include recommendations of amendments and/or new policies to facilitate the option of managed retreat, and recommendations of the most promising funding and financing strategies to support the implementation of a managed retreat strategy. 2023-2018-048—Infrastructure managed retreat and/or nature-based solutions engineering pilot project to protect threatened Hawai'i infrastructure Problem: Infrastructure is threatened along the state's shore. A pilot project is needed to examine methods to protect infrastructure, such as a roadway or a sewage treatment plant or a power generation facility, threatened by chronic coastal flooding, climate change and sea level rise by shifting it way from vulnerable coastal areas through retreat and/or a nature-based engineering solution to harden, if retreat is not possible. Action: 1. Develop criteria to rank infrastructure most threatened by chronic coastal flooding, climate change and sea level rise 2. Develop mitigation strategy to either retreat threatened infrastructure or nature-based engineering solution to harden, if retreat is not possible 3. Retreat or harden infrastructure
O'AHU	Honolulu Climate Commission Guidance (2018; updated 2022)	Recommendations: Based on research, the Commission recommends the following: 1. The IPCC AR6 states that global mean sea level will continue to rise for thousands of years, even if future CO2 emissions are reduced to net zero and global warming halted. On this basis, community design professionals, government agencies, and all coastal stakeholders should recognize that sea level rise is an inevitable, dangerous, and fundamental condition to be recognized in every element of coastal planning and management. 2. The City and County of Honolulu should set as a planning and policy benchmark the interagency Intermediate (1.16 m, 3.8 ft by 2100) sea level rise scenario, as modeled for the Honolulu Tide Station, as the minimum scenario for all planning and design, and that the City continue to utilize the 3.2 ft SLR-XA until updated SLR-XA map data is available. 3. The City and County of Honolulu should set as a planning and policy benchmark the interagency Intermediate High (1.78 m, 5.8 ft by 2100) sea level rise scenario for all planning and design of public infrastructure projects and other projects with low tolerance for risk, and that the City continue to utilize the 6 ft passive flooding map layer from NOAA until updated map data is available. 4. With regard to Commission Guidance on revisions to ROH Chapter 23 concerning shoreline setbacks (adopted December 23, 2019), new scientific findings underscore the threat that sea level rise presents to coastal properties and assets, and provide added urgency to implement the recommendations. 5. In implementing Intermediate and Intermediate High sea level rise scenarios, all projects should apply design elevations to mean

		higher high water (MHHW) as a datum. Projects with low tolerance for flood risk should add additional design elevation to account for compound events (e.g., an additional 1 ft for extreme or “king” tides, 1 ft for runoff accumulation in light of drainage failure at high tides).
O'AHU	Climate Ready O'ahu (2023 DRAFT)	Part 3: Safe and Reliable Infrastructure Strategy 5: Strengthen climate resilience of beach and wetland ecosystems through preservation and restoration. 5.5 Explore the potential for a statewide Coastal Conservancy in coordination with the State and other counties. Strategy 10: Make buildings, homes, and infrastructure more climate resilient. 10.4 Develop sea level rise adaptation pathways for high priority infrastructure assets. Strategy 11: Reduce flood risk and coastal erosion by directing development to safer and higher ground. 11.1 Update Flood Ordinance to require freeboard in certain special flood hazard areas. 11.2 Assess the adoption of a sea level rise overlay zone. 11.3 Critically evaluate the costs of relocating infrastructure out of the sea level rise exposure area versus maintaining and repairing infrastructure in place. 11.4 Develop priority options for resilient redevelopment and managed retreat in areas vulnerable to sea level rise.
O'AHU	Ola: O'ahu Resilience Strategy (2019)	Pillar III. Climate Security Goal 3: Climate Resilient Future Action 29: Protect Beaches and Public Safety with Revised Shoreline Management Rules Action 30: Protect Coastal Property and Beaches Through Innovation and Partnerships
O'AHU	O'ahu General Plan (2021)	IV. Housing and Communities Objective C. To provide residents with a choice of living environments that area reasonably close to employment, schools, recreation, and commercial centers, and that are adequately served by transportation networks and public utilities. Policy 6. Discourage residential development in areas where the topography makes construction difficult or hazardous, where sea level rise and flooding are a hazard, and where providing and maintaining roads, utilities, and other facilities would be extremely costly or environmentally damaging. V. Transportation and Utilities Objective A. To create a multi-modal transportation system that moves people and goods safely, efficiently, and at a reasonable cost and minimizes fossil fuel consumptions and greenhouse gas emissions; serves all users, including limited income, elderly, and disabled populations; and is integrated with existing and planned development. Policy 4. Work with the State to ensure adequate and safe access for communities served by O'ahu's coastal highway system, and to plan for the relocation of highways and roads subject to sea level rise away from coastlines. Objective D. To maintain transportation and utility systems which support O'ahu as a desirable place to live and visit. Policy 5. Evaluate impacts of sea level rise on existing public infrastructure, especially sewage treatment plants, roads, and other public and private utilities located along or near O'ahu's coastal areas, and avoid the placement of future public infrastructure in threatened areas. VII. Physical Development and Urban Design Objective A. To coordinate changes in the physical environment of O'ahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

		Policy 11. Implement siting and design solutions that seek to reduce exposure to natural hazards, including those related to climate change, flooding, and sea level rise. Objective B. To plan and prepare for the long-term physical impacts of climate change. Policy 3. Prepare for the anticipated impacts of climate change and sea level rise on existing communities and facilities through mitigation, adaptation, managed retreat, or other measures in exposed areas. VIII. Public Safety and Community Resilience Objective B. To protect residents and visitors and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions. Policy 9. Plan for the impacts of climate change and sea level rise on public safety, in order to minimize potential future hazards.
O'AHU	North Shore Coastal Resilience Working Group Report: Adaptive Coastal Management Recommendations, Actions and Strategies (2022)	Recommendations for Immediate Action 1. Improve guidelines and limitations for emergency shoreline erosion management and strengthen enforcement against unauthorized work and materials. 2. Establish a statewide managed retreat program, with the North Shore as a pilot area, to provide a pathway for affected landowners to voluntarily vacate affected properties and with clear public benefit. 3. Improve interagency coordination for shoreline erosion and flooding management, which overlaps jurisdictional and ownership boundaries. 4. Develop a beach and dune management plan with a near to mid-term outlook for North Shore beach parks and accessways with guidelines that may be transferable to efforts fronting privately-owned lands. 5. Develop a detailed and comprehensive climate change and sea level rise vulnerability assessment and adaptation strategy for the North Shore. 6. Continue the Working Group and expand community discussions, engagement and outreach. Adaptation Pathways for North Shore Current Term (Immediate) Strategy: Policy Changes to Limit Shoreline Development and Plan for Climate Adaptation Needs and Next Steps: 1. Adopt updated SMA and shoreline setback requirements (Chapter 23 and 25, ROH) 2. Adopt policies in North Shore Sustainable Communities Plan to limit development in vulnerable areas and conduct regional vulnerability assessment/climate adaptation plan 3. Develop statewide climate adaptation framework 4. Will require city initiative, political will, planning, funding Near-Term (Next 5 Years) Strategy: Planning for relocation/removal of individual wastewater systems Needs and Next Steps: 1. Provide guidance and enabling regulations for removal or relocation of threatened wastewater systems 2. Identify/create funding source for implementation Strategy: Retreat mechanism/funding system Needs and Next Steps: 1. Economic valuation study of public trust resources, recreation, surf contests, etc. on North Shore

		2. Regional vulnerability assessment and climate adaptation plan 3. Develop state and/or county regulatory mechanisms for managed retreat (buyouts, lease-back programs, TDR, improvement districts, etc.) 4. Explore community-based solutions (community financing districts, strategic buyouts/conservation easements of priority areas, etc.) 5. Disaster trigger for retreat and federal support to implement; need a disaster recovery plan ahead of time Long-Term (25+ years) Strategy: Strategic highway and infrastructure relocation Needs and Next Steps: 1. Develop a mechanism for agency coordination 2. Develop a plan for addressing individual wastewater systems Strategy: Retreat (Implementation) Needs and Next Steps: 1. Comprehensive relocation of most-vulnerable roads, infrastructure, and development
O'AHU	Central O'ahu Sustainable Communities Plan (2021)	3. LAND USE POLICIES AND GUIDELINES 3.1 OPEN SPACE PRESERVATION AND DEVELOPMENT 3.1.3 GUIDELINES 3.1.3.3 Shoreline Areas • Maintain and enhance, where necessary, nearshore wetlands and mangroves as wildlife habitats. • Provide, at a minimum, a 60-foot setback along the shoreline; and, where possible, expand the setback to 150 feet where justified, based on historic or adopted projections of coastal erosion rates. • Analyze the possible impact of sea level rise for new public and private projects in shoreline areas and incorporate, where appropriate and feasible, measures to reduce risks and increase resiliency to impacts of sea level rise.
O'AHU	'Ewa Development Plan (2020)	3. LAND USE POLICIES AND GUIDELINES 3.1 OPEN SPACE PRESERVATION AND DEVELOPMENT 3.1.3 GUIDELINES 3.1.3.3 Shoreline Area • Coordinate private and public landowners' efforts to create continuous shoreline easements to ensure the maximum feasible degree of lateral public access. • Provide, at a minimum, a 60-foot setback along the shoreline, and, where possible, expand the setback to 150 feet where justified, based on historic or adopted projections of shoreline erosion rates. • Analyze the possible impact of sea level rise for new public and private projects in shoreline areas and incorporate, where appropriate and feasible, measures to reduce risks and increase resiliency to impacts of sea level rise.
O'AHU	East Honolulu Sustainable Communities Plan (2022)	3. LAND USE POLICIES AND GUIDELINES 3.1.1 GENERAL POLICIES Open space will be used to: • Protect aesthetic and biological values of wetlands, beaches, nearshore marine environments, natural streams, and other drainage ways; • Prevent development of areas susceptible to natural hazards such as soil movement, rock falls, coastal erosion, and sea level rise.

	3.1.2 PLANNING GUIDELINES 3.1.2.2 Shoreline Areas Guidelines pertaining to shoreline areas are listed below: • Lateral Access – Improve, protect, and maintain lateral shoreline access. • Shoreline Access – Pursue opportunities to secure additional pedestrian rights-of-way from the nearest street or highway to the shoreline in sections that have high recreational value, but no similar public access within at least a quarter of a mile, particularly in the areas of Kai Nani, Wailupe Peninsula, and Niu Peninsula. • Vegetation – Landowners along the shoreline shall maintain vegetation so as to not encroach into the public right-of-way, particularly as the shoreline erodes, pushing the right-of-way inland. • Sea Level Rise Impact on Lateral Access – Include sea level rise and shoreline erosion projections when establishing protections for lateral shoreline access. • Codify Access – Recognize and codify mauka-makai shoreline access into the Revised Ordinances of Honolulu (ROH). • Setbacks – Increase minimum shoreline setbacks and implement other management strategies to account for anticipated impacts from climate change and coastal erosion. Revise and amend shoreline rules and regulations to incorporate sea level rise into the determination of shoreline setbacks and Special Management Area (SMA) use requirements. • Armoring – Conserve and enhance a natural, dynamic shoreline wherever possible. Restrict shoreline hardening. Shoreline hardening should only be considered as a last resort where it supports significant public benefits and will result in insignificant negative impacts to coastal resources and natural shoreline processes. • Protect Infrastructure – Mitigate impacts to critical public and private infrastructure subject to sea level rise exposure through elevation, relocation, or other adaptation measures. • Sea Level Rise Impact on New Projects – Analyze the impact of sea level rise for new public and private projects in shoreline and low-lying areas. If it is likely that sea level rise will increase the risk of flooding during the lifespan of the project, incorporate, where appropriate and feasible, measures to reduce risks and increase resiliency to impacts of sea level rise. • Current Information – Use the most current versions of the City Climate Change Commission’s Sea Level Rise Guidance, Climate Change Brief, and the State of Hawai’i Sea Level Rise Vulnerability and Adaptation Report and associated Viewer for managing assets, reviewing permitting requests, and assessing project proposals. • Building Codes – Work cooperatively to develop design and construction standards that mitigate and adapt to the impacts of climate change and sea level rise. • Hazard Assessment – Incorporate assessments of all hazards into the land development application process. • Redevelopment District – Form a community-based redevelopment district, similar to a business improvement district, that would protect, adapt, and relocate residential and commercial structures, public facilities, and natural and cultural resources vulnerable to sea level rise impacts, including coastal flooding, inundation, and erosion. • “Build Back Better and Smarter” – Map repetitive loss areas and develop and implement a “build back better and smarter” strategy to mitigate future damage costs. • Disaster Plans – Develop short- and long-term resiliency and recovery plans. 3.6 NON-RESIDENTIAL DEVELOPMENT 3.6.2 GENERAL POLICIES • Sea Level Rise – Protect, adapt, or relocate commercial structures, public facilities, and natural and cultural resources vulnerable to sea level rise impacts, including coastal flooding, inundation, and erosion as feasible. 4.8 CIVIC AND PUBLIC SAFETY FACILITIES

		4.8.1 GENERAL POLICIES • Provide adequate staffing and facilities to ensure effective and efficient delivery of basic governmental services and protection of public safety. Analyze the possible impact of sea level rise for new public and private projects in shoreline and low-lying areas and require, where appropriate and feasible, measures to reduce vulnerability and increase resiliency.
O'AHU	Ko'olau Loa Sustainable Communities Plan (2020)	Guidelines pertaining to shoreline areas: • To the extent possible, acquire shallow developed beach-front lots which would be impractical to redevelop given existing zoning standards or wave hazard considerations in order to improve public access and lateral shoreline views along Kamehameha Highway. • Maintain and enhance public access to the shoreline and lateral access along the coast, including the provision of parking areas. Public access should be provided at approximately 1/2-mile intervals in rural areas, or at closer intervals when justified by public demand, traditional use patterns, the quality of the recreational resources, or natural barriers that impede shoreline access. • Establish additional minimum setbacks for structures near the shoreline in erosion hazard areas, and implement other management strategies to protect unstable sandy beach areas that impact Kamehameha Highway along the Ka'a'awa, Punalu'u and Hau'ula shorelines. • Adopt development standards that require new structures along the shoreline to incorporate structural and design elements compatible with coastal hazards such as coastal erosion, tsunami and hurricane overwash. • Incorporate best available science and information from the City Climate Change Commission when evaluating updates to land use policies and regulations relating to climate change and sea level rise.
O'AHU	Ko'olau Poko Sustainable Communities Plan (2017)	3. LAND USE POLICIES AND GUIDELINES 3.1 OPEN SPACE PRESERVATION 3.1.3 ELEMENTS OF OPEN SPACE RESOURCES 3.1.3.2 Shoreline Areas Guidelines for Shoreline Areas: • Prepare beach management plans to maintain lateral access along popular beaches that are subject to long-term and seasonal erosion, particularly at Lanikai and Kualoa, emphasizing non-structural approaches and prevention of adverse effects on adjacent coral reef ecosystems such as greater shoreline setbacks for new structures along these and other unstable shoreline areas. The Kailua Beach and Dune Management Plan could serve as a prototype for beach management plans at other locations. Effective beach management plans are very location-specific and incorporate the consideration of long-term effects such as climate change and sea level rise, as well as seasonal and long-term erosion and accretion. • Pursue measures to render all shoreline accretion as public (State) property in perpetuity in order to preserve shorelines as a public resource. • Prohibit the use of shore armoring structures, considering alternative measures such as beach replenishment • Pursue measures to render all shoreline accretion as public (State) property in perpetuity in order to preserve shorelines as a public resource. • Prohibit the use of shore armoring structures, considering alternative measures such as beach replenishment
O'AHU	Primary Urban Center Development Plan (2024 DRAFT)	Sea Level Rise + Coastal Hazards Planning GOAL SLR-1 Adapt Regulatory Standards to Improve Resilience to Climate Change and Coastal Hazards Policy SLR-1.1: Utilize the SLR-XA as a tool for current zoning and permitting decisions and for siting critical infrastructure. Policy SLR-1.2: Advance evidence-based sea level rise and resilience requirements, and time-based monitoring. Policy SLR-1.3: Encourage voluntary adaptation measures in the SLR-XA that exceed statutory requirements. Policy SLR-1.4: Consider the SLR-XA compound hazards individually and together to determine appropriate adaptation measures. Policy SLR-1.5: Update shoreline regulations and development policies to reflect coastal hazard impacts and best available guidance on

		an ongoing basis. GOAL SLR-2 Conduct Long-Range Planning to Increase Area-Wide Adaptation and Resilience. Policy SLR-2.1: Plan for priority growth outside of higher impact areas and vet proposed solutions for higher impact areas with the community. Policy SLR-2.2: Address potential impacts to surrounding sites for projectlevel adaptation measures. Policy SLR-2.3: Prioritize and fund community-level Area Adaptation Plans. Policy SLR-2.4: Incorporate sea level rise / coastal hazard considerations in the planning, design, and maintenance of facilities and infrastructure. GOAL SLR-3 Coordinate Infrastructure Planning for Sea Level Rise Across Agencies. Policy SLR-3.1: Support collaborative resilience planning for new and existing infrastructure. Policy SLR-3.2: Pursue a district-scale fee structure or other dedicated funding mechanisms for adaptation projects. Policy SLR-3.3: Monitor ongoing impacts within the SLR-XA across infrastructure agencies to update development regulations that implement adaptation. Policy SLR-3.4: Support State agencies in applying appropriate interventions and environmental measures for adapting/preserving beaches and shoreline impacted by sea level rise and erosion.
O'AHU	Wai'anae Sustainable Communities Plan (2012)	3.3 COASTAL LANDS 3.3.2 Policies Pertaining to Coastal Lands 3.3.2.1 Do Not Allow New Coastal Development There should be no new residential, commercial, industrial, resort, or other urban or suburban type of development makai of Farrington Highway, with the exception of new development or redevelopment of low-rise commercial and public buildings associated with the development of Wai'anae Country Town and future improvements to the Wai'anae Boat Harbor. 3.3.2.2 Incrementally Acquire Coastal Properties The long-range goal for the coastal lands of the Wai'anae District should be the establishment of a coastal zone that is free of urban or suburban development and that is open to public access and public recreation. In working toward this goal, opportunities to acquire parcels or rights-of-way in coastal areas for public use should be pursued, especially for lands adjacent to public parks. Any such acquired parcels should be restored to open space and made available to public access and/or public recreational use. The acquisition of land for the expansion and improvement of Pōka'i Bay Beach Park should be a top priority. The U.S. Army Rest Camp should be programmed for eventual return to the general public. 3.3.2.3 Discourage Shore Armoring Shore armoring along any beaches of the Wai'anae District, including seawalls, groins, and breakwaters, should generally be discouraged. 3.3.2.4 Government Agencies Should Partner with Community-based Organizations in order to Better Manage Wai'anae's Coastal Lands Government agencies should partner with community-based organizations to better manage coastal lands and their natural and cultural resources, as described in Section 2.3.10. Specific to the management of coastal lands, these groups should educate and monitor the community on using best fishing and gathering practices along the coast, such as the prohibition of laying net and leaving it unattended. 3.3.2.5 Prohibit Projects that Negatively Impact Coastal Lands Approvals should not be granted for uses or projects that may negatively impact the natural ecology, scenic beauty, or cultural practices on coastal lands, or that may increase user conflicts on the beach or in nearshore waters. 3.3.2.7 Maintain Beaches/Sand

		All sand that is found along the Waiʻanae Coast, whether it is part of a formally recognized beach or not, should be maintained as much as possible. Any proposed projects along the coast should not significantly impact the sand found there naturally. 4. PUBLIC FACILITIES AND INFRASTRUCTURE POLICIES AND GUIDELINES 4.7 CIVIC, PUBLIC SAFETY, AND EDUCATIONAL FACILITIES 4.7.2 Policies Pertaining to Civic, Public Safety, and Educational Facilities 4.7.2.2 Selection of Sites for New Schools Should Comply with the Waiʻanae Sustainable Communities Plan Criteria Schools should not be makai of Farrington Highway, due to the long-term issue of sea level rise, as well as more immediate threats, such as tsunami. 4.7.3 Guidelines for Civic, Public Safety, and Educational Facilities 4.7.3.1 Design Standards Sea level rise should be taken into account when choosing the location of a public building, especially emergency facilities.
OʻAHU	East Honolulu Watershed Management Plan (2024 DRAFT)	OBJECTIVE #5: MEET PUBLIC WATER DEMANDS AT REASONABLE COST Sub-Objective 5.3 Research climate change impacts and pursue adaptation and infrastructure resiliency strategies. The many potential impacts of climate change, which may include drought, flooding and sea level rise, are not yet well understood. Public and private infrastructure managers – for roads, drainage, electrical power, potable water, non-potable water, agricultural water, wastewater – will need to develop adaptation strategies as climate change continues to unfold.
OʻAHU	Ewa Watershed Management Plan (2017 DRAFT)	OBJECTIVE #5: MEET PUBLIC WATER DEMANDS AT REASONABLE COST Sub-Objective 5.3 Research climate change impacts and pursue adaptation and infrastructure resiliency strategies. The many potential impacts of climate change, which may include drought, flooding and sea level rise, are not yet well understood. Public and private infrastructure managers – for roads, drainage, electrical power, potable water, non-potable water, agricultural water, wastewater – will need to develop adaptation strategies as climate change continues to unfold.
OʻAHU	Koʻolau Loa Watershed Management Plan (2009)	OBJECTIVE #2: PROTECT AND ENHANCE WATER QUALITY AND QUANTITY Sub-objective 2.3: Maintain and improve the water quality of nearshore waters. The nearshore water quality is related the quality of the surface waters that flow into the ocean. Surface water quantity can be increased by retaining water and preventing it from directly flowing into the nearshore waters. Also, nearshore water quality can be improved reducing groundwater contamination because some groundwater ultimately flows into the nearshore waters.
OʻAHU	Koʻolau Poko Watershed Management Plan (2012)	OBJECTIVE #1: PROMOTE SUSTAINABLE WATERSHEDS Sub-Objective 1.5 Adapt to and plan for climate change and sea level rise. Community members have commented that there are areas in Koʻolau Poko that have received noticeably less rainfall than in the past. A prudent watershed management plan should take into account potential changes in climate such as longer periods of drought as well as potential impacts of sea level rise.
OʻAHU	North Shore Watershed Management Plan (2016)	OBJECTIVE #5: MEET FUTURE WATER DEMANDS AT REASONABLE COSTS Sub-Objective 5.4: Adapt to and plan for drought, climate change and sea level rise. Community members expressed concern about the impacts of climate change and sea level rise to the aquifer. The question was posed, “What can we be doing now that we wish we would have done in 100 years?” North Shore land use planning and infrastructure should take into account potential changes in climate such as longer periods of drought and more frequent storm events, as well as potential impacts of sea level rise.
OʻAHU	Waianae Watershed	OBJECTIVE 1: PROMOTE SUSTAINABLE WATERSHEDS SUB-OBJECTIVE 1.3 Protect the community from natural and humaninduced hazards. Waiʻanae, as with other districts, is vulnerable to natural hazards, some of whose impacts have been exacerbated by man-made structures or land management practices. Protecting life and property is of utmost importance to the community.

	Management Plan (2009)	
O'AHU	Multi-Hazard Pre-Disaster Mitigation Plan For The City & County of Honolulu (2020)	5.10 Future Mitigation Actions to Reduce Damages Caused by Coastal Erosion 5.10.1 Use of Numerical Wave Run-up and Storm Surge Models 5.10.2 Adjust the Shoreline Setback Line Related to the Construction of a New Building or Structure, or to a new Addition to an Existing Building or Structure. 5.10.3 Special Management Area, ROH Chapter 25 (amended November 2011) <i>Proposed Changes:</i> starting in 2025, • Create another level of SMA zone maps defining a Coastal Construction Control Zone, to account for the coastal inundation limit of the 500-year flood including the effects of expected climate change by the year 2100 and sea level rise of 2 feet above the year 2000 mean high water, using modeling consistent with CMIP AR5 RCP 8.5 climatic conditions (see Chapter 14). Have this applicable only to major (definition to be determined) long-term developments. • For Major Permits (exceeding 25,000 square feet of building gross area) within the Coastal Construction Control zone, require that the effects of 50-years of erosion and the adverse effects of climate change and sea level rise, as defined by the Coastal Construction Control Zone, on the functionality of the development and land use be minimized to the extent practicable, and include provisions for the mitigation of the deleterious effects of the proposed use, and require the director to consider that as a criteria for permitting new development and any variances therefrom. 5.10.4 Disclosure of Hazard Risks 5.10.5 Uniform Land Sales Practices Act, HRS Chapter 484 <i>Proposed Change:</i> Expand list of disclosable hazards in public offering to include, more explicitly: "Exposure to natural hazards that are mapped: e.g., 2500-year earthquake ground motion in excess of SDC C levels, 100-year and 500-year flooding including 2 ft of sea level rise, tsunami evacuation zone and extreme tsunami zone, lava inundation hazard zone 1 or 2 per 1992 USGS map, adjacency to forest and wildfire historic burn areas per DOFAW, effective windspeed hazards above 145 mph per Hawaii State Building Code, dam failure evacuation map per DLNR, and 50-years of shoreline erosion. High surf inundation, earthquake induced ground failure, and potential rockfalls / landslides shall also be disclosed to the extent known." 5.10.6 Mandatory Seller Disclosures in Real Estate Transactions, HRS Chapter 508D <i>Proposed Change:</i> Make mandatory seller disclosure apply to vacant lots as well.
O'AHU	City & County of Honolulu (O'ahu) 2022 Comprehensive Economic Development Strategy (2022)	Housing & Resilient Infrastructure Objective #3: Develop and implement policies, plans, and programs that prioritize balanced land-use priorities (e.g., affordable housing, clean energy, water, transportation, climate resilience and adaptation, nature conservation, and local food goals) through multi-stakeholder, business, and community coordination. Priority Action #4. Prepare for climate change impacts and sea-level rise through mitigation, adaptation, and managed retreat strategies to build resilience for local businesses and communities.
MAUI	Maui Climate Action and Resiliency Plan (2022)	Resiliency Strategies & Actions 2. Secure Our Infrastructure Strategy 4: Plan for managed retreat and infrastructure relocation Action 1 (High Priority): Develop a threshold-based system built on the degree of climate change vulnerability and risk exposure for managed retreat of coastal infrastructure, so that the risk to physical structures and infrastructure across Maui County can be addressed with the least possible disruptions to residents and the economy over time.

		Action 2 (Medium Priority): Continue to update coastal parks adaptation and relocation plans with exposure to climate change impacts such as sea level rise and coastal erosion by performing vulnerability assessments and adopting updated adaptation plans. Action 3 (Medium Priority): Secure funding to establish a revolving fund for managed retreat and an interestbearing account to support targeted projects. <i>3. Secure Our Natural Systems</i> <i>Strategy 5:</i> Increase resiliency of shoreline areas through active coastal management. Action 1 (High Priority): Protect beaches and coastal safety by updating shoreline management rules and adopting shoreline development setbacks based on sea level rise/erosion maps. Provide incentives to reconfigure and retreat from high-hazard areas.
MAUI	Maui General Plan 2030 (2010), updated 2021 (Ordinance 5264)	Countywide objectives and policies for population, land use, the environment, the economy, and housing A. Protect the Natural Environment Objective 1. Improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations. Policy e. Protect the natural state and integrity of unique terrain, valued natural environments, and geological features. Policy f. Preserve and provide ongoing care for important scenic vistas, view planes, landscapes, and open-space resources. <i>Implementing Actions:</i> a) Develop island-wide networks of greenways, watercourses, and habitat corridors. Objective 2. Improve the quality of environmentally sensitive, locally valued natural resources and native ecology of each island. Policy a. Protect and restore nearshore reef environments and water quality. Policy b. Protect marine resources and valued wildlife. Objective 3. Improve the stewardship of the natural environment. Policy a. Preserve and protect natural resources with significant scenic, economic, cultural, environmental, or recreational value. Policy b. Improve communication, coordination, and collaboration among government agencies, nonprofit organizations, communities, individuals, and land owners that work for the protection of the natural environment. Policy c. Evaluate development to assess potential short-term and long-term impacts on land, air, aquatic, and marine environments. Policy d. Regulate access to sensitive ecological sites and landscapes. Policy e. Provide public access to beaches and shorelines for recreational and cultural purposes where appropriate. Policy f. Support the acquisition of resources with scenic, environmental, and recreational value, and encumber their use. Policy g. Improve enforcement activities relating to the natural environment. Policy h. For each shoreline community, identify and prioritize beach-conservation objectives, and develop action plans for their implementation. B. Preserve Local Cultures and Traditions Objective 1. Perpetuate the Hawaiian culture as a vital force in the lives of residents. Policy a. Protect and preserve access to mountain, ocean, and island resources for traditional Hawaiian cultural practices. Policy b. Prohibit inappropriate development of cultural lands and sites that are important for traditional Hawaiian cultural practices, and establish mandates for the special protection of these lands in perpetuity. Policy c. Promote the use of ahupua'a and moku management practices. <i>Implementing Actions:</i> a) Establish alternative land use and overlay zoning designations that recognize and preserve the unique natural and cultural characteristics of each ahupua'a or district.

		<i>J. Promote Sustainable Land Use and Growth Management</i> Objective 1. Improve land use management and implement a directed-growth strategy. Policy f. Direct new development in and around communities with existing infrastructure and service capacity, and protect natural, scenic, shoreline, and cultural resources. Policy h. Support the dedication of land for public uses. Policy i. Preserve the public's rights of access to and continuous lateral access along all shorelines. <i>Implementing Actions:</i> b) Establish transfer and purchase of development rights programs. <i>L. Mitigate Climate Change and Work Toward Resilience</i> Objective 1. Lower carbon emissions levels to mitigate climate change impacts and limit the rate of global warming. Policy e. Improve efforts to mitigate and plan for the impact of natural disasters and global warming. Policy f. Encourage the building industry to use environmentally sustainable materials, technology, and site planning. Policy h. Plan and prepare for and educate visitors and residents about the possible effects of global warming. Objective 2. Reduce the impacts of sea-level rise by acknowledging climate change, adapting, mitigating, and planning accordingly. Policy a. Evaluate development to assess potential short-term and long-term sea-level rise impacts on nearshore environments. Policy b. Improve efforts to mitigate and plan for the impact of sea-level rise. Policy c. Protect undeveloped beaches, dunes, and ecosystems, and restore natural shoreline processes. Policy d. Develop an inventory of private wastewater systems (septic systems, cesspools) that may be affected by sea-level rise. Policy e. Strengthen coastal-zone management, re-naturalization of shorelines, where possible, and filtration or treatment of urban and agricultural runoff. Policy f. Educate the construction and landscape industries and property owners about the use of best management practices to prevent erosion and nonpoint source pollution. Policy g. Discourage beach hardening processes such as building sea walls and revetments that block movement of the shoreline and can accelerate erosion. Policy h. Discourage new entitlements for residential, resort, or commercial development along the shoreline. Policy i. Restrict development in areas that are prone to sea-level rise. Policy j. Move or rebuild public facilities away from nearshore environments to account for sea-level rise to the extent reasonable. Policy k. Move or rebuild roads that are in sea-level rise inundation zones to the extent reasonable. Policy l. Ensure that public or affordable housing projects include siting and design standards that promote equity and resilience for vulnerable populations. Policy m. Identify, research, and evaluate innovative and sustainable financing to support mitigation and adaptation to sea level rise. <i>Implementing Actions:</i> a) Develop programs to help transition shoreline property owners out of their nearshore locations and develop a long-term plan to stay out of the way of natural beach migration. b) Identify buildings, roads, and other infrastructure that are in sea-level rise inundation zones and assist in adaptive efforts, including nature-based solutions, elevation, or moving them away from such zones. c) Identify disaster redevelopment alternatives that support resilience-focused adaptation to sea level rise in the event of a catastrophic coastal event.

MAUI	Maui Hazard Mitigation Plan Update (2020)	Mitigation Actions: 14. Expand Beach and Dune Restoration Projects 1) Identify and prioritize erosion hotspots for mitigation via beach nourishment where applicable. 2) Pursue Federal/State/County funding for beach nourishment and restoration (including pre-positioning for postdisaster financial assistance). 3) Work with State regulatory agencies to streamline permitting for beach restoration. 4) Promote living shoreline projects instead of shoreline hardening where feasible. 5) Protect/restore coral reefs as they provide a barrier for erosion, high surf/coastal flooding and tsunamis. 15. Update dune restoration guidance. Provide dune restoration training. Develop an outreach initiative to encourage or establish new dune restoration volunteers/stewards. Install ADA compliant dune walkovers in identified locations. 21. Develop a strategy to mitigate risk to coastal roads. 26. Identify critical infrastructure, lifelines, roads, and populations that are vulnerable to coastal hazards, and encourage strategic retreat, relocation or retrofit. Maui Island Plan 3.1.2.a 37. Establish a revolving fund that can support grant matching funds for hazard mitigation and climate action strategies. 48. Provide funding support to the University of Hawai'i (Coastal Geology Group) to complete shoreline erosion studies to include Moloka'i and Lāna'i and continue to update studies for Maui.
MAUI	Beach Management Plan for Maui (1997)	Areas, Objectives & Recommendations Area 1. Identification of Erosion Hotspots and Erosion Watchspots Objective 1.1) To identify existing and potential erosion problem areas along Maui's shoreline <i>Recommendations:</i> 1.1a) Sponsor a study to better identify Maui's erosion hotspots and watchspots and to analyze the possible causes of erosion 1.1b) Acknowledge the special nature of erosion hotspots and watchspots when planning shoreline developments, infrastructure, and restoration projects 1.1c) Require data on shoreline erosion/accretion trends for any proposed coastal development Area 2. Guidelines for Shoreline Protection Measures Objective 2.1) To establish guidelines for governmental agencies and the coastal community to determine the most appropriate type of coastal protection in a particular location <i>Recommendations:</i> 2.1a) Develop a study to provide technical recommendations for the restoration of sandy shorelines through beach nourishment 2.1b) Provide suggestions on alternative coastal protection designs where beach nourishment is not feasible 2.1c) List acceptable structures for emergency (temporary) coastal protection 2.1d) Address permitting requirements for beach nourishment and structural alternatives Area 3. Beach Nourishment Objective 3.1) To promote beach nourishment by more effectively managing the limited sources of readily available sand and building its capacity to tap new, currently unavailable (offshore) sources of sand <i>Recommendations:</i> 3.1a) Earmark beach-quality sand that is periodically removed from Maui's harbors for nourishment projects 3.1b) Restrict the export of Maui's dune sand resources, perhaps by introducing new legislation 3.1c) Limit sand mining to quarries designated free of cultural sites 3.1d) Identify, map, and sample potential offshore borrow sites 3.1e) Consider acquiring a suction dredge to use to tap offshore sand resources, provided offshore borrow sites have sand of good quality, and dredging will not cause long-term environmental impacts

		3.1f) Identify and implement one or more pilot beach nourishment projects Area 4. Dune Preservation and Restoration Objective 4.1) To preserve existing sand dunes Objective 4.2) To restore degraded sand dunes <i>Recommendations:</i> 4.1a) Map coastal dunes, and limit development on top of or in front of these dunes 4.1b) Prohibit grading (leveling) or mining of coastal dunes 4.1c) Guide landscaping in dune areas (e.g., limit topsoil fill, encourage the planting of native coastal species rather than turf grass, which is not consistent with the natural littoral environment) 4.1d) Establish moveable dune walkovers to provide pedestrian access without trampling dune vegetation 4.2a) Encourage and support dune restoration efforts (dune fencing, revegetation, sand nourishment, etc.) 4.2b) Publish a handbook detailing the methodology for future dune restoration projects Area 5. Coral Reef Ecosystems, Water Quality, and Upland Activities Objective 5.1) To reduce impacts to water quality and coral reef ecosystem <i>Recommendations:</i> 5.1a) Continue to educate the public-especially the ocean recreation users such as ocean activity centers and dive/snorkel tour boat operators-on the importance of coral reef ecosystems and how to reduce damage to these resources 5.1b) Support studies to determine the status of Maui's coral reef ecosystems 5.1c) Insure that upland construction and agricultural practices become more environmentally responsible by increasing public awareness 5.1d) Amend the grading ordinance to implement best management practices for dust and sediment control, as approved by the Natural Resource Conservation Service, and the Department of Public Works and Waste Management (This is currently being considered by the Maui County Council.) 5.1e) Provide BMP workshops to contractors at construction sites 5.1f) Improve enforcement of the grading ordinance 5.1g) Implement suggestions of the West Maui Watershed Owners Manual including guidelines for the reduction of soil erosion and the development of and adherence to best management practices protective of coastal water quality 5.1h) Promote sand fill along shoreline properties rather than soil fill 5.1i) Review existing water quality standards, testing, and enforcement 5.1i) Support a study of nearshore circulation patterns to help determine environmental impacts of various drainage master plans Area 6. Shoreline Setbacks and Coastal Erosion Hazard Data Objective 6.1) To provide relevant information for governmental agencies and the coastal community when purchasing shoreline property and/or planning and designing any development along the shoreline Objective 6.2) To provide a scientific basis to assess and regulate proposed structures and activities within projected shoreline erosion hazard zone <i>Recommendations</i> 6.1a) Develop a detailed coastal erosion hazard analysis that will determine historical shoreline positions and map the projected position of the shoreline 30, 60, and 90 years in the future. (Maui County has already prepared and advertised an RFP to develop such a study.)

	6.1b) Quantify the amount of beach loss that has occurred to help identify the possible causes and potential mitigation of coastal erosion 6.2a) Incorporate site-specific erosion rate data and performance standards (e.g., construction style and estimated lifetime of structure) into the determination of shoreline building setbacks 6.2b) Initiate meetings with neighborhood associations to help develop performance standards for variable setbacks in areas with high rates of coastal erosion Area 7. Proactive Development of Coastal Lands Objective 7.1) To encourage proactive shoreline developments and increase awareness of coastal hazards Objective 7.2) To increase awareness of the discretionary nature of permitting shoreline armoring to protect property <i>Recommendations:</i> 7.1a) Encourage developers and landowners to pre-consult with various experts and governmental agencies familiar with coastal erosion in order to get appropriate recommendations on project design 7.1b) Make the Beach Management Plan for Maui available to developers, contractors, and landowners as a reference guide 7.1c) Encourage greater setbacks for erosion hotspots and watchspots and other areas with a high rate of erosion 7.1d) Discourage slab-on-grade construction 7.1e) For major condominium/hotel type developments, encourage layouts with less linear frontage 7.1f) Encourage minor structures to be non-permanent and portable 7.1g) Encourage major structures to be hurricane/tsunami resistant (ie., built on posts) and located away from areas of high coastal hazard 7.1h) Encourage developers to construct building additions on the mauka side of the structure rather than within the shoreline setback area 7.1i) Encourage use of sand fill and native vegetation for shoreline landscaping 7.2a) Require developers and landowners to acknowledge that shoreline armoring is discretionary and based on grounds of hardship and impacts on the environment Area 8. Inter-agency Coordination Objective 8.1) To enhance coordination with federal, state, and other governmental agencies with jurisdiction over shoreline management issues-Army Corps of Engineers, Natural Resource Conservation Service, State and County Parks Departments, the State Department of Transportation (Highways and Harbors Division) the State Department of Land and Natural Resources, State Department of Health, and the County Department of Public Works Objective 8.2) To develop an atmosphere which allows communities to act proactively to meet demands for shore protection and preservation <i>Recommendations:</i> 8.1a) Maintain ongoing discussions and improve coordination on shoreline matters with other agencies in order to avoid duplication, expedite permit processing, and encourage more environmentally sensitive shoreline protection measures 8.2a) Proactively plan highway construction, park improvements, and other infrastructure Projects Area 9. Structures and Activities within the Shoreline Area Objective 9.1) To regulate certain structures and activities within the shoreline area in a manner consistent with proactive planning recommendations <i>Recommendations:</i>

		9.1a) Limit minor structures to those that are portable, expendable, or under a certain dollar value, and require them to be relocated or removed if shown to adversely affect shoreline processes 9.1b) Expedite permit processing for sand nourishment projects, provided that guidelines are created through the Shoreline Setback Rules to minimize adverse impacts on water quality and marine resources 9.1c) Specifically define the criteria for granting a shoreline variance for major structures 9.1d) Require that shoreline setback rules apply to all lands that abut the shoreline or abut a state beach reserve 9.1e) Consider incorporating other recommendations in this plan as formal rule changes (e.g., prohibition of soil fill and sand dune grading along the shoreline) Area 10. Beach Management Districts Objective 10.1) To encourage and implement beach management districts in order to coordinate beach management on a neighborhood scale <i>Recommendation:</i> 10.1a) Establish beach management districts at erosion hotspots, especially those proposing to implement a beach restoration project 10.1b) Set up a mechanism at the county and/or state levels for evaluating petitions to form a beach management district Area 11. Public Awareness and Education Objective 11.1) To increase public and private sector awareness and education on coastal and marine resource protection <i>Recommendations:</i> 11.1a) Identify key target audiences (e.g., schools, community associations, neighborhood boards, rotary clubs, developers and contractors, ocean activity owners, county commissions, etc.) 11.1b) Continue disseminating information by issuing press releases, publishing booklets and posters, and giving presentations at conferences and to key user groups 11.1c) Sponsor the creation of a web site on coastal processes, development guidelines, and beach management 11.1d) Partner with local scientists and environmental groups to sponsor K-12 teacher training Workshops Area 12. Research Objective 12.1) To continue to help fund research in coastal and marine science and marine policy Objective 12.2) To continue to closely monitor shoreline trends such as coastal erosion and beach loss as well as algal blooms <i>Recommendations:</i> 12.1a) Commission new research projects in coastal and marine science and marine policy on all scales 12.1b) Fund studies that seek to better understand site-specific causes of coastal erosion and beach loss 12.1c) Help fund a study that quantifies sand production on coral reefs 12.1d) Help sponsor a study of the economic, legal, and political challenges associated with requiring rate-based building setbacks 12.1e) Encourage Maui Community College to take a more active role in marine science education and research by further developing its Marine Option Program 12.1f) Seek participation in research on marine issues from other universities, ocean user groups, and other government agencies 12.2a) Update the County's database of coastal aerial photographs at least every five years so that county planners can make informed decisions with reasonably up to date information on shoreline development 12.2b) Help maintain and expand the island-wide network of beach profiles 12.2c) Help support the continued collection of data on water quality and algal blooms

		Area 13. Funding Mechanisms Objective 13.1) To sharply increase funding for beach management, coastal lands acquisition, and research and monitoring and seek to attract outside sources of funding <i>Recommendations:</i> 13.1a) Allocate a portion of the annual budget to a dedicated beach management fund, which would not only be used for land banking and beach nourishment projects but also for continued coastal zone research and monitoring 13.1b) Identify strategies for generating more revenue earmarked for beach management 13.1c) More effectively pursue matching funds from outside agencies through leveraging 13.1d) Support and recognize volunteer efforts of non-governmental agencies and community groups who are active in beach stewardship
MAUI	Hana Community Plan (1994)	B. Goals, Objectives, Policies and Implementing Actions Environment Objectives & Policies 9. Avoid development of flood prone areas, stream channels and gulches.
MAUI	Kaho'olawe Community Plan (1995)	Part III. Policy Recommendations, Implementing Actions and Standards for the Kaho'olawe Region C. Planning Standards 4. Design b. Structures shall be set back from the shoreline a minimum of 300 feet. Exceptions may be allowed for traditional structures, subject to approval by the monitoring/planning committee.
MAUI	Kihei-Mākena Community Plan (1998)	B. Goals, Objectives and Policies Land Use <i>Objectives & Policies</i> a. Acquire beachfront properties for public use. l. Preserve coastal vistas, open space and recreational opportunities for residents by prohibiting further shoreline development except in places designated on the 1997 community plan land use map, and prohibit future community plan amendments along the shoreline that would increase the intensity of land use, with the exception of land use that is public or quasi-public in nature Environment <i>Objectives and Policies</i> a. Maintain and enhance the long-term availability of shoreline resources for public enjoyment through adequate access, space, and facility provisions, and through on-going resource management programs. b. Preserve, protect, and restore unique natural areas with significant conservation values. c. Require that new shoreline development respect shoreline resources and maintain public access: 1) Existing dune formations are important elements of the natural setting and should remain intact. 2) Indigenous or endemic strand vegetation should remain undisturbed; new development and landscaping should treat such vegetation as given conditions. 3) Planning for new shoreline development, as well as redevelopment, shall consider the cyclic nature of beach processes. Setbacks shall be used to provide a sufficient buffer between the ocean and structures to allow for periodic and long-term accretion and erosion of the shoreline. A Coastal Erosion Rate Analysis shall be developed. The planning commissions are encouraged to incorporate data from the analysis into planning decisions for shoreline areas, especially with respect to shoreline building setbacks. In the interim period prior to the completion of the analysis, the planning commissions are further encouraged to utilize minimum setbacks for multi-family and hotel uses of 150 feet from sandy shorelines, and 75 feet from rocky shorelines, or 25% of the average lot depth, whichever is

		greater. Where shoreline erosion threatens existing structures or facilities, beach replenishment shall be the preferred means of controlling erosion, as opposed to sole reliance on seawalls or other permanent shoreline hardening structures. 4) Storm water run-off from proposed developments shall not adversely affect the marine environment and nearshore and offshore water quality. 5) Planning, design, and layout for new development shall be integrated with public shoreline use and sound principles of resource management. Implementing Actions e. Facilitate protection of valuable shoreline resources in the Open Space Master Plan by transferring State Beach Reserves and adjacent undeveloped State-owned lots to County jurisdiction. Prepare and implement a plan for enhancement of these lands to provide stewardship of cultural and natural resources and the fostering of traditional cultural activities. i. Develop and implement a strategy for sand dune protection.
MAUI	Lana'i Community Plan (2016)	4. Hazard Mitigation B. Issues and Strategies Issue 3: Kaumālapa'u Harbor and Mānele Bay Resort are located in the tsunami zone Strategy 3: Prepare for disaster response by planning for the phased relocation of critical structures and long term strategic retreat of buildings. Issue 4: Sea level rise will increase the risk of storm surge inundation affecting developments in coastal areas. Strategy 4: Coordinate with State agencies to obtain information and maps on sea level rise Plan for a phased relocation of critical structures long term strategic retreat of buildings and adequate setback for new development. C. Goals, Policies, Actions Goal: Lana'i will be prepared for natural disasters. Policy 4. Locate critical infrastructure outside of areas projected to become evacuation and inundation zones as sea levels continue to rise. Policy 7. Require shoreline developments to analyze shoreline hazards including sea level rise during the entitlement and permitting process.
MAUI	Makawao-Pukalani-Kula Community Plan (1996)	N/A
MAUI	Moloka'i Community Plan (2018)	E. Goal, Policies, and Actions Goal: Moloka'i's land use pattern will protect agricultural lands, open space, and natural and cultural resources, and support livable small towns and rural communities. Policy 3: Direct growth to vacant and underutilized infill lots outside of hazard prone areas and proposed expansion areas as shown on the Moloka'i Island Community Plan Land Use maps (see Maps 6.2 - 6.4) and as described in Section B. Future Conditions. Policy 13: Support the expansion of the State Conservation District boundary, where warranted, for environmental preservation and habitat enhancement. Policy 18: Support the development of a climate change policy and adaptation plan to address rising sea levels and beachfront housing and development on Moloka'i.

MAUI	Pa'ia-Ha'iku Community Plan (1995)	B. Goals, Objectives, Policies and Implementing Actions LAND USE <i>Objectives and Policies</i> 1. Protect the marine environment and quality of the offshore waters. 2. Preserve important scenic vistas and shoreline resources of the region 9. Maintain and expand areas desirable for public recreational uses. 15. Avoid development of flood prone areas, stream channels and gulches due to safety concerns, open space relief, and visual separation. Drainage channels should be regularly maintained by appropriate agencies. <i>Implementing Actions</i> 5. Improve standards and procedures to protect scenic vistas and shoreline resources of the region. 7. Develop and implement a directed and managed growth plan and strategies to guide and coordinate future development consistent with the provision and availability of public infrastructure. ENVIRONMENT <i>Objectives and Policies</i> 4. Preserve the shoreline sand dune formations throughout the planning region. These topographic features are a significant element of the natural setting and should be protected from any actions which would detract from their scenic, cultural or ecological value. 8. Protect and maintain the quality of the nearshore and offshore waters and marine environment. Ensure that storm water run-off and siltation from proposed development will not adversely affect the marine environment and nearshore and offshore water quality. Open culverts which empty directly into nearshore waters should be avoided. CULTURAL RESOURCES <i>Objectives and Policies</i> 1. Encourage and protect traditional mauka and makai accesses, cultural practices and rural lifestyles. Protect traditional hunting, fishing and gathering. SOCIAL INFRASTRUCTURE Recreation and Open Space <i>Objectives and Policies</i> 2. Secure shorefront lands with scenic and recreational value potential, especially those identified on the Land Use Map. <i>Implementing Actions</i> 1. Adopt a mauka/makai access dedication ordinance pursuant to Chapter 46, H.R.S., and acquire accesses through purchase, dedication, condemnation or land exchange. 2. Implement a program to acquire shorefront sites for future parks and lands for new and expanded parks, consistent with the Community Plan Land Use Map.
MAUI	Wailuku-Kahului Community Plan (2002)	C. Goals, Objectives, Policies and Implementing Actions ENVIRONMENT <i>Objectives and Policies</i> 2. Protect nearshore waters by ensuring that discharges from waste disposal meet water quality standards. Continuous monitoring of existing and future waste disposal systems is necessary to ensure their efficient operation. 3. Protect shoreline wetland resources and flood plain areas as valuable natural systems and open space resources. These natural systems are important for flood control, as habitat area for wildlife, and for various forms of recreation. Future development actions

		should emphasize flood prevention and protection of the natural landscape. 4. Preserve the shoreline sand dune formations throughout the planning region. These topographic features are a significant element of the natural setting and should be protected from any actions which would detract from their scenic, environmental, and cultural value. 5. Require that new shoreline development respect shoreline resources and maintain public access. a. Existing dune formations are important elements of the natural setting and should remain intact. b. Indigenous or endemic strand vegetation should remain undisturbed; new development and landscaping should treat such vegetation as given conditions. c. Planning for new shoreline development, as well as redevelopment, shall consider the cyclic nature of beach processes. Setbacks shall be used to provide a sufficient buffer between the ocean and structures to allow for periodic and long-term accretion and erosion of the shoreline. A Coastal Erosion Rate Analysis shall be developed. The planning commissions are encouraged to incorporate data from the analysis into planning decisions for shoreline areas, especially with respect to shoreline building setbacks. In the interim period prior to the completion of the analysis, the planning commissions are further encouraged to utilize minimum setbacks for multi-family and hotel uses, and any undeveloped property, of 150 feet from any shoreline, or 25 percent of the average lot depth, whichever is greater. For other uses, including single family residences and subdivisions along shoreline property, the Department of Planning staff and the Land Use and Codes Division Plans Examiners are encouraged to consult existing data on shoreline trends when discussing minimum shoreline setbacks with developers. Both episodic and long-term erosion rates should be disclosed to current or prospective purchasers of property to assist with the selection of an adequate shoreline setback. Where shoreline erosion threatens existing structures or facilities, beach replenishment shall be the preferred means of controlling erosion, as opposed to sole reliance on seawalls or other permanent shoreline hardening structures. 9. Maintain coastal open space along the region's shoreline as a scenic amenity and public recreational area. Implementing Actions 3. Develop a master plan for a recreational coastline access. 4. Develop and implement a strategy for sand dune protection. 5. New studies should be commissioned that seek to better understand site-specific causes of coastal erosion. SOCIAL INFRASTRUCTURE Objectives and Policies 2. Ensure adequate public access to shoreline recreation resources by pursuing access ways identified by the County. URBAN DESIGN Objectives and Policies for the Wailuku-Kahului Region in General 4. Establish, expand and maintain parks, public facilities and public shoreline areas.
MAUI	West Maui Community Plan (2022)	Section 2 Policy Framework Goal 2.1: Ready and resilient systems. <i>Policies: Climate Change and Sea Level Rise</i> 2.1.1 Proposed Community Plan Amendments for new development on existing golf course land in Kā'anapali makai of Honoapi'ilani Highway should be approved only for existing shoreline development that is retreating inland because of impacts from sea level rise or other coastal hazards. 2.1.2 To minimize impacts from future coastal erosion, new permanent structures must be located landward of the State-recognized SLR-XA for coastal erosion, except a minimum buildable area must be provided. This restriction does not apply to structures needed as

		part of an approved beach restoration project or cultural project, such as loko i'a, and which must be evaluated on a case-by-case basis. 2.1.3 For redevelopment and new developments within the SLR-XA, developers must proactively: a. Coordinate with the Maui County Department of Planning and adjacent or nearby property owners to understand possible collective relocation of at-risk structures; b. Incorporate results of coordination into development plans by siting any new planned structures out of harm's way; c. Make efforts to not hold the County of Maui and State of Hawai'i liable for any and all future costs associated with maintaining or protecting the property developed within the SLR-XA, including costs associated with retreat, hazard mitigation, and cleanup costs to maintain the health of the nearshore marine environment from material debris originating from the ocean or from the structures' own erosion; and d. Make efforts to waive the ability to ever request shoreline hardening for their property or project from the County of Maui or the State of Hawai'i. 2.1.4 Prioritize projects that provide multiple benefits from resilience actions. 2.1.5 Protect the shoreline and beaches by preserving waterfront land within the SLR-XA as open space wherever possible. <i>Goal 2.5 Safe, healthy, and livable communities for all.</i> Policies 2.5.21 Support public and private efforts to inventory, evaluate, and expand public shoreline access. Require shoreline access to currently privatized shoreline areas by gates and walls 2.5.23 Require public shoreline access to be provided through establishment of both vertical and lateral access through public rights-of-way and public transit corridors as a condition of any SMA Major permit for properties that lie within the Special Management Area and abut the shoreline to the extent permitted by law. Section 3 Growth Framework <i>Growth Plan Objectives</i> Policy 3.1.1 Agricultural land within the growth boundaries should only be converted to urban or rural designations when: b. Conversion will facilitate shoreline retreat by directly replacing an existing development of similar size and character. Public facilities developed under this policy do not need to be of comparable size to the public facilities that they are replacing.
MAUI	County of Maui 2022 Comprehensive Economic Development Strategy (2022)	Priorities & Strategies: Energy Other: Plan for retreat from sea-level rise and increase climate resilience.
MAUI	South Moloka'i Shoreline Erosion Management Plan (2022)	CHAPTER 5: SHORELINE EROSION MANAGEMENT OPTIONS 5.1 SEA LEVEL RISE ADAPTATION STRATEGIES Considering SLR and its potential adverse impacts, the Hawai'i State Office of Planning Coastal Zone Management Program (OP CZM) has identified three main adaptation strategies for addressing coastal hazards: Managed Retreat, Accommodation, and Protection (DBEDT, 2019).

		It is important to consider these strategies in response to the variety and types of impacts that are likely to result from exposure to SLR and shoreline change. It is also important to understand the degree of coastal hazard exposure for those residing on the coastal plain. It is wise to consider the advantages, disadvantages, limitations, and potential natural and cultural impacts of each strategy before implementing an erosion or hazard exposure response. Among these strategies, managed retreat has the greatest certainty of reducing risk and damage from coastal hazards. 5.2 ADAPTIVE REALIGNMENT Managed Retreat or adaptive realignment is a form of relocation that incrementally moves development inland and mauka from the coastline. The strategy involves the creation of a proactive plan to relocate vulnerable buildings, infrastructure, and public facilities out of harm's way by avoiding erosion, flood, and hazard prone areas during a building's lifespan. If the cost of protecting a vulnerable structure from SLR exceeds the cost of relocating the structure out of harm's way, adaptive realignment can make economic and practical sense. If the cost to repair and maintain a building in harm's way exceeds the cost of adapting to natural hazards, it may be prudent to fully implement a managed retreat strategy. These costs should also factor in the human costs of lost life, personal injury, and damage to property and possessions including repetitive losses. Adaptive realignment may occur within the confines of a parcel, between parcels, or within a community. Adaptive realignment can be accomplished in several ways. First, through the physical relocation of structures that are situated in at-risk areas. Second, through the incremental improvement of buildings and infrastructure located outside of hazard prone areas. Third, through policy that restricts development, substantial improvements, or infrastructure upgrades in hazard prone areas. Such policy should prevent inappropriate building practices in at-risk areas, such as slab-on-grade home and building construction, the pushing of erodible soils into mounds for house pads, the filling of natural drainage ways, construction in gulches, and the use of cesspools. The policy should account for the cumulative costs of development including differences in property insurance costs, association maintenance fees, and special assessment or reserve fees. Fourth, the strategy should direct capital improvement and infrastructure enhancements to areas that are not at risk of damage by coastal and natural hazards. Finally, the strategy should incentivize development of new areas that are located outside of hazardous areas and the retirement of buildings in at-risk areas. A planned obsolescence strategy can also be implemented where buildings and infrastructure located within hazardous areas are retired at the end of their useful lifespan rather than repetitively repaired, which may cumulatively cost more than replacement. For DHHL, implementing an adaptive realignment strategy with both short- and long-term policy objectives and implementation strategies could offer substantial efficacy relative to achieving its mission to provide safe, affordable, and functional homesteads.
KAUA'I	Kaua'i Kākou: Kaua'i General Plan (2018)	1.4 Policies to Guide Growth Policy #14: Prepare for Climate Change The best available science for our island indicates we should plan for at least three feet of sea level rise. As an island with the majority of residences and activities located on or close to the coastline, it is important to provide direction to prepare our island for increased coastal hazards and their impacts to business, homes, roadways, drinking water, and ultimately health and safety. 2.1 Future Land Use Objective #8: To increase resiliency by limiting development in areas impacted by future sea level rise. 3.0 Actions by Sector <i>Sector I: Kahakai - Coastal Areas and Shorelines</i> A. Permitting and Code Changes

		1. Minimize coastal hazard risks through planning and development standards that: a. Ensure the safety of individuals, families, and communities within coastal hazard areas and communicate the dangers to residents and tourists. b. Discourage development or redevelopment (including tourist uses) within hazardous areas, while preserving adequate space for expected future growth in areas located outside these areas c. If hazard risks are unavoidable, minimize hazard risks to new development over the life of authorized structures. 2. Avoid or minimize coastal resource impacts through development standards that: a. Protect public beach, rocky coasts, dune, wetland, river, and stream resources in all coastal planning and regulatory decisions. b. Protect the quality of coral reefs through standards that address, prevent, and minimize impacts from development. c. Minimize impacts to view corridors from roads or public places to the ocean and from mauka to makai. d. Preserve and protect Kaua'i's sandy beaches and shorelines from erosion and degradation while ensuring continued public access to them. 4. Seek to preserve natural beach processes and avoid the construction of shoreline protection structures. 5. Do not allow permanent armoring of the shoreline. 6. Include the following guidelines for coastal development in the CZO: c. Protect community accessways laterally along the coast in the buffer zone mauka of the shoreline. B. Plans and Studies 4. Analyze options and criteria for relocation of development outside of hazardous areas along the coast and incorporate findings into a long- term relocation plan. C. Projects and Programs 1. Adequately fund and utilize the Public Access, Open Space, and Natural Resources Fund to actively acquire shoreline lands and accessways for public use and consider development of an "Offer To Dedicate" (OTD) Coastal Easement or Land Banking Program. D. Partnership Needs 2. Address loss of beach areas due to sea level rise through a comprehensive beach management strategy, including local financing plans for beach and dune restoration. 4. Adopt tax policies favorable to public shoreline access. <i>Sector IX. Public Safety & Hazards Resiliency</i> 2. Hazards resiliency A. Permitting and Codes Changes 1. Minimize coastal development in areas of high risk of erosion, flooding, tsunami inundation, and sea level rise. 3. Global Warming and Climate Change Adaptation A. Permitting and Code Changes 3. Identify lands/areas that may serve as buffers from coastal hazards and restrict development within them. 6. Within the Special Management Area (SMA) and Zoning Permit program: a. Require applicants to analyze coastal hazard impacts and include mitigation in permit applications. b. Impose development conditions upon permits that minimize the impacts of exacerbated flooding, storm surge, and erosion due to sea level rise. c. Strengthen rebuilding restrictions for non-conforming structures such that these structures are relocated a safe distance from the shoreline in hazardous areas.

		d. Evaluate conditions that prohibit shoreline armoring. 7. Update the subdivision standards to: a. Restrict residential subdivisions in areas prone to current and future coastal hazards, including sea level rise. b. Outside of these natural hazards areas, provide for conservation subdivisions or cluster subdivisions in order to conserve environmental resources. B. Plans and Studies 2. Identify priority planning areas where resources and planning efforts need to be focused and identify how and where to use adaptation strategies such as accommodation, retreat, and protection. 3. Encourage strategic retreat and relocation to safer areas based on the results of the assessments above. D. Partnership Needs 3. Consider incentive programs, such as a tax incentive program or a transfer of developments rights program, to relocate potential or existing development out of hazardous or sensitive areas. Consider creating a relocation fund through increased development fees, in lieu fees, or other funding mechanisms. 4.0 Implementation and Monitoring Objective #8: 8. To increase resiliency by limiting new development in areas impacted by future sea level rise.
KAUA'I	Kaua'i Multi-Hazard Mitigation and Resilience Plan (2020)	Mitigation Actions: Action KC20— Develop and maintain public awareness of hazards, vulnerability, mitigation and adaptation strategies. Action KC31— Pursue beach and dune restoration to mitigate impact from coastal hazards and sea level rise.
KAUA'I	Līhu'e Community Plan (2015)	N/A
KAUA'I	South Kaua'i Community Plan (2015)	Policies & Guidelines: Natural & Cultural Heritage Resources 4.5.3.1 Risk Assessment and Adaptation a. Develop a community-scale risk and vulnerability assessment for coastal hazards due to climate change and sea level rise (SLR) in South Kaua'i with particular focus on critical infrastructure facilities (roads, water, wastewater, power, and public facilities such as hospitals, fire, police, schools) and the vulnerability of beach resources and resort facilities. Explore the full range of options to manage the impacts from climate change and SLR including accommodation, protection, retreat/restoration, prevention, and procedural solutions. Examples include: - o Coastal hardening, which can lead to exacerbating erosion and beach loss - o Asset protection, such as building higher levies (which may still fail in extreme events) - o Shoreline/hazard retreat, which may involve loss of property use and value and high construction costs - o Beach nourishment, which may have high recurring costs if systems are not internally stabilized b. Develop an adaptation plan for areas with high SLR-related hazards, including coastal areas facing increased erosion and wave inundation. Alternative roadway alignments mauka should be explored for areas projected to be impacted by SLR and inland flooding. 4.5.3.3 Design and Construction a. Update design standards and incentives to change building practices and encourage hazard mitigation. b. Design improvements within the VE Flood Zone to reduce and/or minimize the risk of damage and injury due to shoreline inundation. Avoid high-value development in VE and other high risk areas if possible.

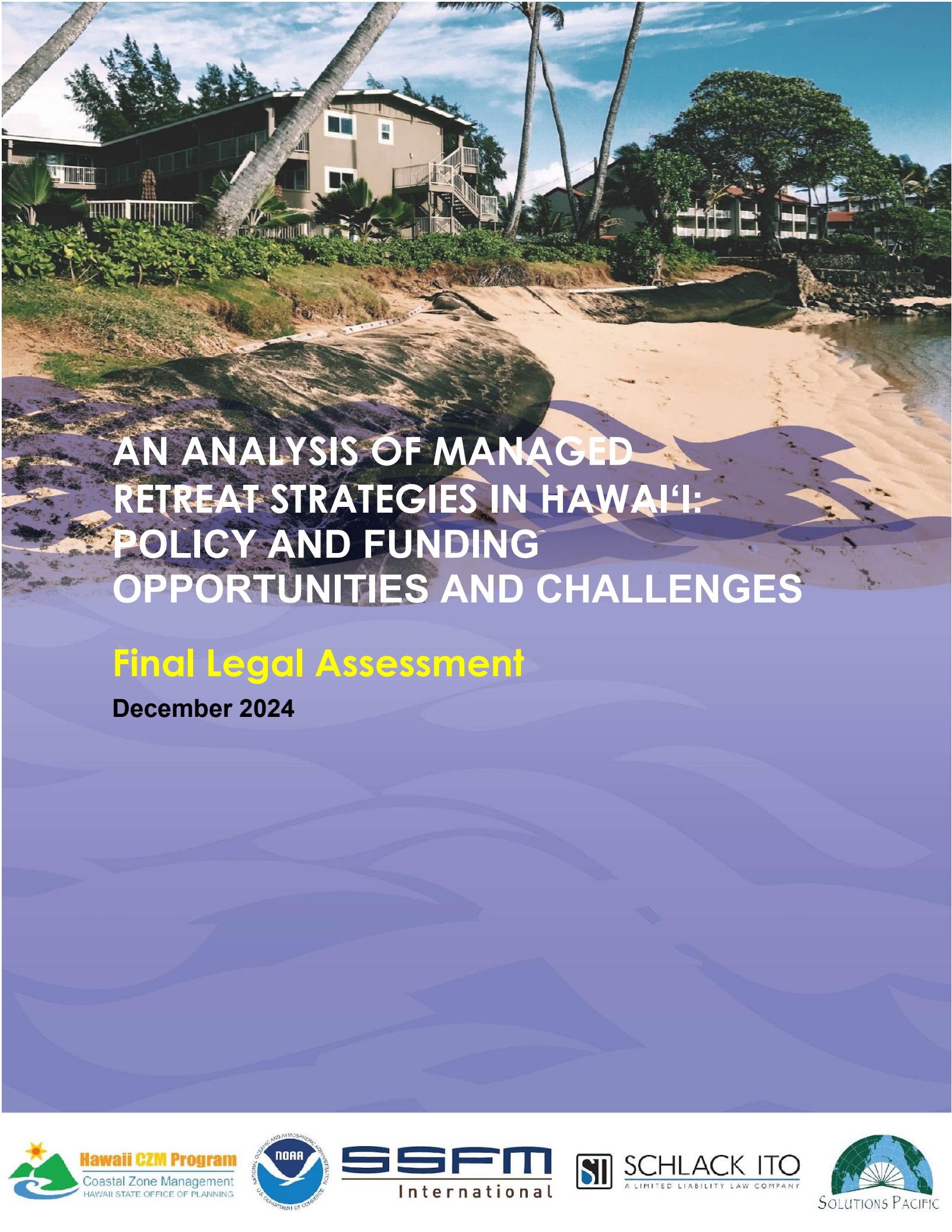
		c. New shoreline protection/hardening structures such as seawalls and revetments should be prohibited. Discourage hardening on or of intact dunes. Implement offshore solutions that take advantage of natural processes to build back the beach such as groins, breakwaters, or artificial reefs. d. Mitigate hazards during infrastructure planning. e. Retrofit buildings to withstand various hazard conditions or adapt to accommodate SLR and natural hazards.
KAUA'I	West Kaua'i Community Plan (2020)	Part II: Regional Policies <i>D. Resiliency</i> <i>Resiliency Policy #1.</i> Adapt West Kaua'i's low-lying neighborhoods for climate change impacts and lay the groundwork for managed retreat. How: To increase neighborhood resiliency, improved development standards and managed retreat strategies should be employed. Identify areas that are highly vulnerable to coastal hazards, including but not limited to SLR, coastal erosion, high wave run-up, passive flooding, and an increased frequency and intensity of storms. Ensure that if development occurs within these areas, the development is constructed in a manner that safely mitigates those impacts. Managed Retreat must shift new greenfield development inland while discouraging development in vulnerable and exposed residential areas. Managed retreat also means planning for the gradual relocation of homes and infrastructure to safer locations. <i>Resiliency Policy #5.</i> Ensure the long-term resiliency of the land transportation network. How: How: Long-term options for roadways include relocation, raising, and armoring, each with its own set of impacts and feasibility issues. Detailed feasibility studies of these options are needed. Other projects include addressing nuisance flooding on roads and highways and the development of alternative access or evacuation routes. Part III. Town Plans <i>Waimea</i> d. Support a master-planned new community mauka within the Walkable Neighborhood designation to accommodate workforce housing, planned growth, and a potential SLR managed retreat area Part VI. Maps <i>Land use designation: Coastal Edge</i> Description of Coastal Edge designation: The Coastal Edge land use mirrors the proposed Special Treatment Coastal Edge (ST-CE) Zoning District and identifies vulnerable and exposed coastal neighborhoods based on a managed retreat framework. It includes all State Land Use Urban District lands located makai of a public road and within the SLR-XA at 3.2 feet. The ST-CE Zoning District requires additional performance and permit processes for development to insure that development is constructed in a manner that safely mitigates impacts from coastal hazards, including but not limited to, SLR, coastal erosion, high wave run-up, passive flooding, and an increased frequency and intensity of storms. Infrastructure improvements such as transportation and park improvements will be allowed so long as it advances the goals of this plan related to resiliency.
HAWAII	Hawai'i County General Plan (2023 DRAFT)	Climate Change Goal Objective 3.8 Improve the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options. Policy 3.8 Partner with communities to develop adaptation strategies (e.g., protection, accommodation, managed retreat, and preservation) for vulnerable areas including conducting vulnerability assessments and assessing land use and land availability. Policy 3.11 Partner with government (e.g., State Office of Planning and Sustainable Development (OPSD)), private and nonprofit

		agencies, and other stakeholders to analyze conservation buffers to accommodate shifting native habitats impacted by climate change, particularly wetlands and high-elevation forests. <i>Priority Action 3.b</i> Support and partner with government, private and nonprofit agencies, and other stakeholders on research for adaptive policies and technology that increase resilience. <i>Priority Action 3.d</i> Adopt a land acquisition program with potential leaseback options for the purchase of hazard-prone locations or those with beneficial attributes for climate adaptation and mitigation. Objective 7 Reduce the threat to life and property from natural hazards and disasters Policy 7.1 Enact additional land use and building structure regulations in areas vulnerable to severe damage due to the impact of waves or inundation. Policy 7.2 Review land use policy as it relates to floodplains, high surf, and tsunami hazard areas. Policy 7.6 Reduce development intensity in identified high-risk hazard areas. <i>Priority Action 7.b</i> Adopt natural hazard overlay zones and set appropriate conditions for land use, siting, and design within high-risk zones.
HAWAII	Integrated Climate Action Plan (2023)	Climate Cascade 4: Sea Level Rise Intervention Point 4A. New Development 4A1. Improve climate hazard risk knowledge Actions: 4A1.1 Monitor and map landslide events along the shoreline 4A1.2 Conduct shoreline change studies 4A1.3 Map shoreline regions 4A1.4 Update urban growth models in the General Plan for potential influx of climate migrants from Pacific Island countries 4A2. Update County codes, regulatory standards, and policies requiring all coastal development to incorporate measures to reduce risk from coastal hazards and sea level rise Actions: 4A2.1 Revise shoreline setbacks to protect public safety from flooding and cliff failure, protect native ecosystems including GDEs, and comply with new State requirements (Rule 11) 4A2.2 Revise subdivision rules to require sea level rise mitigation in new subdivisions in flood prone areas (Chapter 23) 4A2.3 Integrate sea level rise risk reduction policies and actions in General Plan update 4A2.4 Update floodplain management requirements (Chapter 27) to incorporate new hazard mitigation requirements for sea level rise (see also: 3A2.2, 3F2.2, and 4F1.3) 4A2.5 Use overlay hazard zones to develop conditions for land use and design within high-risk zones and within or adjacent to urban growth areas outside of high-risk areas - Adopt the SLR Area as an overlay for planning and rules (Chapter 25) - Integrate hazard overlays in General Plan update - Review/update hazards overlay, as needed, based on the 5-year in County Hazard Mitigation Plan update 4A3. Set aside shoreline areas as open space to benefit natural resources and public access and reduce risk to structures from sea level rise Actions: 4A3.1 Identify funding sources and mechanisms to acquire coastal parcels in areas exposed to coastal hazards exacerbated by sea level rise

	4A3.2 Identify receiving areas for transfer of development rights from areas exposed to coastal hazards and sea level rise 4A3.3 Identify need for expansion and provide additional shoreline access points - Maintain mapping of all County existing shoreline access points and make accessible to the public on-line Intervention Point 4B. Cultural and Historic Resources 4B1. Assess risks to cultural and historic resources in sea level rise prone areas Actions: 4B1.1 Conduct a sea level rise vulnerability assessment of cultural and historic resources in coastal hazard prone areas beginning with County lands - Form a Permitted Interaction Group under the Cultural Resources Commission to develop protocols for assessment 4B2. Develop adaptation strategies for cultural and historic reso Actions: 4B2.1 Develop place-based cultural adaptation protocols with Aha Moku council, cultural practitioners, and lineage descendants to proactively address impacts to cultural and historic resources beginning with County lands Intervention Point 4C. Parks and Recreational Areas 4C1. Upgrade/relocate parks and park facilities exposed to sea level rise and other coastal hazards Actions: 4C1.1 Assess sea level rise risks to County parks with high exposure and risk to sea level rise - Develop assessment tool that includes identification of potential adaptation strategies and multiple public benefits - Use assessment tool for Kahalu'u Beach Park (North Kona) Intervention Point 4D. Water and Wastewater Systems 4D1. Upgrade/relocate water infrastructure exposed to sea level rise Actions: 4D1.1 Retrofit/relocate water infrastructure county-wide - Assess vulnerability of water mains subject to inundation by sea level rise and review every 5 years - Coordinate with DPW and DEM on road retrofit/realignment for Hilo Bay waterfront, Kailua-Kona and other locations vulnerable to sea level rise 4D2. Upgrade/relocate wastewater systems exposed to sea level rise Actions: 4D2.1 Expand wastewater lines in Hilo and Kona wastewater service areas to connect those converting from OSDS - Assist DOH link County residents to federal and State funding to upgrade on-site disposal systems in wastewater service areas - Conduct wastewater facility planning and resilience assessment by wastewater service area 4D2.2 Assess vulnerability of wastewater gravity mains in South Hilo 4D2.3 Assess vulnerability of wastewater forcemains/pump stations in South Hilo Intervention Point 4E. Roads and Bridges 4E1. Upgrade/relocate roads and bridges vulnerable to sea level rise and other coastal hazards Actions: 4E1.1 Develop adaptation priorities and options for coastal roads and bridges at risk to sea level rise

		4E1.2 Reassess sea level rise risks to Kalanianaʻole infrastructure improvements, South Hilo Intervention Point 4F. Existing Development 4F1. Reduce repetitive flood loss to structures and properties Actions: 4F1.1 Expand and maintain home buyout program established for volcanic hazard recovery as a long-term program to incorporate properties affected by sea level rise 4F1.2 Review and revise non-conforming use clauses in all County codes for rebuilding or repairing damaged structures to reduce repetitive flood loss 4F1.3 Update floodplain management requirements (Chapter 27) to adopt lower threshold for substantial improvements/damages based on structure value with no lateral expansion of building footprint (see also: 3A2.2, 3F2.2, and 4A2.4)
HAWAI'I	Hawai'i County Multi-Hazard Mitigation Plan (2020)	Mitigation Actions: Action HC23—Codes and Policies for Sea Level Rise: Update county codes and policies to require that all coastal development consider and incorporate measures to address sea level rise. Action HC25—Shoreline setback for Coastal Erosion: Update county shoreline setback policies to include coastal erosion in order to better regulate development in the high-risk areas. Action HC26—Reduce development in high-risk hazard areas: Update and overlay hazard zones and develop conditions for land use and design within high risk zones and within or adjacent to urban growth areas outside of high-risk areas.

APPENDIX B: LEGAL ASSESSMENT



AN ANALYSIS OF MANAGED RETREAT STRATEGIES IN HAWAII: POLICY AND FUNDING OPPORTUNITIES AND CHALLENGES

Final Legal Assessment

December 2024

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1 INTRODUCTION

This Legal Assessment provides an assessment of laws associated with various strategies to implement managed retreat. This assessment is undertaken pursuant to a project for the State Office of Planning and Sustainable Development (OPSD) Coastal Zone Management Program entitled “An Analysis of Managed Retreat Strategies in Hawai'i: Policy and Funding Opportunities and Challenges” (the Project). The Project includes two additional related assessments, the Financing and Funding Assessment and the Policy Assessment. The Legal Assessment will provide a foundation for the subsequent Legal Framework, which is to be applied to two illustrative Case Studies involving sites on O'ahu and Maui. The key points and conclusions from this Legal Assessment may be summarized as follows:

- Although there is no definition of “managed retreat” in Hawai'i law at this time, there are a range of relatively discrete managed retreat and associated laws which are reviewed in this Legal Assessment;
- > Managed retreat operates both as a voluntary and collaborative strategy rather than a mandate. Voluntary buyouts or easements, as examples, are rooted in fair market value compensation and negotiations, which may take into consideration true value given the climate risk, and that ensure willing participation that minimizes legal exposure while achieving public trust objectives. This is distinct from regulatory actions, like rezoning or setbacks, which impose restrictions on use and may trigger regulatory takings analysis;
- > Regulatory takings claims are widely discussed as a potential impediment to the implementation of managed retreat. However, this Legal Assessment concludes that, in general, there continue to be robust legal defenses to such claims grounded in the public trust doctrine and other legal principles, in addition to the voluntary nature of certain managed retreat programs or approaches and strategies that are rooted in protection of health and safety, natural resources, and public trust principles;
- The public trust doctrine and Native Hawaiian traditional ecological knowledge are poised to play critical, yet distinct, roles in providing legal support for managed retreat. While the public trust doctrine serves as a defense to regulatory takings claims and as a foundational legal principle broadly supportive of managed retreat, the legal operationalization of traditional ecological knowledge is closely tied to the acknowledgment and protection of Native Hawaiian access rights for cultural practices.
- The results of this assessment demonstrate that, despite certain legal challenges in addition to regulatory takings claims, managed retreat is reasonably well supported by existing law and policy.

Each of these points is further discussed below.

2 BACKGROUND TO LEGAL ASSESSMENT

2.1 MANAGED RETREAT, LAWS AND STRATEGIES

The term “managed retreat” derives from coastal land use planning, natural hazards management, and engineering and refers to the planned physical movement of existing structures and shifting of development patterns away from areas subject to coastal hazards (Hino et al., 2017; Esteves, 2014). Unlike ad hoc responses to hazards, managed retreat involves long-term planning, community engagement, and strategic decision-making to ensure that relocation aligns with broader resilience and land use goals. As mentioned above, there is currently no Hawai'i statutory definition of the term managed retreat at this time, although this Assessment discusses potential of a Hawai'i managed retreat statute which would likely include such a definition.

The term “laws,” as used in this Legal Assessment, refers to federal and state constitutional provisions, statutes, administrative rules, county ordinances, and reported decisions (collectively, “laws”). Laws include Hawai'i as well as state jurisdictions outside of Hawai'i.

Finally, the term “managed retreat strategies” or “strategies,” as used in this Legal Assessment, refers to various policies, plans, regulations, laws and other similar measures that promote and support managed retreat. Many of the strategies examined herein are drawn from OPSD's Guide to Coastal Hazard Adaptation Strategies Suitable for Hawai'i's Coastlines (OPSD, 2023).

2.2 RELATION TO FINANCING AND FUNDING ASSESSMENT AND POLICY ASSESSMENT

This Legal Assessment includes the strategies discussed in the Financing and Funding Assessment and other laws and strategies that may not be discussed in that assessment but that are supportive of or related to managed retreat.

The Policy Assessment focuses on planning and regulatory strategies which are also supportive of or related to managed retreat. Given the legal nature of these planning and regulatory strategies, there may be overlap between the laws addressed in this assessment and the Policy Assessment and the two assessments should be read in conjunction.

2.3 ORGANIZATION OF LEGAL ASSESSMENT

This assessment is organized around three main topic areas, which are:

- An overview and assessment of legal defenses to regulatory takings claims challenging the implementation of managed retreat strategies;
- The public trust doctrine and native Hawaiian traditional ecological knowledge (“TEK”) not only as defenses to regulatory takings claims, but also as foundational legal principles that are broadly supportive of managed retreat strategies; and
- An assessment of laws associated with the managed retreat strategies under consideration in this Project.

3 REGULATORY TAKINGS CLAIMS ARE UNLIKELY TO POSE A MAJOR LEGAL BARRIER TO THE IMPLEMENTATION OF MANAGED RETREAT

3.1 INTRODUCTION

A potentially critical aspect of the legal assessment of managed retreat concerns the requirement under the U.S. and Hawai'i Constitutions that the government compensate private property owners for unpermitted “takings” of their properties. The Constitutional takings prohibition is considered a cornerstone of U.S. property law and at the same time there is mounting public interest in climate change adaptation to address coastal hazards and protect public trust resources. These two issues converge on Hawai'i's shorelines, where stakeholders must grapple with the enforcement of regulations in the context of unprecedented changes driven by climate-induced sea level rise (“SLR”). Accordingly, the following outlines the basic parameters of takings law as an aid to assessing how emerging managed retreat strategies in Hawai'i may continue to interact with this fundamental legal doctrine.

It should be emphasized that ultimately this assessment concludes that regulatory takings claims are unlikely to pose a major barrier to the implementation of managed retreat strategies. This is due primarily to Hawai'i's robust public trust doctrine and other related factors that are similarly supportive of managed retreat in the context of takings claims. For further clarity, it should be noted that the takings analysis may vary as between areas makai or seaward of the shoreline as compared to setback areas that are mauka or landward of the shoreline, with the latter facing potentially greater risk of exposure to takings claims. While the analysis of these claims largely favors government action even against takings claims, this analysis also recognizes that the claims themselves can create significant administrative burden for the State, even if the State is ultimately successful.

3.2 REGULATORY TAKINGS CLAIMS AND MANAGED RETREAT

3.2.1 Background to regulatory takings

The prohibition against takings is found in the “Takings Clause” of the Fifth Amendment to the U.S. Constitution, which states that property shall not “be taken for public use, without just compensation.”¹ The Hawai'i State Constitution similarly provides that “[p]rivate property shall not be taken or damaged for public use without just compensation.”²

The takings clause does not prohibit government from taking private property; it simply requires that property owners be compensated for the value of the property taken. According to the U.S. Supreme Court, the takings clause “was designed to bar government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole.”³ The threat

¹ U.S. Const. amend. V.

² Haw. Const. art. I § 20.

³ *Armstrong v. United States*, 364 U.S. 40, 49 (1960).

of required compensation, however, may thwart or delay government action including the implementation of managed retreat strategies.

Government action may constitute a taking where the government requires or authorizes property to be physically occupied or invaded for a public purpose, such as causing property to be flooded or allowing the installation of cable television equipment.⁴ Such government actions involving these types of physical invasions differ from regulatory takings and thus fall outside the scope of the following discussion.

Of brief mention are submerged lands, the title of which has been found to be held by the State in trust for the benefit of all Hawai'i's people under the public trust doctrine. Shorefront properties at risk of erosion are subject to said lands becoming submerged as a result of erosion and sea-level rise and, as a result, becoming a part of the public trust. See generally, *Sotomura I*, *In Re Castle*, and *Sotomura II*. Under these cases, the State courts upheld the recertifying of coastal boundaries as a result of erosion, where newly submerged lands as a result of rising seawater become a part of the public trust. This was upheld by the Federal court in *Napeahi*, which adopted the rationale of the Hawai'i State courts to hold that where natural erosion had occurred, the property would become State-owned land.

When government-led managed retreat strategies, for example, appear to go “too far” private property owners may threaten or take legal action based on claims that denial of a permit, imposition of a permit condition, or similar development restrictions constitute a regulatory taking. Such claims typically allege government action reduces allowable uses, diminishes private property values, or unfairly require the owner to provide a public benefit.

As the U.S. Supreme Court recognized long ago, “government hardly could go on if to some extent values incident to property could not be diminished without paying for every such change in the general law”⁵ At the same time, however, “while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking.”⁶

3.2.2 Eminent domain

Apart from but similar to “regulatory takings,” or takings claims based upon the implementation of government regulations, takings law also encompasses government condemnation of private property by eminent domain for a highway, public works project, or other public purpose – such as managed retreat.

As discussed below, managed retreat strategies may involve the acquisition of shoreline properties impacted by coastal hazards or otherwise suitable to be included in the implementation of managed

⁴ For example, in *Loretto v. Teleprompter Manhattan CAV Corp.*, 458 U.S. 419, 441 (1982), the U.S. Supreme Court determined that a New York law requiring property owners to allow television cable companies to install cable facilities on their apartment buildings was a taking, even though such facilities only occupied about one and a half cubic feet of the property at issue. Such government action may constitute a taking regardless of how minimal the intrusion or how important the government interest at stake, and is considered a *per se* or categorical taking.

⁵ *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 413 (1922).

⁶ *Id.*

retreat strategies. This could be done by the government based on its legal authority based on eminent domain statutory law and implemented through its powers of condemnation.

In such instances, owners of the properties to be acquired through the managed retreat eminent domain action could, if necessary, file inverse condemnation actions seeking compensation from the government. In a direct condemnation proceeding (typically referred to simply as "condemnation"), a government takes property by bringing an eminent domain action. By contrast, inverse condemnation is a remedy for property owners when a government takes or damages a property for public use without having brought an eminent domain proceeding.

Inverse condemnation is both a legal concept and cause of action used by property owners when government action damages or decreases the value of private property without government first obtaining ownership of the property through the use of eminent domain. Unlike the typical eminent domain case, the property owner is the plaintiff and not the defendant. Like direct condemnation actions, inverse condemnation actions are filed against the federal government under the Takings Clause of the 5th Amendment to the U.S. Constitution and Article I, section 20 of the Hawai'i Constitution.

Historically, the use of eminent domain has elicited a high degree of risk aversion from decisionmakers at state and local level. This aversion may be attributable to political and economic factors, as well as legal uncertainties. Public opposition, litigation, and even the potential threat of financial liability may deter officials from sanctioning eminent domain as a viable tool, even when it serves public trust objectives. Voluntary buyouts and other incentives may present as more palatable approaches in this situation.

3.2.2.1 Public purpose

Government agencies using eminent domain power to condemn properties for purposes of implementation of managed retreat must demonstrate that it serves a public purpose. The public purpose requirement is discussed in reported judicial decisions. Generally, the public purpose doctrine has been intentionally broad. Courts have employed a strong tone of federalism in this determination, most often deferring to State and local laws and lawmakers for guidance⁷. In Berman⁸ and Midkiff⁹, the Supreme Court most notably categorized blight, which presents its own challenges in a lack of a definition of the term, as well as the "social and economic evils of a land oligopoly" to guide its analytic framework of public purpose. While eminent domain has historically been used for purposes such as infrastructure projects and land redistribution, its application to managed retreat requires a clear articulation of how relocation serves public trust objectives, such as protecting coastal resources and ensuring public access. Establishing a strong public purpose justification is essential to balance private property rights with the broader societal need for climate resilience and long-term hazard mitigation.

⁷ See generally Kelo v. City of New London, 545 U.S. 469 (2005).

⁸ Berman v. Parker, 348 U. S. 26 (1954).

⁹ Hawaii Housing Authority v. Midkiff, 467 U. S. 229 (1984)

3.2.2.2 Just compensation

Government agencies using eminent domain power to condemn properties for purposes of implementation of managed retreat must also provide just compensation to the affected property owner. The just compensation requirement is discussed in reported judicial decisions.

Just compensation is owed any time a taking occurs, and as a general rule, this will be commensurate with the fair market value of a particular property (*City and County of Honolulu v. Market Place, Ltd.*, 55 Haw. 226, 517 P.2d 7 (Haw. 1973) (citation omitted) (“as a general rule the proper method of determining just compensation for property subject to several, independently held interests is to value it as an unencumbered freehold estate, with allocation of fair market value thus determined to be made thereafter among the various interests.”). This would apply for both total physical and total regulatory takings. This general rule is applied in Chapter 101 of the Hawai'i Revised Statutes, which provides the eminent domain requirements that condemning entities must follow.

Generally, HRS §101-23 details how a property owner's total or partial damages would be assessed, although which factors are and are not considered in determining valuation has been developed through case law. For example:

- > Rental value of lands in the vicinity is generally inadmissible (74 F.2d 596)
- > No compensation for business losses or leases (72 F. Supp. 903)
- > Capitalization of rental value is evidence of market value (132 F.2d 699)
- > Rental value is evidence of market value (91 F.2d 85)
- > Market value may include adaptability of land for subdivision purposes (43 H. 195)
- > If taking does not affect value of remaining property, evidence as to its value is inadmissible (122 F. 581)
- > In absence of evidence, value of land encumbered with roadway easement is nominal (55 H. 305, 517 P.2d 779)
- > Land cannot be valued alone without buildings (182 F.2d 172)
- > Improvements have only such value as they add to land (48 H. 444, 404 P.2d 373)
- > Evidence of cost of development of land for its best use is admissible to show diminution of market value (53 H. 582, 499 P.2d 663)
- > County general plan map indicating possible redesignation of subject land, even though not adopted, was a document likely to be considered by informed sellers and buyers and thus admissible; no error in admitting evidence of development concept and plan for property adjoining condemned land; where paucity of comparable sales, allowance of discussion of transaction occurring several years after subject property's condemnation not necessarily an abuse of discretion (64 H. 168, 637 P.2d 1131)

Courts have yet to provide an exact formula for partial regulatory takings claims; however, as discussed in Section 3.2.4, prevailing on such a claim would be rare. It can be assumed that, if a partial regulatory takings claim was upheld, just compensation assumedly would be based on any relevant market analysis and constitute less than the full market value of a property. Each County may have requirements for both the utilization of eminent domain and determination of just compensation, and political will, as mentioned in Section 3.2.2, may be a factor in decision making that authorizes exercising this authority.

3.2.2.3 Assessment

The managed retreat strategies under consideration may include the acquisition of private property by governmental agencies exercising the power of eminent domain through condemnation proceedings. To the extent this occurs, it appears that the government agencies are likely to possess sufficient legal authority under existing eminent domain statutes, as well as reported judicial decisions. Financing or obtaining the necessary funding for such acquisitions is expected to be a greater impediment than any lack of legal authority.

Opportunities may be further explored in future policy recommendations and framework stages related to strengthening laws around how property assessments and appraisals consider changing environmental and regulatory conditions in response to sea level rise.

3.2.3 Lucas "Total Loss" Test

The U.S. Supreme Court has developed several tests to determine when a regulation goes "too far" and a regulatory taking has occurred.¹⁰ Two tests are relevant to this Legal Assessment. The first is the "total loss of all beneficial use" test set forth in the Court's seminal *Lucas v. South Carolina Coastal Council* decision.¹¹ The second test, discussed below, is the three-factor test set forth in the Court's *Penn Central* decision.¹²

Where an actual taking of private property by the government in exercise of its powers under the Fifth Amendment occurs, claims challenging the legality of that taking are deemed to be "ripe" - whereby an action has demonstrably been taken and a potential harm is able to be asserted. Assuming a claim is ripe, the U.S. Supreme Court has established a categorical rule under which government regulation is an unpermitted taking if it denies all economically beneficial or productive use of the property.¹³ In such circumstances, the court may conclude the private property owner has been "called upon to sacrifice all economically beneficial uses in the name of the common good."¹⁴

In the *Lucas* case, the South Carolina legislature enacted a Beachfront Management Act which prevented plaintiff Lucas from erecting any permanent habitable structures on two residential oceanfront lots. Lucas challenged the state law to the U.S. Supreme Court, which held that an action that denied "all economically beneficial or productive use of the land" was a "categorical" taking that requires compensation to the landowner.¹⁵

The *Lucas* "total loss" does not apply, however, if the regulated activity is already prohibited or constrained by "background principles" of the state's common law regarding property and nuisance – which for purposes of this assessment would most notably include the Hawai'i public trust doctrine.

The *Lucas* court provided two examples of nuisance-like activities which a government could properly prohibit even if no economically beneficial uses of the property remained: operating a nuclear power

¹⁰ *Lingle v. Chevron U.S.A.*, 544 U.S. 528 (2005).

¹¹ *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003 (U.S. 1992).

¹² *Penn Central Transportation Co. v. New York City*, 438 U.S. 104 (1978).

¹³ *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003 (U.S. 1992).

¹⁴ *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1019 (U.S. 1992).

¹⁵ *Id.*

plant located on an earthquake fault line, and operating a landfill in a manner that resulted in flooding on neighboring properties. In effect, the *Lucas* court specifically recognizes government prohibitions that do “no more than duplicate” the effects of existing remedies against nuisance.

As a practical matter, regulatory decisions rarely leave property deprived of all economically beneficial use and therefore few regulatory actions by government officials violate the *Lucas* “total loss” takings test.

3.2.3.1 Assessment

The breadth of the Hawai'i public trust doctrine serves as the bedrock for the argument that the State already possesses the power to abate nuisances and, more importantly, threats to the resources that fall squarely within the public trust. Consequently, managed retreat measures taken by the State government that would arguably remove any remaining economically beneficial use, such as prohibition of new development in identified shoreline erosion areas established by shoreline setbacks, would not violate the total loss test to the extent that the managed retreat measures would align with the protections identified under the public trust doctrine.

Apart from complete condemnation of coastal properties, the *Lucas* total loss test is unlikely to pose a major impediment to the implementation of regulation-based managed retreat, in part because the regulations in most circumstances are unlikely to leave the property owner with no economically beneficial use, as that term has been interpreted in reported judicial decisions. In *Leone v. County of Maui*, the County was found not to have deprived property owners of all economically beneficial use, because while the property owners were prevented from building a single-family residence as a result of regulatory restrictions, sufficient evidence was shown that the property had value as an investment property and could potentially be used for commercial purposes, like as a park. Additionally, regulations that leave a portion of a property useable are likely not to be determined to be a total loss. Even in a managed retreat context, properties are likely to continue to have some use for non-residential purposes, including recreation, cultivation, and various conservation uses. Nevertheless, the following section lays out the framework for partial takings.

3.2.4 Penn Central Three-Part Test

More important for regulatory takings claims involving managed retreat than the *Lucas* “total loss” test is the three-part test set forth by the U.S. Supreme Court in its landmark *Penn Central* decision. In that decision, the Court established the principal guidelines for resolving regulatory takings claims that do not fall within the physical takings or *Lucas* rules.

The Court set forth three factors which must all be met to determine whether a “partial” regulatory taking has occurred: 1) the economic impact of the regulation; 2) the character of the government action; and 3) the degree of interference with the owner’s “reasonable investment-backed expectations.” This is a multi-factor legal standard and it may not be necessary to prevail on all three factors for a taking to be found or not found by the court.

3.2.4.1 First Factor: Economic Impact of the Regulation

The first factor, concerning the economic impact of the regulation, requires the regulation to have a relatively severe economic impact for a taking to be found. The court must weigh the public interest,

which includes but is not limited to the health, safety, morals, or general welfare of the public, in the government action against the interest of the private owner. The United States Supreme Court also highlighted, in the case of prohibiting certain trees that threatened a cash crop critical to a State's economy¹⁶, that the State was within its constitutional powers to negatively impact one class of property without compensation for the purpose of saving another class of property which was determined to be of greater value to the public. Assuming the regulation has a strong public purpose, such as managed retreat or coastal hazard mitigation, the court may conclude that the restriction's public benefits exceed the costs to private property owners.

Decisions from other jurisdictions illustrate how a court may evaluate the economic impact of a regulation to deny a regulatory taking claim. For example, a Michigan court rejected plaintiff's claim that denial of its request for a permit to fill a wetland on its property constituted a taking. The court found that "a reduction in the value of the regulated property is insufficient, standing alone, to establish a compensable regulatory taking," and affirmed a relatively high threshold for determination of an allowable economic impact on a property by a regulatory regime. Although the regulation caused an estimated 60% reduction in property value, the court opined that a reduction in value in the range of 90% would be necessary to establish a compensable taking.¹⁷

In another example, a North Dakota court evaluated the economic impact on a property by comparing its fair market value immediately before a government moratorium was implemented to the market value immediately after the action was terminated and concluded no taking had occurred. The court found that the economic impact on the land did not constitute a taking because the property owner sold more lots at higher prices after the moratorium was lifted than before its termination.¹⁸

3.2.4.1.1 Assessment

The first factor of the three-part *Penn Central* test is unlikely to present a major impediment to the implementation of managed retreat provided they demonstrate that they are strongly in the public interest. Managed retreat is consistent with and supportive of the public interest as related to protection from coastal hazards, the exercise of traditional and customary rights, the protection of public trust resources, and maintaining overall public safety.

As seen in communities that are currently under risk of shoreline erosion and sea level rise, inaction by the government or actions by private landowners, including the construction of seawalls or other erosion mitigation measures, result in direct and measurable impacts to neighboring properties. Given the value of beach and dune protection within the scope of the public trust, it is unlikely that prioritizing the economic value of near-shore resources over the economic value of individual beachfront properties would present a significant obstacle to the implementation of managed retreat.

3.2.4.2 Second Factor: Character of the Government Action

Under this factor, a court must evaluate the government purpose or "character" of the action, including whether it is a physical or regulatory taking.

¹⁶ *Miller v. Schoene*, 276 U.S. 272 (1928) .

¹⁷ *K&K Construction, Inc. v. Dept. of Environmental Quality*, 705 N.W. 2nd 365, 380-81 (2005).

¹⁸ *Wild Rice River Estates v. City of Fargo*, 705, N.W. 2nd 850, 858 (2005).

Generally, there is a hierarchy of government purposes, ranging from protecting public health and safety to promoting scenic views and aesthetics. As the U.S. Supreme Court stated in *First English v. Los Angeles*, “If there is a hierarchy of interests the police power serves – and both logic and prior cases suggest there is – then the preservation of life must rank at the top.”¹⁹ Preventing loss of life and property due to flooding carries more weight than protecting aesthetic values.²⁰

Similarly, in its landmark *Penn Central* decision, the U.S. Supreme Court carefully scrutinized the character of the government action at issue and found it sufficient to withstand a takings claim. In that case, the New York City Council concluded that the preservation of historic city landmarks by means of its historic preservation law benefited “all New York citizens and all structures, both economically and by improving the quality of life in the city as a whole.”²¹ The owners of the historic Pennsylvania Station building sued, claiming the government restrictions prevented them from developing a high rise in the airspace above the historic station.

The Court concluded that denial of construction of a high rise in the airspace above the building was not a taking in part because the building owners were sufficiently compensated through the various public benefits arising from the regulation. In addition, the court assessed the economic impact of the landmark protection law in terms of the owner’s entire property interest, which included other parcels and other possible uses of the property.²² Transferable Development Rights (TDRs) were offered as compensation to Penn Central, which Penn Central deemed insufficient compensation. The Court disagreed, holding that not only was it a valid compensatory benefit, but it also mitigated the economic impact of the restrictions.

In *Gove v. Zoning Board of Appeals of Chatham*, a court found no taking where the regulation at issue was firmly grounded in protecting public health and safety. The property owner claimed a zoning board effectuated a taking of its lot by not allowing residential construction. The regulation was designed to protect coastal areas and public health and safety and reduce the risk to people and property from “extreme high tides” and “rising sea level.”

Before ruling, the court considered expert testimony that during a large storm a building on the lot at issue “could certainly be picked up off its foundation” and be carried away, “potentially damaging” neighboring properties. As a result, the court found a reasonable relationship between the regulation prohibiting residential development on the lot and a legitimate state interest. *Gove v. Zoning Board of Appeals of Chatham*, 831 N.E. 2nd 865, 871 (2005).

3.2.4.2.1 Assessment

The second factor of the three-part *Penn Central* test is unlikely to present a major impediment to the implementation of managed retreat provided they demonstrate that they strongly support the protection of public health and safety, including prevention of the loss of life. As illustrated in *Penn Central*, it is not for the court to make determinations of character of government action where challengers assert that impediments to segmented potential future use of a parcel are analyzed independently. Rather, the totality of the impacts to all potential uses of the property must be

¹⁹ *First English v. Los Angeles*, 210 Cal. App.3d 1353, 1370 (1989).

²⁰ *First English v. Los Angeles*, 210 Cal. App.3d 1353, 1371 (1989).

²¹ *Penn Central Transportation Co. v. New York City*, 438 U.S. 104, 134 (1978).

²² *Penn Central Transportation Co. v. New York City*, 438 U.S. 104, 131 (1978).

considered as a whole. Further, under the second factor, it is unlikely that claims that individual property owners are unjustly singled out will be successful.

Additionally, claims that individual properties are impermissibly targeted as the result of a managed retreat are unlikely to overwhelm the validity of the strategy under the second factor. In the case of *Penn Central*, the government action being enacted for the public good applied broadly across all potential landmarks, as an example, and was not analogous to prohibited spot-zoning provisions. A universally applied government standard that comports with the health, safety, and well-being of the general public is permissible, even if only specific properties are impacted.

3.2.4.3 Third Factor: Reasonable Investment-Backed Expectations

The reasonable investment-backed expectations factor generally relates to whether an owner knew or should have known that laws or regulations would affect the property's value at the time the owner acquired the property.

For example, an owner of tidal wetlands who is aware of the public trust doctrine would not have a reasonable expectation of filling such wetlands for residential purposes. Government prohibition of such uses therefore generally would not constitute a taking. Expectations are "investment-backed" if the property owner has invested financial and other resources in property development plans.

Although not a takings case, landowners brought a claim similar to a takings claim against the County of Kaua'i.²³ This case is relevant insofar as it clarifies the Hawai'i Supreme Court's view as to what reasonable use of coastal property entails.

In *Brescia v. Planning Commission*, 2007 Haw. LEXIS 251 (Aug. 2007), the subdivision code and county setbacks together allowed the owner to construct only a triangle-shaped house, albeit of over 4,000 square feet. The landowner sought a variance, arguing he was entitled to one because he had lost "reasonable use" of his property. The Hawai'i Supreme Court disagreed and overturned the lower court's decision granting the variance. The Court was comfortable allowing a coastal landowner to build on only a portion of the lot. The holding of the Court indicated that a determination of whether or not an owner lost reasonable use of their property might be conducted on a case by case basis, and in this case, the Court deemed that the appellant demonstrated that there was ample opportunity to construct a structure on the unimpacted portion of the property. This ruling suggests courts may decide the reasonable investment-backed expectation inquiry under the third Penn Central factor in takings cases in a similar manner.

Importantly, the Hawai'i State legislature recently modified Hawai'i Revised Statutes ("HRS") chapter 508D requiring realtors to disclose sea level rise projections in real estate sales, providing owners with constructive notice that would impact their "reasonable investment-backed expectations."

As a practical matter, the level of investment the owner has taken into developing their parcel is also considered. The earlier in the process a landowner is in a project development, the less likely a court is to find that the government regulation interferes with the use and investment backed expectations of the landowner. In circumstances where a landowner has acted on certain expectations that were later

²³ *Brescia v. Planning Commission*, 2007 Haw. LEXIS 251 (Aug. 2007).

impacted or negated by subsequent government regulatory action, the owners demonstrated vested rights can legitimize a claim that government action interferes with reasonable investment-backed expectations. Moreover, under legal principles of equitable estoppel, the reliability of government representations or approvals may also delegitimize the reasonableness of subsequent government action.

3.2.4.3.1 Assessment

The third factor of the three-part *Penn Central* test presents less impediment to the implementation of managed retreat than prior regulatory implementation has seemed to assume. There being no strict rule or guidance from the Hawai'i courts in terms of making a determination that reasonable investment-backed expectations are impacted, it is imperative that any managed retreat strategy take into consideration impacts to different classes or categories of property. Shorefront properties in which little to no construction might be able to take place may face stronger arguments under *Brescia*. However, in the totality of the three-part *Penn Central* test, it is unlikely that these properties alone are sufficient for the strategy to face major impediments.

3.2.4.4 Summary Assessment

In summary, regulatory takings claims based on government regulation of coastal development in Hawai'i to address the impacts of shoreline erosion, storm surges, and sea level rise, such as through managed retreat, will turn on a court's evaluation of the foregoing three *Penn Central* factors, but only as those factors are applied to a specific property and the specific facts surrounding development of that property.

As the U.S. Supreme Court noted in the *Penn Central* decision, "we have frequently observed that whether a particular restriction will be rendered invalid by the government's failure to pay for any losses proximately caused by it depends largely upon the particular circumstances of that case."²⁴

Although no definitive conclusions about the potential viability of takings claims may be drawn absent the specific facts of a specific case, it appears that managed retreat may generally be expected to withstand anticipated takings claims.

3.2.4.5 Contested Case Hearings

Broadly speaking, the current and anticipated range of managed retreat policy tools rely on and incorporate various legal requirements established in federal and State laws, county ordinances and other legal mandates. These legal requirements are integral to the implementation of managed retreat and typically include enforcement provisions and mechanisms. Although the types of enforcement provisions may vary, they generally include enforcement procedures, as well as penalties, fines, and other substantive mandates and directives.

Managed retreat tools focused on regulation of the shoreline area also include enforcement mechanisms. For example, agencies responsible for implementing shoreline setback requirements, prohibitions on seawalls, or similar shoreline area restrictions may direct landowners to remove

²⁴ *Penn Central Transportation Co. v. New York City*, 438 U.S. 104, 124 (1978).

offending structures, pay monetary fines and penalties and take various other actions in response to enforcement actions.

Government enforcement of managed retreat-related shoreline area regulations and requirements involve consideration of procedural due process, including these types of enforcement actions. Due process in this context means the landowner may claim certain legally-protected rights to go through a process in the imposition and adjudication of any such enforcement requirements - especially mandated actions and fines. The fundamental due process requirements are notice, an opportunity to be heard, and an impartial tribunal.

More specifically, in these types of enforcement proceedings a landowner or other defendant may request a contested case hearing pursuant to HRS ch. 91, the Hawai'i Administrative Procedures Act. The purpose of the request would be to seek a trial-like proceeding for the adjudication of the enforcement action, instead of an agency hearing at a regularly-scheduled meeting.

If the agency denies the request, the respondent may appeal the agency's denial to a Hawai'i appellate court. If the agency grants the request, the agency may appoint a hearing officer, schedule a formal hearing with witness testimony, briefing and other procedural steps, and otherwise move forward with an administrative trial. Under both approaches, there may be significant delays which hamper implementation of managed retreat. However, proactive enforcement through the contested case process may more efficiently achieve managed retreat goals, while eliminating long-term exacerbation of offenses.

One potential solution could be the development of legislation which amends existing law to provide a more specific and explicit basis for the agency to deny the request for a contested case hearing. The likelihood of success of any such statutory amendment is unclear given the foundational nature of due process protections under state and federal constitutional and statutory law. In essence, managed retreat mechanisms, including policies and procedures, would need to be considered as sufficiently important to over limit or override deeply entrenched and fundamental legal principles surrounding due process protections.

3.3 THE PUBLIC TRUST DOCTRINE MAY PROVIDE A DEFENSE AGAINST REGULATORY TAKINGS CLAIMS BASED ON MANAGED RETREAT

3.3.1 Hawai'i public trust doctrine as *Lucas* background principle

Governmental regulatory actions involving public trust resources, such as coastal areas where managed retreat would be applied, may have additional protection from takings claims in the form of the public trust doctrine.

Under the public trust doctrine, as set forth in Article VI, section 1 of the Hawai'i State Constitution, "all public natural resources are held in trust by the State for the benefit of the people." In Hawai'i, beaches

are public trust resources.²⁵ The public trust doctrine therefore encompasses loss of beaches and harm to beach systems from coastal development.²⁶

Enforcement of managed retreat to prevent harm to public trust resources, such as coastal resources, will likely withstand takings challenges if the court considers the resources to be part of Hawai'i's background principles of property law and nuisance.

As mentioned above, under the *Lucas* decision there is no taking where "background principles of nuisance and property law," such as the public trust doctrine, prohibit the uses that the state regulates.²⁷ In such instances, no taking may be found even if the regulation leaves a property with no economically beneficial use because the regulation or restriction "inheres in the title itself, [and] in the restrictions that background principles of the State's law of property and nuisance already place upon land ownership."²⁸

The public trust doctrine is well-established under Hawai'i law, and prohibitions against invasion of the public trust are also well-established. With this in mind, it would follow that enforcement of the public trust doctrine, which may be construed barring what may be considered essentially the privatization of areas within the shoreline, refusing to permit seawalls to harden the shoreline, or not allowing modifications to shoreline areas would not constitute takings for they are actions a property owner is not entitled to under the common law. Moreover, intrusion into the public trust, similar to nuisance, can give rise to a cause of action that is enforceable.

3.3.2 Legal authorities confirm public trust as *Lucas* background principle

A range of court cases and a Hawai'i legal opinion letter illustrate the interplay between takings claims and the public trust doctrine.

3.3.2.1 Reported judicial decisions

For example, in 2009 the Hawai'i Intermediate Court of Appeals held that the public trust doctrine diminished any expectation that oceanfront owners in Hawai'i had and may have in future accretions to their property.²⁹

Similarly, in Washington, the state's denial of a permit to build homes on platforms and pilings in tidal waters was held not a taking because the public trust doctrine precluded shoreline residential development.³⁰ In a case decided by the United States Court of Appeals for the Ninth Circuit, the court held that public trust doctrine may be a "background principle" of a state's common law which may result in a government avoiding liability from a regulatory takings claim even if all economically beneficial use is taken.³¹

²⁵ *County of Hawai'i v. Sotomura*, 55 Haw. 176; 517 P.2d 57 (1973).

²⁶ *Id.*

²⁷ *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1004 (U.S. 1992).

²⁸ *Id.*

²⁹ *Maunalua Bay Beach Ohana 28 v. State of Hawai'i*, 2009 Haw. App. LEXIS 807, *64 (2009).

³⁰ *Esplanade Properties, LLC v. City of Seattle*, 307 F.3d 978, 985 (9th Cir. 2002).

³¹ *Esplanade Properties, LLC v. City of Seattle*, 307 F.3d 978, 985 (9th Cir. 2002).

The denial of a fill permit was upheld in South Carolina because public trust tidelands “effected a restriction on [the owner’s] property rights inherent in the ownership of property bordering tidal waters . . . [and] . . . ownership rights do not include the right to backfill or place bulkheads on public trust land and the State need not compensate him for the denial of permits to do what he cannot otherwise do.”³²

In California, dredging privately-owned tidelands to improve navigation was not held a taking because the city, as the state’s trustee, retained a public trust easement over tidelands which enabled it “to make improvements and changes in the administration of this easement without the exercise of eminent domain.”³³ *Murr v. Wisconsin*³⁴ may further support managed retreat in the face of takings claims. Although this decision does not expressly address public trust principles, it may have the effect of reducing the cost to government of implementing managed retreat and its accompanying regulations and eminent domain. *Murr* defines the denominator for a taken parcel by a multifactor test, which expressly takes into account that coastal property may be subject to greater environmental regulation than other property without triggering governmental liability for a regulatory taking. In *Murr*, the petitioners owned two adjacent lots. To meet the requirements under local regulations, and due to geographical features the lots had to be combined for development to be permitted. Thus, the issue in *Murr* was what is the proper unit of property against which to assess the regulatory taking claim, more specifically the reasonableness of the landowner’s expectations that the property would be treated as one parcel or separate tracts for purposes of the takings analysis.

The court in *Murr* affirmed that a number of factors had to be considered in determining the denominator for the takings claim, including treatment of the land under state and local law, the physical characteristics of the land, and the prospective value of the regulated land. In short, the U.S. Supreme Court upheld the application of a multifactor test which expressly takes into account that coastal property may be subject to greater environmental regulation than other property without triggering governmental liability for a taking.

3.3.2.2 Attorney General Opinion Letter No. 17-01

In 2017, the Hawai’i Attorney General’s office issued Opinion Letter No. 17-01 to the Hawai’i Department of Land and Natural Resources on the issue of “Shoreline Encroaching Easements” (“Opinion Letter No. 17-01”) which may provide additional support for managed retreat.

Opinion Letter No. 17-01 addressed whether the state must approve the acquisition of property it gains through shoreline erosion under statute. The Opinion Letter relied on relevant Hawai’i Supreme Court and Ninth Circuit Court of Appeals precedent to conclude that “under Hawai’i law, the State holds an inchoate (i.e., partial) right to land that may pass to it by erosion or sea level rise. This is an inherent aspect of the State’s ownership of land, already owned by the State (and by the Territory before it). Ripening of that inchoate right is not “acquiring” or “acquisition” of real property”³⁵

³² *McQueen v. South Carolina Coastal Council*, 580 S.E. 2d 116, 119-20 (S.C. 2003).

³³ *Newcomb v. City of Newport Beach*, 7 Cal. 2d 393, 403 (1936).

³⁴ *Murr v. Wisconsin*, 137 S. Ct. 193 (2017) (“*Murr*”).

³⁵ Letter from D. Chin, Attorney General, State of Hawai’i to S. Case, Chairperson, Board of Land and Natural Resources, State of Hawai’i (December 11, 2017).

Importantly, Opinion Letter No. 17-01 also concluded that there are no “viable federal [takings] claims” associated with shoreline erosion because “the possibility that private littoral land may pass into public ownership is an inherent part of the State’s ownership of land.”³⁶

Relying on and quoting *Lucas*, the Attorney General found that there is no viable federal taking claim because “the logically antecedent inquiry into the nature of the owner’s estate shows that the proscribed use interests were not part of his title to begin with . . . thus there is no taking.”³⁷

3.3.3 Assessment

State ownership rights, the public trust doctrine, and “background principles” of property law under *Lucas* generally protect state regulations regarding public trust resources against takings claim – including with regard to any potential claims arising from the implementation of various managed retreat strategies.

The state’s public trust interest is considered a dominant property interest because the state either owns shorelines and submerged lands or has conveyed them to private parties subject to a public trust easement.

3.3.4 Custom and TEK May Similarly Provide a Defense Against Regulatory Takings Claims Based on Managed Retreat Strategies

Like the public trust doctrine, custom (including traditional and customary Hawaiian practices) may also be considered a background principle and play a role similar in takings claims. Where such practices are recognized, they may predate private ownership and preclude a takings claim, where such practices were part of the original limitations on the private property rights.

The State has an affirmative duty to preserve and protect traditional and customary Native Hawaiian rights arising out of Article XII Section 7 of the Hawai’i Constitution and a series of cases culminating in *Ka Pa’akai o ka ‘Āina v. Land Use Commission* (2000).³⁸ Shoreline erosion as a result of sea level rise will accelerate the generally accepted assertion that legal land boundaries on the shoreline, such as the highwater mark³⁹, will change over time. It is uncontested that newly submerged lands and new shoreline makai of the highwater mark will become a part of the public trust, and with it, will extend the affirmative duty of the State to preserve traditional and customary rights and TEK associated within these areas.

Ka Pa’akai proposes a four-part framework that establishes the minimum diligence the State must exercise in the protection of traditional and customary rights: 1) identify the scope of “valued cultural, historical, or natural resources” including the extent to which customs are exercised in the area; 2) the

³⁶ *Id.*

³⁷ *Id.*

³⁸ *Ka Pa’akai o Ka ‘Āina v. Land Use Com’n*, 94 Haw. 31, 45, 7 P.3d 1068, 1082 (Haw. 2000).

³⁹ See *In re Application of Ashford*, 50 Haw. 314, 440 P.2d 76 (Haw. 1968). See also *County of Hawaii v. Sotomura*, 55 Haw. 176, 517 P.2d 57 (Haw. 1973).

potential impacts that the proposed action might take; 3) alternatives to the proposed action; AND 4) mitigation efforts to be taken to reasonably protect native Hawaiian rights, if they are found to exist.⁴⁰

In order to properly inform that due diligence, consultation with impacted communities, community resources, key leaders, and experts in TEK is crucial. In particular, the Native Hawaiian community serves as a valuable, and in many cases, unbroken lineage of critical information that lends to the analysis of all four Ka Pa'akai factors. The Native Hawaiian community considered should include current and former residents of the impacted community, lineal descendants of non-living former occupants, and current and former resource managers. With regard to the third and fourth factors, consultation provides the unique opportunity to diversify alternative measures contemplated in the context of traditional uses and their intentional integration into future planning. Furthermore, consultation with communities-at-large provides opportunity to contemplate the desire of entire communities who intend to retreat together - something that is likely more common in Native Hawaiian coastal communities.

A separate, but equally important, factor in engaging communities is the potential for 'iwi kūpuna, Native Hawaiian burial remains, to be uncovered in the retreat process. Shorelines, and sand dunes in particular, were regular sites for burials. The Federal government and the State of Hawai'i have explicit procedures and recommendations in place for activities that may disturb or uncover burials that engage community in the Native American Graves Protection and Repatriation Act, and Hawai'i Revised Statutes Chapter 6E and Hawai'i Administrative Rules Section 13-300.

These well-established principles are an indication that private property owners are on notice that the free and uninterrupted use of their property may or may not be impacted by custom. Furthermore, owners can expect that government action that impacts or impedes the use of their property to the extent that the government is fulfilling its constitutional obligations to protect custom and TEK will likely not rise to the level of a regulatory taking. These principles are further indicative of the notion that private property owners in the State of Hawai'i rarely possess the full "bundle" of private property rights as might be expected in other states as a result of the State's progressive and wide-reaching protections afforded to Native rights and customs.

As an extension of this argument, the implementation of managed retreat] that preemptively asserts the State's affirmative duty to protect beaches, dune systems, and coastal ecosystems, even as the shoreline moves inward, on behalf of Native Hawaiians cannot arise to a regulatory taking as shoreline property owners in all likelihood never possessed the full bundle of free, unimpeded uses of their properties to begin with. The construction of a fixed structure near the existing highwater mark and vegetation line should not be a defense or basis for a regulatory takings claim in ignorance of the possibility that said mark and vegetation line might one day change, no matter how rapidly that change occurs.

Additionally, without speaking in depth to the State's various obligations at a State and Federal level to the protection of marine species, the acceleration of a moving shoreline will necessarily impact marine species habitats, and the access of Native Hawaiians to use lands in their ahupua'a. Permitting seawalls or hard structures also results in a change in the type of habitat, which can have substantial impacts on the ecological assemblages of fish and benthic organisms. Further consideration should be given to the State's obligation to protect these species in the face of rapidly changing shorelines - both as they relate to general environmental protection regulations as well as the relevant uses some species may have in

⁴⁰ Id.

the scope of customary practices. Flora, such as 'ilima, naupaka, and limu might all directly impacted, while fauna dependent on estuarine habitat stability and sediment transport, like 'ama'ama, moi, and 'opelu, might also have spawning and foraging grounds disrupted.

The strength of Hawai'i's shoreline access laws is not solely derived from statutory mandates or judicial precedent—it is deeply reinforced by the principles of custom and TEK. The longstanding recognition of Native Hawaiian practices, codified in Article XII, Section 7 of the Hawai'i Constitution and clarified through cases discussed in the following section, affirms that access to natural resources is more than a public right; it is a legally protected, historically embedded necessity for the continuation of subsistence and cultural traditions. As the coastline shifts due to sea level rise and increasing erosion, the role of custom and TEK in shaping and defending shoreline access laws becomes even more pronounced.

Traditional and customary practices are inherently tied to access—whether for nearshore fishing, gathering limu, or religious ceremonies. The courts have affirmed that these practices require not only the right to access, but the right to engage in meaningful interaction with shoreline resources. This understanding strengthens the public trust doctrine by underscoring that the coastline is not just a place of recreation, but a living space where knowledge systems and cultural identities are maintained. Unlike other states, where shoreline access laws are often framed through the lens of private-public property conflicts, Hawai'i's approach is distinct in that access is also a matter of indigenous rights and customary law. This creates a dual foundation for the public's right to use and access the shoreline—one rooted in common law and another in constitutional protections for Native Hawaiian practices.

TEK further supports the strength of shoreline access laws by providing a framework for understanding the ecological importance of maintaining open, unhardened shorelines. Hawaiian names, mele, and mo'olelo around places provide important insights into traditional uses, ecological features, and cultural practices important to understand, to understand a place. Generational knowledge of sediment transport, seasonal wave shifts, and nearshore fisheries has long informed sustainable management practices, reinforcing the necessity of preventing artificial barriers such as seawalls or private encroachments that disrupt natural coastal processes. TEK also offers insight into how communities have historically adapted to shoreline changes without resorting to hard engineering solutions that compromise access for future generations. In this way, traditional knowledge bolsters legal arguments in favor of managed retreat policies, supporting the notion that access to the shoreline must remain dynamic, shifting with the natural movement of the coastline rather than being fixed by artificial structures.

Custom and TEK contribute to the enforcement of shoreline access laws by establishing an expectation of community stewardship. The recognition of this stewardship role further strengthens shoreline access laws by reinforcing that their enforcement is not solely the responsibility of government agencies but also of the very communities who rely on these resources. This framework lends itself well to the discussion around how to plan for the future of spaces that return to the public trust.

4 PUBLIC TRUST DOCTRINE AND TRADITIONAL ECOLOGICAL KNOWLEDGE ARE FOUNDATIONAL LEGAL PRINCIPLES BROADLY SUPPORTIVE OF MANAGED RETREAT

4.1 THE ROLE OF FOUNDATIONAL LEGAL PRINCIPLES IN SUPPORTING MANAGED RETREAT

Regulatory takings, including what might be considered a taking and what the State responsibilities are to the private landowner when a taking occurs, are often raised as a concern when discussing strategies for managed retreat. In particular, the issue may arise as to whether and when the government must compensate private property owners for “takings” of their properties.

Although not relevant to all strategies, the pervasive focus on regulatory takings in discussions concerning managed retreat bears deeper understanding to contextualize when a takings claim may (or may not) be relevant, the implications when it is, and how it might be considered within the framework of the public trust doctrine. These and other private property rights are an important consideration when evaluating the legal aspects of managed retreat.

Within the context of the public trust doctrine, it is also important to understand the role and relevance of Native Hawaiian Traditional Ecological Knowledge (“TEK”) and traditional and customary rights held by Native Hawaiians. These are considered part of the public trust, asserting the right of Native Hawaiians and their descendants within an ahupua’a to access and use lands in various ways, both public and private.

4.2 PUBLIC TRUST DOCTRINE AS A FOUNDATIONAL LEGAL PRINCIPLE

Although as explained above the public trust doctrine may play a critical role in defending against regulatory takings claims, the venerable doctrine offers significant additional support for innovation and evolution of managed retreat approaches on a Hawai'i's shorelines, as well as the practical implementation of current managed retreat strategies.

More specifically, the public trust doctrine frames the State of Hawai'i's affirmative duties and responsibilities in taking actions related to protecting public resources such as the beaches and dune systems, ocean resources, and rights holders' access.

The public trust doctrine has roots in ancient Roman law and English common law. Today, the public trust doctrine is enshrined in the Hawai'i Constitution, which states, “All public natural resources are held in trust by the State for the benefit of the people.” (Hawai'i Constitution § 11.1). The Constitution specifically obligates the State to “conserve and protect Hawai'i's natural beauty and all natural resources, including land, water, air, minerals and energy sources” (Hawai'i Constitution § 11.1). The State has a further “obligation to protect, control and regulate the use of Hawai'i's water resources for the benefit of its people” (Hawai'i Constitution § 11.7).

Much of Hawai'i's environmental case law has its roots in the public trust doctrine. Under the precautionary principle, the State must act in a proactive manner to prevent environmental degradation

when there are present or potential threats of serious damage to natural resources, even in the absence of full scientific certainty (*Hawai'i Supreme Court, Waiahole Ditch Combined Case, 2004*).

Coastal waters are also part of the public trust doctrine. Thus, the waters and land up to the high water mark line are the State's requirement to hold in trust on behalf of the citizens of Hawai'i .

As Hawai'i's governments and communities consider how it will adapt to climate change, whether through managed retreat or other strategies, the possibilities that lie ahead may be an opportunity to galvanize collective support for various options. Conversations around managed retreat, for example, often focus on the current private landowners and how, when, or where they will leave an area. Also critical is the discussion around what happens with that land if certain uses are retreated.

The end goal in this discussion is to address hazards of developments and structures on land that is under risk of coastal erosion and sea level rise, and return the land to the public for conservation or public use. . The public trust doctrine, traditional and customary rights, as well as traditional ecological knowledge, each offer potential insights into how property may be utilized if reclaimed through managed retreat.

In one example, following the 1946 tsunami, Hilo chose not to rebuild the homes destroyed in place. Rather, it built a series of parks and waterways that serve as public gathering spaces, buffers for potential future impacts, and memorials for the lives and communities lost. Also on Hawai'i Island, a private landowner in Keauhou went through a significant public engagement process when redeveloping its large shoreline resort that included a mixture of retreat and adaptation. Ultimately, they made a decision to demolish two of their resort buildings along the coastline while also rebuilding in place three heiau, or traditional temples, within the shoreline area, and creating an educational space along the shoreline. As Maui Komohana looks ahead to how it will rebuild Lahaina, important conversations are at the fore around whether to rebuild in place, whether to restore Moku Ula into a wetland with 'ulu groves, how to repair and care for the eleven historic buildings that appear to be able to be standing, and more. All important questions that can benefit from the input that the public trust doctrine, traditional and customary rights, as well as traditional ecological knowledge can provide.

Important considerations for each strategy will include the future use of the land and the stakeholders involved. Opportunities for the ongoing stewardship of land by existing private and public right holders offer great potential while also diminishing potential claims. In the question of what comes after retreat, TEK can offer insights into opportunities.

The State of Hawai'i's fiduciary obligations under the Public Land Trust (PLT) are not only defined by the Admission Act of 1959 and statutory law but are also reinforced through constitutional provisions and case law. Article XII, Section 4 of the Hawai'i State Constitution explicitly affirms that the lands granted to the State under Section 5(f) of the Admission Act are to be held in trust for specific public purposes, including "the betterment of the conditions of Native Hawaiians." This provision directly informs the implementation of managed retreat policies, ensuring that any state action involving trust lands, including the retreat from coastal areas, does not diminish or undermine the trust's core obligations to its beneficiaries.

A key component of this fiduciary duty is the requirement to allocate a portion of PLT revenues to the Office of Hawaiian Affairs (OHA), which serves as a trustee entity for Native Hawaiians. Established through the 1978 Hawai'i Constitutional Convention, Article XII, Sections 5 and 6 of the State Constitution mandate that OHA administers and manages “all income and proceeds from the public land trust” designated for Native Hawaiians. However, the percentage of these revenues has been the subject of ongoing legal and political disputes, affecting the extent to which managed retreat strategies must account for OHA's entitlement.

The application of these legal principles to managed retreat underscores the necessity of ensuring that any land transfers, lease revenues, or development rights stemming from PLT lands contribute appropriately to OHA's entitlement. For instance, if managed retreat policies result in the reclassification of trust lands for conservation purposes, the State must ensure that such decisions do not diminish OHA's financial stake in the trust. Similarly, if revenues are generated from leaseholds or redevelopment of inland lands following retreat, OHA must receive its rightful portion.

Moreover, the State's obligations under Article XII, Section 7—to protect traditional and customary Native Hawaiian rights—further reinforce the need for a managed retreat framework that prioritizes Native Hawaiian access to coastal resources, rather than merely protecting real estate interests. The intersection of public trust, public land trust, and Native Hawaiian entitlements means that the State must structure its retreat policies in a way that does not erode either the revenue streams owed to OHA or the cultural and subsistence rights guaranteed under the Constitution.

Given these obligations, any comprehensive managed retreat strategy must contemplate impacts to PLT revenues that are allocated to OHA. This requires legislative oversight, transparency in accounting for revenues from affected lands, and a commitment to ongoing consultation with OHA to assess how changes in land classification, public access, and shoreline protection efforts impact trust obligations. By incorporating these constitutional and legal considerations into managed retreat planning, the State can better fulfill its fiduciary responsibilities while ensuring that the interests of Native Hawaiians remain central to coastal adaptation strategies.

4.3 TEK AS FOUNDATIONAL LEGAL PRINCIPLES

Hawai'i uniquely traces its modern public trust doctrine back to Native Hawaiian traditional and customary law.⁴¹ Traditional and customary rights are defined and protected under the Hawai'i Constitution, Hawai'i Revised Statutes, and case law as established by the courts. Article XII, section 7 of the Hawai'i Constitution reads:

“The State reaffirms and shall protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua'a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778, subject to the right of the State to regulate such rights.”⁴²

⁴¹ D. Kapua'ala Sproat, Chapter 13: Kahakai: Shorelines, in NATIVE HAWAIIAN LAW: A TREATISE (2015) at 740.

⁴² Haw. Const. art. XII, § 7. Added by 1978 Const. Con., ratified Nov. 7, 1978.

HRS § 1-1 further establishes that application of the common law in Hawai'i, which has been used by the courts to further support traditional and customary rights.

TEK is foundational and interrelated with the development and advancement of the public trust doctrine in the context of a managed retreat. For example, potential legal claims may arise from the impacts that failure to mitigate the impacts of sea level rise may have on the exercise of traditional and customary rights.

Similarly, laws related to and supportive of restoring or enhancing of public access to and use of shoreline areas and coastal resources as an outcome or byproduct of managed retreat may emerge. Native Hawaiian traditional uses of shorelines areas have grown in the last fifty years, with myriad initiatives dedicated to recultivation of native limu, seaweed, and limu farming, fishing and crabbing, coral reef restoration, access for he'enalu, surfing, and native vegetation restoration, for example, have gained momentum and popularity. Increased public access to and along the shoreline will allow for proliferation of these activities across the State and will have the ancillary benefits of reinvigorating and protecting native ecosystems. Consultation with Native Hawaiian experts in ecological systems and Hawaiian culture might offer additional insight into traditional maintenance of a dynamic shoreline, which may give way to historical accounts of native responses to tidal and seasonal shifts in shoreline levels. Additionally, whether there exists potential for legal claims that might compel the State to take proactive action interceding climate impacts, may also be considered.

In *Public Access Shoreline Hawai'i v. Hawai'i (PASH)*, the planning commission denied a nonprofit's request for a contested case hearing on a proposed development and special management area permit. (Native Hawaiian Law a Treatise, 2015). The Hawai'i Supreme Court reversed the lower courts' decisions upholding the planning commission's position and held that the state must protect the reasonable exercise of traditional and customary rights, in compliance with Article XII, section 7 of the Hawai'i Constitution.

It is also important to note that prior to *PASH*, the courts recognized the existence of traditional and customary (T&C) rights on private land in *Kalipi v. Hawaiian Trust Co.* When faced with a trespass charge, Kalipi put forward a T&C defense that was rejected by the lower courts. In reversing those decisions, the Court outlined three conditions that must be satisfied in order to exercise traditional and customary rights: the right is exercised by a Native Hawaiian who is a lawful occupant of the ahupua'a in which the right is exercised, the practice is traditional and customary, and it is on undeveloped land or land in a natural state. For the context of this discussion, it is important to recognize that T&C rights may be exercised, and must be protected, even on land that is privately owned.

As a Hawai'i land use scholar has explained:⁴³ "California and Hawai'i have most extensively developed their ecological public trust doctrines, and they have done so by making law apart from the traditional common-law doctrine related to waterways and tidelands . . . [C]ourts, legislators, and state constitutions often declare various lands and other resources to be held in trust for the public. However, they rarely declare such land and resources to be subject to the public trust doctrine." Id. at 78-79.

⁴³ D. Callies, *The Public Trust Doctrine*, at 79.

However, even without the 1978 Constitutional Amendments to clarify this expansion of the public trust doctrine in Hawai'i, HRS section 1-1 would have imparted all traditional and customary Hawaiian public trust principles in addition to the historical western trust principles. HRS section 1-1 states that:

“The common law of England, as ascertained by English and American decisions, is declared to be the common law of the State of Hawai'i in all cases, except as otherwise expressly provided by the Constitution or laws of the United States, or by the laws of the State, or fixed by Hawaiian judicial precedent, or established by Hawaiian usage; provided that no person shall be subject to criminal proceedings except as provided by the written laws of the United States or of the State.”

Of note here is the interplay between these legal principles and some of the key concepts discussed in prior sections as it relates to the obligation of the government for the overall well being, health, character, and morals of the community. Whether it be by way of the court's discussions in Penn Central or Lucas or the underlying reasoning in Hawai'i law, it is clear that the intrinsic qualities of TEK and traditional and customary Native Hawaiian practices are not incongruous with Western notions of property law. Due consideration for the preservation of land and its uses for the wellbeing of everyone, with government acting as its steward, is a consistent legal byline giving credence to the eventual role government must take with regard to managed retreat. More succinctly, these principles harken back to the Court in Penn Central's emphasis on government actions “improving the quality of life” for the public.

Thus, T&C rights are firmly established and protected under state law, and within that framework the state has an affirmative duty to protect those rights. TEK is also foundational and interrelated with the exercise of traditional and customary practices, and therefore with the application of the public trust doctrine in the context of managed retreat.

The exercise of T&C rights informed by TEK provides both a legal and regulatory lever for furthering policies that both facilitate managed retreat and protect or restore public trust resources and support traditional and customary practices. As an example, potential legal claims may arise from the effects that failure to mitigate the impacts of sea level rise, or measures such as shoreline hardening, may have on the exercise of traditional and customary rights. The potential for legal claims around impacts on traditional and customary practices due to loss of shoreline access and coastal resources provide additional basis for the State to take proactive action in these areas.

As an example, beach fishing in Hawai'i occupies a unique legal space within the framework of public trust doctrine and T&C rights, reflecting the broader legal and cultural tensions at play in shoreline access and resource management. As a subsistence and cultural practice deeply embedded in Native Hawaiian traditions, shoreline fishing is protected under Article XII, Section 7 of the Hawai'i Constitution, as well as through the precedent set in cases like PASH and Kalipi.

However, this right is not absolute; it is subject to state regulation designed to balance conservation, public access, and private property interests. The interplay between managed retreat policies and the rights of shoreline fishers raises significant legal and practical questions. As rising sea levels and erosion alter the coastline, public access to traditional fishing areas may be disrupted, either through loss of land or state-imposed restrictions in response to climate impacts. Additionally, while increased public access as a byproduct of managed retreat might facilitate the proliferation of subsistence fishing, tensions persist regarding the degree to which traditional fishers may exercise exclusive or priority access in historically

significant areas. As with other T&C practices, consultation with Native Hawaiian cultural and ecological practitioners is essential in shaping policies that uphold both the letter and the spirit of public trust protections. The evolving landscape of shoreline management will likely give rise to legal claims testing the boundaries of these rights, particularly where state inaction or conflicting regulations threaten the ability of Native Hawaiian fishers to exercise their practices in a meaningful way. In this way, the discussion of beach fishing serves as a microcosm of the broader legal and policy debates surrounding public trust, managed retreat, and TEK in Hawai'i.

Similarly, laws related to and supportive of restoring or enhancing of public access to and use of shoreline areas and coastal resources as an outcome or byproduct of managed retreat may also support the exercise of TEK and traditional and customary practices.

So too, as agencies evolve in their understanding around this knowledge, building capacity will be a critical component of future success. Hiring internally those with TEK, relationships with community practitioners, and knowledge for how to navigate legal and cultural skills, will all be critical. As that capacity is being built, community-based consultants, experts, and partners will be important partners to lean in around.

Legal authority is derived in part from social acceptance as well as notions of justice, fairness and equity. Managed retreat strategies that promote TEK and result in enhanced shoreline access, open space and other public benefits (recreational, environmental, and economic, as well as cultural) may play an important role in advancing community acceptance of managed retreat strategies in Hawai'i. However, longstanding mistrust between communities who have asserted self-determination through nearshore marine management systems and state agencies that have failed them is a significant barrier, which might not be soon overcome simply through increased shoreline access. Social equity is also a consideration in implementing managed retreat, especially with regard to ensuring that public trust resources are protected for use by the public and not subsumed to private property interests, and that implementation and funding mechanisms for retreat take into account differential impacts to vulnerable populations.

Traditional ecological knowledge strongly encourages local-level and place-based decisions over broad overarching policy. TEK would evaluate factors such as the rate of impact, whether the sea level rise impacts are from the shore or also rising groundwater, what the traditional and potential public use might be, how the existing property owners might be able to continue to utilize or steward the land, and other factors. Engaging with TEK practitioners in each community will be important to gain insight into which strategies are appropriate in a given area as well as how to implement a framework in the most appropriate way.

An important consideration beyond residential and commercial structures is that many cultural and historic sites exist within areas threatened by sea level rise. Moving historic structures are not always physically or financially possible, and significant cultural impacts could occur with their loss. Additionally, cultural sites are typically intertwined with the land and thus not possible to be moved. Some preservation efforts have focused on how to adapt to sea level rise, often through dry or wet proofing or vertical adaptation. Some cultural sites also allow the sea to run its natural course, maintaining the site as best as possible. Preservationists offer the example of shoreline heiau, which provides an interesting case, where their structural design seems to account for the ocean coming in and out, withstanding nearly 1,400 years of impact.

Engaging with cultural practitioners, archaeologists, and lineal descendants within a respective community will also be important. Iwi and traditional burials are likely to be present both within areas of retreat as well as areas that may be retreated to. Some may see retreat as an opportunity to better care for iwi and limit disturbances. In other areas, retreat may create challenges if for example a burial site is within the retreat area. In any case, engagement will be extremely important to work through the appropriate treatment and protocol for the different communities. Communities may intersect as functions of where individuals presently live, where they have previously lived, and where their ancestors originated; geographical associations based on education, cultural practice, and specialized training; or even spaces in which subsistence or recreation occur.

This is an opportunity to envision public trust spaces to meet the needs of communities, stakeholders, and residents. As one stakeholder acknowledged: “Kanaloa is rising. How will we meet him?”

5 LEGAL ASSESSMENT OF SPECIFIC MANAGED RETREAT STRATEGIES

This Legal Assessment includes the following review of the laws and other legal aspects and issues associated with various managed retreat strategies. It should be emphasized that this assessment generally concludes that the following strategies are unlikely to be meaningfully impeded by regulatory takings claims, except as otherwise noted.

5.1 STRATEGY: LAND ACQUISITIONS (OPEN SPACE, BUYOUT AND LEASEBACK, CONDEMNATION, EMINENT DOMAIN)

One policy tool within managed retreat is the acquisition of private property for the purpose of achieving a range of climate change adaptation policy objectives. The Financing and Funding Analysis discusses several managed retreat options or models involving these types of acquisitions. The section below briefly assesses legal aspects of some of these acquisition models.

5.1.1 Model: Opportunistic or voluntary purchase at market or assessed value

5.1.1.1 Description

Under this model, the government would acquire the private property through a managed retreat program involving the acquisition of property through conventional or traditional means.

5.1.1.2 Assessment

This process provides few legal barriers and is contingent on having a willing seller. While there may be certain requirements depending on the funding source, which may dictate requirements on the amount, presumably it would not give rise to any takings claims insofar as it is a negotiated purchase.

Equity questions may arise if the government is selective in which properties it will acquire. Counties expressed significant concern with how to implement a regime that might treat different types of property owners differently, a concern also shared by the state. This concern is reasonable, especially as due process generally prevents discrimination against protected classes of persons, except where there is a significant government interest and the law is narrowly tailored to address that interest.

However, that does not mean that the government is legally prohibited from a framework that treats landowners differently in reasonable ways. For example, commercial versus residential ownership may be a factor to consider that raises less due process claims. Counties have long been able to regulate the use of properties according to their zoning, for example for residential versus agricultural or other purposes. Additionally, while a regulatory framework might choose not to differentiate between income levels of residential owners, a benefits structure might. Housing funding through the U.S. Department of Housing and Urban Development, for example, regularly is eligible for specific income levels or ethnicities.

The largest barrier to this approach would likely be the cost of funding the acquisition, particularly given Hawai'i's high property values. This highlights the importance of the assessment and appraisal processes, especially as they related to fair market value, explored in other parts of this assessment.

5.1.2 Model: Mass purchase using eminent domain

5.1.2.1 Description

Under this model, the government would utilize its eminent domain powers to condemn multiple parcels in relatively large or densely populated oceanfront areas that are vulnerable to coastal hazards.

5.1.2.2 Assessment

A mass purchase using eminent domain would be based in part on statutory authority. Under the provisions of HRS §101, eminent domain power is held by the state and counties. This type of acquisition would constitute a physical taking that would require the government to pay just compensation to the property owner.

As discussed above, the government must establish that its condemnation of the properties as part of the managed retreat strategy constitutes a valid and acceptable "public purpose."

In addition, the government must pay "just compensation" to the property owners, which is typically evaluated as fair market value of the property. The determination of fair market may entail consideration of judicial opinions regarding acceptable valuation methodologies, whether the property's assessed or appraised value is the proper basis of evaluation, whether the SLR impacts are included in determining the value, and whether there may be jurisdictions that require appraisers to consider SLR and associated regulatory requirements in determining fair market value. As discussed in Section 3.2.2.2, HRS § 101-23 provides guidance for determinations in the State of Hawai'i.

Arriving at fair market value in the context of managed retreat requires a careful and transparent valuation process that accounts for current market conditions. Fair market value represents the price that a willing buyer and seller would agree upon under current market conditions, but it does not account for forward-looking effects such as anticipated impacts of sea-level rise or erosion unless those risks are already reflected in the market. In this sense, fair market value captures the value of the property as it exists at the moment of negotiation rather than incorporating future vulnerabilities. For managed retreat, this limitation means that properties in high-risk areas may be undervalued if long-term environmental risks are not fully internalized by market dynamics, necessitating additional considerations or incentives to ensure property owners are compensated equitably.

Incentives in negotiation that account for the potential undervaluation of fair market value can include:

1. Relocation Assistance
 - a. New Jersey's Blue Acres Program implemented voluntary buyouts of flood-prone properties after Hurricane Sandy.
 - b. Louisiana's Coastal Resettlement programs and Texas' Harris County Project Recovery provided relocation assistance that covered moving costs, closing costs, and other relocation expense.
2. Tax Incentives

- a. North Carolina's Isle De Jean Charles resettlement incentivized voluntary buyout programs with state and local tax benefits
- 3. Flexible Valuation Metrics
 - a. New Jersey's Blue Acres Program, New York's NY Rising Buyout Program, and Texas' Harris County Project Recovery purchased properties at pre-storm market values.
 - b. New York's NY Rising Buyout Program appraised homes based on their value before being damaged by hurricanes or flooding with an additional percentage bonus to incentivize voluntary relocation.
- 4. Community Benefits
 - a. New Jersey's Blue Acres Program and the Louisiana Coastal Resettlement programs converted purchased lands into open space, natural flood buffers, parks, or floodwater retention zones to improve community resilience.
 - b. New York's NY Rising Buyout Program supported clustered relocation in order to preserve community ties.

At present, it does not appear that any jurisdiction requires the contemplation of sea level rise and coastal flooding specifically in a formula for determination of fair market value⁴⁴. One study suggests that as a result of the lack of oversight in contemplations of flooding in fair market valuations, the houses in the United States are overvalued by a total of \$43.8 billion.⁴⁵ Presently, disclosure requisites are predominantly deferred until contract finalization, leaving prospective landowners uninformed about flood risks at the critical decision-making juncture.⁴⁶ The State of Hawai'i, however, does require disclosure of climate and sea-level rise related impacts to purchasers under Hawai'i Revised Statutes Section 508D-15.

While there is no explicit formula in the determination of just compensation by way of fair market value, the general legal principle recognizes the value most likely to make the property owner whole.⁴⁷ The Supreme Court in *Kimball Laundry Co.* more specifically recognizes the subjective nature of this assessment, noting that it is the general demand for transferable value that supersedes personal value to the owner for current or future use, and highlights that loss specifically as a result of condemnation is "properly treated as a part of the burden of common citizenship."⁴⁸

Mass purchasing could result in multiple legal challenges by property owners. The government would be likely to prevail on the merits, assuming just compensation was proffered; however, any litigation would still result in legal costs. There are also no transferrable examples of mass eminent domain proceedings conducted in response to climate-change and sea level rise-related threats – in this, Hawai'i would be in fairly uncharted territory.

⁴⁴ See generally *Silver Creek Drain District v. Extrusions Division, Inc.*, 468 Mich. 367 (2003); *Emeryville Redevelopment Agency v. Harcros Pigments, Inc.* 101 Cal. App. 4th 1082 (2002).

⁴⁵ Miyuki Hino & Marshall Burke, The Effect of Information About Climate Risk on Property Values, 118 PNAS 17, April 20, 2021, at e2003374118, <https://doi.org/10.1073/pnas.2003374118>.

⁴⁶ *Id.*

⁴⁷ See generally *United States v. Miller*, 317 U.S. 369 (1943); *United States v. 564.54 Acres of Land*, 441 U.S. 506 (1979); *see also City & Cnty. of Honolulu v. Victoria Ward, Ltd.* Supreme Court of Hawai'i (2023); *Kimball Laundry Co. v. United States*, 338 U.S. 1 (1949).

⁴⁸ *Kimball Laundry Co. v. United States*, 338 U.S. 1 at 5 (1949).

When compared to individual property purchases, mass purchasing could provide increased support for finding the requisite “public purpose,” especially when the acquisition is part of an overall plan for area protection or restoration.

Given the requirement for just compensation, this model may be particularly well suited for areas where there are unique opportunities for public access, protection of unique resources, restoring traditional and customary uses, and areas impacted by coastal erosion hazards.

5.1.3 Model: Buyout and leaseback

5.1.3.1 Description

Under this model, property owners sell their property but retain the right for themselves or another lessee to live in that property until some future trigger date or upon the property no longer being fit for use due to sea level rise and coastal erosion. Sale-leasebacks are seen most in the sales of private property with no direct example of the State engaging in such a transaction.

5.1.3.2 Assessment

Government is within its authority to purchase and lease lands. This model would be best suited for currently occupied coastal properties that are at a continued risk. It would provide a pathway for current owners to transition their property into the public domain while continuing to live or lease their current residence or property. This could include short-term rentals, where otherwise allowed under the applicable laws and ordinances that differ between Counties. Case law offers little guidance on restrictions to the State’s ability to enter into a leaseback transaction, but does highlight the complexity of these transactions.⁴⁹

This approach would provide coastal property owners more flexibility and an opportunity to transition away from their vulnerable properties while reducing incentives for continued habitation and new development in hazardous coastal areas. By establishing a definitive target date, there would be a clear timeline to encourage planning and participation. To mitigate the potential for incentivized coastal investments, additional safeguards – such as restrictions on new construction or prioritizing pre-existing property owners – will need to be contemplated

Although one challenge to this approach is cost, government could recoup some costs it might otherwise bear in a buyout or eminent domain action. Costs related to final disposition of properties would also need to be factored in as dwellings become vacant and left on public property.

5.2 STRATEGY: TRANSFER OF DEVELOPMENT RIGHTS (“TDR”)

5.2.1 Description

Under this strategy, the government establishes voluntary programs that allow the owner of one property (the “sending area”) to transfer its development rights to the owner of a second property (the

⁴⁹ See generally *Wohlschlegel v. Uhlmann-Kihei, Inc.*, 4 Haw. App. 123 (Haw. Ct. App. 1983); *Weinberg v. City & Cnty. of Honolulu*, 82 Haw. 317 (1996).

“receiving area”) in order to effect changes in patterns of development. In the case of managed retreat, the sending area would be vulnerable coastal properties. The receiving area may be a designated undeveloped area or an existing neighborhood with potential for densification or infill development. The State of Hawai'i has authorized counties to transfer and regulate TDR under HRS § 46-161 thru 165 to protect the natural scenic, and agricultural qualities of open lands, enhance sites and areas of special character or special historical, cultural, aesthetic, or economic interest or value; protect lands at risk from sea level rise, coastal erosion, storm surge, or flooding, and enable and encourage flexibility of design and careful management of land in recognition of land as a basic and valuable natural resource.

5.2.2 Assessment

Government maintains the right to zone and provide respective approvals and development rights to develop lands. A regulatory framework may assist in providing equal access to properties to participate. A potential challenge in implementation may be that development rights are often site specific and take into consideration the unique community, natural, cultural, and historic features of a particular parcel. Therefore, transfer of development rights would not likely be absolute without needing to go through the approvals required under state and federal law for the parcel to which the rights are being transferred.

Areas that would allow for a transfer of those rights without raising concerns for those conditions may likely be areas where the development rights would have been allowed without significant effort, therefore also providing minimal value to the transfer. The greatest value here may be policy in nature, providing confidence to a landowner that they will be able to obtain the value of development in a new area and encouraging their decision to retreat voluntarily from the shoreline. More study is required to assess the viability of TDR credits within the market.

5.3 STRATEGY: SHORELINE SETBACKS

5.3.1 Description

Under this strategy, the government would establish shoreline setbacks to limit, regulate and control development in the shoreline area consistent with managed retreat policy objectives. Shoreline setbacks fall within the zoning authority of State and Counties and serve as part of the regulatory framework that seeks to uphold the duty to protect public trust resources.

Shoreline setbacks establish how close to the shoreline a structure may be built. Setbacks therefore play a critical role in establishing the balance between private use and enjoyment of valuable coastal properties and competing public interests in hazard mitigation and environmental protection. Because setbacks directly affect development, the application and enforcement of setback ordinances on private property may give rise to threatened or actual takings claims. These restrictions would be applicable to new development or redevelopment, but not applicable for existing development or structures that are under risk of coastal erosion and sea level rise.

Maui County became the first to adopt a variable setback that utilizes a combination of the erosion hazard rate and minimum setback lines based on lot depth (see Shoreline Rules for the Maui Planning Commission § 12-203-6). Kaua'i and Hawai'i Counties have similar laws and have enacted updates to respond to increasing coastal hazards, with Kaua'i also imposing a formula based on historical data.

The City and County of Honolulu's most recent shoreline legislation is codified in Ordinance 23-3, which increased the current 40 foot shoreline setback depending on the circumstances. As a result, after July 1, 2024, the general shoreline setback will be (1) sixty feet plus 70 times the annual coastal erosion rate, up to a maximum setback of 130 feet, on zoning lots within all development plan and sustainable communities plan areas except the Primary Urban Center Development Plan area; (2) 60 feet in the Primary Urban Center, for lots with no documented coastal data, for lots with coastal accretion, or where the historical erosion data show an annual coastal erosion rate of zero; or (3) where lot sizes have a buildable areas of less than 1,500, the setback may be adjusted by the Director; however, a minimum 40 foot setback must be maintained. The ordinance also has additional allowances and restrictions based on the condition of a particular property or structure, including when repairs may be done.

5.3.2 Assessment

Land use and zoning regulations are well-within the government's historical exercise of power, and shifting the path of development and/or redevelopment away from the coast is seemingly one of the most effective tools in retreat. Given the high standard for a regulatory taking, it is arguable that all of the current county laws and regulations may be adjusted even further without giving rise to a takings claim. The regulatory takings claim analysis for this strategy is expected to be similar to the analysis for other approaches. Within the current frameworks, there is still room for an economically beneficial use of coastal properties, and exceptions and exemptions to the law contemplate ensuring that at least portions of the property remain economically useful.

The limitation and benefit of shoreline setbacks is that they are incremental and forward-looking. They provide current property owners notice and a framework for future use of their properties that slowly move development away from the coast. By allowing continued development, shoreline setbacks prevent a total taking by retaining some economically beneficial use of coastal properties. Of note, on Kaua'i, variances are available when the setback leaves the owner with no buildable area further avoiding a question of total taking. At the same time, as they move development and redevelopment of coastal properties mauka, we will see decreased density in hazard-prone areas. In isolation, however, shoreline setbacks may not respond quick enough for the specific coastal areas that are seeing immediate and dramatic impacts. That is why they are one tool that may be used in conjunction with others.

5.4 STRATEGY: REGULATION OF SHORELINE HARDENING

5.4.1 Description

Under this strategy, the government would limit, regulate and control shoreline hardening structures in shoreline areas.

5.4.2 Assessment

Although this assessment concludes the risk of successful takings claims based on the implementation of managed retreat is potentially relatively low, takings claims may arise when the government does not allow a shoreline property owner to harden the shoreline to protect against rising sea levels and coastal erosion. It is well established that permanent structures designed to control erosion often adversely affect shoreline processes, including the size, shape, and location of prized beaches.

As with shoreline setbacks, government regulation of shoreline hardening has evolved to address the tension between private property rights and the need to protect coastal areas from natural hazards. Historically, laws and regulations provided pathways for landowners to seek exemptions, emergency permits, or variances to allow shoreline hardening. However, with the passage of Act 16, discussed below, the legal landscape has shifted significantly, particularly for residential properties. With strict limitations on shoreline hardening, Act 16 prohibits the construction of private structures like seawalls and revetments on sandy beaches or in areas where such structures interfere with public recreation and cultural practices. This policy shift prioritizes the preservation of natural shoreline processes over private hardening solutions.

Faced with the destruction of economically valuable and often emotionally cherished coastal properties, owners often seek variances and emergency permits from government agencies to allow shoreline hardening. If the government denies the owner's request for a variance, the owner may threaten, or indeed, file a lawsuit alleging an unpermitted regulatory taking. For additional clarity regarding how this might apply, the Final Report and incorporated recommendations will further apply these concepts to the key strategies and scenarios. Further analysis will require fact specific scenarios on a case-by-case basis.

5.4.2.1 Act 16

Act 16⁵⁰ is consistent with and broadly supportive of the implementation of managed retreat in Hawai'i in relation to potential regulatory takings claims. Act 16 made significant changes to the Hawai'i Coastal Zone Management Act ("HCZMA").

Act 16 amended the HCZMA to take into account the dynamic nature of beach processes in Hawai'i. The Legislature further found that hardship variances allowing shoreline hardening "set into motion a cycle of shoreline armoring that causes 'flanking,' or amplified erosion, on properties adjacent to armored shorelines . . . [and t]his cycle, caused by a combination of beach erosion and coastal policy, has resulted in the narrowing and even elimination of beaches to the extent that they can no longer be used for public recreation or cultural practice."⁵¹

Thus, Act 16 amended the definition of the term "beach" to include a range of dynamic shoreline physical processes.⁵² Act 16 also limits rebuilding or replacing currently permitted artificial shoreline hardening measures. Most importantly, Act 16 prohibits the "construction of private shoreline hardening structures including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities."⁵³

Another enforcement-related area of concern relates to agencies granting emergency permits and variances for shoreline hardening structures. Such authorizations may work at cross-purposes to the relatively straightforward and bright-line prohibition under Act 16. In addition, as a practical matter it appears that shoreline property conditions initially identified as "emergency" tend to remain unresolved

⁵⁰ S.B. No. 2060, Act 16 (Haw. 2020).

⁵¹ Cite.

⁵² Under the amended HCZMA, the term "beach" is defined to include "sand deposits in nearshore submerged areas, or sand dunes or upland beach deposits landward of the shoreline, that provide benefits for public use and recreation, for coastal ecosystems, and as a natural buffer against coastal hazards."

⁵³ Cite.

for extended time periods. Such misuses or abuses of emergency permitting regimes poses challenges to legitimacy and undercuts the legal and policy rationale for such programs.

Act 16 is relatively new and untested in its lack of judicial interpretation, and currently BLNR is in the early stages of gaining experience with implementation. Additional time is needed to evaluate the results of implementation of Act 16. In addition, ongoing efforts to enforce Act 16 may continue to reveal the need not only for gaining more experience, but also greater coordination between state and county agencies.

5.5 STRATEGY: ROLLING EASEMENTS

5.5.1 Description

Under this strategy, an easement can be achieved through regulation or the transfer of property rights that creates a moveable shoreline boundary that migrates with sea level rise. This strategy is evaluated in greater depth in the Sea Level Rise and Coastal Land Use in Hawai'i: A Policy Tool Kit for State and Local Governments (Codiga 2011).

Regulatory rolling easements can be achieved through: (1) local zoning that restricts shore protection; (2) regulations that prohibit shore protection by state coastal or wetland programs, or require removal of structures standing on the beach or in the wetlands; (3) permit conditions that require public access along the dry beach in return for a building permit; and (4) permit conditions that require public access along the inland side of a new shore protection structure, in return for a permit to build such a structure.⁵⁴

Rolling easements through a property rights framework can be achieved through: (1) affirmative easements that provide the public with the right to walk along the dry beach even if the beach migrates inland; (2) conservation easements that prevent landowners from erecting shore protection structures or elevating the grades of their land; (3) restrictive covenants in which owners are mutually bound to avoid shore protection and allow access along the shore to migrate inland; (4) future interests that transfer ownership of land whenever the sea rises to a particular level; (5) migrating (ambulatory) property lines, which move as the shore erodes, enabling waterfront parcels to migrate inland so that inherently waterfront activities can continue; (6) legislative or judicial revisions and clarifications regarding the inland migration of public access along the shore and the rights of landowners to hold back the sea; and (7) transferable development rights—especially along migrating barrier islands—that provide those who yield land to the rising sea the right to build on land nearby.⁵⁵

Rolling easements will typically include: (1) no shoreline armoring; (2) a rolling design boundary (e.g. dune vegetation line), seaward of which the owner's property rights are reduced; (3) no new structures seaward of the rolling design boundary; (4) encouragement or requirement to remove pre-existing structures when erosion leaves them seaward of the rolling design boundary; (5) including clear disclosure, including in real estate transactions, of assumption of risk associated with coastal hazards and the potential use of liability waivers to limit future claims related to shoreline erosion, flooding, or

⁵⁴ U.S. Environmental Protection Agency, *Rolling Easements, Climate Ready Estuaries* (2011) at 6-7, available at <https://www.epa.gov/sites/default/files/documents/rollingeasementsprimer.pdf>.

⁵⁵ *Id.* at 7.

property damage; (6) provisions for public access; and (7) indication whether beach nourishment and adding sand to dunes are allowed.⁵⁶

5.5.2 Assessment

The Attorney General Opinion Letter No. 17-01 effectively acknowledges a rolling easement-type of transfer of property rights from public to private based on the State's inchoate right in future submerged lands - the erosion and inundation of privately own lands as a result of a constantly advancing shoreline is the ripening of the State's rights that preexist private ownership. It has not been tested through a judicial action, and the Board of Land and Natural Resources is only beginning to enforce it. However, it can and should be enforced on a more systematic basis in order to support retreat in appropriate circumstances.

Components of this strategy are already covered in Hawai'i's public trust doctrine, as discussed, which provides for public access and prohibits private ownership below the annual highest wash of the waves, or the statutory shoreline. The public trust doctrine in Hawai'i has a rolling effect in that the public trust follows the waterline as erosion or other impacts affect coastal properties. This ensures public access and prohibits development by coastal property owners within the public trust.

Components of this are also already incorporated into zoning laws and land use restrictions by both the state and counties. The benefit of this approach is that minimal, incremental impacts on valuation are less likely to give rise to a takings claim. With this in mind, the assessment relating to setbacks is most pertinent as at what point regulations and restrictions rise to a level that warrants just compensation. As a practical matter, further research may be needed regarding how the requirements of a rolling easement policy and program would be implemented by title companies and financial institutions given the changes to title and ownership that may be necessitated by rolling easements.

5.6 STRATEGY: DOWNZONING AND DEVELOPMENT RESTRICTIONS

5.6.1 Description

Downzoning refers to zoning restrictions that reduce permitted densities or restrict previously allowed uses for a parcel.⁵⁷ "Specific down-zoning measures could include changing the classification of a zone, for example from 'residential' to 'conservation' or reducing the allowed residential density from three units per acre to one unit per acre."⁵⁸

⁵⁶ *Id.* at 14.

⁵⁷ Siders, Anne, *A Legal Handbook on Shifting Development Away from Vulnerable Areas*, Columbia Law School Center for Climate Change at 97, available at <https://climate.law.columbia.edu/sites/default/files/content/docs/others/Siders-2013-10-Managed-Coastal-Retreat.pdf>.

⁵⁸ *Id.*

5.6.2 Assessment

Downzoning alone does not constitute a taking, and a takings claim based on downzoning would be evaluated under the *Penn Central* test.⁵⁹ As reiterated by the courts, "a land use regulation does not constitute a taking if the regulation does not deny a landowner all economically viable use of the property and if the regulation substantially advances a legitimate government interest."⁶⁰ The foregoing generally assumes there are no vested rights or permitted development that has already taken place, although there may be exceptions for property rights that have not been acted upon in a timely manner.

5.7 STRATEGY: AMEND CONDOMINIUM GOVERNANCE LAWS

5.7.1 Description

In Hawai'i, the implementation of managed retreat strategies may occur on or otherwise involve properties that are under a condominium property regime established pursuant to Hawai'i state condominium statutory law, primarily in HRS ch. 514B ("condo laws").

Condo laws may create barriers to the implementation of managed retreat strategies including in response to sea level rise and shoreline erosion. For example, condo laws may impose certain fiduciary types of duties on a condo board of directors to preserve property values, restore common elements (such as seawalls) or otherwise protect owner members from impaired property values and loss of use and loss of economic value of their properties. Condo law provisions relating to governance of condominiums may necessitate amendment to clarify and strengthen facilitation of managed retreat strategies.

5.7.2 Assessment

Additional research is needed, potentially through case studies, to assess the actual impact of condo laws on potential managed retreat strategies. To the extent condo laws impose duties on directors that hamper or thwart managed retreat policy and program objectives, statutory amendments may be necessary through the legislative process.

5.8 STRATEGY: MANAGED RETREAT STATUTE OR AMEND HRS 205A WITH MANAGED RETREAT SECTION

5.8.1 Description

This report proposes amendments to HRS ch. 205A to strengthen public trust protections of sandy beaches and dunes. The Hawai'i Coastal Zone Management Act ("HCZMP") was adopted in 1977 codified as HRS ch. 205A. The purpose of the Hawai'i HCZMP is to "provide for the effective management, beneficial use, protection, and development of the coastal zone." In Hawai'i, the coastal zone encompasses all land areas and extends three miles offshore to the edge of the State's jurisdiction (HRS 205A-1). The HCZMP provides a framework for State action and guidance to the counties through

⁵⁹ See *Buckles v. King County*, 191 F.3d 1127 (9th Cir. 1999)(Where the Ninth Circuit held that a rezoning from commercial to residential did not constitute a taking that warranted just compensation).

⁶⁰ *Id.* (citations omitted).

the Special Management Area (SMA) regime. The HCZMP is also responsible for protecting, creating, and enhancing public access to the coast (HRS 205A-2).

5.8.2 Assessment

At this time, we are not aware of a statutory definition of “managed retreat” (or directly similar cognate terms) in the Hawai'i Revised Statutes. While the foundational support for managed retreat exists within the Hawai'i State Constitution and HRS, further clarification and emphasis as an important strategy can support public policy generally and communicate clearly to stakeholders the State's intention. Legally, while it may not be necessary, clarity and strengthening can further support the State if claims are brought, or deter the threat of such claims.

In relation to a potential future statutory definition, a visioning definition of managed retreat should be developed to reflect and incorporate the opportunities that may become possible for a future vibrant, healthy, resilient community if coastal land were reclaimed.

5.9 STRATEGY: TORT CLAIMS AGAINST GOVERNMENT AGENCIES FOR COASTAL HAZARDS

5.9.1 Description

Under this strategy, a property owner may bring a claim against a government agency for negligence in failing to protect it from coastal hazards. The claim could take different forms such as a property owner wanting to protect itself from coastal hazards with shoreline hardening, or conversely a property owner experiencing coastal hazards due in part to erosion that has been exacerbated by other property owners that the government failed to prevent public nuisances. On a larger scale, there may be growing risk for tort claims to evolve beyond government negligence to include a litany of climate-change-related harms.

5.9.2 Assessment

Generally, the federal and state governments enjoy sovereign immunity that prevents their agencies from being sued without their consent, essentially a waiver of immunity. However, the Federal Tort Claims Act and the Hawai'i State Tort Liability Act (HRS §662) allow for compensating individuals who have suffered personal injury, death, or property loss or damage caused by the negligent or wrongful act or omission. As instrumentalities of the State, Counties' qualified immunity differs. Generally, Counties have specific processes to address tort claims.

The AEP decision⁶¹ addressed climate change litigation by ruling that the Clean Air Act superseded federal common law in this area. The AEP decision and subsequent case law, to the extent applicable, may be interpreted as restricting the use of federal common law to pursue public nuisance claims against greenhouse gas emitters, as an example, effectively channeling climate change mitigation through regulatory mechanisms rather than judicial ones. This stance potentially leaves communities vulnerable to climate change, such as the Native Village of Kivalina, without a direct means to seek compensation for the damages they suffer due to environmental degradation. This underscores the

⁶¹ *State of Connecticut v. American Electric Power Co., Inc.*, 406 F. Supp. 2d 265 (S.D.N.Y. 2005).

limitations of a purely regulatory approach to addressing climate impacts, highlighting the need for legal frameworks that allow for direct compensation to affected communities. As policymakers and legislators consider the future of climate change legislation, the importance of maintaining avenues for compensatory justice within the legal system becomes clear, ensuring that those disproportionately affected by climate change have the means to seek redress and support for relocation and adaptation efforts.

5.10 STRATEGY: MANDATORY DISCLOSURE OF SLR COASTAL HAZARDS

5.10.1 Description

Under this strategy, a property owner must be informed of the impact, or predicted impact, of sea level rise coastal hazards on his or her property, typically when a property is being acquired. Under this approach, real estate brokers work with prospective purchasers of real property to ensure they have significant information about coastal hazards. This proactive approach helps to deter buyers that do not understand the risks, proactively encourage education that may lead to better land stewardship, and ultimately prevent takings claims based upon the claims of investment-backed expectations.

5.10.2 Assessment

In Hawai'i a disclosure requirement was enacted and is required at the point of sale by the seller of a property.⁶² In addition to various other disclosure requirements, Hawai'i Revised Statutes § 508D-15(a)(5) specifically requires mandatory disclosure if a property is within the sea level rise exposure area.⁶³

An H.R.S. § 508D-15(a)(5) disclosure would be relevant in a takings claim, specifically when a court assesses a property owner's reasonable investment-backed expectations, the third factor in a *Penn Central* analysis. Arguably, a buyer is now on notice of sea level rise impacts and should factor that into their expectations.

Of course, the breadth and depth of any notice and what a property owner should reasonably expect is not a bright line rule, and whether or not a court finds the current disclosure sufficient is yet to be seen. The reasonableness of an investment-backed expectation, however, would be informed if a property buyer knows, for example, that private property lines are anticipated to migrate landward due to changes in the waterline or that development rights may be affected by zoning laws or land use regulations that limit development along the coastline. With that in mind, a review of the current disclosure law may be warranted to assess whether additional requirements may increase notice that would reduce the possibility of future takings claims. Realtor associations in some jurisdictions such as

⁶² H.R.S. § 508D-14

⁶³ H.R.S. § 508D-15(a)(5)(For properties “[w]ithin the sea level rise exposure area as designated by the Hawaii climate change mitigation and adaptation commission or its successor, subject to the availability of maps that designate the five areas by tax map key (zone, section, parcel), the seller shall include the material fact information in the disclosure statement provided to the buyer subject to this chapter. Each county shall provide, where available, maps of its jurisdiction detailing the five designated areas specified in this subsection. The maps shall identify the properties situated within the five designated areas by tax map key number (zone, section, parcel) and shall be of a size sufficient to provide information necessary to serve the purposes of this section. Each county shall provide legible copies of the maps and may charge a reasonable copying fee.”)

California have tried to be proactive in providing additional notice to buyers, which may be considered by others seeking to embrace such law

As for appraisals, further consideration could be given to potential statutory provisions which address appraisals. Specifically, it could be required by statute that appraisals comply with certain substantive requirements, which in this instance would be requirements pertaining to SLR and coastal hazards. In addition to any such statutory provisions, consideration could also be given to modifying non-legal industry or professional guidelines governing appraisers. A similar process and evaluation may be possible regarding the criteria utilized by real property taxation authorities.

6 CONCLUSION

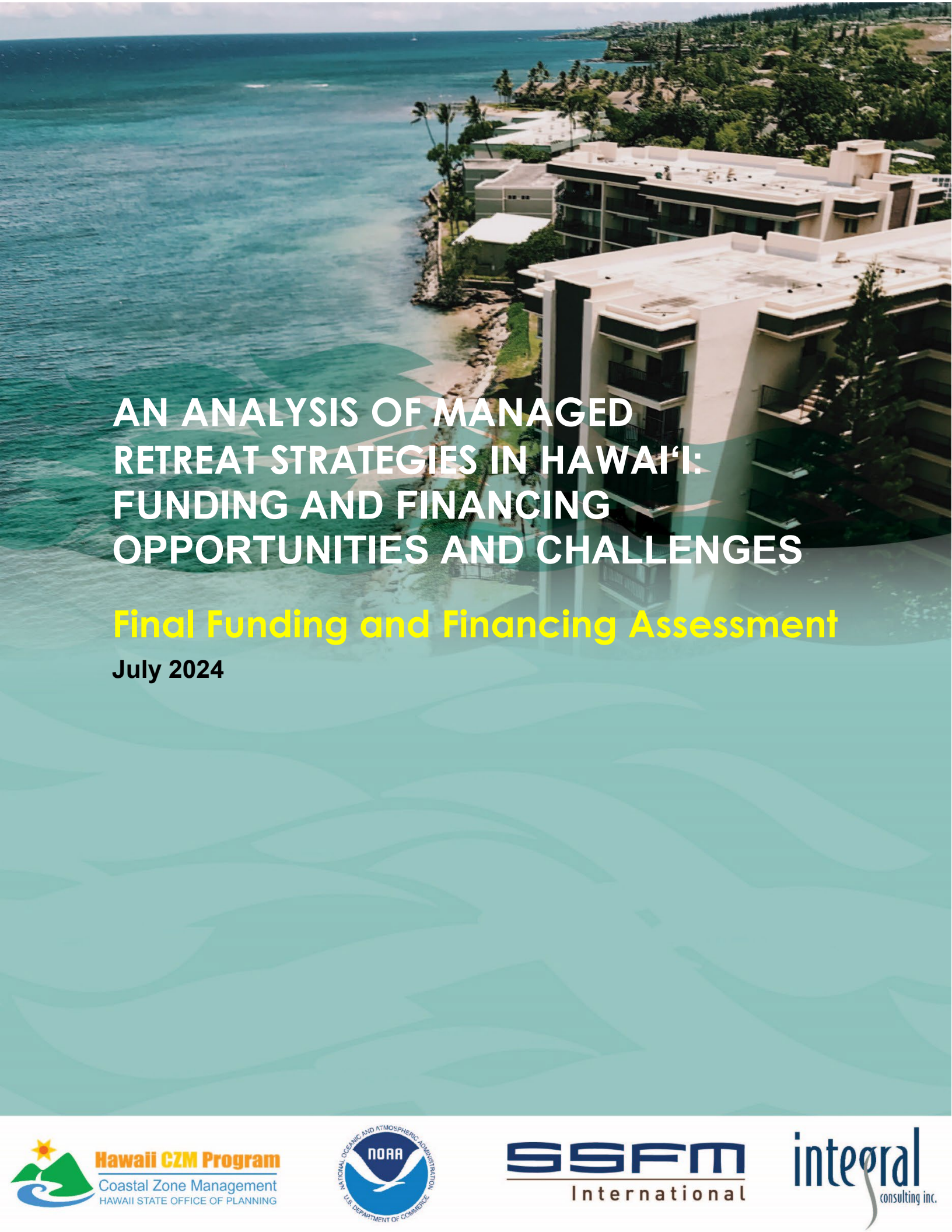
In general, the law and judicial history do not prohibit policymakers from utilizing the many tools that exist to make decisions around when, how, and where to apply a managed retreat framework. As decisions continue to be rooted in constitutionally mandated requirements to protect public resources, those decisions will likely have a stronger position if challenged.

Despite that legal framework, there is little to stop a claim from being brought forward, regardless of the merits. While the destructive impact to public and natural resources carries a significant cost, governments should be prepared for the costs, financial and otherwise, that could be incurred even in the pursuit of successful courses of action.

State, federal, and local laws provide strong support for government action in protecting public resources, and those laws continue to move in the direction of greater support and in some cases even a duty to protect. Strengthening mandatory disclosure requirements in recent years goes directly to the heart of the partial taking analysis, where the reasonable investment-backed expectations of a landowner are a factor in determining if a taking has occurred. Additionally, despite bullish claims from private property owners, the legal analysis generally does not support a widespread concern with successful takings claims, especially where regulatory frameworks are developed accounting for those rights and are based in their affirmative public trust duties.

While legal and regulatory frameworks couple with judicial decisions that generally support managed retreat, even against takings claims, it is important to understand that many areas of law implicated within these scenarios are unsettled law. This legal gray area demands ongoing tracking while also being mindful of the various factors that work for and against a proposed retreat action. Sharing of best practices between jurisdictions, investing in ongoing in-depth and fact-specific analysis, and shoring up regulations where possible are all important continued strategies.

APPENDIX C: FUNDING & FINANCING ASSESSMENT



AN ANALYSIS OF MANAGED RETREAT STRATEGIES IN HAWAII: FUNDING AND FINANCING OPPORTUNITIES AND CHALLENGES

Final Funding and Financing Assessment

July 2024

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Acronyms

- > BLNR – Board of Land and Natural Resources
- > BRIC – Federal Emergency Management Agency Building Resilient Infrastructure and Communities Grant Program
- > CDBG – U.S. Department of Housing and Urban Development Community Development Block Grant
- > CDBG-DR – Community Development Block Grant - Disaster Recovery
- > CDBG-MIT – Community Development Block Grant - Mitigation
- > CDUP – Coastal District Use Permits
- > CFD – Special Tax District – Community Facility District
- > CIP – Capital Improvement Programs
- > CZMA – Coastal Zone Management Act
- > CZMP – Coastal Zone Management Program
- > DBEDT – Department of Business, Economic Development, and Tourism
- > DLNR – Department of Land and Natural Resources
- > FEMA – Federal Emergency Management Agency
- > FLAP – Federal Land Acquisition Program
- > FMA – FEMA Flood Mitigation Assistance Program
- > GET – General Excise and Use Tax
- > HMA – FEMA Hazard Mitigation Assistance Program(s)
- > HMGP – FEMA Hazard Mitigation Grant Program
- > HRS – Hawai'i Revised Statutes
- > HTA – Hawai'i Tourism Authority
- > HUD – U.S. Department of Housing and Urban Development
- > IBC – International Building Code
- > ID – Special Tax District – Improvement District
- > IRC – International Residential Code
- > LLCF – Legacy Land Use Conservation Fund
- > LWCF – Land and Water Conservation Fund
- > MRRF – Managed Retreat Revolving Fund

- > NFIP – National Flood Insurance Program
- > NOAA – National Oceanic and Atmospheric Administration
- > OCCL – Office of Conservation and Coastal Lands
- > OPSD – Office of Planning and Sustainable Development
- > ORLP – Outdoor Recreation Legacy Partnership
- > PA– Public Assistance
- > PDMP – Pre-Disaster Mitigation Program
- > PILOT – Payment in Lieu of Taxes Program
- > RFP – Request for Proposal
- > ROFR – Right of First Refusal
- > RPT – Real Property Tax
- > SCORP – Statewide Comprehensive Outdoor Recreation Plan
- > SFHA – Special Flood Hazard Area(s)
- > SID – Special Tax District – Special Improvement District
- > SLR-XA – Sea Level Rise Exposure Area
- > SMA – Special Management Area
- > STRL – FEMA Safeguarding Tomorrow Revolving Loan Fund Program
- > TAT – Transient Accommodations Tax
- > TDR – Transferrable Development Rights
- > TPL – Trust for Public Land
- > USACE – U.S. Army Corps of Engineers

1 PROJECT PURPOSE, GOAL, GUIDING PRINCIPLES AND TASKS

1.1 PROJECT PURPOSE AND GOAL

The purpose of this project is to provide an analysis of ways to plan and carry out managed retreat in Hawai'i that will include (i) an analysis of relevant existing policies, laws, and regulations, (ii) an analysis of potential strategies to implement and finance managed retreat, (iii) identification of challenges to implementation including practical and legal issues, (iv) identification and analysis of potential solutions to address those challenges, and (v) application of potential solutions to two illustrative case studies. The lead consultant, SSFM International, Inc., is working with the Office of Planning and Sustainable Development (OPSD) and a team of technical subconsultants (the Project Team) to create and execute a managed retreat analysis.

The project's goal includes recommendations of amendments and/or new policies to facilitate the option of managed retreat, and recommendations of the most promising funding and financing strategies to support the implementation of a managed retreat strategy. For the purpose of this report, managed retreat is defined as the physical movement of existing structures and shifting of future development patterns away from areas subject to coastal hazards (Hino et al., 2017; Esteves, 2014). This report has a further focus on private properties, as distinct from public infrastructure, and the threats posed by coastal erosion, as opposed to the more gradual inundation impacts caused by sea level rise.

1.2 FUNDING AND FINANCING ASSESSMENT

The funding and financing assessment provides an evaluation of mechanisms that have been used in Hawai'i and elsewhere to facilitate the removal of at-risk assets from the coastal hazard zone. It is assumed that reduction of risk is the primary objective, while the second is to protect, conserve and enhance access to and the use of public trust resources in the coastal zone. Such resources include beaches, coastal reserves, and nearshore surf breaks. These resources are critical drivers of tourism and recreation in Hawai'i, but also intrinsically important for social and cultural reasons.

Although managed retreat is identified as the preferred long-term response to coastal hazards and has recently received substantial attention both in Hawai'i and elsewhere, case studies of successful implementation of retreat are limited in areas with dynamic coastal zones and high property values such as Hawai'i (Landry et al., 2003; Gerrard, 2013). Existing examples of retreat are mostly from post-disaster situations involving relocation of low- to moderate-value properties, and mostly in the context of riverine or storm surge flood impacts.

Managed retreat can be funded either through grants or by accessing ongoing streams of revenue. This assessment provides an overview of numerous funding sources that have previously been used for managed retreat projects or could potentially be used for that purpose. This assessment has a focus on actions that could be taken by government entities, as some form of public funding will inevitably be required to move from reactive disaster relief to proactive retreat, and for the cleaning and ongoing management of areas that are converted from private to public ownership.

This assessment does not examine funding and financial support available to offset costs that would be borne by private asset owners. Those costs may be partially compensated through disaster relief programs or private insurance; on the other hand, they may simply become irreversible reductions in personal wealth. The full spectrum of public and private costs and benefits would need to be considered in any benefit cost analysis of managed retreat options, but such analysis is outside the scope of this document. Further analysis of the full range of public and private will be undertaken in the case study component of the project.

1.2.1 Managed Retreat Scenarios

This assessment takes a broad view of managed retreat and the forms in which it could be implemented. Such approaches range from neighborhood-scale, post-disaster and buyout programs to land use controls and trigger-based approaches that result in the gradual acquisition of threatened properties. This assessment does not attempt to recommend any particular mechanism, but rather provides an overview of each approach and comments on their applicability to Hawai'i.

The focus of this report is on retreat in circumstances where a property is already developed, and the goal is to retreat residential and commercial property to reduce risk exposure and preserve the coastal environment and public trust resources. In cases where vulnerable lands are being considered for intensification of development, existing planning and regulatory frameworks, and coastal zone management processes can be applied to preemptively minimize increases in exposure. Fiscal and economic impacts of land use planning interventions are site and policy-specific, so cannot be fully estimated in a state-level assessment. Further discussion of policies and regulations to prevent development intensification in vulnerable areas can be found in the Policy Assessment.

1.2.2 Funds vs. Financing

This assessment separates the sources of funding into those that represent either existing or potential sources of funds (analogous to the funds available in a bank account), versus those that could be financed through utilization of ongoing sources of revenue (analogous with a period salary payment). The former category includes monies available in the general fund or made available via the annual budget process in the capital improvements program (CIP) or in existing special funds with purposes that are aligned with coastal zone management and land conservation. Grants from federal agencies provide another key potential source of funding. It should be noted that there is a hybrid option, whereby a fund can be established using monies borrowed using a stream of revenue for repayments (e.g. through bond raising).

Financing options considered in this assessment focus on existing streams of revenue via taxation, with consideration given to potential modifications to existing taxation programs that could deliver additional revenue and have a realistic chance of being achieved. Consideration is also given to fines and fees for encroachment. The assessment also considers innovative means of financing, including accessing private funds and implementation methods that reduce or delay expenditures in order to reduce the present-day fiscal impact of expenses related to buyouts and acquisition programs.

1.2.3 Scope of Required Funding

To frame the financial requirements associated with managed retreat, it is informative to look at the scope of exposure to sea level rise and associated coastal hazards. If a funding source is conceptually appealing but is likely to generate only \$100,000 per annum in revenue, then it is not sufficient to address funding needs of \$100 million per year.

The sea level rise exposure area (SLR-XA) is a useful region to establish an upper bound for the area where managed retreat could potentially be applied, although retreat will likely not be implemented across the region but applied more selectively when certain criteria are met. These criteria could include those identified in [HRS 173A-2.6](#), which articulates land acquisition priorities to be applied by the Board of Land and Natural Resources.

The value of land and buildings within the SLR-XA is substantial and increasing rapidly. In 2017, the Hawai'i Sea Level Rise Vulnerability and Adaptation Report estimated that there were around 6,500 flooded structures valued at \$19 billion dollars within the 3.2-foot-scenario SLR-XA. This excludes damage to infrastructure such as flooding of 38 miles of roads. The impacts are not distributed evenly,

with O'ahu, Kaua'i and Maui being the islands with the greatest value and number of assets at risk due to sea level rise:

- > Hawai'i - \$426 million, 132 structures
- > Maui - \$3.2 billion, 760 structures
- > O'ahu - \$12.9 billion, 3,800 structures
- > Kaua'i - \$2.59 billion, 930 structures
- > Lāna'i - \$10 million, 13 structures
- > Moloka'i - \$285 million, 780 structures¹

In 2023 it was estimated that the estimated value of built assets in the SLR-XA on O'ahu had increased to at least \$18.6 billion (excluding roads and other infrastructure), and property tax revenue for the City and County of Honolulu from properties within SLR-XA represented approximately 8% of all property tax revenue for the municipality. The increase in exposure is due to changes in development patterns, property values, and changes in the methodology used to define the SLR-XA region.²

The State of Hawai'i [Coastal Zone Management Program's Section 309 Assessment and Strategy 2021-2025](#) identifies average annualized losses for flooding and coastal erosion of \$16 million per year and \$10-11 million per year, respectively. Note that the flooding estimate includes terrestrial flooding. For the purposes of this assessment, the focus is on funding sources and financing options that provide a minimum of \$10 million per year for implementation of managed retreat. Additional criteria that are used in the financial assessment of the various options are outlined in the section below.

1.2.4 Desirable Attributes of Funding and Financing Sources

In identifying potential sources of revenue, this assessment follows the principles identified by the Institute on Taxation and Economic Policy³, which promotes tax systems which have the following characteristics:

- > Equity, comprising:
 - Vertical equity – requiring high-income taxpayers to pay a larger share of their income in taxes than those with lower incomes;
 - Horizontal equity – taxpayers with the same circumstances pay the same taxes, and there aren't special tax breaks or taxation of selected groups;
- > Simplicity, including efficiency (revenue divided by the cost of collection, enforcement and compliance, and distortions caused by the tax);
- > Exportability (the ability to levy the tax on non-residents); and
- > Adequacy (generates sufficient funds to balance the expenditures required).

The Hawai'i Tax Review Commission in 2017 expanded upon these principles in the publication [Principles of Sound Tax Policy](#). They added a criterion for stability (prioritizing taxes that are less volatile in terms of collections.)

¹ State of Hawai'i, [Hawai'i Sea Level Rise Vulnerability and Adaptation Report](#), 2017.

² State of Hawai'i, [Hawai'i Sea Level Rise Vulnerability and Adaptation Report 2022 Update](#)

³ Institute on Taxation and Economic Policy, [Tax Principles: Building Blocks of A Sound Tax System](#), December 1, 2012

This assessment focuses on identification and assessment of potential funding sources that are stable, equitable, and provide sufficient funding for the scope of the policy challenge, with a preference for the use of existing revenue streams rather than the creation of additional tax burdens. It also prioritizes funding sources and financing options that are linked to economic activity in the areas most vulnerable to coastal hazards, to ensure that there is a clear link between the objectives of managed retreat and the funding sources used for its implementation.

1.2.5 Risk Communication as a Means of Reducing Costs of Managed Retreat

One of the key mechanisms for reducing the level of financial risk due to exposure of assets to coastal hazards is not to reduce the number of assets, but rather to provide information about risk exposure and to see the market incorporate that risk information and reduce the value of assets at greatest risk. To date, property prices within the SLR-XA do incorporate exposure to long term passive SLR, but do not appear to be fully incorporating the stochastic or seasonal risks due to erosion (Tarui et al., 2023). Risk communication, via real estate disclosures and public dissemination of information, is a key avenue for reducing the financial burden on those tasked with managed retreat, as it should result in a decline in the value of exposed property.

This assessment does not directly address risk communication, except to note that enforcement actions related to encroachment on conservation districts and actions that harm the public trust, such as use of illegal shoreline protection structures, signals the intent of the state and county governments to preserve public trust resources. Risk disclosure requirements in property transactions, introduced by [Act 179 \(21\)](#), also provide a mechanism to influence property transaction choices and would be expected to result in reduced willingness to pay for properties with high levels of exposure.

Insurance premiums are another means by which risk is communicated to property owners, especially when insurance coverage is no longer available. Premiums are largely outside direct control of government. Premiums are determined at the property or asset level by insurers based on the value of the insured assets, the risk exposure of those assets, vulnerability of assets to a hazard (e.g., level of flood proofing) and a range of business considerations including the cost of reinsurance. Community-level interventions that reduce vulnerability, such as through the construction of levees, have the potential to result in lower policy premiums, as discussed further in Section 2.1.1.2.

2 STATE AND LOCAL FUNDING SOURCES

This section summarizes potential sources of funding from state and county sources. The first subsection addresses raising funds through issuance of debt, in the form of government bonds. Subsequent subsections outline existing and potential revenue streams and their uses, and fees and charges that could be levied upon users (and misusers) of public trust resources.

Of this range of options, tax revenues stand out as among the most reliable, more specifically, the use of TATs. Looking at TATs alone, the change in its revenue distribution in 2020 (when the state stopped distributing money to the counties) left the state with \$103 million in annual funding—a 'windfall' of sorts. In addition, the counties were allowed to raise their own TAT, at 3%, which provides an additional benefit of about \$90 million. The revenue to the counties is unevenly distributed, with O'ahu and Maui having more of the money/revenue raising potential. Using this tax revenue to secure bond funding, millions of dollars could be raised to fund and implement managed retreat.

2.1 EXISTING FUNDS

There are a number of existing funds that could potentially be applied to managed retreat. Some of these funds have existing sources of revenue and expenditure authorizations that would be applicable without modification, while others would require changes to the definitions and funding arrangements.

Because the General Fund is resourced by such a broad range of public revenues, it is more resilient to fluctuations in the level and distribution of the state's productivity and economic activity year over year. Additionally, its broad reach makes allocation to new objectives, such as retreat, more attainable. Special funds retain this robustness, but trade spending flexibility with ease of use, since the funds are already established, but their applications are limited.

It can also be seen that none of the funds that currently exist are sufficient to address the scope of the program that may be necessary for implementation of a statewide managed retreat program in Hawai'i. It may be possible to amend the revenue allocation and purpose of existing funds or establish new funds for managed retreat. These funds must have a source of appropriation or revenue, which could simply be a transfer from the General Fund. For this assessment, the focus is on identifying potential sources of existing or additional revenue that could support such a fund dedicated to managed retreat.

2.1.1 General Fund and Capital Improvement Programs

The General Fund is the default fund for financing any activity or expenditure not financed through another fund. It receives revenue from all taxes levied by the state of Hawai'i, including the General Excise and Use Tax (GET), income taxes, Transient Accommodations Tax (TAT), as well as non-tax revenues and other sources. The last two categories include investment earnings, fines, license and permit fees, grants, estate, and corporate taxes.

The Capital Improvements Program (CIP) appropriates funds for 'renovations, repairs and major maintenance to existing facilities, landscape improvements, new construction, land acquisition, and utility modifications.' Landscape improvements and land acquisition are both potentially means by which CIP appropriations could be directed towards a managed retreat project. Allocations to the CIP are discretionary, so there is limited certainty about the availability of funding.

In theory, it is possible to dedicate significant amounts from the General Fund or through the CIP towards managed retreat, which could be implemented in a formal manner through regulation or administrative rules, or as a variable funding appropriation during the annual budget process. This assessment focuses on more specialized sources of funding or financing, including special funds.

2.1.2 Special Funds

Special funds contain state revenues dedicated to a specific goal and have legislative restrictions on their use. Special funds are used extensively for infrastructure and education programs, particularly for road, harbor, hospital and airport facility projects. Departments are authorized to raise funds by HRS 39-53 ([Additional Powers of Departments, n.d.](#)). Non-general revenue funds administered by the agencies with objectives and activities that align with coastal zone management are relatively limited in scope but could be bolstered by additional contributions or relaxations of limits on inputs. Relevant special funds are listed below, organized by administering department:

- > Department of Land and Natural Resources (DLNR)
 - Natural Area Reserve Fund
 - Implements the purposes of Chapter 195-9 (Hawai'i Revised Statutes), including the: identification, establishment, and management of natural area reserves, acquisition of private lands for new natural area reserves, operation of the heritage program, and provision of matching funds for the natural area partnership program. Annual expenditure expected in 2022 was approximately \$360,000. Up to 2015, this fund received conveyance tax revenues of almost \$18 million per year. With removal of that funding source the main revenues are parking fees, estimated at around \$300,000 per year. This fund is therefore not a significant source of funds for managed retreat.
 - Beach Restoration Special Fund
 - Established to fund restoration of public beach lands where that restoration is considered a benefit to the state. Receives funds from fines and fees. [HRS 171--156](#) outlines the creation and conditions associated with the Beach Restoration Special Fund. Annual revenue for this fund is derived mainly from leases for public lands, fines, donation, grants, and processing fees for applications. Annual expenditure in 2022 was \$1.5 million, and could not finance purchases of multiple properties at that level. Additional revenue from enforcement of encroachment fines may increase available funding. There have been multiple fines of close to \$1 million approved by the Board of Land and Natural Resources in recent months, most of which have proceeded to contested cases. It is unclear what net revenue would be available from these fines once the staff time for preparation of the cases is deducted.
 - Special Land and Development Fund
 - Receives \$3 million per year in remittances from the TAT for 'purposes including the protection, preservation, maintenance, and enhancement of natural resources, including beaches, important to the visitor industry.'⁴ Total revenue is between \$12 and \$20 million per year. The balance of this fund is in the order of \$25-30 million.
 - (Legacy) Land Conservation Fund
 - Funded by 10% of the State Real Property Conveyance Tax, or \$5.1 million, whichever is lower. Additional funds are obtained from interest and revenue

⁴ [HRS 237D-6.5](#)

sharing from lands acquired using financing from the fund. This fund provides for: 'the acquisition and management of lands that have natural, environmental, recreational, scenic, cultural, agricultural production, or historic value, including park and trail systems that provide access to such land.' Annual revenue is \$6-10 million, while expenditure is dependent on acquisitions. Total funds available in the fund at the time of writing are around \$30 million.

2.1.3 Assessment of Existing Funds Use

SUITABILITY ASSESSMENT:

The use of existing funds would negate the need for grant funding applications or creation of new funds or programs. While appropriations from general revenue may be possible, this would likely require establishing a new special fund, as none of the existing funds have purposes or revenue raising processes that would allow for a managed retreat program of the scale necessary to address the existing and future issues faced by Hawai'i.

SUPPORTIVE ELEMENTS:

- ✓ Expenditure authorizations would not require new revenue sources.
- ✓ The annual budgetary process provides substantial flexibility, with the potential appropriation of a large amount of funding.

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) Special funds have more legislative restrictions on their use, but the General Fund, while more flexible, is more subject to redirection of funds toward other uses.
- 2) Reliance upon appropriations in the annual budget cycle means that available funding may not be known in advance, or only for the duration of a budget cycle.

2.2 RAISING OF NEW FUNDS VIA BONDS

Issuance of bonds could raise substantial funds that could be used for managed retreat implementation, but there must be a mechanism to ensure that these borrowed funds can be repaid, in addition to any interest payments. Bonds have substantial flexibility, as the bond can be created and described to serve almost any purpose. Many investment funds, including retirement accounts, are required to invest in bonds as part of their mandate, as these bonds provide a defined income stream. It is not possible to predict in advance who the purchasers of a bond may be unless the offering is restricted.

From the perspective of the issuing entity, bonds operate somewhat like a crowd-sourced mortgage. The issuer pays interest to the purchasers of the bonds, with the amount of interest dictated by a range of factors such as the inflationary environment and the credit rating of the issuer.

Bond repayment requires that the issuer has a source of funds at the time that repayment of capital comes due, and to cover interim payments. Many bonds have a quarterly interest repayment schedule, with return of principal at the end of the bond period. For a managed retreat program, it is necessary to ensure that the source of revenue or funding does not disappear prior to the bond period's end.

Bond issuance is an option that can provide substantial funding, flexibility, and certainty. Bonds may be suitable in circumstances where there is a compelling reason to implement high-cost actions in a short period of time, such as large-scale simultaneous buyouts or purchase of developable land. Repayment of the capital could be conditional upon achieving certain objectives and financed through revenue streams, as described in the next section.

The use of bonds allows the issuer to raise funds up front, and to spread the repayment of those funds over a longer period. This provides certainty about both the amount of funding available and the necessary repayment schedule. A key disadvantage is that payment of interest results in a higher overall project cost, as the repayments must cover both the project and the interest costs of the bond. The burden for this repayment ultimately falls on the state taxpayer for most bonds.

2.2.1 State Government Bonds

The Hawai'i State Constitution authorizes the issuance of four types of bonds:

- > General obligation bonds;
- > Bonds issued under special improvement statutes;
- > Revenue bonds; and

Special purpose revenue bonds (defined by the Constitution as all bonds payable from rental or other payments made to an issuer by a person pursuant to contract and secured as may be provided by law, including a loan program to a state property insurance program providing hurricane coverage to the general public).⁵

The State of Hawai'i [Investor Relations](#) page provides a listing of current bond offerings. There are no current listings for the Department of Business, Economic Development, and Tourism (DBEDT) or DLNR, the two agencies with mission statements that could include management of coastal resources and tourism drivers. Municipal bonds are a form of government bonds issued by counties and cities. They are functionally similar to state government bonds but may be targeted to specific projects or localities.

General obligation bonds are backed by the general revenue of an entity. In the case of governments, they are backed by the taxing authority of the government. Municipal bonds may also be revenue bonds secured by a stream of revenue from an income-producing project. Revenue bonds comprise approximately two-thirds of the municipal bond market and are widely used for infrastructure projects that will generate income.

It could be argued that the avoided losses of beach-related tourism and recreation is a revenue stream that could be anticipated from projects designed to preserve the public trust resources. In practice, recreation is a non-market benefit that does not involve financial transfers or generate revenue for the state or counties. Bonds must be secured by predictable sources of revenue, typically outlined via the designation of taxing powers and a projection of tax collection revenues that demonstrates stability and adequacy. Tourism taxes provide one such source of revenue, as outlined in the next section.

2.2.2 Green and Blue Bonds

These measures, which include climate bonds, are designed to raise funds for environmental or clean energy projects. They may have tax exemption status, which provides benefits to the purchaser. These bonds provide a way to raise money by offering a stream of income in the form of interest payments.

⁵ [HRS 49](#)

The issuer of the bonds must be able to repay the raised funds in addition to the interest payments. This requires a form of revenue generation, or a commitment to finance the repayments using general funds.

2.2.3 Environmental Impact and Social Impact Bonds

These bonds embed a pay-for-success approach, which requires an objective be achieved before payments are made to investors. In the context of managed retreat, this could be defined as the successful removal of all assets within a given area, or the successful purchase of properties that will be removed at some time in the future. These bonds have been suggested as a way to finance coastal restoration projects around the world.

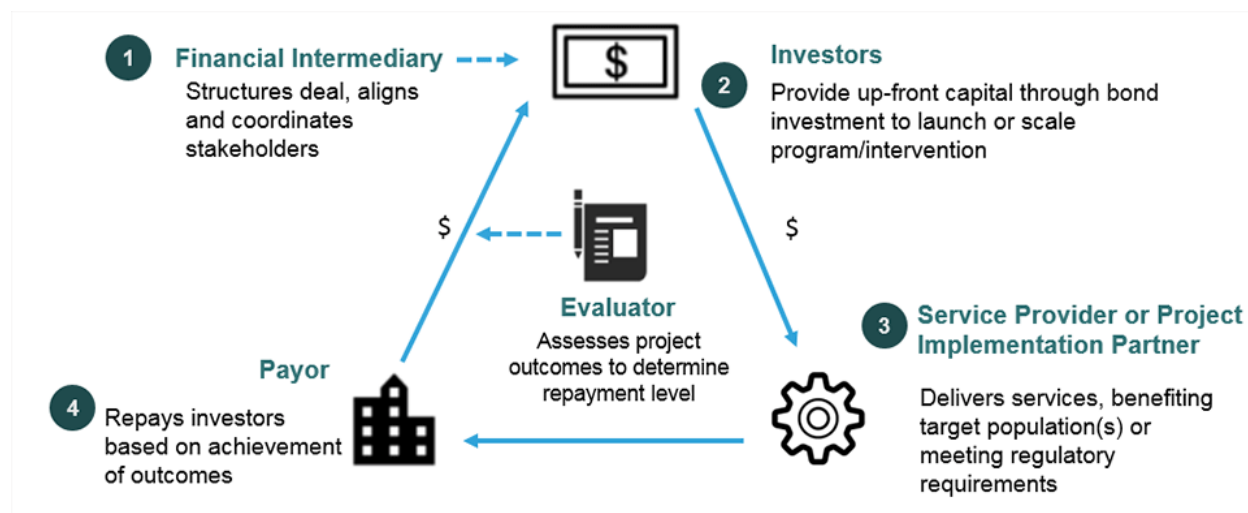


FIGURE 3: ENVIRONMENTAL IMPACT BOND DIAGRAM (CREDIT: [ENVIRONMENTAL IMPACT BONDS: FINANCING FOR WETLANDS RESTORATION, N.D.](#))

1These bonds could be coupled with a leaseback arrangement, whereby the lease revenues are used to pay back investors. Further information on leaseback arrangements is included in Section 5 of this assessment.

2.2.4 Assessment of Raising New Funds via Bonds

SUITABILITY ASSESSMENT:

Coupled with pre-existing state managed funds or newly established special purpose funds, bond issuance provides the state with an opportunity to raise a significant amount of funding from investors looking for a stable investment. These investors typically consist of investment firms or state pension funds with a very large and reliable source of capital. Bond issuance would be a reliable way for the state and counties to raise funds, with the debt being repaid by tax revenue collections. The source of revenue should consider potential reductions in collections as coastal hazard increases and property values and visitation decrease.

SUPPORTIVE ELEMENTS:

- ✓ Hawai'i can utilize existing revenue streams for bond payments.
- ✓ Hawai'i has a strong economy and maintains a budget surplus, so Hawai'i-issued bonds would receive good credit ratings.

-
- ✓ Bonds could be a substantial source of funding, with certainty about the amount of available funding over the duration of the loan.

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) Bond interest payments will lead to higher overall project costs.
 - 2) Interest payments are dependent on the broader economic performance of the issuing party and the investment conditions (e.g., interest rates).
-

2.3 USE OF TAX REVENUES FOR MANAGED RETREAT

This section summarizes approaches that rely upon taxes related to economic activity. They are predominantly linked to tourism expenditures, which provides both advantages and disadvantages. A key advantage is the direct link between the source of funding and the pressures on coastal areas due to tourism uses and visitor accommodations. A disadvantage is the potential volatility of the revenue source due to fluctuations in tourism and visitor expenditures. These fluctuations may be linked to the effects of sea level rise and erosion, meaning that they could decline as these impacts become more severe and persistent. Permanent removal of short-term accommodations or hotels also reduces the potential for Transient Accommodation Tax (TAT) revenue if these venues are not replaced or substituted with other sources of revenue.

Tax exporting is a popular route for collection of revenue in areas with a high tourism population relative to the number of local residents. In Hawai'i, the number of tourists on island at any given time is 20-35% of the resident population and may greatly exceed that during peak periods. As a result, there is a high degree of interaction and conflict between tourists and local residents. Hawai'i has recently reoriented its tourism strategy to incorporate destination management with the aim of mitigating negative impacts and reorienting tourism toward activities that align with Hawaiian culture and local values, including proposing visitor fees to collect funds that offset impacts of high visitation. Consequently, there is likely to be local support for revenue sources that link the impact of tourism pressure to the management of the natural resources that drive tourism demand. These taxes, fees and charges must be carefully designed to avoid legal challenges or complications, while still allowing for practices like the use of kama'āina rates for hotel lodging.

This assessment does not propose increases or modifications to the collection and use of the General Excise Tax, due to equity concerns. It notes that there is potential to implement a levy on high income taxpayers for coastal management, but that this is likely to be unpopular if applied to projects in isolated locations, or to purchase high value properties owned by non-residents. Closing the capital gains loophole has the potential to generate substantial funds, however, changing income tax regulations would be politically challenging and is not a reliable source of additional funding in the near term.

The creation of special districts has potential to match the costs of managed retreat interventions to those who benefit from the actions, but these districts and their funding arrangements (both for revenue raising and expenditures related to managed retreat and the ongoing management of public open space) would need to be designed carefully to avoid legal challenges and public opposition. Raising the rate of conveyance tax or increasing the allocation of revenues from that tax to the Land Conservation Fund each year are methods the State may employ to take advantage of pre-existing development trends and to prepare receiving areas, or to convert areas to conservation and open space uses.

Hawai'i's tourism management strategy and pre-existing tourism-targeted tax policies make increasing the TAT a logical task with high potential returns. Potential tax revenue that could be dedicated to

implementation of managed retreat, or coastal zone and natural hazard management more generally, are summarized below. All measures would require further analysis and careful design to limit unintended impacts and increases in the tax burden for low- and middle-income sectors of the community.

2.3.1 Income Tax - Closing the Capital Gains Tax Loophole

This assessment does not attempt to examine marginal tax rates or the allocation of revenue from state income taxes, but instead focuses on two key elements that could potentially generate revenue suitable for implementation of managed retreat programs.

Hawai'i is one of the few states that allows for long term capital gains, such as those realized through the sale of real property, to be taxed at a lower rate than income from other sources. These gains, which are payable by non-residents as well as residents, are taxed at a rate of 7.25% or the marginal income rate, whichever is lower. Bill [HB232](#), introduced in the 2023 legislative session, sought to remove the differential rate for capital gains, which would effectively apply the marginal income rate of up to 11%. The bill estimated potential additional revenue of \$132 million per year, rising to \$187 million within six years. The bill was referred to committee and no further action was taken on it during the session.

Although Hawai'i has a high overall income tax burden⁶ and there is opposition to increases in income taxes⁷, this would be a progressive tax, as it would apply largely to those on higher incomes. Capital gains tax comprises 33.1% of the total taxable income for residents of Hawai'i with taxable income of over \$400,000, and almost half (47.4%) of taxable income for non-residents. Analysis of the taxpayers who had capital gains in 2021 showed that 75.6% of the capital gains income was received by the 10.5% of persons who earned more than \$400,000 per annum.⁸

The tax is also relatively exportable, given the high level of non-resident ownership and investment in the more expensive properties near the shoreline. It would be possible to structure the tax so that it would apply only to those in the highest tax brackets, such as limiting the tax so that it only applied to gains of over \$400,000, or only to properties that were purchased after a certain date, thereby limiting impacts on long term residents.

The proportion of this additional tax revenue that is attributable to transactions in the SLR-XA could be diverted to a fund responsible for management of those areas. This would result in the SLR-XA region being used as a special tax district. It is not possible to estimate the potential revenue this carveout could produce without detailed analysis of the spatial distribution of property transactions and associated capital gains. It could reduce the attractiveness of property investments in Hawai'i, as it would reduce the potential gains of the investment, however previous modeling has suggested that there is not likely to be a significant impact.⁹

Changes to the income tax regulations are likely to be challenging and involve a protracted consultation process. Modifications to the capital gains tax regulations, however, could create a carveout for coastal zone management purposes, including managed retreat.

⁶ State of Hawai'i, Department of Taxation, Tax Research Insights - [Comparing Hawai'i's Income Tax Burden to Other States](#), June 2023.

⁷ Grassroot Institute of Hawai'i, [Income tax reform would make Hawai'i more affordable](#), August 24 2023.

⁸ State of Hawai'i, Department of Taxation, Hawai'i Individual Income Statistics, [2011](#).

⁹ Hawai'i Tax Fairness Coalition, [Capital Gains Tax Reform - Income from wealth should be taxed like income from work, accessed on October 12, 2023](#).

2.3.2 Income Tax - Natural disaster levy

It may be possible to implement a levy on high income taxpayers for coastal management. An example of this type of levy is the Temporary Flood and Cyclone Reconstruction Levy, implemented in 2011-12 in Australia as a temporary additional payment on federal income taxes, with a differential payment structure that eliminated or reduced the impact on low- and middle-income taxpayers.¹⁰ This is not a common approach, and is more likely to be implemented after a disaster has occurred. Levies of this nature are unpopular where there is a localized impact, so are typically used when there is a major disaster affecting the majority of a state or territory. This assessment does not attempt to estimate the revenue that could be raised by such a levy.

2.3.3 Transient Accommodation Taxes

Transient accommodation taxes (TATs) are also known as transient occupancy taxes (TOTs), hotel room tax, bed taxes, and beach taxes. TATs are used extensively in coastal tourism areas to raise revenue, typically from non-resident sources. In some jurisdictions, these taxes can represent a substantial component of own-source revenue. TAT is the fastest growing source of state income in Hawai'i and the third largest overall (after the GET and income tax).¹¹ It is, however, a more volatile source of funds, as evidenced by the loss of revenue due to the COVID pandemic and associated lockdowns.¹²

The state TAT in Hawai'i is 10.25%, with 1% dedicated towards the mass transit special fund. Based on tax collections from FY 2018, 92% of the TAT collections were from non-residents, highlighting the extent to which this tax is exportable.¹³

2.3.4 State TAT carveout

An annual payment of \$3 million is made to the Special Land and Development Fund administered by DLNR. One of the purposes of this fund is to repay revenue and general obligation bonds. DLNR has authority to spend monies in this fund for *'the protection, preservation, maintenance, and enhancement of natural resources, including beaches, important to the visitor industry.'*¹⁴ Unexpended funds remaining in this fund at the end of each year are transferred to the state General Fund.

Until 2021, the State also redistributed a component of TAT revenue to the counties, roughly equivalent to the amount of TAT revenue that was generated within each county, but with some balancing between the counties. Between 2015 and 2019 these annual payments totaled \$103 million per year, with the majority of the balance of the TAT revenue being allocated to the general fund. The allocation to the counties did not change between 2015 and 2019, despite collections increasing by more than 25% over that period. As a result, the county share of TAT collections fell from 24.5% to 16.5% over the same period.¹⁵

In 2021, with the State government trying to balance the budget in response to a significant fall in revenues due to the COVID-19 pandemic, HB 862 CD1 ceased the payments of TAT revenue to the counties, with the \$103 million instead being contributed to the General Fund. At the same time,

¹⁰ Parliament of Australia, Senate Standing Committees on Economics, Flood Bill Levy, [Chapter 2 – Implementation of the Levy](#).

¹¹ TRC 2022 -

¹² C Moore, [The Year Without Tourism: Hawai'i's FY2022 Pandemic Budget](#), University of Hawai'i.

¹³ Hawai'i Tax Review Commission, [Who Pay's Hawai'i's Taxes](#), March 17 2021.

¹⁴ HRS 237D-6.5 (4)(A)

¹⁵ J Mak, [Should the Counties Get a Share of the Transient Accommodation Tax?](#), University of Hawai'i, June 16 2021.

counties were authorized to impose their own county TATs, at a rate of up to 3%, in addition to the state TAT. All counties have now imposed the tax at the maximum rate, as discussed below.

2.3.4.1 Opportunity to partially reinstate state TAT carveout

This change in the allocation of state TAT revenue and the ability of counties to collect their own TAT revenue has created a unique opportunity for both levels of government to create funds that apply the double-dividend windfall of increased TAT revenue to programs and projects that preserve the natural features that are key drivers of tourism. The State could set aside a portion of the State TAT revenue and also require that the counties take similar steps with their TAT revenue.

Turning first to the carveout of State TAT revenue, we can make some estimates of the potential revenue. In analysis of the proposed visitor fee, the Hawai'i Tax Research and Planning office estimated that a 1% set aside or carveout of state TAT revenue would have the potential to raise approximately \$55m in FY 2024.¹⁶ Note that this means that 1% out of the 10.25% levy would be set aside, so around 9.8% of the total collections of that tax.

If the carveout was instead matched to the percentage of state revenue that was provided to the counties at the time of the suspension, 16.5% in 2019, then the potential revenue available would be around \$128 million, based on the 2022 TAT collection of \$776 million. It is unlikely that the State would wish to relinquish all of this funding, but a 10% allocation would still raise almost \$80 million per annum and would be expected to grow over time. Based on leverage of this revenue to support a revenue bond, the State could access more funding.

2.3.5 County TAT

Counties may now charge an additional TAT of up to 3%, as authorized by HB 862 CD1. All counties levy the fee at the maximum rate.

- County of Kaua'i: [Ordinance 1099](#)
- County of Maui: [Ordinance No. 5273](#)
- County of Hawai'i: [Ordinance 21-89](#)
- City and County of Honolulu: [Ordinance 21-33](#)

Funds raised through the county TATs replace the distributions that they previously received from state TAT revenue. As shown in Table 1, the revenue generated by the county TATs exceeds that previously distributed by the state. Note that there is likely to be a substantial impact on Maui County TAT revenue associated with the 2023 wildfires impacting Lahaina.

¹⁶ Green Fee Hawai'i, [Visitor Green Fee](#), Report to the Hawai'i Tax Commission, September 2021.

TABLE 1 COUNTY TRANSIENT ACCOMMODATIONS TAX REVENUE

COUNTY TAT	STATE TAT LIABILITY (%) IN FY 2020	REALLOCATION OF STATE TAT PRIOR TO 2020	STATE TAT REPLACED (\$M)	ANNUAL COUNTY TAT REVENUE (\$M, FROM 2023 BUDGET FORECASTS)	PROPORTION OF PROJECTED REVENUE FROM COUNTY TAT (2023, %)	ADDITIONAL TAT REVENUE (\$M)
KAUA'I COUNTY TRANSIENT ACCOMMODATIONS TAX	11	14.5%	\$14-15	\$23	11.9%	\$8
MAUI COUNTY TRANSIENT ACCOMMODATIONS TAX	30	22.8%	\$23	\$60	31.1%	\$37
HAWAI'I COUNTY TRANSIENT ACCOMMODATIONS TAX	13	18.6%	\$19	\$24	12.4%	\$5
O'AHU TRANSIENT ACCOMMODATIONS TAX	46	44.1	\$45	\$86	44.6%	\$41
TOTAL			\$103	\$193		\$90

2.3.5.1 Dedication of county TAT to managed retreat funds

As the State provides the authority to counties to levy the county TAT, it also has a measure of control over the way in which those funds are collected and used. The State could require that part of the county TAT revenue be dedicated towards a managed retreat fund, or to fund activities consistent with managed retreat. Such a proposal may not be popular as it does not align with the principle of home rule by the Counties.

Honolulu allocates 8.34% of the county TAT revenue to natural resources, including parks and beaches, but does not specify the use of these funds for purposes related to coastal hazard management or managed retreat. The balance of funds is split between the transit fund and the general fund.¹⁷ The other Counties do not provide information about how the TAT revenues are to be expended, and it is likely that the monies are directed towards the general funds. If the State chose, it could direct a component of the county TAT revenue to a specific purpose, such as adaptation or managed retreat through revision of HRS 237D-2.5.

A model for such a dedication was provided by the Maui County Managed Retreat Revolving Fund (MRRF), which set aside a portion of the Maui County TAT to be used for purposes including managed retreat. Notably, the purpose of the fund is primarily for retreat of public structures and excludes the acquisition of private properties unless there is a two-thirds majority vote by the County Council.¹⁸

A. The managed retreat revolving fund is established for the purpose of optimizing opportunities for shifting development inland from the coast through the physical movement of existing structures by funding:

- 1. Shoreline safety improvements including mitigation or removal of hazardous conditions due to shoreline erosion;*
- 2. Removal or relocation of structures or infrastructure that pose a threat to public health and safety or the environment;*
- 3. Programs and permitting, including environmental assessments, related to this chapter's purposes;*
- 4. Leveraging funds provided by federal, state, nonprofit or for-profit organizations, and other non-County entities to further the purposes identified in this chapter; and*
- 5. Equivalent personnel and administrative costs.*

B. The revenues in this fund must not be used for any purpose except the purposes listed in subsection A.

C. The revenues in this fund must not be used for the purchase, acquisition, or rehabilitation of privately-owned property unless approved by an affirmative vote of two-thirds of the members of the council by resolution.

¹⁷ [Ordinance 21-33](#)

¹⁸ [Bill 68 CDI](#) (2022).

The fund was suspended in June 2024 for three years to allow flexibility in the use of funds for Maui's wildfire recovery.¹⁹

2.3.6 Potential regulatory changes affecting TAT revenue

A bill proposed in the 2023 Hawai'i State Legislative Session ([HB820 HD1](#)) proposed raising state TAT for transient vacation units to 25%. Another bill ([HB84 HD1](#)) would have given Counties greater control over short term rental (STR) zoning and permitting, including the ability to swap or trade those permits. There was also a bill ([HB211 HD1](#)) that would require online accommodation brokers such as Airbnb and VRBO to only list rental properties that have been proven to have certification or permits to operate a business of that type.

2.3.7 Real Property Tax

There are two types of real property taxes (RPTs) that are potential sources of funding for implementation of a managed retreat program. The first is the annual real property tax, which is an asset-based tax, calculated using two factors, the assessed value of the property and the mill rate or percentage of asset value (typically expressed as a value in dollars per \$1,000 of assessed property value). The second is a real estate transfer tax (conveyance tax) that is levied by the state upon the sale or lease price of the property at the time of transfer.

RPTs provide a substantial component of the revenue for local and state governments, and Hawai'i is no exception. The Hawai'i State Constitution permits counties to levy RPTs, whereas the state government is not authorized to impose these taxes.²⁰ This provides substantial flexibility and control over revenue raising at the county level, and all counties have introduced differentiated RPTs for residential properties, depending on the use of the property. Properties used for short-term rentals are taxed at substantially higher rates than owner-occupied properties, as are second homes that are used only as vacation properties, without rental payments. It also introduces a potential conflict of interest, where counties may be reluctant to enforce inspection and removal of erosion control structures due to the potential reduction in values of beachfront properties. In a case where buyouts do occur, the State has a competing incentive to take advantage of the potential decrease in value from re-evaluation. Increased incentives for reporting of illegal rental accommodation could offset this potential conflict by encouraging constituents to contribute to the re-evaluation process.

Hawai'i has the lowest mill rate of all U.S. states, but due to high average property values the average property tax bill for Hawai'i is in the top 20. Based on analysis by the State Tax Department, approximately 40% of the total RPT across all land use types is paid by non-resident owners. For residential properties, the percentage paid by non-residents is higher.²¹

The RPT mill rate in Honolulu, Hawai'i and Kaua'i counties is lower than it was in 1983, in an attempt to keep average RPTs from increasing at the same rate as the increase in assessed property values. The Tax Review Commission in 2022 estimated that restoring the rates of 1983 would result in a net revenue increase of \$465 million, with increases in all counties except Maui, which would see a decrease of \$140 million.²²

¹⁹ [Bill 78 \(2024\)](#).

²⁰ [Hawai'i State Constitution, Article VIII, § 3](#).

²¹ J Mak and R.D. Ebel, [Rethinking HTA's "Regenerative Tourism Fee"](#), The Economic Research Organization at the University of Hawai'i.

²² Hawai'i Tax Commission, [Memo on Property Taxes](#), September 2021.

Property taxes are highly exportable, with around one third of the tax collections paid by non-residents.²³ Changing the property tax structure to place more of the tax burden on the highest value properties, properties owned by non-residents, and those who use their properties for short term accommodation is another potential source of revenue, which counties have already implemented to some extent. The differential rating structures used by all counties reflects recognition of that potential, but the rates currently applied still leave room for expansion.²⁴ As counties have constitutional power over the levying and usage of RPTs, the state has limited ability to control this source of revenue, but some policy direction may be able to affect the collection and distribution of taxes at the county level. This also aligns the source of funds with the key entities involved in the process, as many of the functions of a managed retreat program would fall under the jurisdiction of counties through their management of activities within the SMA.

RPTs have the potential to decline as shoreline impacts increase. This means that the revenue available is declining at the same time as the need for those funds is greatest. To date, RPT revenue has not shown significant responsiveness to short-term erosion impacts. In some locations, such as the north shore of O'ahu, the income from use of coastal properties can peak at times when erosion impacts are greatest, due to the desire by renters to be located near surf breaks or overlooking the beach. As this erosion becomes more persistent, RPT revenue may be a less reliable source of income.

County open space acquisition programs

Each county in Hawai'i has some form of open space acquisition program that is funded by setting aside property tax revenue. Allocations range from 0.5% to 1.0% but have historically been as high as 2%.

²³ Hawai'i Tax Review Commission, [Hawai'i Tax System: TAT and Property Tax](#), 2021.

²⁴ Hawai'i Tax Commission, [Memo on Property Taxes](#), September 2021.

COUNTY FUND	SOURCE OF REVENUE	PURPOSE
KAUA'I COUNTY PUBLIC ACCESS, OPEN SPACE, AND NATURAL RESOURCES PRESERVATION FUND (PONC)	Receives 0.5% of revenue from real property tax revenues.²⁵	The PONC Fund Commission recommends a biennial list of lands or other property entitlement to be acquired for conservation purposes. These purposes include the following (Public Access, Open Space & Natural Resources Presv. Fund Commission, 2024): • Access to beaches and mountains. • Preserving forests, beaches, coastal areas, and agricultural lands. • Conserving land to reduce erosion, floods, landslides, and runoff. • Improving public access to, and enjoyment of, public land, and open space. • Acquiring public access to public land, and open space. • Conserving land for open space and scenic values. • Improving public pedestrian access to coastal areas.
MAUI COUNTY OPEN SPACE, NATURAL RESOURCES, CULTURAL RESOURCES, AND SCENIC VIEWS PRESERVATION FUND	Receives 1% of the revenue of real property taxes imposed by the county.²⁶	This program was established for the purpose of purchasing or otherwise acquiring lands or property entitlements for land conservation purposes in the County of Maui (Ordinance No. 3128 Bill No. 20, 2003): • Public outdoor recreation and education. • Preserving forests, beaches, coastal areas and agricultural lands. • Conserving land for the purpose of reducing erosion, floods, landslides, and runoff. • Improving disabled and public access to, and enjoyment of, public land, open space, and recreational facilities.

COUNTY FUND	SOURCE OF REVENUE	PURPOSE
HAWAI'I COUNTY PUBLIC ACCESS, OPEN SPACE, AND NATURAL RESOURCES PRESERVATION FUND (PONC)	2% of real property tax revenues. 1% of real property tax revenue is also deposited into the Disaster and Emergency Fund (until the balance of that fund reaches \$20 million), which includes acquisition of properties to reduce the impacts of future disasters and emergencies.²⁷	To develop an initial island-wide prioritized list of qualifying lands worthy of preservation (Public Access Open Space and Natural Resources Preservation Commission, 2023). Since its inception in 2006, the PONC has acquired 4,806.37 acres in fee simple and 5,537.487 acres in conservation easements, all of which shall be held in perpetuity for the use and enjoyment of the people of Hawai'i (Sako et al., 2023).
HONOLULU COUNTY CLEAN WATER AND NATURAL LANDS FUND	Raises approximately \$7.5 million per annum, through an allocation of 0.5% of annual real property taxes.²⁸	Provides financing for the purchase of, or to otherwise acquire, real estate or any interest therein for land conservation in the City for the following purposes (Clean Water and Natural Lands, 2023): • Preservation of forests, beaches, coastal areas, and water supply. • Public outdoor recreation and education, including access to beaches and mountains. • Conservation of land to reduce erosion, floods, landslides, and runoff. • Acquisition of public access to public land and open space.

Increasing all open space fund allocations to 2% of RPT collections would provide approximately \$30 million in additional funding, based on 2023 RPT revenue estimates.²⁹ The regulatory purposes of each fund are well aligned with the objectives of managed retreat, except for the Hawai'i County Public Access, Open Space, and Natural Resources Preservation Fund. In this case, the Disaster and Emergency Fund is currently aligned more directly, although the \$20 million cap on funding imposes limitations, as does the focus on post-disaster relief.

²⁵ County of Kaua'i, [Article 14 Public Access, Open Space, Natural Resources Preservation Fund](#).

²⁶ Maui County Code, [Chapter 3.88 - OPEN SPACE, NATURAL RESOURCES, CULTURAL RESOURCES, AND SCENIC VIEWS PRESERVATION FUND](#).

²⁷ Hawai'i County Code, Section 2-214.1. [Public access, open space, and natural resources preservation fund](#).

²⁸ Honolulu Code, [Article 62: Clean Water and Natural Lands Fund](#).

²⁹ Hawai'i Department of Business, Economic Development & Tourism, Research and Economic Analysis, [Real Property Tax Valuation for the State, 2020 to 2023, and by County, 2023](#)

Offsetting property tax revenue losses due to conversion to open space

A key concern for managed retreat is the potential for reduction in the tax base through removal of the most highly valued property along the shoreline. Recent analysis by the University of Hawai'i suggests that sea level rise exposure resulted in a reduction in sale prices for properties exposed to potential inundation and erosion.³⁰ Modeling of the potential impact of hardening of the shoreline in Santa Cruz identified that while this may preserve the value of oceanfront properties, it could have a negative impact on the value of non-oceanfront properties within 1,000 feet of the shoreline due to reduced availability of natural beaches.³¹

While measures that reduce the value of properties exposed to coastal hazards do have the potential to reduce the tax base, they also have the ability to reduce the level of exposed assets. Note that it is also possible that removal of the first row of houses would increase the values of the properties located landward of the newly created open space, as well as the nearby properties that benefit from improved public access, so there could be a net positive effect on the tax base. Detailed modeling would be required to examine the site-specific fiscal and economic impacts of retreat, which are dependent on the assessed value of affected properties. Where properties are encroaching on or impacting public trust resources, this assessment must balance the public benefits of retreat against the public fiscal impact and the private financial impact.

In New Jersey, the state government manages a program that encourages local governments to protect open space by paying them to restrict development of those areas. The state Payment in Lieu of Taxes (PILOT) program pays local governments that acquired land for open space purposes for the loss of property taxes and the costs of maintaining the open space after acquisition. Payments were structured to incentivize greater levels of open space preservation within the local jurisdiction, with the tax loss compensation declining over time.³²

A similar program could be implemented for managed retreat in Hawai'i, whereby the state government could make payments to counties that offset the initial loss in RPT revenue, with those payments declining over time as the RPT revenue of the county rebounds. This would occur either through increases in the asset value base, or via infill and new development, possibly in managed retreat receiving areas. The State could also provide assistance for the ongoing conservation and management of the acquired lands. One means of financing this type of program could include issuing conservation bonds. Alternatively, it could be funded by a jurisdiction-wide levy or the creation of a special tax district.

Special tax districts

Improvement Districts (IDs), Special Improvement Districts (SIDs), and Community Facilities Districts (CFDs) are all means of charging additional property taxes for a given region to fund additional services or projects. They have potential application for funding of managed retreat programs, as there are already zones identified as being subject to coastal hazards (e.g., the SLR-XA). Smaller zones may be appropriate, such as the CFD proposed for the Kahana Bay region of West Maui.

HRS 46-80.5 provides counties with authority and guidance to establish SIDs, including for natural hazard mitigation and climate change and sea level rise adaptation ([Special Improvement District, n.d.](#)).

³⁰ Tarui, N., Urbanski, S., Lam, Q.L. et al. Sea level rise risk interactions with coastal property values: a case study of O'ahu, Hawai'i. *Climatic Change* 176, 130 (2023). <https://doi.org/10.1007/s10584-023-03602-4>

³¹ Brucal, A., Lynham, J. Coastal armoring and sinking property values: the case of seawalls in California. *Environ Econ Policy Stud* 23, 55–77 (2021). <https://doi.org/10.1007/s10018-020-00278-3>

³² New Jersey Department of Community Affairs, [Municipal Tax Abatement Toolkit](#).

Counties have considerable flexibility in how the assessment for the SID is levied, subject to limiting the annual increase. They also have the potential to issue and sell bonds to finance the improvements and to place liens on properties for non-payment of the special assessment. The Waikīkī Beach SID was created by the City and County of Honolulu ordinance in May 2015. In 2023, the tax rate was 6.5 cents per \$1,000 of assessed value.³³ In 2020, the gross revenue (before administration costs were paid to the City and County) was \$1,063,044.³⁴ The tax rate was 6.58c/\$1,000 in 2019-20, which implies that the assessed land value in the district was approximately \$16.2 billion. The Waikīkī Business ID, formally known as *City and County of Honolulu business improvement district No. 1 (Waikīkī)*, applies a rating structure based on the direct and indirect beneficiaries of its cleanliness, hospitality and security services.

HRS 46-80.1 permits creation of CFDs, to fund public improvements or services ([Community Facilities District, n.d.](#)). It allows for selling bonds to finance improvements, which are serviced by the annual collections. Establishing a CFD requires a public hearing to approve an ordinance, and approval by the county councils. It requires the support of at least 25% of the affected or benefited property owners and can be stopped by 55% of owners objecting to the proposal. There are some analogies with condominium and homeowner association charters and policies, which may also be involved in these negotiations.

Special tax districts are equitable for beach improvement projects, as they place the greatest proportional tax burden on those whose private properties benefit from the project, namely beachfront property owners. The costs and benefits are aligned. It is important to note that special tax districts are typically used for the provision of additional services or benefits as well as to upgrade and restore existing infrastructure. In the case of financing a managed retreat program, beachfront property owners may receive funds to facilitate the removal of their properties, but many of the benefits would accrue to the broader community. Conceptually, a broader region could be levied to generate funds necessary to purchase properties identified for retreat. This would be a direct application of the public trust if the balance of the community was motivated to buy out properties in a location where there was encroachment or other impacts on access and use of public trust resources. This could be construed as unnecessary taxation, in that communities would be asked to pay for rights that are already enshrined in legislation and policy.

Establishing the rate and structure of the additional charges would require definition of the project objectives and the distribution of benefits of the project (though it is not required that levied properties be beneficiaries). This may require a balance between the optimum tax rate structure and one which is politically feasible. Similar processes undertaken in other jurisdictions establish differential rate structures based on the benefits accruing to individual properties. For example, beachfront homes or businesses may be required to pay 50% of the total revenue raised, with 25% to be paid by non-beachfront properties within the first block from the ocean, and the balance spread across a larger area. In this way, the geographic area and rate structures inform each other via the process of narrowing down which constituents are benefiting most from these programs. An example is found in the Noosa Main Beach Maintenance Levy, which is applied to businesses in Noosa, Australia, and funds a sand recycling system. Details of the zones and tax rates for this scheme are outlined in Appendix 5 of the Noosa Council 2023-24 [Revenue Statement](#).

³³ <https://www.wbsida.org/overview>

³⁴ WBSIDA 2019-20 Financial Statement and Audit. <https://www.wbsida.org/s/FY2020-WBSIDA-FS-FINAL.pdf>

Broad based conservation levy

To avoid potential misalignment between the special district and the broad benefits of a managed retreat project, a district-wide levy could be applied to all properties. The Washington State legislature established the right for counties to create a conservation futures fund in 1971 ([Conservation Futures Fund, 1971](#)). This fund permits the county to levy an additional property tax of up to 6.25c per \$1,000 of assessed value of taxable property—that is, if it is supported by the majority of the county in a ballot proposal. The conservation futures fund is dedicated to the acquisition of rights and interests in real property, including under lease back arrangements that limit the future use of the property. Up to 15% of the conservation future funds may be used for maintenance and operation of the acquired lands, with additional maintenance allowances under certain conditions, where counties acquire more than 400 acres of land in aggregate. Historically this fund has focused on mauka lands which have been deemed to represent better cost efficiency due to lower land values, so there may be a need to formally set aside funds for purchasing of coastal lands.

2.3.8 Property Conveyance Tax

Conveyance taxes are levied by the State of Hawai'i on the sale or lease of real property at a rate of 0.1-1.25%, with proceeds mostly going to the General Fund.³⁵ Some have argued that there should be a steeper increase in taxes payable for property transactions for the most valuable properties, as is the case for high-cost cities such as Seattle and San Francisco. This was proposed in the 2023 legislature by [SB678, and was ultimately deferred](#). Such a measure could potentially raise up to \$30 million in annual funding for land conservation projects, through the allocation of ten percent of the revenue to the Legacy Land Use Conservation Fund (LLCF).³⁶

The lesser of ten percent of the revenue from conveyance taxes for real estate and \$5.1m is dedicated to the LLCF yearly³⁷, which is managed by DLNR. The goal of this fund is to, “provide for the acquisition and management of lands that have natural, environmental, recreational, scenic, cultural, agricultural production, or historic value, including park and trail systems that provide access to such land.” The cap on contributions limited allocations to the LLCF in 2022, which would have received \$18.8 million if that cap was removed.³⁸

Acquisitions using the LLCF require matching funds equaling 25% of the total project costs from county agencies or nonprofit land conservation agencies. This is likely to provide a financing challenge across the state, which could be addressed through the use of county tax revenues, described in the following section.³⁹

2.3.9 General Excise Tax

This assessment does not propose increases or modifications to the collection and use of the General Excise Tax (GET). Although GET is the largest source of state tax revenue, it is regressive in application, resulting in lower income taxpayers paying a higher proportion of their income towards those measures. This assessment concurs with the Tax Review Commission 2022 in considering tourism and real property taxes as the most suitable means of raising tax revenue, and as a result, the most appropriate for raising or allocating funds for managed retreat.⁴⁰

³⁵ [HRS 247-7](#)

³⁶ Hawai'i Tax Fairness Coalition, [Conveyance Tax Reform](#).

³⁷ [HRS 247-7](#)

³⁸ Hawai'i Tax Fairness Coalition, [Conveyance Tax Reform](#).

³⁹ [HRS 173A-5](#)

⁴⁰ State of Hawai'i, Department of Taxation, [Tax Review Commission 2020-2022, Final Report](#).

2.3.10 Assessment of Potential Tax Revenues for Managed Retreat

TABLE 2 SUMMARY OF VARIOUS TAX REVENUE SOURCES

TAX	ADJUSTMENT	POTENTIAL ADDITIONAL REVENUE (ANNUAL)	COMMENTS
INCOME TAX		\$132 million	Would increase tax burden for those earning more than \$200k in capital gains income. May impact attractiveness of property investment.
STATE TAT	Dedicate the equivalent of the former county contributions to a managed retreat fund	\$103 million	Would require modification of HRS 237D Revenue could be deposited to a fund, to which state agencies and counties could apply for funding. It could be authorized to raise funds via bond issue, and to provide match funding for grant applications.
	Dedicate the same proportion of funds to counties as occurred in 2019 before changes to the TAT distribution (16.5%)	\$128 Million	
	Dedicate 10% of TAT revenue	\$77.6 million	
	Dedicate a 1% carveout of TAT revenue	\$76.0 million	

COUNTY TAT	Require dedication of 20% of county TAT revenue to managed retreat funds	\$38.6 million	Maui already has a managed retreat fund. State could mandate creation of the fund under HRS 237D, but this direction may be unpopular given the loss of TAT revenue.
	Require dedication of the difference between historical state TAT allocations and county TAT revenue	\$90 million	The 2023 projections for County TAT revenue vary by jurisdiction and may be more volatile between islands than across the state, as evidenced by the wildfires on Maui. Some balancing may be required to preserve equity and obtain support.
REAL PROPERTY TAX	Increase property tax rates to the same level as 1983	\$465 million	Under county control. Would relieve the pressure on county budgets, but could act as a disincentive to purchase and relocate valuable beachfront property
	Increase allocation to open space acquisition funds to 2% of RPT collections	\$30 million	Increasing allocations to the open space acquisition funds would require reducing services in other areas
PROPERTY CONVEYANCE TAX	Remove cap on contributions to Legacy Land Use and Conservation Fund	Increase from cap of \$5.1 million to \$18.8 million = approximately \$12-14 million per annum for LLCF	Would require modification of HRS 247-7
	Increase rate for properties over \$2m, and remove cap on contributions to Legacy Land Use and Conservation Fund	Total increase of \$3-400 million, with 10% allocated to LLCF = \$30m, or an increase of up to \$25 million	

SUITABILITY ASSESSMENT:

Allocation of existing tax revenues avoids opposition to the imposition of new taxes but would still require changing regulations governing their rates and distribution. TAT revenue satisfies the criteria for a desirable funding mechanism and is largely under State control. Changes in income and property taxes have significant revenue potential but may be more challenging to achieve. Each method will

interact uniquely with Hawai'i's current tax, fiscal, political, and cultural composition; intentionality and understanding of unintended and interacting consequences will be essential.

SUPPORTIVE ELEMENTS:

- ✓ Recent changes to TAT revenue allocation and collection mean that both State and Counties have 'new' funds available.
 - ✓ Taxes can provide a source of revenue with which to finance bond interest payments and provide matching funds.
 - ✓ TAT revenue has not shown significant responsiveness to short-term erosion impacts.
 - ✓ Highly exportable, with 92% of the tax paid by non-residents.
-

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) Concerns surrounding the reduction in tax base through removal of the most highly valued property along the shorefront.
 - 2) As erosion impacts become chronic, TAT revenue may be a less reliable source of income.
 - 3) A relatively volatile source of funds, as evidenced by the loss of revenue during the COVID-19 Pandemic and associated lockdowns.
 - 4) Illegal renting and non-payment of TAT may be incentivized, requiring enforcement.
-

2.4 FEES AND CHARGES

Fines and fees act as a disincentive for private property owners to engage in actions that result in impacts to sandy beach resources including public trust resources. The California Coastal Commission imposes in lieu mitigation fees on development permits for seawalls and other shoreline structures expected to result in the loss of sandy beach area over their lifetime. These fees are calculated using methodologies based on projected erosion rates, length of shoreline structure, structure lifetime and economic valuation of beach recreational area or dune systems. Currently, lease fees for structures within the conservation district typically reflect the value of the adjacent land. This should be considered a bare minimum, in the absence of estimates of the social and environmental value of the public trust resources.

There is some debate about the ability of economic methods to derive appropriate estimates of the value of natural resources, particularly when they have cultural importance, but there are methods that have been accepted for use in other areas of practice, including Natural Resource Damage Assessment. It should be noted that the fees must be set at a sufficient level to provide a disincentive for even the wealthiest landowners to avoid continued encroachment or illegal activity.

Regulations like HRS Chapter 205-A can provide the basis for defining prohibited actions and may be expanded to identify parameters for negative impacts. While there are many different fees and charges that the State can leverage, the nature of this funding tool is fundamentally flawed in that they can only be leveraged after a violation has been committed. The exception to this is access/use fees, such as a Green Fee. This assessment aims to fund managed retreat in a way that upholds public health and

safety, making the issuance of fines and charges something that should not be relied upon as a primary source of funding.

Despite this, there are substantial unrealized gains from unenforced fines for unauthorized shoreline hardening or failure to remove temporary structures. If collected, these may be able to be put towards future managed retreat financing.

2.4.1 Regulatory Support for Encroachment Fees

Hawai'i law provides substantial support for fines and fees for permit non-compliance, encroachment and illegal use of shoreline protection structures or erosion control devices. These funds are deposited to the Beach Restoration Special Fund, which does not currently support managed retreat activities, but could be modified to do so. Currently, counties in Hawai'i have the ability to levy fines against homeowners who violate State Conservation District rules. Such violations include the placement of unauthorized structures in the shoreline setback area as well as failing to comply with the conditions of original permits. The Hawai'i State Attorney General issued an opinion in 2017 asserting that the State owns all lands "makai of the upper reaches of the wash of the waves, usually evidenced by the edge of vegetation or by the line of debris left by the wash of the waves"⁴¹[OBJ]. The legal basis for establishing encroachments is discussed further in the Legal Assessment. Maintenance of public access and safe setbacks from the shoreline are also strongly supported by state law, as further described in the Policy Assessment.

Act 16, Session Laws of Hawai'i 2020 modifies HRS 205A to amend the list of activities defined as "development" and "not development." It increases the minimum shoreline setback from 20 feet to 40 feet, adds sea level rise to the definition of coastal hazards, modifies the definition of beach to enhance beach protections, and restricts or prohibits shoreline hardening structures at sites with sand beaches. Additionally, the Special Management Area (SMA) is the area of the island that is near the shoreline that requires permits for development. SMA permits are issued by the Counties to regulate uses, activities, or operations on land or in or under water within the SMA.

2.4.1.1 Public access requirements

HRS 115-5 defines beach transit corridors as a six-foot-wide strip of the coastline that is seaward of the shoreline and establishes that they are considered public property ([Beach Transit Corridor Defined, n.d.](#)). Counties have authority to purchase land for public rights of way to the shoreline under [HRS 115-2](#). If the state contributes funds towards the acquisition of transit corridors and rights of way, it requires a 50% contribution or match from the counties.⁴² When there is no safe transit for the public along the beach seaward of shoreline, there is the capacity to establish public transit corridors which must be at least six feet wide and be located on the makai (seaward) boundaries of the property lines.

Under HRS 115-09, landowners have an obligation to maintain public access within beach transit corridors ([Obstructing Access to Public Property; Penalty, n.d.](#)). Any activity, including failure to remove illegal structures, that causes the loss of this navigability can result in fines. If the cause of the reduced access is due to growth of vegetation, OOCL may require the landowner to remove the vegetation. Failure to comply with the request is a misdemeanor. Minimum fines for violations are \$1,000 for a second conviction, and \$2,000 for subsequent violations.

⁴¹ [Hawai'i Attorney General Opinion 17-01](#), 2017.

⁴² [HRS 115-8](#).

Under HRS 115-10 and 183C-7, penalties of up to \$15,000 per violation per day are payable for intentional obstruction of public access to and along the shoreline due to installation or failure to maintain vegetation. This does not include restoration or replacement costs of damaged resources.

HRS 171-6 authorizes the Board of Land and Natural Resources (BLNR) to bring actions to remove or remedy encroachments on public land. The fines are set at \$1,000 a day for the first offence, \$1-4,000 per day for subsequent offences. This does not include costs of restoration and associated adverse effects, or for administrative costs of the department. This potentially represents a substantial source of revenue that could equal or exceed the market value of coastal property within a few years if applied at the maximum rate.

2.4.1.2 Recent enforcement actions

On 7 December 2023, the Hawai'i BLNR fined a North Shore resident \$77,000 for erosion control violations, including failure to remove unauthorized structures. A fine of \$937,000 was levied against another property owner in the same stretch of coast, which is currently subjected to a contested case hearing.⁴³ It should be noted that the process of levying these fines is a slow and requires substantial research and justification by the Office of Conservation and Coastal Lands (OCCL). The original violation was issued in September 2022.⁴⁴ The Director of OCCL stated in a media release in September 2022:

*The current system of bringing enforcement actions to the Board of Land and Natural Resources, working our way through the process for contested cases requested by landowners on alleged violations, and then following up when cases are appealed in court, is slow and inefficient. Unfortunately, this process is the only enforcement tool OCCL currently has available.*⁴⁵

2.4.1.3 Modifying rules for expenditure of encroachment fine revenue

Proceeds from the fines for unauthorized shoreline structures on state submerged land or conservation district land are deposited into the Beach Restoration Special Fund. This fund may also receive TAT revenue. Currently, the purposes of this fund are restricted to implementing or researching beach restoration projects. The amendment of HRS 171-156 could enable the use of these funds for implementation of managed retreat.

2.4.1.4 Modifying approvals process

Establishing a performance bond or 'safety deposit' associated with Conservation District Use Permits could be a means to ensure that governments are not faced with cleanup and removal costs in the event that a landowner abandons a damaged structure. In the mining sector it is common to require a rehabilitation bond that reflects the likely costs associated with restoring the site to a natural or improved state after completion of mining operations.

This could occur through modification of HRS205A-46, which defines the rules for allowing variances that would permit seawalls, if the variance:

Was clearly demonstrated to be in the interest of the general public (e.g., highway protection);

Maintained safe lateral access to and along the shoreline or compensated for its loss; and

⁴³ Environment Hawaii, [BOARD TALK: Contested Case Staves Off Fine Over Sunset Beach Erosion Control](#), January 2024.

⁴⁴ DLNR News Release-[State Land Board Imposes \\$77,000 Fine for Shoreline Violations](#), Dec. 7, 2023

⁴⁵ [No Good Options for Homeowners & the Public on O'ahu's North Shore](#)

Minimizes risk of adverse impacts on beach processes or public views to and along the shoreline and avoids the risk of structures failing, resulting in dangerous debris on public property.

Factors that could be used to assess the appropriate performance bond or safety deposit may include:

Temporal and spatial extent of impacts on the Conservation District and the use thereof (e.g., visitor use studies to identify the extent of disruption of public access); and

Preparation of a cost estimate by a suitably licensed professional coastal engineer that incorporates:

- Costs associated with removal of the structure, at a time determined by the duration of the permit or by physical triggers; and
- Costs associated with restoration of public trust resources (e.g., beach sand, beach transit corridors, etc.).

The balance of this fund would be returned to the landowner once the offending structure was removed and the adjacent public land was restored.

2.4.1.5 Non-Encroachment impacts on public trust resources

In Hawai'i, impacts of encroachment on the beach are often experienced in the tidal and subtidal regions and affect recreation and habitats in those areas. For example, the loss of sand and placement of hard structures within the active beach zone can reduce sediment supply to the active beach and increase reflected waves, thereby reducing wave quality.

It may be possible to include fees for impacts on public trust resources in permit conditions related to the placement of structures on private property that subsequently became located on public assets through landward movement of the shoreline. Calculation of the appropriate fees for impacts on use of the aquatic environment would require detailed physical modeling and dedicated economic studies to determine the impacts on surfing, snorkeling, fishing and other nearshore uses.

2.4.1.6 Visitor fee

In 2021, the Hawai'i Tourism Authority (HTA) proposed a regenerative tourism fee of \$40-\$50, that would have applied only to visitors to O'ahu. This fee was described as the 'visitor impact fee' or 'green fee' (in part because a similar proposal to tax all visitors to Hawai'i was supported by Governor Green); which is similar in nature to the fee charged for visiting sensitive areas such as the Galapagos Islands National Park. All adult visitors to the Galapagos Islands that are not Ecuadorian citizens must pay \$100, while children aged 12 and under pay \$50.

HTA's *O'ahu Destination Management Action Plan 2021-2024* described a number of studies that should be undertaken to explore potential for the regenerative tourism fee.⁴⁶ The estimate of revenue that could be raised by a \$50 visitor fee was around \$440 million in FY 2024.⁴⁷ The proposal was unsuccessful and would face constitutional challenges if applied to all visitors to the state, as it could be considered a violation of the U.S. Constitution's Privileges and Immunities Clause.⁴⁸ It may be possible to apply visitation fees for areas that are within a defined reserve or area with restricted access or parking, or in a form that is more targeted. Hawai'i already has fees that operate in a similar fashion to the proposed visitor fee. The rental vehicle surcharge tax and the tour vehicle surcharge are levied primarily upon

⁴⁶ [O'ahu Destination Management Action Plan 2021–2024](#), Action F.

⁴⁷ [Visitor Green Fee](#) – Report to the Hawai'i Tax Commission, September 2021.

⁴⁸ M Honore, [Will Hawai'i tourists have to pay a 'green fee' to go to the beach? There is growing local support](#), USA Today, 3 February 2023; Grassroot Institute of Hawai'i, [Hill highlights flaws of 'green fee' for H. Hawai'i Media listeners](#), 5 April 2023.

visitors to Hawai'i, either directly or indirectly. The [Ocean Stewardship User Fee](#) is a \$1 charge for each passenger on a vessel with a Commercial Use Permit from the DLNR Division of Boating and Ocean Recreation. These fees are deposited to the ocean stewardship special fund. The conditions of use for this fund include ocean restoration and compensatory mitigation measures.

One means of implementing a visitor fee is to require a parking permit or to charge fees for parking at beach parks, nature reserves and similar coastal sites. This has been implemented at several state parks in Hawai'i including Hanauma Bay, Hā'ena State Park, and Hāpuna Beach State Recreation Area. The Washington State Discover Pass is a permit to access all state recreation lands and water access sites managed by Washington State Parks and Washington Department of Natural Resources. This permit is required by all vehicular visitors, including residents.

Due to the prevalence of rental vehicles, this charge could be added to the rental contract as a daily fee, with more cost-effective options for longer rentals. Renters who hold a Hawai'i driver's license and military personnel could be excluded from having to pay the fee.

2.4.2 Assessment of fees and charges

SUITABILITY ASSESSMENT:

Fines and charges that can only be enforced and collected after a public statute protecting public safety and/or health has been violated should not be a key source of revenue for financing proactive managed retreat and should be avoided. Fees and charges for access to and use of public trust resources is a promising and practical avenue to pursue, if structured to ensure that those charges are legal and do not have unintended consequences such as introducing barriers to equitable access.

SUPPORTIVE ELEMENTS:

- ✓ Under established statutes, it is possible to include fees for impacts on public trust resources.
- ✓ Funds from fines are deposited into the Beach Restoration Special Fund, which is largely aligned with the objectives of managed retreat.

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) Penalty fines and charges are collected only after a violation has occurred. This could lead to health and safety concerns.
- 2) Modifying the purpose of the Beach Restoration Special Fund to permit financing of managed retreat requires amending HRS 171-156.

2.5 ASSESSMENT OF STATE AND LOCAL FUNDING SOURCES

SUITABILITY ASSESSMENT:

While there are many potential sources of funding from state and county sources, this assessment suggests that the use of Transient Accommodation Taxes to secure bond funding may be the best path forward to support managed retreat.

SUPPORTIVE ELEMENTS:

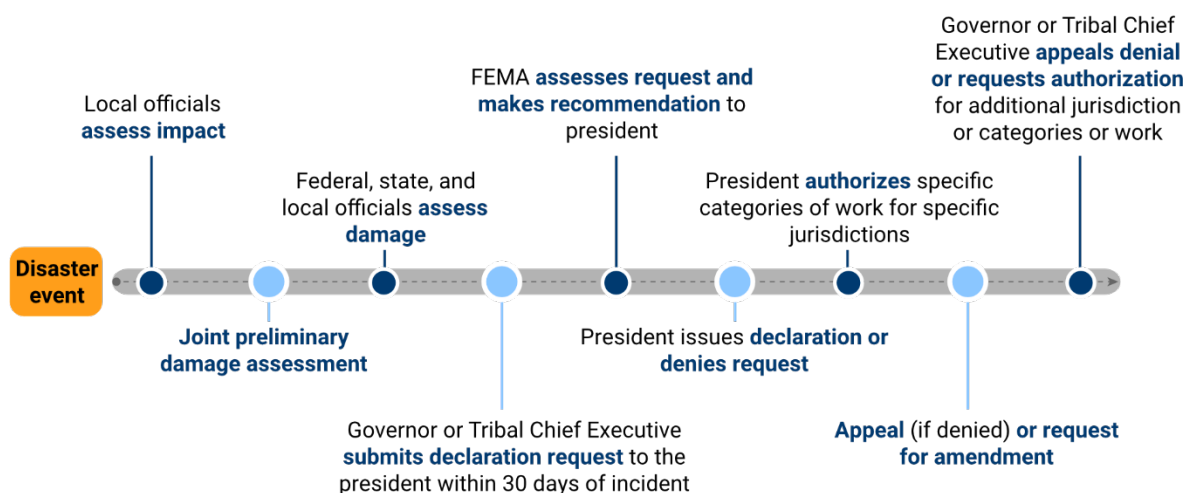
- ✓ TAT revenue provides substantial annual revenue, commensurate with the level of risk.
- ✓ TAT revenue can provide a source of revenue with which to finance bond interest payments.
- ✓ TAT revenue has not shown significant responsiveness to short-term erosion impacts.
- ✓ Revenue bonds financed by tax revenue could be a substantial and predictable source of funding, with customizable terms and performance requirements.

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) Concerns surrounding the reduction in tax base through removal of the most highly valued property along the shorefront, which could also reduce tourism revenue.
- 2) As erosion impacts become chronic, TAT revenue may be a less reliable source of income.
- 3) TAT can be a volatile source of funds, as evidenced by the loss of revenue during the COVID-19 Pandemic and associated lockdowns.
- 4) Bond interest payments will lead to higher overall project costs.
- 5) Visitor industry pushback is likely to accompany any proposed increases to TAT.

3 FEDERAL DISASTER RELIEF FUNDING

Disaster relief funding has historically been the source of the largest funding allocations for managed retreat. This funding comes with limitations, however, which reduces its applicability to managed retreat implementation in Hawai'i. Key among these is the low likelihood that erosion events or gradual sea level rise will result in a disaster declaration, which is necessary to secure federal disaster funding. Before the federal government can provide disaster relief funding, a presidential disaster declaration is required, which is typically in response to an extreme weather event such as a hurricane, wildfire, tsunami, storm surge, or severe flood. Figure 1 shows the process for declaration of a disaster.



Source: Infographic based on timelines developed by Congressional Research Services. The timeline summarizes provisions in 44 C.F.R. §§206.31-206.48

B | Brookings Metro

FIGURE 1: TIMELINE OF A TYPICAL HMGP-FUNDED BUYOUT (CREDIT: [KOUSKY ET AL., 2023](#))

The following section reviews the various funding sources considered along with their limitations and applicability, which both exist in every source to varying degrees. While emergency funds may be authorized within days and flow quickly to restore services, the process of requesting and obtaining funds for acquisitions of affected properties takes over 18 months on average.

Due to the need for a disaster to have already occurred, and the long delay before funding is available for property acquisition, federal disaster relief programs are not suited to proactive managed retreat or sound coastal zone management. However, these programs can assist with financing the purchase of properties affected by single or repeated events.

Post-disaster funding programs require that a disaster has already been declared, which could be considered a failure of the coastal zone management planning process. The criteria for declaring a disaster limit the application of this type of funding in Hawai'i, as sea level rise, coastal erosion, and most forms of marine flooding are not eligible types of disasters. Exceptions apply to flooding due to storm surge and compound flooding (riverine flooding made more severe due to elevated marine water levels). One limitation is that the disaster must be so large that the response is beyond the scope of local

or state governments. This may not apply in the case of acute coastal erosion events, which are moderated by local geography and development patterns.

The need for repetitive losses is a limiting factor in application of FEMA programs to managed retreat. In the case of coastal erosion, the flood damage may not be covered by the NFIP policy, and if the structure is deemed unsafe or uninhabitable due to loss of underlying sediment rather than flood damage, it is unlikely to be able to sustain repeated flood damage.

The loss of property tax revenue due to the disaster's impacts would mean a large fiscal effect on counties and the state, which may provide an incentive for an ad-hoc response to the disaster. A 2023 study by the University of Hawaii estimated the property tax revenue within the SLR-XA 3.2 foot area on O'ahu at \$1.5 million per annum, or 7.8% of total tax revenue.⁴⁹ The objective of a managed retreat program should be to reduce risk exposure as much as possible before a disaster occurs. Post-disaster relief funding is not consistent with the goals of a managed retreat program, but it can provide economic support for the transition to that program if retreat has not yet been implemented when a major disaster occurs. It could also provide some structure to the post-disaster recovery, which is a form of management, but does not achieve the primary objective of preemptive risk reduction.

Although buyouts may be appropriate where there is a compelling argument for simultaneous removal of multiple properties, the voluntary nature of post-disaster programs can lead to piecemeal implementation and an overall reduced level of effectiveness.

In addition to the buyout of properties at the pre-damage market value, there may be additional incentives required to aid in the relocation of communities, such as payments and top-ups to the amount paid for the property. For example, the NY Rising program paid additional incentives of up to 15% of the fair market value of the properties, to incentivize group buyouts and prioritize areas of greatest importance for flood protection.⁵⁰

3.1 FEDERAL EMERGENCY MANAGEMENT AGENCY

The Federal Emergency Management Agency (FEMA) is the largest source of funds for natural hazards mitigation and recovery, and potentially the largest source of funds for use in a buyout.

FEMA does not purchase properties directly but provides funding that allows state and local governments to make those purchases. Properties purchased with assistance from FEMA must be primary residences and are typically located in Special Flood Hazard Areas (SFHAs). Second homes are typically not eligible, although residents of those homes may be eligible for rental assistance, and in some circumstances, owners may be eligible for business physical disaster loans from the Small Business Administration. FEMA disaster relief programs are intrinsically linked to the National Flood Insurance Program (NFIP), as community or property participation in the NFIP is an eligibility criterion for receiving post-disaster assistance from FEMA. Participation in the NFIP is also required for some mitigation planning applications for pre-disaster mitigation planning and project funding.

3.1.1 National Flood Insurance Program

Flood insurance is mandatory for holders of federally backed mortgages in flood hazard zones. The majority of residents in these zones purchase policies through the NFIP, due to the lower costs of these

⁴⁹ Han, Rachael & Coffman, Makena & Newfield, Conrad & Tavares, Kammie-Dominique & Setter, Renee & Terry, Alice & Roberson, Isabella & Tarui, Nori. (2023). A Study of Shoreline Regulations and Managed Retreat for Hawai'i: A Cost Analysis for Paumalū, O'ahu.

⁵⁰ New York Governor's Office of Storm Recovery (2022) NY Rising buyout and acquisition program policy manual, Version 7.2. Governor's Office of Storm Recovery, Albany, NY

policies. NFIP policies cover losses to building and contents, but have many exclusions, including seawalls, septic systems, and decks and patios. There are also limitations on payments due to erosion, which must be caused by storm waves, tsunamis, or currents of water exceeding their normal cyclical levels, and not by long term loss of land mass or normal wave action. Importantly, the focus of the NFIP is upon coastal erosion is not covered by NFIP policies and is unlikely to be included in coverage from other providers. The limits to a NFIP policy are \$250,000 for building damage and \$100,000 for contents losses. Flood insurance from other providers may not have these coverage limitations. In recent years, private insurers have also chosen to depart from some insurance markets (e.g., hurricane risk in Florida, wildfire risk in California), so obtaining private insurance may become more challenging in the future.⁵¹

3.1.1.1 Increased cost of compliance coverage

In some instances, the NFIP Increased Cost of Compliance coverage can provide up to \$30,000 for a relocation project that aims to bring a home or business located in the SFHA into compliance with floodplain management ordinances or regulations. Funding is only available to NFIP policy holders, and only if (i) the damage costs exceed 50% of the pre-damage market value (substantial damage), or if there is a repetitive loss provision in the floodplain ordinance, and (ii) two claims in the past ten years have equaled 25% of the market value, on average. Demolition is also a potential use of these funds. While this program does not provide sufficient funding for managed retreat, it may provide funding for landowners who are required to demolish or relocate their properties due to the conditions of the managed retreat program. Building construction types may dictate whether relocation is possible, as this is most applicable to structures on elevated piers. Relocation of properties built on concrete slabs is not feasible in most circumstances.

3.1.1.2 Community rating system

Programs that reduce the flood risk exposure of a community result in an increase in the discounts available on the NFIP premiums. This benefit could be internalized through a referendum for a bond to support flood reduction measures. Implementing such a program would require careful analysis of the potential benefits to ensure that the expected reduction in premiums is realized. In the context of rising premiums due to global changes in reinsurance premiums and the increase in frequency and severity of insured events, it may be difficult to develop projects that result in absolute reductions in policy premiums. Many of the types of programs and projects that reduce risk include engineering the shoreline, which the State of Hawai'i has forbidden in areas with sand beaches.⁵²

3.1.2 Hazard Mitigation Assistance Programs

FEMA's Hazard Mitigation Assistance (HMA) programs include the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance Program (FMA), the Building Resilient Infrastructure and Communities Grant Program (BRIC), and the Safeguarding Tomorrow Revolving Loan Fund Program. The first two programs are post-disaster relief programs and addressed in this section. The latter two programs are mitigation and resiliency programs and are discussed in Section 3.4.

3.1.2.1 Hazard mitigation grant program (HMGP)

The HMGP has been one of the largest sources of funding for managed retreat. The program requires a 25% cost share from states, tribes, or territories. Buyouts are voluntary and paid at the preflood fair market value of the property. Assistance is not competitive but is linked to a federal disaster

⁵¹ J Bogage, [Home insurers cut natural disasters from policies as climate risks grow](#), Washington Post, 3 September 2023.

⁵² HRS 205A and HRS 183C-7.

declaration, with up to 20% of total funds allocated able to be set aside for the HMGP. Communities with projects in SFHAs must be participants in the NFIP.⁵³

A typical timeline for a buyout financed under the HMGP is shown in Figure 2.

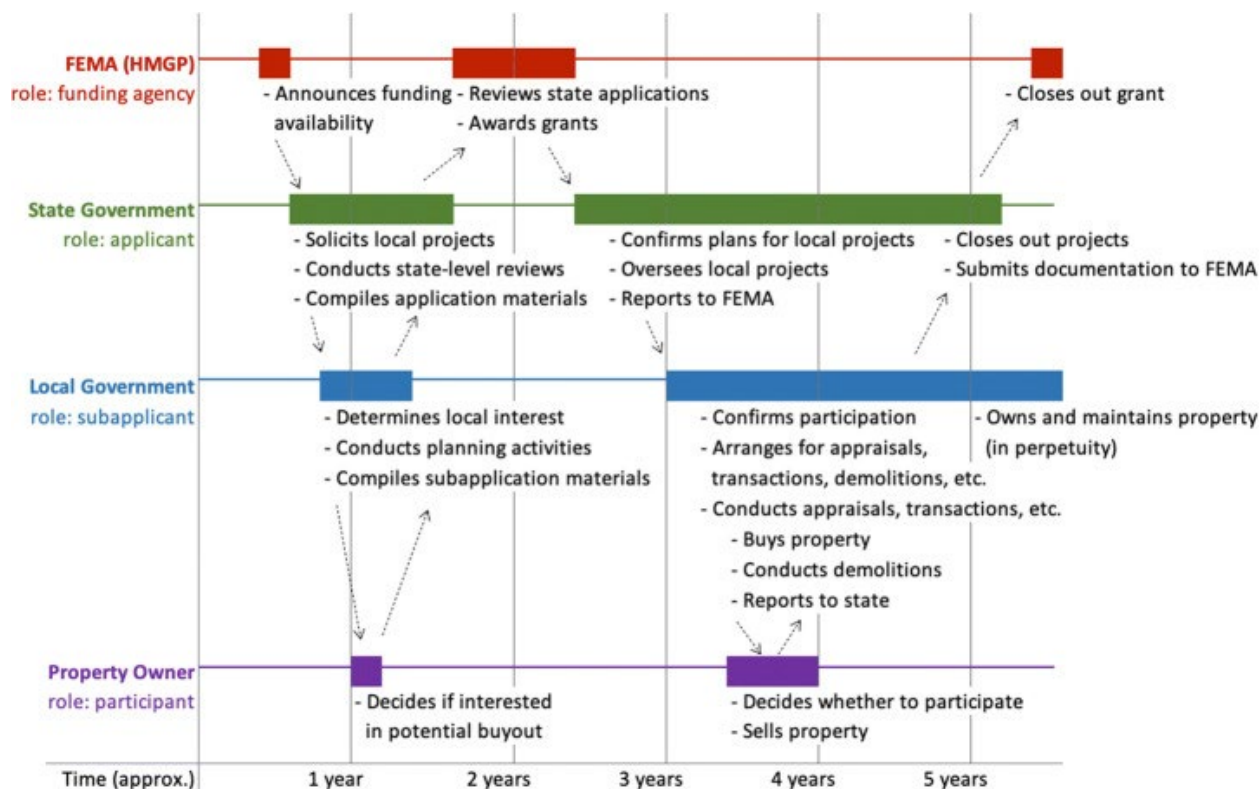


FIGURE 2: TIMELINE OF A TYPICAL HMGP-FUNDED BUYOUT (CREDIT: CURRAN-GROOME ET AL., 2021).

Acquisition of properties under the HMGP and other FEMA programs must comply with [Title 44 of the Code of Federal Regulations Part 80](#) and the [Addendum to the Hazard Mitigation Assistance Guidance](#). Key among these requirements are that the property be: flood prone, purchased from a willing seller, and maintained as open space in perpetuity to restore or conserve natural floodplain functions. This may mean that acquisitions for erosion or for inundation due to sea level rise are not eligible.

FEMA states that a property is eligible for acquisition if it:

- Will be acquired from a willing, voluntary seller;
- Contains a structure that may or may not have been damaged or destroyed as a result of a hazard event;
- Is undeveloped, flood-prone land that is part of a project with an adjacent eligible property with one or more existing structure(s) and the total project remains cost effective;
- Has easements that are incompatible with open space or encumbrances that can all be extinguished;
- Is not contaminated with hazardous materials at the time of acquisition other than incidental demolition or household waste; and

⁵³ FEMA, [Hazard Mitigation Grant Program](#).

- Is not part of an intended, planned, or designated project area for which the land is to be acquired by a certain date and/or where there is an intention to use the property for any public or private use that is inconsistent with the open space deed restrictions and FEMA acquisition requirements (e.g., roads, flood control levees).⁵⁴

3.1.2.1.1 Loss avoidance studies

Loss avoidance studies quantify the risk reduction benefits from HMA projects. These benefits represent benefits accruing both to residents and to state and federal taxpayers due to the reduction in damages. The majority of case studies available on the FEMA website relate to avoided flood damages. The performance of the hazard reduction interventions varies due to a range of factors, particularly the time period of the assessment. If the hazard reduction intervention was designed to limit the damages from an infrequent flood event, such as a storm with a return interval of 30-50 years, and the assessment is completed before that design storm has been experienced, the modeled benefits are unlikely to have been achieved. As a result, the benefit cost ratio will be lower and may appear to be less than the expended funds.

3.1.2.2 Flood mitigation assistance

Flood Mitigation Assistance (FMA) funding is used to reduce or eliminate repetitive losses to buildings covered by the NFIP. It is a competitive program, with an assessment period that typically lasts from fall of one year to summer of the following year. Funding is provided on a competitive basis and is not linked to individual disaster declarations. In 2023, FEMA announced that \$800 million would be available for the 2023 FMA grant program cycle.

Acquisitions are one action that is eligible for funding under the FMA. Typically, these acquisitions will only be authorized for properties that have been subject to repeated or severe flooding, as they must be considered flood prone to be considered. For acquisition projects under the Individual Flood Mitigation project type they must satisfy the definition of [Repetitive Loss](#) or [Severe Repetitive Loss](#) structures. Additional eligibility criteria are defined in the [Addendum to the Hazard Mitigation Assistance Guidance](#). Total FMA funding to any state may not exceed \$10 million in any five-year period.⁵⁵

3.1.2.3 Swift Current

[Swift Current](#) is a funding program that applies only to flood-related disasters that occur between June 1, 2023 and May 31, 2024. It provides up to \$300 million in assistance that is linked to a major disaster declaration. Eligible properties include repetitive loss and severe repetitive loss properties (as defined under the FMA or NFIP), or substantially damaged properties, and are provided for individual flood mitigation projects. Eligible activities include acquisition, acquisition and relocation, and relocation.

3.1.2.4 Public assistance

After a disaster declaration, FEMA may provide funding under the Public Assistance (PA) program to eligible governments for relocation of public facilities or real property. A local cost share of 25% applies for most PA funding.

3.2 U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

The federal Department of Housing and Urban Development (HUD) administers three programs that may be used for buyouts or acquisitions of properties in the context of managed retreat. They are targeted towards low- and moderate-income households, which may limit their application to recent

⁵⁴ FEMA, [Addendum to the Hazard Mitigation Assistance Guidance](#)

⁵⁵ [Title 42 United States Code 4104c\(h\)\(3\)](#)

purchasers of oceanfront properties in Hawai'i, but may be appropriate in areas that are subject to existing flood threats that would be exacerbated by sea level rise, or when properties are generational assets held by families with limited income.

3.2.1 Community Development Block Grant

The State Community Development Block Grant (CDBG) program provides funding based on an annual appropriation act, which may be used for acquisition of real property or relocation and demolition. Hawai'i elected not to participate in the State CDBG program, but HUD still administers the program for the non-entitled counties. The City and County of Honolulu is not eligible for participation in the CDBG HUD-Administered Non-Entitled Counties in Hawai'i Program, but the other counties in Hawai'i do qualify.

The CDBG program requires that 70% of funds are used to benefit low- and moderate-income households, averaged over up to three years.

3.2.1.1 Community Development Block Grant - disaster recovery

CDBG-Disaster Recovery (CDBG-DR) program requires special appropriations, which take place after a major disaster declaration when there are significant ongoing needs for recovery investments. It is typically 3-5 years before these funds are made available, and 50% of funds must be allocated to low- and moderate-income households. Applicants must submit a Disaster Recovery Action Plan to HUD. FEMA and Small Business Administration data is used to identify the areas that were most affected by the disaster and remain distressed.

Funds may be used either for buyouts at pre-disaster value, or for acquisitions, which may be made at post-disaster value. In the case of buyouts, the land must be dedicated as open space. In the case of acquisitions, there is greater flexibility in the use of the land after removal of the at-risk properties than when using FEMA funding. CDBG-DR funds were used by the New York Governor's Office of Storm Recovery to help finance buyout programs following Hurricane Sandy.⁵⁶

3.2.1.2 Community Development Block Grant - mitigation

The CDBG - Mitigation (CDBG-MIT) program provides for areas recently impacted by disasters to make high-impact, strategic, and large-scale investments to reduce future vulnerabilities. They require supplemental congressional appropriations, which means they are an unreliable source of funds from year to year. Funding allocations in 2018 totaled \$15.9 billion, based on qualifying disasters in 2015-2017. Hawai'i was not a recipient in this funding allocation. In 2021, \$186 million was allocated, based on qualifying disasters in 2018. Hawai'i County received \$6.862 million in CDBG-MIT funds for the Kilauea Volcanic Eruptions and Earthquakes experienced between May and August 2018 (*Hawai'i Kilauea Volcanic Eruption and Earthquakes, n.d.*). Kaua'i County received \$585,000 for severe storms that occurred in April 2018 (*Hawai'i Severe Storms, Flooding, Landslides, and Mudslides, n.d.*).

3.3 ASSESSMENT OF POST-DISASTER FUNDING FOR RETREAT

SUITABILITY ASSESSMENT:

Although federal disaster relief programs represent the greatest potential source of funding for buyouts of affected properties, the use of post-disaster funding is inconsistent with the goals of a managed retreat policy that seeks to limit public hazards, socioeconomic hardship, and damage to public trust resources. The eligibility requirements for accessing these funds limit their application to chronic impacts of sea level

⁵⁶ NYC Recovery, Sandy Funding Tracker, CDSBG-DR Funding

rise and coastal erosion in Hawai'i, and the time delay between disaster declaration and final purchase means that there would be displaced populations for extended periods.

SUPPORTIVE ELEMENTS:

- ✓ Substantial funds are available to support disaster recovery.
 - ✓ If plans and community vision are in place, retreat may have more support immediately after a disaster, both from the owners of affected properties and from the community more broadly.
 - ✓ Under buyout conditions, property owners would receive fair market value of the property before the disaster. This is likely higher than they would receive on the open market, so acceptance may be higher.
-

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) Programs require a federal disaster declaration, which is unlikely for coastal erosion.
 - 2) Although disaster relief funding is provided promptly, it can take many years for buyout funds to be made available.
 - 3) Programs require conversion of acquired land to public open space, which may not always be in line with private or community objectives and reduces the property tax base within the affected area (but not necessarily an overall reduction in property tax collections, as there may be compensatory increases in adjacent areas.)⁵⁷
 - 4) Funding availability is dependent on assessments and appropriations at the federal level.
-

4 MITIGATION AND RESILIENCE FUNDING PROGRAMS

In recent years, state and federal agencies have given greater priority to funding of actions and projects that reduce risk exposure *before* an extreme event or disaster occurs. This is due to the realization that this is both more cost effective and results in a reduction in social and economic impacts.⁵⁸ These funding sources align well with the goals of retreat. However, the eligibility requirements are strict, and funds or project scopes are competitive and cannot be relied upon to support large scale or recurrent projects.

FEMA is the only funding source in this section that allows for flexibility such that using their funds for more systemic retreat strategies, like preparing receiving areas for example, is not out of scope. Both the NPS and USACE opportunities are attractive because their scope aligns so closely to property

⁵⁷ The removal of shoreline properties will remove that parcel from the tax portfolio but may raise the value of neighboring properties resulting in a net change in tax collections that is smaller than the superficial calculation or may even be positive. Discussed more in Section 4.3.3.

⁵⁸ Nelson, K.S. & Camp, J. (2020). Quantifying the Benefits of Home Buyouts for Mitigating Flood Damages., *Anthropocene*. Vol 31 (September 2020), <https://doi.org/10.1016/j.ancene.2020.100246>

buyouts and thus makes them more applicable. These programs are small (only a few properties at a time which could produce patchwork retreat), and in the case of the NPS, require the resulting land be made publicly protected, which could conflict with Hawai'i land use and/or community goals. Like the NPS opportunity, the HCZMP focuses in large part on the benefit to the natural environment. Money for this program is limited. Even though NPS, USACE and HCZMP funds cannot be relied upon as a core funding sources due to small award amounts relative to Hawai'i's high property values, they could provide opportune financial cost reductions to specific phases of a larger project.

4.1 NATIONAL OCEANOGRAPHIC AND ATMOSPHERIC ADMINISTRATION

In recent years, largely due to the availability of Bipartisan Infrastructure Law funding, the National Oceanographic and Atmospheric Administration (NOAA) has established additional programs to support the coastal zone management funds already provided under Section 306 of the Coastal Zone Management Act (CZMA).

4.1.1 Large Legislation Special Funding - Climate Resilience Regional Challenge

Announced in 2023, the NOAA Climate Resilience Regional Challenge was funded by the Inflation Reduction Act. It provided up to \$575 million in funding for regional approaches to climate resilience, with final awards to be made in mid-2024.⁵⁹ This program appears to have been a once-off funding allocation, so is not a reliable source of future funding; however, it does illustrate the potential for future special funding allocations with a greater focus on proactive resilience actions that could include managed retreat.

4.1.2 CZM Habitat Protection and Restoration Bipartisan Infrastructure Law Competition

This program provides project funding in the range of \$200,000 to \$6 million for activities including land conservation and coastal habitat conservation, which included acquisition of real property or conservation easements.⁶⁰ Funding was made available via competitive grant programs in 2022 and 2023, with additional projects to be funded in subsequent years. A total of five years of funding was made available (2022-2026). Given the high cost of coastal property in Hawai'i, this program has limited potential application at the state level for financing a managed retreat program, except in isolated cases with few private assets.

4.2 THE NATIONAL PARK SERVICE

The National Park Service (NPS) manages two programs funded by the Land and Water Conservation Fund (LWCF) that could potentially be applied to purchases of land and property for managed retreat: the State and Local Assistance Program and the Outdoor Recreation Legacy Partnership (ORLP).

4.2.1 State and Local Assistance Programs

The LWCF provides matching grants to state and local governments for acquisition of lands to provide outdoor recreation opportunities and facilities. To be eligible, states must have a current Statewide Comprehensive Outdoor Recreation Plan (SCORP). The [2021 SCORP](#) for Hawai'i identifies a number of actions related to managed retreat:

⁵⁹ [NOAA-NOS-OCM-2023-2008068](#)

⁶⁰ [NOAA-NOS-OCM-2023-2008054](#)

Action: Encourage “managed retreat” for rehabilitation of outdoor recreation facilities that are located in flood prone, tsunami hazard, or projected sea level rise areas.

Action: Support acquisition of lands that can be utilized for passive recreational purposes and ecosystem services such as flood control, or a buffer between the urban and wildland interface.

If eligible lands are available, this program may be a source of potential funding assistance for acquisition of land for implementation of managed retreat. Annual allocation to Hawai'i in 2021 was slightly under \$2.2 million, with an additional amount of \$0.82 million provided pursuant to the Gulf of Mexico Energy Security Act. Funds are allocated to municipalities or DLNR for specific projects.

4.2.2 Outdoor Recreation Legacy Partnership

The ORLP is a national competitive grant program that provides funding to urban areas with a population of over 30,000 people, to provide outdoor recreation opportunities to economically disadvantaged groups, as determined through use of the [Climate and Economic Justice Screening Tool](#). Although many areas are identified as being economically disadvantaged by the definition used in that tool, the availability of open space in Hawai'i means that few projects within the state are likely to be deemed eligible.

4.2.3 Federal Land Acquisition Program

The Federal Land Acquisition Program may also be applicable if a project site is in a federal unit boundary. These funding sources may only be used for properties that are managed by the federal government, so is not applicable to much of Hawai'i's coastal zone. To be eligible for funding, the following considerations must be satisfied:

- Project is inside or adjacent to a federal unit boundary, such as a National Park, National Wildlife Refuge, or National Recreation Area.
- Project creates positive relationships with federal agency personnel at the local/regional/national level.
- Projects are locally driven, so building support from the ground up among community stakeholders and local land managers is crucial to success.
- Project is based on willing seller landowners.
- Project meets federal Yellow Book appraisal standards.

A recent purchase of properties in Rodanthe, North Carolina used funds from the LWCF to purchase two properties on the Cape Hatteras National Seashore. The reasons given for purchasing the two houses were to:

- Mitigate the ongoing impacts of having threatened oceanfront structures impact visitor safety, public health, and wildlife habitat at the Seashore;
- Assist threatened oceanfront structure owners that do not have viable options to move the structures or promptly remove debris following potential collapse;
- Restore the beach and make the sites a public beach access where visitors from the surrounding community can walk onto the Seashore beach areas without walking through private properties;
- Remove the structures, or have the ability to respond to their collapse, and clean up debris in a much quicker manner; thereby, minimizing impacts to park areas and visitors; and

- Evaluate the feasibility of a larger program.⁶¹

Most [federal lands in Hawai'i](#) are managed by the Department of Defense and not eligible for LCWF funding or are located inland.⁶² In theory, dedication of new areas as national parks, national shorelines or marine sanctuaries could enable the use of LWC funding. It should be noted that the designation of a marine sanctuary or national park is a slow and involved process that would also place limitations and restrictions on the use of that site, which may be incompatible with existing use patterns and cultural practices.

4.3 U.S. ARMY CORPS OF ENGINEERS

In some circumstances, buyouts may be authorized by the U.S. Army Corps of Engineers (USACE) to reduce flood damages. In 2014 the nonstructural measures program was extended to allow application to authorized coastal storm damage reduction projects.⁶³ This is termed a nonstructural alternative. The non-federal cost share for nonstructural measures is 35%, and typically the non-federal project sponsor is required to provide all real estate interests, meaning that they would need to purchase land or easements or acquire them via eminent domain. The [Ala Wai Canal Flood Risk Management Report](#) is an ongoing project that utilizes the cost-sharing system. Although acquisition is not agreed upon at this time, it is clear that this measure is being considered in certain cases. Acquisition, even if determined necessary and approved in the public appeals process, is likely to be cost prohibitive in many potential applications. The USACE can use eminent domain to acquire properties and will pay fair market value. The USACE also provides additional relocation assistance and costs associated with demolition and cleaning of the site.

4.4 FEMA MITIGATION PLANNING

In addition to the post-disaster funding programs, FEMA administers several programs that seek to reduce hazards and increase resilience through mitigation planning and projects.

4.4.1 FEMA Pre-Disaster Mitigation Program

The Pre-Disaster Mitigation Program (PDM) was largely replaced by the Building Resilient Infrastructure and Communities Grant (BRIC) Program in 2020.

Projects funded under the PDM have a cost share requirement of 25% from non-federal sources. Small, impoverished communities (defined as those with a population of 3,000 or fewer individuals and an average per capita annual income not exceeding 80% of the national average) may be eligible for a reduction in the cost share requirement to 10%. No counties in Hawai'i satisfy this definition, and it would be difficult for any of the smaller islands to satisfy the FEMA definition of a [community](#), given the absence of sub-county governments.

In 2023, a list of 100 congressionally directed spending projects were identified for funding. The only project selected in Hawai'i was for the City and County of Honolulu to undertake hardening of Fire Station Doors. Funding available for this project was \$2,002,915.

4.4.2 FEMA Safeguarding Tomorrow Revolving Loan Fund

The FEMA Safeguarding Tomorrow Revolving Loan Fund (STRL) was established in 2023 and allows eligible entities to establish revolving loan funds to mitigate the impacts of natural hazards. Under the

⁶¹ National Park Service, Cape Hatteras National Seashore North Carolina, [Threatened Oceanfront Structures](#), 1 December 2023.

⁶² <https://www.nps.gov/state/hi/list.htm?program=all>

⁶³ 33 U.S.C. §701n(a)(1)

program, the entity (typically a state government) can provide direct low interest loans to local governments in need of assistance. Entities are required to provide a 10% cost share and to provide repayment over a period of up to 30 years in low-income areas. Individual loans may not be more than \$5 million and interest rates may not exceed 1% per annum, with repayments to commence within a year of completion of the funded project.⁶⁴

4.4.3 FEMA Building Resilient Infrastructure and Communities Grant Program

The FEMA Building Resilient Infrastructure and Communities Grant program (BRIC) replaced the Pre-Disaster Mitigation program in 2020, except for some Congressionally Directed Funding. The cost share arrangements for BRIC are the same as for PDM, requiring a 25% non-federal contribution. A region must have experienced a declared disaster in the seven years prior to application ([Horn, 2020](#)).

Funding for the BRIC program is linked to disaster declarations. Once the costs of recovery and repairs from a declared disaster are estimated, 6% of the value of these costs is set aside for BRIC funding. The actual amount allocated is determined by FEMA each year and announced in the Notice of Funding Opportunity. Eligibility conditions for BRIC funding require that a state has received disaster relief funding within the past seven years.

Historically, Hawai'i was unsuccessful in applications under the selective national competition. This may be due to the weighting of hazard-resistant statewide building codes in the technical evaluation criteria.

In 2023, Hawai'i's State Building Code Council adopted the 2018 International Building Code (IBC) (effective 4/20/2021) and 2018 International Residential Code (IRC) (effective 11/17/2020) as the state building code. The counties had two years from the effective date of each code to amend and adopt it themselves before it became automatically applicable as the interim county building code on 4/20/2023 and interim county residential code on 11/17/2022.

Although recent changes to funding rules for the BRIC program prioritize funding for those residing in an Economically Disadvantaged Rural Community, the definition employed is unfavorable for Hawai'i. As there are no incorporated cities, there are no population centers that fit the criteria. Even on the island level, less populated islands like Moloka'i have more than 3,000 residents.

4.5 ASSESSMENT OF FEDERAL GOVERNMENT FUNDING FOR PREEMPTIVE RETREAT

SUITABILITY ASSESSMENT:

Pre-disaster funding programs are highly competitive, and funding is not available on an as-needed basis. Funds are limited, and given the high property values in Hawai'i, the maximum available funding under these programs is unlikely to support purchases of many properties.

SUPPORTIVE ELEMENTS:

- ✓ Funds are available prior to a disaster, which limits social impacts and is more economical.
- ✓ If plans are in place, retreat may have more support immediately after a disaster, both from the owners of affected properties and from the community more broadly.

⁶⁴ FEMA, [Safeguarding Tomorrow Revolving Loan Fund Program](#)

- ✓ Under buyout conditions, property owners would receive fair market value of the property before the disaster. This is likely higher than they would receive for those damaged properties on the open market, so homeowner acceptance may be higher.
-

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) These funds are a highly competitive, irregular funding source.
 - 2) The awards would be insufficient to support a statewide retreat program.
 - 3) Although disaster relief funding is provided promptly, it can take many years for buyout funds to be made available.
-

5 INNOVATIVE APPROACHES

Unlike the methods discussed in previous chapters, many of the approaches in this section are cost avoiding rather than fund accruing. Leasebacks are the only method that requires an initial purchase be made by the government, thereby increasing the importance of ensuring the success of the fundraising method and lease payment structuring. Because property in Hawai'i is so expensive, the initial purchase outlay would be high, but so too would the repayments, subject to ensuring affordability objectives were satisfied. The debt schedule could be designed around the interest rate at the time of acquisition, or the interest rate of the bond used to finance the purchase.

Life estates have the benefit of giving constituents long-term planning privileges, although it may be at odds with Hawai'i culture in that intergenerational home ownership would be discontinued. This could become a particular issue in the indigenous community, or those with strong histories of continual occupation.

Land swaps and transferrable development rights are attractive land use-based solutions that would support redirection of development to areas outside the hazard zone, rather than simply removal of development. This would provide the ability to defray costs of purchasing or canceling development rights within the coastal hazard zone. Though not a direct funding or financing mechanism, this may ease the financial burden of implementing the policy. The financial impacts would be site and policy specific and require careful design. Considering the limited availability of developable land in Hawai'i, providing landowners with a means to raise the resources to relocate while encouraging retreat could be a powerful motivator. To address the challenges posed by low demand for these rights, the State could consider allowing the transfer of development credits between counties as a creative solution.

Land trusts, mitigation banking, and conservation easements are all examples of ecologically focused retreat strategies that rely upon public-private partnerships. Because of Hawai'i's substantial ecological wealth and the continued emergence of private companies and organizations either wanting to or being required to offset their environmental impacts, this could be a useful way to acquire land for retreat while minimizing the financial impacts on Hawai'i residents.

5.1 LEASEBACK AND RENT-TO-BUY

Under a leaseback program, lands are purchased (typically by a government entity or land trust) but the property owners are permitted to continue to occupy the site either for a given period of time that is

predetermined, or until a safety or operational threshold is exceeded. They pay lease or rent to the purchaser in the interim, which separates the decision to sell from the decision to relocate, which may aid in the reduction in risk exposure of public assets. The lease fees could be used to service revenue bonds issued to finance the purchasing of the properties.⁶⁵

A revolving fund for managed retreat was proposed in California in 2021 and 2022, which would have included leaseback arrangements. This fund would have provided low interest loans to local jurisdictions to purchase vulnerable coastal properties within their jurisdiction. It was to be established within the California Infrastructure and Economic Development Bank Fund, which is a continuously appropriated fund. These bills were ultimately vetoed by the Governor, who stated that the bill did not comprehensively address the costs of the program over the coming decades, and stated that local jurisdictions should not intervene in the property rental market.

Depending on the duration of occupation, the incidence of extreme weather events, and the interest paid by the purchaser (if applicable), leaseback arrangements can return the investment within a relatively short period of time. A hypothetical application in Imperial Beach, California, estimated that the initial outlay could be returned in 25-45 years.⁶⁶ The purchaser takes on a degree of risk in estimating the leasing period's duration. If a severe erosion or flooding event occurs before the period is over, the purchaser may not recoup all of the costs of the initial purchase. This is an important limitation for properties under most immediate threat of erosion, which may limit application to more chronic impacts of sea level rise that can be projected with greater certainty. The method also requires the purchaser to act as a landlord and turns the purchased property into a form of public housing. This may be undesirable due to liability concerns or community objections.

An alternative approach would be for a government or land trust to purchase lands through a rent-to-buy scheme, which operates like a reverse mortgage. This would involve the land purchaser making payments over a defined period, until the full purchase price has been transferred to the seller and the purchaser takes ownership. This process reduces the upfront expenditure required and can provide a source of income to enable the seller to move to a new location.

5.2 LIFE ESTATES

Life estates are purchases that allow residents to remain within an area until the end of their life, or the point at which they choose to leave. They could be combined with leaseback arrangements or operate without requiring any rental or lease fees. Primarily used by governments to purchase properties for their own use, they have been applied when acquiring properties for national parks. When purchasing land using life estates, the value paid is the appraised value less one per cent for the year of the reservation. In the case of the landowners' life expectancy, actuarial tables estimate their lifespan. If they are projected to live for another 50 years, the property would be purchased at a 50% discount to the current appraised value.⁶⁷

⁶⁵ Keeler, A.G., Mullin, M., McNamara, D.E. et al. Buyouts with rentbacks: a policy proposal for managing coastal retreat. *J Environ Stud Sci* 12, 646–651 (2022). <https://doi.org/10.1007/s13412-022-00762-0>

⁶⁶ Revell, D.; King, P.; Giliam, J.; Calil, J.; Jenkins, S.; Helmer, C.; Nakagawa, J.; Snyder, A.; Ellis, J.; Jamieson, M. A Holistic Framework for Evaluating Adaptation Approaches to Coastal Hazards and Sea Level Rise: A Case Study from Imperial Beach, California. *Water* 2021, 13, 1324. <https://doi.org/10.3390/w13091324>

⁶⁷ Gross, Sam, "Managed Retreat and the Life Estate: A Practical Path Forward for Coastal Communities" (2019). Virginia Coastal Policy Center. 49. <https://scholarship.law.wm.edu/vcpclinic/49>.

5.3 LAND SWAPS AND ZONING CHANGES

Land swaps have been used to encourage movement away from at-risk areas. In reality, these programs should be termed 'housing swaps' as they typically require that the receiving property have pre-constructed homes. In some instances, swaps of undeveloped properties and existing homes may occur, though this may require scaling or additional compensation to account for differences in property values. Creation or purchase of suitable properties for the swap to occur requires significant forward planning and expenditure. Subsection 171 of the HRS provides conditions under which land exchanges can take place between property owners and the state ([Title 12. Conservation and Resources, n.d.](#)). Kaua'i County is currently exploring of the feasibility of a pilot voluntary land swap program in West Kaua'i which could allow opportunities to steward and caretake family lands.

In New Orleans, the [Project Home Again](#) program provided 101 low- and middle-income homeowners with new homes outside the hazard zone, in exchange for the title to their flooded home. These homes were designed to be energy efficient, elevated, and clustered to preserve the community of the relocated residents. The PHA program was funded via a philanthropic gift of \$20 million from The Leonard and Louise Riggio Foundation and delivered by the New Orleans Redevelopment Agency.

This option has the potential advantage of allowing close-knit communities to stay together as they move to a different location. To be effective, it would require zoning and/or land use designation changes to ensure that the sending areas can no longer be inhabited or developed. Given the lack of available housing in Hawai'i and the relative wealth of beach and oceanfront landowners, there may be limited support for programs that provide housing for that population, potentially at the expense of other community residents. Such landowners may also not be amenable to moving to designated properties further inland when they have the resources to purchase properties in many other locations.

5.4 TRANSFERRABLE DEVELOPMENT RIGHTS

Transferrable development rights (TDRs) separate the right to develop from the physical property. They allow the development rights to be transferred to a different location by sale to another party, or transfer between two properties owned by the same entity. They are a means of limiting development within a given area while reducing the costs associated with that limitation, and potentially avoiding claims of regulatory takings.⁶⁸ TDR has been used successfully across the U.S. for purposes including historic preservation, wildfire mitigation, and preservation of agricultural lands and natural areas. Its application for climate adaptation has been limited to date, however one example is Ocean City, Maryland which implemented a sending area through an overlay zone for beachfront properties.⁶⁹

One potential application of TDRs in Hawai'i for managed retreat would be to allow for upzoning or increased development of urban and agricultural lands, or infill areas where costs of development may be lower due to the presence of utilities, in exchange for downzoning of properties in the coastal zone. For a TDR program to be effective, there must be a market need for the traded rights. It is unclear that this is true for Hawai'i, though it may be possible to create that market by actions that restrict development opportunities elsewhere or providing incentives for use of preexisting development rights through reduced property tax rates, for example. In the absence of a formal mechanism it is difficult to predict what any potential revenues from the program could be. Site-specific analysis would be required to identify the potential for use of TDRs for alleviating the costs associated with managed retreat or facilitating the relocation of assets from sending to receiving areas. A study is currently ongoing by the University of Hawai'i for the City and County of Honolulu to examine the market for TDRs on O'ahu in

⁶⁸ HRS 46-161.

⁶⁹ Pruetz, Rick, FAICP, "Climate Action and Transferable Development Rights" (2020). APA Zoning Practice. Issue 12.

both urban and rural contexts. It is expected to be completed in the summer of 2024; however, it should be noted that the findings may not be easily translatable to other counties. An approach to controlling development and allowing for transfer of building rights within hazard zones is found in the Rate of Growth Ordinance (ROGO) system employed by Monroe County in Florida to limit development in the Florida Keys. This system limits development through use of a points-based rating system that guides development to less risky locations. Additional points can be purchased either via a donation to the County's land acquisition fund, or accrued by donation of property via dedication of land that results in a retirement of development rights for the donated parcel. There are other projects that can earn points through reducing environmental impacts of a development, increasing affordable housing, or reducing wastewater management issues. Building rights may also be purchased from other property owners.⁷⁰ It should be noted that the ROGO system may face legal challenges or revisions to allow for issuance of additional building permits, in part due to concerns about the potential for takings claims via denial of development rights.⁷¹

5.5 CONSERVATION EASEMENTS AND LAND TRUST PURCHASES

Private funding has been used to purchase land for conservation, including through partnerships with the state Legacy Land Conservation Program and land trusts. This may occur through simple fee acquisitions (purchasing the property), or through application of conservation easements that limit the use of land under that easement.

Some land trusts operate as transaction brokers, raising funds and providing technical assistance for the purchasing of properties and transfer to the entity that will be responsible for the ongoing maintenance of the site. The Trust for Public Land (TPL) works in partnership with local land trusts, community organizations, and county, state, and federal governments. Organizations such as TPL can provide funds used as match funding for competitive grant applications, such as the pre-disaster funding programs outlined above. This leverages the investment and may increase both the capacity of the Hawai'i government to submit more funding applications, and the impact of the funding provided by private donors and organizations. TPL does not retain ownership of land, but transfers it to another land trust, non-profit organization, or public entity.

On Kaua'i, TPL supported the purchase of 40 acres of land adjacent to [Lumaha'i beach](#) in 2001. This land was transferred to the State of Hawai'i and designated as a scenic coastal reserve. In the Maui community of Hana, TPL partnered with the Office of Hawaiian Affairs, the County of Maui and the federal government to purchase 73 acres of land at [Mū'olea Point](#) in 2005 to provide access for fishing and swimming. On the Big Island, TPL partnered with multiple organizations to purchase a property at [Kauhola Point](#) in 2012 and transfer it to a nonprofit community organization.

The Maui Coastal Land Trust, O'ahu Land Trust, Kaua'i Public Land Trust and Hawai'i Island Land Trust merged in 2011 to form the Hawaiian Islands Land Trust, now known as the Hawai'i Land Trust. The North Shore Community Land Trust is a land trust focused on the north shore of O'ahu. Its activities have included facilitating permanent protection of 634 acres of coastal lands near Turtle Bay Resort and conducting dune restoration and fence construction activities at Paumalū (Sunset Beach).⁷²

⁷⁰ Monroe County, [ROGO/NROGO System](#), accessed on February 12 2024.

⁷¹ WLRN Miami, ['More than alarming': New report spurs worries over public safety, the environment in the Keys](#), January 8 2024.

⁷² <https://www.northshoreland.org/land-conservation/>

5.6 MITIGATION BANKING

A mitigation bank is “a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources” ([Mitigation Banks under CWA Section 404, 2023](#)). Some areas have been set aside for mitigation banking to offset impacts in coastal areas, primarily for wetlands. An example is the [Upper Los Cerritos Mitigation Bank](#) in Los Angeles County, established by the USACE and the California Coastal Commission. Depending on the future use of the open space, it may be possible to create a conservation land bank and sell the credits for that space to entities required to offset their project impacts on coastal lands. This approach would have greatest applicability for purchasing areas to allow for the migration of wetlands that would otherwise be lost to coastal squeeze due to sea level rise. Under some offset requirements linked to development consents it may be necessary for a developer to purchase lands to allow for restoration of sandy beaches through removal of hard structures. This is an approach that is worthy of additional investigation.

5.7 ASSESSMENT OF INNOVATIVE APPROACHES TO FUNDING MANAGED RETREAT

SUITABILITY ASSESSMENT:

These innovative approaches offer substantial potential to further retreat without direct spending from the State via taking advantage of pre-existing land stewardship relationships, zoning systems, and development processes. Unique cultural challenges occur with each, and care should be taken in their design to meet maximum impact.

SUPPORTIVE ELEMENTS:

- ✓ Purchased properties would be transferred to some form of public ownership or a community land trust, consistent with public trust and access objectives.
- ✓ Life estates or leaseback arrangements would allow residents to continue to occupy the coastal zone until it was no longer safe to do so. This provides time for detailed planning and reduces the immediate economic burden on all parties.
- ✓ Via mitigation banking, funds could be raised without taking on debt, and potentially without changing existing policy.

ELEMENTS REQUIRING FURTHER RESEARCH:

- 1) The State will need to proceed intentionally with many of these strategies to ensure that they produce the desired outcomes and expectations among local residents.
- 2) TDRs, land swaps, and zoning changes are only as effective as their level of demand. Much of Hawai'i's development market is already saturated with low-cost development rights. Opening up further development of agricultural lands and open space would likely prove controversial and could undermine other policy goals.
- 3) Although land trusts can have access to large funds, they are unlikely to support the direct buyout of private property at pre-disaster market value unless there are significant ecological, social, and/or cultural benefits.

6 APPLICABILITY OF FUNDING AND FINANCING SOURCES TO MANAGED RETREAT IN HAWAI'I

This assessment has examined sources of existing funds and potential financing options that would be most applicable to implementation of managed retreat in the context of Hawai'i. A number of options are recommended to be excluded as potential avenues based on their limited spatial or practical applicability, eligibility restrictions, inability to provide sufficient funding, or likely challenges in making the necessary regulatory changes. Others still may be individually ill suited due to limited financial scope for raising revenue, but in combination with several other sources could produce a robust funding portfolio.

At a high level, this assessment identifies that the most promising means of financing retreat is through allocation or carveout of existing sources of state tax revenues to a dedicated fund, which would be able to:

Provide non-federal cost share or match funding for grant applications;

Use the revenue stream to secure additional borrowing via bond issuance;

Acquire properties to implement managed retreat where clear objectives are met, which could include:

- Public safety;
- Risk reduction;
- Mitigating of repetitive losses;
- Clear benefits to the public through improving or increasing public access or creation of new public conservation or park lands; and
- Compelling public demand, as evidenced by a ballot or similar consultation activity.

Provide support to counties that convert taxable properties to open space via acquisition via:

- Replacement of lost property tax revenue, declining over time; and
- Costs of ongoing maintenance of the newly created open space.

The prioritization of funding and financing options for managed retreat is the objective of the next phase of this project.

APPENDIX D: NORTH SHORE CASE STUDY PROFILE

OPSD Managed Retreat Case Study Profile

Sunset Beach, North Shore, O‘ahu

Location	Sunset Beach (Paumalū), O‘ahu
Case Study Area	~7.5 ac / ~.25 miles long
Ownership	Various
County Zoning	R5 – Residential
State LUD	Urban
Plan Area	O‘ahu General Plan
Sub Plan Area	• North Shore Sustainable Communities Plan (SCP) (2011)
Other Key Plans & Reports	• North Shore SCP Update (ongoing) • Surfrider Foundation North Shore Coastal Resilience Working Group - Adaptive Coastal Management Recommendations, Actions and Strategies (2022) • UH Institute for Sustainability and Resilience - A Study of Shoreline Regulations and Managed Retreat for Hawai‘i: A Cost Analysis for Paumalū, O‘ahu



Project Area Description

The North Shore of O‘ahu is home to some of the most imminently threatened coastal development on the island. Large seasonal swells and development constructed close to the shoreline make this region especially vulnerable to coastal erosion, which is being exacerbated by sea level rise (SLR). Recent episodes of seasonal erosion have threatened homes, public beach accesses, and cultural resources in some areas. Sunset Beach represents one of the most vulnerable “hot spots,” as evidenced by homes collapsing onto the beach in 2022 and 2024 near Rocky Point.

This approximately ¼-mile stretch of beach is situated between Sunset Beach Park to the north and Rocky Point to the south. It encompasses a single littoral beach cell, which extends beyond the study area to Sunset Point to the north. Paumalū Stream flows toward the beach just north of the study area, providing seasonally intermittent ocean connection at its stream mouth. The study area includes beach access points for surfbreaks including Kammiland (“Kammies”), Monster Mush, and Rocky Point. Further south are world famous surf breaks such as Banzai Pipeline, Backdoor and Off the Wall and properties include homes owned by professional surfers and companies such as Quiksilver, Vans, Volcom, and Billabong.

The Sunset Beach case study area encompasses an R-5 zoned area with approximately 60 privately owned residential properties between the beach and Kamehameha Highway. The homes in the study area are constructed on a coastal dune system which is comprised of mainly sandy soils. The study area is situated between 20 and 23 ft above sea level. The Sunset Beach neighborhood is accessed via Kamehameha Highway and includes Ke Nui Road, which runs parallel to the highway. The majority of the properties in the neighborhood are single family homes.

According to a study completed by the University of Hawai'i at Mānoa's Institute for Sustainability and Resilience in 2023, approximately 80% of the properties in the Paumalū ahupua'a have been listed as short-term rentals at some point between 2018-2022. Given the recent restrictions on short-term rental areas and minimum stay lengths in the City and County of Honolulu per Ordinance 22-7, this proportion may have been affected.

Mauka of Kamehameha Highway is a flat coastal plain between 500 and 800 ft wide which abuts a series of bluffs approximately 300 feet tall. The coastal plain includes low density County-zoned land with single family homes, several food trucks, and a gas station. Atop the bluffs is the 1,144-acre Pūpūkea-Paumalū State Park Reserve, purchased by a non-profit land trust in 2007 and transferred to State Parks Division.

Vulnerabilities

The major vulnerabilities to Sunset Beach include coastal erosion, flooding, and storm surge, which are exacerbated by rising sea levels. Under 3.2 ft SLR-XA, nearby portions of Kamehameha Highway are expected to be inundated, which would significant impact access to the study site. Currently, Kamehameha Highway provides the only roadway access to this neighborhood. Furthermore, large seasonal variations in beach width can exacerbate erosion and flooding due to large winter swell events.

Current Conditions

The entire case study area is built on sand dunes formed by sand deposited by waves and wind. West to northwest swells tend to push sand easterly from Rocky Point towards Sunset Point, while northwest to north swells push sand westerly. Sand tends to accumulate at Sunset Beach during the winter season and move towards Rocky Point during the summer months, however large year-to-year variations are possible. Shoreline change over time is illustrated in Figure 1.

In the 2013-2014 winter season, large swells caused severe sand loss in front about 20 homes along Sunset Beach, including those in the study area (U.S. Climate Resilience Toolkit, 2024). Seasonal sand pushing was commenced to provide a soft defense against strong waves. However, the solution was never intended to be a permanent fix.

Subsequent years saw more major erosion events, such as a large swell in December 2017 that undermined portions of the bike path adjacent to Kamehameha Highway, created a 20-foot cliff, and caused the lifeguard tower to be relocated (Wu, 2017). This was partly mitigated by a dune restoration project at Sunset Beach Park resulting from a public-private partnership which focused on installing native vegetation and designated beach accessways to manage foot traffic (Wu, 2018).

In the study area, subsequent erosion events in 2022 and 2024 caused multiple houses to fall into the beach in front of surf break Kammie's. In February 2022, a late season winter swell produced greater than normal erosion, causing one home to collapse onto the beach. Temporary protection measures were in place at the adjacent properties. The home was lifted and moved back onto the remaining section of the parcel. In 2024, multiple homes were undermined and fell onto the beach, causing a significant amount of debris to disperse into the ocean. One of the property owners whose home was undermined had previously been fined \$77,000 in 2022 for illegally pouring concrete on the sand fronting his home (Dowd, 2024).

The area is not connected to a municipal wastewater system. As such, all properties contain on-site sewage disposal systems (OSDS), consisting mainly of cesspools. According to State Department of Health data, there are 42 OSDS within the case study area – one is an aerobic system, three are septic and the remaining 38 are cesspools. A State law (Act 125) passed in 2017 requires the replacement of all cesspools across the state by 2050.



FIGURE 1: LONG-TERM SHORELINE CHANGE FROM ROCKY POINT TO SUNSET BEACH WITH RED ILLUSTRATING EROSION AND BLUE ILLUSTRATING ACCRETION.

Applicable State and County Policies

Under HRS 205A-28, no development is allowed in the Special Management Area (SMA) without obtaining an SMA permit, which are regulated by the Counties. Under the SMA rules, projects with environmental impact or that are valued over \$500,000 in a 24-month period require an SMA permit. An SMA permit is required for “development” (as defined in Revised Ordinances of Honolulu Chapter 25), which includes any construction, grading, or change in the intensity of the use of land, with certain exceptions, including relocating a dwelling unit to an area on the property less susceptible to coastal hazards.

The City & County of Honolulu recently updated the shoreline setback rules. Prior to July 2024, the shoreline setback line was 40 ft from the shoreline. After July 1, 2024, the shoreline setback area is now set to account for sea level rise and coastal erosion in order to further protect public beaches and shoreline properties. For the North Shore the shoreline setback line is 60 feet mauka (inland) from the certified shoreline, plus 70 times the annual erosion rate.

At the state level, the construction of new seawalls to protect private property is prohibited (Act 16). However, prior to this prohibition, emergency requests for temporary protection were allowed when coastal property owners could provide evidence of erosion within 20 ft of certain structures, as the structures are then considered “imminently threatened” (HAR § 13-5-2). Many properties within the case study area have applied for such permits in the past and in some cases continue to put in emergency erosion control measures without proper permits, or leave emergency protection measures in place beyond the permit expiration date.

Eighteen homes in the case study area have received notices of violation for unauthorized uses by the DLNR OCCL, mostly for unauthorized or expired shoreline protection measures. Multiple homeowners are facing large fines for unauthorized erosion control measures including mining sand from the beach to fill sand bags.

Projected Sea Level Rise (SLR) and Coastal Erosion

Over 84 percent (6.32ac) of the case study area is projected to be impacted by SLR under the 3.2 ft scenario represented by the State of Hawai'i's Sea Level Rise Exposure Area (SLR-XA) (see Figure 2). This could lead to many of the structures on these parcels becoming uninhabitable over time without measures to protect, adapt, or retreat.

Figure 2 also shows projected coastal erosion under different SLR scenarios. The erosion line generally trends makai towards the south end of the study area, so fewer properties are projected to be impacted initially. Under the 1 ft sea level rise and coastal erosion scenario, approximately 10% (.75 ac) of the case study area is projected to be impacted. 20 properties closest to the beach in the northern section of the study area are projected to be impacted.

Under the 2 ft sea level rise coastal erosion scenario, approximately 37% (2.76 ac) of the case study area will be impacted. All 24 parcels fronting the beach are projected to be impacted along with the two northernmost parcels fronting Ke Nui Rd for a total of 26 parcels projected to be impacted.

Under the 3.2 ft sea level rise coastal erosion scenario, the north end of the study area would be completely impacted by the 3.2 ft coastal erosion projection. In total approximately 56% (4.17 ac) of the case study area will be impacted, encompassing 31 parcels.

Affected Properties

Publicly available tax information was disaggregated down to the properties within the case study area and analyzed using GIS to ascertain a high-level understanding of the land and building values. The figures used are assessors values from 2023 in 2023 dollars.:

Assessed Land Value:

- **Mean:** \$1,431,830
- **Median:** \$1,100,000
- **Sum assessed land value of all parcels:** \$85,909,800

Assessed Building Value:

- **Mean:** \$547,798
- **Median:** \$464,150
- **Sum assessed building value of all parcels:** \$32,867,900

Net Tax Value (after land/building exemptions):

- **Mean:** \$1,931,448
- **Median:** \$1,523,950
- **Sum net taxable value of all parcels:** \$115,886,900

Tentative tax assessed value impacted by SLR-XA

SLR-XA	NUMBER OF UNIQUE RECORDS	NUMBER OF UNIQUE PARCELS	TOTAL TENTATIVE TAX VALUE (EXEMPTIONS INCLUDED)¹
0.5 ft	46	44	\$122,125,700
1.1 ft	92	69	\$218,814,200
2.0 ft	112	75	\$270,253,800
3.2 ft	137	100	\$316,129,800

Costs of Retreat for Case Study Area

A study recently released by the University of Hawai'i at Mānoa's Institute for Sustainability and Resilience in 2023 quantified the costs for retreat up until 2100 for the case study area from Rocky Point to Sunset Point with the mauka boundary of Kamehameha Highway. In this report, three retreat approaches were identified: all-at-once, threshold-based, and reactive retreat. All-at-once retreat is the simultaneous and immediate retreat of all properties identified to be impacted by 3.2 ft of SLR. Threshold-based retreat uses a predefined trigger to determine the timing of an individual parcel's retreat, which in this case is when a structure is within 20 feet from the projected erosion boundary. Reactive retreat occurs after the erosion line has already intersected or is beyond a structure, typically implying the property has been severely damaged.

For each retreat approach, two scenarios were considered to provide a range of costs, with the main reason for the cost difference being the type of projected hazard under SLR (either coastal erosion or annual high wave flooding) used to determine the amount of land that transfers from public to private. The application of these scenarios vary slightly per retreat approach, but for all intents and purposes, this general explanation of the methodology is sufficient for this review. For a more detailed methodology, please refer to the original report.

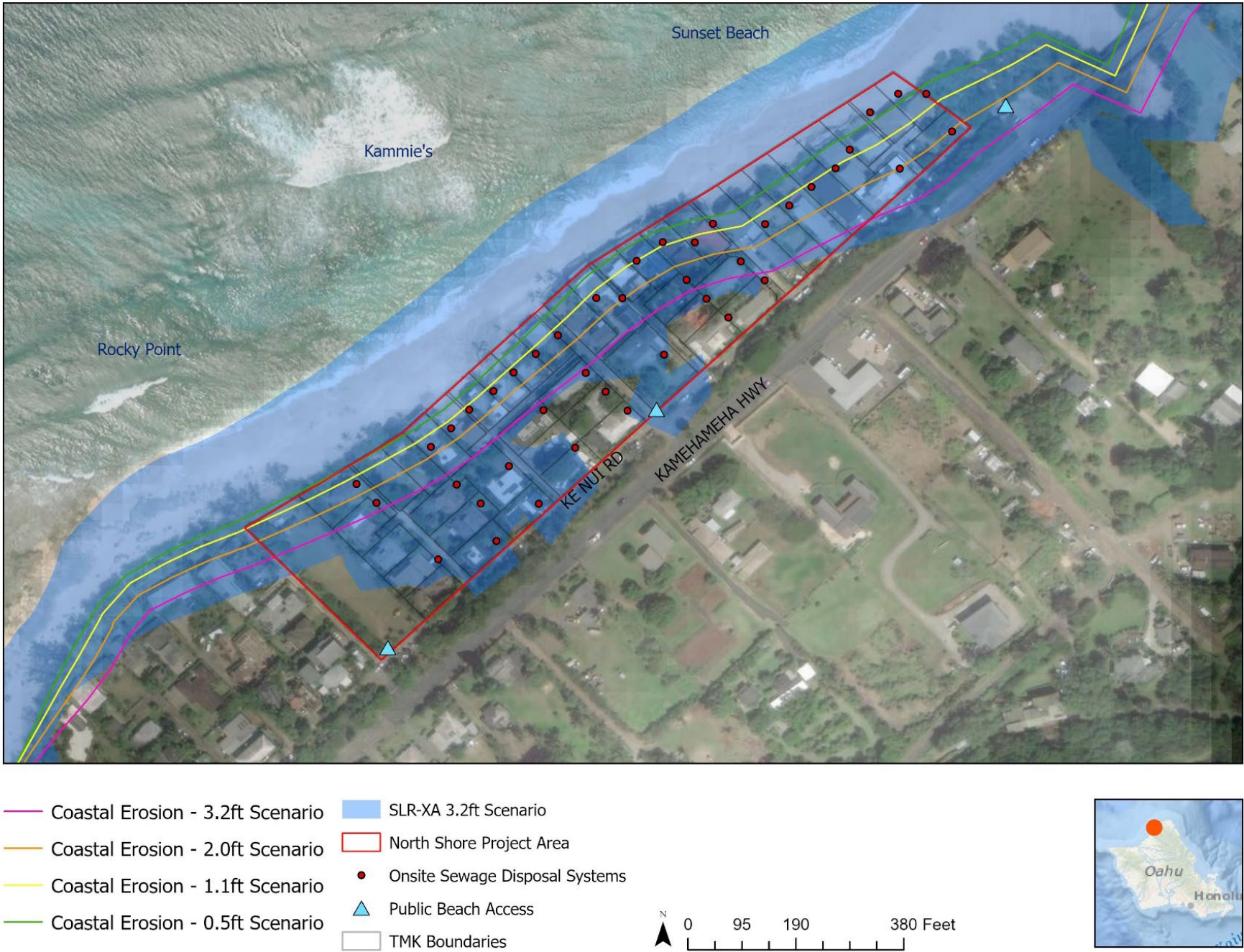
All-at-once retreat is the most expensive, with total costs ranging from \$206.7 mil to \$332.9 mil (\$2021). The cost of threshold-based retreat decreases significantly, ranging from \$62.1 mil to \$89.4 mil (\$2021). Reactive retreat has the least economic cost but overlaps with threshold-based retreat, with totals from \$53.4 mil to \$72.5 mil (\$2021). In conjunction with these cost estimates to provide the context of retreat benefits, the study estimates the amount of beach area gained with each retreat approach, assuming the amount of previous privately-owned land is added to the existing beach upon retreat given the study area is composed of sand. Taking the economic cost with the amount of beach area gained with each retreat approach, the recommendation of this report is to investigate threshold-based retreat as a potential strategy to protect public access to and preserve the public beach while mitigating cost, especially compared to the current status quo at sandy beach areas of reactive retreat which is costly and threatens public safety. However, these findings are dependent on the enforcement of the state's shoreline regulations.

¹ If the SLR-XA line intersects with a parcel, all land and building value of that parcel is included in the Total Tentative Tax Value.

FIGURE 2: PROJECT AREA OVERVIEW MAP WITH SLR SCENARIOS



FIGURE 3: PROJECT AREA DETAIL



APPENDIX E: WEST MAUI CASE STUDY PROFILE

OPSD Managed Retreat Case Study

Kahana Sunset Condominium Building F, West Maui

Location	Kahana, Maui
Year Built	1973
Case Study Area	~11,000 sf
Ownership	Condominium - 10 owners
Zoning	R3 – Residential
Plan Area	Maui Island Plan (2012)
Sub Plan Area	West Maui Community Plan (2022)
Other Key Plans	• Maui County Climate Action and Resiliency Plan • Kahana Bay Erosion Mitigation Draft EIS
Key adjacent areas	Ka'ōpala Bay, Lower Honoapi'ilani Road,



Project Area Description

The Kahana Sunset is an oceanfront condominium complex in Lahaina, Maui that was constructed in 1973. The development consists of six (6) condominium buildings on a roughly 4.5 acre oceanfront parcel. Two of the buildings (Building A and F) are built directly on the oceanfront protected by seawalls and a small pocket beach. Building F is main the focus of this case study. Building F is a two story building with 12 two-bedroom, two-story units. The building is built directly adjacent to Keonenui beach and is built behind a seawall that runs the length of the front of the building. The seawall was deemed structurally unsound and building F was deemed uninhabitable by the County of Maui in 2021 and Building F has been vacated. The complex includes a central landscaped area with a pool and each building has its own adjacent parking lot. The parcel elevation ranges from sea level at the beach, to 50 ft at the frontage with Lower Honoapi'ilani Road. A public shoreline access point is located on the southern border of the complex. Due to beach erosion, the shoreline access dead ends at a cliff, requiring users to jump into the ocean and swim to the beach.

Each Kahana Sunset unit is individually owned and it is believed that the majority of the complex is currently used for vacation rentals. For Building F, there are a total of 10 owners, all registered as Non-Owner Occupied/Residential for tax purposes. In 2023, each unit in Building F was assessed at \$50,000 for tax purposes. This figure is much lower than units in other buildings. For example, Building A was assessed with a land value of \$510,300 and a building value of \$714,000 for 2023. This decision was made by the Maui County Real Property Tax Review Board at a meeting on November 16, 2022.

To the north and south of the Kahana Sunset property are single-family homes, however, additional vacation condominiums are located less than 1 mile south along Lower Honoapi'ilani Road. The Kahana Sunset is located within Keonenui Bay, a small bay north of Ka'ōpala Bay, separated from it by Haukoe Point, a small rocky headland.

The Kahana Sunset is accessed via Lower Honoapi'ilani Road, a two lane collector road that was once the main route around West Maui prior to the construction of the nearby Honoapi'ilani Highway. Lower Honoapi'ilani Road is also being undermined by erosion at Ka'ōpala Bay. There have been discussions in the past 5-10 years regarding the potential for realigning the road away from climate change impacts. If the road is realigned, the Kahana Sunset would be impacted, and the roadway may not exist or continue to be maintained by the County.

The wider Kahana area is a mix of single family homes, residential condominiums, vacation condominiums, hotels, restaurants, and retail. Many developments line the shoreline and the once large beach has been eroded due to development and seawalls. Condominiums in Kahana Bay, two bays south of the Kahana Sunset, are attempting to form a Community Facilities District to renourish the beach and create a series of T-groins to provide beach stabilization (Dobbyn, 2022). This project would not impact the situation at the Kahana Sunset. The property is protected by two headlands which would inhibit any natural transfer of sand from an expanded beach at Kahana Bay.

West Maui, where Kahana is located, was historically well populated in pre-contact times with a sustainable agriculture system to support the Native Hawaiian population. Post-contact, large pineapple and sugar plantations took over most of the mauka land. The area is in the rain shadow of the West Maui Mountains and is more arid than most of the rest of the island (with the exception of South Maui).

Vulnerabilities

The major vulnerabilities to the Kahana Sunset are coastal erosion, flooding, and storm surge, which are being worsened by sea level rise.

Current Conditions

The Kahana Sunset is located in floodzones VE and AE and is fully within the Special Management Area. The building's sea wall replacement project was granted an FEA FONSI in 2014 to replace a 114 ft existing seawall in front of Building F. The seawall was moved 30ft inland from the previous location.

Projected Sea Level Rise (SLR) and Coastal Erosion

Under the State-defined 3.2 ft Sea Level Rise Exposure Area (SLR-XA), over 50% (2.5ac) of the property would be impacted by sea level rise (see Figure 1). This will fully impact buildings A and F and partially impact buildings B and E, likely making those buildings uninhabitable.

Buildings A and F are both partly impacted by the 0.5 ft coastal erosion projection and fully impacted by the 2.0 ft coastal erosion projection. The 3.2 ft coastal erosion projection impacts buildings B and E. In the 3.2 ft coastal erosion projection, over 50% (2.5ac) of the property would be impacted by coastal erosion (see Figure 1).

The newest tool from PacIOOS, the [West Maui Wave Driven Flooding with Sea Level Rise](#), shows annual high wave flooding under a 3.2 ft sea level rise scenario that impacts Buildings A and F with up to 2 ft of flooding.

Applicable State and County Policies

Maui County has proposed new shoreline setback rules. The rules went into effect in August 2024 but were invalidated by a judge in November 2024 after a lawsuit by Maui Tomorrow. The former rules are now in place. The minimum setback line is now 40ft from the approximate shoreline location. Under this rule, 100% of building F is impacted.

Under the proposed new rules (which may be implemented in the future the County will use the projected 3.2 ft sea level rise erosion rate line rather than historic erosion rates as the basis for the shoreline setback. Under these rules, over 50% of the Kahana Sunset property, and 100% of Building F will be impacted. The shoreline setback rules also include a requirement for a hazard mitigation plan that considers realignment of structures away from the shoreline if those structures are exposed to coastal hazards. This would impact Kahana Sunset. Additionally under the proposed SMA rules, projects with environmental impact or that are valued over \$500,000 in a 24-month period require an SMA permit. Any renovation, remodel, or removal of Building F would trigger the need for an SMA permit and likely require an Environmental Assessment at minimum.

At the State level, the State of Hawai'i prohibits the construction of new seawalls to protect private property. Kahana Sunset has an existing seawall to which emergency repairs are allowed through a SMA Emergency Permit. However, the latest emergency permit has been legally challenged as discussed above.

County Contested Case

Kahana Sunset currently has a [contested case](#) before the Maui Planning Commission regarding a sinkhole under building A that has rendered building A structurally unsound, similar to building F. The Kahana Sunset intends to conduct emergency repairs under a Special Management Area (SMA) Emergency Permit, requested in April 2023.

Repairs proposed under SMA Emergency Permits to stabilize Building A and Building F have both been appealed by Surfrider Foundation, Na Papa'i Wawae 'Ula'ula, Ka Malu O Kahālāwai, Kai Nishiki, and Tiare Lawrence. The appeal is based on the concern that Maui County has continued to provide SMA Emergency Permits for seawall repairs since 1975 and that the seawall has contributed to the degradation of Keonenui beach. The appeal notes that Kahana Sunset was required to generate a managed retreat plan as a condition of a prior SMA Emergency Permit in 2010 and that this plan is not forthcoming.

Kahana Sunset Managed Retreat Report (2024)

The Association of Apartment Owners of Kahana Sunset (AOAO), referenced as the Kahana Sunset, produced a Managed Retreat Report in 2024 with the assistance of Ke Kai Planning. The purpose of the report was to set out the Kahana Sunset understanding of managed retreat, current conditions and future planning, as well as perceived barriers to managed retreat as considered by property owners and the board of directors for the project.

The report notes that the Kahana Sunset parcel is impacted by north swells and trade wind waves and that the parcel has experienced problems with chronic beach erosion since the construction of the property and property seawall. The property submitted a Shoreline Certification Application form to the State Department of Land and Natural Resources in June 2023. The certification form was purportedly lost in the devastating Lahaina fires in August 2023.

The report asserts that managed retreat can include Adaptation and Protection, of which the report argues that using seawalls to protect the property could be a form of managed retreat. The report also notes potential engineering projects such as beach nourishment or the construction of an artificial reef in Keonenui Bay could be pursued by the Kahana Sunset to extend Keonenui Beach and therefore provide a buffer to the property. The Kahana Sunset report states that retreat will be completed over years or decades and cannot be completed in a year.

The key barriers identified by the Kahana Sunset Managed Retreat Report are:

- The absence of clear managed retreat policy for the State or County.
- Condominium Property Act which requires owners to meet various thresholds to alter common areas or make material alterations or additions to the property or to demolish a building.
 - The board also claims that because the seawalls supporting Building F are part of the common areas defined by the Declaration of Horizontal Property Regime, then the association has a mandatory duty to repair the damaged areas consistent with the Associations Bylaws.
- Environmental protection laws of the State of Hawai'i that would be required to complete any construction project.

For each element of the managed retreat plan, the Kahana Sunset outlines proposed steps in order to complete the action. For example, the report outlines potential steps towards the removal of Building F but does not commit the board to undertaking the action. The report identifies that the Kahana Sunset will form a working group for community input on managed retreat strategy. As part of the Managed Retreat Report, the Kahana Sunset committed to completing a rolling three (3) year strategic plan to continue preparing for managed retreat. This three-year plan identifies activities that Kahana Sunset will attempt to finalize over the three year strategic plan period. It is assumed that a new three-year plan will be prepared at the conclusion of the current three year window (2027).

Figure 1. Project Area Overview Map with SLR Scenarios

