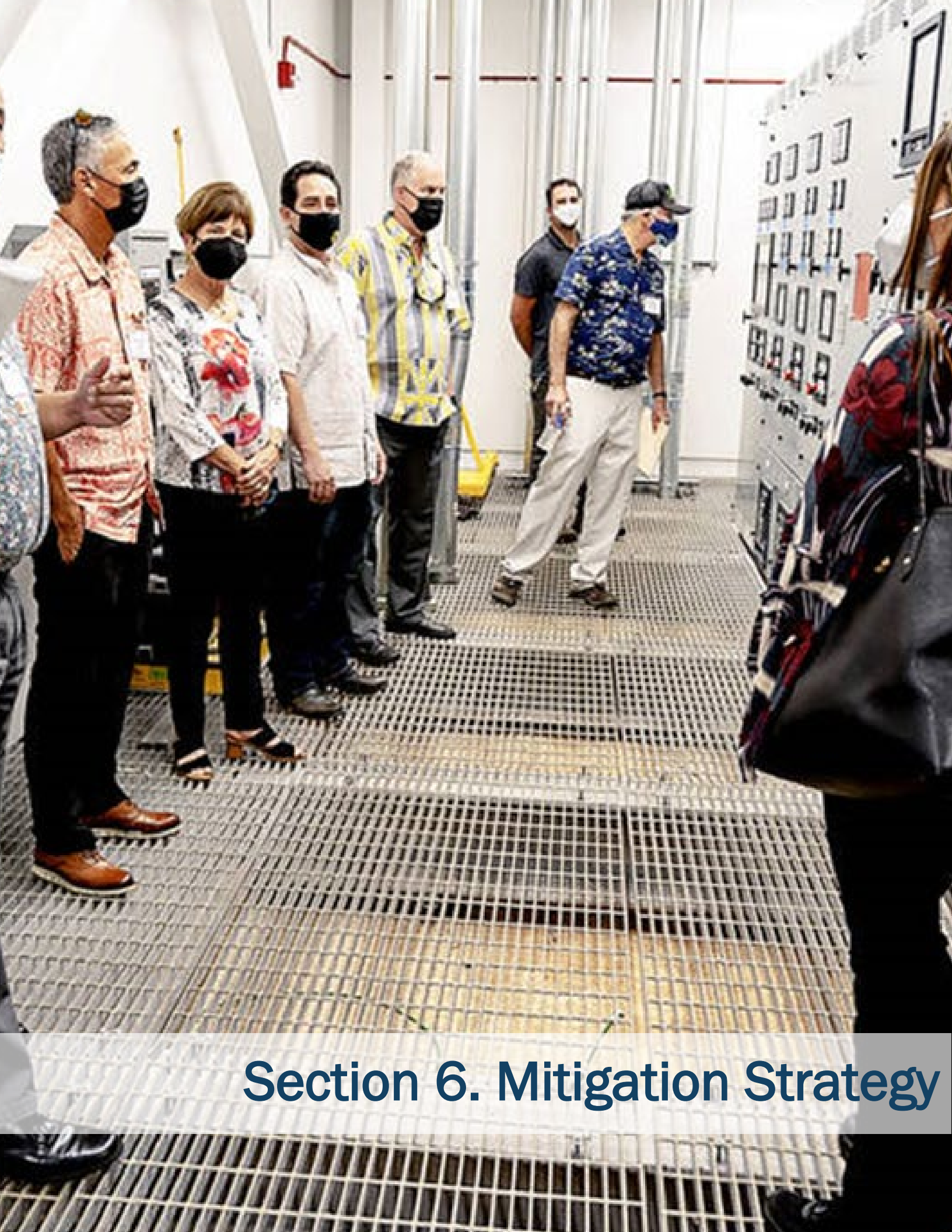


Section 6. Mitigation Strategy

CONTENTS

TABLES

[1] *Section Cover Photo: Emergency generators installed at Wilcox Medical Center, Kaua'i. Photo by Dennis Fujimoto/The Garden Island*

SECTION 6. MITIGATION STRATEGY

2023 SHMP Update Changes

- The mitigation goals were reviewed and validated. Overall, all 2018 SHMP goals were maintained with enhancements to strengthen the wording, and one new goal (goal 7) was added.
- Mitigation objectives were added to support the goals and measure mitigation success.
- A comprehensive review and evaluation of the 2018 SHMP mitigation action plan was conducted, and a synopsis of notable achievements was developed.
- The 2018 SHMP mitigation actions, updated risk assessment, updated capability assessment, local HMP actions, and stakeholder input were used to identify mitigation actions for the 2023 SHMP Update.
- The updated action plan only includes projects that state agencies have the authority to implement. Actions that individual counties have the authority to implement will be included in their respective local HMPs.
- The State Repetitive Loss Strategy has been comprehensively reviewed and updated.

6.1 OVERVIEW

The mitigation strategy sets the state's mitigation program priorities and helps guide the counties as they update their plans. The mitigation strategy is composed of goals, objectives, and actions that directly address the risks and vulnerabilities identified in the risk assessment as well as the findings of the capability assessment. The following sections outline the state's mitigation goals and objectives; reviews, evaluates, and updates the mitigation actions identified in the 2018 SHMP; identifies new actions; and prioritizes all actions for implementation over the performance period of the 2023 SHMP Update.

6.2 MITIGATION GOALS AND OBJECTIVES

Element S9, HHPD3, and 44 § CFR 201.4(c)(3)(i): The state plan must include goals to reduce long-term vulnerabilities from the identified hazards. The goals represent what the state seeks to accomplish through mitigation plan implementation using a wide range of funding, including non-FEMA funding. The goals must be consistent with the hazards and vulnerabilities identified in the risk assessment.

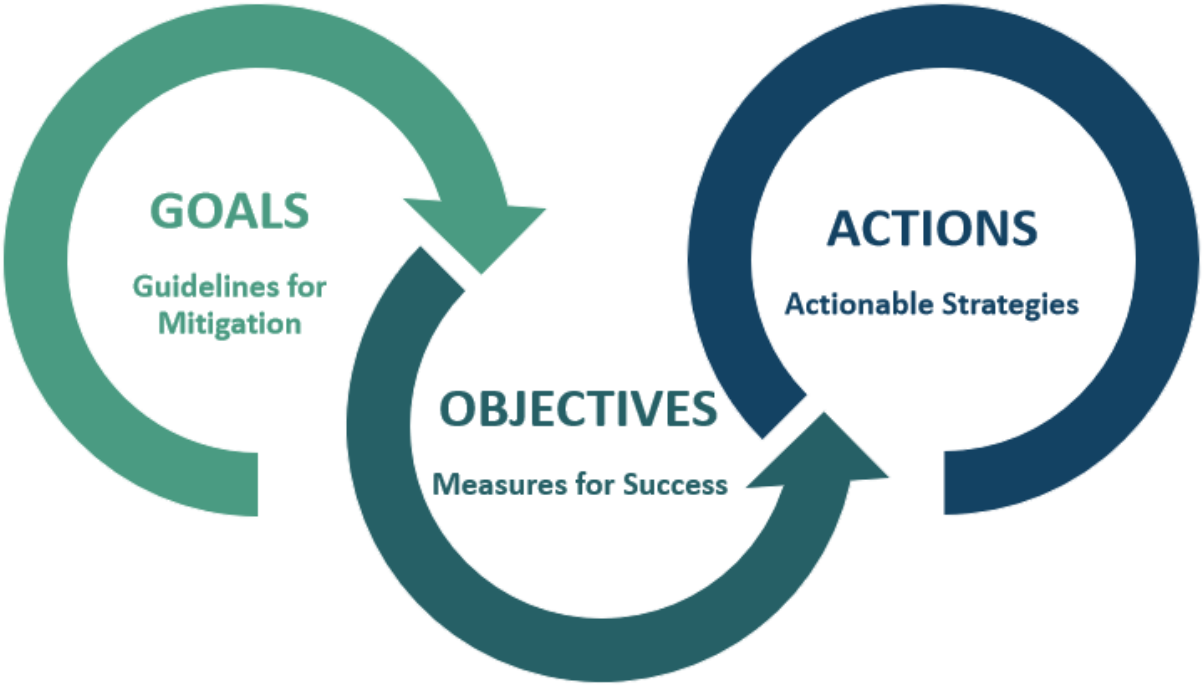
Key Term

Mitigation Goals are broad, long-term policy and vision statements that explain what will be achieved by implementing the mitigation actions.

Mitigation Objectives are defined, short-term measurable actions that lead to achieving an overall goal.

As part of the 2023 SHMP Update process, the 2018 SHMP goals (listed in Appendix G [Mitigation Strategy Supplement]) were reviewed, updated, and validated (see Figure 6-1). Objectives were developed for the 2023 SHMP to meet multiple goals and align with objectives already established in County HMPs; objectives were reviewed to verify that they could be used as measures for success for implementing actions in the updated 2023 mitigation plan.

Figure 6-1. Goal Setting



The goal review and objective development was led by HI-EMA with input from the Forum and was conducted over the course of the planning process. This linear approach to goal setting provides greater detail to identify what the state aims to achieve over the next five years.

At the October 2022 Forum meeting, the 2018 SHMP goals were reviewed and discussed to determine if the goals: (1) led to mitigation projects and changes in policy that reduced risk over the performance period of the 2018 SHMP; and (2) continue to articulate the long-term vision for mitigation activities in the state addressing both current and future vulnerabilities. Based on these discussions, modifications were made to the wording of goals to more closely align with the state's updated vision; two of the 2018 SHMP goals were revised; and a new goal

was added (please see Appendix A [Planning Process Documentation] and Appendix G [Mitigation Strategy Supplement] to review the 2018 SHMP goals and modifications that were made).

Throughout the planning process, HI-EMA, the Forum, and state agency stakeholders reviewed the goals to ensure that the goals: (1) reflected the updated risk assessment; (2) supported changes in mitigation capabilities; and (3) supported other state-level priorities. Upon this review HI-EMA and the Forum confirmed the goals for the 2023 SHMP Update as follows:

- **Goal 1**—Reduce the long-term vulnerability of Hawaii's people, property and jurisdictions, including state-owned or operated buildings, infrastructure and critical facilities, to natural hazards while conserving the state's natural, historical, and cultural assets. This includes High Hazard Potential Dams and high-risk properties such as repetitive loss (RL) and severe repetitive loss (SRL) properties.
- **Goal 2**—Promote actions designed to ensure long-term resiliency to natural hazards and climate change impacts.
- **Goal 3**—Strengthen partnerships and leverage existing resources and capabilities to identify, assess and reduce the impact of natural hazards.
- **Goal 4**—Utilize state-of-the-art methods and technology and local knowledge to identify and analyze natural hazards and assess state capabilities to reduce the impact of those hazards.
- **Goal 5**—Promote public awareness of natural hazard risks and public action to reduce the long-term risks.
- **Goal 6**—Provide a framework for robust local hazard mitigation planning and mitigation strategy implementation in alignment with this plan.
- **Goal 7**—Build capacity and capabilities to increase disaster resiliency among historically underserved populations, individuals with access and functional needs, and in communities disproportionately impacted by disasters and climate change.

Objectives were identified and reviewed for their ability lead to achieving an overall goal. HI-EMA and the Forum confirmed the objectives for the 2023 SHMP Update as follows:

- **Objective 1**—Establish and maintain public-private partnerships among all levels of government, community groups, the private sector, and institutions of higher learning to improve and implement methods to protect life, property, and the environment.
- **Objective 2**—Utilize the best available data, science, and technology to identify and communicate the risk exposure to hazards, climate change risks, and vulnerabilities to inform risk reduction measures, preparedness response, and adaptation strategies.
- **Objective 3**—Improve the understanding of the locations, potential and cascading impacts, and linkages among the threats, hazards, vulnerabilities, and measures needed to protect life, community lifelines, the environment, property, and infrastructure.
- **Objective 4**—Promote, coordinate, and implement hazard mitigation planning and projects to reduce the negative impacts of hazards, to foster and reinforce resilient communities, and to be consistent with longer-term climate action and adaptation.
- **Objective 5**—Foster a comprehensive, statewide, whole community approach to hazard mitigation with equitable and inclusive engagements, plans, strategies, and actions that minimize disproportionate

impacts on underserved populations and historically marginalized communities. Prioritize efforts to improve resilience of community lifelines in socially vulnerable communities.

- **Objective 6**—Identify and encourage the use of statewide recommended criteria to develop and inform a shared data repository to integrate into state, local, and non-governmental plans, strategies, and actions.
- **Objective 7**—Develop and implement mitigation policies, protocols, programs, and procedures to address the state's changing environment and climate.
- **Objective 8**—Incentivize and implement mitigation measures into the built environment, especially in areas with substantial hazard risk and those known to have repetitive loss.
- **Objective 9**—Promote and implement the retrofit, hardening, acquisition or replacement of at-risk structures and lifelines to increase community resilience.
- **Objective 10**—Adopt and enforce building codes and standards that are affordable and feasible for life and property protection.
- **Objective 11**—Annually review the effectiveness of current land use related plans, codes, and standards for appropriate future development within hazard areas, and amend them as necessary to account for climate change effects.
- **Objective 12**—Minimize impacts of hazard incidents on the economic drivers for the state.
- **Objective 13**—Recognize and support the disaster resilience inherent in host culture traditions and practices, including holistic watershed management, community connectivity, and local, ahupua'a based decision-making.
- **Objective 14**—Support hazard mitigation measures that promote and enhance natural infrastructure and natural processes to minimize adverse impacts on the ecosystem and minimize public safety risks.
- **Objective 15**—Improve warning and emergency communication systems and utilize a diversity of communication media.

Using a consistent set of goals and objectives reinforces the plan integration process. The 2023 SHMP Update contains an updated set of goals, entirely new objectives based on applicable objectives contained in local HMPs, and revised strategies that can be incorporated into local hazard mitigation planning. When reviewing and evaluating local HMPs, state reviewers can ensure that local goals, objectives, and strategies are consistent with those of the state, and that local concerns are reflected in the overall state goals, objectives, and strategies. Consistent goals and objectives can lead to consistent mitigation strategies at both the state and local level.

Mitigation actions were selected and prioritized to move the state and its counties closer to achieving these goals and objectives over the performance period of the 2023 SHMP Update. Actions that were selected are discussed in Section 6.4 (Updated Mitigation Actions).

6.3 REVIEW AND EVALUATION OF 2018 SHMP MITIGATION ACTIONS

Element S12 and 44 § CFR 201.4(d): The state plan must reflect progress in statewide mitigation efforts and changes in priorities by providing a narrative of the status of each mitigation action in the previous plan identifying which actions have been completed and describing if an action is no longer relevant or included in the updated plan. The prioritization of mitigation actions and activities must be updated based on the updated analysis of risks, capabilities, and progress.

6.3.1 COMPREHENSIVE REVIEW AND EVALUATION OF THE 2018 SHMP MITIGATION ACTIONS

The 2023 SHMP Update included a comprehensive review of the 124 mitigation actions identified in the 2018 SHMP. This review was led by HI-EMA and involved a wide array of state and county agencies and other stakeholders. Progress on each identified mitigation action was reviewed to determine the status of each action, the source of funding used to implement the completed actions, and, for those actions that were not completed, if the action should be carried forward to the 2023 SHMP Update or discontinued. Actions that were identified for inclusion in the updated mitigation strategy were reviewed and evaluated to determine if the action should be revised to reflect any new information obtained as part of the plan update process (for example, changes in the risk assessment, capabilities, or lead agency).

The following is a summary of the progress in mitigation efforts over the performance period of the 2018 SHMP:

- 17 actions (14% of total actions) were completed.
- 63 actions (51% of total actions) were initiated but were not completed.
- 6 actions (5% of total actions) were determined to be ongoing activities and/or capabilities integrated into standard operations.
- 24 actions (19% of total actions) were not initiated or had no reported progress.
- 13 actions (10% of the total actions) were discontinued for many reasons, including changes in priorities or the action is no longer under the state's authority.

The 124 actions in the 2018 SHMP mitigation strategy included 34 actions that were considered high priority in County HMPs. The 2023 SHMP mitigation action plan no longer includes high priority actions also identified in the local HMPs; however, the counties were given an opportunity through participation on the Forum and invitation to the stakeholder workshops to identify mitigation activities to reduce risk in their jurisdiction. Regarding actions that are under the state's authority, 68 actions were reviewed and revised for inclusion in the 2023 SHMP Update mitigation strategy.

The comprehensive review and evaluation of the 2018 SHMP actions can be found in Appendix G (Mitigation Strategy Supplement).

6.4 UPDATED MITIGATION ACTIONS

Element S10, FMAG2, HHPD4, and 44 CFR 201.4(c)(1), 201.4(c)(3)(i), 201.4(c)(4)(ii), and 204.51(d)(2): The state plan must prioritize mitigation actions to reduce vulnerabilities identified in the risk assessment to reduce the vulnerability of jurisdictions within the state as well as the vulnerability of state-owned assets. The plan must describe the process to evaluate and prioritize actions that are cost-effective, environmentally sound, and technically feasible. Actions must contribute to goals and the state must describe how local government mitigation strategies link to the state mitigation strategy.

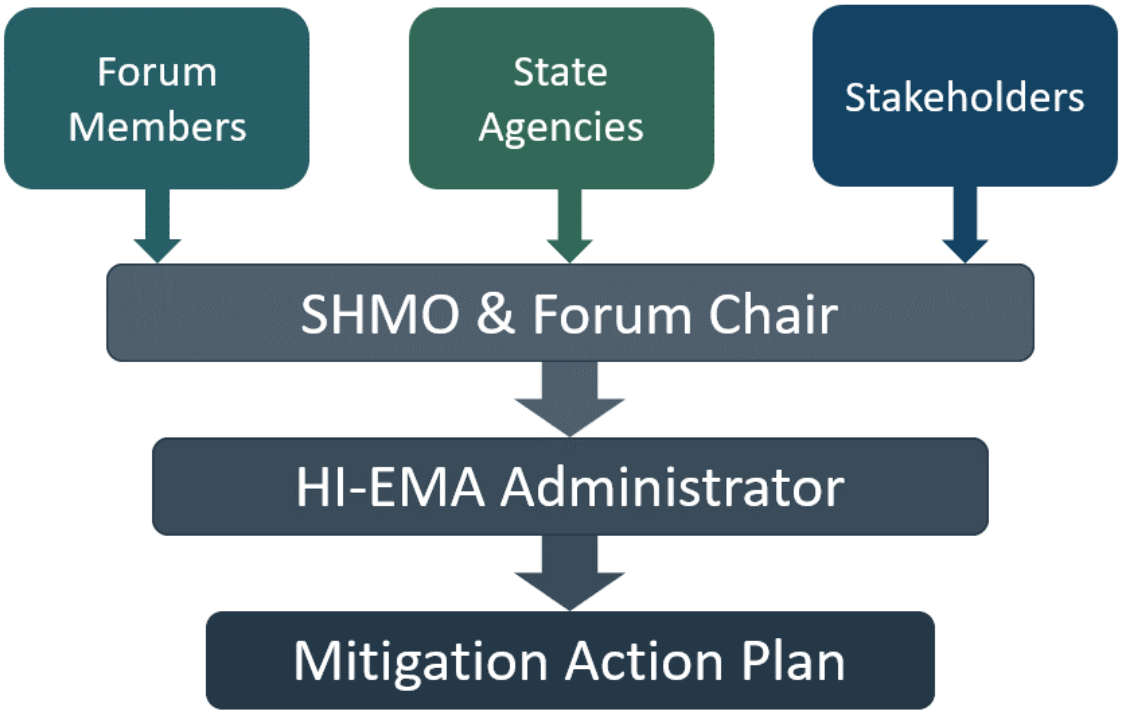
6.4.1 IDENTIFICATION OF MITIGATION ACTIONS

Mitigation actions for inclusion in the 2023 SHMP Update were identified through four primary sources:

- **2018 SHMP Mitigation Strategy**—Actions that were not completed during the 2018 SHMP were reviewed, revised, and included as described in Section 6.3.
- **Risk Assessment**—The results of the updated risk assessment were reviewed with the Forum and individual sector groups, and problem statements were developed. Mitigation actions were added after comparing the updated risk analysis with a focus on actions that would address high and medium ranked hazards and reduce the vulnerability of state assets.
- **Capability Assessment**—Challenges and opportunities identified during the capability assessment were reviewed with the Forum and individual sector groups. Mitigation actions were added to address challenges, capture opportunities, and enhance ongoing progress in capability development.
- **County Actions**—County local HMPs were reviewed to understand community vulnerabilities and priorities and to identify opportunities for the state to develop actions to support its Counties in their mitigation efforts.

Individual state agencies submitted actions that had been approved within their departments. Members of the Forum were given opportunities to submit mitigation actions throughout the planning process. County representatives on the Forum were encouraged to propose mitigation actions that would align local and state mitigation strategies. The February 2022 workshop participants, including numerous stakeholders, had the opportunity to identify mitigation actions. Actions were reviewed by the SHMO and the Forum Chair before being submitted to the HI-EMA Administrator (Figure 6-2). Additionally, actions that were included in local HMPs, but that focused on state assets, were considered for inclusion. Not all potential actions identified from the above sources were ultimately selected for the 2023 SHMP Update mitigation strategy. Those actions that were selected are described in the following sections.

Figure 6-2. Mitigation Action Plan Input



6.4.2 STATE MITIGATION ACTION PLAN

Implementable mitigation actions require more than just a statement of activity as actions are led by different departments and agencies, require various levels of effort, and have varied resource needs. The State of Hawai'i Mitigation Action Plan (see Table 6-1) includes information on implementation including:

- **Mitigation Action Title and Numbering**—The action plan assigns a numeric identifier to each action for tracking and progress reporting. Actions with a "2023" prefix are new actions identified for this SHMP update. Actions with a "2023-2020", "2023-2018" or "2023-2013" prefix are actions carried over from their respective mid-cycle or complete action plan updates.
- **Problem Statement**—The problem statement provides context as to why the action is needed. The problem connects the risk assessment, capability assessment, or both to the mitigation action.
- **Responsible Departments or Agencies**—The lead department or agency responsible for implementation is listed first, followed by any supporting departments or agencies.
- **Location**—The action plan lists the islands where the mitigation action will be implemented.
- **Existing or Future Development**—The action plan identifies whether each action will reduce risk to new assets as they are built, existing assets (i.e., retrofits), or both.
- **Community Lifelines Addressed**—The action plan lists which of the seven FEMA categories for lifelines each action will protect.
- **Estimated Costs**—The action plan lists estimated costs to implement the action.
- **Potential Funding Sources**—The action plan lists options for funding the action.

- **Timeline**—The action plan provides general project implementation and completion timing as follows:
  - **Short-Term**—The action can be completed within the 5-year performance period for the SHMP.
  - **Long-Term**—The action is likely to take longer than 5 years to complete.
  - **Ongoing**—The action is already funded and being implemented by the state as on ongoing program that does not have a completion date.
- **Hazards Addressed**—A list of hazards addressed by each mitigation action is contained in Appendix G (Mitigation Strategy Supplement).

Table 6-1. 2023 SHMP Update State of Hawai'i Mitigation Action Plan

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-001— Lualualei Navy lands drainage improvements **Problem:** Contaminated soils on Navy lands can impair downstream water quality when flooding and runoff occur. **Action:** The DOH and the watershed coordinator will work with the Navy to identify depressions or relatively flat areas along stream channels to construct small detention ponds and/or check dams to reduce peak flood flows. These are easier to construct than a full sediment basin and will help reduce some of the sediment load and peak flows, potentially reducing flooding downstream. (Originally included in the City and County of Honolulu HMP)						
DOH	O'ahu	Existing	All	>$100,000	State budgets; U.S. Navy; FEMA; USGS; NRCS	Long
2023-002— Micro grids for critical health infrastructure support **Problem:** Medical facilities such as hospitals and dialysis centers are community lifelines that need to remain in operation to provide critical services to health-vulnerable populations. There is no current backup power system in place to ensure their continuity of services if the primary power grid goes down. **Action:** Install micro grids to support medical facilities such as hospitals and dialysis centers in the event that the island's primary power grid goes down. (Originally included in the City and County of Honolulu HMP)						
DOH	O'ahu	Existing	Health and Medical	>$100,000	State budgets; FEMA; BRIC; HMGP	Long
2023-003—High-hazard potential dam awareness program **Problem:** In recent years, public awareness programs have included general outreach on all dams in the state, or dams that have been damaged by severe storm events. A targeted campaign to provide awareness about all high hazard dams in the state is needed to inform the entire community of potential risks from dams that present the highest hazard potential. **Action:** HI-EMA will coordinate with the DLNR Engineering Division to expand the dam failure hazard awareness program to include all high-hazard potential dam risk areas.						
HI-EMA, DLNR	Statewide	Both	All	$10,000 to $100,000	State budgets	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-004— Economic recovery and resiliency planning **Problem:** Hawai'i does not have an economic development district planning organization. Economic development districts are multi-county entities tasked to help lead and coordinate locally developed and regionally driven economic development to ensure the region's economic resilience and prosperity. **Action:** 1. Create and economic development district planning organization to unite stakeholders to support the diversification and self-sufficiency of Hawaii's economy and long-term economic resilience 2. Coordinate the integration of economic resilience in resilience hub planning and programing. 3. Interagency coordination of the analysis of short- and long-term economic impacts of known hazards and other shocks to Hawaii's people and businesses to inform documents such as the THIRA and Hazards and Vulnerabilities Overview. 4. Develop an economic recovery operations plan to align with the economic recovery support function. This document should detail how government will stand up economic recovery operations following a disaster or external shock. The document should be designed to prevent duplication of effort, gaps in recovery operations, and improve coordination between government agencies. 5. Develop the Hawaii Economic Recovery and Resilience Plan to address the economic vulnerabilities and hardships revealed during the pandemic particularly for socially vulnerable communities and businesses. The plan should identify the macro-economic vulnerabilities revealed during the pandemic. The plan should identify gaps in services, institutional vulnerabilities, actionable projects, and connect implementing organizations with funding sources. 6. Develop community/regional action plans to address the needs of specific audiences not currently represented in economic recovery/resiliency planning. 7. Update the 2014 Natural Disaster Economic Recovery Strategy (NDERS) to reflect changes in goals, objectives, and implementation strategies. 8. Develop an action planning process to mobilize implementation partners for the NDERS.						
OPSD	Statewide	Both	All	>$100,000	State budgets; EDA grants	Ongoing
2023-005— Develop a model to estimate probable maximum precipitation (PMP) using a high-resolution numerical weather model **Problem:** The potential impacts from severe rainfall events, triggered by climate change, are difficult to determine without proper modeling. Without accurate modeling, infrastructure rehabilitation and design may not withstand future severe precipitation events. **Action:** PMP is used by hydrologists, meteorologists, civil and environmental engineers, policy makers and decision makers in the design and rehabilitation of critical infrastructure (dams, spillways, bridges, and others) to prevent failure from inundation or overtopping from torrential rainstorms. Reliable PMP data is essential to keep the community safe. Climate change projections will be incorporated in the analysis. The model will focus on socially vulnerable areas (Puna District), parts of the state where flooding is common (North Shore Kauai), and watersheds where dams are located.						
SOEST	Kaua'i and Hawai'i Counties	Both	All	>$100,000	HHPD, State budgets	Short
2023-006— Create rain gardens to reduce flooding **Problem:** Flooding and increased runoff is experienced frequently. Small-scale, individual property-specific actions are needed to contribute to the reduction in flooding. **Action:** Implement community projects such as rain gardens to reduce the volume of stormwater that enters the larger stormwater management system by increasing infiltration of run-off into the ground during rain events.						
Climate Change Mitigation and Adaptation Commission	Statewide	Both	All	$10,000 to $100,000	State budgets, FMA	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-007— Increase urban forestry **Problem:** Extreme heat events triggered by climate change are impacting urban communities. Trees and vegetation lower surface air temperatures by providing shade and through evapotranspiration. The urban heat island effect will lessen if trees are planted and maintained in urban areas. **Action:** Increase tree planting efforts in urban communities, including Honolulu and surrounding areas, Līhu'e, Kahului, Kona, and Hilo. to offset impacts of climate change						
Climate Change Mitigation and Adaptation Commission	Statewide	Both	All	>$100,000	State budgets	Ongoing
2023-008— Wetland restoration **Problem:** Natural wetlands have been negatively impacted by development and mismanagement. **Action:** Restore wetlands that act as sponges that ameliorate droughts by storing water and releasing it to maintain river flows long after the rains cease, and they protect against floods. Targeted wetlands throughout the state will be included.						
Climate Change Mitigation and Adaptation Commission	Statewide	Both	All	>$100,000	State budgets, HMGP, FMA, Forest Stewardship Program	Ongoing
2023-009— Coral reef restoration for flood risk reduction supporting Hawai'i State Legislature Senate Resolution 35 designating Hawaii's coral reefs as critical natural infrastructure **Problem:** Coral reefs are vulnerable to high wave action, pollution, and marine heat events. **Action:** Emergency/short term coral reef restoration actions for emergency hazard mitigation includes: • Reattachment of corals of opportunity on reef hardened structure to priority regions impacted by hazard • Out planting of nursery-grown corals to priority regions impacted by hazard • Removal of debris and sedimentation in priority regions impacted by hazard Coral reef restoration actions for long-term hazard mitigation include: • Translocation of corals of opportunity to priority reefs • Out planting of nursery-grown corals to priority reefs						
HI-EMA	Statewide	Both	All	>$100,000	State budgets, BRIC, FMA	Long
2023-010— Hazard mitigation plan StoryMap outreach **Problem:** Increased and continued public outreach is a critical component to hazard mitigation. A visual, interactive online solution to promote hazard awareness has been initiated but needs to be maintained and updated to remain a critical resources for residents to learn more about hazards in their community. **Action:** Update existing or develop new state and county hazard mitigation StoryMaps to promote hazard awareness, education, and mitigation initiatives.						
HI-EMA and Counties	Statewide	Both	All	$10,000 to $100,000	State budgets	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-011— Residential Wind Retrofit Program **Problem:** The purpose of this residential wind/structural retrofit project is to reduce the vulnerability of and damage to homes from wind, and wind driven rain intrusion during a high-wind event such as hurricane winds up to 129 MPH. **Action:** HI-EMA in partnership with state department/agencies, county governments and other Non-Government Organizations (NGO) will implement a program to retrofit and strengthen qualified residential homes that will withstand the wind effects of a Category 3 Hurricane. HI-EMA submitted a HMGP application on 2/3/2023, re: State of Hawaii Residential Retrofit Program. FEMA is in the process of reviewing the application and we should hear back (approved or not approved for funding) later in 2023. While the application is being reviewed, we are working with partners to understand the construction requirements, permitting requirements, site selections, applicant's selection, assessment details, et al.						
HI-EMA	Statewide	Existing	Food, Water, Shelter	>$100,000	State budgets; BRIC; HMGP	Ongoing
2023-012— Support the development of a social vulnerability mapping tool that will accurately reflect the unique characteristics of the state **Problem:** Existing social vulnerability datasets developed on the national level do not represent the actual social vulnerability of the communities in Hawai‘i. **Action:** Through interagency coordination lead by OPSD, state, county, and non-governmental organizations will collaborate to develop a tool that can be used across multi-discipline planning efforts to increase understanding of the location of vulnerable populations that will allow plans and grant funding opportunities to address their needs.						
OPSD	Statewide	Existing	All	>$100,000	State budgets; FEMA; BRIC; HMGP	Short
2023-013— Vulnerable Population Outreach **Problem:** Socially vulnerable communities have a disproportionate risk to sea level rise and coastal erosion hazards. **Action:** Further understand communities' needs to adapt to sea level rise and its associated hazards. Conduct a survey and interviews within identified vulnerable communities to allow for initial community input and give individuals the opportunity to define their needs.						
OPSD	Statewide	Existing	All	$10,000 to $100,000	State budgets; FEMA; BRIC; HMGP	Ongoing
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.						
OPSD	Statewide	Existing	All	>$100,000	State budgets	Long
2023-015— Develop and maintain a Hawai‘i Digital Coastal Atlas **Problem:** Plans developed by different agencies do not have a way to coordinate coastal mapping. This results in duplication of efforts or inconsistency among plans. **Action:** This database would serve as a digital repository for the information and data acquired through the process of delineating and characterizing shoreline regions and subregions. The Atlas could also serve as a clearinghouse for a variety of products including guidance documents, studies and other information that would be made publicly accessible. The database may include a web viewer with downloadable GIS data.						
OPSD	Statewide	Existing	All	>$100,000	State budgets; FEMA; BRIC; HMGP	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-016— Improve cross-agency coordination in coastal management **Problem:** Disparities in the coastal management process exist among local, state, federal agencies and landowners **Action:** 1. Identify current areas of inconsistent legal interpretations and challenges for DHHL beneficiaries when navigating county and state requirements for conducting activities in the shoreline area 2. Identify potential strategies to address these major challenges and inconsistencies. The results of this project will serve as the first step in a larger initiative, which may lead to the program change of proposing amendments to Hawai'i Coastal Zone Management Law (Hawai'i Revised Statutes (HRS) Chapter 205A) that establish DHHL as an Agency with authority to conduct coastal zone management, and developing MOU's/MOA's between DHHL and the County Planning Departments to outline relationships and workflows.						
OPSD	Statewide	Existing	All	>$100,000	State budgets; FEMA; BRIC; HMGP	Ongoing
2023-017— Vertical evacuation sites for schools **Problem:** Tsunami warnings triggered by a local event such as an earthquake may not allow enough time to evacuate entire schools to an area topographically above the tsunami evacuation zone. The logistics and expense involved in constructing vertical evacuation sites on school property necessitate feasibility studies to be performed first. **Action:** Conduct a study to determine the feasibility of constructing vertical evacuation sites at schools within the tsunami evacuation zones.						
HI-EMA, DOE	Statewide	Existing	Food, Water, Shelter	>$100,000	State budgets; FEMA; BRIC; HMGP	Short
2023-018— Coordinated planning for climate change hazards **Problem:** Plans developed by HI-EMA need to leverage the wealth of knowledge from subject matter experts to provide a better analysis of future conditions. **Action:** Align HI-EMA planning efforts (SHMP, HVO, THIRA) to increase the analysis and discussion of climate change hazards impacting the state including sea level rise, extreme heat, and severe weather.						
HI-EMA	Statewide	Both	All	>$100,000	State budgets	Short
2023-019— Statewide Wildfire Mitigation **Problem:** Devastating impacts from the August 2023 wildfires in Maui and Hawai'i Counties **Action:** Reassessment of the Community Wildfire Protection Plans; conduct a statewide re-evaluation of potential mitigation actions to increase resident safety (e.g., defensible space, fire-proof building materials, warning systems, early detection systems) coupled with collaborative public engagement to knowledge share and understand community needs and priorities.						
HI-EMA, DLNR	Statewide	Both	All	>$100,000	FEMA HMGP; BRIC; State budgets	Short/ Long
2023-2020-001—Modernization and hardening of the State Emergency Operations Center **Problem:** The current EOC was built before modern seismic and hurricane standards were adopted. It needs to be moved because it is currently located in a culturally sensitive area. **Action:** Relocate the EOC to a more suitable site where it can be built to meet current construction design standards. 1. Acquire suitable land 2. Acquire funds for design and engineering to include environmental assessment 3. Acquire funding for construction						
HI-EMA	O'ahu	Existing	Safety and Security; Communications	>$100,000	State budgets; FEMA; BRIC; HMGP; DHS	Long

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2020-002—Warning systems and outreach programs **Problem:** Reliable real-time warning systems accompanied by comprehensive and timely public education programs are not widely available statewide. **Action:** High risk areas will be evaluated by subject matter experts to include governmental agencies having statutory responsibility for those activities.						
HI-EMA	All islands	Existing	Communications	>$100,000	State budgets; FEMA; BRIC; HMGP	Short
2023-2020-003—Hardening/retrofit/protection of food and agriculture facilities which involve production, storage, distribution, and research functions **Problem:** Adequate and safe food supply after disasters and emergencies is needed. **Action:** Hardening/retrofit/protection of food and agriculture facilities which involve production, storage, distribution, and research functions will include the following action items: 1. Structural Analysis of priority facilities 2. Acquire funds for design and engineering 3. Acquire funds for construction						
HI-EMA	All islands	Existing	Food, Water, Shelter	>$100,000	State budgets; FEMA; BRIC; HMGP	Short
2023-2020-004—American Red Cross (ARC) Hawai'i Chapter will conduct Disaster Emergency Life Safety Sheltering and Outreach training programs throughout the state **Problem:** Capacity and capability training is needed to increase the number of trained disaster and shelter volunteer responders for the Red Cross Disaster Preparedness & Response program accompanied by educational presentations to help communities better prepare for crises. **Action:** Increase the number of trained volunteers capable of responding and providing emergency support services at public shelter during a disaster.						
HI-EMA	All islands	Both	Food, Water, Shelter	$10,000 to $100,000	State budgets; Red Cross; FEMA; HMGP	Short
2023-2018-001—Conduct non-structural retrofits of schools and hospitals in Hawai'i County and Maui County **Problem:** Schools and hospitals built before current codes are at risk for non-structural damage that would render facilities inoperable even if there was no structural damage. **Action:** Conduct non-structural retrofits of schools and hospitals in Hawai'i County and Maui County. The following steps will be implemented: 1. Assess and prioritize schools and hospitals 2. Prepare work plans 3. Procure funding 4. Implement						
HI-EMA, HETAC, DOE (Schools), HAH (Hospitals)	Hawai'i; Maui	Existing	Safety and Security, Health and Medical	$10,000 to $100,000; >$100,000	State DOE and DOH budgets; FEMA; BRIC; HMGP	Short

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-002—Feasibility study of multi-hazard, non-structural retrofit of Hawai'i County and Maui County hospitals and schools **Problem:** After the 2006 Kiholo Bay EQ several schools and hospitals were identified as potentially at risk for non-structural damage from earthquakes, hurricanes and flooding, and having limited emergency storage capacity, especially to those with special needs. An assessment is necessary to determine what actions are required to mitigation the potential damage and to provide the information necessary for a complete Hazard Mitigation Assistance application. **Action:** Engage FEMA in a Cooperating Technical Partnership (CTP) to acquire technical assistance to assess the Hawai'i and Maui County hospitals and schools for possible seismic, high wind and flooding non-structural vulnerabilities. The study would prioritize the hospitals and schools, prioritize non-structural actions, develop information for funding applications and develop documentation for benefit-cost analysis.						
HI-EMA, HETAC	Hawai'i; Lāna'i; Moloka'i	Both	Safety and Security; Health and Medical	>$100,000	FEMA; BRIC; HMGP; NEHRP	Short
2023-2018-004— Increase mitigation capacity across all islands to support reduction in hazard risk **Problem:** HI-EMA has been chronically understaffed for several years and as a result has missed several opportunities to advance numerous mitigation opportunities, including project development and implementation, public outreach and education, and technical assistance to county and state partners. **Action:** Increase mitigation capacity across all islands to support reduction in hazard risk. The following steps will be implemented. 1. Document current shortfalls in implementing recent mitigation opportunities 2. Prepare justification for additional positions 3. Provide technical assistance to upcoming local mitigation plan updates						
HI-EMA	All islands	Both	Safety and Security	>$100,000	State funding to DOD HI-EMA	Long
2023-2018-005—Earthquake mitigation training **Problem:** Live training is needed for earthquake mitigation design professionals and public officials to increase capacity and capability. **Action:** Work with public and private sectors to determine specific training needs and resources to reduce vulnerability from earthquakes.						
HETAC, HI-EMA	All islands	Both	All	>$100,000	HI-EMA Department Funds	Short
2023-2018-006—Implement actions from Natural Disaster Economic Recovery Strategy (NDERS) **Problem:** In 2014 the Hawai'i Office of Planning, Department of Business, Economic Development & Tourism developed a NDERS for pre-disaster business continuity planning and post-disaster recovery actions for both public and private sector, with a focus on small business. The NDERS culminated in forty-nine recommendations which for the most part remain to be implemented. The NDERS is not being updated regularly. **Action:** HI-EMA will re-engage with NDERS staff and assist with the implementation of the following recommendations: 1. Coordinate with the Office of Planning to re-engage with the NDERS stakeholders 2. Review and prioritize recommendations with a focus on implementation 3. Identify strategy "champions" and potential funding sources 4. Provide logistical support to champions and support agencies 5. Schedule regular follow up stakeholder meetings to track progress and identify gaps and solutions						
HI-EMA and DBEDT	All islands	Both	Communications	$10,000 to $100,000	BRIC, EDA, State Funding	Short

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-007— Enhanced Coordination between HI-EMA and DLNR on Flood Mitigation Projects **Problem:** The State of Hawai'i is vulnerable to the flood hazards. Recent events have highlighted the vulnerability as evidenced by disaster declarations due to severe storms, flooding and landslides. Impacts have been to roads, bridges and structures. HI-EMA is committed to reduce the number of repetitive and severe repetitive loss properties in the state as outlined in Section 6 (Mitigation Strategy). **Action:** HI-EMA will continue to work with DLNR to identify flood vulnerability, identify flood mitigation projects and provide technical assistance to secure grant funding to implement the mitigation projects to reduce flood losses in the state. Mitigation measures may include but are not limited to structural projects, plans, studies, outreach, and training.						
HI-EMA and DLNR	All islands	Both	All	<$10,000	Operating Budgets – State Funding; FMA	Ongoing
2023-2018-009—Acquire GIS staff, training, and technology **Problem:** GIS, as a system of components that play a vital role to facilitate the coordination, collection, and dissemination of geographic information. A GIS system is comprised of 5 key components – hardware, software, data, people, and methods. Together GIS can help decision makers: MITIGATE - identify and prioritize threat levels to develop plans for evacuations and containment, PREPARE – inventory and assess assets and capabilities, training and exercises, inform the public, RESPOND - visualize and share real-time situations, dispatch first responders, direct limited resources, and RECOVER – via mapping damaged infrastructure, affected populations, and resources to more efficiently coordinate recovery efforts. Additional GIS capacity and capability is needed. **Action:** 1. Determine GIS needs and requirements for the Resilience Branch 2. Hire GIS staff for Resilience Branch to conduct project tracking and assist with mitigation planning 3. Acquire GIS licenses and equipment						
HI-EMA, Counties	All islands	Both	Communications	$10,000 to $100,000	BRIC, HMGP, cost reduction through State/ESRI (ArcGIS developer) Enterprise Licensing Agreement for software license and instructor-led training	Short
2023-2018-011—Housing Vulnerability Assessment **Problem:** Hawai'i has a shortage of shelter spaces for the immediate pre (for hazards with some lead time) and post event needs. The gap can be addressed with a combination of strengthening the existing housing stock through retrofits and building code upgrades and strengthening public buildings to serve as evacuation shelters. **Action:** Conduct a housing stock and social vulnerability assessment for seismic, high wind, and flooding vulnerabilities. The study would prioritize the retrofit actions, including incentives for homeowners to strengthen their residences, and to develop guidance for shelter retrofit guidance consistent with FEMA's grant program guidance.						
HI-EMA, HETAC	All islands	Both	Food, Water, Shelter	>$100,000	BRIC, HMGP, NEHRP	Short

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-012—Retrofit of the Kaua'i War Memorial Convention Hall (KWMCH)-emergency shelter **Problem:** Mass care, specifically tropical cyclone evacuation shelters, is a top priority of the County of Kauai. A USACE study estimates that 27% of the population will seek shelter. Presently, there is a significant shortage of shelter spaces in the county. **Action:** Perform a structural analysis to determine suitability of KWMCH to serve as an emergency shelter and to determine scope of work. The retrofit will include hardening of the doors (33) and windows (40) which will serve as a minimum Type B Shelter (category 1 hurricane). This project will add about 1,668 shelter spaces for the County and the heavily populated area of Lihue. This increases by 44% the number of residents/visitors seeking shelters during hurricanes in the central portion of the Island.						
HI-EMA, County of Kaua'i Department Parks and Recreation	Kaua'i	Both	Food, Water, Shelter	>$100,000	BRIC, HMGP, State CIP Funds	Short
2023-2018-013—Retrofit of Moloka'i High School gym-emergency shelter **Problem:** The island of Moloka'i in the County of Maui presently has no suitable hurricane shelters. This is a life-saving issue. **Action:** This facility involves extensive retrofit of the building envelope, doors, windows, and other hardening measures. A initial engineering structural analysis has been completed, and a secondary SAM (Simulation and Analysis of Mechanisms) will be completed to ensure the retrofits are able to meet the Enhanced Hurricane Protection Areas (EHPA) standard.						
HI-EMA, State DOE, State DAGS	Moloka'i	Both	Food, Water, Shelter	>$100,000	State CIP Funds, HMGP, BRIC	Short
2023-2018-016—Enhance the State Technical Assistance Program to support state agencies and counties **Problem:** During the period of performance of the 2018 HMP, limited resources were available to provide increased technical assistance on grant program support (notifications, training, application/BCA development) and a linkage between the local plans and the HMP. It is the intention of the HI-EMA to develop a standard operating procedure for state technical assistance program for local county hazard mitigation plans and mitigation activities, implement an annual review coordinated with and through the annual mitigation program consultation with FEMA. **Action:** Enhance HI-EMA's technical assistance program to support state agencies and Counties in all aspects of mitigation. Examples of program expansion and enhancement include: 1. Working with specific state agencies to support obtaining grant funding, such as DHHL, and submit projects for implementation 2. Developing a standard operating procedure for providing counties technical assistance in updating their local hazard mitigation plans and implementing hazard mitigation actions to reduce future losses in the state.						
HI-EMA, Forum	All islands	Not applicable	Safety and Security	$10,000 to $100,000	Operating Budget – State Funds	Short
2023-2018-017—Monitor water resources and conduct drought forecasts and impact assessments **Problem:** Drought is a slow-onset natural hazard. Monitoring and forecasting drought is important for managing this hazard through early mitigation and preparedness actions as well as response actions. **Action:** DLNR-CWRM will monitor water resources and conduct drought forecasts and impact assessments as follows: 1. Continue to and expand monitoring of hydrologic elements (rainfall, stream flow, reservoir water levels, ground water levels) 2. Improve drought forecasting 3. Increase drought research 4. Collaborate with the National Integrated Drought Information System						
DLNR – CWRM	All islands	Not applicable	Food, Water, Shelter	$10,000 to $100,000	Federal (NOAA), State (CWRM, University of Hawai'i), County (water departments)	Other

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-018—Increase water conservation, reuse, and recharge **Problem:** The archipelago state of Hawaii is surrounded by the Pacific Ocean and relies 100% on rainfall for its fresh water supplies. Reduced rainfall due to drought affects Hawaii's fresh water supply. To increase drought resilience, the state must make the most efficient use of available rainfall through water conservation, reuse of storm water and recycled wastewater, and increasing groundwater recharge. **Action:** The following actions are proposed to mitigate drought, and increase water conservation, reuse, and recharge: 1. Implement the Hawai'i Water Conservation Plan 2. Incentivize and promote reuse (e.g., grants, rebates, policies, etc.) 3. Protect and restore watersheds important to water supply (e.g., fencing, invasive species removal, replanting, etc.)						
DLNR – CWRM, DLNR – DOFAW, County water and wastewater departments, County planning departments	All islands	Both	Food, Water, Shelter	>$100,000	Federal (Bureau of Reclamation Title XVI program), State (CWRM, DOFAW Watershed Grant), County (water departments, watershed funding), Private grant funding	Other
2023-2018-019—Support the Hawai'i Association of Watershed Partnerships **Problem:** Healthy watersheds are key to a resilient and robust water supply. The Hawaii Association of Watershed Partnerships protects and restores watersheds to ensure that water is captured efficiently to replenish and maintain our water supplies, which are especially important during drought periods. **Action:** DLNR-DOFAW will support the Hawai'i Association of Watershed Partnerships through the following: 1. Seek dedicated, long-term funding for watershed protection, restoration, and maintenance 2. Support forest stewardship programs						
DLNR - DOFAW	All islands	Not Applicable	Food, Water, Shelter	>$100,000	Federal (USDA Forest Service), State (DOFAW Watershed Grant, general funds), County (water departments), private (Firewise Grant), Private funding	Other
2023-2018-021—Provide drought public education awareness and outreach **Problem:** Communities, sectors and stakeholders impacted by drought may not have the capacity to prepare for and respond to drought. Drought outreach and awareness will help to improve overall preparedness for drought. **Action:** The following public education and awareness are proposed: 1. Continue to promote drought awareness campaigns and public outreach events (e.g., Wildfire & Drought LOOK OUT!; Halawa Xeriscape Garden Open House and Unthirsty Plant Sale, etc.) 2. Seek cooperative outreach & education opportunities with agricultural agencies and organizations to promote drought awareness and conservation actions 3. Encourage water purveyors, businesses, and agricultural producers to develop individual drought plans						
DLNR – CWRM, County water departments, Soil & Water Conservation Districts	All islands	Not Applicable	Food, Water, Shelter	$10,000 to $100,000	Federal (USDA, NOAA), State (CWRM; DOFAW; University of Nebraska – NDMC), County (water departments), Private funding	Other

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-022—Statewide public information campaign to increase citizen resilience to flooding **Problem:** Property owners with a federally backed mortgage that have structure(s) located inside a Special Flood Hazard Area on FEMA FIRMs are required to have flood insurance. However, many property owners who have paid off their mortgage or are outside these zones are also at risk to flooding but likely have not maintained or have optionally purchased flood insurance. Public awareness and understanding of what insurance policies cover would encourage citizen resilience to flooding. This campaign would explain the three types of insurance homeowners should have: basic for property/fire, hurricane, and flood. For example, hurricane insurance doesn't cover flooding unless flooding occurs from a wind-driven rain. This public information campaign should be conducted annually well before hurricane season starts because there is a standard 30-day waiting period for new applications and for endorsements to increase coverage, with some exceptions. The effectiveness of such a campaign can be measured as a percent of increase in the number of flood insurance policies compared to baseline. **Action:** 1. Work with federal agencies with a role in insurance and state insurance regulator (DCCA) to develop campaign strategy and key messages 2. Develop a public information campaign including public service announcements, fact sheets, and other forms of communication on the types of insurance and the need to purchase flood insurance 3. Measure Change in the number of active flood insurance policies compared to baseline levels (57,941 policies statewide as of October 31, 2022)						
DLNR	All islands	Existing	Food, Water, Shelter	< $10,000	FEMA Mitigation Grants	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-023—Integrated hazard mitigation of state coastal highways and beaches from chronic coastal flooding **Problem:** Segments of state coastal highways are eroding due to annual high waves and coastal erosion exacerbated by sea level rise. The state is constantly engaged in repairing these segments to protect human safety and transportation. For many communities, coastal highways are the only way into or out of an area. Similarly, 75% of Hawaii's beaches are eroding due to a similar combination of hazards. The landward migration of beaches with sea level rise will be impeded by coastal highways and other structures resulting in the permanent loss of beaches for shoreline protection, recreational and cultural purposes and critical habitat for the Hawaiian monk seal. Some segments of coastal highways cross geological features such as sand deposits and dunes. In these areas, the redesign of coastal highways to enable landward beach migration would provide an opportunity to support multiple hazard mitigation objectives to protect human safety, reduce structure loss, and protect beaches that serve as natural buffer to waves and habitat to wildlife and reef ecosystems. **Action:** 1. Identify coastal highway segments across the state based on vulnerability to coastal hazards exacerbated by sea level rise and geological and physical viability for landward beach migration. (HDOT) 2. Select top five state coastal highway segments, in consultation with county and community stakeholders, to develop coastal highway mitigation alternatives and evaluate feasibility of each alternative. (HDOT) 3. Develop design specifications and implementation plan for the preferred alternative for each coastal highway segment (HDOT) 4. Implement coastal highway-beach mitigation (HDOT) 5. Conduct hazard mitigation utilizing nature-based approaches along coastal roads that are vulnerable to chronic and storm flooding and erosion, where relocation can't be implemented in the near-term, to improve public safety and community resilience and protect public trust resources. (CC) 6. Update coastal hazards modeling and vulnerability assessment as needed based on new climate science, sea level rise projections, and methods. (CC)						
Hawai'i DOT Highways Division (HDOT), Hawai'i Climate Change Mitigation and Adaptation Commission (CC), DLNR OCCL	All islands	Both	Transportation	>$100,000	FEMA, Federal DOT, State DLNR and HDOT	Short
2023-2018-024—Reduce and/or convert hazardous fuels on fallow agricultural lands **Problem:** With the passing of the plantation era in both sugar and pineapple production, including the closure of the state's last sugar plantation in 2016, abandoned agricultural land is susceptible to invasive, fire prone grasses and shrubs, thereby increasing fire risk to nearby communities and conservation land. **Action:** Implement fuel management through alternative land uses, such as reforestation and active agriculture. Also create and maintain fuel and fire breaks on fallow agricultural lands.						
DLNR-DOFAW and DOA	All islands	Both	Food, Water, Shelter; Hazardous Material	>$100,000	USFS Grant (Federal Funds); Private Landowner Assistance Programs (State and Federal Funds); Private Sector Funds	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-025—Reduce and/or convert hazardous fuels in the Wildland Urban Interface (WUI) to reduce the threat of wildfires to communities and conservation land near them **Problem:** Reducing and/or converting hazardous fuels in the WUI slow the spread of fire and stop the grass fire cycle through fuel breaks, including greenbreaks or vegetated fuel breaks; managed grazing; and as necessary, prescribed burns. Over 25% of the state is covered by invasive, fire prone grasses and shrubs. Each time fire burns into native forest, this percentage increases. Wildfires in the WUI have been carried rapidly by invasive grasses into forested watersheds, which recharge water supplies, control erosion and run off, and supply culturally important plants. **Action:** Implement fuel breaks, including green breaks or vegetated fuel breaks; managed grazing; and as necessary, prescribed burns. Increase plant propagation for outplantings in the green breaks.						
DLNR, DHHL, DOA, County Fire Departments, HWMO	All islands	Both	N/A	>$100,000	Operating Funds (State Funds); Operating GIA pursuant to Chapter 42F, HRS (State General Funds); USFS Grants (Federal Funds); Private Landowner Assistance Programs (State and Federal Funds); Private Sector Funds	Ongoing
2023-2018-026—Assess, identify, and implement state nursery improvements needed to provide native plants for green breaks **Problem:** Green breaks help shade out grass to break the grass fire cycle, by replacing non-native, invasive grasses and shrubs with mostly native plants and trees. **Action:** Assess, identify, and implement state nursery improvements in order to increase plant propagation for outplantings in the green breaks.						
DLNR-DOFAW	All islands	Both	N/A	>$100,000	CIP (State General Obligation Bond Funds); Operating Funds (State Funds)	Ongoing
2023-2018-027—Continue to develop water sources, including installation of additional water storage structures **Problem:** There are limited water resources in remote areas and are vulnerable to drought. **Action:** Install additional water storage structures, such as portable catchment tanks, reservoirs, and dip tanks.						
DLNR-DOFAW, DLNR-CWRM, DOA, DHHL, County Water Supply Agencies	All islands	Both	Food, Water, Shelter	>$100,000	CIP (State General Obligation Bond Funds); Operating Funds (State Funds)	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-028—Provide wildfire awareness, preparedness, and prevention education involving all sectors **Problem:** Pursuant to Chapter 185, HRS, DLNR is mandated to take measures for prevention of wildland fires on DLNR-DOFAW managed lands, and is required to cooperate with established fire control agencies of the counties and federal governments in developing plans and programs and mutual aid agreements for assistance of prevention of wildland fires on land not managed by DLNR-DOFAW. Over 98% of wildfires in Hawaii are human caused, which means many are preventable. Preventable wildfires cause losses which exceed the cost of prevention education. While under-publicized, the percentage of land area burned per year in Hawaii exceeds the national average, and some years surpasses the western states. Each fire agency and other entities present wildfire prevention materials differently and with varying frequency. A coordinated public awareness campaign allows for consistent messaging. **Action:** Provide wildfire awareness, preparedness, and prevention education involving all sectors, including: 1. Create a statewide, inter-agency wildfire prevention plan 2. Continue all-agency, unified wildfire and drought awareness campaign annually 3. Hold National Wildfire Community Preparedness Day events in each county annually 4. Establish Outreach and Education Specialists at each DLNR-DOFAW District Office 5. Reach a wider audience by participating in inter-agency wildfire outreach and education efforts at community emergency preparedness fairs.						
DLNR-DOFAW, DLNR-CWRM, HWMO, PFX, County Fire Departments	All islands	Both	N/A	$10,000 to $100,000	Operating Funds (State Funds); Operating GIA pursuant to Chapter 42F, HRS (State General Funds); USFS Grants (Federal Funds)	Ongoing
2023-2018-029—Maintain and improve fire and fuel breaks/access roads on state land **Problem:** Fire and fuel breaks/access roads stop advancing fire and provide access to firefighters to reduce the impacts of wildfires to native ecosystems and watersheds. Pursuant to Chapter 185, Hawaii Revised Statutes (HRS), DLNR is mandated to take measures for prevention, control, and extinguishment of wildland fires on DLNR-DOFAW managed lands, and is required to cooperate with established fire control agencies of the counties and federal governments in developing plans and programs and mutual aid agreements for assistance on land not managed by DLNR-DOFAW. **Action:** Maintain and improve fire and fuel breaks/access roads on state land: 1. Clear, reduce, and convert hazardous fuel in fire and fuel breaks and on both sides of access roads 2. Monitor vegetative regrowth due to year-round growing season and invasive, fire-prone grasses that grow back quickly 3. Improve access roads, including paving, repaving, or grading.						
DLNR-DOFAW	All islands	Existing	Transportation	>$100,000	Operating Funds (State Funds); CIP (State General Obligation Bond Funds); USFS and USFWS Grants (Federal Funds)	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-030—Establish additional Community Wildfire Protection Plans (CWPP) **Problem:** CWPPs help communities address wildfire response, hazard mitigation, and community preparedness. Newly established CWPPs will make additional lands eligible for funds available through the WUI Grant Program, which funds mitigation actions. CWPPs are also an interagency planning tool. There are areas not covered by a CWPP, while others may need updating. **Action:** There are 14 CWPPs established throughout Hawaii, which cover over half of the state. Each county has at least one CWPP. Areas not covered by a CWPP will need to be prioritized. Once funding is secured, the entity writing the CWPP will hold community and agency meetings, process data, and write the plan.						
HWMO, DLNR-DOFAW, County Fire Departments, County Emergency Management Agencies	Hawai'i; Lāna'i; Maui; O'ahu	Both	All	>$100,000	Operating GIA pursuant to Chapter 42F, HRS (State General Funds); USFS Grant (Federal Funds)	Long
2023-2018-031—Prevent structure ignition from wildfires in the home ignition zone through home hardening **Problem:** Fire science research indicates that embers and low intensity surface fires are the primary ways that most homes ignite in wildfires. Home hardening with ignition resistant building materials and landscaping that supports vegetation removal and replacement with fire resistant plants can reduce home ignition potential and increase home survivability. **Action:** Currently 15 communities are part of the Firewise program. Hawai'i Wildfire Management Organization (HWMO) program would like to train more assessors from the community and county fire departments so additional assessments can take place.						
DLNR-DOFAW, DHHL, County Fire Departments, HWMO	All islands	Both	Food, Water, Shelter	>$100,000	Operating Funds (State Funds); Operating GIA pursuant to Chapter 42F, HRS (State General Funds); USFS Grant (Federal Funds); Private Sector Funds	Ongoing
2023-2018-032—Install and maintain remote automated weather stations (RAWS) **Problem:** Remote automated weather stations ensure that microclimate data is captured to help rate fire danger and monitor fuels. **Action:** Purchase and install additional RAWS. Continue to maintain existing RAWS to ensure that all stations within Hawaii's network are operational.						
DLNR-DOFAW for State operated RAWS.	All islands	Both	Communications	>$100,000	Operating Funds (State Funds); USFS Grant (Federal Funds)	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-033—High Priority Area Cesspool Abatement Program **Problem:** The State of Hawaii has identified 14 priority areas of the state where cesspool upgrades are critically needed to protect public health and the environment. There are approximately 88.000 cesspools within the state – 43,000 of which are in the identified priority areas. Cesspools provide no treatment of wastewater and inject an estimated 53 million gallons of raw sewage into the state's groundwater every day, potentially spreading disease and harming the quality of the state's only available drinking water supplies and recreational waters. The cost of upgrading all the state's roughly 88,000 cesspools is estimated at $1.75 billion. State law currently requires the elimination of cesspools in Hawai'i by 2050. **Action:** Implement a public-private cost share program between the state, counties, and the private landowners to incentivize upgrades of qualified cesspools to a septic tank or aerobic treatment system, prioritizing identified high priority areas and cesspools posing the greatest risk to ground water contamination and/or surface water impairment as a result of system overflow during heavy rainfall events.						
DOH, DBEDT – OP, City & County Planning Departments	All islands	Existing	Food, Water, Shelter	>$100,000	State & County - Capital Improvement Plan budgeting; Public-private partnership	Long-term and ongoing
2023-2018-034—Harden state laboratory facility to increase all-hazards resilience **Problem:** The State Laboratories Division (SLD) plays an essential role in public health and safety. Data provided by the SLD include those related to detecting infectious outbreaks, identifying hazardous chemicals, responding to emergencies, identifying environmental contaminants, and monitoring significant public health trends. It is imperative that the SLD is able to continue its core population-based activities when events occur that disrupt its normal operation. Originally constructed over 20 years ago, the State Laboratory has several critical vulnerabilities that pose a threat to the facilities continued operations during disaster. As there is only one State Laboratory facility within the state, hardening of the State Laboratory facility is necessary in order to ensure continuity of operations during all hazards. **Action:** Harden the State Laboratory facility to increase all-hazards resilience. 1. Add protective closure for cooling tower 2. Add shatter proof window films 3. Provide second transformer and double ended switchgear 4. Provide separate feeders to mechanical equipment 5. Provide redundant emergency generator 6. Provide additional fuel tank for 7-day supply of emergency generator fuel (5 additional days from current capacity) 7. Construct a 1,200 +/- square foot biosafety level 3 addition						
DOH	O'ahu	Existing	Safety and Security	>$100,000	FEMA Pre-Disaster Mitigation Grant; State appropriation of funding through CIP budget	Short and Long

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-041—Comprehensive education/outreach plan for the state **Problem:** People do not know where to go for hurricane vs., tsunami, or get evacuation steps confused. Additional education is needed for residents, visitors, and all organizations. **Action:** 1. 2017 HB-571 – Requires Comprehensive Education and Outreach Plan for emergency management and disaster preparedness. Implement strategies to reach all individuals and all organizations 2. For 2022-2023, an HMGP grant application is under FEMA review for the Project Aloha Safe Homes—Community Behavior, which targets unreceptive or difficult to reach citizens. A Communication Plan to Reach the Whole Community was submitted to the Legislature in 2020 (https://seagrant.soest.hawaii.edu/wp-content/uploads/2020/09/Communication-Strategy-Outreach-Plan-V.1.pdf)						
UH Sea Grant	All islands	Both	Food, Water, Shelter	>$100,000	Some limited State Funding under HB571, University of Hawai'i, Sea Grant	Ongoing
2023-2018-042—Homeowner's Handbook to prepare for natural hazards **Problem:** Residential structures and properties are vulnerable to hazard events and need information on how to assist with reducing impacts to their assets. **Action:** Update Homeowner's Handbook for hazard events. Obtain funding to reprint and incorporate lessons learned such as from Hurricane Ida in Louisiana						
UH Sea Grant	All islands	Both (Includes Retrofits of existing houses – measures for new)	Food, Water, Shelter	$10,000 to $100,000	State – 20 partners (companies, flood insurance program, CZM), FEMA HMGP	Short and Long
2023-2018-043—Implement actions from the Comprehensive Wastewater Management Plan **Problem:** The Department of Health has identified priority areas for cesspool upgrades and conversions across the state. The state also needs a comprehensive inventory of all onsite systems and outreach program with mandatory inspections, moving forward. Only upgrading does not address future vulnerabilities and risk of onsite system. **Action:** 1. Implement statewide wastewater management program with funding to inventory and maintain database of onsite systems. 2. Implement statewide code that requires maintenance contracts. 3. Develop robust education and outreach program.						
DOH, County Planning Dept., OP, UH Sea Grant	All islands	Both	Food, Water, Shelter	>$100,000	State and County – Capital improvement plan budgeting, public-private partnerships, Philanthropic Foundations (NOAA)	Long and ongoing
2023-2018-045—Building code amendments to reduce existing and future stock vulnerability to coastal hazards & climate impacts for the counties and the state **Problem:** Building codes reduce impacts and save lives. **Action:** Report on building code amendments to be produced for the counties to implement in their building code update process						
State of Hawai'i DBEDT OPSD-CZM	Hawai'i; Kaua'i; Moloka'i; O'ahu	Both	Safety and Security; Food, Water, Shelter; Health and Medical	TBD; estimated at $10,000 to $100,000	National Oceanic and Atmospheric Administration and TBD	Short

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-046—Green infrastructure study and plan **Problem:** A green infrastructure approach to stormwater management and flood risk reduction seeks to capture rainwater as close to where it falls as possible and let that water soak back into the ground. It integrates multiple smaller practices throughout the watershed, encourages the preservation of existing free space, increases tree canopy cover, works to restore degraded natural areas, and adds green space where possible. All of this is done with consideration of traditional piped stormwater systems, so that the green infrastructure elements reduce the volume of runoff that streams and piped systems need to carry. **Action:** Develop a green infrastructure plan inclusive of the following: 1. Identify green infrastructure opportunities in the state, including any related costs and savings 2. Identify green infrastructure planning and development best practices in the state for potential application, including financing and community engagement practices. 3. Complete a plan that details how the state can move forward to cost effectively take advantage of identifies opportunities, including and related costs and savings 4. Identify any legal or regulatory changes that will be needed to execute the completed plan						
DBEDT OPSD	All islands	Both	Safety and Security; Food, Water, Shelter; Health and Medical	$750,000	NOAA, State Appropriation	Short
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						
State of Hawai'i DBEDT OPSD-CZM	All islands	Both	All	TBD; estimated >$100,000	National Oceanic and Atmospheric Administration and TBD	Long

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-049—Development of Comprehensive High Resolution Probabilistic Tsunami Design Zone Maps compatible with ASCE 7-16 for the Island of Oʻahu, State of Hawaiʻi **Problem:** The State of Hawai'i Department of Business, Economic Development & Tourism (DBEDT), Office of Planning (OP) Coastal Zone Management Program's (HCZMP's) federally approved Section 309 Assessment and Strategy for FY2016-2020 identifies key problems and opportunities to improve HCZMP's ability to prevent or significantly reduce coastal hazard's risk in high-hazard areas and to manage the effects of potential sea level rise. To implement Section 309 Assessment and Strategy, OP seeks implement this strategy to develop comprehensive high resolution probabilistic Tsunami Design Zone maps for the Island of Oʻahu, State of Hawaiʻi for upcoming use with the International Building Code (IBC) 2018 / American Society of Civil Engineers (ASCE) 7-2016, Chapter 6, Tsunami Loads and Effects standards. **Action:** 1. Develop Phase I project work plan 2. Conduct modeling and mapping of the City & County of Honolulu (urban core south coast and Haleʻiwa) 3. Complete modeling and mapping for entire City & County of Honolulu Island of Oʻahu 4. Conduct independent technical review to ensure compliance with the ASCE 7-16 Chapter6 Probabilistic Tsunami Hazard Analysis mapping criteria 5. Draft proposed language for the Honolulu City Council to consider amending the City &County of Honolulu Building Code to adopt the probabilistic Tsunami Design Zone maps and model data developed pursuant to this project along with styles of maps appropriate for use in the City & County of Honolulu Building Code and the ASCE Tsunami Design Geodatabase						
State of Hawaiʻi DBEDT OPSD-CZM	Oʻahu	Both	All	$430,000	National Oceanic and Atmospheric Administration	Short
2023-2018-050—Development of Comprehensive High Resolution Probabilistic Tsunami Design Zone Maps Compatible with ASCE 7-16 for the Counties of Hawaiʻi, Maui and Kauaʻi, State of Hawaiʻi **Problem:** The State of Hawaii Department of Business, Economic Development & Tourism (DBEDT), Office of Planning (OP) Coastal Zone Management Program's (HCZMP's) federally approved Section 309 Assessment and Strategy for FY2016-2020 identifies key problems and opportunities to improve HCZMP's ability to prevent or significantly reduce coastal hazard's risk in high-hazard areas and to manage the effects of potential sea level rise. To implement Section 309 Assessment and Strategy, OP seeks implement this strategy to develop comprehensive high resolution probabilistic Tsunami Design Zone maps for the Counties of Hawaii, Maui and Kauai, State of Hawaiʻi for upcoming use with the International Building Code (IBC) 2018 / American Society of Civil Engineers (ASCE) 7-2016, Chapter 6, Tsunami Loads and Effects standards. **Action:** 1. Initiate modeling and mapping for Hawaiʻi, Maui, and Kauaʻi counties 2. Complete modeling and mapping for Hawaiʻi, Maui, and Kauaʻi counties 3. Conduct independent technical review to ensure compliance with ASCE 7 criteria 4. Draft and complete proposed language for county councils of Hawaiʻi, Maui, and Kauaʻi to consider amending their building codes to adopt the probabilistic Tsunami Design Zone maps and model data developed pursuant to this project along with styles of maps appropriate for use in their respective county building codes and the ASCE Tsunami Design Geodatabase 5. Draft proposed language to adopt the probabilistic Tsunami Design Zone maps and model data developed pursuant to this project along with style of maps appropriate for use in State of Hawaiʻi Building Code 6. Present building code amendments for SBCC review and approval 7. Conduct rulemaking in accordance with HRS Chapter 91						
State of Hawaiʻi DBEDT OPSD-CZM	Hawaiʻi; Kauaʻi; Molokaʻi; Maui	Both	All	TBD; estimated >$100,000	National Oceanic and Atmospheric Administration and TBD	Long and Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-051—Flood engineering analysis of Waimanalo watershed **Problem:** Waimanalo like many watersheds in Hawaii is subject to flooding. Erosion and development have exacerbated the flooding risk and existing infrastructure may no longer be adequate to contain the risk, leading to damage to farms, residences and businesses. **Action:** 1. Form workgroup of affected state and county agencies and affected landowners and stakeholders. 2. Develop a public information campaign including public service announcements, fact sheets, and other forms of communication on the types of insurance and the need to purchase flood insurance. 3. Measure change in the number of active flood insurance policies compared to baseline levels.						
HI-EMA	O'ahu	Existing	All	>$100,000	FEMA, State funding, US Geological Survey, US Department of Agriculture, Natural Resources Conservation Service	Short
2023-2018-053—Coordinate the compilation of projected development to assist with future local and state HMPs **Problem:** Development continues to occur in the state. To avoid future losses, it is best to assess if projected new development may be impacted by hazards by conducting a spatial analysis. A statewide spatial layer of projected development (e.g., buildings, infrastructure) is not available. To conduct this exercise for the 2023 HMP Update, the following data was used: 1) Hawai'i Community Development Authority's Community Development Districts; 2) Enterprise Zones and 3) Maui Development Projects; refer to Section 3 (State Profile). It is recognized that these datasets do not represent all projected development in the state and a centralized location for this spatial data is needed to ensure a complete analysis is conducted. **Action:** HI-EMA will work with other departments at the state and local levels to coordinate the compilation of projected development in a spatial format to enable a more comprehensive analysis to identify problems and exposure prior to construction. This information will be included in the future update of local and state hazard mitigation plans; and be available to all entities for planning use.						
HI-EMA	All islands	Future	Other	< $10,000	Operating Funds (State Funds)	Ongoing
2023-2018-054—Reduce number of repetitive loss properties **Problem:** Properties continue to incur flood damages; the number of repetitive loss properties has increased over the performance period of the 2018 HMP. **Action:** The State of Hawai'i Department of Land and Natural Resources (DLNR), HI-EMA and the four County Governments will continue to work together to reduce the number of properties remaining on the repetitive loss list. The State Hazard Mitigation Forum will provide technical and scientific assistance. Mitigation measures to be considered for each property are: acquisition, re-location, elevation, or small flood control projects.						
HI-EMA in coordination with DLNR Engineering Division and the four Counties	All islands	Existing	Safety and Security; Food, Water, Shelter; Health and Medical	>$100,000	FEMA HMA grants, State Appropriation	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-055—Reduce and/or convert hazardous fuels along roadsides **Problem:** The State Wildfire Ignitions Mapping Project showed that the majority of ignitions occur along roads. Reducing and/or converting hazardous fuels along roadsides help prevent wildfires and stop or slow the spread of wildfires to communities and native ecosystems and watersheds. **Action:** 1. Roadways, portions of highways and private streets shall be cleared of combustible vegetation and other combustible growth 2. Certain ground covers shall be permitted to be exempt provided that they do not form a means of readily transmitting fire 3. Keep invasive, fire prone grasses and shrubs short 4. Monitor vegetative regrowth due to year-round growing season and invasive, fire-prone grasses that grow back quickly.						
State HDOT and County Departments of Transportation	All islands	Both	All	>$100,000	Operating Funds (State Funds)	Ongoing
2023-2018-056—Collaborate with partners and the State Hazard Mitigation Forum to evaluate and update the State Hazard Mitigation Plan on an annual basis **Problem:** In the process of updating the earlier versions of the HMP, it became apparent that mitigation processes, although well-intentioned, have been interrupted; including during the performance period of the 2018 SHMP. The SHMP needs to remain a living document in order to reduce future losses to the state. To do so, an annual evaluation on progress by meeting with the Forum, updates to the plan, supported by the local HMP roll-up and annual consultation with FEMA needs to take place. The HI-EMA is committed to this annual evaluation and update. **Action:** The Forum will meet quarterly, with at least one Forum meeting dedicated to discussion to evaluate the content of the SHMP. The framework and questions are outlined in Section 7 (Plan Maintenance). At the conclusion of these Forum meetings, the HI-EMA will capture the changes and progress discussed, and combine into an annual review report. The annual review report will be structured to align with the main sections of the 2023 SHMP Update and be included in an appendix to the plan for record. This will facilitate the incorporation of changes and progress made in the 2028 SHMP Update. The SHMO will continue to host the current version of the 2034 HMP Update on the HI-EMA website and ensure the annual review reports are included in an appendix to the SHMP and uploaded to the website for transparency and to keep stakeholders and the public up to date. The SHMO will meet annually with FEMA Region IX for the annual consultation process to ensure continual progress is made and feedback is obtained.						
HI-EMA, Counties, FEMA Region IX	All islands	Not applicable	Safety and Security	< $10,000	Operating Funds (State Funds)	Ongoing
2023-2018-057—Coordinate access to Hawai'i State Historic Preservation Division (SHPD)-maintained cultural resource information **Problem:** Cultural asset information in the State of Hawai'i is managed by the Hawai`i State Historic Preservation Division in the Department of Land and Natural Resources. It is a goal of the HI-EMA to work with the Department in the future in order to access this information for inclusion in future state hazard mitigation plan updates. **Action:** HI-EMA will work with (SHPD) in order to access to cultural resource information for inclusion in future state hazard mitigation plan updates.						
HI-EMA and State Historic Preservation Division	All islands	Existing	Safety and Security	< $10,000	Operating Funds (State Funds)	Short

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2018-058—Implement the mitigation measures as outlined in the Statewide Highway Shoreline Protection Study **Problem:** Several roadways in the state flood from chronic coastal flooding as well as storm events; and flooding may be exacerbated by projected sea level rise and changes in future conditions identified in this plan. These roads have been identified and catalogued in a study (State Highway Shoreline Protection Study: Final Report of Preliminary Field Investigation, Rankings and Recommendations; January 2018). **Action:** Implement the mitigation measures as outlined in the Statewide Highway Shoreline Protection Study: Final Report of Preliminary Field Investigation, Rankings and Recommendations of August 2019 has recommendations for next steps and has prioritized the roadways that require attention.						
State of Hawai'i DOT	All islands	Existing	Transportation	>$100,000	US Fed Highways, NOAA, State Appropriation	Long
2023-2013-001—High-occupancy design standard updates **Problem:** The number of safe public locations that can withstand hurricane impacts is not sufficient **Action:** By 2028, update the design standards for new high-occupancy public buildings that can provide enhanced hurricane protective areas, and consider Mass Care Working Group recommendations						
HI-EMA	All islands	Future	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Hazardous Material	$10,000 to $100,000	Department funding; FEMA CTP	Short
2023-2013-002—Perform a critical infrastructure vulnerability analysis **Problem:** Lack of information and identification of resilience needs **Action:** Evaluate vulnerability of critical infrastructure systems in the storm surge inundation zone (power, water, fuel, communications, ports, airports) and identify protective measures or back-up resources to the most practical extent						
HI-EMA	All islands	Existing	All	>$100,000	EMPG Funding; Department Funding; FEMA CTP	Long
2023-2013-004—Increase capabilities to adopt new building codes in a timely manner **Problem:** State adoption of building codes does not keep pace with the release of new building codes. This makes new construction more vulnerable to hazards and prevents the state from being competitive when applying for grants that require adoption of current building codes for scoring criteria. The SBBC does not have the capacity with its volunteer staff to keep up with the frequent changes in building codes. **Action:** Improve Building Codes to the most current standards. Adopt wind design standards for the installation of photovoltaic panels, power walls, and other alternative energy sources on residential/commercial buildings.						
HI-EMA, Building Code Council	All islands	Future	Food, Water, Shelter; Energy	$10,000 to $100,000	DR4062 HMGP Funds	Short
2023-2013-018—Vertical evacuation building evaluation and identification **Problem:** Sufficient facilities are not identified that can be used as vertical evacuation centers **Action:** Continue to support the Counties in the evaluation of existing policies for the use of buildings for vertical evacuation and update as necessary. Develop a standard procedure for evaluating existing multi-story buildings as tsunami (and hurricane) refuge structures						
HETAC, All Counties	All islands	Existing	Food, Water, Shelter	<$10,000	State Appropriation, FEMA HMA Grants	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2013-021—Update tsunami-resistant design standards **Problem:** Additional mapping and design regulations are needed for the tsunami hazard **Action:** Develop maps of probabilistic tsunami inundation and runup for use in designing or retrofitting critical infrastructure facilities, including bridges, major multi-story buildings, and vertical evacuation refuge buildings (required ASCE-7 implementation). Adopt tsunami-resistant design provisions. Enable "tsunami-ready" designation for risk category III and IV structures.						
DBEDT, OPSD-CZM	All islands	Both	All	>$100,000	NOAA Funding	Short, Ongoing
2023-2013-024—Priority-facility hazard evaluations and retrofits **Problem:** Hawai‘i and Maui Counties lack the needed evaluations to determine the best options for retrofits to harden priority facilities **Action:** Conduct all hazard evaluations and develop cost-effective seismic retrofits for priority facilities in the Counties of Hawai‘i and Maui						
HETAC, Counties of Hawai‘i and Maui	Hawai‘i, Maui, Moloka‘i, Lāna‘i	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Hazardous Material	>$100,000	FEMA CTP Funding; Department Funding; NOAA Funding	Short
2023-2013-025—Hurricane retrofit public information outreach **Problem:** Homeowners may lack knowledge about how to perform retrofits to their homes to withstand hurricanes and high winds. **Action:** Provide public outreach on how to retrofit and establish anchorage of post & pier foundations of Hawai‘i light-frame housing						
HETAC, Counties of Hawai‘i	All islands	Existing	Food, Water, Shelter	$10,000 to $100,000	FEMA CTP Funding; Department Funding	Short
2023-2013-026—Seismic bracing requirements for renovations **Problem:** Renovations do not currently require additional seismic bracing **Action:** Require implementation of seismic bracing requirements for equipment and ceiling systems in renovation and post-disaster repairs of schools and hospitals, and assisted living facilities						
Building Code Council	All islands, emphasis on Hawai‘i and Maui	Existing	Safety and Security; Health and Medical	<$10,000	FEMA CTP Funding; Department Funding	Short
2023-2013-028—Bridge seismic retrofit performance evaluation **Problem:** Bridges are a critical part of transportation infrastructure. If a bridge is damaged from a seismic event, access could be cut off for weeks or months. Information is needed to determine retrofit performance. **Action:** Compile detailed County of Maui bridge seismic retrofit performance objective information from HDOT for 50-60 bridges, and update HAZUS inventory to reflect more accurate expected bridge loss estimates in data products						
State of Hawai‘i DOT	Maui, Moloka‘i, Lāna‘i	Existing	Transportation	<$10,000	US Fed Highways, State Appropriation, NEHRP	Short

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2013-033—Construction performance evaluations **Problem:** Common construction methods may need to be enhanced to protect lives of occupants during hazard events **Action:** Conduct testing of the performance of current and future assets for the promotion of life-saving measures (single wall construction, pillar and post construction, and post disaster housing) when subjected to major earthquakes and hurricanes						
HI-EMA, UH	All islands	Future	Food, Water, Shelter	$10,000 to $100,000	Department Funding; FEMA Grants	Short
2023-2013-034— Tsunami warning and earthquake monitoring **Problem:** Local and distant earthquakes can trigger tsunamis. Additional monitoring is needed to determine potential impacts and evacuation measures needed. **Action:** Explore the use of subsea cabling for tsunami warning and earthquake monitoring systems						
HETAC, USGS	All islands	Not applicable	All	<$10,000	Operating Funds (State Funds)	Ongoing
2023-2013-035—Soils analysis and seismic modeling **Problem:** Soils data for all the islands is lacking **Action:** Generate ShakeMaps that incorporate soil conditions and the new seismic hazard model information for Hawai‘i						
HETAC	All islands	Future	All	$10,000 to $100,000	Department Funding; FEMA Grants	Short
2023-2013-061—Real estate disclosures for landslide hazard areas **Problem:** Current real estate disclosures do not include landslide hazard areas. **Action:** Develop Zones of Required Special Investigations near hillsides. If mandated by the State Legislature, use these zones to define as a “duty to notify” during real estate transactions.						
UH, DLNR, State of Hawai‘i DOT	All islands	Both	All	$10,000 to $100,000	State Appropriation, FEMA HMA Grants, NRCS	Short
2023-2013-071—Develop a pre-incident mission-ready package (MRP) for EMAC requests (Emergency Mutual Aid Compact) for licensed healthcare professionals **Problem:** Ability to respond efficiently to EMAC requests **Action:** As a small and remote state, Hawai‘i is more likely to request assistance from other states than provide it. An ongoing plan has been developed for Department of Health Office of Public Health Preparedness Planners to handle EMAC requests as the need arises.						
DOH	All islands	Not applicable	Health and Medical	$10,000 to $100,000	PHP; HPP	Ongoing
2023-2013-072—DOH to maintain standard operating procedures for sharing information across agencies **Problem:** Communication problem among agencies **Action:** Maintain information sharing by continuing to implement DOH's Emergency Operations Plan for sharing information across agencies via WebEOC, veoci, various data and reports from lab/disease investigation/GIS, etc. and the network communication infrastructure including landline phones, computers, email, video conferencing, and fax. Satellite phones and 800 MHZ two-way radios are backup devices for communication.						
DOH	All islands	Not applicable	Safety and Security; Health and Medical; Communications	<$10,000	PHP	Ongoing

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2023-2013-078—Update templates for public health emergency messaging **Problem:** Communication barriers **Action:** Continue to update templates for various public health emergencies that could be modify depending on the situation.						
DOH	All islands	Not applicable	Health and Medical; Communications	<$10,000	PHP/Operating Funds	Ongoing
2023-2013-086—Supply chain disruption preparation and outreach **Problem:** Food supply chain disruption **Action:** Investigate how to warehouse supplies to account for supply chain disruption. Continue preparedness messaging to residents to have food and water on hand for 14 days.						
HI-EMA	All islands	Existing	Food, Water, Shelter	$10,000 to $100,000	Department Funding, FEMA Grants, EDA	Short
2023-2013-088—Increase public building sheltering capability through retrofits **Problem:** The number of Enhance Hurricane Protection Area (EHPA) rated shelter locations across the state needs to be increased. **Action:** Using the "Hurricane Shelter Retrofit Procedural Guide" HI-EMA will continue to retrofit public shelter buildings to increase capacity to decrease the sheltering deficit. These shelter hardening actions will result in EHPA-rated hurricane shelters that will achieve category 3 hurricane protection.						
HI-EMA, All Counties	All islands	Existing	Food, Water, Shelter	>$100,000	HMGP, State CIP Funds	Long
2023-2013-095—Earthquake and tsunami public awareness campaign **Problem:** Outreach is not sufficient to property inform the public how to reduce impacts from earthquakes and tsunamis **Action:** Augment and expand education and outreach for earthquake and tsunami hazard reduction activities						
HETAC	All islands	Both	All	$10,000 to $100,000	NOAA Funding	Short
2023-2013-116—Continue to develop Operational Support Plans **Problem:** Lack of operational support plans could impact the flow of supplies during hazard events that are critical to operations **Action:** 1. Account for adequacy of critical marine/ground transportation to address supply chain and alternate port operations plan 2. Include Natural Systems Protection (NSP) elements						
HI-EMA	All islands	Existing	Transportation	>$100,000	EMPG Funding	Short
2023-2013-121—Harbor mapping for tsunami evacuation **Problem:** Tsunamis can cause damage or sink ships in harbor areas, putting the lives of sailors at risk if they are not evacuated in time. **Action:** Continue to develop harbor maps to define regimes of currents and timeframes for several scenarios of tsunami to estimate necessary period of ship evacuation						
HI-EMA	All islands	Existing	Transportation	$10,000 to $100,000	NOAA Funding	Short

Note:
See Appendix G (Mitigation Strategy Supplement) for additional information on implementation

6.4.3 ACTION PLAN PRIORITIZATION

Stakeholders prioritized identifying mitigation actions in the 2023 SHMP Update based on high- and medium-ranked hazards in the risk assessment, capabilities, and progress on previously identified actions. The prioritization schema for action implementation differs from the process and criteria the Forum uses to rank planning and project proposals for FEMA mitigation grant funding (see Appendix C – Capability Assessment Supplement). Each action in the 2023 SHMP Update was ranked based on the following criteria:

- Will the action result in life safety?
- Will the action result in property protection of vulnerable state assets?
- Will the action be cost-effective? (future benefits exceed cost)
- Is the action technically feasible?
- Will the action mitigate impacts from climate change?
- Does the state have the legal authority to implement?
- Is funding available for the action?
- Will the action have a positive impact on the natural environment?
- Does the action benefit socially vulnerable communities?
- Does the state have the administrative capability to execute the action?
- Will the action reduce risk to more than one hazard?
- Can the action be completed in less than 5 years?
- Is there an agency/department local champion for the action?
- Will the action support other local objectives (such as capital improvements, economic development, environmental quality, or open space preservation?) or policies of other plans and programs?

The answers to each of these questions are weighted as follows:

- Yes = 3 points
- Not sure, could be either yes or no, or question is difficult to quantify = 1 point
- No = 0 points

Following scoring of each action, priorities are assigned based on the following metrics:

- 31 or more = High Priority
- 15 to 30 = Medium Priority
- 0 to 14 = Low Priority

This prioritization process was applied to a revised action plan that focuses on high and medium hazards identified by the risk assessment conducted for the 2023 SHMP Update. It was also applied based on updates to the capabilities assessed in Section 5 (Capability Assessment) and Appendix C (Capability Assessment Supplement), as shown in the prioritization questions above. Table 6-2 shows the implementation priority for each action included in the 2023 SHMP Update, based on the following characteristics of the action:

- **Mitigation Goals**—Goals are listed in detail in Section 6.2 (Mitigation Goals and Objectives)
- **Mitigation Objectives**—Objectives are listed in detail in Section 6.2 (Mitigation Goals and Objectives)
- **Action Type**—Mitigation actions are summarized into the following four types define by FEMA:

- **State & Local Plans and Regulations**—Include government authorities, policies, or codes that encourage risk reduction, such as building codes and state planning regulations. This may also include planning studies.
- **Structure & Infrastructure Projects**—Involve modifying existing structures and infrastructure or constructing new structures to reduce the impact of hazards.
- **Natural Systems Protection**—Minimize losses while also preserving or restoring the function of natural systems.
- **Education and Awareness Programs**—Include long-term, sustained programs to inform and educate citizens and stakeholders about hazards and mitigation options. This category could also include training.

- **Implementation Priority**—The ranking criteria discussed above. See Appendix G (Mitigation Strategy Supplement) for the prioritization summary of each action.

Table 6-2. 2023 SHMP Update State of Hawai'i Action Plan Goals, Objectives, Action Type, and Priority

Action Number	Mitigation Goals	Mitigation Objectives	Action Type				Priority
			State & Local Plans and Regulations	Structure & Infrastructure Project	Natural Systems Protection	Education & Awareness Programs	
2023-001	1, 2, 3	1, 3, 4, 5, 14		◆	◆		Medium
2023-002	1, 2, 3, 4, 7	1, 2, 4		◆			High
2023-003	1, 3, 5	3, 4, 5, 15				◆	High
2023-004	1, 3, 6, 7	1, 4, 5, 12	◆				Medium
2023-005	1, 4, 5, 7	1, 2, 3, 4, 5, 6, 7	◆			◆	High
2023-006	1, 2, 3	1, 3, 5, 7, 13, 14			◆		High
2023-007	1, 2	1, 3, 4, 7, 14			◆		High
2023-008	1, 2	1, 3, 4, 7, 13, 14			◆		High
2023-009	1, 2	1, 3, 4, 5, 7, 13, 14		◆	◆		High
2023-010	1, 4, 5	2, 3, 4, 15				◆	Medium
2023-011	1, 2, 3, 5, 7	1, 3, 4, 5, 7, 8, 9		◆			High
2023-012	2, 4, 5, 7	1, 2, 5, 6				◆	Medium
2023-013	3, 5	1, 3, 5				◆	Medium
2023-014	1, 2, 3	2, 3, 4, 5, 7, 14	◆			◆	Medium
2023-015	1, 3, 4	1, 2, 3, 6				◆	Medium
2023-016	1, 3, 4	1, 3, 5, 13	◆				Medium
2023-017	1, 7	1, 2, 5, 9		◆			Medium
2023-018	1, 2, 3, 6	1, 2, 5, 6	◆				High
2023-019	1, 2, 3, 4, 5, 6, 7	All	◆	◆	◆	◆	High
2020-001	1, 2	4, 8, 9		◆			High
2020-002	3, 4, 5, 7	2, 15				◆	High
2020-003	1, 2, 3, 7	4, 8, 9		◆			Medium
2020-004	3, 5, 7	2, 15				◆	Medium
2018-001	1, 2, 4, 7	4, 8, 9		◆			High
2018-002	1, 2, 4, 7	4, 8, 9		◆			High

Action Number	Mitigation Goals	Mitigation Objectives	Action Type				Priority
			State & Local Plans and Regulations	Structure & Infrastructure Project	Natural Systems Protection	Education & Awareness Programs	
2018-004	2, 3, 4	1, 2, 3, 4, 5, 6, 9	◆				Medium
2018-005	2, 5	1, 2, 3, 4, 5, 6, 9				◆	High
2018-006	1, 2, 3, 4, 6	1, 2, 5, 12	◆				Medium
2018-007	3, 4, 6	1, 4, 6, 9, 14	◆				High
2018-009	2, 3, 4	1, 2, 3, 6, 9, 13	◆	◆		◆	High
2018-011	1, 2, 3, 5, 7	2, 3, 4, 5, 6, 7, 8, 9, 10	◆	◆			High
2018-012	1, 2, 4, 7	1, 8, 9, 10	◆	◆			High
2018-013	1, 2, 4, 7	1, 8, 9, 10	◆	◆			High
2018-016	3, 6	1, 2, 3, 6, 8	◆			◆	High
2018-017	2, 3, 4, 7	2, 3, 4, 6, 7, 11, 13, 14	◆			◆	Medium
2018-018	2, 3	4, 5, 7, 13, 14	◆	◆	◆		Medium
2018-019	2, 3	1, 3, 4, 7, 13, 14			◆		High
2018-021	2, 3, 5	1, 2, 3, 4, 5, 7, 13				◆	Medium
2018-022	2, 3, 5	1, 2, 3, 4, 5, 7, 9, 12, 13, 14, 15				◆	High
2018-023	1, 2, 4, 6	2, 4, 6, 8, 9, 11, 12, 14	◆	◆	◆	◆	High
2018-024	2, 3	1, 2, 3, 4, 5, 14	◆		◆		High
2018-025	1, 2	2, 4, 7, 8, 9, 11, 12, 14	◆		◆		High
2018-026	2, 3	3, 4, 7, 14	◆	◆	◆		High
2018-027	1, 2, 4, 7	4, 5, 7, 8, 13, 14	◆	◆	◆		High
2018-028	2, 3, 5	1, 2, 3, 4, 5, 7, 9, 12, 13, 14	◆		◆	◆	High
2018-029	1, 2	8, 9, 10	◆	◆	◆		High
2018-030	2, 4, 6	1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14	◆	◆	◆	◆	High
2018-031	1, 2, 3, 4, 7	1, 2, 3, 4, 8, 9, 10	◆	◆		◆	High
2018-032	2, 4	1, 2, 3, 6	◆		◆		High
2018-033	1, 2, 3, 5, 7	1, 4, 5, 8, 9		◆	◆	◆	Medium
2018-034	1, 2, 4	2, 4, 9, 10		◆			High
2018-041	2, 3, 5	1, 2, 3, 4, 5, 7, 8, 9, 10, 12				◆	High
2018-042	2, 3, 5	2, 3, 4, 5, 8, 9, 12				◆	High
2018-043	1, 2, 3, 4, 6	1, 2, 5, 6, 7, 11, 12, 13, 14	◆			◆	High
2018-045	1, 2, 4	4, 10, 11, 12	◆				High
2018-046	2, 3, 4	2, 3, 4, 5, 6, 8, 9, 13, 14	◆		◆	◆	High
2018-048	1, 2, 3, 4	1, 2, 3, 4, 5, 6, 8, 9, 13, 14		◆	◆	◆	Medium
2018-049	1, 2, 4	2, 3, 4, 6	◆			◆	Medium
2018-050	1, 2, 4	2, 3, 4, 6	◆			◆	Medium
2018-051	2, 4	2, 4, 6, 13				◆	Medium
2018-053	3, 4, 6	2, 3, 4, 6	◆			◆	High

Action Number	Mitigation Goals	Mitigation Objectives	Action Type				Priority
			State & Local Plans and Regulations	Structure & Infrastructure Project	Natural Systems Protection	Education & Awareness Programs	
2018-054	1, 2, 3, 4, 7	2, 3, 8, 9, 10, 12		◆			High
2018-055	1, 2	4, 8, 14	◆		◆		High
2018-056	3, 6	1, 4, 11	◆			◆	High
2018-057	5, 7	1, 2, 3, 5	◆			◆	High
2018-058	4, 6	1, 4, 5, 6, 11, 13, 14		◆			High
2013-001	1, 2, 4	4, 8, 9, 10	◆				High
2013-002	1, 2, 3, 4	8, 9, 10, 11	◆	◆			High
2013-004	1, 3, 4	10	◆				High
2013-018	1, 2, 3, 4	2, 11	◆				Medium
2013-021	1, 2, 4	2, 4, 6, 8, 9	◆			◆	High
2013-024	1, 2, 3, 4	10	◆	◆			High
2013-025	2, 3, 5, 7	1, 3, 4, 8, 9, 12				◆	High
2013-026	1, 2, 6	4, 8, 9, 10		◆			High
2013-028	2, 3, 4	1, 2, 6	◆			◆	Medium
2013-033	4	2, 8, 9, 10		◆		◆	Medium
2013-034	4, 6	15	◆			◆	Medium
2013-035	4	2, 6	◆				Medium
2013-061	2, 3, 4, 5	1, 2, 5, 6, 7, 11, 12	◆		◆	◆	Medium
2013-071	1, 3, 5	1, 2, 3, 5	◆				Medium
2013-072	3	1, 2, 3, 6	◆			◆	Medium
2013-078	2, 4	15				◆	Medium
2013-086	1, 2, 3, 4, 5, 7	3, 4, 12, 15	◆			◆	High
2013-088	1, 2, 3, 6, 7	4, 8, 9		◆			Medium
2013-095	3, 5	1, 2, 3, 4, 9	◆			◆	Medium
2013-116	2, 3, 4, 5, 6	2, 3	◆				Medium
2013-121	2, 3, 4	2, 3	◆				Medium

6.5 REPETITIVE LOSS STRATEGY

44 CFR 201.4(c)(3)(v): A state may request the reduced cost share authorized under §79.4(c)(2) of this chapter for the FMA and SRL programs, if it has an approved state mitigation plan … that also identifies specific actions the state has taken to reduce the number of repetitive loss properties, which must include properties identified as severe repetitive loss, and specifies how the state intends to reduce the number of such repetitive loss properties.

To be eligible for an increased federal cost share, a FEMA-approved SHMP that addresses RL properties must be in effect at the time of grant award and the property must be a RL property. The State of Hawai'i received approval for its Repetitive Loss Strategy in October 2013. The updated RL Strategy, as detailed in this section, identifies actions the state has taken to reduce the number of RL properties. In addition, it describes the state's strategy to

ensure that Counties with RL properties take actions to reduce the number of these properties, including the development of local HMPs.

6.5.1 REPETITIVE LOSS PROPERTIES IN THE STATE OF HAWAIʻI

Properties that are located within the SFHA and have federally-backed mortgages or were constructed using federal or federally-related financial assistance are required to purchase flood insurance. When an National Flood Insurance Program (NFIP)-insured property is damaged by flooding, a claim is filed. If the NFIP-insured property has had at least two paid flood losses of more than $1,000 each in any 10-year period since 1978, it is referred to as a RL property. An NFIP-insured property is known as a SRL property if: (1) the insured property has had four or more paid flood losses of $5,000 (amount of each claim) and a total amount of claims payments of $20,000; or (2) the insured property filed at least two separate claims that have been paid with the cumulative amount of claim payments exceeding the fair market value of the insured building on the day before each loss (FEMA 2020).

Section 4.6 (Flood) discusses the RL and SRL properties in each county. As of August 21, 2022, the state has 262 RL properties including 53 SRL properties throughout all four Counties. Refer to Table 6-3 for a summary of these statistics. Over the performance period of the 2018 SHMP, the number of RL properties has increased from 227 to 262 (an approximate 13% increase). The April 2018 flood event (DR-4365) contributed to the increase in RL and SRL properties.

Table 6-3. NFIP Statistics for the State of Hawaiʻi

County	Repetitive Loss Properties		Severe Repetitive Loss Properties	
	2018 Total	2023 Total	2018 Total	2023 Total
County of Kauaʻi	31	46	0	2
City and County of Honolulu	117	132	1	13
County of Maui	34	38	2	6
County of Hawaiʻi	45	46	6	32
Total	**227**	**262**	**9**	**53**

Source: FEMA 2022; State of Hawaiʻi SHMP 2018

6.5.2 GOALS TO ADDRESS RL AND SRL PROPERTIES

The State of Hawaiʻi is committed to reducing the number of RL and SRL properties by increased education, outreach, and successfully maximizing grant opportunities. This strategy aligns with the state's overall 2023 goals as outlined in subsection 6.2 above. More specifically, Goal 1 is to reduce long-term vulnerability of Hawaii's people and property, which includes high-risk properties such as RL and SRL properties. Goal 6 centers on the state providing a framework for robust local hazard mitigation planning and implementation of their mitigation strategy, including the support to reduce RL and SRL properties.

- **Goal 1**—Reduce the long-term vulnerability of Hawaii's people, property, and jurisdictions, including state-owned or operated buildings, infrastructure and critical facilities, to natural hazards while conserving the state's natural, historical, and cultural assets. This includes High Hazard Potential Dams and high-risk properties such as RL and SRL properties.
- **Goal 6**—Provide a framework for robust local hazard mitigation planning and mitigation strategy implementation in alignment with this plan.

The local HMPs were reviewed to identify goals or objectives that also address the reduction of RL and SRL properties.

- County of Kaua'i
  - Goal 1 – Reduce the long-term vulnerability of the County of Kaua'i's people, communities and property—including government-owned or operated buildings, lifelines, and infrastructure—to hazards, while conserving the County's natural, historical, and cultural assets. This includes high-risk properties such as RL and SRL properties.
  - Objective 2 – Reduce repetitive property losses due to floods, erosion, high winds, tsunamis, fire, and sea level rise through acquisition, retrofitting, design, and updated construction and land use regulations.
  - Objective 3 – Incorporate mitigation measures into repairs, major alterations, new development, and redevelopment, especially in areas with substantial hazard risk and those known to have RL.
- City and County of Honolulu
  - Goal 2 – Plan, design, and construct future development and retrofit existing structures within hazard areas to become resilient and minimize losses.
- County of Maui
  - Goal 1 – Protect the life, health, safety, and welfare of Maui County residents and visitors
  - Goal 3 – Protect and adapt property and infrastructure from the impacts of natural hazards and climate change.
- County of Hawai'i
  - Goal 2 – Ensure that all critical facilities and infrastructure withstand hazard incidents and have contingency plans to restore services quickly.
  - Objective 4 – Promote and implement the retrofit, hardening, or replacement of at-risk structures and lifelines to increase community resilience.

6.5.3 PRIORITIZATION OF RL AND SRL MITIGATION ACTIONS

The state's criteria to rank project proposals for FEMA mitigation grant funding programs is listed below and described in greater detail in the Capability Assessment Appendix (Appendix C – Capability Assessment Supplement). Several ranking criteria ensure the projects that include the reduction of RL and SLR properties are ranked high to proceed with proposal submission and project award. One of the ranking criteria for project selection is to give priority to problems that are "repetitive" (Resolve Significant Problems); and projects that are long-range solutions (Long-range). In addition, the hardening or retrofit of essential facilities and flood control projects are determined as high priority project types (Priority in the State).

- **Environmental/Historic Preservation**—Must be environmentally sound and in conformance with Floodplain Management, Historical Preservation, and Protection of Wetlands and Endangered Species laws and regulations.

- **Resolve Significant Problems**—Addresses a problem that has been repetitive or a problem that poses a significant risk to public health and safety if left unresolved.
- **Long-range**—Solution should be long-range.
- **Cost-effective**—Be cost-effective and substantially reduce the risk of future damage, loss, hardship, or suffering from a major disaster.
- **Priority in State Plan**—Types of projects which have been determined high priority for the State of Hawai'i.

6.5.4 CURRENT AND POTENTIAL FUNDING SOURCES TO IMPLEMENT REPETITIVE LOSS MITIGATION ACTIVITIES

The primary source of mitigation funding for flood mitigation projects is through FEMA's Hazard Mitigation Assistance grant programs which provide funding for eligible mitigation activities that reduce disaster losses and protect life from future disaster damages. These four FEMA funding opportunities require an approved local or state HMP and are listed below.

- Hazard Mitigation Grant Program (HMGP)
- Building Resilient Infrastructure and Communities (BRIC)
- Pre-Disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)

The Capability Assessment and Capability Assessment Supplement Appendix (Section 5 and Appendix C, respectively) describe the pre- and post-disaster funding sources available for mitigation in the state.

6.5.5 SUPPORT OF LOCAL HAZARD MITIGATION PLANS

Element S14 and 44 CFR § 201.3(c)(5) and 201.4(c)(4)(i): The state plan must include a discussion of the process to support the development of approvable local government mitigation plans. This includes providing technical assistance, training, and funding. The plan must provide a summary of barriers to developing or updating, adopting, and implementing FEMA-approved local government mitigation plans and steps to remove barriers to help local governments advance mitigation planning.

As discussed in Section 5 (Capability Assessment), HI-EMA is committed to educating its Counties on grant availability, grant applications, and managing mitigation funds. Over the performance period of the 2018 SHMP, when funding opportunities became available, HI-EMA placed notifications in local newspapers, notified appropriate state and county agencies via email and other means, and communicated opportunities through networks via word of mouth. In addition, HI-EMA has provided training in groups and/or one-on-one on benefit-cost analysis (BCA), the E-Grants system, the environmental and historic preservation (EHP) review process, the Hazard Mitigation Assistance (HMA) program, and applicant briefings and trainings for the Hazard Mitigation Grant Program (HMGP).

Over the performance period of the 2023 SHMP Update, HI-EMA will work to expand discussion and outreach for these and other programs that provide funds for mitigation activities. Additional information on trainings is provided in the Section 5 (Capability Assessment).

As outlined in Section 7 (Plan Maintenance) HI-EMA has updated the plan maintenance strategy. Through the coordination of the SHMO and/or Chair of the Forum, the Forum will continue to meet quarterly. In addition to these meetings, the SHMO and Forum Chair may request the Forum meet following disaster events, to assure that procedures and resources are appropriate for plan maintenance and implementation. It is at these Forum meetings that project proposals for FEMA mitigation grant funding programs are ranked.

As each County's expiration date on their current hazard mitigation plan approaches, the SHMO will continue to notify each County regarding their status and advise to submit a FEMA HMA planning grant application to FEMA; refer to Section 7 – Plan Maintenance for further details.

6.5.6 STATE AND LOCAL CAPABILITIES FOR FUNDING AND IMPLEMENTING RL AND SRL MITIGATION ACTIONS

Element S11, HHPD5, and 44 CFR § 201.4(c)(3)(iv): The state plan must identify current and potential sources of funding to implement mitigation actions and activities, including the identification of current and/or potential sources of federal, state, local, or private funding for implementation. At a minimum, the plan must identify FEMA mitigation funding sources.

State and local capabilities for funding and implementing the mitigation of RL and SRL properties provide a basis for effectiveness of the RL Strategy. As discussed in the Capability Assessment (Section 5), HI-EMA administers the state's hazard mitigation program, with the SHMO serving as the official point of contact. As discussed in this plan, HI-EMA recognizes that the HI-EMA Mitigation Section is limited in staffing capacity, as discussed further in Section 5 (Capability Assessment), and that Forum meetings since the adoption of the 2018 SHMP have been sporadic. In addition, the COVID-19 pandemic and the frequency of hazard events and the state's necessity to redirect attention to disaster response and recovery diverted attention and resources away from the outlined 2018 SHMP maintenance process. The updated RL Strategy in the 2023 SHMP Update re-emphasizes the state's commitment to reducing the number of RL and SRL properties in the state.

DLNR is designated as the State Coordinating Agency responsible for assisting the coordination of the NFIP between the Federal and County agencies in the State of Hawai'i. Refer to Table 5.2-1 in Section 5 for a summary of the state's capabilities for the flood-related hazards of concern (climate change and sea level rise, flood, hurricane storm surge, and infrastructure (dam) failure).

The state's 2023 updated mitigation strategy includes focused actions carried over from the 2018 SHMP to reduce the number of RL and SRL properties as follows:

- 2023-2018-007—Better Coordination between the HI-EMA and DLNR on Flood Mitigation Projects
- 2023-2018-022—Statewide Public Information Campaign to Increase Citizen Resilience to Flooding
- 2023-2018-054—Reduce the number of RL properties

All four of the Counties are participating in and are in good standing with the NFIP; and each community has a representative County floodplain manager (refer to Table 5.3-2 in Section 5 [Capability Assessment] for information on County floodplain management programs). Hawai'i is the first state in the nation in which all Counties participate in the Community Rating System (CRS) program. In terms of local capabilities, the local HMPs were reviewed to examine the following (summarized further in Section 5.3 [Section 5 – Capability Assessment]):

- Foundational Capabilities
- Floodplain Management Capabilities
- Land Use Planning
- Evaluation and Effectiveness

A review of the County local HMPs reveals that there is limited discussion of the effectiveness of mitigation actions and specifically regarding RL and SRL properties. A summary of the results of the review are provided below. In addition, the local HMPs were reviewed to examine the local mitigation actions identified to reduce the number of RL and SRL properties in the state. The following summarize these findings by County; note, this is not considered an exhaustive list of all flood-related hazard mitigation actions identified in each plan.

- County of Kaua'i Multi-Hazard Mitigation and Resilience Plan, 2021
    - The County of Kauai's HMP summarizes the County's flood mitigation capability in Chapter 7 and Appendix L. The probable causes of flooding for all properties in identified RL areas has been determined to be commensurate with the risk reflected in the SFHA mapping. Since the development of the 2021 Kaua'i HMP, the County has been admitted into the CRS program.
    - Mitigation Actions:
        - Work with the state NFIP Coordinator to develop the program for participation in the CRS
        - Develop and maintain public awareness of hazards, vulnerability, mitigation and adaptation strategies.
- City and County of Honolulu Multi-Hazard Pre-Disaster Mitigation Plan, 2020
    - The City and County of Honolulu summarized RL in Chapter 8. Since the development of the 2020 HMP, the County has been admitted into the CRS program.
    - Mitigation Actions:
        - CRS: Participate in the NFIP Community Rating System to reduce flood losses and lower flood insurance premiums.
        - Critical Facilities Plan: Plan for flood control public works for the defense of critical facilities and major economic assets. Harden critical facilities, utilities, power and communication networks, and port facilities.
- County of Maui Hazard Mitigation Plan Update, 2020
    - The County of Maui's HMP summarized RL in its flood hazard profile. All but one RL property in Maui County have been identified as residential structures. Many RL properties are clustered in specific areas.

- Mitigation Actions:
  - Where appropriate and feasible, provide technical assistance and administer financial support to willing property owners for the completion of projects to protect structures located in hazard-prone areas from future damage, with RL and SRL properties as priority.
  - Participate in the CRS program and identify opportunities across all relevant County departments and programs to improve current CRS class.

- County of Hawai‘i Multi-Hazard Mitigation Plan, 2020
  - The County of Hawai‘i HMP summarizes RL in Chapter 11. All of the properties are within or immediately adjacent to the FEMA-mapped SFHA; most are residential. The probable causes of flooding for all properties in identified RL areas has been determined to be commensurate with the risk reflected in the SFHA mapping.
  - Mitigation Actions:
    - Vulnerable Property Protection. Where appropriate, support retrofitting, purchase or relocation of structures located in hazard areas, prioritizing those that have experienced repetitive losses and/or are located in high- or medium-risk hazard areas.
    - Maintain CRS Participation. Continue to maintain and enhance (where feasible) the County’s classification under the CRS program.

The results of this assessment were used by the state to develop its mitigation strategy and strengthen the RL Strategy for the 2023 SHMP Update.