

CHAPTER 7:

Kaua'i County Hazard Mitigation, Risk Reduction and Resilience Strategy

7.0 Introduction to the Mitigation and Resilience Strategy

This chapter outlines the mitigation strategy according to the latest FEMA requirements, specified in the local mitigation plan guidance. In this section, there are the following sub-sections as specified in the topic sub-headings for this section of the plan: 1) Identification and Analysis of Mitigation Actions (§201.6(c)(3)(ii)); 2) Identification and Analysis of Mitigation Actions: NFIP Compliance (§201.6(c)(3)(ii)); and, 3) Implementation of Mitigation Actions (§201.6(c)(3)(iii)). This strategy builds on the revised and updated goals and objectives for hazard mitigation and resilience, approved by the Mayor and Disaster Management Committee (DMC), identified in Chapter 1, Table 1-1.

7.1 Identification and Analysis of Past Mitigation Actions

The emphasis for this mitigation and resilience plan continues to target the protection of assets in Kaua'i County and encouragement of cross-sector risk reduction programs and policies, that will ensure sustainable development and protection of life, property and resources. The strategy to meet these objectives is twofold: 1) Engage in mitigation and risk reduction through existing programs, policies, administrative rules, agency mandates, and community and non-governmental actions; and, 2) Identify actions that need to be taken to reduce risks and seek funding, staff, expertise, and resources to support these necessary activities.

Many of the recommended actions requiring external resources in 2009 were funded, and several mitigation projects were implemented and supported through State, County General, or other funds. These are listed in Table 6.2.

7.2 Local Hazard Mitigation & Risk Reduction Strategy

7.2.1 Identification of a Comprehensive Range of Specific Mitigation Actions and Projects for each Hazard

Kaua'i County has identified a series of actions that contribute to hazard mitigation and overall disaster risk reduction (Table 7.1). The actions were suggested by county agencies, organizations, and community members through meetings and consultations. Projects requiring additional funds were solicited through the disaster management committee (DMC) and reviewed for inclusion in the plan. The list of the following actions has been reviewed and recommended by the DMC for inclusion in the plan, because they meet the overall goals and objectives of the county to strengthen their

resiliency to disaster by promoting sustainable ways of life. As specified in Chapter 8, the list will be reviewed and updated annually to monitor progress.

As previously mentioned, the actions have been divided into those that can be conducted with existing resources and those that require additional resources. Estimated timelines have been included; however, these are subject to the constraints of economic pressure, limited staff, and competing mandates for action.

Table 7.1. 2015 Kaua'i County Mitigation Actions.

Lead agency/ organization	Goals & Objectives	Action Description Project Timeframe [Estimated Cost & Time (Estimated/Proposed/Completed Timeframe)]
Multi-Hazard Actions		
Incorporate into operations using existing resources		
Office of the Mayor and Kaua'i Civil Defense	4.4 6.1	Ensure widespread awareness for reducing disaster risks and mitigating impacts of hazards in policies, planning, and program implementation. Has continued. Additional staff provisions for KCD have enabled this ongoing initiative. Encourages training of personnel and communities. February 2015 KCDA reorganization included an Emergency Management Administrative Officer position dedicated to preparedness, community outreach/awareness, resilience, and mitigation initiatives. Estimated Time: Ongoing
Office of the Mayor, Planning Department, and Kaua'i Civil Defense	2.5	Ensure hazard mitigation is incorporated into the Kaua'i County General Plan (ten-year plan, 2015-2025). The process for the General Plan was completed with integrated hazard mitigation and climate change consideration. 2014 General Plan underway currently, with plans to integrate current Community Plans as well as hazard mitigation and climate change recommendations of the Kaua'i Climate Change and Coastal Hazards Assessment Sea Grant publication. Estimated Time: 2015
Department of Public Works Building Division	5.1	For new construction of public buildings, designate areas to serve as a shelter. (Construction would require new resources; see specific requests for project funding for shelters). There are no new facilities since 2009 that have sheltering capacity. Estimated Time: Ongoing as-feasible
Kaua'i Civil Defense	5.1 5.2 5.3 5.4	Review and ensure agreements are in place among private utilities, the executive government agencies, Kaua'i Civil Defense (KCD), and the Red Cross to ensure that high priority facilities and shelters are maintained. Still relevant. Includes Kaua'i Visitors Bureau and the Hotel Association. Review and ensure agreements are in place among private utilities, the executive government agencies, Kaua'i Civil Defense (KCD), and the Red Cross to ensure that high priority facilities and shelters are maintained. Estimated Time: Ongoing

Department of Public Works Building Division	5	<p>Consider options to secure funds to retrofit facilities with hurricane shutters, roof tie-downs, and other improvements, such as emergency power generation equipment. Specific completed projects were funded from mitigation grants: Moikeha, Piikoi, and the Historic County Buildings; Kaiakea Fire Station was hardened as an essential facility.</p> <p>Estimated Time: Ongoing</p>
Kaua'i Civil Defense & Economic Development Office	5.3	<p>Continue to develop agreements with hotels and resorts to house their own guests and worker families during hurricanes and other major natural disasters. In Hawai'i, legislation enables private facilities to house the public with relief for negligence liability.</p> <p>Previously: Hawai'i Revised Statutes (HRS) 128-19 provides relief for negligence liability to private sector owners who volunteer the use of their facilities as an emergency shelter. The immunity protection that may be provided applies when an owner or controller of the facility meets the following criteria: (1) Their actions relating to the sheltering of people are voluntary; (2) They receive no compensation for the use of the property as a shelter; (3) They grant a license or privilege, or permit the property to be used to shelter people; (4) The Director of Civil Defense, or delegated agency or person, has designated the whole or any part of the property to be used as a shelter; (5) The property is used to shelter persons; and (6) The use occurs during an actual impending, mock, or practice disaster or attack.</p> <p>Currently: The updated relevant policies of HRS 127 and 128 have been replaced by HRS <u>127A-19</u> and <u>127A-20</u>. Given prior challenges, Makani Pahili hurricane exercise recommendations and issues during the Hurricane/TS Iselle and Ana activations, a statewide committee was formed and continues to attempt to address these areas. Kaua'i County is participating in these committees and exercises and is working on these issues locally, which will be briefed and discussed by the DMC.</p> <p>Estimated Time: Ongoing</p>
Kaua'i Civil Defense with civil society (Red Cross), Agency on Elderly Affairs, Human & Social Services	5.2	<p>Identify People with Access and Functional Needs, and sheltering requirements, and facilitate dialogue with key segments of the population to ensure that there are places for these populations to shelter and remain safe during disasters. For example, sheltering in place options may be preferred for mental health clinics with patients requiring specific medications and care, elderly care homes may have non-ambulatory patients, or domestic violence centers may have women who would be unsafe in another facility.</p> <p>Currently: This is still Ongoing. However there have been recent changes due to FEMA and Hurricane Response Frameworks consultant guidance in the wake of Super Storm Sandy. A state-wide approach is needed. Guidance specifies full integration of persons with access, functional and medical needs into general population shelters. More time will be needed regarding areas such as staffing, effects on capacity (floor space per person), accessibility, etc. Kaua'i County will participate in discussions on improving the sheltering requirements with the State and Red Cross guidance.</p> <p>Estimated Time: 2018 (Ongoing)</p>
Kaua'i Civil Defense	2.5	<p>Continue to develop plans that integrate national goals and initiatives into the County of Kaua'i plans for disaster risk management to ensure synergy in programs with limited resources and maximize benefits from</p>

		<p>disaster funding and required programmatic implementation. Ensure compliance with NIMS.</p> <p>Estimated Time: Ongoing</p>
Kaua'i Civil Defense with the Office of Economic Development and State Department of Agriculture	1.5	<p>Continue to encourage the integration of agricultural planning and coordination into disaster risk management community to improve local food security, sustainability, and community resilience to hazards. Food security is critical for coping with disasters where it may be weeks to receive goods and services on island, as Kaua'i experienced with Hurricane Iniki in 1992, so it should be coordinated with sheltering activities and lifeline security.</p> <p>Estimated Time: Ongoing</p>
Kaua'i Civil Defense and Department of Planning	2 2.5	<p>Develop a post-disaster recovery plan that incorporates mitigation considerations to better enable mitigation objectives in rehabilitation and reconstruction, and to prevent additional problems from improper development, land use, or further environmental degradation during the chaos of post-disaster recovery. This will enable policies and programs to be identified ahead of time so that when a disaster occurs, time will not be wasted in determining the best course of action.</p> <p>This has been developed in segments with regulations in the planning department. The effort is ongoing with hope of the development of a comprehensive recovery plan following the General Plan update cycle. One of the UH Sea Grant technical studies recommends a Post-Disaster recovery plan, looking to Maui County once their Recovery Plan (the first in the State) is finished.</p> <p>Estimated Time: 2016</p>
American Red Cross—Hawai'i Chapter	5	<p>Continue to work with community, faith-based, and government facilities to identify and survey shelters to meet the demand for sheltering during crises, and to meet the needs for specific populations.</p> <p>Completed: 1) Kaua'i Veteran's Center Facility to serve as evacuation shelter for flooding and fire and post-impact shelter when possible for large disaster when people in Koloa and Poipu area are displaced. Shelter Agreement signed 2/24/2014. This shelter was included in the 2014 Makani Pahili exercise. 2) Church of the Pacific United Church of Christ Facility was surveyed and determination was made to add private facility to serve as a disaster shelter with Red Cross to serve as evacuation shelter for flooding and fire and post-impact shelter when possible for large disaster when people in Kilauea area were displaced. Shelter Agreement signed 7/12/2010. 3) Kaua'i Christian Fellowship Post-Impact Shelter Facility was approved to serve as a disaster shelter with Red Cross as evacuation shelter for flooding and fire and post-impact shelter when possible for large disaster when people in Koloa and Poipu area are displaced. Shelter Agreement signed 8/27/2014. There is still great need in communities in the North Shore of Kaua'i for evacuation shelters, and the Red Cross will continue to work with the State and Kaua'i County to meet these needs.</p> <p>Estimated Time: 2020</p>
Kaua'i County Housing Agency	1 1.4	<p>Look for funding and planning opportunities to develop more affordable housing in Kaua'i County to meet critical needs of the working population and the poor. KC has the highest cost of housing in the four counties, and the high cost of housing and property taxes have resulted in higher</p>

		<p>costs for rent as well as mortgages, which make it difficult for the younger people to afford to live affordably. In addition, the high demand results in more families occupying homes, which puts added pressure on infrastructure and utilities (water usage, energy, roadways/parking). KCHA continues to work with the county agencies to seek opportunities to improve housing stock, and to use the most updated building codes in development projects.</p> <p>Estimate Time: Ongoing.</p>
Requires external funding or resources		
Department of Finance	3	<p>Use of updated GIS maps will ensure we identify risk and vulnerable residences and we will develop and prioritize risk reduction actions from our increased capacity to perform the GIS mapping of the residences on Kaua'i.</p> <p>Estimated Cost: \$200,000 Proposed: Jan. 2015 Estimated time: 2 years</p>
Kaua'i Island Utility Cooperative	2.7	<p>Provide alternate distribution feed to the Lihue Airport with the installation of auto transfer switchgear, and underground conduits and cables. Project will be designed to be integrated into KIUC's smart grid and Lihue Hardening Plan, increasing reliability and hardening electrical service to critical and essential facilities in Lihue Area.</p> <p>Estimated Cost: \$150,000 Proposed: Feb. 2015 Estimated time: 3 months</p>
Fire Dept. DOFAW	1.5	<p>Procure new 4,000 gallon capacity water truck to assist in providing the public with potable water as well as assist other state and county agencies efforts in disaster management activities. Vehicle will provide DLNR with a water truck capable of handling various disaster incidents while providing the public a valuable resource to address health and safety issues.</p> <p>Estimated Cost: \$260,000 Proposed: Jan. 2015 Estimated time: 3 years</p>
UH Kaua'i Community College	2.8	<p>Continuity of building operations while they serve as emergency shelters. Purchase of 5 diesel generators and installation of generator tie-ins to the electrical system for 5 buildings. Per the Community Wildfire Protection Plan development process, DLNR DOFAW, along with KFD require a water bladder to assist with helicopter water sources for water drops during wildland fires.</p> <p>Estimated Cost: \$200,000 Proposed: Jan. 2015 Estimated time: 9 months</p>
UH Kaua'i Community College	4	<p>Install public address system to ensure effective emergency communications to the campus and surrounding areas.</p> <p>Estimated Cost: \$1,000,000 Proposed: Jan. 2015 Estimated time: 12 months</p>
UH Kaua'i Community College	1.6 4	<p>Installation of a 500 kWdc photovoltaic ground mount and canopy renewable power generation systems ("PV") and renewable energy storage system ("RESS"). This custom-designed system will allow KCC to generate a portion of its daily electricity demand for the operation of its campus. The RESS will store the energy generated by the PV. The PV and</p>

		<p>RESS are sized to maximize the economic benefit of the energy delivered to the campus. The onsite energy storage will be a 250kW / 500kWh Lithium Ion Iron Phosphate containerized energy storage system.</p> <p>Estimated Cost: \$5,000,000</p> <p>Proposed: Jan. 2015</p> <p>Estimated time: 12 months</p>
Hurricane and Strong Winds		
Incorporate into operations using existing resources		
Department of Public Works Building Division	5	<p>Continue to review and update building codes, and distribute wind risk information to those considering building permits. Currently, the building codes in force are IBC 2006, and the Building Division is conducting a study on wind risk that would allow them to upgrade the code to IBC 2012 standards.</p> <p>Estimated Time: Ongoing</p>
Requires external funding or resources		
Parks & Recreation Dept.	5	<p>Hardening of the Kalaheo gymnasium for hurricane shelter purpose: install structural hardening measures to allow the gymnasium to serve as an emergency shelter during natural disaster evacuations.</p> <p>Estimated Cost: \$1,000,000</p> <p>Proposed: Feb. 2015</p> <p>Estimated time: 6 months</p>
Parks & Recreation Dept.	5	<p>Hardening of the Kilauea gymnasium for hurricane shelter purpose: install structural hardening measures to allow the gymnasium to serve as an emergency shelter during natural disaster evacuations.</p> <p>Estimated Cost: \$400,000</p> <p>Proposed: Feb. 2015</p> <p>Estimated time: 6 months</p>
Parks & Recreation Dept.	5	<p>Hardening of the Kaua'i War Memorial Conventional Hall Exhibition Hall install a hurricane shutter system to protect all exhibit hall windows & glass doors to allow use of the exhibit hall as a disaster shelter during natural disaster evacuations.</p> <p>Estimated Cost: \$600,000</p> <p>Proposed: Feb. 2015</p> <p>Estimated time: 6 months</p>
DOFAW (State General Funds)	1	<p>Provide DLNR managed lands with productive watershed values and vegetative ground cover to prevent soil erosion. Reforestation and restoration of watershed resources on DLNR-DOFAW lands that were consumed by 3 Wildfires in 2012. Remove Wildfire damaged trees and provide appropriate vegetative ground cover to enhance watershed values while protecting near shore aquatic resources and public use. Plant native and non-native plant species appropriate for Puu Ka Pele, and Na Pali-Kona Forest Reserve locations on Kauai.</p> <p>Estimated Cost: \$250,000</p> <p>Proposed: Jan. 2015</p> <p>Estimated time: 3 years</p>
DOFAW (State General Funds)	4	<p>Hardening of State DLNR radio repeater sites (3) and base station on Kauai. Purchase and construction of inter-operability radio system and wind storm resistant structures that provide DLNR staff a safe operating system to implement incident management procedures. Repair and Replace existing equipment and structures to meet new FCC compliance standards at Puu Ka Pele, Kahili, Kilauea, and Lihue DLNR Baseyard locations on Kauai.</p>

		<p>Estimated Cost: \$1,100,000 Proposed: Jan. 2015 Estimated time: 3 years</p>
Kaua'i County Housing Agency	1 1.4	<p>Hardening of Kalepa Village. To update the County EEP plan to be consistent with the State EEP Plan. Provides plan to address disaster situations and market disruptions, and to hasten economic recovery. This was not completed during the previous plan because of funding constraints. However, original buildings were designed to withstand 100 mph sustained winds, which were the improved building code wind standards at the time of building. New buildings are designed to current adopted building code standards, 2006 IBC. KCHA is still seeking funds to retrofit affordable housing project.</p> <p>Proposed: 2009 Estimated Time: 1 year</p>
Kaua'i County Housing Agency	1 1.4	<p>Hardening of Paanau Village. Provide exterior sheathing to increase wall strength, harden windows, doors and glass doors and/or provide hurricane shutters to reduce structural failures in the event of a hurricane. Provides 60 families with a secure facility and reduces impact on Koloa area shelters. As of 12/17/14 this was not completed due to budgetary constraints. The buildings are designed with the most recent IBC codes in place. New buildings are designed to current adopted building code standards, 2006 IBC. KCHA is pursuing financing opportunities to harden facility as part of project rehabilitation.</p> <p>Proposed: 2009 Estimated Time: 9 months</p>
Floods		
Incorporate into operations using existing resources		
Department of Public Works Engineering – Flood Plain Management	2	<p>County of Kaua'i is already addressing compliance with NFIP as required. This policy recommendation is that attention to NFIP compliance continues. Since Kaua'i has recently been mapped digitally as part of FEMA's Map Modernization Program, there should be continued attention to reducing flood risks, especially in areas that have revealed frequent or repetitive flooding. New FIRMS November 2010. The Department of Public Works has been engaged with FEMA and State Flood Coordinators to get the repetitive loss issues under compliance in order to be eligible for the Community Assistance Visit (CAV).</p> <p>Estimated Time: Ongoing</p>
Department of Public Works Engineering – Flood Plain Management	6	<p>Work with the State NFIP coordinator to develop the program for participation in the Community Rating System. The County of Kaua'i has developed new online digital tools to aid the public in awareness-raising. The County aims to participate in the CRS, but still is not compliant with items found in the community assessments visit. Kaua'i County turned over to FEMA in 2012. Residences in non-compliance in VE zones, structures illegally built. Since transient visit accommodations are lucrative and property taxes are high, causing homeowners to convert converted "flood breakaway" areas into temporary accommodations. To gain transient accommodation compliance, the County will need to organize visits and work with illegal properties. Upcoming tasks include finalizing compliance with non-conforming items, requesting FEMA to do a CAV, wherein FEMA will specify properties that need to be considered. The County recognizes this problem, which has resulted in the inability to participate in the Community Rating System, which would reduce flood insurance rates for property owners. The non-compliance by a few</p>

		homeowners has been unjustly penalizing other residents in the County, and the County is targeting approaches that will enable CRS participation. Estimated Time: 2017
Department of Public Works Engineering – Flood Plain Management with Kaua'i Civil Defense	6	Ensure public awareness of flood risks and ways to mitigate flood hazards, including participation in the National Flood Insurance Program. NOAA has developed a dashboard web-based tool that looks at all stream gauges/data in real time to help emergency managers make assessments/decisions regarding flood incidents. Web application through the Flood Hazard Assessment Tool. Communities need increased exposure to the tool and there needs to be ongoing information and awareness raising in communities. The online presence is one way to ensure that people are assessing their risk as they apply for building permits – the Building Division handles building permits, so NFIP and FIRM maps are considered; the public can go online and check permits and status of the permits. The County needs to set up an outreach schedule with communities, or at public events such as the annual Home Show. Estimated Time: Ongoing
Requires external funding or resources		
Parks & Recreation Dept.	5	Hardening of the Kalaheo gymnasium for hurricane shelter purpose: install structural hardening measures to allow the gymnasium to serve as an emergency shelter during natural disaster evacuations. Estimated Cost: \$1,000,000 Proposed: Feb. 2015 Estimated time: 6 months
Parks & Recreation Dept.	5	Hardening of the Kilauea gymnasium for hurricane shelter purpose: install structural hardening measures to allow the gymnasium to serve as an emergency shelter during natural disaster evacuations. Estimated Cost: \$400,000 Proposed: Feb. 2015 Estimated time: 6 months
Parks & Recreation Dept.	5	Hardening of the Kaua'i War Memorial Conventional Hall Exhibition Hall install a hurricane shutter system to protect all exhibit hall windows & glass doors to allow use of the exhibit hall as a disaster shelter during natural disaster evacuations. Estimated Cost: \$600,000 Proposed: Feb. 2015 Estimated time: 6 months
Drought		
Incorporate into operations using existing resources		
Kaua'i Civil Defense and the Water Department	2.3	Improve data gathering and accounting for risk and vulnerability assessments for drought and wildfires. Integrating information on the risk and vulnerability specifically for Kaua'i County would be beneficial for planning by water resource managers, planners, and land use managers. Water Audit Training April 8, 2014 for water utility manager. Water Department began water audit on 12/14. Estimated Time: Ongoing.
Kaua'i Civil Defense and the Water Department	2	Implement the County drought mitigation strategies. Currently, drought mitigation plans exists for the State of Hawai'i and the County of Kaua'i. The plans need to be implemented at a local level, and updated regularly to address new needs. The projects have been

		updated every two years, but the overall plan needs to be updated to reflect changes. Estimated Time: Ongoing.
Kaua'i DOW, U.S. Department of Defense, private irrigation systems	6	County-Wide Conservation and Education Program. Ongoing. Partnering with CCH Board of Water Supply in this effort. Proposed: Ongoing, no hazard mitigation project submitted for 2015
Requires external funding or resources		
Kaua'i Dept. of Water	1	Emergency Interconnection-DOW Koloa Water System-Grove Farm Koloa System. Water source protection of this facility will be a proposed new project. The emergency interconnection was completed as a Phase 1 project in 2004. DoW currently buys water from Grove Farm who leases land. In 2019 Grove Farm surface treatment water plant (from Kapaia Reservoir from old sugar cane ditches and tunnels) will go to DoW (serves Lihue, Hanamalu, Puh) as a supplemental water resource. This plant may be located near the proposed landfill, which will create vulnerability if it shuts down with heavy rains leading to increased turbidity. The plant supports water security, though generally this issue is not of top concern due to high rainfall and water volume availability (adequate source, storage and transmission). The proposed project would protect the water resource to prevent contamination. Proposed: 2015, to conduct with Plant transfer in 2019.
Wildfire		
Incorporate into operations using existing resources		
Fire Department	6	Engage in public education programs with schools and communities. These programs include: 1) Smokey Bear material/fire prevention radio and TV spots; 2) Talks to schools, civic organizations, etc.; 3) Public notices/news releases declaring high fire danger periods; and, 4) Posting of fire prevention/high fire danger warning signs and posters. Estimated Time: Ongoing
Kaua'i Civil Defense with Fire Department and State Department of Land and Natural Resources	2	Identify and reduce hazardous fuels. Identify areas with potentially hazardous fuels. Reduce "flash" fuels in high use areas. Engage in programs for conversion of "flashy" fuels in high use areas. Currently: Community Wildfire Protection Plan development is underway, with completion targeted for 2016, and public awareness meetings to be conducted with information from new plan. Estimated Time: Ongoing, 2016-2020.
Planning Department, Kaua'i Civil Defense, and Fire Department	2	Minimize fires through land use policies and control. Determine appropriate restriction of the general public use within a fire hazard. Encourage land use that reduces fire dangers, such as vegetation clearing and clean-up programs. Require fire plans for all appropriate land use activities within the DLNR Department of Forestry & Wildlife's Management jurisdictions. Estimated Time: ongoing

Requires external funding or resources		
DOFAW (State General Funds)	2	Purchase D-4 Dozer to enhance DLNR/DOFAW capabilities to manage wildfire activities and implement forest recovery management objectives. Procuring D-4 dozer will be used to broaden firebreaks and provide for safe evacuation routes for the public. It will also be used in the reforestation and restoration efforts after the wildfires to repair the damaged watershed and lessen effects of soil erosion. Construct and repair firebreaks, open access routes in Puu Ka Pele and Na Pali-Kona Forest Reserves on Kauai. Estimated Cost: \$270,000 Proposed: Jan. 2015 Estimated time: 3 years
DOFAW (State General Funds)	1 2	Provide DLNR managed lands with productive watershed values and vegetative ground cover to prevent soil erosion. Reforestation and restoration of watershed resources on DLNR-DOFAW lands that were consumed by 3 Wildfires in 2012. Remove Wildfire damaged trees and provide appropriate vegetative ground cover to enhance watershed values while protecting near shore aquatic resources and public use. Out plant native and non-native plant species appropriate for Puu Ka Pele, and Na Pali-Kona Forest Reserve locations on Kauai. Estimated Cost: \$250,000 Proposed: Jan. 2015 Estimated time: 3 years
UH Kaua'i Community College	1.2	Protection of life and property from fire. Upgrade fire alarm system throughout the campus and retrofit existing fire sprinkler systems in buildings designated as emergency shelters. Estimated Cost: \$2,500,000 Proposed: Jan. 2015 Estimated time: 12 months
Climate Variability and Change		
Incorporate into operations using existing resources		
Planning Department	1	Take into consideration the impacts of climate change (higher temperatures, sea level rise, extremes in rainfall as floods or drought, and potential increases in tropical storm frequency or severity) in land use, development, and planning. Kaua'i Climate Change and Coastal Hazards Assessment Sea Grant included such considerations (minus higher temperatures) with a focus on coastal hazards. This information will also be incorporated into three community development plans. Estimated Time: ongoing
All departments, working with community organizations and private sector	1 2	Take into consideration potential socioeconomic impacts from climate change for Kaua'i. Many sectors will be impacted by climate change: water resource management, disaster risk management, public health, agriculture, and tourism. Impacts will be felt first in communities, and sustainability of these communities should be considered. The Ha`ena to Hanalei Community Disaster Resilience Plan includes considerations for impacts from climate change. Governor Abercrombie held a series of "climate resilience forums" on all islands (including one w/PriMO), for which Kaua'i County departments

		<p>participated. Climate projects are also being conducted by the Pacific RISA (funded by NOAA) and NWS, and the Pacific Islands Climate Change Cooperative is developing resources for forested areas, especially.</p> <p>Additional departmental observations & ongoing initiatives: Accelerated erosion along shorelines is among the first impacts of sea level rise. Additional climate change-related issues include Invasives – such as Albizia trees—with increased risk from storms/strong winds—as well as the invasive Madagascar lizard putting stress on the Hawaiian gecko.</p> <p>Estimated Time: ongoing</p>
Kaua'i Civil Defense, Water Department, and Planning Department	6	<p>Educate leaders and the public about sea level rise, increased disaster risks, and ecosystem impacts from climate change that will ultimately affect the livelihood of the people in Kaua'i. The findings of scenarios and assessments (especially those conducted by State and Federal partners in risk management) should be integrated into county policies.</p> <p>Sea Grant Extension conducts community presentations around coastal management, SLR, erosion, coastal planning, etc. and presentations at County Council, governmental departments</p> <p>Estimated Time: 2017</p>
Earthquake		
Incorporate into operations using existing resources		
Department of Public Works Building Division	2	<p>Participate in State training and assistance in the use of modern codes and retrofit guidelines for county officials and design professionals. Encourage sponsorship and collaboration in training with the Contractors' Association of Kauai.</p> <p>Trainings conducted – October 2014. Attend annual Hawaii Association County Building Officials.</p> <p>Trainings w/CAK and with the Structural Engineers Association of Hawaii (SEAOH), who aid in providing training on updated building codes and amendments.</p> <p>Extend training and education to local engineers in Kaua'i County.</p> <p>Estimated Time: Ongoing</p>
Tsunami		
Incorporate into operations using existing resources		
KCDA	4 6	<p>Ensure that communities are aware of evacuation routes. Continue education and awareness about tsunami warning and evacuation. Continue to work with communities to identify safe areas for immediate evacuation and mass sheltering for longer term needs. Continue to maintain signage and sirens that were installed as part of the updated maps for tsunami evacuation zones,</p>
Requires external funding or resources		
Kaua'i County Office of Economic Development	6	<p>Community Education & Hazard Publication Distribution. Purchase and distribute University of Hawaii, Sea Grant publications, Purchasing Coastal Real Estate in Hawaii (http://hawaii.gov/dlnr/occl/manuals-reports/Purchasing%20Coastal%20Real%20Estate.pdf) and Homeowner's Handbook to Prepare for Natural Hazards at any opportunity, including community meetings, annual Contractor's Expo, County Fair and the front counter of the Planning Department.</p> <p>Some of these types of activities have been done and are Ongoing by Economic Development, KVB, KIUC, KCDA, Sea Grant, FD through CERT,</p>

		<p>and Contractor’s Association, County Fair (August) by Economic Development. KCDA conducted extensive community outreach related to 2014 tsunami evacuation zone update. Community meetings, website and phone book/yellow book updates were preformed, along with brochure development and a supporting evacuation signage project along roads/highways.</p> <p>Greater Aleutian Tsunami scenario work for expanded zones is the next project that is nearing completion and should be by April 2015.</p> <p>Proposed: 2009 Estimated Time: Ongoing</p>
Parks & Recreation Dept.	5.1	<p>Hardening of the Kalaheo gymnasium for hurricane shelter purpose: install structural hardening measures to allow the gymnasium to serve as an emergency shelter during natural disaster evacuations.</p> <p>Estimated Cost: \$1,000,000</p> <p>Proposed: Feb. 2015</p> <p>Estimated time: 6 months</p>
Robinson Family, Ni’ihau	2	<p>TBD*: Robinson family inquired about the possibility of installing a Civil Defense outdoor warning siren on Ni’ihau. Current cost per new siren is approximately \$85,000. Logistics of transport and construction on Ni’ihau, along with private ownership and questions of funding source could pose additional challenges. *No mitigation project proposal submitted as of April 2015</p>
Parks & Recreation Dept.	5.1	<p>Hardening of the Kilauea gymnasium for hurricane shelter purpose: install structural hardening measures to allow the gymnasium to serve as an emergency shelter during natural disaster evacuations.</p> <p>Estimated Cost: \$400,000</p> <p>Proposed: Feb. 2015</p> <p>Estimated time: 6 months</p>
Parks & Recreation Dept.	5.1	<p>Hardening of the Kaua’i War Memorial Conventional Hall Exhibition Hall install a hurricane shutter system to protect all exhibit hall windows & glass doors to allow use of the exhibit hall as a disaster shelter during natural disaster evacuations.</p> <p>Estimated Cost: \$600,000</p> <p>Proposed: Feb. 2015</p> <p>Estimated time: 6 months</p>
Landslides/Mudslides		
Incorporate into operations using existing resources		
State Highways, DLNR	2.6 2.7	<p>The landslides in Kaua’i have predominantly impacted highways, which are the responsibility of the Department of Transportation Highways Division. KCDA and Fire are participating in statewide task forces and meetings to plan for addressing impacts through mitigation measures along highway corridors. The County continues to work with the state for the latest measures and approaches for reducing landslide risk.</p> <p>Estimated Time: Ongoing.</p>
Erosion		
Incorporate into operations using existing resources		
Department of Planning	2 1.2	<p>Review studies on erosion and sea level rise, and plan for variable setbacks. Minimize coastal development, especially in areas of high erosion risk. Plan for development using the best available knowledge. Work with the State OCCL to update the Coastal Erosion Mitigation Plan for the county.</p> <p>Estimated Time: Ongoing.</p>
Dam Safety		

Incorporate into operations using existing resources		
Department of Public Works	2	<p>Participate in the inspection, repair, and maintenance of dams and levees. The County should work with State and Federal agencies to secure resources for repair and maintenance of dams and levee systems to reduce potential disasters.</p> <p>Action adjusted as this pertains to County dams only, the State handles majority of the dams. Culverts under roadways were not done properly – County roads division/Public Works is currently working on this effort.</p> <p>USACOE did a 2013 study and recommended in conformance that the levees need to be raised. There is a need to propose mitigation actions to raise the height of the levees for Waimea and Hanapepe. Would require \$16 Million. Dept. Public Works will continue to look at maintenance requirements to see if existing levees are in compliance. The levees have been raised with ongoing maintenance to be done, which has an effect on flood insurance to public.</p> <p>Estimated Time: Ongoing</p>
Hazardous Materials		
Incorporate into operations using existing resources		
Department of Public Works	1	<p>Collection of household hazardous waste materials is done on an annual basis for all residents of Kaua'i. This includes but is not limited to batteries, paint, pesticides, chemicals and other hazardous materials. The County has a comprehensive hazardous waste disposal program for County-generated waste.</p> <p>Estimated Time: Current and ongoing</p>
Homeland Security and Human-Induced Hazards		
Incorporate into operations using existing resources		
Kaua'i Civil Defense	2	<p>The Critical Infrastructure Program (CIP) needs to be integrated with hazard mitigation programs in the county, hazardous materials management in the Department of Health, and localized for protection at the county level. Some of these actions have been done, including the assessment of critical infrastructure. The local emergency planning committee previously put vulnerabilities on their public website, but this is now confidential.</p> <p>Ongoing. Some of these actions have been done, including the assessment of critical infrastructure. The local emergency planning committee previously put vulnerabilities on their public website, but this is now confidential. FEMA CIKR protection trainings and exercises (AWR213 and MGT414) were brought to Kaua'i in 2014, with further training set to occur in 2015.</p> <p>Estimated Time: 2014</p>
Kaua'i Civil Defense	6	<p>Engage in public education, outreach, and partnerships. With limited staff in local agencies, agencies must be ready to deal with every aspect of disaster management. Partnering includes developing relationships with non-traditional institutions, agencies, commissions, retail, etc., and also working through the volunteer agencies to ensure the citizens and business are integrated with the emergency management community. KCDA's internal reorganization and inclusion of a dedicated position assigned to these areas will be extremely useful for this end.</p> <p>Estimated Time: Ongoing</p>

Finance Department – Information Technology	1.2	Secure cyber information and technology, which are critical to support of economy, lifelines, and government operations. The potential damage and financial losses from a cyber attack would devastate the economic infrastructure. Information technology is very important in sharing of data and information in the areas of law enforcement, emergency preparedness, shelter operations, volunteer management, resource management, and in reality every aspect of operations – technology enhancements improvements are imperative. Estimated Time: Ongoing
Kaua’i Civil Defense	2	Enhance the multi-hazards exercise and training programs to ensure integrated risk reduction for hazards that considers additional threats. The primary strategy is to conduct exercises as actual events. The gaps in the exercises should be evaluated to suggest improvements in response and recovery actions and pose additional mitigation measures. Annual Makani Pahili; Civil Support team anti-terrorism. Currently underway: Annual Makani Pahili hurricane exercise and Civil Support team anti-terrorism and cyber-security classes, done annually as part of exercises. Vigilant Guard 2015 will include (1) Makani Pahili hurricane ex, (2) CBRN/Hazmat ex with a Civil Support Team, (3) CERFP/USAR collapsed structure ex, (4) Disease component and (4) Cyber component. Estimated Time: Ongoing
Health-Related Disasters		
Incorporate into operations using existing resources		
Kaua’i Civil Defense	2	Advocate research to understand the links between health and climate change, and disaster risk. Following a disaster or extreme climate event, such as a hurricane or drought, the public is at risk from water-borne diseases, including gastrointestinal diseases and cholera. Additional threats occur from increased temperatures related to heat stroke. There are links in diseases such as malaria, dengue, and leptospirosis from extremes in flooding and drought. These considerations need to be built into the public health programs in Kaua’i. Planning should include consideration of the amounts of medicines and medical resources that may be needed during climate extremes. Estimated Time: Ongoing

7.3 Identification and Analysis of Mitigation Actions: NFIP Compliance

7.3.1 Description of adoption and enforcement of floodplain management requirements, including regulatory and inspection practices in Special Flood Hazard Areas

The County of Kaua’i is a participating community in the Federal Emergency Management Agency’s (FEMA) National Flood Insurance Program (NFIP). The County’s Department of Public Works has the responsibility for administering the NFIP within their jurisdiction. The County’s floodplain manager, Mr. Stanford Iwamoto, is a registered Professional Engineer and a Certified Floodplain Manager.

The County entered the Regular phase of the NFIP on November 4, 1981. As a condition of participation in the NFIP program, the County must adopt floodplain management regulations that meet the minimum regulations as set forth in Title 44 of the Code of Federal Regulations §60.3. The initial Floodplain Management regulations for the County, which recognized Special Flood Hazard Areas in accordance with the NFIP was adopted on 10/28/1981 (Ordinance No. 416, Bill No. 774 Draft 1).

The most recent revision to Chapter 15, Article 1 of the Kaua'i County code was adopted September 9, 2005. The 2005 update was required to include mandatory language that was previously missing from the ordinance. However, the County took the opportunity to include higher standard regulations that exceed the minimum NFIP requirements. These higher standards include, but not limited to:

Section	Description
§15-1.3 & 15-1.5	"Repetitive Loss Structure" – new definition and development standards added.
§15-1.3 & 15-1.5	"Substantial Improvement" – a 10-year Cumulative Substantial Improvement (CSI) rule was added.

To ensure that Kaua'i County's floodplain management ordinance remains in good standing with the NFIP, the County elected to include an automatic adoption clause that allows for the automatic adoption of any subsequent revisions and amendments (§15-1.2) to the Flood Insurance Rate Maps and Flood Insurance Study.

The State Coordinating Officer (SCO) initiated the most recent Community Assistance Visit (CAV) in 2012, and is still actively working with the County to resolve various administrative and enforcement procedures. As of January 2014, the additional documentation requested was not received and the SCO was forced to close the CAV with outstanding issues. Since that time, the SCO and FEMA RIX have been investigating potential violations in coastal areas of Kauai's north shore communities and evaluating the effectiveness of the County permitting practices for floodplain development. The County received assistance from the Army Corps of Engineers to modify levees in Hanapepe and Waimea Rivers to meet FEMA's levee certification requirements, and is now compliant.

7.3.2 Floodplain Identification and Mapping, including any Local Requests for Map Updates

On September 16, 2005, the Digital Flood Insurance Rate Maps (DFIRM) for Kaua'i became effective. These maps have not been updated since, and can be found at any one of the following sources:

Table 7.2. Flood Insurance Rate Maps for Kauai.

County of Kaua'i Building Division	http://www.kauai.gov/default.aspx?tabid=64
Kaua'i Online Hazard Assessment Tool (KOHA)	http://coast.noaa.gov/koha/?redirect=301ocm#

Hawaii Flood Hazard Assessment Tool (FHAT)	http://gis.hawaiiinfip.org/FHAT/Default.aspx?tmk=192019011
FEMA Map Service Center	http://msc.fema.gov/portal

Preliminary DFIRMs were issued to the County in May 2009. The proposed revisions incorporate FEMA’s Hurricane Flood Insurance Risk Study. These maps are available for review on the FHAT. A Letter of Final Determination was issued on November 26, 2010.

One of the changes to the Kaua'i County Floodplain Management Ordinance in 2005 to bring it in compliance with CFR 44 was the addition of language regarding repetitive loss structures. The additions had the effect of not allowing grandfathered unsubstantial improvement for repetitive loss structures, but rather to force these structures to flood compliance. The County has been working with FEMA and the State to come into compliance on structures that were not approved. In December 2014, the County had addressed outstanding issues. In January 2015, the Department of Public Works received notification from FEMA that they would be soon eligible for the Community Assistance Visit (CAV) as the County worked to meet compliance and enforcement issues for non-permitted buildings.

7.3.3 Future Actions for NFIP in Kaua'i County

7.3.3.1 Flood Maps

To ensure that Kaua`i County’s floodplain management ordinance remains in good standing with the NFIP, the County elected to include an automatic adoption clause that allows for the automatic adoption of any subsequent revisions and amendments (§15-1.2) to the Flood Insurance Rate Maps and Flood Insurance Study. This measure permits updates and revisions to be adopted quickly. The DFIRMs were approved November 26, 2010, and have been integrated into the GIS and decision support tools for understanding flood risk.

7.3.3.2 Repetitive Loss Property

As mentioned the addition of language regarding repetitive loss structures to the Kaua'i County Floodplain Management Ordinance in 2005 to bring it in compliance with CFR 44, the updated ordinance does not allow grandfathered unsubstantial improvement for repetitive loss structures in order to force these structures to flood compliance. The ordinance enables the county to address future repetitive loss structures.

7.3.3.3 Levee Certification Process

Kaua'i County previously requested and received assistance from the US Army Corps of Engineers in repairing levees to meet requirements in the certification process. The request was to pursue modification of the levees at the Hanapepe and Waimea Rivers under Section 216 of the Flood Control Act of 1970, Modification of Existing Corps Projects. The Floodplain Coordinator conducted public meetings to ensure that the communities are aware of the issues with certification. The county worked with the

Army Corps of Engineers to address the problem and become compliant with NFIP. The system was compliant in 2011.

7.3.3.4 Community Rating System

Kaua'i County has requested a Community Assistance Visit (CAV), which initiates the process for establishing the Community Rating System (CRS). It is estimated that the County will be eligible to participate in CRS in 2017. (See Summary, Ch. 7 Appendix B).

7.4 Kaua'i County Project Prioritization

In their focus on achieving the overall vision of the Mayor and the achievement of goals and objectives, the Disaster Mitigation Committee (DMC) has supported the mitigation actions that appear in this plan. Because of limited resources, personnel, and funding in the county, mitigation has become a part of the overall disaster risk management focus of the county to achieve sustainable development and preserve the rural character of the island.

The criteria for determining inclusion in the plan were based on a series of practical questions:

Effectiveness: Will this project reduce hazard risks in the county?

Focused: Is the project supportive of the goals and objectives for mitigation approved by the DMC?

Feasible, Appropriate, and Equitable/Just: If we apply a STAPLEE analysis, where we look at Social, Technical, Administrative, Political, Legal, Environmental, and Economic aspects of the proposed project, will this project be beneficial to Kaua'i County? Will these actions reduce hazard risks and build resilience?

Beneficial and Cost-Effective: Is there a greater benefit than cost ratio for the applied project? If not, is there an unaccountable social benefit for reducing risks that merit inclusion of the project in the plan?

Achievable and Sustainable: Will this mitigation action be achievable with local knowledge and resources or will external assistance be required? (Where external assistance is required, the efforts were separated in the list in Section 7.2 so that a funding strategy can be considered.)

The Disaster Management Committee (DMC) considered the range of projects for several types of hazards. The projects that were still unfunded, but were nonetheless needed to improve mitigation, were left on the list. These projects have been reviewed periodically. The only projects that moved off the list were those that had been funded, but not fully implemented or were deemed no longer relevant to achieving risk reduction in Kauai. The actions were thoroughly reviewed during the evaluation, and the status of the projects is included in Chapter 6, Table 6-1. The DMC determined that the projects that had been proposed previously were still important for the county.

Through the Mayor's Office, projects were solicited from the government agencies through their executive branch representatives on the DMC. In Kaua'i, each member of

the DMC and the broader community in Kaua'i, including council members, agency directors and staff members, disaster utilities subcommittee, and private sector and not-for-profit organizations received a copy of the hazard mitigation project proposal forms. The DMC reviewed the projects and made the determination as to whether it was a high-medium-low priority for the county and only listed those that were high and medium priorities. These projects that had a high and medium priority and require funding were included in Table 7-1 and in Table 7-2, which is the listing of projects that require funding and external assistance for implementation. The projects requiring funding proposed for 2015 have been included in Chapter 7 Appendix A for review (Note: these are included as an appendix with the intent to update the list of projects on an annual basis and to keep track of projects that receive funding).

The mitigation actions will be reviewed and new projects solicited by the DMC on an annual basis to ensure that the activities make sense for achieving hazard mitigation and risk reduction goals for the county.

In initiating the project proposals, each agency or organization considered the overall cost of the project, the benefit to preserving Kauai's critical facilities, and the overall benefit to people of Kaua'i County. Since there are mitigation actions in Table 7-1 that do not require additional resources or funding, these will be implemented as staffing and agency requirements permit. An initial consideration of the benefit-cost methodology was considered with the project proposals because the county wants to make sure that the benefits outweigh costs. If not, the funding could be better used on another mitigation activity. Since many of the projects are not eligible for FEMA funding, the FEMA Benefit-Cost Analysis tool has not been applied until the projects are proposed for consideration under the Pre-Disaster Mitigation Grant Program or the Hazard Mitigation Grant Program that is overseen by the State.

Since FEMA reviewers specified that projects needed to be prioritized as a required revision of the plan to get final approval, the DMC met and looked at the current issues facing Kaua'i to prioritize the list. The greatest hazard risks are still from hurricanes, tsunami, dam failure, and coastal inundation (from storms, sea level change, high wave events, and tsunami). There are chronic flood and erosion risks that the county is trying to address through development planning and communities are trying to mitigate through watershed management. The numerical prioritization that accompanies the list of projects requiring funding in Table 7-2 reflects the priorities for these particular proposed projects from 2015. The list will be reviewed annually and updated according to the degree of success in achieving risk reduction, meeting goals and objectives, and providing the greatest benefit to the county in reducing risks.

Many of the proposed projects will benefit multiple sectors and address risks from multiple hazards. The Kaua'i County Department of Finance Grants Specialist will help to review and identify potential funding sources for the proposed projects in the plan, and work with the DMC and appropriate lead agencies to develop full proposals meeting

requirements of each funding source. The determination for submission of external grants and resources will be based on availability of funding and additional criteria set forth by the sponsor. This process enables the county to take advantage of multiple funding sources, including those from multiple sources such as FEMA, USGS, USDA/NRCS, NOAA, State, and County budgets. In this period of economic downturn, Kaua'i County plans to consider all available resources that will contribute to reducing multiple hazard risks.

Table 7-2. Kaua'i County Mitigation Actions Requiring External Funding and Resources for Implementation.

	Jurisdiction	Project Description	Hazards	RVA Plan Section	Lead Agency	Budget (Federal) (Total)	Funding Source	Priority	Goal	Obj
County of Kaua'i										
Status: C = Complete F = Funded P = Pending Approval NA = No Action										
1	Kaua'i County	Hardening of the Kapule Building	Wind, Tropical Storms	5.2 5.2	Department of Public Works, Building Division	\$ 10,000	FEMA & County	HIGH 6	5 2	
2	Kaua'i County	Updating GIS Residential Maps for Risk & Vulnerability Assessments & Priorities	Multi-Hazards	Ch.s 3, 4, 5	Department of Finance	\$200,000	HUD, County	HIGH 1	3	
3	Kaua'i County	Lihue Hardening Plan: alternate distribution feed to the Lihue	Multi-Hazards	Ch.s 4, 5	Kaua'i Island Utility Coop	\$150,000	DOE, FEMA, State, County	HIGH 7	1 2	
4	Kaua'i County	New 4,000 gallon capacity water truck for Disaster Response & Management Water Security	Multi-Hazards, Fire	Ch.s 4, 5	DOFAW	\$260,000	DHS DOFAW USDA	HIGH 9	1 2	
5	Kaua'i County	5 diesel generators and installation of generator tie-ins for Emergency Shelters Continuity of building operations	Multi-Hazards	Ch. 5	UH Kaua'i Community College	200,000	DHS, DoEd State County	HIGH 8	2 5	
6	Kaua'i County	Public address system for effective emergency campus communication	Multi-Hazards	Ch. 3, 4, 5	UH Kaua'i Community College	\$1,000,000	DHS DoEd	MEDIUM 12	4	

	Jurisdiction	Project Description	Hazards	RVA Plan Section	Lead Agency	Budget (Federal) (Total)	Funding Source	Priority	Goal	Obj
County of Kaua'i										
Status: C = Complete F = Funded P = Pending Approval NA = No Action										
7	Kaua'i County	500 kWdc photovoltaic ground mount and canopy renewable power generation systems	Multi-Hazards	Ch. 4, 5	UH Kaua'i Community College	\$5,000,000	DoE DHS County	HIGH 10	2 1	
8	Kaua'i County	Hardening of the Kalaheo gymnasium for hurricane shelter	Hurricane	Ch. 5	Parks & Recreation Dept.	\$1,000,000	DHS DOE State	HIGH 5	5	
9	Kaua'i County	Hardening of the Kilauea gymnasium for hurricane shelter	Hurricane	Ch. 5	Parks & Recreation Dept.	\$400,000	DHS DOE State	HIGH 4	5	
10	Kaua'i County	Hardening of the Kaua'i War Memorial Conventional Hall Exhibition Hall install a hurricane shutter system	Hurricane	Ch. 5	Parks & Recreation Dept.	\$600,000	DHS HVB CIP State County	HIGH 3	5	
11	Kaua'i County	Reforestation for soil erosion, landslide and related prevention/mitigation in DLNR managed lands, reduce albizia	Wildfire, Hurricane & Strong Winds	Ch. 4, 5	DOFAW	\$250,000	State USGS USDA USFWS	MEDIUM 13	1 2	
12	Kaua'i County	Hardening of State DLNR radio repeater sites (3) and base station on Kaua'i for high winds/hurricanes.	Hurricane	Ch. 4, 5	DOFAW	\$1,100,000	State HUD, DHS CIP	HIGH 2	2 4	
13	Kaua'i County	Purchase D-4 Dozer to enhance DLNR/DOFAW capabilities to manage wildfire activities	Wildfire		DOFAW	\$270,000	State General Funds	HIGH 11	2	
14	Kaua'i County	Upgrade fire alarm system throughout the campus and retrofit existing fire sprinkler systems in buildings designated as emergency shelters.	Fire, Multi-Hazard	Ch. 4, 5	UH Kaua'i Community College	2,500,000	DHS, Fire, Fed Ed, County, State	MEDIUM 14	2	

7.5 Implementation of Mitigation Measures

Should funding be limited for implementation of mitigation measures, Kaua'i County is committed to encouraging mitigation planning through its everyday operations. This is the reason that Kaua'i County made careful consideration of the types of mitigation actions that can be achieved with the staffing, knowledge, and administrative resources throughout the county, and included these actions in Table 7-1. The responsibility of the County agencies is to protect the safety of the residents, and commitment to improving the building and land use permit system by using the GIS database will help to minimize impacts from disasters. Projects that can be coordinated through partnerships and programs will also be considered, in order to maximize and synchronize efforts with similar goals to the hazard mitigation strategy.

Despite the constraints, Kaua'i County has implemented a number of mitigation measures, and has demonstrated its commitment to hazard mitigation. Kaua'i County will continue to pursue opportunities to engage in partnerships with community and nonprofit organizations that will maximize limited financial resources and benefit the county by reducing risks to the impact of natural hazards.

7.5.1 Potential Resources for Disaster Risk Management Implementation

Many of the traditional resources to support disaster risk management – from emergency response, recovery, preparedness, hazard mitigation, and resilience planning – come from the Department of Homeland Security Federal Emergency Management Agency. To support external funding for hazard mitigation actions, Kaua'i County has benefited from grants under the Hazard Mitigation Grant Program and the Pre-Disaster Mitigation Grant Program, which enabled the hardening of many structures in Kaua'i County.

As federal requirements and levels of funding have shifted, and as the county recognizes the cross-cutting nature of disaster risk reduction, the County has developed partnerships with State agencies and civil society organizations, such as the Red Cross, to address risk reduction needs.

7.5.2 Potential Sources of Federal and State Funding and Technical Assistance

Additional sources of federal and state funding and technical assistance are included in Table 7-3, and are separated into the following categories:

- ♦ General emergency management grants, loans, and assistance;
- ♦ Floods/flood control grants, loans, and technical assistance;
- ♦ Earthquake grants, loans, and technical assistance;
- ♦ All-hazard mapping grants, loans, and technical assistance;
- ♦ Ancillary flood and natural resource projects grants, loans, and technical assistance;

- Basic and applied research/development grants; and
- Other planning resources: Demographics, societal data, and transportation, agricultural, industrial, and economic statistics.

Table 7-3. Potential Sources of Funding for Hazard Mitigation and Resilience

Program/Activity	Type of Assistance	Agency and Contact
General Emergency Management Grants, Loans, and Technical Assistance		
Mitigation Project Funding	State Capital Improvement Program funds	State Civil Defense (808) 733-4301
Emergency Management/Mitigation Training	Training in disaster mitigation, preparedness, and planning.	FEMA Region IX NFIP and Mitigation http://training.fema.gov/
Post-disaster Economic Recovery Grants and Assistance	Grant funding to assist with the long-term economic recovery of communities, industries, and firms adversely impacted by disasters.	Economic Development Administration (800) 345-1222 (202) 482-6225 www.eda.gov/
Physical Disaster Loans and Economic Injury Disaster Loans	Disaster loans to nonfarm, private sector owners of disaster damaged property for uninsured losses. Loans can be increased by up to 20 percent for mitigation purposes.	Small Business Administration (202) 205-6734 www.sba.gov/services/disasterassistance
Disaster Grants—Public Assistance	Grants for the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private nonprofit organizations. Mitigation funding is available for work related to damaged components of eligible buildings/structures.	FEMA Region IX www.fema.gov/government/grant/pa/index.shtm
Community Development Block Grants State’s Program	Grants to states to develop viable communities (e.g., housing, a suitable living environment, expanded economic opportunities) in non-entitled areas, for low- and moderate-income persons.	U.S. Department of Housing and Urban Development Community Planning and Development (202) 708-3587 x4538 www.hud.gov/offices/cpd/index.cfm
Community Development Block Grants/Entitlement Grants	Grants to entitled cities and urban counties to develop viable communities (e.g., decent housing, suitable living environments, expanded economic opportunities), principally for low- and moderate-income persons.	U.S. Department of Housing and Urban Development (HUD) Community Planning and Development (202) 708-3587 x4538 www.hud.gov/offices/cpd/index.cfm
Disaster Recovery Assistance	Critical housing and community development resources to aid disaster recovery (including mitigation).	U.S. Department of Housing and Urban Development (HUD) Community Planning and Development (202) 708-2605 www.hud.gov/offices/cpd/index.cfm
Public Housing Capital Fund Emergency/Natural Disaster Funding	Funding to public housing agencies that confront an emergency situation or a natural disaster.	U.S. Department of Housing and Urban Development Office of Capital Improvements (202) 708-0950

		www.hud.gov/offices/pih/programs/ph/capfund/index.cfm
Single Family Housing Repair Loans and Grants (Section 504 Rural Housing Loans and Grants)	Repair loans, grants, and technical assistance for very low-income homeowners living in rural areas to repair their homes and remove health and safety hazards.	U.S. Department of Agriculture (USDA) Rural Development Housing and Community Facilities Programs (202) 720-1474 www.rurdev.usda.gov/rhs/
Guaranteed Single Family Housing Loans (Section 502 Rural Housing Loans)	Loans, loan guarantees, and technical assistance to help very low, low-income, and moderate-income households in rural areas buy, build, or improve permanent residences.	U.S. Department of Agriculture (USDA) Rural Development Housing and Community Facilities Programs (202) 720-1474 (direct loans) (202) 720-1452 (guaranteed loans) www.rurdev.usda.gov/rhs/
Farm Ownership Loans	Direct loans, guaranteed/insured loans, and technical assistance to farmers to develop, construct, improve, or repair farm homes, farms, and service buildings and to make other necessary improvements.	U.S. Department of Agriculture Farm Service Agency (202) 720-1632 www.fsa.usda.gov/
HOME Investment Partnerships Program	Grants to states, local government, and consortia for permanent and transitional housing (including support for property acquisition, improvements, demolition, and relocation) for very low and low-income persons.	U.S. Department of Housing and Urban Development (HUD) Community Planning and Development Affordable Housing Programs HOME Investment Partnership Programs (202) 708-2470 www.hud.gov/offices/cpd/affordablehousing/index.cfm
Rural Development Assistance—Housing	Grants, loans, and technical assistance for addressing rehabilitation and health and safety needs in primarily low-income rural areas. Declaration of major disaster necessary.	U.S. Department of Agriculture (USDA) Rural Development Housing and Community Facilities Programs (202) 720-4323 www.rurdev.usda.gov/rhs/
Rural Development Assistance—Utilities	Direct and guaranteed rural economic loans and business enterprise grants to address utility issues and development needs.	U.S. Department of Agriculture (USDA) Rural Development Utilities Program (202) 720-9540 www.rurdev.usda.gov/rhs/
Assistance—Community Facility Direct Loans/Grants	Grants, direct and guaranteed loans, and technical assistance to construct, enlarge, or improve community facilities for healthcare, public safety, and public services in primarily low-income rural areas.	U.S. Department of Agriculture (USDA) Rural Development Housing and Community Facilities Programs (202) 720-4323 www.rurdev.usda.gov/rhs/cf/cp.htm
Community Development Block Grant—Section 108 Loan Guarantees	Loan guarantees to public entities for economic development, housing rehabilitation, public facilities, and large-scale physical development projects (including mitigation	U.S. Department of Housing and Urban Development Community Planning and Development/Section 108 (202) 708-1871

	measures).	www.hud.gov/offices/cpd/communitydevelopment/programs/
Homeland Security Grant Program	Grants to enhance the ability of states, territories, and urban areas to prepare for, prevent, and respond to terrorist attacks and other major disasters. Includes State Homeland Security Program, Urban Areas Security Initiative, Law Enforcement Terrorism Prevention Program, Metropolitan Medical Response System, and Citizen Corps Program grant programs.	FEMA Grants Management (800) 368-6498 askcsid@dhs.gov www.ojp.usdoj.gov/odp/grants_hsgp.htm
Infrastructure Protection Program	Grants to strengthen the nation's ability to protect critical infrastructure facilities and systems. Includes Transit Security Grant Program, Port Security Grant Program, Intercity Bus Security Grant Program, Trucking Security Program, and Buffer Zone Protection Program grant programs.	FEMA Grants Management (800) 368-6498 www.ojp.usdoj.gov/odp/grants_ipp2007.htm
Assistance to Firefighters Grant Program	Grants to local fire departments to protect citizens and firefighters against the effects of fire and fire-related incidents.	FEMA Grants Management (866) 274-0960 firegrants@dhs.gov www.firegrantsupport.com/afg/ FEMA Region IX
Fire Prevention and Safety Grant Program	Grants for projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and mitigate high incidences of death and injury.	FEMA Grants Management (866) 274-0960 firegrants@dhs.gov www.firegrantsupport.com/afg/ FEMA Region IX www.fema.gov/about/contact/regionix.shtm
Fire Management Assistance Grant Program	Grants for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster.	FEMA Region IX www.fema.gov/government/grant/fmagg/index.shtm
Hazardous Materials Emergency Preparedness Program	Project grants and technical assistance to enhance hazardous materials emergency planning and training.	U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration Office of Hazardous Materials Safety (202) 366-0001 http://hazmat.dot.gov/training/state/hmep/hmep.htm
Regional Coastal Resilience Grant Program	Regional funding for building resilience to extreme weather, disasters, and climate change.	National Oceanic and Atmospheric Administration http://coast.noaa.gov/resilience-grant/

Floods/Flood Control Grants, Loan, and Technical Assistance		
National Flood Insurance Program	Flood insurance to residents of communities that adopt and enforce minimum floodplain management requirements.	FEMA Region IX NFIP and Mitigation www.fema.gov/about/programs/nfip/index.shtm www.floodsmart.gov/floodsmart/pages/index.jsp
Flood Control Planning Assistance	Technical and planning assistance for the preparation of comprehensive plans for the development, utilization, and conservation of water and related land resources.	U.S. Army Corps of Engineers (USACE) www.usace.army.mil/
Nonstructural Alternatives to Structural Rehabilitation of Damaged Flood Control Works	Direct planning and construction grants for nonstructural alternatives to the structural rehabilitation of flood control works damaged in floods or coastal storms.	U.S. Army Corps of Engineers (USACE) www.usace.army.mil/
Floodplain Management Services	Technical and planning assistance at the local, regional, or national level needed to support effective floodplain management.	U.S. Army Corps of Engineers (USACE) www.usace.army.mil/
Land Protection	Technical assistance for run-off retardation and soil erosion prevention to reduce hazards to life and property.	U.S. Department of Agriculture Natural Resources Conservation Service (202) 720-4527 www.usda.gov/
Earthquake Grants, Loans, and Technical Assistance		
National Earthquake Hazards Reduction Program and Other Earthquake Hazards Reduction Programs	Technical and planning assistance for activities associated with earthquake hazards mitigation.	FEMA Region IX NFIP and Mitigation www.nehrp.gov/
All-Hazard Mapping Grants, Loans, and Technical Assistance		
National Digital Orthophoto Programs	Develops topographic quadrangles for use in mapping of flood and other hazards.	U.S. Geological Survey National Mapping Division (573) 308-3802 ortho@ndop.gov www.ndop.gov/
National Streamflow Information Program	Operation of a network of over 7,000 stream gaging stations that provide data on river flood characteristics.	U.S. Geological Survey Office of Surface Water (703) 648-5303 http://water.usgs.gov/nsip/
Mapping Standards Support	Expertise in mapping and digital data standards to support the National Flood Insurance Program.	U.S. Geological Survey National Mapping Division (573) 308-3802 www.ndop.gov/
Earthquake Hazards Program	Seismic hazard maps.	U.S. Geological Survey (703) 648-6785 http://earthquake.usgs.gov/
Cooperating Technical Partners	Technical assistance, training, and data to support flood hazard data development activities.	FEMA Region IX www.fema.gov/plan/prevent/fhm/ctp_main.shtm

Map Modernization Management Support	Provides funding to supplement, not supplant, ongoing flood hazard mapping management efforts by local, regional, and State agencies.	FEMA Region IX NFIP and Mitigation www.fema.gov/plan/prevent/fhm/mm_main.shtm
Community Assistance Program State Support Services Element (CAP-SSSE)	Provides funding to states to provide technical assistance to communities in the National Flood Insurance Program (NFIP) and to evaluate community performance in implementing NFIP floodplain management activities.	FEMA Region IX NFIP and Mitigation
Geospatial One-Stop (geodata.gov)	GIS portal that contains metadata records and links to live maps, features, and catalog services, downloadable data sets, images, clearinghouses, map files, and more.	Geospatial One-Stop geodata@usgs.gov http://gos2.geodata.gov/
Ancillary Flood and Natural Resource Projects Grants, Loans, and Assistance		
Environmental Quality Incentives Program	Technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands.	U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) (202) 720-1845 www.nrcs.usda.gov/programs/eqip/
Nonpoint Source Implementation Grants (Clean Water Act Section 319 Grants)	Grants to states to implement nonpoint source programs, including support for nonstructural watershed resource restoration activities.	U.S. Environmental Protection Agency Office of Water Non-Point Source Control Branch (202) 566-1203 www.epa.gov/owow/nps/cwact.html
Capitalization Grants for Clean Water State Revolving Funds	Loans to fund water quality protection projects for wastewater treatment, nonpoint source pollution control, and watershed and estuary management.	U.S. Environmental Protection Agency Office of Wastewater Management www.epa.gov/owm/cwfinance/index.htm
National Wetland Program Development Grants	Grants to build capacity to protect, manage, and restore wetlands.	U.S. Environmental Protection Agency Office of Wetlands, Oceans, and Watersheds Wetlands Division www.epa.gov/owow/wetlands/
Watershed Protection and Flood Prevention Program	Technical assistance for designing and installing watershed works of improvement and financial assistance for cost-sharing of measures for watershed protection, flood prevention, agricultural water management, sedimentation control, etc., in small watersheds under 250,000 acres.	U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Watersheds and Wetlands Division www.nrcs.usda.gov/programs/watershed /
Soil and Water Conservation Program	Technical assistance to the general public in planning and applying natural resource conservation practices, systems, and treatment; and furnishing technical natural resource conservation information to	U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) (202) 720-4527 www.nrcs.usda.gov/programs/swca/

	State and local governments.	
Watershed Surveys and Planning	Technical assistance planning activities to help solve water and related land resources problems.	U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Watersheds and Wetlands Division www.nrcs.usda.gov/programs/watershed/
Emergency Watershed Protection Program	Provides technical and financial assistance for relief from imminent hazards in small watersheds and to reduce vulnerability of life and property in small watershed areas damaged by natural hazard events.	U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Watersheds and Wetlands Division www.nrcs.usda.gov/programs/ewp/
Wetlands Reserve Program	Financial and technical assistance to protect and restore wetlands through easements and restoration agreements.	U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Watersheds and Wetlands Division www.nrcs.usda.gov/programs/wrp/
Project Modifications for Improvement of the Environment	Provides for ecosystem restoration by modifying structures and/or operations or water resources projects constructed by the U.S. Army Corps of Engineers or restoring areas where a Corps project contributed to the degradation of an area.	U.S. Army Corps of Engineers (USACE) www.usace.army.mil/
Aquatic Ecosystem Restoration	Direct support for carrying out aquatic ecosystem restoration projects that will improve the quality of the environment.	U.S. Army Corps of Engineers (USACE) www.usace.army.mil/
Planning Assistance to States (Water Resources Development Act)	Financial and technical assistance to prepare comprehensive plans for the development, use, and conservation of water and related land resources.	U.S. Army Corps of Engineers (USACE) (202) 272-0169 www.usace.army.mil/cw/cecw-cp/
Beneficial Uses of Dredged Materials	Direct assistance for projects that protect, restore, and create aquatic and ecologically-related habitats, including wetlands, in connection with dredging an authorized federal navigation project.	U.S. Army Corps of Engineers (USACE) www.usace.army.mil/
Soil Survey	Maintains soil surveys of counties or other areas to assist with farming, conservation, mitigation or related purposes.	U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Science and Resource Assessment (202) 690- 4616 http://soils.usda.gov/survey/
Land Acquisition	Acquires or purchases easements on high-quality lands and waters for inclusion into the National Wildlife Refuge System.	U.S. Fish and Wildlife Service Division of Realty (703) 358-1713 realty@fws.gov www.fws.gov/realty/lap.html
Transfers of Inventory Farm Properties to	Transfers title of certain inventory farm properties owned by the Farm	U.S. Department of Agriculture Farm Service Agency

Federal and State Agencies for Conservation Purposes	Service Agency to federal and state agencies for conservation purposes (including the restoration of wetlands and floodplain areas to reduce future flood potential).	Farm Loan Programs (202) 720-3467, 1632
Disposal of Federal Surplus Real Property for Parks, Recreation, and Historic Monuments	Identifies, assesses, and transfers available federal real property for acquisition for state and local parks and recreation, such as open space.	National Park Service (NPS) (202) 354-6915 nps_flpnational@nps.gov www.ncrc.nps.gov/programs/flp/ NPS—Northeast/Midwest Regions (617) 223-5190 nps_flpnorth@nps.gov
Partners for Fish and Wildlife	Financial and technical assistance to private landowners interested in restoring or otherwise improving native habitats for fish and wildlife on their lands.	U.S. Fish and Wildlife Service Branch of Habitat Restoration (703) 358-2201 www.fws.gov/partners/
Conservation Contracts	Debt reduction for delinquent and nondelinquent borrowers in exchange for conservation contracts placed on environmentally sensitive real property that secures Farm Service Agency loans.	U.S. Department of Agriculture Farm Service Agency (202) 720-3467, 1632
Federal Assistance Monitor	Published by CD Publications. Semi-monthly report on federal and private grants. Available for a fee.	CD Publications (301) 588-6380, (800) 666-6380 info@cdpublications.com www.cdpublications.com/
Catalog of Federal Domestic Assistance	Database of all federal programs available to State and local governments; federally recognized Indian tribal governments; domestic public, quasi-public, and private profit and nonprofit organizations and institutions; specialized groups; and individuals.	Catalog of Federal Domestic Assistance http://12.46.245.173/cfda/cfda.html
Basic and Applied Research/Development		
Decision, Risk, and Management Sciences	Funding for research directed at increasing the understanding and effectiveness of decision making by individuals, groups, organizations, and society.	National Science Foundation Directorate for Social, Behavioral, and Economic Sciences (703) 292-8700 www.nsf.gov/dir/index.jsp?org=SBE
Science and Society	Funding for research that examines questions that arise in the interactions of engineering, science, technology, and society.	National Science Foundation Directorate for Social, Behavioral, and Economic Sciences (703) 292-8700 www.nsf.gov/dir/index.jsp?org=SBE
National Earthquake Hazards Reduction Program	Funding for research to mitigate earthquake losses by providing earth science data and assessments essential for land use planning, engineering design, and emergency preparedness decisions.	U.S. Geological Survey External Research Support (703) 648-6716 gd-erp-coordinator@usgs.gov http://erp-web.er.usgs.gov

Structural Systems and Hazards Mitigation of Structures	Funding for research on new technologies for improving the behavior and response of structural systems subject to natural hazards.	National Science Foundation Directorate for Engineering Division of Civil, Mechanical, and Manufacturing Innovation (703) 292-8360 www.nsf.gov/div/index.jsp?org=CMMI
Environmental Technology	Funding for research to develop and test new technologies in the field of environmental engineering emphasizing principles underlying pollution avoidance as well as pollution treatment and remediation.	National Science Foundation Directorate for Engineering Division of Chemical, Bioengineering, Environmental, and Transport Systems (703) 292-8320 www.nsf.gov/div/index.jsp?org=CBET
Infrastructure Management and Hazard Response	Funding for research on multidisciplinary issues concerning the impact of natural, technological, and manmade hazards upon critical infrastructure systems and society.	National Science Foundation Directorate for Engineering Division of Civil, Mechanical, and Manufacturing Innovation (703) 292-8360 www.nsf.gov/div/index.jsp?org=CMMI
Environmental Sustainability	Funding for research with the goal of promoting sustainable engineered systems that support human well-being and that also are compatible with sustaining natural (environmental) systems, which provide ecological services vital for human survival.	National Science Foundation Directorate for Engineering Division of Chemical, Bioengineering, Environmental, and Transport Systems (703) 292-8320 www.nsf.gov/div/index.jsp?org=CBET
Behavioral and Social Research on Disasters and Health	Funding for research in the behavioral and social sciences on the consequences of natural and man-made disasters for the health of children, the elderly, and vulnerable groups, with an ultimate goal of preventing or mitigating harmful consequences.	National Institutes of Health (301) 496-4000, TTY (301) 402-9612 NIHinfo@od.nih.gov http://grants.nih.gov/
Other Planning Resources: Demographics, Societal Data, and Transportation, Agricultural, Industrial, and Economic Statistics		
Demographics, Societal Statistics and Economic Statistics	Free planning information concerning jobs, business and economic statistics, population and housing statistics, and help with census products (i.e., statistics, maps, reports, etc.). Note: For statistics regarding clean water, wetlands, conservation, disasters, natural resources, rivers, and other subjects covered in this document, use the contact information provided in the subject matter areas.	U.S. Census Bureau (301) 457-4608 www.census.gov/ Bureau of Economic Analysis Public Information Office (202) 606-9900 CustomerService@bea.gov www.bea.gov/ Bureau of Labor Statistics (BLS) Division of Information Services (202) 691-5200, (800) 877-8339 blsdata_staff@bls.gov www.bls.gov/

7.5.3 Local Funding

Local governments receive a significant portion of their funding for mitigation projects from the federal programs discussed above. Sources of local funding include departmental budget allocations, tax-funded investments (predominantly from property and sales tax) in infrastructure improvements and dedicated transportation/capital improvements sales or use taxes, all of which can also serve to mitigate hazards.

Tables 7-1 and 7-2 include local mitigation projects reviewed and prioritized by Kauaʻi County Disaster Management Committee. Most of the recommended local mitigation projects are funded in part by county budget allocations and reflect the agency mandates that contribute to risk reduction, and will often appear as the project non-federal cost-share. This hazard mitigation plan update process was funded by local county budget allocation. In addition, significant time and resources were contributed by the Department of Finance GIS technician in updating the hazard and asset layers for the County GIS system. KCDA and the Mayor’s Office provided support for meeting coordination, plan reviews, and public distribution (at the CAK Annual Home Show) of information.

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