

# CHAPTER 8:

## Plan Maintenance Procedures

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### 8.0 Importance of Maintaining the Mitigation Plan

The State's Multi-Hazard Mitigation Plan provides a guideline for addressing risks. It considers vulnerability from multiple perspectives, including local socioeconomic factors that contribute to vulnerability related to a number of hazards. The plan tracks progress and attention to risk reduction efforts.

One of the most important chapters is the second chapter that focuses on instilling the process of risk reduction. The plan update process, as described in the Executive Summary, provides as much information from which to engage in hazard mitigation as the mitigation strategy. The development of a process ensures that there will be long-term focus on hazard mitigation. Maintaining momentum in process implementation can be cumbersome and may not be possible during times of crisis; nonetheless, engaging in a process can lead to significant long-term changes and overall risk reduction.

For the 2007 update, the plan identifies gaps that have been realized with recent hazards, three major disaster declarations, and three fire emergency declarations. As many of the products and tools that will improve analyses become available in the next year, these can be integrated into the plan. By approaching this plan as a gap analysis, the State can begin addressing risks and can simultaneously assist the counties as their plan updates become due in the next three years (Kaua'i County – December 2008; City & County of Honolulu – September 2009; Hawai'i County – June 2010; and Maui County – August 2010). The work in mitigation for the next three years will involve attention to ensuring that the mitigation process outline in this plan is followed and that mitigation actions become implemented.

## 8.1 Addressing Gaps

The 2007 mitigation plan update process highlighted areas where the State needs to improve the process of interaction among agencies and organizations statewide. By focusing on adherence to the mitigation process, the State plans to ensure coordination and attention to risk reduction measures.

### 8.1.1 Lessons Learned from Disasters

Some of the gaps that need to be addressed include: 1) better attention to improving communication; 2) inclusion of sectors that have not been previously identified as critical, such as the judiciary, prison management, and law enforcement; 3) attention to funding upgrades and retrofits to shelters and public facilities; 4) addressing issues of water and energy use and the impacts that these actions can have on reducing climate risks; 5) integrating ecological studies and best environmental practices into risk management as mitigation measures; and 6) building better awareness of disaster risks and impacts among leaders, decision-makers, and the general public.

**Table 8-1. Disaster Lessons and Resulting Actions**

<b>Event</b>	<b>Lessons Learned</b>	<b>Resulting Actions</b>
Mānoa Flood FEMA-1575-DR-HI, October 30, 2004	Maintenance of Infrastructure is Critical; Stream Maintenance and Debris Clearance is Important; Electrical Outlets, Equipment, and Essential Materials should not be located at ground level; Need for better valuation of research and livelihood	<ol style="list-style-type: none"> <li>1) Hydrology Study</li> <li>2) Coordinated effort among NRCS, US Army Corps, State Civil Defense and the Mānoa Community for streambank stabilization, debris removal, and infrastructure improvements.</li> <li>3) UH Emergency Management Planning and Sheltering Study, proposed shelters</li> <li>4) UH System Hazard Mitigation Plan initiated to identify risk and vulnerability in the system</li> </ol>
2004 South Asian Tsunami, December 26, 2004	Tourism Economies can be severely impacted by catastrophic events; Tourists need and want information on ways to protect from disasters; Tsunami Events may not occur frequently but can be catastrophic and Hawai'i could easily have a locally generated tsunami with little lead time.	<ol style="list-style-type: none"> <li>1) Efforts have been made by the Hawaii Visitors Bureau and the Hotel Association to improve disaster information for tourists and to secure shelter space for visitors in hotels</li> <li>2) Efforts have been made to install signage for evacuation and to improve materials in different languages.</li> <li>3) Study and modeling work initiated to map coastal inundation based on bathymetry, DEMs and topography and multiple directional scenarios</li> <li>4) Tsunami Risk Public Awareness Tool released by NOAA to improve awareness of risks.</li> </ol>

Hurricane Katrina, September 2005	Isolation of Hawaiian Islands would mean relief assistance would not be swift; Sheltering problems - Hawai'i does not have enough spaces, there are not enough places for special needs, there are not enough places that permit pets, need safer homes and structures; Dams and levees need inspections; Recognition that poorest were impacted most; Many other sectors should be involved in disaster management besides first responders, such as the judicial and legal systems and mental health and other care facilities. Vegetation removed in clean-up and other environmental disasters; Lack of a recovery plan and coordination resulted in additional disasters; Increased focus on community resilience.	<ol style="list-style-type: none"> <li>1) Loss Mitigation Program approved by the Legislature to provide partial funding for the public to retrofit homes.</li> <li>2) Funding allocated to retrofit schools for additional shelter spaces, including special needs and pet shelters</li> <li>3) Inspections of dams and levees, maintenance and retrofits determined</li> <li>4) Coastal Readiness Program and Study on importance of vegetation in reducing coastal hazards</li> <li>5) Proposal for development of Recovery Plan</li> <li>6) Proposed Community Resilience Plan for Waipi'o Valley, based on local water management process.</li> </ol>
Severe Storms, Flooding, Landslides, Mudslides and Dam Failure FEMA -1640-DR -HI	Transportation impacted by rock and mudslides; stream flooding because of need for stream maintenance and debris clearance; Need for inspection of private levee/dam structures that could threaten populations; The wastewater and drainage systems need improvement to maintain use of beaches; Climate anomalies may become more frequent with climate change and disaster provides a lesson in preparedness.	<ol style="list-style-type: none"> <li>1) Increased effort in dam inspections and development of mitigation and retrofit strategies</li> <li>2) Efforts to mitigate potential rock fall areas near roadways by DOT</li> <li>3) Efforts needed for stream maintenance and debris clearance</li> <li>4) Efforts to improve wastewater and drainage systems.</li> <li>5) Proposed efforts to understand climate change issues, such as impacts of sea level rise and socioeconomic issues.</li> </ol>
Kīholo Earthquake FEMA -1664-DR -HI	Emergency Infrastructure and Utilities need to be inspected and tested for seismic standards; Need for increased public awareness about EQ response and potential tsunami threats; Impacts from one disaster may increase the impacts from another, as the destroyed irrigation system has resulted in water loss exacerbated by drought. Hawaii's assessment of EQ losses based on modifications to HAZUS proved sound and could be used for enhanced understanding of structural losses; the State needs a statewide Building Code to ensure post-disaster building meets high standards for disaster-resistance and counties needed building code improvements. Need communication improvements to improve public awareness and coordinated activity.	<ol style="list-style-type: none"> <li>1) State Building Code Council formed to determine state code related to the International Building Code.</li> <li>2) System investigations of electrical system problems and corrections for equipment failure</li> <li>3) Investigation of post-and-pier structural failures and guidelines for retrofits</li> <li>4) Communication and connectivity issues being improved in state and public systems.</li> </ol>

In addition to the technical aspects used in conducting risk and vulnerability assessments, there is a need to understand the deeper causes of disaster, which can also result from poor socio-economic conditions of an affected community. When this underlying condition is present, it deepens the impact on a community's ability to respond to and recover from disasters. Some of these issues include poverty and social justice. Others issues that need to be considered are the gendered divisions of labor and how this information is incorporated into livelihood recovery projects. These in-depth analyses have not been incorporated into current disaster risk management analyses.

The disasters of the last three years in and out of Hawai'i focused attention on the often overlooked social issues related to disasters, such as environmental justice, poverty, and marginalization. In this update, the plan identifies some of the overlooked communities, such as special needs populations and the homeless. Many projects currently target populations who do not speak English and focus on distributing emergency information in multiple languages. Yet, these analyses are only cursory and fail to address social injustice and root causes of poverty that may place people in harm's way, such as makeshift tents on the beach or under bridges in flash flooding streams. In the next three years, there are several proposed projects, including the second phase of the tsunami risk assessment project initiated by USGS with state and county collaborators, that will begin to assess these types of social risks and vulnerability and seek to implement mitigation actions that will build greater resilience to disasters.

### **8.1.2 Addressing Issues in Process and Coordination**

In the process of updating the plan in 2007, there were a number of lessons learned, as well. The frequency and attention to disaster response and recovery diverted attention from the outlined mitigation process. The mitigation process was developed to help inform and improve mitigation efforts. Without consistent application of the process, there were increased challenges in coordination.

One of the most important areas of the mitigation process is the coordination among agencies and organizations in the hazard community. Without keeping to schedules for meetings in the Hazard Mitigation Forum, some entities were unaware of new developments in risk reduction. The update process illuminated the lack of discussion and general awareness of mitigation in many important state agencies. Efforts in the next three years and in local mitigation plan updates will include the incorporation of expertise and coordination among state agencies and organizations with disaster management responsibilities.

The process has also demonstrated the need for improved coordination of the geographic information systems and critical data. Detailed hazard layers and parcel layers have been developed in the counties, but the state does not have a database that incorporates all of the state infrastructure and facility data with the level of detail that the counties use. Better coordination and data sharing protocol would enable

richer analyses for use in risk and vulnerability assessments. This will be pursued as part of the planning efforts in the next three years.

At the October 12, 2007 State Hazard Mitigation Forum meeting, the suggestion was raised and approved to conduct a strategic planning effort for State Hazard Mitigation Forum activities. A subcommittee has been formed to begin this effort. The intent of the committee is to investigate issues of membership, representation of disaster issues areas, and involvement to improve the coordination of the Forum and the ongoing process for mitigation. The effort will further improve linkages with the counties and determine areas of assistance in the local mitigation planning efforts.

Although intended for the strategic planning effort, about the issue of the incorporation of hazard advisory committees into the Forum was addressed. The Forum members decided that they would extend invitations to the chairs of the hazard committees, such as the Hawai'i State Hurricane Advisory Committee (HSHAC) and the Hawai'i State Earthquake Advisory Committee (HSEAC). Groups that have had less interaction previously include the Drought Council, the newly formed Ocean Resource Management Plan Coastal Hazards Working Group, and an Erosion Working Group. The Forum strategic planning subcommittee will make an effort to identify other hazard working groups.

The Forum intends to revive the subcommittees that had been part of the process previously. These include the Multi-Hazard Science Advisory Committee and the Public Awareness subcommittee. By reinvigorating these groups, the mitigation process will be better able to provide assistance to the local mitigation planning processes and improve the long-term planning process for disaster risk reduction.

An additional aspect of the strategic planning effort will be to advise State Civil Defense with regard to process formation and adoption. The effort will help determine a means for annually updating aspects of the plan so that there are continuous updates to the planning process.

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## **8.2 Monitoring and Evaluating the Plan**

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The mitigation plan was developed as an organic document and will be updated regularly. The format of the document was considered when preparing the plan to make it easy for review and update. The three-ring binder was chosen rather than binding to keep the document dynamic and to enable easy use once Federal Emergency Management Agency approval has been obtained. The primary distribution of the document will be by CD-ROM.

Even though this document has been formally approved, the State of Hawai'i recognizes that this was the best available information by the targeted deadlines to meet requirements. The plan will be revised and updated as new information becomes available. This plan has tried to summarize and build on a number of important hazard

documents. The hazard mitigation planning process has given momentum to the advisory committees for hazards and for information technology and GIS development, and will evolve as information becomes updated through other committees linked to the State. The risk and vulnerability assessment and hazard mitigation strategy will be reviewed and updated next year to address these gaps.

### **8.2.1 State of Hawai'i Executive Order**

The Executive Order to Establish the State of Hawaii as a Disaster Resilient Community (EO) provides a framework for implementing the policies and actions identified in this document. The Hawaii State Hazard Mitigation Forum will continue to oversee and ensure implementation of the state's hazard mitigation efforts and advise the state on mitigation actions and measures through Hawaii State Civil Defense. The inclusion of government agencies and the private sector in the committee enables hazard mitigation policies to be supported at all levels in the state.

The EO supports the hazard mitigation planning process outlined throughout this document, including periodic updates. Even though the communities in the island of Kauai were consulted during the risk and vulnerability assessment and mitigation planning process, they have not developed mitigation plans for each community. The EO will provide assistance for communities to further engage in mitigation planning.

The EO encourages the continued development of partnerships. The State Hazard Mitigation Forum initiated a process for partnerships to mitigate impacts from natural hazards throughout the State. These collaborations (discussed in Chapter 2) have demonstrated that partnerships help to maximize limited resources and build awareness throughout all sectors of the community-at-large. The EO establishes a process that enables the sustainability of these partnerships.

To address hazards that cause greatest risk to Hawaii State, the EO supports enforcement and improvement of building codes and standards and promotion of hazard considerations in land use decisions.

The EO supports the maintenance of all emergency response, recovery, and mitigation plans, including technical assistance in towns and communities to develop local plans.

The mitigation projects and actions identified in chapter five demonstrate the ongoing support of the State in securing critical facilities and infrastructure, including governmental facilities and privately owned lifelines. This includes improving shelters and hardening facilities where vulnerable populations exist.

Hawaii State Hazard Mitigation Forum has supported the development of public awareness and reduction programs, both at the county level through Project Impact and in the State through the public awareness campaign. The EO further supports training opportunities in hazard mitigation for planners, developers, architects, and county personnel, including those involved with information systems and mapping

technologies. The State of Hawai'i also promotes continuing education for building officials and contractors.

## **8.2.2 Hawai'i State Hazard Mitigation Forum**

The Hawai'i State Hazard Mitigation Forum will be responsible for overseeing implementation of this hazard mitigation strategy. The first activity will be to review their responsibilities as set out in the by-laws. The second activity will involve a review of this plan to determine priorities for the upcoming Pre-Disaster Mitigation Grant and remaining HMGP project funding. The Forum will consider its needs for ensuring implementation of the plan, including the development of subcommittees. Full updates of the risk and vulnerability assessment and mitigation strategy should occur every three years, with constant updates to the GIS databases as new data and information become available and as actions are completed.

The following tentative schedule outlines first year activities:

### **October 2007**

- 1) Obtain approval from FEMA for Hawaii State Hazard Mitigation Plan.

### **November 2007 - January 2008**

- 1) Review current mitigation strategy in the State Hazard Mitigation Forum and develop an implementation schedule.
- 2) Develop cost-benefit analyses using FEMA's guidance and software.
- 3) Discuss protocols for information and data sharing as part of an ongoing project to improve geographic information systems, data management, and decision support tools development.
- 4) Convene advisory committees and task forces to develop partnerships, projects, standards, and recommendations. Set up additional committees as necessary to implement policies identified in the State Hazard Mitigation Plan.
- 5) Prepare assistance strategy for Local Mitigation Plan Updates.
- 6) As projects receive funding, set up project timeline and monitoring process.
- 7) Work with regional hazard mitigation organizations to collaborate and leverage tools and resources, such as the work with the Pacific Risk Management 'Ohana (PRiMO), a hazard mitigation network coordinated by the NOAA Pacific Services Center.

### **February – April 2008**

- 1) Convene the quarterly meeting of the Forum.
- 2) Review Risk and Vulnerability Assessment and Mitigation Plan to assess for any gaps or new information that should be incorporated.
- 3) Look at proposal funding schedules and deadlines, and develop grants. Begin writing proposals for funding. Review proposals through email.
- 4) Formally develop information sharing protocols within the county, state agencies, federal agencies, and private interests.

- 5) Continue to update risk and vulnerability assessment.
- 6) Finalize new Local Mitigation Plan for the University of Hawai'i System.

### **May – July 2008**

- 1) Convene quarterly meeting of the committee. Review subcommittee findings. Review implementation of actions within the government offices.
- 2) Review funding progress. Continue seeking funding sources.
- 3) Continue mitigation projects and monitoring.

### **August – October 2008**

- 1) Convene the fourth quarterly meeting of the committee.
- 2) Discuss subcommittee findings.
- 3) Determine process for addressing gaps in hazard mitigation strategy.
- 4) Review new guidance criteria and requirements by FEMA.
- 5) Review project status, successes, and update project lists. Update cost-benefit analyses in preparation for Pre-Disaster Mitigation Grant Program requirements.
- 6) Begin to revise the Risk and Vulnerability Assessment based on updated HAZUS.

### **November 2008**

- 1) Convene the Annual Progress Review by the Hawaii State Hazard Mitigation Forum's Hazard Mitigation Subcommittee.
- 2) Prepare Annual report to the Director and Vice Director of Hawaii State Civil Defense on progress.
- 3) Prepare one page updates on progress to insert into the strategy.
- 4) Prepare detailed schedule and actions for year two.

### **Year 2:**

Continue with Quarterly meetings, Committee meetings, and additional meetings as needed to ensure implementation of mitigation efforts. Continue to update sections of the plan and ensure implementation. Review new FEMA requirements.

### **Year 3:**

Continue with Quarterly meetings. Continue to update plan and ensure implementation. At the end of the third year, a thorough review will be undertaken, and an updated plan will be drafted.

### **Year 4:**

Continue with Quarterly meetings. Continue to update plan and ensure implementation.

### **Year 5:**

Continue with Quarterly meetings. Continue to update plan and ensure implementation.

### **Year 6:**

Continue with Quarterly meetings. Continue to update plan and ensure implementation.

At the end of the third year, a thorough review will be undertaken, and an updated plan will be drafted.

**Schedule Contingency:** The Hawai'i State Hazard Mitigation Forum and State Civil Defense will pursue the previous schedule as outlined to the best of their ability; however, in the event of a disaster during the planning cycle, it may be impossible to keep this schedule. The Forum will meet as needed to guide in response and recovery efforts and respond to Hazard Mitigation Grant Program requirements.

Furthermore, there may be changes in federal, state, and local administrations during this cycle, and there may be new requirements, criteria, and responsibilities assigned to the State of Hawai'i that may make this schedule infeasible.

The outlined schedule will be reviewed, revised, and updated periodically to best serve Hawaii State's needs in implementing hazard mitigation practices and actions.

### **8.2.3 Mitigation Projects**

There are a series of projects identified in the plan addressing critical facilities and infrastructure. These have been prioritized as high, medium, and low. As appropriate funding sources become available, these projects will be implemented. New projects will need to be developed and prioritized. These will need to be included in future plan updates.

The preliminary proposals included in the plan need further development and assessment before submission to potential funders. For the Pre-Disaster Mitigation Grant Program, a further engineering analysis and a cost-benefit analysis must be developed. Other potential funding agencies will have specific information needs, which will be identified and met. State Civil Defense with assistance from the State Hazard Mitigation Forum will develop identified projects and work with experts in the government and private sector to gather information required in proposals.

### **8.2.4 Monitoring Project Implementation and Closeouts**

The Mitigation Branch of State Civil Defense will monitor the implementation and closeouts of mitigation projects. The State Hazard Mitigation Officer will oversee these activities with assistance from the State Hazard Mitigation Forum. For Federal disasters, close consultation and coordination with FEMA's Pacific Area Office will occur.

All applicants with projects funded by the Hazard Mitigation Grant Program, Pre-Disaster Program, and State programs will be required to submit quarterly reports to State Civil Defense. Also, quarterly reports for projects funded by the Flood Mitigation

Assistance Program will be submitted to the Department of Land and Natural Resources.

On an annual basis, the State Hazard Mitigation Forum in conjunction with State agencies and the county governments will review and evaluate the mitigation projects listed in the State and County Plans and hazard-unique plans. Projects will be analyzed by the criteria established in Chapter 6. Also, new projects will be solicited from potential applicants. Evaluation should determine if the mitigation projects are achieving the goals of the State's mitigation strategy.

Post Disaster Review (Federal and State Disasters): Implemented projects will be evaluated by the State Hazard Mitigation Forum and appropriate Federal, State, county, and private agencies for performance effectiveness. Documentation will be prepared to highlight effectiveness, short-comings, and future recommendations for improvement. This review may supplant the annual review contingent on the magnitude and timing of the disaster.

#### **8.2.4.1 Local Plan Review and Updates**

Each of the Counties has completed a multi-hazard mitigation plan with guidance and oversight from State Civil Defense and the Hawaii State Hazard Mitigation Forum. These local plans were submitted for review to FEMA in November 2003. As of October 2004 (finalization of this plan), the County of Kauai and the City & County of Honolulu plans were approved, and the Counties of Hawaii and Maui had submitted revisions that were pending approval.

The Hawaii State Hazard Mitigation Forum's Hazard Mitigation Planning Subcommittee and the Multi-Hazard Science Advisory Committee, with State Civil Defense, provided initial briefings on the planning processes and update briefings on changing pre-disaster mitigation grant program and local plan requirements. The State has been directly involved in the local mitigation plans and has provided assistance to the local hazard mitigation planning committees and technical consulting teams in each county. The intent in the State Hazard Mitigation Plan is to annex the approved county plans, in addition to annexing the hazard-specific plans developed by state agencies.

By developing a collaborative, integrated disaster risk management process---even prior to the most recent plans required by FEMA regulations---the State has intended to ensure integration of local needs and projects in mitigation. Aspects of these local plans have already been considered in the development of mitigation actions. The state is also assisting the counties in identifying resources to implement plans. Integration of state, local and federal mitigation planning represents an ongoing commitment of the State of Hawaii to comprehensive, integrated multi-hazard mitigation plans.

#### **8.2.5 Data Improvement**

Currently, the Hawaii Statewide Hazard Mitigation Forum and the Multi-Hazard Scientific Advisory Council have advised the counties to assemble the best available data for this first strategy. Several programs exist across the state to gather and prepare data and information. For example, a working group has been looking at gathering LIDAR to improve the Flood Insurance Rate Maps through the new FEMA Map Modernization Program. The FIRMs are currently the best available flood hazard maps, but all the counties recognize the need to improve this information.

Data usage, storage, and maintenance are unevenly distributed in the counties and in agencies across the state. The Hawaii State Department of Accounting and General Services (DAGS) and the GIS Program within the Office of Planning will continue to develop infrastructure and data, working in partnership with federal, state, and local agencies to improve resources.

### **8.3 Implementation through Existing Programs**

As described in Chapter Six, the State of Hawai'i has established a number of mechanisms within its day-to-day operations that will ensure implementation of the hazard mitigation plan, regardless of funding and additional resources. The land use system, building codes and standards, and permitting process already consider hazard risks. Improvements have been identified for these areas that will enhance the system..

The State of Hawai'i works with the counties for comprehensive land use planning and zoning, capital improvements planning, and building codes and standards to guide and control development in each county. The permit process will integrate the risk and vulnerability assessment and maps in the geographic information system to improve decision making for allowing future development. The State will continue to assist the counties in identifying and establishing improved building code standards.

A key component to implementing this plan and to updating information in the future will be to increase public involvement in the planning process through existing plans. The public has been engaged through Project Impact and public awareness campaigns. Public comment and insight was incorporated through meetings and plan review (available on the website), and will be critical in updating the local mitigation plans. Another method that will be pursued is seeking comment specifically from non-profit organizations, community planning groups, and watershed management councils. Because these groups have already engaged in mitigation activities separately, it will be important to maintain communication and develop a network of these organizations for future planning efforts.

Upon final approval of the plan by FEMA, the Hawai'i State Hazard Mitigation Plan will be made available to the public through the website. Improved technology in library system will ensure access to the plan. State Civil Defense and the Forum will distribute the copies of the plan to relevant agencies and organizations in the state. They will also

collect comments and suggestions for review and consideration by the Hazard Mitigation Forum. In addition, copies of the plan and any proposed changes will be posted on the State Hazard Mitigation Forum website, [www.mothenature-hawaii.com](http://www.mothenature-hawaii.com), for mitigation planning. This site contains an email address and phone number to which people can direct their comments or concerns.

In the next year, the state will engage in a review of the updated planning process to determine the methods that have been most useful. The State will renew the public awareness campaign in addition to the individual agency engagement in public awareness. As the State engages the counties in updating the local mitigation plans, there is an opportunity to further evaluate and refine the overall hazard mitigation process to ensure utmost effectiveness.