



TSUNAMI EDUCATION: A BLUEPRINT FOR COASTAL COMMUNITIES

JANUARY 2009

Prepared By:

Kylie Alexandra

Genevieve Cain

Patsy Iwasaki

On Behalf Of:

The Pacific Tsunami Museum

and the

County of Hawai'i Planning

Department



TSUNAMI EDUCATION: A BLUEPRINT FOR COASTAL COMMUNITIES

JANUARY 2009

AS PART OF:
THE TSUNAMI EDUCATION, PREPARATION, AND RECOVERY
PROJECT FOR DOWNTOWN HILO

Prepared By:

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County of Hawai'i Planning Department



FUNDED BY:

COUNTY OF HAWAI'I PLANNING DEPARTMENT
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A REPORT OF THE COUNTY OF HAWAI'I SUPPORTED BY THE HAWAI'I OFFICE OF PLANNING, COASTAL ZONE MANAGEMENT PROGRAM, PURSUANT TO NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION AWARD NO. NA07NOS4190079 OR NA06NOS4190159 OR NA05NOS4191060 (RESPECTIVELY), FUNDED IN PART BY THE COASTAL ZONE MANAGEMENT ACT OF 1972, AS AMENDED, ADMINISTERED BY THE OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT, NATIONAL OCEAN SERVICE, NATIONAL OCEAN AND ATMOSPHERIC ADMINISTRATION, UNITED STATES DEPARTMENT OF COMMERCE.

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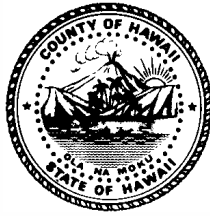


Dedication

*We dedicate **Tsunami Education: A Blueprint for Coastal Communities** to the people of Hawai‘i, who, despite several devastating tsunamis, have kept the spirit of perseverance alive.*



Harry Kim
Mayor



Dixie Kaetsu
Managing Director

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Aloha,

The world has found out through the tragedies of other countries about the power of nature released in a tsunami. The latest major destructive tsunami that killed over 250,000 people in the Indian Ocean area woke up many parts of the world to this phenomenon, the tsunami.

One reason why so many people suffer from the power of the tsunami is a complete unawareness about this naturally occurring event. It was apparent that many of the areas and countries impacted by the Indian Ocean tsunami had no information or knowledge of what the phenomenon was; and therefore, what to do to prevent harm. Perhaps the only positive result of that tragedy is that the rest of the world was awakened and realized that there is no place anywhere on this earth that is immune to a tsunami.

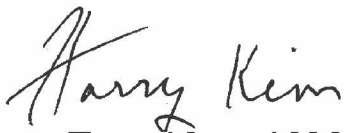
For Hawai'i, there is no excuse for not knowing.

For Hawai'i, there is no excuse for non-preparedness.

For Hawai'i, there should not be fatalities because of a tsunami event caused by a distant earthquake.

Why? The lessons of 1946, 1960, and 1975 should all be fresh in our memories. Recalling these tragedies should be more than enough of a reminder that we must be aware and we must prepare. For those in positions of responsibility for the safety of others, the memories should be more than enough to move us to action to ensure preparedness and education for the sake of the young who have never experienced a tsunami and for those who are not aware of the tsunami and its destructive powers.

It is important for all to remember that the tsunami is a natural phenomenon of this earth, and they will happen again and again. It is our responsibility to accept this. It is our responsibility to prevent harm and to actively help – "Take Care of Yourself – Take Care of Others; Be Tsunami Safe," especially for others who we are responsible for.



Harry Kim

Harry Kim
Mayor

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Foreword

By the Executive Director of the Pacific Tsunami Museum



Aloha,

It is so easy to become complacent about the threat of a tsunami since we in Hawai'i have been blessed for over forty years with a calm Pacific Ocean.

As a community resource, the Pacific Tsunami Museum is in a unique position to keep the specter of a tsunami in our consciousness and through programs such as the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* we are able to actively inspire and motivate the public to take active steps in preparing for and recovering from the next inevitable tsunami.

I commend Genevieve Cain of the Pacific Tsunami Museum for her initiation of the concept to prepare the Downtown Hilo area for the next tsunami. Susan Gagorik of the Hawai'i County Planning Department was quick to see that *EnVision Downtown Hilo 2025: A Community-Based Vision and Living Action Plan* would provide the foundation for implementing this project with Coastal Zone Management funds, and thus this wonderful partnership was formed. I thank Christian Kay and Susan Gagorik of the Planning Department for their support and partnership of this Project, and also commend all of the Supporting Partners for their interest and enthusiasm that they exhibited from the very beginning.

The tsunami history of Hilo has contributed much to the scientific study of tsunamis, and the lessons of perseverance and recovery have inspired the museum to fulfill its mission, that through education, no one in Hawai'i should ever again die due to a tsunami.

Donna A. Saiki

Donna Saiki, Executive Director
Pacific Tsunami Museum

Introduction

More people have died in Hawai'i due to tsunamis than from hurricanes, floods, and volcanic activity all combined, making tsunamis our State's most deadly natural hazard. The location of the Hawaiian Islands in the middle of the Pacific Ocean, and surrounded by the plate tectonic activity associated with the *Ring of Fire*, makes this island paradise extremely vulnerable to distant tsunamis generated by earthquakes thousands of miles away. In addition to the threat of distant tsunamis, the Hawaiian Islands are located over a *hot spot* of volcanic activity, a region where locally-generated tsunamis can be generated.



Tsunami is a Japanese word which roughly translates to “harbor wave”. This is because tsunami waves are often intensified in shallow bays and harbors. The word “tidal-wave” has also been used to describe tsunami waves, but it is a misnomer, as tsunamis have nothing to do with regular surface waves. On the island of Hawai'i, the natural crescent shape of Hilo Bay makes it particularly vulnerable to tsunamis, and the shape has often been described as a natural “funnel” for tsunami waves.

Donna Saiki, Executive Director of the Pacific Tsunami Museum nicknamed the area along Hilo Bay as the “tsunami capitol of the world”. Based on historical and scientific data, scientists and experts agree that it's not a matter of IF, but WHEN the next destructive tsunami will occur and we are long overdue.

The knowledge that a destructive tsunami will come at anytime created a sense of urgency that was a driving force for the community orientated initiative: *The Tsunami Education, Preparation, and Recovery Project for Downtown Hilo*. The Lead Solution Partners (LSPs) for this Project were the County of Hawai'i Planning Department and the Pacific Tsunami Museum in collaboration with Supporting Partners (SPs) from government agencies and community groups.

This Project was funded by the State of Hawai'i's Department of Business, Economic Development & Tourism, Office of Planning Coastal Zone Management Program, and the County of Hawai'i Planning Department. *The Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* was intended to be the first phase of a long term initiative to better educate and prepare the community for the next inevitable tsunami.

*Throughout the document, we will share helpful **tips** that can be applied by other coastal communities.*

The Tsunami Education, Preparation, and Recovery Project for Downtown Hilo was a cooperative project that occupied a place in the worldwide effort to increase resilience of coastal communities to the tsunami hazard. Community, county, state, federal and international organizations have implemented, and continue to develop, programs that focus on tsunami education. With over 260,000+ fatalities from the 2004 Indian Ocean tsunami, collaborative efforts are now global.

This document, *Tsunami Education: A Blueprint for Coastal Communities*, is the cumulative record of the Tsunami Education, Preparation, and Recovery Project for Downtown Hilo; a demonstration project focused on a collaborative approach to delivering tsunami education to the Downtown Hilo community.

The purpose of this guide is not merely to report the process or findings of the project, but rather to offer resources and instructions on how to create and run similar programs in your coastal community.

Although the document is lengthy it is not necessary to read it from cover to cover in order to find helpful information. Each chapter has a different focus that can provide guidance in the development of your project, so please feel free to jump to the sections that have particular significance to your community/project.

- **Part One: Downtown Hilo** - highlights the unique character of Downtown Hilo and glances at the effects of past tsunamis on the community.
- **Part Two: The Tsunami Hazard** - contains information on the tsunami hazard and how tsunamis have affected Hilo in the past.
- **Part Three: The Tsunami Education, Preparation, and Recovery Project for Downtown Hilo** - outlines the project creation, development and implementation.
- **Part Four: Community Outreach & Data Collection** - summarizes the outreach efforts associated with the project.
- **Part Five: "Tsunami Safe" Disaster Preparedness Fair** - showcases the activities, speakers and exhibits present at the "Tsunami Safe" Disaster Preparedness Fair.
- **Part Six: Conclusion** - critiques the "Tsunami Safe" Disaster Preparedness Fair and the *Tsunami Education, Preparation and Recovery Project for Downtown Hilo* as a whole.

We invite you to read this resource with the hope that you will be encouraged and inspired to initiate partnerships within your own community in an effort to increase tsunami awareness. Self-reliance is the key to hazard preparedness and the essence of this is inherent in the project phrase:

**"Take Care of Yourself - Take Care of Others;
Be Tsunami Safe."**



Each section will end with **Key Questions** for other communities to consider.

Glossary

Acronyms

CERT	Community Emergency Response Team
CZM	Coastal Zone Management
EDH 2025	EnVision Downtown Hilo 2025
HBWAG	Hilo Bay Watershed Advisory Group
HCR	Hawai'i Consolidated Railway
HCRC	Hawai'i County Resource Center
HDIA	Hawai'i Downtown Improvement Association
ORMP	Ocean Resources Management Plan
PSA	Public Service Announcement
PTM	Pacific Tsunami Museum
PTWC	Pacific Tsunami Warning Center
TWS	Tsunami Warning System

Definitions

Lead Solution Partner (LSP): A group, organization or government agency willing to take a leading role in the project.

Supporting Partner (SP): An individual, group, organization or government agency willing to take a supporting role in the project.

Resilience: The ability of a community to effectively prepare for, endure and recover from a tsunami event.

In-Kind: Given in goods, commodities or services rather than legal tender.

“Talk-Story:” A local term to describe casual conversation at a gathering.

Vision Focus Area: An EDH:2025 term to describe a category to which a community vision belongs.

Kumiai: A Japanese concept of pulling together, supporting each other in times of need.

Tsunami Awareness Month: In the month of April in the state of Hawai'i, a series of special programs and events are put on to increase tsunami awareness.

Keiki Corner: A local term used to describe an area set aside for children to learn or play.

Our Cultural Heritage

Pele told her mother Kahinali'i, "I see a new home for me, away from Kahiki and you, my mother, will propel my canoe to this new land called Hawai'i." As a result, Pele arrived in the Hawaiian Islands and tried to make a home on each of the islands. With her 'o'o (digging stick) she would dig a lua (pit) that would protect her fires. But wherever she would dig, her sister Nāmaka'okaha'i (the primary deity associated with tsunamis) would flood the lua extinguishing the fires of the Pele clan.

On the island of Maui, a vicious battle between Pele and her sister resulted in Pele's physical form being destroyed. Pele, now a goddess and stronger than her rival sister, made her home on the island of Hawai'i. (Beckwith, 1940)

Hawaiian myths and legends speak of great sea floods and the "rising of the sea to the hills." These stories suggest that tsunamis have impacted Hawaiian coastal communities in the past, just as they do in the present day. As we know that this is historically accurate, there is a great deal to be learned through these experiences passed down through generations of story telling, dance and chants.



Kahinali'i

In some accounts is referred to as the husband of Hinaka'alualumoana. In some accounts she is the mother of Pele. A number of "floods" in Hawaiian mythology have been termed Kaiakahinali'i.



Nāmakaokaha'i

Elder and more powerful sister of Pele, a Goddess of the sea who controls tsunamis.



Hinaka'alualumoana

Hina who follows the ocean (wife of Kahinali'i), said to live under the sea outside of Waiākea, Hilo



Kanaloa

One of the four major Hawaiian deities of the ocean and ocean winds

[©Artist: Rory Akau]

Roxane Kapuaimohalaikalani Stewart, a marine science teacher born and raised in Hilo, has been studying hula since she was eight years old. She has grown familiar with the history of ancient Hawai'i through stories and the art of hula and chant. She has both a scientific mind and a heart that is connected to her surrounding environment and to the ancient Hawaiian deities. She believes that a duality exists in nature and that balance is predominant.



At the beginning of Parts One through Six, we will share proverbs of ancient Hawai'i, called *'ōlelo no'eau*, that relate to tsunami education and preparedness today.

Recently, she has been conducting research into ancient Hawaiian myths and legends that pertain to tsunamis and sharing her findings with the community on how these may guide our tsunami educational programs of the future. Indigenous knowledge can play a significant role in helping us to understand our surrounding environment. The *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* was centered in the concept of learning through stories, and upon understanding past experiences of others to prepare ourselves for the next tsunami event.

'Iliki ke kai i ka 'ope'ope la, lilo; i lilo no he hawawa.

The sea snatches the bundle, it is gone; it goes when one is not watchful.

Interpretations

A person who fails to watch out often loses. Never turn your back on the sea.

“No Ke Kaiakahinali'i,” a chant Ms. Stewart wrote in July, 2007 is on the following page. The Hawaiian deities associated with the ocean and tsunami waves are honored in this chant.

Please note: Hawaiian myths and legends indicate tsunamis but interpretations vary.

No Ke Kaiakahinali`i

Written by Roxane Kapuaimohalaikalani Stewart
July 21, 2007 in Waiākea Waena, Hilo, Hawai`i

The many deities associated with the generation and movement of tsunami waves are honored here. This chant provides a means to communicate with the very deities who will decide the fate of lands and people with the coming of the next tsunami.

E kai ulukū o Kanaloa	Oh restless sea of Kanaloa
Hāweo la i ka `āpapa lani	Your abode of gods are honored
‘O Hinaka`alu`alumoana	Hinaka`alu`alumoana ¹
‘O Kahinali`i	Kahinali`i ²
‘O Nāmaka`okaha`i	Nāmaka`okaha`i ³
‘O Hi`iakaika`ale`i	Hi`iakaika`ale`i ⁴
‘O Hi`iakaika`alemoe	Hi`iakaika`alemoe ⁵
‘O Hi`iakaika`alekuamo`o	Hi`iakaika`alekuamo`o ⁶
‘O Hi`iakaika`alepo`i	Hi`iakaika`alepo`i ⁷
‘O Hi`iakaika`aleweke	Hi`iakaika`aleweke ⁸
Na hoa ali`i	And all other such deities
Ke hiki mai he kai a kahinali`i	When your next flood arrives
Ha`i aku kai i one	Breaking upon these shores
Kahe nā nalu me ke aloha	May your waves be merciful
Waiho ke kulaīwi	Forbearing these native lands
Waiho ke ola o ke kanaka	Sparing the lives of men
Maliu mai i ka leo kaupē	Hear this humble plea

1. Hina who follows the ocean (wife of Kahinali`i), said to live undersea outside of Waiākea, Hilo. In some accounts, believed to be Pele’s mother who sent a tsunami to propel Pele’s canoe throughout the Pacific to find her new home.
2. In some accounts, named as the mother of Pele who propelled Pele’s canoe with tsunami waves. In other accounts referred to the husband of Hinaka`alu`alumoana. A number of “floods” in Hawaiian mythology have been termed Kaiakahinali`i.
3. Elder and more powerful sister of Pele, a goddess of the sea who controls tsunamis, said in some versions to have chased Pele out of Kahiki (as a tsunami) after Pele married Nāmaka`okaha`i’s husband Aukelenuiaiku
4. Hi`iaka in the giant billows, eldest of the Hi`iaka sisters
5. Hi`iaka in the low lying billows, second Hi`iaka sister
6. Hi`iaka in the overturning wave, third Hi`iaka sister
7. Hi`iaka in the breaking waves, eighth Hi`iaka sister
8. Hi`iaka in the open billows, ninth Hi`iaka sister

Photo: Depicting a vortex; the feud between fire and water. Dancers are Roxane Kapuaimohalaikalani Stewart, Mikihala Mahi, Kilohana Hirano & Manaiakalani Kalua. Image courtesy of Timothy O Bryan and Roxane Kapuaimohalaikalani Stewart.

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[Aerial view of Downtown Hilo prior to 1946. Hiromi Tsutsumi Collection]

An account by David Malo, 1898, records the story of an ancient Hawaiian legend about Konikonia, a ruling chief, and Lalohana, a woman who lived in the sea beyond the Wailuku River. “Lalohana would steal the fish hooks and bait from the fishing lines of the chiefs when they would fish. To stop this, Konikonia tricked and lured Lalohana ashore by making her believe that her husband was waiting ashore for her. After being kept four days on land, she warned him that her brothers were pao’o (fish) and that her parents, Kahinali’i and Hinaka’ala’alumoana would send her brothers in the form of pao’o (fish) to search for her on land. After ten days the ocean rose up and overwhelmed the land from one end to another.”



PART ONE: DOWNTOWN HILO

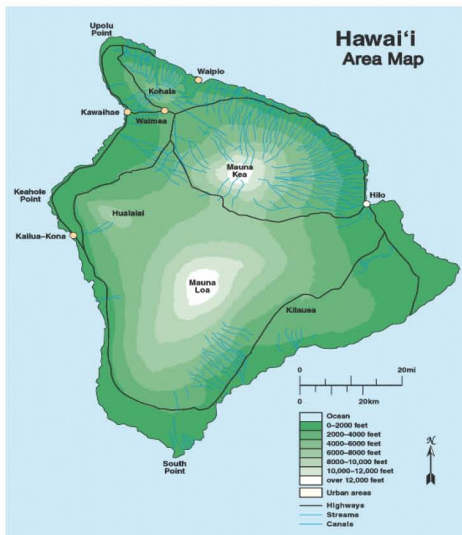


Downtown Hilo is a very special place. The delightful and unique combination of the past, present and future amid spectacular natural surroundings makes it a true treasure in the Hawaiian Islands, which captures the hearts of both lifelong residents and first time visitors.

Hilo’s distinctive buildings and historical importance firmly link us to our past; while modern businesses and organizations highlight Hilo’s diverse cultural and social environment and pointing toward possibilities and innovations for the future. Surrounded by lush greenery nurtured by rain, located next to the Wailuku River with the peaks of Mauna Kea and Mauna Loa in the background, and bordered by the crescent-shaped, black sand shoreline of beautiful Hilo Bay, Downtown Hilo is definitely a slice of heaven-on-earth.

“All of us didn’t have a lot of money back then; in fact, we had very little. But we made the best of it. There were theaters, cafes, restaurants, bars and neighborhood baths. After taking a bath, people would relax outside in their *yukata* (summer garment) and “Talk-Story” . . . those were the days.”

Richard Nakamura, 2004



Similar in spirit to today, Downtown Hilo over 60 years ago was a bustling, hub of commerce, culture and community. In fact, there were even more people, more activity . . . more bustle, all around.

Bordered by the Wailuku River at the west end, and the Wailoa River on the east end, 60 years ago, Hilo’s “downtown” area spread out from its current location to cover the nearby communities of Shinmachi (New Town) and Waiākea Town, also known as Yashijima and included the area known as Moku Ola, Coconut Island. Today these areas are for the most part, open green spaces consisting of soccer fields and public park lands.

[Hawai'i Map: SOEST Illustrations group]

Many visitors unknowingly praise the city's founding fathers for the superior town planning and foresight to have created such an exceptional recreational space for public use so close to the shoreline. They do not recognize or grasp the real reason and true cost behind the open space (Dudley & Lee, 1998).

Prior to April 1, 1946, Shinmachi and Waiākea Town were flourishing, heavily populated, close-knit communities mainly settled by Japanese immigrants and their descendants who had been contract laborers for the sugar plantations along the Hāmākua Coast at the turn of the century, but later sought more opportunities in the city.

"It [downtown Hilo] was a busy, happening place, everything was going on...lots of places to eat, movie theaters, a bowling alley, Waiākea Center, YMCA Center, the Hilo Center . . . and there was Shinmachi nearby. It was THE place to be.

Millie Uchima, 1946 Survivor

On weekends and holidays, Downtown Hilo overflowed with people as residents from the Puna and Hāmākua districts caught the Hawai'i Consolidated Railway into town. After the United States entered World War II, servicemen also flocked to Downtown Hilo for recreation and weekend entertainment.



[The 1946 tsunami inundates downtown Hilo]

The people of this thriving, vibrant town of Hilo were caught completely by surprise by a tsunami generated by a magnitude 7.8 undersea earthquake in the Aleutian Islands on April 1, 1946. Massive tsunami waves, one believed to be 100 feet high completely destroyed Scotch Cap Lighthouse Station on Unimak Island, Alaska, which was the nearest land to the epicenter. Traveling at approximately 500 miles per hour, the deep sea waves reached the island of Hawai'i just before 7

a.m. A series of waves crashed over the Hilo coastline; the third wave was the largest, recorded at 26 feet above the normal water line on Coconut Island. Since this was April Fool's Day, many thought that the initial warnings and concerns of residents were jokes.

Police officer Bob "Steamy" Chow was leaving his home in Wainaku when a neighbor told him that a tsunami had hit Hilo. "Oh yes, April Fool's," he responded with a smile. However, when he drove towards Downtown Hilo, he saw that one third of the railroad trestle spanning the Wailuku River had washed up-river and been deposited on the rock *Maui's Canoe*. Mr. Chow quickly realized that this was no April Fool's joke.

"The second wave lifted and tore apart the railroad bridge. Then the Wailuku River became dry as the water receded. The third wave; that, I will never forget. The wave came back and everything exploded!"

Bob "Steamy" Chow, 1946 Survivor

TIPS:

- Talk with friends and family about their perceptions, knowledge or recollections of past tsunami events.
- Speak with public safety organizations (i.e. Civil Defense) about the current tsunami risk in your community.
- Seek out individuals and organizations in your community eager to improve tsunami resilience.

He spent the next 18 hours directing traffic and people away from the danger zone and over the following days had to assist with identifying the victims. The tsunami had claimed 96 lives in Hilo and 25 lives in the coastal town of Laupāhoehoe. Five hundred homes and businesses were destroyed at a cost of \$26 million.

Following the tsunami, the people of Hilo rebuilt their town, recreating many of the densely populated areas as before. No one imagined another devastating tsunami would arrive in the near future.

With a functioning Tsunami Warning System (TWS) established soon after the 1946 event, Hilo experienced two more tsunamis, in 1952 and 1957. On November 5, 1952 Hilo received a surge 12 feet high, however, there were no casualties or fatalities and damage was estimated to be less than \$800,000. On March 9, 1957 a tsunami generated in the Aleutian Islands hit north Kua'i communities hard. Ha'ena received waves 32 feet above normal sea level. Despite large wave heights and damage to property, thanks to the TWS not a single life was lost in either event.

On May 22, 1960 a colossal magnitude 9.5 earthquake rocked the South American country of Chile and a destructive tsunami was generated. Witnesses at Isla Chiloé, the largest island of the Chiloé archipelago, saw the water receding, exposing 1,500 feet of sea floor and then an enormous wave 50 to 65 feet high forming offshore that washed over the island coastline. The death toll from the earthquake and tsunami would eventually reach 1,000 and the damage would amount to \$417 million.

Scientists predicted that it would take 15 hours for the waves to travel the 6,600 miles to Hilo and would arrive just before midnight. At 8:30 p.m. sirens sounded in Hilo, but people didn't really understand the warning because the siren system had changed just a few months before and there was confusion as to what the siren meant.

Under the old system, there were three separate soundings: the first siren indicated that a tsunami warning was in effect; the second meant that it was time to evacuate; and the third was set to go off just prior to the arrival of the waves. Under the new system, there was only one siren – and it meant “evacuate immediately.”



[Parking meters on Kamehameha Ave following the 1960 tsunami. Pacific Tsunami Museum.]

“After hearing the “first” siren, many people began to pack up their belongings in preparation for evacuation. Then they waited for the second siren before leaving their homes. There was to be no second siren that night!” (Dudley & Min Lee, 1998)

Hilo residents reacted to the tsunami warning in different ways. Some remembered vividly the destruction of the 1946 tsunami and did not want to take any chances. They packed up and evacuated their homes close to the shoreline. Even though they had lived through the tsunami, many could not believe that it would happen again. The two tsunamis in 1952 and 1957 had not been destructive, lulling many people into a false sense of security. There were also quite a few people who had evacuated earlier in the evening, but went back to their homes in the evacuation zone when nothing seemed to happen.

After midnight, reports from a Honolulu radio station said that the estimated time of arrival had been set back by 30 minutes. Yet geologists in Hilo had already recorded the arrival of the first wave, which was a small, but noticeable 4 feet high. The radio report meant that communication between the warning system and the news media had broken down and this misinformation increased the danger to the public (Dudley & Lee, 1998).

At 12:46 a.m. the second wave arrived in Hilo 9 feet above normal sea level. Just as in the 1946 tsunami, the third wave was the most destructive. With a deafening roar, the 20-foot nearly vertical wall of water crashed over Downtown Hilo and Waiākea Town at 1:04 a.m. After the tsunami waves reached the Hawai‘i Electric Light Company power plant, the entire city was in darkness.

“The curious, the foolhardy, and the misinformed actually went down to the bay to wait for the waves to come in. They stood around the old Suisan Fish Market filled with the excitement and sense of adventure instilled by a late night outing.”

Walter Dudley and Min Lee, *Tsunami!*, 1998.

In Hilo, 61 people died and several hundred people were treated for tsunami related injuries. The tsunami caused damage to 229 dwellings and 508 businesses and public buildings, the damage totaled \$50 million. For many, the loss of life was even harder to accept and comprehend because it was so easily avoidable.

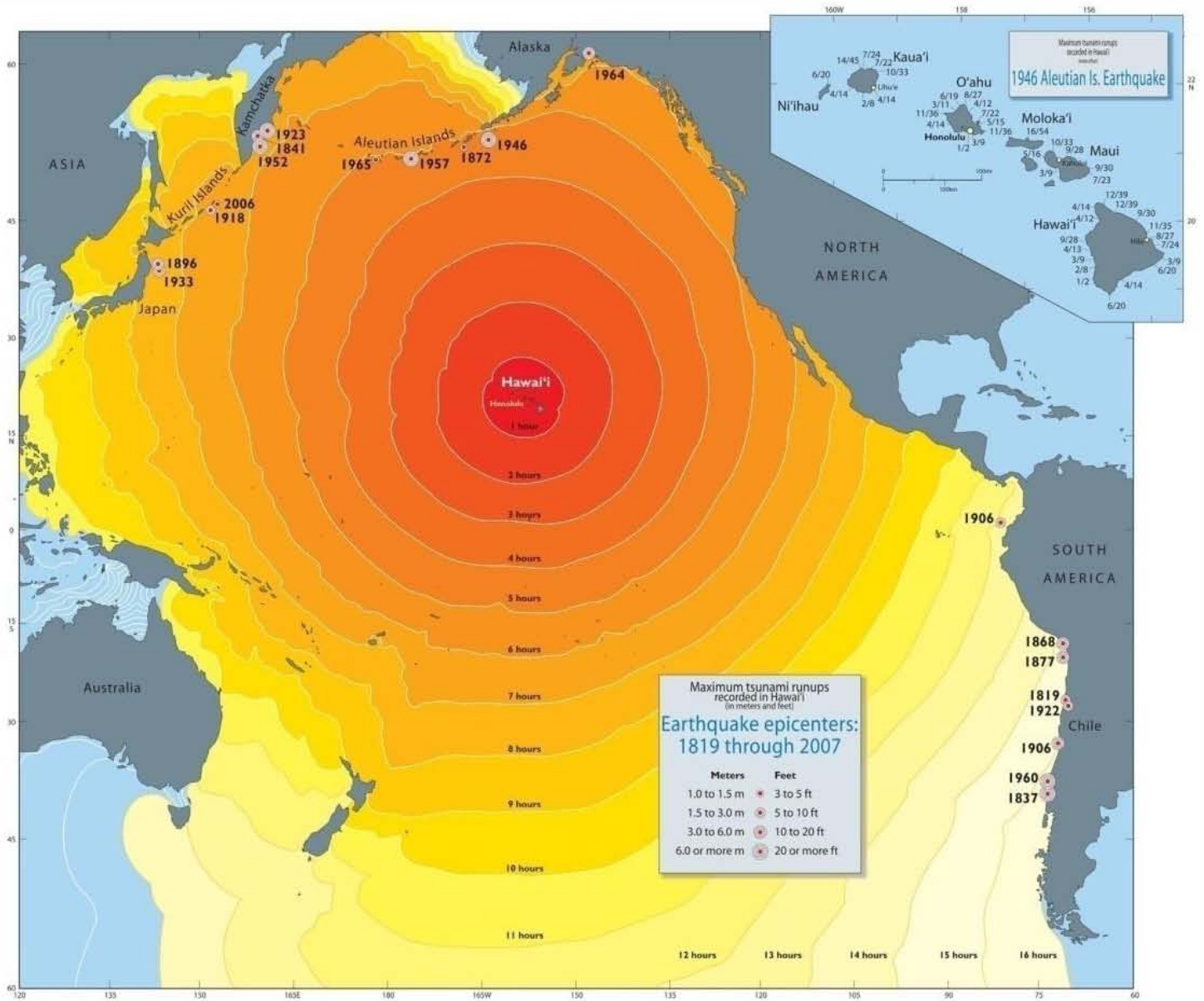
The tsunami of 1960 highlighted the need for not only education about the nature of the tsunami hazard but also the need for education on the procedures put in place to warn and evacuate public safely.



Key Questions

What impacts have past tsunamis had on your community?

How do people in your community perceive the tsunami hazard?



Data shown in this image are the source locations and dates and years of origin for Pacific-wide tsunamis from 1819 - 2007. Also shown are the maximum reported wave heights on land in low-lying coastal areas of the Hawaiian Islands for these tsunamis.

Image courtesy of Dr. Daniel Walker, Tsunami Memorial Institute.

Part Two: Key Elements of Tsunami Education

Deep Sea

Kai Hohonu



[Wailoa State Park; the area once known as Shinmachi, Hilo, Hawai'i.]

In the open sea, tsunamis are not seen or felt by passing ships because they are deep-sea waves and their wavelengths can be 100 miles long or more; as opposed to wind driven waves which rarely have wavelengths longer than 1,000 feet apart. When tsunami waves approach shore, they start to change. The shape of the nearshore sea floor has an extreme effect on how the tsunami waves behave. As the waves approach land they travel progressively slower, but the energy lost from the decrease in speed is transformed into increased wave height. Reports claim the 1946 Aleutian earthquake produced tsunami waves of 100 feet at Scotch Cap, Unimak Island, Alaska.

I kahiki ka ua, ako'ē ka hale
While the rain is still far off, thatch your house.
Be prepared at all times.



PART TWO: Key Elements of Tsunami Education

Tsunami education is a critical component to include when taking steps towards increasing the resilience of a coastal community. Without public understanding of the tsunami hazard and the procedures in place for a tsunami event, communications and effective and timely evacuation may breakdown, ultimately resulting in loss of life.

It is advisable for all coastal communities at risk from tsunamis, distant or locally-generated, to have tsunami education programs in place.

Every community is unique and therefore tsunami education should be tailored to the needs of each coastal community. Many factors, both past and present, should be taken into consideration before embarking on a customized educational program. The following highlight some of key areas of research:

- Past tsunami events and the multi-faceted impacts on the community.
- Cultural/local knowledge of tsunamis and current level of use/understanding.
- Current state of TWS and warning communication systems.
- Past and current tsunami education programs and outcomes.

To assist you in your customized tsunami education plan you may consider contacting the following organizations who will have information available to you on the tsunami hazard and the tsunami event procedures for your community:

- State Civil Defense
- County Civil Defense Agencies
- Red Cross (local branch)
- NOAA (regional)
- NOAA Pacific Services Center
- UNESCO/ITIC (international)
- Pacific Tsunami Warning Center
- County Police Department
- County Fire Department



Please refer to the information about gathering Lead and Supporting Partners in Part Three. When seeking funds to conduct tsunami education projects, it is very useful to have in-kind support and commitment from partners. In-kind support such as this quickly stacks up to amounts that can satisfy sizeable grant matching opportunities.

TIPS:

- Research what other communities have done to better prepare for tsunamis and dialogue with the key people involved.
- Research your culture or host culture and use the local wisdom as a “roadmap” for future tsunami education programs.

What is a Tsunami?

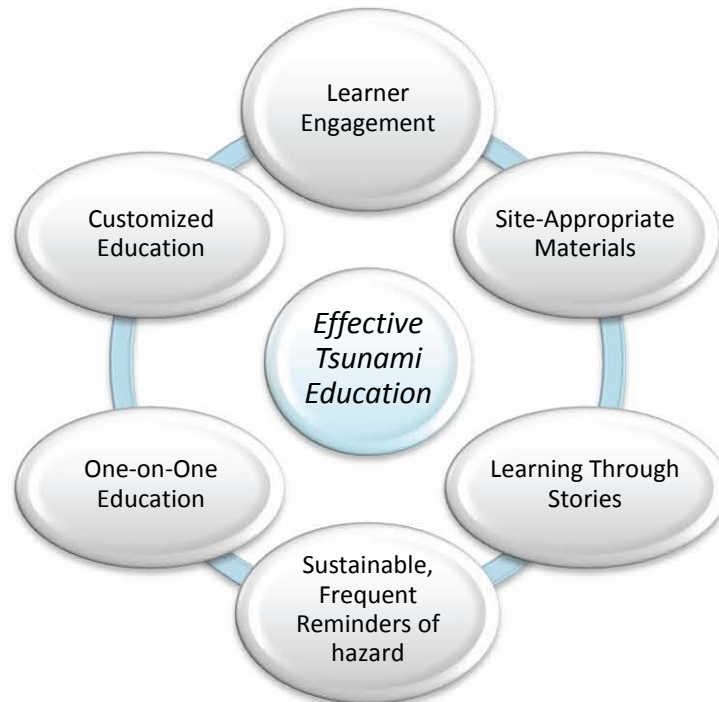
Tsunamis are a series of water waves produced by an abrupt disturbance that displaces a large amount of water. Submarine earthquakes, landslides or volcanic activity can all generate tsunami waves. Tsunami waves, unlike surface waves, move through the entire water column from the floor to the surface of the water. They also have very long wavelengths, resulting in long periods between crests and move very quickly through a body of water.

Hawai'i is at risk from both distant tsunamis, historically originating from the Pacific-Rim and also from locally-generated tsunamis, which are generated just off the Hawaiian coastline. Tsunamis rapidly propagate outwards in all directions from the tsunami generating disturbance quickly impacting nearby shorelines.

Tsunami waves can approach the shore in several different forms; steep walls of water, large breaking waves, slow rising flood or quickly rising surges of water. When a tsunami inundates a coastline, depending on the size of the waves, it picks up all things in its path, creating a fast moving, debris filled mass of water. Tsunami waves can inundate a coastline for several hours.

In the Hawaiian language, two words are used to describe tsunamis. The general term for tsunami waves is **kai e'e** and a more specific term of **kai mimiki** refers to the withdrawal of water as the trough of a tsunami wave arrives.

The following diagram illustrates concepts that have proven to be highly effective in the education, motivation and preparation of several Pacific coastal communities:



The Pacific Tsunami Museum

“We believe that through education and awareness no one should ever again die in Hawai’i due to a tsunami.”

The mission of the Pacific Tsunami Museum is to provide tsunami education for the people of Hawai’i and national and international visitors. The museum also seeks to preserve the social and cultural history of Hawai’i and promote economic development on the island as well as statewide. The museum also serves as a living memorial to those who lost their lives in past tsunami events.

Located in Downtown Hilo, the museum features a series of in-house permanent exhibits that interpret tsunami events affecting the Hawaiian Islands. The museum also contains public safety information and a wealth of resources and has a good collection of community educational materials created by the outreach department. The museum has a full-time archivist who processes and maintains all archival material and these materials are commonly used in the museum exhibits and used in special programs.

The museum has a policy making Board of Directors that includes representatives from various sectors of the business community. The museum also has a Scientific Advisory Council that includes internationally recognized tsunami experts. The Pacific Tsunami Museum, a non-profit, receives the majority of income from admissions and memberships and donations.

1) Customized Education

Based on the fact that each community is different, it is important to identify the current levels of knowledge, preparedness and perception of the hazard before considering a strategy for customized education. An effective and relatively simple way to identify these levels is to conduct a survey. Depending on the type of questions, a survey can show consistencies and inconsistencies in knowledge, perception of the hazard and level of preparedness.

✓ Please refer to Part Four where survey creation and surveying techniques are discussed. Surveys should always be focus group tested before use in the community.

Depending on the answers in the survey, you can begin to gauge what topics need further education. For example, if the community does not know the natural warning signs of tsunami, or they do not understand the TWS messages and how they will be expected to evacuate, there needs to be further education in these areas.

It is critical that organizations concerned with public safety be aware of the people’s understanding of the hazard in the region which they serve. This information will assist them in knowing what to expect in the next tsunami warning situation. It is vital that the roles of organizations concerned with public safety be clearly communicated to the public, as in our experience, expectations of public safety organizations do not always match the roles.



[The Pacific Tsunami Museum in Downtown Hilo.]

Communities are comprised of people with different learning needs and with differing levels of vulnerability and exposure to the tsunami hazard. For example, a child attending school in an evacuation zone would benefit greatly from tsunami education that emphasizes natural warning signs of a tsunami and safe evacuation procedures. In comparison, an elderly couple living 50 miles inland from the coast would benefit greatly from tsunami education with an emphasis on self-sufficiency following a destructive tsunami event.

Differing learning needs may also mean that tsunami education needs to be translated into the learner's native language, so wherever possible, tsunami educational materials should be available in other languages.

2) Engagement by Learner

For tsunami education to be effective, learners must be engaged. An indication of successfully engaged learners includes individuals that not only understand the materials, but feel confident to share it with others.

Tsunami education includes facts as well as actions which learners must know to be able to be responsible for their own personal safety – in the form of tsunami preparedness.

Here are some techniques for promoting engagement of the subject by the learner:

- Provide materials that increase personal identification with the subject.
- Encourage peer-to-peer discussion and co-learning.
- Provide an environment allowing the freedom of individual inquiry.
- Promote collaborative learning.
- Allow for project/community based learning.

✓ Please take time to read the *Talk-Story Sessions* document which is a good example of how to engage individuals in small groups and the outcomes of group interactions such as this.

Tsunami Evacuation Signage in Hawai'i County



The installation of colorful, bright, attention-grabbing signs informing residents and visitors when they will be entering or exiting a tsunami evacuation zone will be posted at select locations along the coast of Hawai'i during summer, 2008. The locations of these signs will mirror the tsunami roadblock sites indicated at the front of the local phonebook.

The signs serve as a permanent and constant educational tool for the public. The signs teach where hazard areas and safe areas are. Pedestrians and motorists can quickly identify where is safe and where is not.

The basic design template for the signs was taken from NOAA's TsunamiReady Program and from this basic stage they were developed by Mayor Harry Kim and his Cabinet through several working drafts to the signs you see today.

The signs are a great contribution to Hawai'i County efforts to increase tsunami awareness.

"[The signs] serve as an educational tool as well as a physical reference point"

Quince Mento, Civil Defense Administrator, 2008

3) Widely Available Site-Appropriate Educational Materials

Readily available educational materials, that are relevant to the location, will promote better understanding of the tsunami hazard and will increase interest. Institutionalization of tsunami education materials should be regularly pursued. Institutionalization, by which a material becomes an integral and standard part of the State and County's tsunami education protocol, will affirm the sustainability of resources. Wherever possible and appropriate, local knowledge and personal information such as quotes from community members, tsunami survivors etc., should be included in the educational materials.

✓ There is an abundance of material on tsunamis worldwide. Collecting as much of this information before you start will help you to begin thinking about how this information may be adapted to your location.

Educational materials can take a variety of different forms. Some examples are:

Rack cards	Fliers
Educational brochures and pamphlets	Posters
School curriculum	Website
Books	Multi-media video
Pocket-size materials	pieces/documentaries
Step-by-step guides	Exhibits

4) Learning Through Stories and Personal Identification

Learning through stories is one of the most effective ways to learn about events of the past, and in this case tsunami events. Every region has a history that has been captured through stories and passed down through generations. Look to the Kūpuna (Hawaiian: "community elders") in your area for advice on education that will embrace the knowledge of the past and the present.

✓ This document is an example of how personal stories and insights can be interwoven into materials which may result in a more flavorful, diverse, personalized piece which adds greater depth to the subject.



[Photograph of Millie Uchima, 1946
Tsunami Survivor, 2008]

The Pacific Tsunami Museum has collected several hundred survivor stories to feature in tsunami education for today and the future. These survivor stories have been collected on video tape and then transcribed.

5) Sustainable, Consistent and Constant Reminders

Sustainable, consistent and constant reminders of the tsunami hazard will keep the awareness levels of communities elevated. Depending on the material, both residents and visitors can be consistently educated on the tsunami hazard often. Intervals between tsunamis may be decades, so it is critical that information going to the public from various organizations be consistent, accurate and constant.

“I’ll tell people that they better not look at the tsunami, run away from the tsunami would be wise, just wise.”

Bing Kow, 2004



Please refer to Part Six, where some of the most effective reminders in Hilo are discussed. The Tsunami-Safe Disaster Preparedness Fair is used as an example of an annual event.



Public broadcast companies may warmly welcome an edited and ready-for-broadcast piece, often free of charge

Reminders of the hazard can take various forms, such as public service announcements (PSAs), outdoor and indoor educational signage or displays, memorials, annual events, testing of warning/communication systems, training exercises, museums and exhibits.

These reminders should be present in many different locations such as residential and commercial areas. PSAs are an effective way to reach large numbers of people, both residents and visitors, of all demographics.

6) One-on-One Education

In our experience, it is clear that one-on-one education which addresses the specific needs of the individual is by far the most effective method of tsunami education, resulting in the most engagement and personal identification with the issue. This method requires an abundance of time from the tsunami educator, but is highly effective. Small group sessions may, in some cases, be just as effective provided that an appropriate facilitation method is used and the groups do not exceed 10 individuals. In Chapter Six these tsunami education concepts will be discussed in greater detail using work done in Hilo as examples.



Key Question

How can existing educational materials or projects be adapted to your community and implemented effectively with the resources you have at hand?

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**Part Three: The Tsunami Education,
Preparation, and Recovery Project for
Downtown Hilo**

Tsunami

Kai'e'e



©Copyright Pacific Tsunami Museum

[Aerial view of the tsunami waves impacting Hilo during the 1946 tsunami.]

Both distant and locally-generated tsunamis share certain natural warning signs, so it is important to rely on your senses to detect a possible imminent tsunami.

What you might see: Water receding, exposed reef or rocks and stranded fish and boats.

"..then the water was receding, the water was receding and it went out, out, out. The river went dry, the bay went dry, then it went out passed the breakwater" Gabriel Manning, Tsunami Survivor

What you might feel: Before a locally-generated tsunami, you may feel an earthquake if you are on land; if you are in the water relatively near shore you may begin to feel strong currents as the water begins to withdraw or surge towards land.

What you might hear: You might hear water receding, or water approaching.

"It hit our ears first. A roar, louder than an ascending jet. Broke the blue and froze us all into stunned silence." Kimina Lyall, *Into the Blue*, 2006

What you might smell: As the water recedes during a tsunami event, you might smell the odor of the exposed ocean floor.

"They all came running to the edge of the pier, we're all looking down, the yuckiest gray color, real dirty muddy gray and the stench that came from the bottom of the ocean, you must think how old it is" Floyd Hoopi'i, Tsunami Survivor



PART THREE: THE TSUNAMI EDUCATION, PREPARATION, AND RECOVERY PROJECT FOR DOWNTOWN HILO

“If we can help anyone, we must do it. Government is not always going to be there and first responders will be affected themselves. We need to be a part of the solution.”

Susan O’Neill, Hilo Bay Watershed Advisory Group, 2008

Like many excellent ideas sitting on the back burner of busy minds, it takes a chance encounter of the right people to actually fan the flames and build the spark into a roaring fire. That is exactly what happened with the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo*.

At a monthly meeting of the Hilo Bay Watershed Advisory Group (HBWAG) in the summer of 2007, Dr. Walter Dudley, a Professor of Oceanography in the Marine Science Department at the University of Hawai‘i at Hilo and Scientific Advisor to the Pacific Tsunami Museum, gave a presentation on lessons learned in the 2004 Indian Ocean tsunami at Mokupāpapa Discovery Center in Downtown Hilo. Genevieve Cain, Tsunami Outreach Coordinator for the Pacific Tsunami Museum, was at the presentation, along with Susan O’Neill, spokesperson for HBWAG, who was facilitating the presentation.

“It was an important vision that found fertile soil. It was about collaboration with partners and building relationships in the community.”

Genevieve Cain, Pacific Tsunami Museum, 2008

During the “question and answer” period after the presentation, Genevieve Cain shared her idea of working more closely with businesses in the Downtown Hilo area to be better prepared for the next inevitable tsunami. The idea became a seed that sprouted quickly into a lively discussion with genuine possibilities.

The group reached an agreement about the need for a project focusing on public education and awareness, especially addressing the needs of the Downtown Hilo community. Ms. Cain’s goal, as Outreach Coordinator at the Pacific Tsunami Museum, is to educate more people about the dangers of tsunamis, as well as help businesses in Downtown Hilo create an evacuation and recovery plan.

Susan O’Neill, was familiar with Strategy 5.1 of EnVision Downtown Hilo 2025 Vision Focus Area: Promoting Health and Safety, and she knew that this would be a good “fit.”

Susan O’Neill contacted Susan Gagorik about a possible collaboration between EDH 2025, County of Hawai’i Planning Department and Pacific Tsunami Museum. Susan Gagorik responded with, “this is too exciting to wait on”



[The first team meeting]

Ms. Cain met with Mrs. Gagorik and Ms. Kylie Alexandra, Community Planning Assistant for the EDH:2025 Plan and they began to search for grants and draft a project outline. An announcement was

made by the State Office of Planning that Coastal Zone

Management funds were available for implementing projects addressing coastal hazards. As the team drafted a proposal they also sought engagement from key agencies in government and the community, who would later become the SPs. The funding source required matching funds and with the involvement of the SPs this came in the form of in-kind support.

The proposal contained the following key elements which would go into providing the skeleton of the *Tsunami Education, Preparation, and Recovery Plan for Downtown Hilo*:

- Small “Talk-Story” sessions where community members could raise concerns ask questions, and share their thoughts on the tsunami hazard;
- An attitudinal and knowledge based survey of downtown Hilo business owners and staff;
- Easy to read educational materials;
- The “*Tsunami Safe*” Disaster Preparedness Fair;
- A guidebook for business owners on how to prepare for a tsunami;
- The development of a comprehensive resource designed to be shared with other coastal communities – *Tsunami Education: A Blueprint for Coastal Communities*.

EnVision Downtown Hilo 2025

Over four years ago the Downtown Hilo community developed an organized vision of how they would like to see Downtown Hilo in the year 2025. This community Vision developed into *EnVision Downtown Hilo 2025: A Community-Based Vision and Living Action Plan for Downtown Hilo (EDH 2025)*.



The EDH 2025 Plan incorporates six Vision Focus Areas to develop a holistic Community-Based Living Action Plan: Creating Economic Vitality; Preserving Our Environment; Strengthening & Sustaining Our Community; Enhancing Education, Culture and the Arts; Promoting Health & Safety; and Managing Growth. Each Focus Area contains numerous actions that once implemented, would be working sustainably towards achieving the community vision.

It was within the Focus Area ‘Promoting Health & Safety’ that the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* took root. Initially, the Project goals comprised elements of two actions that called for developing evacuation plans and delivering all-hazard educational programs. Being that the scope for these two comprehensive actions was large, it was only natural that a new action would help to kick-start them. Hence, a new action focusing on tsunami education and preparedness was suggested and created by the Tsunami Museum:

Action 5.14: Develop and conduct a tsunami education, preparation, and recovery program addressing Pacific-wide and locally-generated tsunamis for Downtown Hilo

Hawaii Coastal Zone Management program

Hawai'i's Coastal Zone Management (CZM) program was approved in 1977, and this joint federal and state partnership seeks to protect, restore and responsibly develop Hawai'i's important, diverse, coastal communities and resources.

The remote location of the Hawaiian Islands, coupled with the sustainability that Hawaiian waters provide, has resulted in the entire state being designated a CZM area. The area also extends out to include the sea surrounding the State, which is consistent with Hawai'i's historic claims over waters of the Hawaiian archipelago based on early transportation routes and submerged lands.

The Hawai'i CZM program focuses on the complex resource management problems of coastal areas in the state that is under the highest stress. Stewardship, planning, permitting, education and outreach, technical assistance to local governments and permit applicants, policy development and implementation, and identification of emerging issues and exploration of solutions are some of them.

Under the umbrella of CZM, is the Hawai'i Ocean Resources Management Plan (ORMP) which was published in 1991 and developed by a multi-agency, cabinet-level council which included private sector and non-governmental representatives. It is under ORMP objectives, outlining the need for public education on coastal hazards, that the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* centered on and ORMP became the primary source of funding for this project.

The proposal was submitted on August 21, 2007 to the Department of Business, Economic Development & Tourism, State Office of Planning Coastal Zone Management Program.

The contract was executed in December 2007 and was a short six-month project, the performance period being December, 2007 to June 31, 2008. Within days of the contract being signed, an initial meeting of all the Partners was held and a project timeline and framework mapped out.

At the first Supporting Partner meeting, held on December 5, 2007, the group developed the framework for the Project, which included the following objectives:

- Educate the Downtown Hilo community on the tsunami hazards of the past and inform them of the current high tsunami risk;
- Encourage the implementation of preparatory measures for business owners and residents;
- Develop evacuation strategies for Downtown Hilo using Pacific-wide and locally-generated tsunami scenarios;
- Educate public on the natural warning signs of tsunamis;
- Take the first steps in developing a culture of tsunami preparedness.



[Photograph from a Supporting Partner meeting]

Motivated by the altruistic goal of saving lives in future tsunami events, the LSPs and SPs volunteered their resources, time and energy to become involved and engaged in the planning of the "Tsunami Safe" Disaster Preparedness Fair. As the meetings continued in 2008, plans for speakers, vendors, exhibits and activities were solidified.

At the same time plans were developing for the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo*, Connections Public Charter School Principal John Thatcher was working on a grant with the East-West Center at the University of Hawai'i at Mānoa and with State Farm Insurance, to fund a special course on disaster education. Mr. Thatcher asked Eric Bollen, a 7th- 8th grade social studies instructor, if he would be interested in taking on this program. He agreed and created an extra credit disaster education class on Fridays with a group of 10 students.

Project Stakeholders

Lead Solution Partners

Pacific Tsunami Museum
County of Hawai'i Planning Department

Supporting Partners

Connections Public Charter School	Hilo Bay Watershed Advisory Group
EnVision Downtown Hilo 2025 VisionKeepers	Hilo Downtown Improvement Association
County of Hawai'i Civil Defense	Kanoelehua Industrial Area Association
County of Hawai'i Police Department	Oregon State University Sea Grant Program
County of Hawai'i Fire Department	Pacific Tsunami Warning Center
County of Hawai'i Department of Research and Development	Tsunami Memorial Institute
University of Hawai'i Sea Grant	National Oceanic and Atmospheric Administration

As a SP representing Connections on the *Downtown Hilo Tsunami Education, Preparation and Recovery Project*, and a member of the EDH 2025 VisionKeepers, Mr. Daguman was involved with both efforts and felt they could be combined for an optimal educational experience for the students. He also volunteered the use of the school as the site for the *Tsunami-Safe Disaster Preparedness Fair*. Students in the class committed to produce several exhibits for the fair highlighting what they learned in the class.

"It was a very student-focused program. The students learned about what disasters have affected the Big Island, the different types of natural disasters including tsunamis, how to prepare for a disaster and the recovery process."

Kaholo Daguman, Connections Public Charter School, 2008

The students also attended a meeting with County of Hawai'i Mayor Harry Kim, the County of Hawai'i Civil Defense Administrator and created a Website. A highlight of the class involved the participation and certification in

TIPS:

- Collaboration is the key to achieving successful outcomes that can be sustained.
- Customize education to the needs of the community in question.
- Identify ways or elements of a program that will encourage interest, engagement and motivation of your community to learn about and prepare for the next tsunami.

Community Emergency Response Team (CERT) training from the County of Hawai'i Fire Department, which was adapted for the age group and shortened to a 12-hour course. Students received instruction on basic disaster response skills such as fire safety, search and rescue, team organization and disaster medical operations.

The combination of the *EDH:2025 Community-Based Action Plan*, Connections' all-hazard disaster grant, and the contributions from the key SPs gave the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* great strength and spirit.

"My students really enjoyed the CERT style training they received from the fire fighters. It gave them the skills to use in a disaster situation. This also gave them the confidence to teach others, which they all seemed to really enjoy."

Eric Bollen, Connections Public Charter School, 2008



Key Question

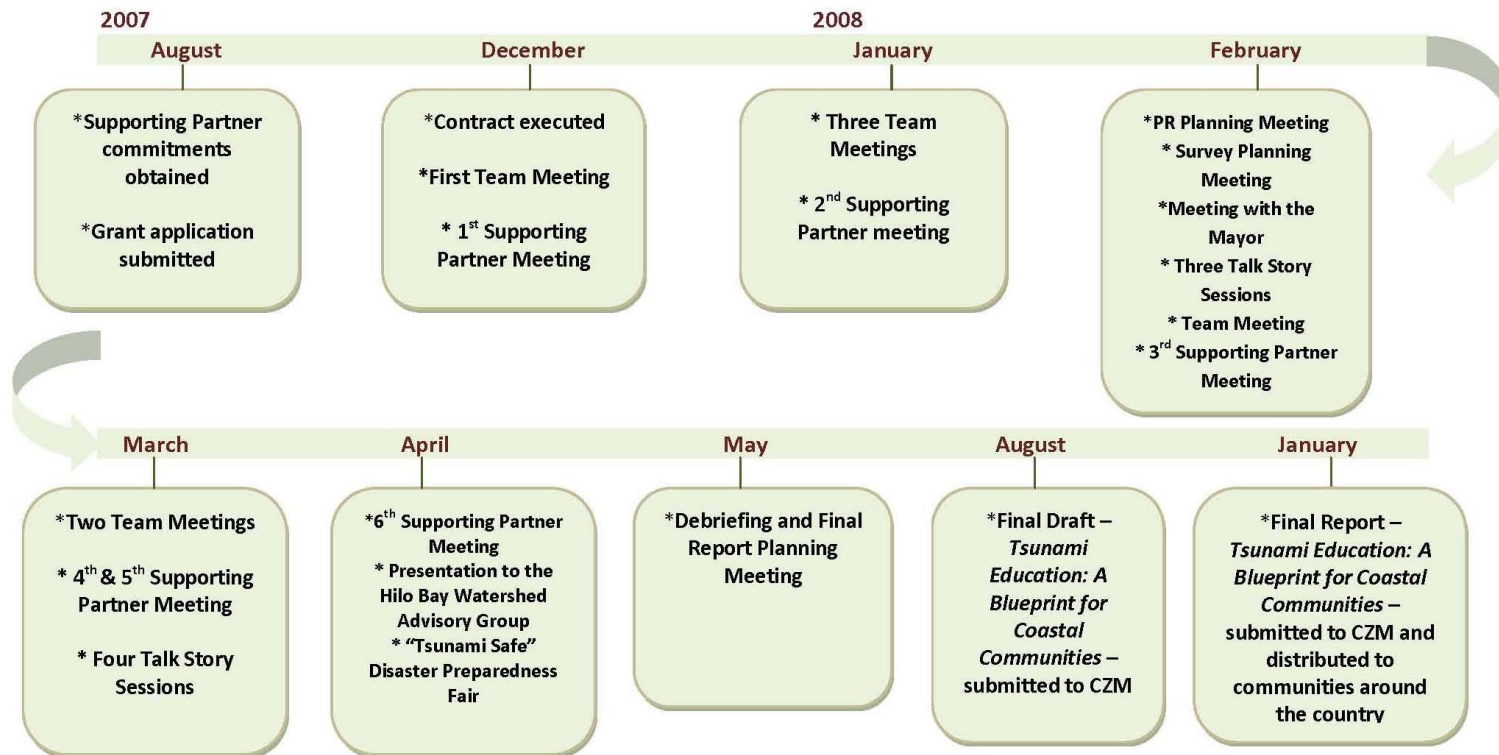
What sort of customized educational program will be suitable for your community?



Tsunami Education, Preparation, and Recovery Project for Downtown Hilo



Timeline of Events: August 2007 – January 2009



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[“Talk-Story” Session at the Pacific Tsunami Museum.]

When disturbed, water in any basin -- a bathtub or an ocean -- will slosh back and forth for a period of time depending on the shape and size of the basin. This sloshing is called seiche (pronounced “saysh”). The period of oscillation depends upon the body of water: larger bodies of water produce longer periods; and greater water depths produce shorter periods (Dudley & Lee, 1998).

An tsunami wave may set off a seiche and if the following tsunami waves arrive with the natural oscillation of the seiche, water may reach even greater heights than from the tsunami alone. The large heights that tsunami waves reach in bays may be attributed to the combination of the tsunami waves and the seiche waves arriving at the same time.

*He lawai`a no ke kai papa`u, he pōkole ke aho;
he lawai`a no ke kai hohonu he loa ke aho.*
A fisherman of the shallow sea uses only a short line;
a fisherman of the deep sea has a long line.



PART FOUR: COMMUNITY OUTREACH AND DATA COLLECTION

“Take Care of Yourself - Take Care of Others; Be Tsunami Safe”

The Project, driven with the idea that we learn through stories and shared experiences, coupled with the importance of personal preparedness and self-reliance, adopted a motto that would convey this to the community. During one of the SP meetings, County of Hawai‘i Fire Department Chief Daryl Oliveira came up with “Take Care of Yourself - Take Care of Others; Be Tsunami Safe”.

Following the ideas initially outlined in the proposal, SPs agreed that tsunami education should address the gaps in knowledge or the major concerns as voiced by the community. In order to achieve this, the group initiated the following tasks:

- Open “Talk-Story” sessions
- A survey of Downtown Hilo businesses and organizations
- “Tsunami Safe” Disaster Preparedness Fair for the public

Efforts to achieve public participation were centered in a strong public relations campaign through the media, presentations to local groups and face-to-face individual contact.

“The essence of this is that we really want to give the community a chance to voice their questions, concerns and suggestions, so they can be in the ‘driver’s seat’ when it comes to their education.”

Genevieve Cain, Tsunami Outreach Coordinator, Pacific Tsunami Museum, 2008

Public Relations

Through local media, Project Manager Christian Kay of the County of Hawai‘i Planning Department and Genevieve Cain, Tsunami Outreach Coordinator of the Pacific Tsunami Museum, invited the community to join in the “Talk-Story” sessions and generated interest in the “Tsunami Safe” Disaster Preparedness Fair in April. Media coverage was generated through PSAs and interviews with radio personnel and reporters.

Presentations

Several presentations were given to local community groups and organizations both before the Project was officially underway and throughout the Project term. Every opportunity to showcase the Project was utilized and this had a noticeable impact on how well the word spread within the community. Two key presentations have been highlighted below.

In March 2008, Genevieve Cain was invited to be a guest speaker at the Pacific Risk and Management 'Ohana (PRiMO) annual conference. At this event, largely attended by individuals associated with risk management, Ms. Cain shared the work done at the community level in Hilo with regards to tsunami education. The group was very interested in the Project and offered support in many capacities.

Sponsored by the HBWAG, a presentation entitled "Tsunami Safe: Learn about Tsunami Preparedness" was held on April 10, 2008 at the Mokupāpapa Discovery Center. At the event, Ms. Cain and Mr. Kay offered a preview of the "Tsunami Safe" Disaster Preparedness Fair. The evolution of the entire Project was also featured with an interactive discussion following the presentation.

The "Talk-Story" Sessions

"Don't depend on first responders. They may be stuck somewhere themselves. It is up to every individual to learn how to respond to a tsunami disaster."

Community Member, 2008

From February 15 to April 10, 2008, nine "Talk-Story" sessions were conducted at various locations and times in Downtown Hilo. The "Talk-Story" sessions provided informal and comfortable opportunities for the public to attend, chat, and, "Talk-Story," about the tsunami hazard, as neighbors would. The topic of discussion revolved around past events and the threat of future tsunami affecting Downtown Hilo.

Throughout these "Talk-Story" sessions, community members voiced their concerns and raised important issues relating to the tsunami threat in Hilo. In addition, participants were gauged on their current level of tsunami preparedness and their understanding of the hazard.

A small, handy, laminated *Tsunami Safe Quick-Step Guide* was given to each participant with essential information on how to recognize locally-generated and Pacific-wide tsunamis, preparation guidelines, helpful websites and emergency telephone numbers. A major element of this project was to encourage the public to be self-reliant in the next tsunami event. The "Talk-Story" sessions provided both

Community Emergency Response Team (CERT)



[Photograph from the CERT training program]

The Community Emergency Response Team (CERT) program provides basic training and education about disaster preparedness for hazards that may affect a community. CERT volunteers are given instruction on basic disaster response skills such as fire safety, basic search and rescue, and first aid which they may use to take care of themselves and their families post-disaster.

Upon completion of the program, CERT participants have a better understanding of the potential threats to their home, workplace and community. They also have the option to form an official CERTeam, consisting of three or more trained individuals, who would be directly assisting the Hawai'i County Civil Defense. As members of a CERT, they can apply the training they received in the program toward giving critical support to their family, neighbors and co-workers in their immediate area until help arrives. When help does arrive, the CERT member can provide crucial information and support the efforts of first responders.

The CERT program is sponsored by the collaborative efforts of three County Agencies: The Hawai'i County Fire Department, Civil Defense and the Department of Research and Development.

information on how to tailor our educational efforts as well as provided us with an opportunity to educate the public on crucial information such as Nature’s warning signs. These natural warning signs are:



[The first “talk-story” session held at the Pacific Tsunami Museum.]

- **Water receding or surging inland**
- **An earthquake**
- **A strange sound from out to sea**

Participants greatly appreciated receiving accurate and comprehensive information on tsunamis. They enjoyed the opportunity to share their thoughts and concerns, provide input toward the Project and raise awareness about tsunami preparedness. Flyers

posted throughout Downtown Hilo and personal invitations to merchants helped publicize the Project. Project members noted that the personal touch was very effective, contributing to greater attendance.

Tsunami awareness materials, refreshments and a drawing for a tsunami disaster preparedness kit were provided at each of the sessions and were a big hit with participants.

At each “Talk-Story” session, a facilitator used three questions to initiate discussion. In particular, question one which asked, “What comes to mind when we say the word ‘tsunami’?” generated some common feelings and themes:

- Feelings of confusion and fear.
- Abstract notions of damage and destruction.
- Waves surging inland.
- The 2004 Indian Ocean tsunami.
- Memories of Laupāhoehoe.
- The old buildings which used to line the Bayfront.
- People running mauka (inland, to the mountain) -- the “running photo”.
- Concerns over safe places and shelters.
- Earthquakes.
- Personal survival skills.

The participants were asked to share something that they would like to know about tsunamis with our promise that we would research and respond to the question at the Fair. The most commonly asked questions and concerns from the “Talk-Story” participants were condensed into 10 key questions. The questions and their answers were featured in an exhibit at the “Tsunami Safe” Disaster Preparedness Fair and a handout was created.

“I know what a tsunami is, I’ve been through it; but the later generations, they don’t know what a tsunami is.”

Community Member, 2008

Survey of Downtown Hilo Merchants and Organizations

In 2007, Ms. Cain developed a survey to better understand the public perception of the tsunami hazard and the current levels of knowledge. Ms. Cain used the highly successful survey conducted in Seaside, Oregon as her template and by February the survey had gone through several drafts, had been tested by several community groups and individuals and was finalized ready for distribution.

Ms. Cain enlisted the help of two University of Hawai‘i at Hilo Marine Option Program (MOP) University Students, Nikki Zellner and Carla Konz. Together with Pacific Tsunami Museum intern, Michelle Gruszczynski, and Rachelle Ley, an intern with the County of Hawai‘i Planning Department the team worked diligently on this very significant part of the Project.



[The Survey Team in Downtown Hilo]

TIPS:

- A survey is a good way to gauge community knowledge and levels of preparedness. In doing a survey, you may meet others that would like to collaborate with you on tsunami education programs.
- Learning through stories is an excellent way to get the community to identify with the dangers of tsunami hazards and their relevance to the present.

Ms. Gruszczynski, Ms. Zellner, Ms. Konz and Ms. Ley logged many hours as they went door-to-door conducting the survey for Downtown Hilo merchants. Instead of dropping off the survey and collecting them later, the interns conducted face-to-face interviews, asking questions and recording answers. This method was very successful and provided individualized attention; many attended the “Talk-Story” sessions because of this individual contact.

Hawai'i County Resource Center

The Hawai'i County Resource Center (HCRC) is a program of the County of Hawai'i Department of Research and Development whose mission is: "...to facilitate the sustainability of Hawai'i Island through community-based collaboration and capacity building services." The HCRC seeks to develop networks, provide access to information and resources, and help connect local communities and government agencies, so that residents of Hawai'i Island have the choice and capability to become more self-reliant and resilient to hazards.

"Project Kumiai takes its name from the Japanese concept of the neighborhood association that was deeply rooted in Hawai'i's plantation era. The Kumiai thrived in a time when people lived simply with very little, and there was a mutual understanding that neighbors helped each other and worked together. It once filled a variety of social functions, from taking care of a grieving widow, to organizing special events. Through the Kumiai, a communication network was established to help people stay informed on local politics and issues, and to connect with other Kumiai's."

Frecia Basilio, Hawai'i County Resource

The Kumiai philosophy forms the foundation of the HCRC program. Through island-wide initiatives and core services, HCRC provides assistance and resources that help to build and strengthen informal communication networks among Hawai'i Island communities. The *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* dovetailed with the HCRC's disaster preparedness initiative.

HCRC's commitment to the project included help with community outreach and engagement at the "talk-story" sessions, support and assistance with the Project implementation and coordination of the Fair. HCRC focused on these capacity-building services to assist the Downtown Hilo community in becoming more tsunami resilient.

The survey produced helpful and promising results. A high percentage of those surveyed responded with accurate information about tsunamis and knew to get to higher ground immediately when a powerful earthquake occurs. Ninety-nine percent of those surveyed knew that tsunamis are caused by an earthquake under the ocean. When asked how important they thought a survey such as the one they were taking was, seventy-two percent responded that it was "very important".

The "Talk-Story" sessions and the survey enabled the LSPs and SPs to gauge the tsunami awareness and knowledge level of the community and use this to tailor the education effort. It was crucial that these outreach

and data collection elements of the Project were conducted early, as this information was then incorporated into exhibits and information for the "Tsunami Safe" Disaster Preparedness Fair on April 19.



Key Questions

How prepared is my community for the next tsunami?

How can I engage the community to prepare for the next tsunami event?

Appendix one: "Talk-Story" Compilation;
Appendix two: Survey;

Part Five: “Tsunami Safe” Disaster Preparedness Fair

Receding Sea

Kai mimiki

[Photograph of water receding at Mahukona, Hawai‘i during the 1946 tsunami.]

On the morning of April 1, 1946 the first warning for some people that a tsunami was approaching was the sight of the water receding from Hilo Bay. The exposed sea floor attracted an interested crowd of onlookers who attempted to collect fish and other stranded sea life flopping around in muddy puddles that sea water had left behind.

When a tsunami is generated, it propagates outwards in all directions from the source; in some ways like ripples in a pond when a stone is thrown in. Tsunamis are a series of waves, often with wavelengths of 100 miles between crests, and depending on what part of the tsunami waves arrives first, the water will either recede or surge inland. If the trough of the wave arrives first, this will result in the water pulling back and receding; the crest arriving first may appear as a rapidly rising surge of water. With such long wavelengths and a dozen or more waves, it could take hours for all of the successive waves to hit the coastline.



PART FIVE: “TSUNAMI SAFE” DISASTER PREPAREDNESS FAIR

“We wanted it to be a friendly, open, fair atmosphere, but we did not want to lose sight of the message.”

Christian Kay, 2008, County of Hawai‘i Planning Department

The Lead and Supporting Partners of the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* wanted the “Tsunami Safe” Disaster Preparedness Fair to provide concise and accurate information to the community on tsunamis in a welcoming, family-oriented setting. The SPs, who comprised the majority of exhibitors and speakers, took to heart the motto: “Take Care of Yourself -Take Care of Others; Be Tsunami Safe,” which helped create a neighborly approach. The fair had evolved to include the information, concerns and thoughts community members had raised based on data collected from the outreach efforts outlined in Part Four.

The Fair was held at the historic Kress Building, now the site of Connections Public Charter School on Saturday, April 19, 2008 to coincide with the State of Hawai‘i’s April “Tsunami Awareness Month.” Numerous LSP and SP meetings to plan this first-ever Tsunami Safe Fair in Downtown Hilo resulted in a successful, smooth running, activity-filled event from 9 a.m. to 3 p.m. for the Hawai‘i Island community.



Everyone who walked through the door received an empty, re-usable paper bag so that they could browse and pick up materials that were offered to them throughout the Fair. Some of these materials included:

- “Tsunami Safe Quick-Step Guide”;
- 10 Important Facts about Tsunamis;
- 10 Key Questions from the Community with answers.

[Rachelle Ley, Intern with the County of Hawai‘i Planning Department attaches a banner to a fence in Downtown Hilo]

A colored ticket was given to each visitor upon entry to the Fair. Volunteers at the front desk changed the ticket reels each hour to a different color to coincide with hourly prize drawings. Disaster kits and items such as flashlights and blankets, Downtown Improvement Association and “Tsunami Safe” Disaster Preparedness Fair t-shirts and other items were a big hit and encouraged people to remain at the fair for at least an hour.

As an LSP, the Pacific Tsunami Museum’s Executive Director Donna Saiki devised a special program on the day of the Fair, offering two presentations at the tsunami museum on tsunamis in Hawai’i and lessons learned through stories. Numbered tickets distributed at the door provided free entry to the Pacific Tsunami Museum all day.

The following elements combined to form a successful fair:

Publicity

- **Radio and print advertising**
Event flyers were printed in mass and the SPs took on the role of distributing these within their circles. The Hilo Downtown Improvement Association (HDIA) took a lead role in this, going on foot to downtown Hilo businesses and personally inviting business owners to the event.
- **Flyers posted in Downtown Hilo**
Flyers were also posted at various locations throughout Downtown Hilo and at various other locations in the community such as the University of Hawai’i at Hilo campus and various elementary, intermediate and high schools in the area.
- **Banners**
A local company was hired to create banners to advertise the event. These banners were posted on Kamehameha Avenue for passers-by to see.
- **Email lists**
Each SP was asked to email the flyer for the fair to their business/organization’s mailing list/members etc.
- **Personal invitations**
Everyone involved with the Project was asked to extend personal invitations to friends, family and colleagues.

Opening the Fair



On the morning of April 19, 2008, Kumu Roxane Kapuaimohalakai-kalani Stewart began her unique Hawaiian chant in the cavernous hallway of the Connections Public Charter School located in the historic Kress Building in Downtown Hilo. Unadorned by flowers and draped in two kīhei, the sacred Hawaiian ceremonial dress, one blue and one green to represent the colors of the ocean, Ms. Stewart captivated the crowd gathered for the opening of the first ever “Tsunami Safe” Disaster Preparedness Fair. Her passion, intensity and sincerity, manifested by her compelling voice, hand gestures and facial expressions as she looked towards Hilo Bay, mesmerized the audience.

Before they had even begun to work on their display for the “Tsunami Safe” Disaster Preparedness Fair, Ms. Stewart and her students from Keaukaha, paid homage to the deities Hinaka’alu’alumoana and Kahinali’i in Hilo Bay. They acknowledged the deities, brought ho’okupu (offerings) and then asked that their lives and the land would be spared during the next tsunami.

Logistics

Set-up:

- The majority of the space organization and set up for the fair was conducted by students from Connections Public Charter School, who were also presenting projects or work done relating to tsunamis and other hazards. The students worked in shifts for two days leading up to the fair.
- On Friday April 18, the evening before the fair, SPs and volunteers worked with the students at Connections School setting up tables, chairs, etc.
- Colorful artwork and displays by Connections School artists interpreting tsunamis and other natural disasters were placed throughout the exhibit space.

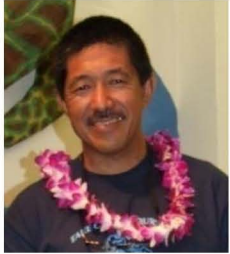
The Fair:

- LSPs, SPs and volunteers wore blue shirts with the theme “Take Care of Yourself - Take Care of Others; Be Tsunami Safe,” printed on the front and the Tsunami Safe “Quick-Step Guide” printed on the back.
- Tickets were distributed upon entry, serving as drawing numbers for prizes, free entry to the Pacific Tsunami Museum for the day and record of attendance.
- Refreshments were available to everyone; SPs and volunteers received lunch tickets; lunch and snacks were available for purchase as a fundraiser for Connections Public Charter School.
- Master of Ceremonies services by Alice Moon of Alice Moon & Company kept everyone aware of the schedule and her friendly, fun and informational commentary maintained a high level of energy and welcoming atmosphere throughout the day.

Ongoing Activities

- **Exhibits and Presentations**
There were 22 exhibits at the fair, representing a wide range of organizations, community groups and federal, state and county agencies. Representatives from each one were on-hand to provide information, answer questions and raise awareness on the resources available for tsunami education, preparation, and recovery.
- **Keiki Corner**
The keiki corner was manned by volunteers with tsunami worksheets, coloring pages and crayons on hand for children.
- **Public Awareness Survey**
The same survey conducted in Downtown Hilo in the months leading up the fair was conducted during the fair to continue gauging the public’s knowledge of tsunami events and mitigation.
- **One-on-one Business Preparedness Consultations**
Genevieve Cain, Tsunami Outreach Coordinator at the Pacific Tsunami Museum provided business preparedness guidance and recommendations.

Speakers



Quince Mento, County of Hawai'i Civil Defense Director was born and raised on the Big Island and began his career as a Honolulu firefighter after graduating from the University of Hawai'i at Mānoa. He returned to the Big Island and joined the Hawai'i County Fire Department in 1985 and in April 2008 became the Hawai'i County Civil Defense Administrator. At the Fair, he gave the welcoming address and talked about the importance of personal preparedness.



Bob "Steamy" Chow has lived through several tsunami events, each time trying to educate and increase the awareness in the community. He serves on the Board of Directors at the Pacific Tsunami Museum and shares with the students at Connections Public Charter School his experiences of past tsunamis. At the Fair he recounted being a police officer during the 1946 tsunami.



Susan O'Neill was in Thailand visiting her son in Bangkok when the tsunami hit in December 2004. She was invited by a government official in the affected area to be an observer of the tsunami aftermath. The purpose of this request was for an ordinary person to "bring the story back to the United States"



Donna Saiki has been a voluntary Executive Director of the Pacific Tsunami Museum since 1998. Ms. Saiki is a wonderful story teller and infuses local stories and experiences with accurate scientific information about tsunamis. She gives regular presentations to visiting school groups and tourists. She gave two forty-minute presentations at the Pacific Tsunami Museum for all ticket holders to the fair.



Dr. Nathan Becker is an oceanographer with the Pacific Tsunami Warning Center (PTWC) in 'Ewa Beach, O'ahu spoke about the TWS in the Pacific and how tsunamis are detected and warnings are given.



George Curtis has spent a large portion of his career focusing on tsunamis in Hawai'i; he is currently the Hawai'i County Tsunami Advisor and a Scientific Advisor to the Pacific Tsunami Museum. Mr. Curtis spoke about current tsunami research in Hawai'i and the PTWC in the Pacific.



Millie Uchima is a tsunami survivor from both the 1946 and 1960 and gave a vivid personal account of her experiences. She is currently a docent at the Pacific Tsunami Museum and expressed the importance of tsunami education.



Patrick Corcoran is a coastal hazards outreach specialist with the Oregon State University Sea Grant Program. He outlined tsunami preparedness and mitigation on the Oregon Coast and how it can be applied to Hawai'i and elsewhere.



Jeanne Johnston described her personal account as a 6 year old girl during the 1946 tsunami in Keaukaha. She spoke about the effect of that tsunami on the community and how it changed her life. Jeanne has served in many capacities that have facilitated her in educating the State of Hawai'i about the tsunami hazard.



Daryl Oliveira, County of Hawai'i Fire Chief, provided closing remarks and emphasized the theme of the fair. Chief Oliveira takes an active role in hazard education, believing that it is the best preventative measure in saving lives.

The first ever “Tsunami Safe” Disaster Preparedness Fair was an inspiring success all around. Comments from those attending the fair were very positive and the LSPs and SPs felt that all of the Project’s goals for the Fair had been met. A volunteer group of over 54 people worked tirelessly before, during and after the fair to ensure that the event ran smoothly. It was a highly successful event for the community focusing on tsunami education, preparation, and recovery. Based on the tickets distributed, 245 people attended the event and 100 people attended the special presentations at the Pacific Tsunami Museum.

Immediately after the take-down and clean up of the fair, LSPs and SPs held a debriefing. Almost all of the partners and exhibitors were present.



[The fair logo was designed by Connections Public Charter School students, April 2008.]

Critique: What worked well?

At the debriefing session, the following comments were made by partners:

Venue/Logistics

- Great venue for fair in Downtown Hilo; very appropriate historically and currently.
- Alice Moon was a Great Emcee – personality and commentary kept the energy and excitement of the event going throughout the day.
- Set up and take down of tables and chairs was organized and efficient.
- Student art interpreting tsunamis and natural disasters decorating the walls was colorful and interesting.
- Volunteers, Lead and Supporting Partner members wore the same shirt, making those involved with the fair easy to identify.
- Lunch was provided for exhibitors/vendors and volunteers and this was great.
- The Emcee and program schedule was flexible.
- Good publicity of the event.
- Event was held on a Saturday when the Farmers Market is open, bringing in more people in the area.

Lead and Supporting Partners and Volunteers

- Partners worked extremely well with one another, and with those who attended the fair. Great teamwork.
- Greeters at the door welcomed guests. Worked well.
- The Hilo community celebrated Earth Day just the week before.

“First responders have said that we cannot depend on the government in a disaster; the community needs to pull together. This event showed that it can be done.”

Susan Gagorik, 2008

- This made it very convenient for the exhibitors, who had already prepared their material.

“Tsunami Safe” Disaster Preparedness Fair

- The diversity of people, young and old, who attended the fair was wonderful.
- The Hawaiian chant “No Ke Kaiakahinali’i” as the opening to the fair was a very fitting cultural connection.
- The diversity and number of speakers was excellent.
- The diversity, representation and amount of resources – 22 exhibitors and presenters. They were able to connect with each other, establish relationships and stayed until the end of the fair.
- Personal survivor story sessions were very popular.
- Speakers were given the option of being in a classroom or out in the main stage area.
- Prizes and Giveaways were very popular.
- Free one day entry passes to the Pacific Tsunami Museum was a great idea.

Critique: What could have been improved?

Venue/Logistics

- The venue space was difficult to work with. People were reluctant to move down the hall to the stage.
- The noise level from the concessions area exacerbated the poor acoustics of the building and created high noise levels in the main stage area that made it difficult to hear the Emcee and speakers down the hall.
- Larger signage indicating the location of the different sessions, areas of activity.
- Location of speakers, activities should be listed in the program.
- Shorten the event by two hours. Suggestion: 10:00 a.m. – 2:00 p.m.
- Ensure safety on stage and entire venue.
- Women’s restroom was inadequate.

Lead and Supporting Partners and Volunteers

- More time to prepare for the event.
- There was a disconnection between some of the exhibitors.

TIPS:

- An event or competition is an excellent way to engage a community as a whole.
- Collaborate with a school or community organization to host an event.
- Do not be afraid to think outside the box!
- At an event, always honor the host culture.

“It was a great event! The diversity of resources and people that came together was phenomenal!”

Community Member, 2008

“Tsunami Safe” Disaster Preparedness Fair

- Hold a contest. Suggestion: Poster contest on fair.
- More publicity. Suggestions: Include publisher and other media heads to be on the program; write articles/press releases and submit them with photographs to newspapers.
- Tag fair onto a larger event. Suggestion: County Fair, have a booth at the Saturday Farmers Market, smaller mobile events.
- Get more families and children to attend the event. Suggestions: Flyers to schools, involvement from schools and youth organizations, churches. Provide transportation from schools to the event.
- Add a brief biography on the speaker in the program.



[T-Shirts designed by Connections’ students were worn by Partners and volunteers at the fair]

Exhibitor Evaluation

To gauge the effectiveness of this collaborative Project with Lead and Supporting Partners, an exit evaluation form was distributed to all of the exhibitors. Based on the forms received, on a scale from 0 (poor) to 5 (very successful) 42.86% ranked the fair with a “5 – very successful,” 50% ranked the fair with a “4 – successful,” and 7.14% ranked the fair “3 – average.” When asked if they would participate as an exhibitor if the fair was held next year at another location, an overwhelming majority, 13 out of 14 or 92.86%, responded positively with a “yes.” Other findings:

- They liked the exhibits and presenters at the fair.
- Suggested more advertisement would increase attendance.
- Suggested other exhibitors/presenters who should be contacted for similar future events.



Key Question

How can each individual in this community and this community as a whole be self sufficient before, during and after a tsunami?

Appendix Three: “Tsunami Safe” Quick-step Guide

Appendix Four: “Tsunami Safe” Disaster Preparedness Fair Program

Appendix Five: Ten Important Facts about Tsunamis; Ten Key Questions about Tsunamis

Appendix Six: Ten Key Questions (and Answers) from the Community



The LSPs, SPs and volunteers for the Tsunami Safe Disaster Preparedness Fair.

As more tsunami education is conducted, the future begins to look somewhat brighter. In the next tsunami there will be inevitable losses in property and damage to infrastructure but with a more educated community there will be lower death tolls.

Every individual living, working or visiting an area that is at risk from tsunamis should understand the tsunami hazard and the correct actions during a tsunami event. In the survey conducted in downtown Hilo for this project, 100 people were asked:

“Do you think it is the sole responsibility of every individual, school, business and entity near the water to prepare for the next tsunami?”

56% Yes, completely.

42% Yes, but more guidance is needed.

These data reinforce the message that tsunami education and awareness is critical and it is through tsunami education programs and community outreach efforts that education and guidance can be given.



PART SIX: PROJECT EVALUATION & CONCLUSION

Increasing the tsunami resilience of a coastal community to a distant or locally-generated tsunami hazard is a long-term venture. In many scenarios, this venture, or ‘vision’ of increased resilience, has proven to be most effectively sustained when driven by the community at a grassroots level. Delivering tsunami education to a community, from long-term residents, to visitors, to state and county planners is a crucial element of increasing community resilience and is greatly effective when it complements and adds to any existing mitigation programs in place.

Despite this, or other documents, providing a general tsunami education ‘path’ to follow, it should be understood that “one shoe does not fit all” and that all communities are different and unique. Social organization, past frequency of events, infrastructure and current mitigation programs are just some of the factors that should be taken into consideration when devising customized, consistent educational programs.

This document serves as a model for all coastal communities that wish to embark on any level of tsunami educational program. It embraces and builds upon similar work done at the community level elsewhere in the world and seeks to highlight the differing techniques and processes that may be considered for adaptation and use in other communities. We would also like to take this opportunity to assure you that no matter how small the tsunami education initiative, funds available, or level of experience or knowledge in the community, that every step no matter how seemingly small, contributes to the overall goal, which is to ultimately save lives during the next tsunami.

In this section we will discuss the key elements, introduced in Part Two, of a sustainable tsunami education program in the context of the *Tsunami Education, Preparation and Recovery Project of Downtown Hilo* and other educational programs that exist in Hawai'i County, and how they may be improved or adapted.

“Customized education is all about wearing different hats; you educate, facilitate and if conducted effectively, learn yourself”.

Genevieve Cain, 2008

1) Customized Education

Before any tsunami education can take place, it is critical that the educator be educated, both in the tsunami hazard and also in the levels of knowledge, awareness and perception of his/her audience.

“People usually arrive at a meeting/gathering or presentation with a ‘full cup’; help them empty their ‘cup’ at the start of the session”

Patrick Corcoran, 2008

As discussed in part two, a one-on-one discussion, a survey or an informal group discussion are some of the most effective ways to engage a learner. In our experience, community members that attend a presentation on tsunami education have information to share and if not addressed early in the session may distract them from the information given by the presenter/educator. Helping participants to ‘empty the cup’ will increase learner engagement.

Education and Forward Community Momentum

In Hawai‘i County several programs and initiatives highlight the importance of customizing education and/or providing the tools to assist in the process of customizing education. The Hawai‘i County Department of Research and Development together with the Hawai‘i County Civil Defense and Hawai‘i Fire Department have provided the opportunity for communities to receive CERT training. In addition to CERT training being multi-hazard and applicable on a national scale, the focus of the Hawai‘i County CERT trainers is to provide community specific education on the various local hazards that will effect a given community.

“The (CERT) trainers really make the effort to include information for that particular district or neighborhood”

Frecia Basilio, Hawai‘i County Research & Development, 2008

The Hawai‘i County Department of Research and Development is also incorporating the award-winning Map Your Neighborhood (MYN) program in to their work in building community resilience. This program contains a customizable ‘tool-kit’ that a community member can take and use in their neighborhood. It is designed to increase overall readiness for a disaster at the grassroots level and has been highly successful in the State of Washington. This MYN program is being initially offered in Hawai‘i County to communities that have CERT teams, as an appropriate follow-up to the training.

The “Talk-Story” sessions were effective in providing an environment for the public to voice concerns and for the team to educate and raise awareness. In a short period of time, usually an hour, the community educated the team as well as voiced concerns and received education. A recorder was present at each session to document all points raised. The majority of sessions asked for members of the community to come to us, however, an improvement on these sessions in the future would be go out to interested parties in the community.

The Pacific Tsunami Museum offers customized education to all. When visitors arrive at the museum they are given a personal introduction to the museum by a docent. Docents begin an effective dialogue with the visitor, and the education given by the docent is built upon the

information received from the visitor. This proves to be a highly enriching experience for the visitor.

2) Engagement by learner

In Hawai'i County, every project or initiative concerning the tsunami hazard has attempted to engage the community in preparing for the next tsunami. This is by far the most difficult part of any outreach program or campaign. Here are some of the most effective ways to engage the community:



- Encourage “bite-size” achievements;
- Grab attention early with interesting, site applicable facts;
- Develop a message that can be carried and spread easily within a community;
- Ensure that people know why it is in their best interest to learn about tsunamis;
- Make the education/message/story all about the listener;
- Encourage folks receiving tsunami education to use their own skills in preparing or educating others;
- Challenge people to try to engage another person with three tsunami facts;
- Encourage team learning and co-learning;
- Engage individuals in settings that they are most comfortable.

3) Widely Available Site-Appropriate Educational Materials

Worldwide there exists an abundance of materials on tsunamis. However, these materials are not necessarily relevant or appropriate to all areas at risk from tsunamis. For instance, the State of Hawai'i is the most remote island group in the world and relies primarily on shipping and airline industries to deliver crucial resources to the islands, however, the ports and several airports are in tsunami evacuation zones. So with this in mind, it is not only necessary for the State of Hawai'i to be prepared for before and during a tsunami but to be self-sufficient and sustainable following a destructive tsunami. A major element of the *Tsunami Education, Preparation and Recovery Project for Downtown Hilo*, as well as other recent tsunami education programs have been realistically considering possible after-event disasters like shortages of fuel, food and medical supplies.

How to Prepare Your Business for the Next Tsunami is a site specific educational material for business owners in coastal business districts. The guide uses a local business called Café 100

(home of the Loco Moco) to best describe the effects and impacts of tsunamis on a businesses here in Hawai'i. The Café 100 story contains lessons for current business owners. The guide covers step-by-step instructions on how to prepare your business, safeguard your customers and staff and tips on how to recovery efficiently.

The *Tsunami-Safe Curriculum*, funded by the National Hazard Mitigation Program and facilitated by Hawai'i State Civil Defense and in collaboration with Hawai'i Department of Education is one of few region-specific, customizable, tsunami curriculums in the Pacific region. The curriculum, developed at the Pacific Tsunami Museum, serves grades three, six and nine and places emphasis on learning through stories and the social impacts of past tsunamis and preparing for future events. The Tsunami-Safe Curriculum is fully supported by a website containing all the information needed for both teachers and students.

4) Learning Through Stories and Personal Identification

Here in Hawai'i, a culture deeply rooted in o'hana (family) and a respect for the natural environment, sharing experiences, learning from the past is a way of life. Stories have been passed down through generations by hula chant, conversation and written materials, all of which supply us with the knowledge and understanding that we have today.

Living through a tsunami event may be traumatizing and life-changing. Interviews with survivors should be sought with sensitivity and respect and should never be rushed or pushed. Interviewees respond well to open ended questions and environment in which they can talk without interruption or constant questioning.

In 1996, the Pacific Tsunami Museum co-founder Jeanne Branch-Johnston, began collecting tsunami survivor stories from around the State of Hawai'i. As a survivor herself she sought understanding and clarity on what happened to her on the morning of April 1, 1946. She found that as she began collecting more interviews, her nightmares of that day began to disappear and the experience for her and the survivors being interviewed became therapeutic and positive.

From small beginnings, the Pacific Tsunami Museum's archive department now contains over 350 survivor story interviews from the State of Hawai'i and other regions affected by tsunamis from all over the world. These personal, unique, and inspiring stories are incorporated in every aspect of the museum from exhibits to touch screen kiosks to outdoor signage and brochures. They lie at the heart of tsunami education in Hilo.

As a key part of the *Tsunami Education, Preparation and Recovery Project for Downtown Hilo*, the Pacific Tsunami Museum offered these stories as a resource for the project. Survivors themselves were eager to get involved to share their stories and this evolved into the inclusion of 'break out' survivor story sessions at the Tsunami-Safe Disaster Preparedness Fair. These sessions were well attended by members of the public at the fair and lasted for about an hour.

5) Sustainable, Consistent and Frequent Reminders

In Hilo, the area stretching from Ponahawai Street to the Wailoa Bridge is a daily reminder, to those that know, of the devastating impacts that tsunamis have had throughout the past. Some areas in Hawai'i County, and indeed the State of Hawai'i, have been hit hard by past tsunamis but show little or no evidence of this today, giving a misleading impression of tranquility.

Reminders of past tsunami events, whether permanent or temporary, help to reinforce the current risk to residents and visitors. The tsunami evacuation zone signage, spearheaded by Mayor Kim, and discussed in part one, is an excellent way to remind the public every time they enter or leave an evacuation zone.



[Tsunami interpretive signage in Keaukaha and Moku Oia (Cocoanut Island)]

On the first working day of every month at 11.45 p.m. Hawai'i County Civil Defense test the Emergency Alert System (EAS). When tested, the EAS sounds sirens, which in a tsunami warning will mean 'evacuate immediately'. During the EAS test, radio and television announcements are broadcast stating that a test is occurring. Testing a system is a good way to keep procedures fresh in the mind.

In the summer of 2004 the Pacific Tsunami Museum launched the *East Hawai'i Walking and Driving Tour of Historical Tsunami Sites*. This award-winning program is self-guided tour of historical tsunami sites, with the aid of a 12-page full color brochure and signage at particular sites.

In 2006, the Pacific Tsunami Museum collaborated with Tim O Bryan, local videographer, and Oceanic Time Warner Cable to broadcast three tsunami safety Public Service Announcements statewide. Ocean Time Warner cable offers free airtime for non-profit 501(c)(3) organizations. Check with Cable companies and radio broadcasters in your area to check if a service similar to this is offered.

6) One-on-One Education

Education that is customized and site-specific will be very effective if delivered to an individual or small group. As part of the survey portion of the Tsunami Education, Preparation and Recovery Project for Downtown Hilo we were able to dialogue with business owners in Downtown Hilo about their questions, concerns and needs.

Future Projects

This 'blueprint' not only serves as a guide to how to conduct tsunami education, but can be adapted to other hazards and other communities. The concepts of tsunami education are flexible yet elemental, and the process of conducting successful tsunami, or indeed other hazard education, will be similar on many counts.

It is a logical step for Hilo, in a long term vision of multi-hazard education, to begin with tsunamis. However, it also makes sense to begin thinking about a multi-hazard approach which compliments and distills existing information and programs. Some organizations and groups have done an excellent job of producing multi-hazard educational materials or initiating programs that adopt a multi-hazard approach.

TIPS:

- It is realistic to expect that any successful tsunami educational program will be achieved through trial and error.
- It is realistic to expect and understand that it takes time and ongoing effort for your educational program to really have an impact on your community.

Tsunami Educational Materials

Encouraged and inspired by the success of the *"Tsunami Safe" Disaster Preparedness Fair*, the Lead Partners decided to use the remaining funds of the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo* project to create easy-to-use educational materials for use by the Hilo community and indeed other communities within the State of Hawai'i. The next tsunami event to impact the Hawaiian Islands would affect coastal communities, so any locally-produced, Hawaii-specific educational material available on-hand to assist in raising awareness of the hazard and promoting preparation is very beneficial. The materials include:

- Laminated Tsunami Safe "Quick-Step Guide"
- 10 Important Facts About Tsunamis
- The "Talk-Story" Sessions document
- 10 Key Q&A
- "How to Prepare Your Business for the Next Tsunami" guide with information on:
 - ✓ What you need to know about the tsunami hazard.
 - ✓ The history between Hilo businesses and tsunamis.
 - ✓ The two main factors to consider when preparing your business.
 - ✓ How to create an evacuation plan for a local tsunami.
 - ✓ The Tsunami "Business" Buddy System.
 - ✓ Recovering from a destructive tsunami.
 - ✓ Checklist for businesses.

The Next Steps for Hilo

The Tsunami Education Preparation and Recovery Project for Downtown Hilo, together with our knowledge and understanding of other tsunami education programs concludes that the Downtown Hilo community and surrounding communities such as Keaukaha are ready for the next steps. The community is asking for more evacuation drills (not just schools), permanent signage, further personalized education and information on other hazards. For this progression and forward momentum to succeed, it

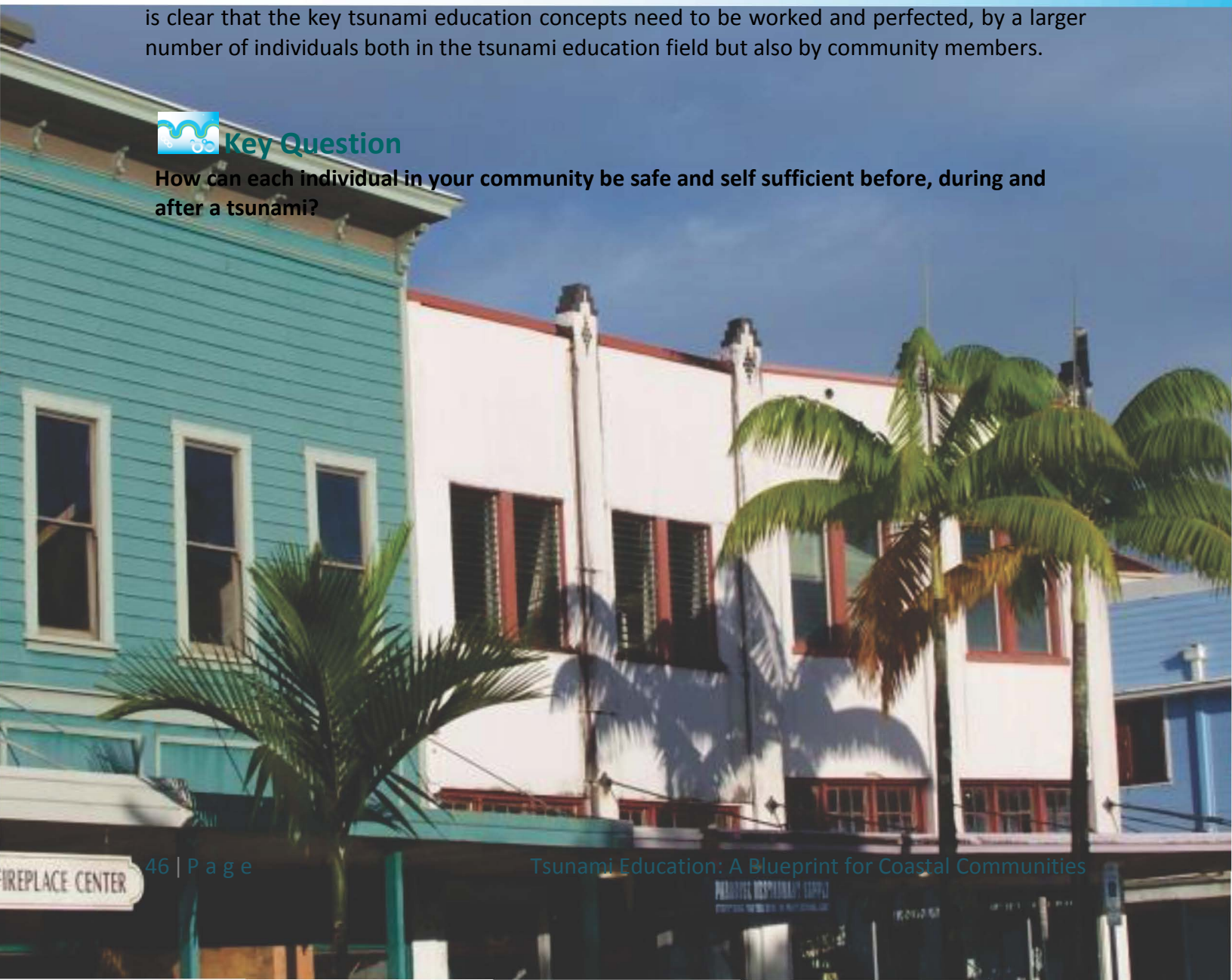


is clear that the key tsunami education concepts need to be worked and perfected, by a larger number of individuals both in the tsunami education field but also by community members.



Key Question

How can each individual in your community be safe and self sufficient before, during and after a tsunami?



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Genevieve Cain, Outreach Coordinator

County of Hawai'i Planning Department

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EnVision Downtown Hilo 2025

VisionKeepers

Hilo Downtown Improvement Association

Hilo Bay Watershed Advisory Group

Kanoiehua Industrial Area Association



The “Tsunami Safe” Disaster Preparedness Fair

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Kanoelehua Industrial Area Association

Ke Ana La'ahana Charter School

Medical Reserve Corps

NOAA National Oceanic & Atmospheric Association

Oregon State University Sea Grant Program

Pacific Tsunami Museum

PTWC Pacific Tsunami Warning Center

TRAP Tsunami Risk Assessment Program

Guest Speakers

Dr. Nathan Becker, Pacific Tsunami Warning Center

Bob "Steamy" Chow, Tsunami Survivor

Patrick Corcoran, Oregon State University Sea Grant Program

George Curtis, Consultant, Pacific Tsunami Museum

Kaholo Daguman, Connections Public Charter School

Jeanne Johnston, Tsunami Survivor

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Roxane Kapuaimohalaikalani Stewart, Ke Ana La'ahana Charter School

Millie Uchima, Tsunami Survivor

Special Thanks

County of Hawai'i:

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Dixie Kaetsu, Managing Director

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Tsunami Education: A Blueprint for Coastal Communities

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IMPLEMENTATION CHECKLIST

- Research the history of tsunami events and impacts of tsunamis on your community.
- Explore existing tsunami education projects in your area.
- Research past and current initiatives to increase the tsunami resilience of your community.
- Brainstorm with community members about appropriate ways to conduct tsunami education.
- Identify what the gaps in knowledge are regarding the tsunami hazard.
- Build relationships with others in the community eager to conduct or support tsunami education.
- Talk with community elders about local knowledge of the hazard.
- Using ideas from community members develop a project outline.
- Think long-term about what you and the community would like to achieve.
- Explore ways in which your project or initiative can be sustained.
- Explore funding opportunities; adapt your project so that it addresses the needs of all parties involved (win-win).
- Work with a funding agency to conduct your project.
- If funding is not available, seek community volunteers to assist.
- As the project develops, record your successes and failures.
- Share your project with other communities.

Take care of yourself – Take care of others; Be tsunami safe

INTERNET RESOURCES

Pacific Tsunami Museum www.tsunami.org

Hawai'i County Planning Department co.hawaii.hi.us/directory/dir_plan.htm

EnVision Downtown Hilo 2025 www.co.hawaii.hi.us/edh2025/index.htm

Hilo Downtown Improvement Association <http://www.downtownhilo.com/>

Hawai'i County Civil Defense Agency co.hawaii.hi.us/cd/

Kauai County Civil Defense Agency
www.kauai.gov/Government/Departments/CivilDefenseAgency/

Maui County Civil Defense www.co.maui.hi.us

City and County of Honolulu Department of Emergency Management
www.honolulu.gov/ocda/

UNESCO/ITIC <http://ioc3.unesco.org/itic/>

Pacific Disaster Center www.pdc.org/iweb/pdchome.html

Hawai'i State Civil Defense www.scd.state.hi.us/

Hawai'i County Resource Center www.hcrc.info/

National Oceanic Atmospheric Administration <http://www.noaa.gov/>

NOAA Pacific Services Center www.csc.noaa.gov/psc/

Federal Emergency Management Agency www.fema.gov/

American Red Cross www.redcross.org/

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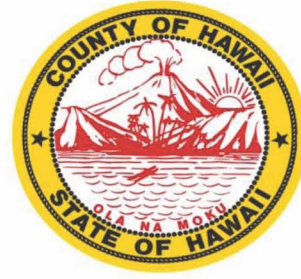
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APPENDIX

Appendix One

“Talk-Story” Compilation

The “Talk-Story” Sessions:



A Compilation of Community Input, Concerns and Questions

For the

Tsunami Education, Preparation, and Recovery Project

From February 15th to April 10th, 2008, the Pacific Tsunami Museum in partnership with the County of Hawaii Planning Department conducted nine “Talk-Story” sessions.

Throughout these Talk Stories, community members voiced their concerns and raised important issues relating to the tsunami threat. Participants were gauged on their current level of tsunami preparedness and their understanding of the natural warning signs to watch out for.

Participants greatly appreciated the opportunity to raise awareness about tsunami preparedness.

This document contains the distilled responses from each of the Talk Stories presented in a format which will guide future efforts towards tsunami preparedness.



April 2008



Question 1:

What comes to mind with the word “tsunami?”

A visual display of photographs will be exhibited at the Tsunami Safe Fair based on the images evoked in the “Talk-Story” participants. Common themes emerged such as:

- Feelings of confusion and fear
- Abstract notions of damage and destruction
- Waves surging inland
- The 2004 Southeast Asia tsunami: Indonesia, Thailand, Sumatra
- Memories of Laupahoehoe
- The old buildings which used to line the bay front
- People running mauka – the “running picture”
- Recovery workers smoking cigars in the absence of gas masks
- Plentiful fish
- Safe places and shelter
- Earthquakes
- Personal survival skills

Question 2:

Do you think we are ready for a locally-generated or pacific-wide tsunami?

Responses to this question covered three main areas of readiness: preparation, evacuation, and recovery. A general consensus emerged that the wider community has not taken the necessary steps to prepare and inform themselves, particularly for locally-generated tsunamis.

Preparation

- Locals and newcomers alike are complacent in their preparedness efforts due to the time lapse from the last tsunami and general underestimation of the tsunami threat.
- Community members and business owners rely on previous inundation areas to gauge risk level. However, old buildings which protected much of the surrounding area no longer exist, with serious implications for future inundation.
- Visitors to Hilo lack information on tsunami evacuation procedures.
- Schools should seek to incorporate greater tsunami education for students and provide information to parents on procedures in the event of a tsunami.
- Hospitals and medical clinics need to ensure adequate medical supplies are stored and generators are available.

Evacuation

Communication methods underscored the concerns regarding evacuation procedures. Radio messaging provided the main source of communication available to the public, but information on evacuation procedures was generally lacking. The following concerns were highlighted:

- The general public is unaware of County Standard Operating Procedures in case of emergency.
- Confusion exists about the identification of emergency shelters. Community members are not aware that shelters are not identified in advance due to the possibility that some may sustain damage during a natural disaster.
- Downtown Hilo and surrounding areas lack signage which indicates evacuation routes and zones.
- Confusion exists about the role of the siren sounds and whether or not they also signal an “all-clear.”
- Canoe paddling associations and boat owners are unaware of warning procedures and instructions specific to them.

Recovery

“Talk-Story” participants cited the recovery phase as the least discussed in any informational material provided to the general public.

- Uncertainty exists as to where people can obtain supplies such as food and medical, but also tools and equipment to help clean up.
- The potentially lengthy delay in provision of utilities services also presents a concern.

Question 3:

Are you aware of the natural warning signs of a tsunami?

- Most participants identified water receding and an earthquake as indicative of a potential tsunami. Shelf collapse was also noted.
- Participants were generally unaware to pay attention to strange animal behavior, or to listen for loud ocean sounds. Further, water may not recede prior to the first tsunami wave, and locally-generated tsunamis may occur without warning.



Question 4:

What arrangements or plans have you made with family or friends before/during/after a tsunami event?

Strikingly, residents who live outside the evacuation zone were less likely to make preparatory arrangements. This attitude assumes that family members will not find themselves caught in the evacuation zone during a tsunami, which cannot be known. It must also be noted that while damage may be contained within the inundation area, the effects will be felt throughout our island-wide community.

The following responses indicate participants' degrees of preparedness:

- Relatively few participants identified meeting locations for their family, but many indicated they would "head uphill."
- Keaukaha residents highlighted the airport as their primary meeting place.
- A minority reported that they had stocked up on extra food and water supplies.
- Various participants indicated a desire to volunteer with evacuation and recovery efforts; however potential organizations or agencies would need to be identified in advance to efficiently channel volunteer time.
- Virtually no one noted the importance of regular data backup, the lack of which could have profound implications on recovery time for businesses in the affected area.

Question 5:

What would you like to learn at the Tsunami Safe Fair?

A number of core areas of interest surfaced throughout the "Talk-Story" sessions.

State and County Agencies

Clear communication of the roles of State and County Agencies emerged as the most needed information. Once community members understand the governments' role, they can more adequately tailor their own preparations.

- **Preparation:**
 - Do guidelines exist for making structures tsunami safe?
 - Are there different siren sounds? What is the contingency plan for sirens which run on electricity in case of power failure?
 - How will gas storage tanks be protected?
 - Does the Port of Hilo maintain an evacuation and recovery plan, and if so, what is it?

- **Evacuation:**
 - Who is responsible for setting warning notifications about an imminent evacuation if Civil Defense is off-duty?
 - Is there a list of potential emergency shelters and who will announce them after a tsunami?
 - Are there plans in place to evacuate large crowds should a locally-generated tsunami occur during an event such as Ho'olaulea, or while sports are underway on the soccer fields?
 - Who is responsible for ensuring the safety of the elderly and impaired?
 - Will the State Department of Transportation close the lower steel bridge in the event of a tsunami?
 - Will the airport be operating to enable residents to evacuate off-island?
 - What is the contingency plan for flooding or damage to the bridges over Wailuku River, to ensure people can travel across it?
 - How will campers, especially those in isolated areas, be advised of a tsunami watch?
 - Should apartment building residents within the evacuation zone go upstairs or evacuate outside and uphill during a tsunami event?

- **Recovery:**
 - What are the County inter-agency recovery coordination procedures?
 - How will residents obtain supplies in the event of island-wide isolation?
 - What is the estimated time for the return of utilities service?

The Science of Tsunamis

A general overview of the causes and consequences of a tsunami will help community members contextualize the tsunami threat. The following questions were raised by a significant number of participants.

- How long do tsunamis generally last?
- What is the maximum potential inundation area?
- How much time do people have after an earthquake for a locally-generated tsunami?
- In the event of a locally-generated tsunami, should people evacuate in their cars, or simply run?
- How far out to sea should boats sail in order to be safe?
- How far uphill is safe?
- Does the breakwater help, and what other structures could be implemented to protect at-risk areas?

Schools and Ongoing Tsunami Education

Participants are interested in learning what the local schools are doing to educate students and parents about the tsunami threat. The distribution of information about schools' evacuation plans and procedures would be most valuable to ease concerns and ensure they are adequately prepared.

The Tourism Industry

Is there a coordinated effort to educate visitors about tsunami evacuation procedures and warning signs? Moreover, do the bayfront hotels post evacuation plans and instruct staff in preventing guests from running to the ocean after an earthquake?

Hospitals and Medical Clinics

Is there a system in place to ensure hospitals and clinics store adequate emergency supplies? What are their contingency plans for an extended power failure?

General Information

- Will cellular phones work?
- Is there a general outline or checklist available for businesses to aid in their preparedness?
- Are there any Web sites residents can access for more information on how to prepare for a tsunami?

Question 6:

How do you best learn or receive information?

The most important element in learning is to generate excitement which will motivate and empower residents to establish personal preparedness plans. Visual aids such as short DVD presentations were highly rated. In addition, short, step-by-step guidelines are useful for conveying important information.



Question 7:

Do you have any suggestions for improving tsunami readiness in Downtown Hilo and surrounding areas?

While this question was not formally asked, many “Talk-Story” participants offered their own great ideas, which we share here:

- Erect signage which displays the evacuation routes, similar to Keaukaha.
- Use the sirens to announce warnings in different languages.
- Require a tsunami evacuation plan as part of the checklist in the annual fire inspection.
- Develop and distribute mock evacuation videos, possibly shown in local movie theatres.
- Provide visitors with tsunami information and evacuation guidelines as part of the agricultural inspection form they must fill in prior to arrival in Hawaii.
- Extend Komohana St to the coast road (Hwy 19) in order to develop an additional route around the island.
- Establish tsunami warning alerts via text messaging on cellular phones.

Mahalo nui loa to all our “Talk-Story” Participants!

Appendix Two

Survey

(Survey results are available upon request)



The purpose of this survey is to gauge public awareness and perception of the tsunami hazard in Hilo.

Pacific Tsunami Museum • County of Hawai'i Planning Dept
Hawai'i County Civil Defense • EnVision Downtown Hilo 2025
NOAA•CZM
February, 2008



(Optional)

Name.....

Age.....

Gender.....

Occupation.....

Place of birth.....

Comments/suggestions may be written on the right side of the page or on the reverse side of survey pages.

Your opinion about tsunamis:

Q 1: What comes to mind when you think of tsunamis?

Q2: How concerned are you about a tsunami hitting Hilo?

- A. Very Concerned
- B. Somewhat concerned
- C. A little concerned
- D. Not concerned

Q3: Hilo has a long history of tsunamis. What do you think a tsunami is?

- A. A series of waves
- B. One large wave
- C. Something else

Q4: What do you think most commonly causes a tsunami?

- A. An earthquake under the ocean
- B. An unusually high tide
- C. Heavy rainfall
- D. Global warming
- E. Something else

Q5: When do tsunamis usually occur?

- A. In the summer
- B. In the winter
- C. Daytime
- D. Nighttime
- E. Any time of the day or year

Q6: A distant tsunami is most commonly triggered by an undersea earthquake far away from Hawaii. What do you think will be your first indication that a distant tsunami is approaching?

- A. Ground shaking violently
- B. A 3 minute siren blast
- C. Emergency personnel notifying you
- D. Friend/Family member

*Please contact Genevieve Cain, Outreach Coordinator at the Pacific Tsunami Museum with any questions or suggestions.
MAHALO*

Q7: A local tsunami is most commonly triggered by an undersea earthquake just off the coast of the Hawaiian Islands (like in 1975). What do you think will be your first indication that a local tsunami is approaching?

- A. Earthquake/Water receding/Water surging inland/Strange sound coming from the sea
- B. A 3 minute siren blast
- C. Emergency personnel notifying you
- D. A phone call from a friend

Responding to a tsunami event:

Q8: What would be your first response if a local tsunami was on the way?

- A. Move immediately to high ground
- B. Drive to high ground
- C. Call 911
- D. Turn on local radio and Public Broadcast stations
- E. Wait for sirens

Q9: For a local tsunami how much time would you have to get to high ground after your first indication of tsunami approach?

- A. 1-5 Minutes
- B. 5-30 Minutes
- C. 30-60 Minutes
- D. 1-3 Hours
- E. 3 + Hours

Q10: For a distant tsunami how much time would you have to get to high ground after your first indication of tsunami approach?

- A. 1-5 Minutes
- B. 5-30 Minutes
- C. 30-60 Minutes
- D. 1-3 Hours
- E. 3 + Hours

Q11: Please indicate (✓) which of the following locations are outside the tsunami evacuation zone?

- Downtown Hilo Post Office
- Palace Theatre
- Hilo High School
- University Campus
- Airport Terminal
- Ken's House of Pancakes
- Bayshore Towers
- Hilo Central Fire Station
- Hilo Hospital (Hilo Medical Center)
- YWCA

Q12: After a distant or local tsunami has hit, how long before it is safe to return to low-lying areas?

- A. After the first wave
- B. An hour after the tsunami arrives on shore
- C. Once emergency officials give the 'all clear'

Preparing for a tsunami:

Q13: If you live or work in the tsunami evacuation zone, have you created an evacuation plan for your home or business which includes evacuation route maps, backed up data off site, and up to date lists of stock/inventory etc, .?

- A. Yes
- B. No
- C. Have made some plans

*Please contact Genevieve Cain, Outreach Coordinator at the Pacific Tsunami Museum with any questions or suggestions.
MAHALO*

Q14: If you have children attending a school in the evacuation zone are you familiar with the school's emergency plans, which includes evacuation route and safe pick-up point?

- A. Yes
- B. No
- C. Maybe
- D. I am not as clear on the plan as I would like to be

Q15: In your opinion do you think that the general public and visitors to the islands understand the warning system and can respond appropriately to sirens and civil defense messages when necessary?

- A. Yes
- B. No
- C. Maybe
- D. More education needed

Q16: In your opinion do you think that it is the sole responsibility of every individual, school and business entity near the water to prepare for the next tsunami?

- A. Yes, Completely
- B. No, it is the responsibility of Civil Defense to prepare for us
- C. Maybe
- D. Yes, but more guidance on how to prepare is needed

Q17: Do you have a disaster kit prepared in the event that you need to evacuate to a shelter or a friend/family home during a tsunami warning?

- A. Yes
- B. No
- C. I am not sure what should be included in a kit

Q18: Please indicate (✓) the ways in which the public and visitors to Hilo could be better educated/supported:

- Regular preparedness workshops
- One-on-one (free) consultation
- 'How to prepare...' fliers and pamphlets
- Public Broadcasts on the Television and Radio
- Disaster preparedness community events/fairs
- More educational signage in the evacuation zones
- Posters/educational artwork displayed in evacuation zone
- Annual evacuation drills

Q19: In your opinion, of all the natural hazards that we could experience here in Hawaii, which one should we be most concerned about?

- A. Tsunamis
- B. Hurricanes/high winds
- C. Flash Floods
- D. Drought
- E. Wild (Brush) Fires
- F. Earthquakes
- G. Lava flows
- H. Vog/poor air quality
- I. Tropical storms
- J. Storm surges/high surf

Q20: How important do you think it is to conduct a survey like this in order to tailor educational efforts to the public?

- A. Very important
- B. Somewhat important
- C. Not important

*Please contact Genevieve Cain, Outreach Coordinator at the Pacific Tsunami Museum with any questions or suggestions.
MAHALO*

Appendix Three

Tsunami Safe Quick-Step Guide

Appendix Four

Tsunami Safe Disaster Preparedness Fair Program

NOA
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Presenters and Organizers

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State Farm Insurance

Special Thanks to

Mayor Harry Kim and Managing Director Dixie Kaetsu
Planning Department Director, Chris Yuen &
Deputy Director, Brad Kurokawa
Connections Public Charter School
Kaholo Daguman
Tim O'Bryan
Patrick Corcoran
Dr. Nathan Becker & Delores Clark
Rachelle Ley, Planning Department Student Intern
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101 Pauahi St, Suite 3, Hilo HI 96720
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Take Care of Yourself - Take Care of Others

Presenters and Organizers



Tsunami Education, Preparation, and
Recovery Project
For DOWNTOWN HILO



**Tsunami Safe
Disaster Preparedness Fair**



Saturday, April 19, 2008
9.00am – 3.00pm

Connections Public Charter School



EAST-WEST CENTER
BUILDING AN ASIA PACIFIC COMMUNITY

9.00a	Special thanks to <i>Donna Saiki and the Pacific Tsunami Museum</i> for providing fair ticket holders free entry to the Museum all day today!
9.30a	
10.00	
10.30	Mahalo to all our Exhibitors and Presenters (in alphabetical order) Big Island Amateur Radio Club CSAV Center for the Study of Active Volcanoes C.E.R.T. Community Emergency Response Teams Connections Public Charter School County of Hawai'i: Civil Defense, Department of Research & Development, Department of Water Supply, Fire Department, Planning Department, and Police Department EnVision Downtown Hilo 2025 VisionKeepers Hilo Downtown Improvement Association Hilo Bay Watershed Advisory Group Kanoelehua Industrial Area Association Ke Ana La'ahana Charter School Medical Reserve Corps NOAA National Oceanic & Atmospheric Association Oregon State University Sea Grant Program Pacific Tsunami Museum PTWC Pacific Tsunami Warning Center Red Cross TRAP Tsunami Risk Assessment Program
11.00	
11.30	
12.00	
12.15	
1.00p	Master of Ceremonies: Alice Moon, Alice Moon & Company
1.15p	<u>Schedule of Events</u>
2.00p	Fair Opening Roxane Kapuaimohalaikalani Stewart – No Ke Kaiakahinali'i Quince Miento – The Importance of Personal Preparedness Living Through a Tsunami Bob "Steamy" Chow Disaster Kit Giveaway Experiences from the 2004 Tsunami in Thailand Susan O'Neill Tsunamis in Hawai'i (Location: Pacific Tsunami Museum) Donna Saiki Disaster Kit Giveaway The Role of the Pacific Tsunami Warning Center Dr. Nathan Becker Tsunami Warning and Response Dr. George Curtis Talk Story Session Christian Kay & Genevieve Cain Disaster Kit Giveaway Living Through a Tsunami Millie Uchima Disaster Kit Giveaway Tsunami Resilience in Other Communities Patrick Corcoran Disaster Kit Giveaway Living Through a Tsunami Jeanne Johnston Tsunamis in Hawai'i (Location: Pacific Tsunami Museum) Donna Saiki Closing Remarks Fire Chief Daryl Oliveira Disaster Kit Giveaway - Pau!
2.45p	
3.00p	

Mahalo to our tsunami survivors for sharing their stories
Bob "Steamy" Chow
Millie Uchima
Jeanne Johnston

Ongoing Activities
•Exhibits •Keiki Corner
•Public Awareness Survey •Light Refreshments
•One-on-One Business Preparedness Consultations
•Connections Public Charter School Fundraiser

- Public Awareness Survey
- Light Refreshments
- One-on-One Business Preparedness Consultations
- Connections Public Charter School Fundraiser

Appendix Five

Ten Important Facts about Tsunamis



Tsunami Education, Preparation and Recovery Project for Downtown Hilo



10 Important Facts about Tsunamis

1. Tsunamis have killed more people in the state of Hawai'i than all other natural disasters combined.
2. Tsunamis can be generated by earthquakes, landslides and volcanic eruptions.
3. The natural warning signs of a tsunami are an earthquake, water receding (or an exposed sea floor or reef), water surging inland or quickly rising above normal sea level, a strange sound out to sea or extremely unusual behavior of animals . If you experience any of these, move to high ground immediately.
4. A tsunami may come ashore as a series of waves; the first wave may not be the largest.
5. Tsunamis can travel across oceans at 450 miles per hour.
6. A tsunami generated in Chile can arrive here in 13 hours; a tsunami from Alaska can arrive here in 5 hours. A tsunami generated just off our coast can arrive in minutes.
7. Tsunami sirens are tested on the first working day of each month in Hawai'i, when you hear sirens you should always turn on your radio, even if you think it is a test.
8. Locally-generated tsunamis have little or no warning. There most likely will not be time to sound the sirens. If you feel an earthquake move to high ground.
9. Tsunamis can occur at anytime day or night. There is no tsunami season.
10. When it comes to tsunamis, it is not a case of 'if' but 'when'.

Take care of yourself - take care of others.



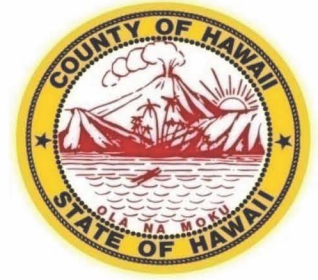
Appendix Six

Ten Key Questions (and Answers) from the Community



The “Talk-Story” Sessions:

The Tsunami Education, Preparation, and Recovery Project for Downtown Hilo



Ten Key Questions from the Community

Question 1: Please explain the primary roles for each of the first responder County Agencies (Police, Fire, and Civil Defense) during the evacuation and recovery phases of a tsunami event?

- *Following a large earthquake in the Pacific region, Civil Defense will activate the Emergency Operations Center (EOC) to wait for further information from Pacific Tsunami Warning Center (PTWC) as to whether or not a tsunami has been generated. If a tsunami has been generated, the primary role of Civil Defense will be to give immediate notification to, and coordinate all public safety agencies.*
- *Police will begin to set up road blocks and work primarily on notifying and evacuating the public out of the evacuation zone. The Fire Department will assist the Police Department with these duties.*
- *Following a destructive tsunami Civil Defense will coordinating all public safety agencies in rescue and recovery. The Fire and Police Departments primary roles will be rescue.*

Question 2: During the recovery phase, who should residents contact in order to obtain food and medical supplies, in addition to tools and equipment for clean up?

This information would be announced following an event, however Red Cross and local organizations have resources to assist in coordinating food, shelter, and equipment.

Question 3: What is the list of potential emergency shelters? Following a tsunami, who will announce which ones are open?

Civil Defense maintains a list of potential emergency shelters and they will work with Red Cross to open these shelters if and when staff/access becomes available. The shelters may be announced over radio or through media.

Question 4: Are there different siren sounds, and what, exactly, do the sirens indicate (warning, evacuate, all-clear)?

There is only one siren sound: one long blast that lasts for 3 minutes. This will be sounded when people are required to evacuate all tsunami evacuation zones (which

can be found at the front of the phone books). You should familiarize yourself with siren locations. If a siren is not working when tested on the first working day of each month, then you should contact your County Civil Defense Agency immediately.

Question 5: What are the natural warning signs of a tsunami?

The natural warning signs of a tsunami may be: an earthquake, water receding, water surging onto land, a strange noise from out to sea, or extremely unusual behavior of animals. Some of these natural warning signs may occur simultaneously or individually and an earthquake may not be your first warning of an approaching locally-generated tsunami.

Question 6: How long do tsunamis last and what is the maximum potential inundation area?

It is very difficult to predict how long a tsunami may last or the extent of inundation. The answers to these questions result from all the different factors which affect a tsunami event; from the location of the epicenter, to the shape of the ocean floor approaching land.

Question 7: Do hospitals and medical clinics store adequate supplies in case of emergency and can they run without power for an extended period of time?

Local military and Medical Reserve Corps maintain medical supply stock and the ability to fly in more supplies if needed.

Question 8: What measures is the tourism industry taking to educate visitors on tsunami risks and procedures to ensure they do not compound the problem?

There is no standard education program, or standard visitor information. If hotels, airlines, cruise ships, or tours offer information about tsunamis it will be on a case by case basis.

Question 9: Is there a tsunami education component in local schools to ensure both students and parents are aware of the schools' policies and procedures in the event of a tsunami?

The tsunami education in schools varies case by case. In the future there are plans to Develop a tsunami curriculum for the State of Hawaii.

Question 10: Is there an outline or checklist available that at-risk businesses can use to aid their preparedness?

Pacific Tsunami Museum will provide information on how businesses can prepare.

Mahalo to Quince Mento, Civil Defense Administrator, and Police Officer Andrew Burian for their assistance in putting this Q&A together.



For more information about the *Tsunami Education, Preparation, and Recovery Project for Downtown Hilo*, please contact:



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