

Tsunami Response Workshop for Businesses

Preparing hotels and businesses for the next tsunami



Workshop Manual 2013 (v1.0)

**Tsunami Response - Guidance and Templates,
Resource Documents**

International Tsunami Information Center
www.tsunamiwave.info



National Oceanic
and Atmospheric
Administration



National Weather
Service



International Tsunami
Information Center

ACKNOWLEDGEMENTS

The International Tsunami Information Center (ITIC) received a request in 2012 from Juan Camacho of the Commonwealth of Northern Mariana Islands (CNMI) – Homeland Security & Emergency Management (HSEM) to create a workshop that better prepares coastal businesses and hotels to respond to tsunami hazards. The workshop would provide guidance on how to protect the safety of their employees, customers, and business operations.

The ITIC staff (including Dr. Laura Kong, Brian Yanagi, and Nicolás Arcos) researched, created, and delivered “Tsunami Response Workshop for Businesses” pilots in CNMI and Guam in September 2013, with assistance from the US National Weather Forecast Office (WFO) Guam. This accompanying manual was created by ITIC and revised after the Workshops to address feedback from participants.

ITIC would like to acknowledge CNMI HSEM and WFO Guam for their contributions to this workshop and manual.

For more information, please contact itic.tsunami@noaa.gov



National Oceanic
and Atmospheric
Administration



National Weather
Service



International Tsunami
Information Center

International Tsunami Information Center (ITIC) Tsunami Response Workshop for Businesses

WORKSHOP MANUAL DETAILED TABLE OF CONTENTS

Documents listed below available on Workshop CD.

Manual and CD contents also available at workshop website:

http://itic.ioc-unesco.org/index.php?option=com_content&view=category&layout=blog&id=2128&Itemid=2557

1. Introduction and Agenda

- a. Tsunami Response Workshop for Businesses: Introduction, Content, Outcome and Agenda
- b. Flyer

2. Tsunami Response – Guidance and Templates

- a. Key Terminology – Tsunami terminology used in workshop is defined. Selected terms from *Tsunami Glossary (2013)*.
- b. 10 Steps to Enable a Successful Tsunami Emergency Response – Broad guidance framework on essential elements needed to enable a Tsunami Warning and Mitigation System.
- c. Tsunami Response Standard Operating Procedure (SOP) Templates & Development of SOPs (*Instructions for modules 4 & 5*)
 - i. Tsunami Emergency Response for Business: Identification of Roles & Responsibilities Matrix – This template can guide businesses in assignment of department(s) and/or job position(s) to critical tasks to enable tsunami emergency response.
 - ii. Pre-tsunami Event Planning Actions Matrix – This planning tool helps prioritize actions necessary to prepare a business/hotel for a tsunami event.
 - iii. Distant Tsunami Evacuation Responsibilities Checklist for Businesses – This template can guide businesses in assignment of department(s) and/or job position(s) to critical tasks in chronological order to enable tsunami emergency response for tsunami waves that arrive in 3+ hours from an earthquake source zone in the Pacific.

- iv. Local Tsunami Evacuation Responsibilities Checklist for Businesses -
This is template can guide businesses in assignment of department(s) and/or job position(s) to critical tasks in chronological order to enable tsunami emergency response for tsunami waves that arrive in minutes up to 3 hours from an earthquake source zone in the Pacific.

3. Tsunami Response – Additional Resource and Planning Documents. Excerpts are included in this manual and the full documents are included in the workshop CD.

a. Hotels

- i. A Guide to Tsunamis for Hotel Guests – one page flyer intended to inform hotel guests about tsunami hazard and safety actions (North-eastern Atlantic and Mediterranean Tsunami Information Centre - NEAMTIC - 2012)
- ii. A Guide to Tsunamis for Hotels – This regional guidebook explains the steps in building tsunami preparedness and to successfully develop plans and procedures. (NEAMTIC - 2012)
- iii. Crisis and Emergency Manual – Tsunami section. This manual provides sample tsunami response procedures for a hotel chain in Hawaii. (Outrigger Hotels & Resorts - OHR circa 1995).
Permission has been received to use for training purposes.
- iv. Disaster Response Guidebook for Hotels and Motels on Washington's Coast – This guidebook provides hotels and motels in Washington State with tsunami response checklists, hazard information and emergency contact information. (Washington Emergency Management Division - 2006)

b. Businesses

- i. How to Prepare Your Business for the Next Tsunami – This guide describes a process to create tsunami evacuation plans for businesses in Hawaii. (Pacific Tsunami Museum - 2008)
- ii. Open for Business: A Disaster Planning Toolkit for the Small to Mid-sized Business Owner – This planning guide provides sample forms for businesses to strengthen their all hazard emergency response. (Institute for Business & Home Safety - 2005)

c. Vertical Evacuation

- i. Guidelines for Design of Structures for Vertical Evacuation from Tsunamis, Second Edition. (FEMA P-646 – April 2012)

Tsunami Response Workshop for Businesses

Introduction

Coastal businesses are at risk from tsunami hazards. Small, medium and corporate businesses, hotels and bed & breakfast inns, and other private sector organizations are interested in becoming better prepared to respond to evacuate from tsunami hazards to protect life-safety of their employees, customers, and business operations. This workshop is intended to define actions to be taken during a “Tsunami Warning” for international business audiences. Preparing for tsunamis will help to mitigate property damage, and also strengthen continuity of operations.

Workshop Content and Outcome

This half-day workshop provides a basic understanding of the science of tsunamis and describes the specific tsunami hazard to the region. Also, the workshop will describe how the Tsunami Warning System provides alert notifications to the public. There will be breakout working group modules where small businesses, corporate businesses and hotel participants will strategize on how to fill in Standard Operating Procedures (SOP) templates that assign department(s) and/or position(s) to critical tasks in chronological order to enable tsunami emergency response. An SOP is a set of written instructions that document a routine or repetitive activity followed by an organization. The development and use of SOPs are an integral part of a successful quality system as it provides individuals with the information to perform a job properly, and facilitates consistency in the quality and integrity of an end-result. Moreover, Checklists for Distant Tsunami events (tsunami wave arrival in 3+ hours from an earthquake source zone in the Pacific) and Local & Regional Tsunami events (tsunami wave arrival in minutes up to 3 hours from a nearby earthquake source zone) will also be filled in with responsible departments.

At the end of the workshop, business participants will have developed SOPs to respond to distant and locally generated tsunamis. Moreover, participants will use the SOPs to conduct follow up preparedness activities when they return to work.

Workshop Agenda (8:00 am - 12:30 pm)

7:30 - 8:00 am	Registration
8:00 - 8:15 am	Welcome
8:15 - 9:00 am	Module 1 - Tsunami Basics
9:00 - 9:45 am	Module 2 - Local Tsunami Hazard
9:45 - 10:00 am	Coffee Break
10:00 - 10:45 am	Module 3 - Tsunami Warning and Response
10:45 - 11:15 am	Module 4 - Tsunami Response SOP Templates
11:15 - 12:15 pm	Module 5 - Development of SOPs: Break out Groups (Small Businesses, Corporate Businesses, Hotels) and Group Reports
12:15 - 12:30 pm	Wrap-up and Closing

Tsunami Response Workshop for Businesses

Dates: TBD

Times: 7:30am to 12:30pm

Location: TBD

This workshop provides a basic understanding of tsunamis, hazard assessment, warning and dissemination, and business response strategies to effectively reduce tsunami risk. The goal of this course is to enhance business participants' abilities to support their organizational preparedness and emergency response efforts. No advanced knowledge or experience of tsunamis is required.

Workshop modules cover tsunami hazard, detection and warning process to alert coastal businesses, and Standard Operating Procedure (SOP) checklists and template tools to build a tsunami resilient private sector. Effective response requires pre-event planning and preparation to ensure that employees know what to do and where to evacuate themselves and their valued customers before destructive waves arrive, and that afterward, knows when it is all-clear and safe to return.

Who Should Take This Workshop?

Employees in small, medium and corporate businesses and hotels involved in emergency response.

Modules:

- ✓ *Tsunami Science Basics*
- ✓ *Local Tsunami Hazard*
- ✓ *Tsunami Warning and Emergency Response*
- ✓ *Developing Tsunami Business Standard Operating Procedures (SOPs)*

Workshop conducted by:

International Tsunami Information Center

Contact for registration:

TBD

No prerequisites or requirements for this workshop. However, participants are encouraged to bring laptops or personal computers.

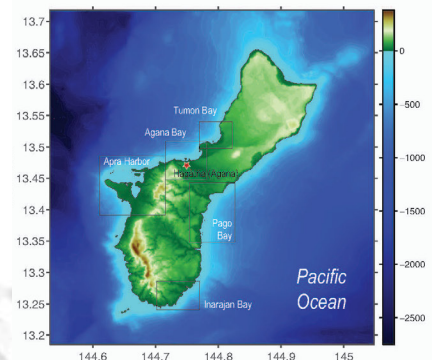


Image: Guam's five grids developed for tsunami hazard assessment. Credit: NOAA/PMEL.



Photo: Onagawa, Japan, following 11 March 2011 tsunami event. Credit: NOAA/ITIC.



Key Terminology

Excerpts from:

Intergovernmental Oceanographic Commission. Revised Edition 2013. *Tsunami Glossary*, 2013. Paris, UNESCO. IOC Technical Series, 85. (English.) (IOC/2008/TS/85rev)

Available at: http://itic.ioc-unesco.org/index.php?option=com_content&view=article&id=1328&Itemid=1142&lang=en



Tsunami

Japanese term meaning wave (“nami”) in a harbour (“tsu”).

A series of travelling waves of extremely long length and period, usually generated by disturbances associated with earthquakes occurring below or near the ocean floor.

Volcanic eruptions, submarine landslides, and coastal rock falls can also generate tsunamis, as can a large meteorite impacting the ocean. These waves may reach enormous dimensions and travel across entire ocean basins with little loss of energy. Tsunamis steepen and increase in height on approaching shallow water, inundating low-lying areas, and where local submarine topography causes the waves to steepen, they may break and cause great damage. Tsunamis have no connection with tides; the popular name, tidal wave, is entirely misleading.

Local tsunami

A tsunami from a nearby source for which its destructive effects are confined to coasts within about 100 km (62 miles), or less than 1 hour tsunami travel time from its source. Over history, 90% of tsunami casualties have been caused by local tsunamis.

Regional tsunami

A tsunami capable of destruction in a particular geographic region, generally within 1,000 km (621 miles) or 1-3 hours tsunami travel time from its source. Regional tsunamis also occasionally have very limited and localized effects outside the region. Most destructive tsunami can be classified as local or regional. It follows many tsunami related casualties and considerable property damage also comes from these tsunamis.

Teletsunami or Distant Tsunami

A tsunami originating from a far away source, generally more than 1,000 km (621 miles) or more than 3 hours tsunami travel time from its source. Less frequent, but more hazardous than regional tsunamis, are ocean-wide or distant tsunamis. Usually starting as a local tsunami that causes extensive destruction near the source, these waves continue to travel across an entire ocean basin with sufficient energy to cause additional casualties and destruction on shores more than a 1,000 kilometres (621 miles) from the source.

Regional and local tsunamis causing deaths since 1975

Date				Estimated Dead or Missing
Year	Mon	Day	Source Location	
1975	10	31	Philippine Trench	1
1975	11	29	Hawaii, USA	2
1976	8	16	Moro Bay, Philippines	4 376
1977	8	19	Sumbawa, Indonesia	189
1979	7	18	Lembata Island, Indonesia **	1 239
1979	9	12	Irian Jaya, Indonesia	100
1979	10	16	French Riviera **	9
1979	12	12	Narino, Colombia	* 600
1981	9	1	Samoa Islands	2
1983	5	26	Noshiro, Japan	100
1988	8	10	Solomon Islands	1
1991	4	22	Limon, Costa Rica	2
1992	9	2	Off coast Nicaragua	170
1992	12	12	Flores Sea, Indonesia	1 169
1993	7	12	Sea of Japan	208
1994	6	2	Java, Indonesia	250
1994	10	8	Halmahera, Indonesia	1
1994	11	4	Skagway Alaska, USA **	1
1994	11	14	Philippine Islands	* 81
1995	5	14	Timor, Indonesia	11
1995	10	9	Manzanillo, Mexico	1
1996	1	1	Sulawesi, Indonesia	9
1996	2	17	Irian Jaya, Indonesia	110
1996	2	21	Northern Peru	12
1998	7	17	Papua New Guinea	2 205
1999	8	17	Izmit Bay, Turkey	155
1999	11	26	Vanuatu Islands	5
2001	6	23	Southern Peru	26
2004	12	26	Banda Aceh, Indonesia **^	227 898
2005	3	28	Sumatra, Indonesia	10
2006	3	14	Seram Island, Indonesia	4
2006	7	17	Java, Indonesia	802
2007	4	1	Solomon Islands	* 52
2007	4	21	Southern Chile	10
2009	9	29	Samoa Islands	192
2010	1	12	Haiti	7
2010	2	27	Southern Chile	156
2010	10	25	Mentawai, Indonesia	431
2011	3	11	Tohoku, Japan	**^ 18 717

Total 259 314

* May include earthquake deaths

** Tsunami generated by landslide

^ Includes dead/missing near and outside source region

Tsunami Warning

A tsunami warning is an alert, usually issued by a National Tsunami Warning Centre (NTWC), to indicate that a tsunami hazard is expected and imminent. During a major threat, high amplitude waves along with powerful currents can be expected and could cause significant inundation and complete destruction of most near-shore structures. Dangerous waves may continue for several hours after arrival of the initial wave. Appropriate public safety action taken when there is a major threat includes the evacuation of low-lying coastal areas, and the repositioning of ships to deep waters if there is time. Warnings may be updated, adjusted geographically, downgraded, or cancelled. To provide the earliest alert, initial warnings are normally based only on seismic information. Threat levels may be given different names by different countries depending upon their language and the standard nomenclature they use for other hazards such as weather events.

Tsunami Warning Cancellation

A warning will be cancelled when damaging waves have stopped coming ashore. A cancellation is issued when sea level readings indicate that the tsunami is below destructive levels and subsiding in most monitored locations.

Tsunami All-Clear

After a warning is cancelled, an All-Clear condition is issued by local authorities (not the Tsunami Warning Center) to the public when it is safe for them to return to the evacuated zones. As local conditions can cause wide variations in tsunami wave action, the All-Clear will depend on the degree of damage and can vary from locality to locality. Local damage to structures and critical infrastructure, and/or secondary impacts caused by fires or hazardous materials leakage, may delay substantially the All-Clear announcement.

Tsunamis causing deaths greater than 1,000 km from the source location						
Date				Estimated Dead or Missing		
Year	Mon.	Day	Source Location	Local and Regional	Distant	Distant locations that reported casualties
1837	11	7	Southern Chile	0	16	USA (Hawaii)
1868	8	13	Northern Chile **	* 25 000	7	New Zealand, Samoa, Southern Chile
1877	5	10	Northern Chile	Hundreds	Thousands	Fiji, Japan, Peru, USA (Hawaii)
1883	8	27	Krakatau, Indonesia	36 000	1	Sri Lanka
1899	1	15	Papua New Guinea	0	Hundreds	Caroline Islands, Solomon Islands
1901	8	9	Loyalty Islands, New Caledonia	0	Several	Santa Cruz Islands
1923	2	3	Kamchatka, Russia	2	1	USA (Hawaii)
1945	11	27	Makran coast, Pakistan	* 4 000	Some	India
1946	4	1	Unimak Island, Alaska, USA	5	159	USA (California, Hawaii)
1960	5	22	Central Chile	1 000	222	Japan, Philippines, USA (California, Hawaii)
1964	3	28	Prince William Sound, Alaska, USA	106	18	USA (California, Oregon)
2004	12	26	Banda Aceh, Indonesia ***	* 175 827	52 071	Bangladesh, India, Kenya, Maldives, Myanmar, Seychelles, Somalia, South Africa, Sri Lanka, Tanzania, Yemen
2005	3	28	Sumatra, Indonesia	0	10	Sri Lanka (deaths during evacuation)
2011	3	11	Tohoku, Japan ****	* 18 715	2	Indonesia, USA (California)
* May include earthquake deaths ** Local and regional deaths in Chile and Peru *** Local and regional deaths in Indonesia, Malaysia, and Thailand **** Local and regional deaths in Japan						

10 Steps to Enable a Successful Tsunami Emergency Response
International Tsunami Information Center
October 2013



- 1) Know and understand a country's tsunami risk.
- 2) Develop an "end to end" Tsunami Early Warning and Mitigation System (TEWS) implementation strategy. Identify lead agencies at all levels of government, NGOs, private sector.
- 3) Set up stakeholder (multi-hazard and/or tsunami specific) coordination committees at all levels of government to include NGOs and private sector.
- 4) Develop multi-hazard disaster response plans including tsunami specific emergency response plans and SOPs at national/provincial/city/local levels. Integrate emergency policies and mobilize all government agencies, in coordination with NGOs and the private sector.
- 5) A country receives 24x7 Tsunami Warning Center messages through international/regional and/or national tsunami warning systems.
- 6) Develop rapid and redundant 24 x 7 communications dissemination infrastructure "down to the last kilometer." Partner with the mass media for alert dissemination, building preparedness, and increasing awareness.
- 7) Emphasize sustainable local community education, preparedness, and mitigation programs (i.e. tsunami evacuation maps, routes, signage, and sirens).
- 8) Conduct annual tsunami exercises and drills at various levels of government, NGOs, the private sector and coastal schools.
- 9) Obtain commitment from public authorities to enact multi-hazard and/or tsunami specific disaster risk reduction policies at all levels of government and the private sector.
- 10) Develop disaster management policies and legislation that address multi-hazards including tsunami specific events.

Tsunami Response Standard Operating Procedure (SOP)

Templates & Development of SOPs

(Instructions for modules 4 & 5)

The following set of Tsunami Response SOP Templates are designed to enable your business or hotel to create a checklist of major activities to rapidly enable during a tsunami event. Tsunami events are classified as a distant tsunami event (3 + hours wave arrival time from earthquake source regions) and local & regional tsunami event (wave arrival time in only minutes and less than 3 hours from other earthquake source regions).

It is recommended to conduct annual tsunami drills with your business employees to ensure they are fully aware of their roles and can enable response responsibilities on a 24/7 basis, 365 days a year. A high level of level of readiness and preparedness to respond will help to save lives of fellow employees and valued clients.

Below are steps to fill in the blank templates.

A. Participants break out into Working Groups (WG).

WG 1: Small and Medium Businesses

WG 2: Corporate Businesses

WG 3: Small and Medium Hotels, including Bed & Breakfast Inns

WG 4: Corporate Hotels

B. WGs review and discuss Matrix of *Tsunami Emergency Response for Business: Identification of Roles and Responsibilities*. Fill in Matrix by assigning Department(s) and/or job position(s) to activities. Note: Some responsibilities have been pre-designated to the Security Department and to All Departments.

C. WGs review and discuss the *Pre-tsunami event Planning Actions Matrix* and two (2) SOP Templates: *Distant and Local & Regional Tsunami Evacuation Responsibilities Checklist for Business*. Fill in Checklist by assigning Department(s) and/or job position(s) to activities.

D. WGs report on what they filled into their Matrices and SOP Template Checklists.

E. Post Workshop Follow Up Activities: All participants are to review and continue to update and implement the *Pre-tsunami event Planning Actions Matrix* as well as the SOP Template Checklists.

[illegible]

Pre-tsunami Event Planning Actions (in order of priority)	Target Year Completion (Recommended)	Responsible Department / Positions	Support Departments /Positions	Resources needed (e.g. equipment, consultant)	Status Year 1 (months 1-6)	Status Year 1 (months 7-12)	Status Year 2 (months 1-6)	Status Year 2 (months 7-12)
Ensure business is connected to reliable tsunami warning source of information.	Year 1							
Ensure Tsunami warnings can be received despite power black outs.	Year 1							
Ensure at least two tsunami warning sources available.	Year 1							
Ensure Tsunami warning information is monitored on a 24/7 basis.	Year 1							
Insert into Training Program: Staff is regularly trained on official warning, tsunami natural warning signs, tsunami wave travel times, and general awareness. (recommended annually)	Year 1							
Ensure Communication devices (i.e loudspeakers, sirens) are available to alert staff and customers .	Year 1							
Insert into Drill/Exercise plan: Communication devices (i.e loudspeakers, sirens) are tested periodically to ensure operability.	Year 1							

Pre-tsunami Event Planning Actions (in order of priority)	Target Year Completion (Recommended)	Responsible Department / Positions	Support Departments /Positions	Resources needed (e.g. equipment, consultant)	Status Year 1 (months 1-6)	Status Year 1 (months 7-12)	Status Year 2 (months 1-6)	Status Year 2 (months 7-12)
Insert into SOPs: Utility shut off procedures (main electrical, gas, water) and emergency generator start up procedures.	Year 1							
Insert into Training Program: Responsibilities and SOPs are (1) communicated to all staff and (2) tested regularly.	Year 1							
Determine evacuation strategy between horizontal land versus vertical building evacuation.	Year 1							
Evaluate suitability of evacuation refuge sites. Including: (1) Evacuation refuge sites are easily accessible for seniors and disabled. (2) Evacuation refuge sites are large enough to accommodate all staff and customers.	Year 1							
Ensure internal building evacuation routes are clearly marked.	Year 1							
Develop official public evacuation routes. Incorporate evacuation into SOPs.	Year 1							

Pre-tsunami Event Planning Actions (in order of priority)	Target Year Completion (Recommended)	Responsible Department / Positions	Support Departments /Positions	Resources needed (e.g. equipment, consultant)	Status Year 1 (months 1-6)	Status Year 1 (months 7-12)	Status Year 2 (months 1-6)	Status Year 2 (months 7-12)
Insert into Training Program: Official public evacuation routes and SOPS are communicated to all staff.	Year 1							
Coordinate emergency procedures with local emergency management agency, neighboring businesses.	Year 1							
Ensure clear SOPs for interpretation of warning messages and decision-making for evacuation are in place and communicated to staff.	Year 1							
Insert into Training Program: Staff able to communicate alarms to customers.	Year 2							
Ensure customers are familiar with alarm and evacuation procedures.	Year 2							
Ensure tsunami Information material is available for customers.	Year 2							
Insert in Drill/Exercise plan: Customer and staff evacuation procedures are drilled/tested at least once a year	Year 2							

Pre-tsunami Event Planning Actions (in order of priority)	Target Year Completion (Recommended)	Responsible Department / Positions	Support Departments /Positions	Resources needed (e.g. equipment, consultant)	Status Year 1 (months 1-6)	Status Year 1 (months 7-12)	Status Year 2 (months 1-6)	Status Year 2 (months 7-12)
Insert into Drill/Exercise plan: Department close down procedures are drilled/tested periodically	Year 2							
Insert into Drill/Exercise plan: Beach evacuation procedures are drilled/tested periodically	Year 2							
Insert in SOPs: Evacuation refuge sites are equipped for emergency (water, food, communication devices, checklists, etc.)	Year 2							
Insert in SOPs: Evacuation refuge sites are periodically checked and resupplied	Year 2							
Prepare a separate SOP/checklist on post disaster operations	Year 2							

***Distant* Tsunami Evacuation Responsibilities Checklist for Businesses**

Wave arrival time in 3 + hours from earthquake source region

This is a simple checklist to use when doing an evacuation. List the department(s) responsible for actions and number of minutes (e.g. + 5 minutes) after earthquake origin time.	Earthquake Origin Time: <u>0000</u>	
	Department(s)	Time (mins):
Tsunami Warning public alerts received for your locality. <i>*Tsunami Warning for your locality may be delayed to avoid prolonged evacuation. See Note below.</i>	_____	<u>+ 15</u>
Alert staff to prepare to initiate evacuation process	_____	<u>+ 20</u>
Alert clients / activate communication devices to initiate evacuation process	_____	<u>+ 30</u>
Guide clients to safety locations / provide supplies (e.g. water)	_____	<u>+50</u>
Prepare to shutoff utilities (e.g. electrical, gas, water) when directed	_____	<u>+50</u>
Prepare to start emergency generator when directed	_____	<u>+50</u>
Protection of key equipment (e.g. computers)	_____	<u>+50</u>
Removal of key documents (e.g. financial, personal information)	_____	<u>+50</u>
Initiate recall of off duty disaster response workers	_____	<u>+60</u>
Obtain accountability of staff and clients	_____	<u>+60</u>

Assess whether waves are damaging to facilities	_____	<u>tbd</u>
Obtain reports of any staff/client casualties	_____	<u>tbd</u>
Determine when to declare “All Clear” to staff / clients	_____	<u>tbd</u>
Prepare for post tsunami impact operations	_____	<u>tbd</u>

*Note: If you are alerted that tsunami wave arrival time will occur in greater than 6 + hours, begin a "heads up" alert notification process to assess the situation. Formulate a plan on how and when to enable your tsunami SOP response.

Local Tsunami Evacuation Responsibilities Checklist for Businesses

Wave arrival time in only minutes and less than 3 hours
from earthquake source region

This is a simple checklist to use when doing an evacuation for <i>local tsunami event</i> . Also, this may be used as a guide for <i>regional tsunami events</i> . List the department(s) responsible for actions and number of minutes (eg + 5 minutes) after earthquake origin time.	Earthquake Origin Time: 0000	
	Department(s)	Time (mins):
Strong and/or prolong earthquake ground shaking felt. (May not be felt during a regional earthquake event)	_____	<u>+ 1-2</u>
Alert staff and clients / activate communication devices to initiate evacuation process	_____	<u>+ 3</u>
Guide clients to safety locations / provide supplies	_____	<u>+ 5</u>
Local Tsunami Warning public alerts received	_____	<u>+10-15</u>
Shutoff utilities (e.g. electrical, gas, water)	_____	<u>+10</u>
Start up emergency generator	_____	<u>+10</u>
Protection of key equipment (e.g. computers)	_____	<u>+10</u>
Removal of key documents (e.g. financial, personal information)	_____	<u>+10</u>
Initiate recall of off duty disaster response workers	_____	<u>+15</u>
Obtain accountability of staff and clients	_____	<u>+30</u>
Assess whether waves are damaging to facilities	_____	<u>+60</u>

Obtain reports of any staff/client injuries and casualties	_____	<u>+120</u>
Determine when to declare “All Clear” to staff / clients	_____	<u>+120</u>
Prepare for post tsunami impact operations	_____	<u>+120</u>

A GUIDE TO TSUNAMIS FOR HOTEL GUESTS

NORTHEASTERN ATLANTIC
AND MEDITERRANEAN
Tsunami Information Center

NEAMTIC



TSUNAMI EVACUATION PROCEDURES

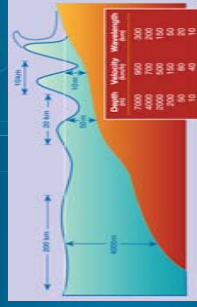
IN CASE OF TSUNAMI EVACUATION FOLLOW THE PROCEDURES EACH STEP FOR THE SAFETY OF YOURSELF AND OTHER PEOPLE
TSUNAMI EVACUATION INSTRUCTION HAS TO BE TAKEN SERIOUSLY EVEN IN THE CASES OF NON-DESTRUCTIVE EVENT.

1. When you feel a strong earthquake and you can hardly stand, or you feel a slow shaking that continues for a longer time, a Tsunami may have been generated.
2. Stay calm and do not panic.
3. After the shaking stops, move calmly to the designated assemble area (always check evacuation area of the hotel), then wait for further instruction by the hotel officials / security.
4. If the sea level receded, exposing fishes and corals, then you should move quickly to higher ground (check if the hotel is a designated vertical evacuation building). Do not go to the beach to confirm or to watch the tsunami.
5. If you are swimming on the shore you might not feel the earthquake, always be mindful of what is happening on the beach. If you see people curiously gathered on the beach, move away from the sea and go to the assemble area.
6. Hotel officials/security will evacuate all guests to higher ground and/or safe area that have been officially designated as tsunami evacuation area. All instructions will be given using a microphone system and/or a megaphone. Listen, follow all of the instruction and move in an orderly manner to the evacuation area.
7. During a tsunami stay calm and do not panic. Do not leave the tsunami evacuation area until it is officially announced by the authorities that it is safe to leave the evacuation area. Tsunami will come in several waves and there are time gaps between the waves.
8. During a tsunami emergency, the hotel staff, local disaster management office, police and other emergency organization will try to save lives please follow all their instruction and give your full cooperation.



WHAT IS A TSUNAMI

- Tsunami is a Japanese word closely translating to 'harbour wave'.
- Tsunami can happen during the day or night at anytime of the year.
- Tsunamis are generated as a result of water displacement usually triggered by a seismic event such as earthquake. Landslides, volcanic eruptions, nuclear explosions, and even impacts of objects from outer space (such as meteoroids, asteroids, and comets) can also generate tsunamis.
- Tsunamis are a series of waves that may impact coastlines for several hours. The first wave may not be the largest.
- Tsunami waves can come ashore in many different ways among which are: a wall of water (resembling white wash), a rapidly rising tide, and a series of surf like breakers.



- In the deep ocean tsunamis travel at a jet airliner speeds but the waves are only centimetres high and cannot be felt abroad ships.
- Tsunamis slow down and grow in height tremendously upon entering shallow water.
- Tsunamis could crest to 10 meters high heights; and it can strike with devastating force, and quickly flood all low-lying coastal areas

TSUNAMI RISK IN THE NEAM REGION

Although less frequent than in the Pacific and Indian Ocean tsunamis can hit the Mediterranean and North East Atlantic coastal areas causing extensive loss of lives and properties. Major tsunamis with ten-thousands of casualties and severe damage to coastal cities happened for example in Crete in 365, Lisbon in 1775, Messina in 1908 and Aegean Sea in 1956. Even recently a tsunami has been generated in the Izmit Bay, and affected the coastline extensively following the 1999 Izmit earthquake. At some locality the inundation distance ranged up to 35 meters. Furthermore, tsunamis have been generated in 2002 in Stromboli and in 2003 in Algeria though fortunately not very damaging. The Mediterranean area represents the collision between the European and the African plates, and comprises a number of geodynamic regions affected by different seismic activity extended from West to East. Furthermore volcanic and geomorphological processes could be at the origin of tsunamis in the area.



It is not a question of "if" but when it is going to happen !
It is not a question of "if" but when it is going to happen !



For more information visit:
NEAMTIC.IOC-UNESCO.ORG

NORTH-EASTERN ATLANTIC
AND MEDITERRANEAN
Tsunami Information Center

NEAMTIC

A GUIDE TO **TSUNAMIS** FOR HOTELS



Table of **CONTENT**

	Acknowledgement	i
	Foreword	ii
	Executive Summary	iii
I.	INTRODUCTION	1
	What is a Tsunami	2
II.	Tsunami Hazard and Mitigation in the North-Eastern Atlantic and the Mediterranean Seas (NEAMS)	3
	Tsunami Facts in NEAMS	3
	Understanding the Hazard and Identifying the Risks	4
	Understanding the warning	6
III.	Hotel Preparedness	9
	Building Preparedness	9
	Evacuation Strategy	12
IV.	Hotel as Evacuation Place	17
	General Considerations on Hotel as Evacuation Area	17
	Determining Evacuation Areas in the Hotel Premises	18
	Evacuation map, routes, and signs within the hotel premises	22
V.	Evacuation Planning and Procedures	25
	Evacuation Planning	25
	Decision to Evacuate	25
	Roles and Responsibilities	26
	Tsunami Evacuation Procedures	26
	Guidelines for Guests on Tsunami Evacuation	29
	Annexes	v
	References	viii

Executive Summary

This booklet summarizes steps that will guide hotels to prepare for tsunami hazards. This guidebook is to be used by hotel management; it is intended to direct them on how to build the hotel's capacity in evacuation planning for tsunami emergency. The guidebook outlines the necessary steps to be undertaken, such as preliminary preparedness assessment using a checklist from the "Tsunami Ready" Toolbox, understanding the warnings (natural warning and official warning), deciding on an evacuation strategy, consideration for a hotel to be an evacuation area and the standard operating procedures for tsunami emergency.

This guidebook is divided into five parts. The first part provides a brief information of what is a tsunami and why it is important for hotels to address this hazard as part of their business. Part 2 describes the tsunami hazard in the North-Eastern Atlantic and the Mediterranean Seas and efforts that have been taken in response to mitigate the hazard. Part 3 focuses on aspects that hotels need to take into consideration in building tsunami preparedness. This part also elaborates three different situations that influence evacuation strategies. Part 4 elaborates on considerations for a hotel to decide if the hotel could be a tsunami evacuation area, including determining the evacuation place in the hotel premises and on the signage needed for the evacuation place. Finally, part 5 highlights the evacuation planning and procedures for the hotel that may serve as their standard operating procedures in tsunami emergency.

This guidebook explains the steps in building tsunami preparedness, however, to successfully develop the plans and procedures the hotel has to do all the ground work. It is recommended to work through a participatory approach with all hotel stakeholders (staff and management) to simultaneously build in the capacity and ownership. At the same time, the hotel should also coordinate with the local disaster management office and/or other local authorities and stakeholders working on disaster and emergency management (for example red cross) to know more about the tsunami risks in the area as well as other local disaster management issues.

I. Introduction

Hotel is a part of the tourism industry that relies on guests/visitors. However, most hotels are located in tourist areas that are more and more exposed to disasters such as earthquake, volcano, sea level rise, and tsunami. Hotel guests, as tourists, usually are not familiar with the local situation and therefore are considered as one of the vulnerable group. They do not know of the hazards and risks in that particular area; thus the guest will not know what to do, and where to go if there is a disaster emergency. During emergency they came to a situation where they need to rely on those who know more about the local situation. In this case the hotel staff and management will be the most reliable source for the guests. Therefore, hotels need to include disaster preparedness as an integrated part of their business operation.

Although tsunami events occur less frequent compared to other disasters, recent tsunami events in the Indian Ocean (2004); Indonesia (2004, 2006, and 2010); Chile (2010); and Japan (2011) have shown that the effects of tsunamis can be catastrophic. The first priority when a tsunami occurs is the evacuation of the people in the tsunami risk areas. The time span between a warning and the impact of the first tsunami wave might be very short (especially for the locally generated tsunamis). This will affect on the when, how, and where the people have to be evacuated.

Once a tsunami early warning is received (either natural warning or official warning) hotels are responsible to assist and guide their guests for evacuation. It is very important for the tsunami evacuation plans and procedures to be integrated as one of the hotel's operational systems.

In the North-Eastern Atlantic and Mediterranean coastal areas, tsunami happens less frequently compared to the Pacific and Indian Ocean. However, there are evidence and records that major tsunami has happened and has caused fatalities and damaged, for example in Crete (365), in Lisbon (1775), in Messina (1908), and in Aegean Sea (1956). The most recent tsunami happened in 2002 in Stromboli and in 2003 in Algeria, fortunately are not too damaging. This historical record of past tsunamis, scientific trace of events, and written and/or oral reports, indicate a high certainty that another tsunami can happen in the future. It is not a matter of "*if the tsunami will happen*" but more of a question of "*when the next tsunami will happen*". Since most tsunamis resulted from an earthquake activity, it is not possible to predict when the next tsunami will happen. For this reason preparedness is the key for people to be able to respond to and recover from when the tsunami strikes again.

III. HOTEL PREPAREDNESS

What is Preparedness

Preparedness is activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warning as well as the temporary evacuation of people and property from threatened locations (UN/ISDR, 2004).

Disaster preparedness involves forecasting and taking preventive measures prior to an imminent threat. Preparedness comprises the ability to understand the warning (including the ability to receive and interpret the warning), to organize evacuation and/or other measures to be taken to minimize potential loss of life and damage during a disaster and to organize timely and effective rescue, relief and assistance.

Preparedness improves the response to the effects of a disaster; therefore, requires a standard operating procedure and regular testing of the systems and plans.

A disaster-prepared hotel is a hotel that has established its standard operating procedures, systems and plans. They are readily organized for the steps necessary in cases of a tsunami, including: emergency response, evacuation during disaster, and recovery plans after disaster. All of the hotel's stakeholders (management and staff) know how to prepare to, respond to, and recover from disaster.

Building Tsunami Preparedness

In general, hotel business has been characterized as business that has solid and consistent operating procedures and systems. Most hotels have established their emergency response system, especially to fire hazards. Therefore, building the tsunami preparedness should be embedded into the existing system. However, it still will require different adjustment and adaptation considering the complexity of tsunami hazard.

To build tsunami preparedness, the hotel needs to first assess its current capacity and to build based on the need to be more prepared. In Indonesia, to build tsunami preparedness in the hotel industry,

the Indonesian Ministry of Culture and Tourism in cooperation with Bali Hotels Association, supported by the German Centrum für Migration und Entwicklung (CIM) has developed a checklist that enables hotels to assess their state of preparedness². This checklist were implemented in several hotels in Bali under their “**Tsunami Ready**” programme (<http://www.tsunamiready.com>).

The checklist consists of six categories and in each category there are sets of questions to be answer to assess the state of current tsunami preparedness (see Annex):

- **Information Sources and Interpretation**, is to check the hotel's capacity to receive official tsunami warnings from the authority, interpret the warnings, and to disseminate the warning within the hotel.
- **Evacuation Procedures**, is to check the hotel's evacuation procedures from rooms, beach, and public places within the hotel.
- **Evacuation Route and Shelters**, is to check the hotel's evacuation route and signs, including the hotel as vertical evacuation.
- **Community Relations**, is to check external relations with the communities surrounding the hotel.
- **Cooperation**, is to check the cooperation amongst hotels in the surrounding area.
- **Post Tsunami**, is to check all of the preparation that needs to be considered post tsunami disaster.

This checklist is only a suggestion and to be use as a starting point. Each hotel might want to adjust and/or add more to the lists in accordance to the local context, regulation, hotel situation and needs. This checklist could also be use as tools to monitor and evaluate how the hotel is progressing in building their tsunami preparedness.

Once the hotel knows their current state of tsunami preparedness, the hotel can start to build their capacity to increase their tsunami preparedness. These are essential points the hotel needs to build inrelation with the tsunami preparedness:

- **Early warning systems**: Hotels should be able to timely receive the warning, especially official warnings, have the ability to understand the warning, and are able to further disseminate the warning to reach all part of the hotel. All hotel guests, visitors, and staff need to be able to hear and receive the warning. To receive the warning, the hotels need to have a close cooperation with the national authorities who are responsible, at national level, for issuing the warning.

² *The Tsunami Ready Toolbox*, Alexander Kesper, Ministry of Culture and Tourism Republic of Indonesia, Bali Hotels Association, Centrum für Internationale Migration und Entwicklung, 2008

- **Evacuation and Shelter:** This should be the primary concern of hotels, especially considering guest and visitors are considered vulnerable since they might not be familiar with the local situation. The hotel has to make sure that all guests, visitors, and staff could be safely evacuated to a designated safe area. Furthermore, taking into consideration that the hotel might be fully occupied, the safe area should be able to accommodate all evacuate. The hotel needs to assess if their building can be considered as vertical evacuation building (meeting all the criteria and standards) or not - in which they have to evacuate all guests, visitors, and staff out of the hotel premises.
- **Emergency Command Function:** In case of emergency hotels should have clear definition of the roles and responsibilities of each stakeholder. Each hotel unit / department should have a clear defined function what they have to do, who will do what and where, and whom they have to report to.
- **Emergency Personnel and Resources:** Hotels need to have procedures to mobilize staffs as emergency personnel with specific roles and ensure that all emergency response is carried out according to plan. Hotels need to ensure that the emergency personnel have the knowledge and skill to perform their duties as emergency personnel. Hotels also need to have all resources needed for emergency and during emergency is available at anytime.
- **Communication and supplies:** Public infrastructure might be paralyzed for several days after the disaster, communication may be cut off. Hotels need to make sure they have emergency communication equipment available, in working condition, and at hand, during and after the disaster, for example satellite phones. Past experience also shows that, in some cases, emergency supplies (water, food, and medical) can take several days before they can get through. Hotels need to ensure that they will have supplies to support them during emergency situation.
- **External Coordination:** The hotels need to coordinate with local administration and disaster management office (DMO) in developing the hotel's evacuation plan and emergency response. Check the local DMO post tsunami emergency plans and make the hotel's emergency plan based on the DMO's capacity. Form alliance with other hotel and businesses in the area to have better coordination and cooperation and develop common strategy in responding to the disaster.
- **Department Close Down Procedure:** Most hotels might already have this Department Close Down Procedures such as for fire related emergency, weather related emergency, and others. These procedures could be adapted for tsunami emergency. However, it is important to understand that in tsunami emergency, there might be only little time available, especially for the

locally generated tsunami cases. Therefore, it is important to concentrate on the essentials and/or have specific procedures for tsunami emergency.

- **Records Management:** Hotels need to ensure that all important documents and records are well secured during emergency. Guests' hotel records will be very important for post emergency response and reliefs as well as to make sure all people are accounted.
- **Restoring main functions and plan for recovery:** Hotels have to have plans on restoring their main function (water, sanitary, electricity, and communication) for emergency use after the disaster and have a short and midterm plan to recover from the disaster.

Evacuation Strategy

Tsunami threat in each country is different, therefore, the setting of the tsunami early warning is different from one country to another. There are countries that have a National Tsunami Early Warning Centre with the capacity to detect, analyse, and issue warning when a tsunami is coming to their coastline. Other country, which has lower tsunami threat, might rely on information from a Regional Tsunami Early Warning System. These settings will affect the time line of how long they will be able to issue the warning. Therefore hotels need to understand the tsunami early warning setting in their country to decide on their evacuation strategy. There are three basic possible scenarios that can be taken as a consideration to decide whether guests, visitors, and staff need to do an evacuation:

1. Earthquake is felt in the hotel area, but no tsunami warning is issued.
2. Earthquake is felt in the hotel area and a tsunami warning is issued.
3. Tsunami warning is issued, although the earthquake is not felt in the hotel area.

These situations would require different decisions and actions by the hotel, especially if related to tsunami evacuation procedures.

1. Earthquake is felt in the hotel area, but no tsunami warning is issued

Hotels located in an earthquake prone area might feel the earth shakes as it happened. The hotel management needs to decide whether to evacuate the guests from the building or not. Depending on the intensity of the earthquake felt in the hotel area, the hotel management might want to decide to evacuate all guests, visitors and staff once the shaking stops. The hotel has to decide on which earthquake intensity strength they would like to do evacuation

Hotel management also has to understand that an earthquake can be a natural sign of a tsunami. There is also a possibility that the official warning mechanism did not work because of the earthquake. Therefore, even there is no official tsunami warning received, hotel management might still need to consider doing tsunami evacuation procedures (See page 6).

as their standard operating procedures. Should the earthquake reach the level of intensity strength that the hotel has decided to do evacuation, they need to start to evacuate all guests, visitors and staffs once the shaking stops. Earthquake evacuation should be done from inside of the building to the designated assembly area outside the building (an open space).

The evacuation procedures involved evacuating guests from their rooms; from restaurants, lobby, function rooms (Ball room, meeting rooms) and corridors; from beach and pool areas; as well as evacuating the staff from the operating department of the hotel (diagram 3.1.). At the same time, after the shaking stops, the hotel management needs to confirm with the authorities whether the earthquake has generated a tsunami. If the authorities confirmed that **the earthquake did not generates a tsunami** and no tsunami warning is issued, then they should proceed with earthquake evacuation and emergency response. Hotel management needs to understand that it might take several minutes for the authorities to analyze and decide whether a tsunami warning

In locally generated tsunami, time is very crucial. Hotel management has to consider that the first wave may arrive with minutes. There is only short time period between the time of the earthquake and the time of the arrival of the first tsunami wave.

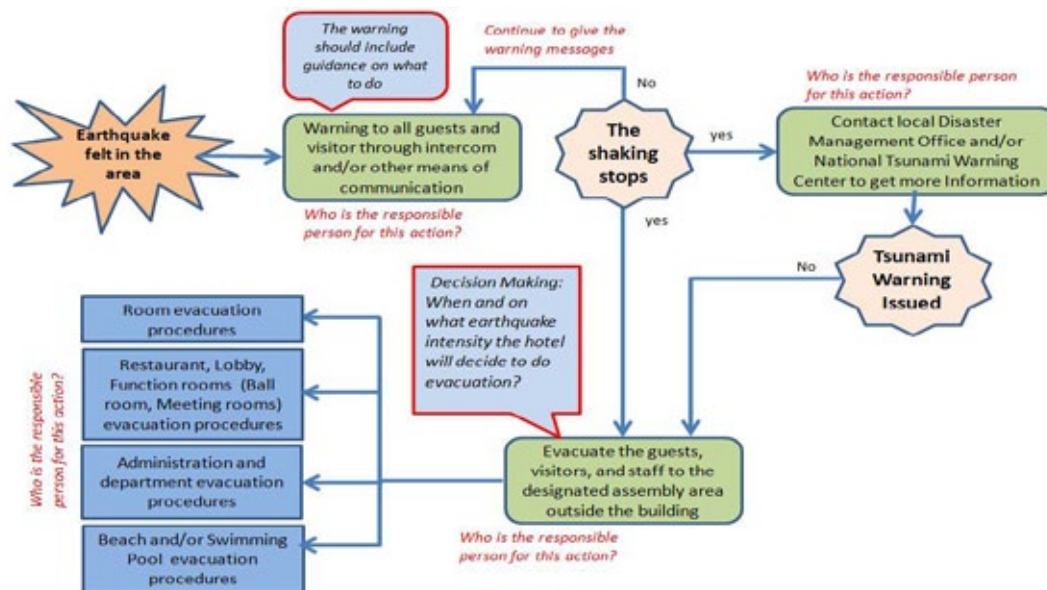


Diagram 3.1. Decision Making on Tsunami Evacuation When Earthquake is felt in the Area, no tsunami warning is issued

would be issued or not. Hotel management also has to understand that there is a possibility that the official warning mechanism did not work because of the earthquake. Therefore, even if there is no official tsunami warning received, hotels management might still need to consider doing tsunami evacuation procedures.

2. Earthquake is felt in the hotel area and tsunami warning is issued

In the case that an earthquake is felt in the hotel area and confirmation is received from the authorities that the earthquake has generated a tsunami (locally generated tsunamis), the hotel management will need to immediately start to initiate their tsunami evacuation procedures (diagram 3.2.). While the earthquake evacuation is in process the hotel also needs to warn all guests, visitors, and staffs that a tsunami warning has been issued and tsunami evacuation procedures has been initiated.

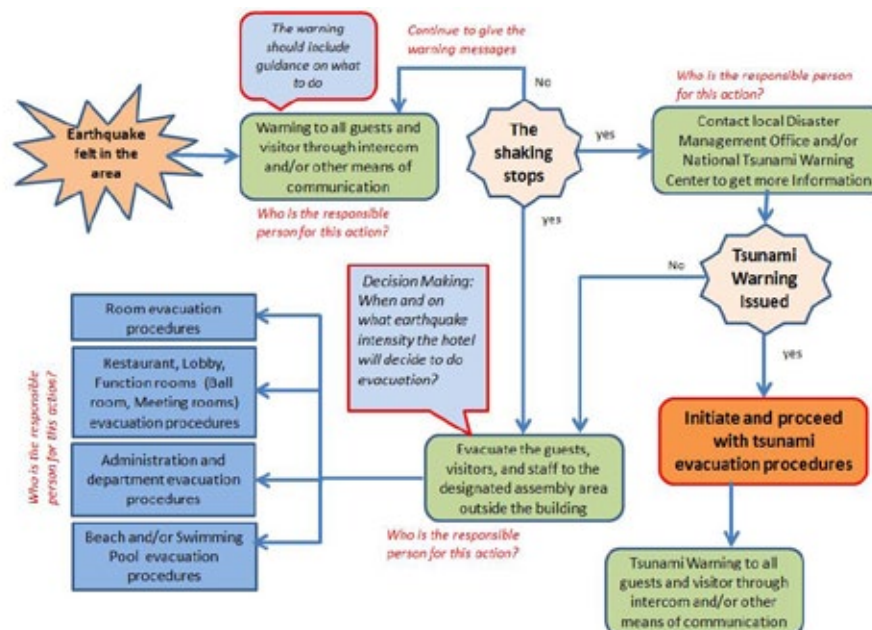


Diagram 3.2. Decision Making on Tsunami Evacuation When Earthquake is felt in the Area and a Tsunami Warning is issued

3. Tsunami warning has been issued although no earthquake is felt in the hotel area

Tsunami threat in some countries is due to a regional or ocean wide tsunamis, a tsunami that is generated by an earthquake that happened across the ocean. The earthquake is not felt anywhere near the hotel area, therefore, nobody in the hotel is aware that a tsunami is heading toward the coastline. In this type of situation the only reliable information is the official warning issued by the National Tsunami Warning Centre (NTWC) of the country.

Once the warning is received, the hotel needs to understand the information/message specifically the level of the warning, the estimated time of arrival, and any advice issued by the National Tsunami Warning Centre. Depending on the distance, a threat of a regional or ocean wide tsunami, might take a few hours to arrive in the coastline. The threat might decrease or escalate as it travels through the ocean. Therefore, it is important to continue to monitor the warning that is issued by the NTWC. Should the warning is issued as a low threat (depending on the analysis and evaluation of the NTWC) there might not be a need to do a full evacuation. Evacuating people from the beach (for hotels located by the beach) might be suffice. Other action that might be taken is to start all preparation for tsunami evacuation so when the threat escalates and tsunami evacuation procedure needs to be initiated all preparation has been done (diagram 3.3.)

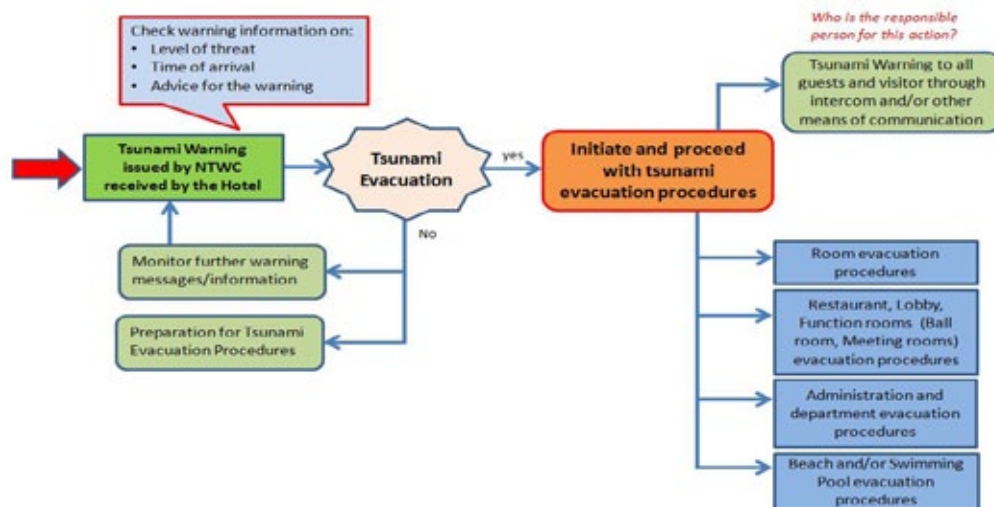


Diagram 3.3. Decision Making on Tsunami Evacuation after a Tsunami Warning is issued

IV. HOTEL AS EVACUATION AREA

General Considerations on Hotel as Evacuation Area

Hotels have to decide where to evacuate their guests, visitors, and staff during tsunami emergency situation. Hotels and their complex can be considered as an evacuation area. Hotel management has to decide whether to evacuate horizontally to a higher ground (in the hotel premises or outside of the hotel premises) or vertically into the hotel's building. Multistory hotels located at the beach make an ideal evacuation structure. Thus the guests and other people in the area can easily and quickly reach these hotels. Hotel rooms, ballrooms, meeting rooms, restaurants, and parking garage that are located above the estimated tsunami inundation depth can be an ideal place for people to take refuge of during the tsunami.

However, before deciding to designate the hotel as an evacuation area, there are criteria and measures to be consider. (Diagram 4.1.)

1. Hotel location

Location of the hotel will be the first consideration for tsunami evacuation. However, before considering this the hotel needs to make sure that the hotel is not located in a tsunami risk area. This can be confirmed by the local authority/agency that is responsible in developing tsunami risk map of the area. The tsunami risk map will indicate if the hotel is indeed located in a tsunami inundated area and what is the estimated tsunami inundation depth of the area. Hotel that is considering to use their premises as an evacuation area needs to make sure that the area is outside the estimated inundation area and/or higher than the estimated inundation depth. Multistory buildings in the hotel premises such as the hotel building, parking garage building are potential to be the evacuation place.

In some cases, although the hotel is located in a tsunami risk area, the hotel ground area and lobby is higher than the estimated tsunami inundation depth because it is elevated in such a way. Hotel ground that is above the estimated tsunami inundation depth can be considered as the area for

horizontal evacuation (evacuation area that can be reach horizontally, including running to higher ground), people and guests should be easily evacuated to this place.

Should the hotel is not located in a tsunami risk area, the hotel might still want to consider to become a tsunami evacuation area to safe the life of the people evacuating from a tsunami.

2. Hotel design and structures

Multistory hotel buildings that are built on concrete frame and/or steel structures, and meet the seismic standard and building codes, are potential location to be a vertical tsunami evacuation building. As a vertical evacuation building, the hotel structure must not only withstand the preceding earthquake with minimal damage and remain functional but also has to withstand the tsunami wave and debris it carried. Therefore it is important to first assess the hotel structure to be sure that it can serves as an evacuation building. Commonly the third floor and above of an evacuation building can be consider as a save place to refuge, however, it depend on the the estimated tsunami inundation depth of the area.

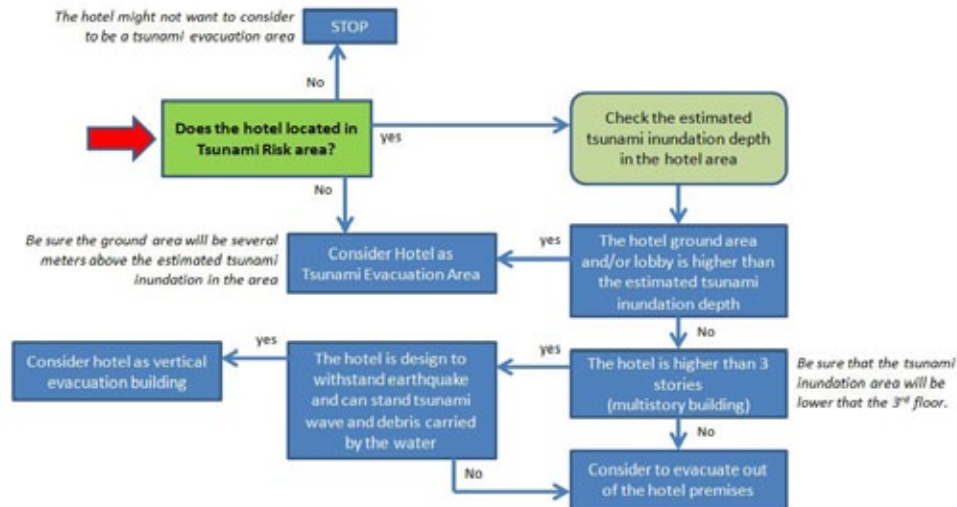


Diagram 4.1. Decision Making Process on Type of Tsunami Evacuation

Determining Evacuation Areas in Hotel Premises

1. On hotel a ground

Open spaces in the hotel premises, which are located on a higher ground above the estimated tsunami inundation depth, are potential to be tsunami evacuation areas. The advantages of using

Full version is on Workshop CD

these open spaces as a tsunami evacuation area are as follows:

1. Open spaces can be easily accessed by hotel guests or visitors. Furthermore if an earthquake happens in the area, many people (especially hotel guests) might be reluctant to reenter the hotel building again.
2. Open space at a higher ground level can accommodate a large number of people.
3. Open space can be use as park, sport area, and/or jogging area.
4. Open space in the hotel premises can be a safe evacuation process (no traffic and transportation are involved).

The main consideration for hotel ground/open space as an evacuation area is that the location does not directly face the beach/open sea where the tsunami wave will approach. In addition of a higher ground location the evacuation area also should be well covered and be saved from incoming wave as well as retracting waves.

Some modifications might be needed to designate an open space as an evacuation area:

1. Ensure that the open space is on a higher ground, above the inundation area and can withstand potential damage and/or erosion from the tsunami wave and the debris it carried.
2. Ensure there are clear access during day time and night time.
3. Ensure the safety and security of the people in this area during and after the tsunami strikes.
4. Ensure all the necessary equipments needed for emergency are available on the evacuation area.

2. On parking garage

Some hotels do not have open spaces on their premises, however there are parking garage/ building adjacent to their hotel. Parking garages are usually open space with vertical column as the structure. This allows for the water to flow over the building with minimal resistance. The parking garage should be designed and be built in accordance to the seismic standard and building codes and could withstand the tsunami wave and the debris it carried. The main disadvantage of a parking garage is when it is full of cars during the tsunami: it reduces the space, limits people circulation area and the cars can be a part of the destructing debris to the building structure.

3. Inside Hotel building

Evacuating vertically in the hotel has many advantages:

1. Evacuating to the upper floor in the hotel often is faster than evacuating to a higher ground outside of the hotel.

2. Evacuating within the hotel do not need vehicles therefore it is not affected by the traffic
3. Evacuation management will be easier
4. Evacuation routes and places are easy to mark

However, before deciding to use the hotel building as tsunami vertical evacuation building, the hotel has to make sure that:

1. The hotel has to withstand earthquake with minimal damages and can stand tsunami wave and debris carried by the water.
2. The evacuation location in the building should be as far as possible from the beach and are secured from the incoming tsunami waves.
3. The building must be strong, accessible in a short time and have enough capacity to accommodate all evacuees.
4. The evacuation location/floor should be higher than the estimated tsunami inundation depth.
5. The evacuation building should have the necessary equipment and infrastructure for emergency situation, wide enough emergency stairs, emergency electricity, and other requirements.

4. Evacuation out of the hotel premises

Saving lives of the hotel guests, visitors, and staff should be the main concern of the hotel. If the hotel does not qualified as a tsunami vertical evacuation building and there are no higher grounds in the premises of the hotel, the hotel should consider evacuating all of the people out of the hotel premises to higher ground or to a designated evacuation area.

Evacuating out of the premises would require a more thoughtful steps and procedures such as considering the traffic, security, and the safety of the people:

- The evacuation area should be out of reach of the tsunami waves either for horizontal or vertical evacuation. The evacuation area should consider the maximal expected wave height, the inundation area and inundation depth.
- The evacuation routes are free from the wave's path and are leading away from the incoming waves. If the evacuation area is out of the hotel premises, the evacuation routes should consider the traffic, road conditions and other obstacles that will affect the travel time needed to reach the evacuation area.
- The evacuation area should be able to accommodate the expected number of people that are supposed to use the evacuation area. The hotel needs to ensure that the hotel's number of guests can be accomodate in the evacuation area. If it is a public evacuation area the hotel

Full version is on Workshop CD

need to take into account the number of people from other hotels, the community and people from the streets

- The evacuation area should be reachable and can accommodate people with special needs (disabled, pregnant woman or parent with babies, and the elderly).
- The hotel needs to consider the time between the warning is issued and the time of the arrival of the first wave, The hotel needs to make sure that people can reach the evacuation area could be reach in time.
- The tsunami evacuation area could be an assembly place during the tsunami and/or could be an emergency shelter for a longer period of time.

5. Vertical evacuation structures

Hotels that are not qualified as a vertical evacuation building and are located in flat areas that are far away from higher grounds might want to consider to build a stand alone, simple and strong vertical evacuation structure. A vertical evacuation structure could be made of steel structure or concrete columns that are strong enough to withstand the tsunami wave. The hotels need to make sure that the evacuation structure can accommodate all the people in the hotel when the tsunami strikes.



*Tsunami Evacuation Tower in Kushimoto Town, Wakayama Prefecture
(http://www.icharm.pwri.go.jp/publication/newsletter/newsletter6_oct07_e.html)*

Evacuation map, route, and signs within the hotel premises

If the hotel decides to use its premises as a tsunami evacuation area, the hotel will be responsible to ensure that guests, visitors, and staffs know where to go to in case of emergency. If the hotel decides to evacuate the people out of the hotel premises, the guests, visitors, and staff should also know the information on the closest designated evacuation area.

The most visible way to let the guests, visitors, and staffs know about the evacuation area and routes are by providing hotel evacuation map that is readily available in each room and to posting signs in the hotel premises. Evacuation routes, safe locations, assembly points should be clearly marked on the hotel premises so those who evacuate will have no difficulties in finding where to go to the safe place.

There are different tsunami signs available however since 2008, UNESCO/IOC encouraged its member states to develop and use IOC-compliant tsunami signage and symbols in order to promote consistency in understanding and actions. There are three basic signs within the ISO 20712 standard which provides specifications and guidance on safety sign for tsunami hazards:



Tsunami Hazard Zone Sign

This tsunami sign informs the hotel guests that they are in a tsunami hazard area as has been identified by the local authorities. It is important to have this sign be visible and posted in the hotel premises as well as in the surrounding areas of the hotel especially in the area where many people usually gather such as open space, parks and on the beach.



Example of ISO 20712 Tsunami Hazard Sign Placement



Evacuation Place in High Ground Sign

This sign should be placed on the site that has been designated as a safe high ground for evacuation. High ground evacuation place can be a natural open space that is located beyond the reach of the estimated tsunami wave height, or an artificially/engineered high grounds (which can function as open space, sport area, or park) that are build as a tsunami evacuation place.



Vertical Evacuation Building Sign

This sign should be placed in the hotel building if the building has been designated as a vertical evacuation building (meeting all the criteria to be a vertical evacuation building). This sign informs the hotel guests that in case of tsunami evacuation emergency they should go to this building. Inside the building there has to be signs which indicate the floor they should to go to as the safe place. This sign has to be visible from far away as well as from an eye level as the people get closer to the building.

These tsunami signage should be placed at the evacuation place, indicating to the evacuee that they have reached the designated safe place. It is equally important is to also place the evacuation routes signs. There are also different evacuation route signs. The ISO 20712 approved evacuation routes should use the same basic signs as the above complementing with directions where the evacuee have to go.



Example of ISO 20712 Tsunami Evacuation Map

V. EVACUATION PLANNING AND PROCEDURES

Evacuation Planning

A tsunami evacuation plan is a plan that will be the reference when a tsunami warning has been issued and an evacuation need to be done. Tsunami evacuation plan involves deciding and preparing the tsunami evacuation area (chapter IV), the decision making procedures to do the evacuation, and the evacuation procedures. The purpose of hotel tsunami evacuation is to save the lives of hotel guests, visitors, and staff. Therefore, the planning should be able to guide the management to decide when to evacuate, to guide all people to the designated evacuation area through the evacuation routes and to conduct everything based on the agreed procedures and processes.

Decision to Evacuate

The decision to evacuate is the first step of the evacuation process. During emergency situations (either experiencing the earthquake or receiving tsunami early warning – chapter III), the hotel management needs to analyze, makes assessment of the situation and decide whether to evacuate the people or not. These decision criteria should be noted as part of the standard operating procedures. Several factors the hotel needs to consider in deciding to evacuate are:

1. **The earthquake**; the hotel needs to decide to evacuate the people immediately after the event, (especially for locally generated tsunami) for example the decision might be based on the intensity of the earthquake felt during the event or how long they feel the shaking.
2. **Timeline**; the hotel needs to consider the time needed to safely and effectively evacuate the people, for example to consider the location of the evacuation area, is it near or far, whether the evacuation involves heavy traffic or not.
3. **Location of the evacuation area**; is the evacuation area located in the hotel premises or outside of the hotel premises, will it be a vertical evacuation or using a high grounds?
4. **Evacuation routes**; special consideration might be needed for evacuation that is outside the hotel premises;
5. **Number of people to be evacuated**; the number of guests and visitors at the time of emergency;
6. **Hotel capacity and resources**; the personnel and resources available at the time of the event.

Roles and Responsibilities

Tsunami evacuation is a complex process. Hotel tsunami evacuation also has its own complexity especially related to people it involves, for example the type of people (hotel guests might consist of people from different cultures with different languages) and the number of people to be evacuated. Hotel management has to clearly define the roles and responsibilities of their staff during emergency situation. The evacuation plan has to clearly designate specific tasks to the staff especially who will do what, when, and where. This tasks will be a part of the hotel's standard operating procedures. Due to the nature of emergency, a less time consuming procedures might need to be established. However, these procedures and processes should continue to be a part of the roles and responsibilities of the specific functions of the hotel units / departments.

The hotel needs to make sure that no guests remain behind, including those who might need special assistance to evacuate. To ease the process of checking if all guests have been safely evacuated, the hotel might want to consider setting up a task team (for example guest evacuation team) that will be responsible in evacuating the guests from their rooms.

The task of the “guest evacuation team” is not only to evacuate all guests from their rooms, but also to mind the visitor to the hotel as well as public who might seek shelter in the hotel. Therefore the hotel should make sure of systematic and easy procedures and should make use of the existing resources available. Special attention needs to be placed on the evacuation of guest rooms since this task requires a lot of time and human resources. Members of the guest evacuation team can be drawn from employees from relevant departments and shifts like housekeeping, bell service, room service, stewarding, duty manger, and night manager etc. Please note that the composition of the guest evacuation team during night shifts and on public holidays might be different from regular shifts and days. Every member of the team should have a realistic designated number of rooms and/or floors to check. Ensure the safety of the team and be aware of the very limited time. Members of the evacuation team should at least be proficient in basic English ³.

³The Tsunami Ready Toolbox, Alexander Kesper, Ministry of Culture and Tourism Republic of Indonesia, Bali Hotels Association, Centrum fur Internationale Migration und Entwicklung, 2008

Tsunami Evacuation Procedures

Room Evacuation Procedures:

1. Knock on the door of the guest room and shout: 'Tsunami Evacuation!'
2. If there are no response, enter the room. Make sure the guest evacuation team has the master key to enter the rooms.
3. Search the bedroom and bathroom areas and check the walk in cupboard.
4. If the room is empty, mark that the room has been checked and is empty (see “all clear tags”). Proceed to the next room.

Full version is on Workshop CD

5. If the room is occupied, tell the guest to proceed to the evacuation area immediately. Point out the direction to the evacuation route.
6. Tell the guests to leave their luggage and bring only their valuables and identification cards.
7. As the guests leave the room, make sure they lock the door and mark the room as has been checked and move to the next room.
8. If there is a guest in the room who does not want to leave **DO NOT** mark the room as empty. However, do proceed to the next room.
9. When the whole floor has been checked, double-check the rooms without the mark and make sure the room is empty.
10. When all their designated rooms are check and clear, the evacuation team members should assist other team members or should proceed directly to the evacuation area.

***"All Clear Tags"** can be placed on the doorknobs after a guest room is checked and cleared. This can avoid double checking and might help when searching for missing guests. All clear tags should be stored in fire hose cupboards, in room service trolleys as well as at the housekeeping department or wherever else the emergency keys are stored for collection. 'All Clear Tags' can also be used by other departments to mark those rooms and facilities are successfully shut down. Evacuation personnel should be informed about where 'All Clear Tags' are stored and make use of them wherever it makes sense⁴.*

⁴ The Tsunami Ready Toolbox, Alexander Kesper, Ministry of Culture and Tourism Republic of Indonesia, Bali Hotels Association, Centrum für Internationale Migration und Entwicklung, 2008

Note: Some guests might also require physical assistance to evacuate

1. *Bring disabled guest or guests requiring additional assistance to evacuate to the emergency staircase.*
2. *Ask other guests to assist the person. If nobody could assist, leave these guests in the staircase area until all rooms on the whole floor are checked.*
3. *Return to assist the disabled guests to reach the evacuation area.*

Lobby, Restaurants, Bars, Ball Rooms, Meeting Rooms and Banquet Rooms Evacuation Procedures:

1. Cease all servings, stop any music, and turn on lights.
2. Inform the guests in the room of the tsunami alarm and tell them to proceed to the evacuation point. Point out the direction to the evacuation route or nearest emergency exit.
3. Direct all guests out of the room. Evacuate the guests sitting at tables closest to the exit first and then working down through the room.

4. If necessary inform all tables individually and tell the guests they must proceed immediately to the evacuation point.
5. If any guest needs assistance to evacuate, instruct other able persons to assist, if nobody could help, assist the guest once all the other people have been evacuated from the room.
6. If any guest refuse to leave the room, they must be escorted out by two waiters/employees.
7. Make sure to check public toilets, storage, or other enclosed rooms in the area.
8. Once all the guests have been evacuated, close the room and mark the room as has been checked and empty.

Beach and/or Swimming pool Evacuation Procedures

If the hotel is located on the beach and/or have swimming pool on the ground floor, the hotel is responsible to alert all the people on the beach and swimming pool of the tsunami warning and to continue with the beach and swimming pool evacuation procedures. Evacuating people on the beach and/or swimming pool could be the responsibility of the lifeguards or beach security.

As some of the guest might be swimming or do water sports (surfing or sailing), it is important for the lifeguards and/or beach security to be able to inform them using megaphones or other signals that can get their attention.

In the case that the earthquake is felt in the hotel area, make sure the beach personnel are familiar with the natural tsunami warning signs (see page 6) and to report any suspicious signs indicating a possible tsunami to the relevant decision makers

1. Get attention of the guest on the beach by shouting "Tsunami Evacuation!"
2. Make sure that the people on the water that a tsunami warning has been issued for the to get out of the water and start evacuating
3. Check all restrooms/toilets, changing rooms and showers in order to make sure that people are aware of the warning.
4. Guide the people around to the evacuation area.
5. Make sure that the beach and/or swimming pool is empty and nobody returns (for example to get their belongings or to watch the tsunami come)

Administration and Hotel Operation / Department Evacuation Procedures

Hotel management is also responsible to make sure that all staff is safely evacuated and all operations are securely close down in emergency. Most hotels probably have already established this department close down procedure for example in the case of fire emergency, weather emergency. These procedures can be adapted for tsunami emergency.

Guidelines for Guest on Tsunami Evacuation

To ensure all guests and visitors are familiar with the hotel policy on safety for tsunami evacuation procedures, in addition to providing an evacuation maps and evacuation routes and signs, the hotel should also provide information on practical steps for tsunami evacuation to their guests. Having these steps will ease the *guest evacuation team* in ensuring that all guests understand, willing, and be cooperative during the evacuation process. Example of steps to guide hotel guests in tsunami emergency are:

1. When you feel a **strong earthquake and you can hardly stand, or you feel a slow shaking that continues for a longer time**, a Tsunami may have been generated.
2. Stay calm and **do not panic**.
3. After the shaking stops, **move calmly to the designated assemble area (always check evacuation area of the hotel)**, then wait for further instruction by the hotel officials / security.
4. If the sea level receded, exposing fishes and corals, then you should move quickly to higher ground (check if the hotel is a designated vertical evacuation building). **Do not go to the beach to confirm or to watch the tsunami**.
5. If you are swimming on the shore you might not feel the earthquake, always be mindful of what is happening on the beach. **If you see people curiously gathered on the beach, move away from the sea** and go to the assemble area.
6. Hotel officials/security will evacuate all guests **to higher ground and/or safe area that have been officially designated as tsunami evacuation area**. All instructions will be given using a microphone system and/or a megaphone. Listen, follow all of the instruction and move in an orderly manner to the evacuation area.
7. During a tsunami stay calm and do not panic. **Do not leave the tsunami evacuation area until it is officially announced by the authorities that it is safe to leave the evacuation area**. Tsunami will come in several waves and there are time gaps between the waves.
8. During a tsunami emergency, the hotel staff, local disaster management office, police and other emergency organization will try to save lives **please follow all their instruction and give your full cooperation**

The guests need to be reminded that in case of tsunami evacuation they have to follow the procedures each step for the safety of themselves and other people, and all tsunami evacuation instruction has to be taken seriously even in the cases of non-destructive event.

Annex



This checklist gives an overview about the steps which are necessary in order to get a hotel tsunami ready. Supporting information is provided in the 'Tsunami Ready' fact sheets (<http://www.tsunamiready.com/>). This list is only a suggestion. Please feel free to copy the list and alter it according to the needs. Should you have any comments or ideas for improvement please let them know so they can share your ideas with others.

A. Information Source and Interpretation		
Task / Items	Status	Follow up
a. Hotel is connected to reliable early warning source		
b. Tsunami early warnings can be received despite power black outs		
c. There are at least two early warning sources available (e.g. SMS, TV, VHF)		
d. Early warning information can be received on a 24/7 basis		
e. Early warning information is monitored on a 24/7 basis		
f. Responsible staff knows how to interpret warnings in order to initiate evacuation		
g. Clear SOP's for interpretation of warning messages and decision making are in place and communicated		
h. Staff is familiar with natural early warning signs and general tsunami facts like likely arrival times etc.		
i. Communication devices like loudspeakers and/or sirens are available and operational to alert staff and guests, also on the beach (consider power outages)		
j. Staff knows how to communicate alarm to guests		
k. Staff and guests are educated on how to interpret tsunami alarm Guests are familiar with evacuation procedures		
l. Tsunami information material for guests is available in every room		

B. Evacuation Procedures		
Task / Items	Status	Follow up
a. Responsibilities and SOP's are clearly defined and communicated to all staff		
b. Guest and staff evacuation procedures are implemented and tested		
c. Department close down procedures are implemented and tested		
d. Beach Evacuation procedures are implemented and tested		
e. Official public evacuation routes are known and communicated		
f. Hotel management and staff are familiar with public emergency procedures and preparations		
g. Test alarms and evacuations are carried out on an irregular basis		

C. Evacuation Route and Shelter		
Task / Items	Status	Follow up
a. Decision on horizontal versus vertical evacuation has been made		
b. Internal evacuation routes are clearly marked		
c. Suitability of evacuation spot has been evaluated by expert		
d. Evacuation spot is easily accessible		
e. Evacuation spot is large enough for all guests and staff (at least 1 m ² /person)		
f. Shelter is equipped for emergency (water, food [for at least 3 days] communication devices, check lists, important contacts etc.)		
g. Shelter and equipment are checked at least every 2 weeks		

D. Community Relations		
Task / Items	Status	Follow up
a. Cooperation opportunities with the immediate general public have been explored		
b. Problem of how to deal with access demands of the general public to hotel has been addressed and a solution found		

E. Cooperation		
Task / Items	Status	Follow up
a. Hotel management consulted with neighbouring hotels, the local administration and relevant institutions on emergency cooperation and procedures		

F. Post Tsunami (the following questions need to be addressed)		
Task / Items	Status	Follow up
a. How can guests and staff be evacuated if transport infrastructure is destroyed		
b. Does it make sense to prepare post disaster plans with other hotels to share resources like equipment, emergency supplies, doctors etc.?		
c. Where can official disaster related information and instructions be obtained from?		
d. Which organizations can help and how can they be contacted? (e.g. US/Australian consulate/army, private organisations like Hills & associates etc.)		
e. Who are the official Indonesian search & rescue organisations and how can they be contacted?		
f. Who else needs to be informed (company headquarters etc.)?		
g. Where could the hotel evacuate to once the water receded if the building is not safe anymore and how can guests and staff be supplied with basic necessities?		
h. Does it make sense to collaborate with other hotels nearby		

CRISIS AND EMERGENCY MANUAL

OHR/OHANA

For Educational and training purposes only.

Information is relevant to Hawaii warning system and local conditions. Current as of 1995.

TSUNAMI



CRISIS AND EMERGENCY MANUAL

OHR/OHANA

For Educational and training purposes only.

Information is relevant to Hawaii warning system and local conditions. Current as of 1995.

TSUNAMI ALERT SYSTEM

Tsunamis are ocean waves produced by earthquakes or underwater landslides. The word is Japanese and means "harbor wave," because of the devastating effects these waves have had on low-lying Japanese coastal communities. Tsunamis are often incorrectly referred to as tidal waves, but a tsunami is actually a series of waves that can travel at speeds averaging 450 (and up to 600) miles per hour in the open ocean.

The major tsunami detection system is the National Oceanic and Atmospheric Administration's Pacific Tsunami Warning System. Civil Defense sirens will be sounded statewide at three hours, two hours, one-hour, and 30 minutes prior to the estimated first wave arrival time. All siren actions will be accompanied by detailed Civil Defense instructions over NOAA weather radio, local news radio and television. All coastal areas are vulnerable regardless of the direction where the earthquake occurred. The hotel Command Center will open. The warning system is as follows:

Tsunami Watch –Significant distant earthquake has occurred. Tsunami approach is not confirmed but possible. No siren will sound. Prepare for possible upgrade to tsunami warning.

Tsunami Warning –Tsunami approach confirmed. Sirens will sound. Monitor radio and television. Be prepared to evacuate when advised or ordered by Civil Defense.

Local Earthquake –May cause you to fall or have difficulty standing. A local earthquake is a tsunami warning. Waiting for local authorities to announce a warning may be too late. Initially protect yourself from earthquake effects and when the shaking stops, leave the evacuation zones immediately.

Urgent Tsunami Warning –A possible tsunami generated by a significant earthquake in local waters. The sirens will sound. Turn on radio. If an urgent tsunami warning for your island is announced, leave the evacuation zones immediately.

Tsunami Evacuation –Sirens will sound. Turn on radio or television. Those who are in tsunami evacuation zones found in the phone book white pages must begin evacuation when the evacuation order is issued by civil defense typically 3 to 4 hours prior to wave arrival. City buses will leave evacuation zones and police will seal off roads no later than 45 minutes prior to the anticipated arrival of the first wave.

Evacuation –Buildings constructed of steel and or concrete six or more stories high can consider vertical evacuations to the 3rd floor or above. Those choosing a vertical evacuation must remain there until the "All Clear" is announced. Otherwise leave the zoned area by walking or driving. If driving, anticipate traffic gridlock.

CRISIS AND EMERGENCY MANUAL

OHR/OHANA

For Educational and training purposes only.

Information is relevant to Hawaii warning system and local conditions. Current as of 1995.

ACTION STEPS

- The Manager on Duty will initiate the Vertical Evacuation Plan.
- The Manager on Duty will contact the Maintenance Foreman/Supervisor to initiate the "Tsunami Flood Secure Procedure" listed below.
- All staff members will make every effort to assist guests in the evacuation process.

VERTICAL EVACUATION PLAN

- Local Tsunami: Considering wave arrival could be within minutes, sound the general alarm followed by a Public Address announcement indicating the possibility of an approaching Tsunami and to calmly proceed to the 3rd floor or higher.
- Pacific wide Tsunami: Notify staff, concessions, guests and patrons of the Tsunami Watch or Warning and indicating estimated wave arrival time and safe zones, 3rd floor or higher or outside the Tsunami Flood Zone.
- Discourage guests from attempting to drive vehicles out of Waikiki. Encourage guests/valet to relocate vehicles from basement parking to above ground parking structures.

If a wave is confirmed and time permits, begin flood secure procedure:

TSUNAMI FLOOD SECURE PROCEDURE

- Maintenance staff will shut off systems possibly affected by an incoming rush of water such as electricity, gas, water, sewage, and fuel lines.
- Prepare emergency generator for flood damage.
- Maintenance staff will move all flammables to a safe place designed for such storage.
- Maintenance will block off lower floor openings into hotel with sandbags or flood shields.
- Maintenance and Security will check emergency lighting and flashlights.
- Security will be responsible for securing the building.
- The manager on duty will post guest advisories or make PA announcements depending on time available regarding tsunami arrival time with relevant warnings and instructions.

CRISIS AND EMERGENCY MANUAL

OHR/OHANA

For Educational and training purposes only.

Information is relevant to Hawaii warning system and local conditions. Current as of 1995.

POST TSUNAMI FLOOD PROCEDURE

- The manager will prepare a space for operations and front desk on 3rd floor or above should evacuation be necessary. Prepare to secure money and important documents.
- Bell staff will relocate vehicles and portable equipment and secure elevators on 3rd floor or higher.
- Communication attendants will check emergency communication equipment.
- All staff members will make an effort to close all doors and windows.
- In the case of an evacuation of a specific area or entire building, no one will return to the property until an all clear is given by the proper authorities.
- No one will re-enter the property or proceed down from a vertical evacuation until the proper authorities give an all clear.
- Help trapped and injured people
- Conduct damage assessment before allowing personnel to return to flood damaged areas. Maintenance will begin a search for safety hazards:
 - Live electrical wires or electrical damage
 - Leaking flammables
 - Toxic hazardous wastes
 - Damage to building foundation, water lines, sewer lines
- Maintenance will restore the Fire Protection System.
- Open windows and doors to help dry building.
- When necessary, test and analyze silt and standing water so that the proper health and cleaning protocols can be employed.
- Have an industrial hygienist inspect any area where mold growth is found, typically around baseboards, ceiling tiles, light fixtures, upholstery and porous surfaces such as paper documents.
- Photograph flood damage.
- The media will not be allowed to tour the property without specific permission from the executive office—see handling the media section.

CRISIS AND EMERGENCY MANUAL

OHR/OHANA

For Educational and training purposes only.

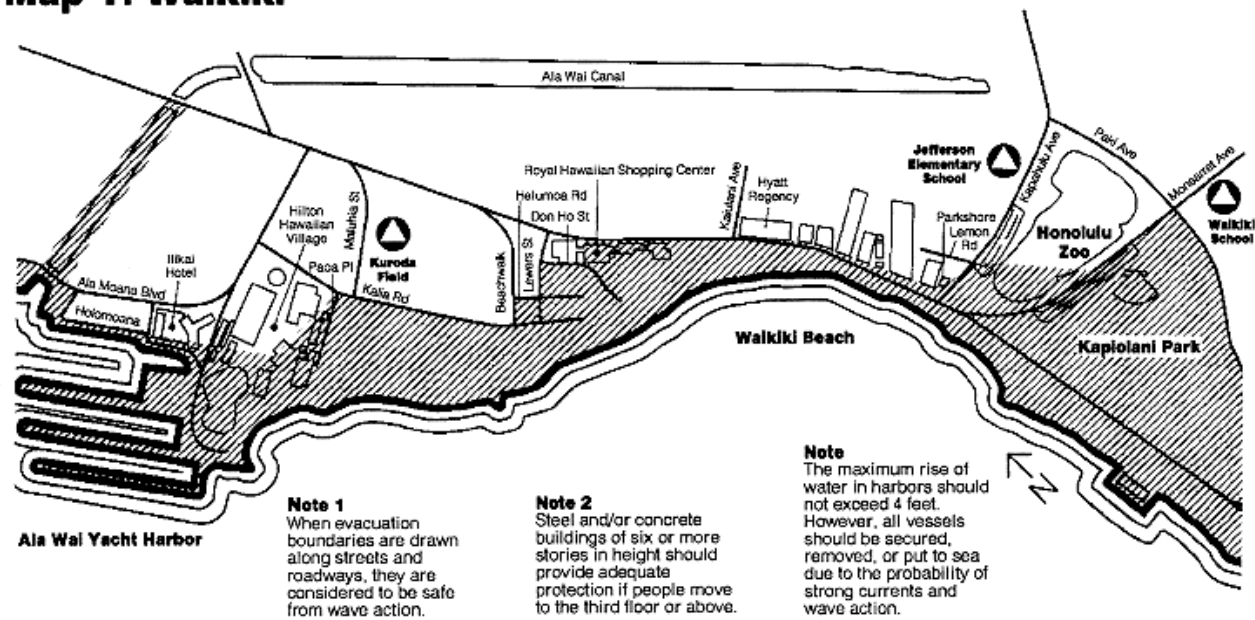
Information is relevant to Hawaii warning system and local conditions. Current as of 1995.

PROPERTIES OUTSIDE EVACUATION BOUNDRIES

- Senior hotel staff, in consultation with the Outrigger Command Center, will decide whether Tsunami Flood Secure Procedures will be implemented.
- Senior hotel staff will decide to evacuate or relocate guests to other properties.
- Senior hotel staff, in consultation with the Senior Vice President, will determine what aid or assets the property might provide to other Outrigger properties, and to the community.

TSUNAMI FLOOD ZONE

Map 1: Waikiki



DISASTER RESPONSE GUIDEBOOK for Hotels and Motels on Washington's Coast



Washington Military Department
Emergency Management Division

JULY 2006

Introduction

This guidebook was developed by the Washington Military Department, Emergency Management Division, which is the agency responsible for helping state and local governments prepare for emergencies. It contains practical advice on how to respond to disasters. We extend our appreciation to Bob Hugo, general manager of the Shilo Inn Ocean Shores for allowing us to use his model emergency plan as the basis for this guidebook.

DO DISASTERS OCCUR ON WASHINGTON'S COAST?

Washington's coastal communities experience disaster situations every year. Each disaster has lasting effects, both to people and property. Knowing what to do can reduce fear, anxiety and losses that accompany disasters.

If a disaster occurs in your area, local government and disaster responders will try to help you, but you need to be ready as well. Local responders may not be able to reach you immediately, or they may need to focus their efforts elsewhere.

WHAT YOU SHOULD KNOW

You should know how to respond to any disaster that could occur in your area, such as earthquakes, tsunamis, extreme weather, flooding, and other natural disasters described in this guidebook.

Your organization should also be ready to be self-sufficient for a minimum of three days. This may mean providing shelter for guests and employees, as well as first aid, food, water, and sanitation.

MORE INFORMATION IS AVAILABLE

Used in conjunction with information and instructions from local officials, this guidebook will help you be responsive to your guests and employees should a disaster occur.

WHAT THIS GUIDEBOOK COVERS

A DVD accompanies this guidebook (located in the front sleeve): *Tsunamis in Washington*, (run time: 4:31:26). It presents useful information that will assist you to respond to disasters.

The Emergency Telephone Contact sheet is a convenient place to record all emergency contact names and telephone numbers in one place for emergency use.

Place this guidebook in a central location, such as the front desk, so that it can be located quickly by all personnel. Take this guidebook with you if you must evacuate your premises.

You may choose to insert additional pages to address your facility's unique situation and requirements.

Weather Radios

NOAA WEATHER RADIO (NWR)

NWR is a nationwide network of radio stations broadcasting National Weather Service **Warnings**, **Watches**, **Forecasts** and other hazard information 24-hours a day.

Working with the Federal Communications Commission (FCC) Emergency Alert System, NWR is an “all hazards” radio network, making it your single source for complete weather and emergency information. NWR broadcasts warnings and post-event information for all types of hazards—both natural, such as tsunamis, and, environmental (such as chemical spills).

Broadcast range from a NWR transmitter is approximately 40 miles.

Weather radios come in many sizes and with a variety of functions and costs; from simple, battery-operated portables, to CB radios, scanners, short wave sets, and in some cars and TVs.

NWR broadcasts **Warnings** (when the specific hazard is a significant threat to public safety and/or property, probability of occurrence and certainty of location is high, and the onset time is relatively short), **Watches** (when conditions are favorable for the hazard but either the start time, probability of occurrence or location is uncertain), and **Forecasts** and **Non-weather Hazards** information 24-hours a day.

An **Emergency** refers to an event that by itself would not kill, injure or do property damage, but indirectly may lead to other things that could result in a hazard.

Specific Area Message Encoding (SAME) technology lets listeners pre-select the NOAA National Weather Service and non-weather

alerts they want to receive, based on the county where they live. Warnings, watches, and statements that may activate the NWR SAME system include, but are not limited to, the following events:

SAME ALERTS*

- Tornados
- Severe Thunderstorms
- Flash Floods
- Tsunamis
- Special Marine Warnings

* SAME alerts only historical events for Winter Storms, Wind Storms, and Flooding.

HAZARDS RELAYED FROM LOCAL AUTHORITIES

- Avalanches
- Child Abductions
- Civil Dangers
- Civil Emergencies
- Law Enforcement Warnings
- Immediate Evacuation
- Shelter-in-Place
- Hazardous Materials Warnings
- 9-1-1 Telephone Outages
- Nuclear Power Plant Warnings
- Radiological Hazard Warnings

*NWR SAME activation is determined by local needs.

Emergency Telephone Contacts

Hazardous Materials/
Materials Peligrosos

Medical/
Médico

Police/
Policia

Fire/
Bomberos

Emergency Dial: _____ **9 1 1** For life-threatening events only.
OUTSIDE NINE ONE ONE
LINE

Note: List emergency phone numbers only. Do not add numbers of vendors, service organizations, or other non-emergency contacts. This list is for employee and guest safety exclusively. This book is to be used by employees of establishment.

Name of Hotel or Motel: _____

Street Address of Hotel or Motel: _____

Front Desk Telephone: _____ Extension: _____

Maintenance: _____ Extension: _____

Housekeeping: _____ Extension: _____

Restaurant: _____ Extension: _____

Police Non-Emergency: _____

Fire Non-Emergency: _____

Hospital: _____

Coastal Medical Clinic: _____

Ambulance: _____

General Manager of Hotel or Motel

Name: _____

Office: _____ Extension: _____

Home: _____ Cellular: _____

Emergency Telephone Contacts

Assistant General Manager of Hotel or Motel

Name: _____

Office: _____ Extension: _____

Home: _____ Cellular: _____

Regional Manager of Hotel or Motel

Name: _____

Office: _____ Extension: _____

Home: _____ Cellular: _____

Restaurant Manager

Name: _____

Office: _____ Extension: _____

Home: _____ Cellular: _____

Gas Utility Daytime: _____ After Business Hours: _____

Electricity Utility Daytime: _____ After Business Hours: _____

Water Utility Daytime: _____ After Business Hours: _____

Propane Utility Daytime: _____ After Business Hours: _____

Emergency Supply Checklist

Disasters happen anytime and anywhere. And when disaster strikes, you may not have much time to respond. If you've gathered supplies in advance, your business can endure an evacuation or confinement of guests and employees. Maintain the supplies you'd most likely need for a Shelter-in-Place instruction.

- Prepare your organization to be self-sufficient for a minimum of 3 days
- Store your supplies in a convenient place known by all staff
- Change your stored water supply every 6 months
- Rotate your stored food every 6 months
- Re-think your needs, and replace batteries once a year
- Personnel should maintain a minimum 3-day supply of personal medications and extra eye glasses.

MAINTAIN THESE ITEMS IN YOUR EMERGENCY SUPPLIES:

Water

- Store enough water for the average number of people staying in your facility
- At minimum, 1 gallon of water per person per day
- Store water in plastic containers such as soft drink bottles. Avoid using containers that will decompose or break, such as milk cartons or glass bottles

Food

Select foods that require no refrigeration, preparation or cooking and little or no water, such as:

- Ready-to-eat canned meats, fruits and vegetables
- Canned juices, milk, soup (if powdered, store extra water)
- Staples, such as sugar, salt, pepper
- High energy foods: peanut butter, granola bars, trail mix
- Foods for infants, elderly persons or persons on special diets
- If you must heat food, maintain a supply of Sterno™
- Comfort foods: cookies, hard candy, sweetened cereals, lollipops, instant coffee, tea bags
- Plastic storage bags for food
- Paper cups, plates and plastic utensils and cooking utensils
- Non-electric can openers

First Aid Supplies

- First aid kit and first aid manual
- Roll 3" cohesive bandage
- 3"x 5" sterile dressing
- Germicidal hand wipes or waterless, alcohol-based hand sanitizer
- Antibacterial ointment
- Cold packs
- Aspirin or nonaspirin pain reliever
- Anti-diarrhea medication
- Laxative
- Antacid (for stomach upset)

Emergency Supply Checklist

- Syrup of Ipecac (use to induce vomiting if needed)
- Sterile adhesive bandages in assorted sizes, hypoallergenic tape
- Scissors, tweezers, needle
- Thermometer
- Assorted sizes of safety pins

Hygiene Supplies

- Infant diapers
- Feminine supplies
- Personal cleansing agent/soap
- Toilet paper, towelettes
- Liquid dish detergent, paper hand towels

Other Supplies and Equipment

- Battery operated radio and extra batteries
- Flashlights and extra batteries
- Fire extinguishers, small canister, ABC type
- Sturdy shoes or work boots, work gloves
- Matches in a waterproof container
- Rain gear
- Blankets or sleeping bags
- Wrench (to turn off utilities), pliers
- Plastic sheeting and duct tape
- Map of the area (for locating shelters)
- Aluminum foil
- Plastic bags for sanitation
- Plastic bucket with tight lid for wastes

Tsunami

Tsunamis can move faster than a person can run. If you hear a tsunami siren or feel the ground shake, evacuate to higher ground immediately!

The Pacific Coast, Strait of Juan de Fuca, Puget Sound, and large lakes have experienced tsunamis. Sudden raising or lowering of the Earth's crust during earthquakes generally cause a tsunami, although landslides and underwater volcanic eruptions can generate tsunamis as well.

PERSONNEL RESPONSIBILITIES

1. The front desk must monitor NOAA Weather Radio or a local radio station for tsunami warnings at all times.
2. If a tsunami warning is issued, advise all guests and employees to head for higher ground immediately. See "Evacuation" in this manual.
3. Alert all staff to notify all guests.
4. Keep telephone lines open for emergency use.
5. In the event of evacuation, front desk personnel should take the guest registration book, emergency reports, and this Disaster Guidebook with them to the safe evacuation site.

IMPORTANT SAFETY INFORMATION

- Tsunamis can occur at any time, day or night.
- A tsunami consists of a series of waves. Often the first wave may not be the largest.
- The danger from a tsunami can last for several hours after the arrival of the first wave. The following waves may be larger than the first wave.

- Sometimes a tsunami causes the water near shore to recede. If you see a sudden change in the shoreline, head inland or for higher ground immediately.
- Follow the routes indicated by Tsunami Evacuation Route signs.
- For locally generated tsunamis, where you might feel the ground shake, you may only have a few minutes to move to higher ground. **DO NOT** wait for a tsunami warning to be announced.
- A tsunami from a local earthquake could strike some areas before a tsunami warning could be announced.
- If people nearby seem not to know that a tsunami is coming, tell them and help them move away from the danger.
- Follow the instructions of local emergency and law enforcement authorities.
- High, multi-story hotels are located in many low-lying coastal areas. The upper floors of these hotels may provide a safe place if you cannot move quickly inland to higher ground.
- Homes and small buildings located in low lying coastal areas are not designed to withstand tsunami impacts. Do not stay in these structures should there be a tsunami warning.
- Staying away from rivers and streams and all low-lying coastal areas is the safest advice when there is a tsunami warning.
- **Do not return to low lying areas or the beach until emergency officials give the "All Clear" notice.**

Evacuation Procedures

EVACUATION PLAN

- Each business should develop an evacuation plan that addresses the unique elements of its site.
- Include all personnel in the development of your plan to ensure that all areas are adequately addressed.
- Insert your plan in this section of your Disaster Response Guidebook.
- Evacuation plans should be practiced every 6 months by all personnel.
- Update your plan after each practice exercise to address new situations.
- In the event of evacuation, front desk personnel should take the guest registration book, emergency reports, and this Disaster Guidebook with them to the safe evacuation site.

TSUNAMI EVACUATION

- Coastal or sub-marine landslides, or volcanic eruptions can generate tsunamis, but large sub-marine earthquakes most commonly cause them.
- Tsunamis are generated when these geologic events cause large, rapid movements in the sea floor that displace the water column above. That swift change creates a series of high-energy waves that radiate outward like pond ripples. Local offshore tsunamis would strike the adjacent shorelines within minutes.
- If unable to get to an assembly area or to high ground, moving to higher levels in a building (verticle evacuation) may be the only choice.

- Tsunami waves can continue for hours. The first wave can be followed by others a few minutes or a few hours later. And the later waves can be larger.
- If a tsunami is generated off our coast, there may be no time to send a hazard warning. The first waves could arrive within 15-30 minutes. The only tsunami warning might be an earthquake felt on shore, or a sudden receding of the shoreline water.

WHEN AT THE BEACH

- If you hear a siren, or other warning devices, or if the ground shakes, do not hesitate. Move inland or to high ground immediately!
- If the ocean recedes from the shoreline, do not hesitate. Move inland or to high ground immediately.

ON-SITE EVACUATION PROCEDURES

1. **REMAIN CALM!**
2. If management personnel are present, they will take control of the situation. If management personnel are not present, maintenance or security personnel will take control of the situation.
3. In the event of an evacuation, a designated safe gathering place should be identified. The safe place will be dependent on the type of emergency. The safe place may be a parking lot, a restaurant, conference room, or a large room that will accommodate the number of people involved.

Continued on next page.

Evacuation Procedures

4. In the event of any emergency, all department heads should stay in contact with each other in order to promote cooperative efforts to ensure the effectiveness of this plan, and the safety of guests and employees.
5. In the event of a disaster, front desk will notify all departments. Assign this task to available staff if possible.
6. Notify all occupied rooms stating: "Maam/Sir, we have an emergency situation. We have been instructed by the authorities to direct all of our guests to: 1) exit the (hotel/motel) immediately; or 2) go directly to the (safe gathering place identified by those in charge)."
7. Tell the guests to use the stairways to exit the building (if you have elevators). Elevators must be available for guests who are unable to use the stairs, such as the physically challenged, injured, and the elderly.
8. Check all guest areas (restaurant, laundromat, fitness area, pools and saunas, public restrooms).
9. Evacuate yourself and all remaining personnel, taking the guest register, emergency reports, cash drawer keys, and this Disaster Response Guidebook.
10. Do not reenter the building or area until it has been declared safe by the official authorities.
11. All employees and guests should gather in the parking lot/safe gathering place. It is the responsibility of the head of each department or senior manager to note who is there and who is missing.
12. All guests and employees are to remain in the safe place until official authorities provide further instructions.

EVACUATE TO A SHELTER OR ASSEMBLY AREA

1. If instructed to evacuate to a shelter or assembly area, follow the route authorities recommend. Don't take shortcuts, they may be blocked or expose you to dangerous situations.
2. Listen to an NWR radio to make sure the evacuation order applies to your area. Local officials may call for evacuation in specific areas at greatest risk.
3. Listen to an NWR radio for information on evacuation routes, temporary shelters and procedures. Leave the area quickly and calmly.
4. Avoid using the telephone. Call 9-1-1 only in life-threatening emergencies.
5. Staying calm will help you move safely and avoid delays or accidents caused by irrational behavior.
6. Do not assume that a shelter will have everything you need. Take your Disaster Supply Kit.
7. Carpool to the evacuation site, if possible. Traffic may be very heavy and parking at a shelter or assembly area may be limited.

HOW TO SHELTER-IN-PLACE

1. One of the instructions you may be given during a disaster is to Shelter-in-Place. This means you should go indoors and stay there until authorities determine that it is safe.
2. To Shelter-in-Place, close and lock doors and windows.
3. Turn off ventilation systems (heating, air conditioning, fireplace vents).
4. Go to a room with the fewest doors and windows, and seal the room.
5. Listen to your portable radio for official instructions or notice that it is safe to leave.

Emergency Utility Checklist

Hotel/Motel Gas Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.

Restaurant Gas Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.

Emergency Utility Checklist

Hotel/Motel Propane Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.

Restaurant Propane Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.

Emergency Utility Checklist

Hotel/Motel Electricity Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.

Restaurant Electricity Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.

Emergency Utility Checklist

Hotel/Motel Water Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.

Restaurant Water Main Shut Off

Paste in a typed instruction telling exactly how to shut off the utility. Include a simple illustration if possible.



This guide is a product of the *Tsunami Education, Preparation and Recovery Project for Downtown Hilo*; An innovative partnership between the Pacific Tsunami Museum and the Hawai'i County Department of Planning.

HOW TO PREPARE YOUR BUSINESS FOR THE NEXT

TSUNAMI

A Guide for Businesses in the Hawaiian Islands



Tsunami damage and debris on Hilo Street following the
April 1, 1946 tsunami.



Preparing Your Business for a Tsunami Event

There are two important factors to consider when preparing for a tsunami: location and primary risk. By assessing your existing risk, based on what has happened in the past, you can consider all the factors that may have an impact on your business in the next tsunami event.

1) Where is your business located?

Check to see if your business is located within a tsunami evacuation zone. To do this you can check the front of your local telephone book for county-specific evacuation zone maps. You can also visit the NOAA Pacific Services Center website which contains a feature allowing you to search by address: http://www.csc.noaa.gov/psc/project_pages/tsunami.html. County Civil Defense Agencies may also post tsunami evacuation maps on their websites and at their offices.

The tsunami evacuation zones are based on how far inland past tsunamis inundated.

“It really took its toll, because the fish market was about fifty yards from our store, all of it was gone. No more open fish market, and the store right next to that was demolished and they were not able to reopen at all. We were fortunate enough that at least my dad could reopen the store for business.”

Laura Chock, 2007(Hawaii Chicken Store)

2) What is your primary risk?

The size of your business should not be a primary factor in determining the course of action needed to prepare your business for a tsunami; however, identifying your primary risk (which is usually a reflection on the size of the business) is a good way to begin thinking about how to customize your preparedness and evacuation procedures.

Businesses/entities such as restaurants, theaters, museums, schools, markets and large offices or factories that contain large numbers of customers/staff/vendors should focus preparatory measures on preventing a tsunami from causing loss of life.

During the warning for a distant tsunami there should be ample time for everyone on the premises to evacuate safely. Conversely, a locally generated tsunami dictates a rapid-response that immediately activates a concise and correct response to a large earthquake followed by effective evacuation.

Businesses like boutiques, arts and craft stores, and specialty shops that focus on the sale of items that

may be replaceable, should focus on developing and maintaining an up-to-date list of stock and investigate the types of insurance are available both for stock and irreplaceable items. Businesses such as this need to have a well-thought-out evacuation plan for a distant tsunami and a priority list of items to remove. **In a locally generated tsunami scenario, the main focus for all businesses must be on personal evacuation and the safe evacuation of staff and customers.**

Small offices such as small law firms with one to five staff members and small capacities for customers, should focus on ensuring that all important or original paperwork is copied and kept out of the evacuation zone (personnel records, tax information, client information, etc.), that all digital files are backed-up on a hard drive and kept out of the evacuation zone and that there is an evacuation plan for both distant and local tsunamis.

Businesses with any potentially hazardous stock that may be an environmental or human threat in the event of a tsunami should contact the appropriate authorities to prepare a necessary plan of action for a tsunami.

“It was a crushing blow to see Mamo Street as nothing, just rubbles.”

Ernie Kurohara, 2007 (Kurohara Tailor store)



The 1946 tsunami inundates the Kamehameha Avenue/Kalakaua Street intersection.

How to Create an Evacuation Plan for a Locally Generated Tsunami

In a locally generated tsunami scenario there may not be time for sirens or an official warning. Even if there is an official warning, there may only be time to evacuate yourself, your staff, and customers. It is possible that your only warning of a potential local tsunami will be experiencing one of the natural warning signs, such as an earthquake.

Be sure to include an appropriate response to a large earthquake in your locally generated tsunami plan. If you are down at sea-level and a large earthquake occurs you should immediately move to high ground. If you are in a reinforced concrete building, this could mean moving to the highest floor possible. Do not wait for sirens or other official warnings as there may not be time.

Locally generated tsunamis can be very deadly and arrive onshore in seconds to minutes. There may not be time for sirens to be activated, so be aware of the natural warning signs of a tsunami.

Using an evacuation zone map, mark the location of your building and determine the quickest, safest route to higher ground, which, as previously stated could be the highest floor in a reinforced concrete building. You should remember that the quickest route inland may not always be the safest and you should be familiar with several different routes to safety in case an incident occurs that prevents you from evacuating via your primary route.

You should post the evacuation route at the exit(s) of your business and train staff on evacuation procedures.



Evacuation procedures posted near exits at the Pacific Tsunami Museum.



How to Create an Evacuation Plan for a Distant Tsunami

In the event of a distant tsunami, there may be time to evacuate priority items from your business to a safe location. The extent to which this can be done depends greatly on how much time there is until the first tsunami wave is expected and the amount of traffic surrounding your business. The EAS and other forms of notification will be activated as soon as confirmation of tsunami warning is received. Once out of the evacuation zone, you will not be allowed to re-enter the area until the all-clear is announced.

Preparedness is the key to safe and efficient evacuation as well as reducing damage potential. The following steps may be used as a guideline:

-Regularly back-up important data. Portable external hard drives are now affordable, light, and easy to quickly remove and transport. An entire system can usually be backed up on to a single drive and your computer can be configured to run regular weekly data back-ups.

-Copy original documents. Original documents such as personnel records, tax information, legal documents, warranties etc. should be copied and kept in a safe location out of the tsunami evacuation zone.

Remember:

- Cell phone and fixed telephone networks may be saturated during a tsunami watch/warning due to the high volume of calls. Have a plan with your family/staff that does not involve calling each other.
- There may be heavy traffic from other business owners wanting to evacuate stock so be prepared for traffic congestion and allow adequate time to evacuate.

-Mark items for removal. If you do have time to remove items from your business, you will save a lot of time if you have already sorted through, prioritized, and marked items for removal. You could use colored stickers or markers on items for removal. Additionally, you can make a list of items for removal with the name of the person responsible for their removal and safekeeping.

-Inventory all stock and equipment. Regularly inventory all stock and equipment as well as update stock/equipment provider details. Having all of this information on hand (and safely out of the evacuation zone) will substantially help you to get back on your feet again after a destructive tsunami. You may also wish to videotape/photograph your premises for insurance purposes.

-Display your plan and train staff. Once you have developed a plan for both distant and locally generated tsunamis, display your plan near to the business exits and train your staff on the evacuation procedures for both scenarios.



- Prepare for an earthquake.** As a large earthquake may be phase one of a tsunami event, you should prepare for an earthquake while preparing for a tsunami. Walk through your business and take measures to ensure that falling debris will be kept to minimum.
- Know how to 'shut down'.** Secondary disasters such as fire can be caused as a result of an event such as an earthquake. When developing an evacuation plan know how to shut everything down (gas, water, electricity) so that you do not increase the risk to your property from these potential hazards.
- Create and maintain an evacuation Kit.** These can be useful in any emergency situation.

Take Care of Yourself – Take Care of Others

The most important thing to remember when preparing for a tsunami, or indeed any hazard, is that you, and only you, are responsible for your own personal safety. Studies of the actions of Hilo residents during the 1960 tsunami indicate that a large number of people who heard the siren that meant 'evacuate immediately', stayed put and waited for further instructions. If you experience any of the natural warning signs of a tsunami, or you hear a siren or announcement to evacuate, then evacuate immediately; do not fall into the 'wait and see' group. If you live outside of the tsunami evacuation zone but have friends in the evacuation zone, set up a plan ahead of time to host them at your safe location until the all-clear is given.

Every business should consider owning a NOAA Weather Radio. The receivers can be set to turn themselves on automatically whenever a tsunami warning is issued. NWR broadcasts weather forecasts, severe weather and tsunami warnings, and emergency information 24 hours a day from the National Weather Service office in Honolulu. Different from commercial radios because they operate on a very high frequency, the units are available at local stores including Longs, Radio Shack, Home Depot, City Mill, and as well as online. More information is available at: <http://www.prh.noaa.gov/hnl/pages/nwr.php>

"I'll tell people that they better not look at the tsunami; running away from the tsunami would be wise, just wise."

Bing Kow, 1946 tsunami, O'ahu

The Tsunami 'Business' Buddy System

You should not assume that emergency personnel will be available to help everyone who needs assistance during a tsunami evacuation emergency.

Although the Tsunami Buddy System was designed as a residential neighborhood program in Oregon, it has since been applied in communities around the world, and can be just as easily applied to the business community. The Buddy System was designed for members of a community to take care of those needing assistance during a tsunami evacuation by:

- 1) Identifying persons in the community who need help getting out of the evacuation zone to a safe area.
- 2) Assigning a responsible "Buddy" who lives/works nearby to help their neighbor/family member/colleague, who needs assistance to evacuate.



Tsunami Buddy System Logo.

There are a number of situations where people may need assistance:



- An elderly person may not be able to move quickly enough on their own.
- A parent with several young children could have trouble getting them all to safety without help.
- Someone with a physical or mental disability may need assistance.
- If you know of someone who might have difficulty evacuating during a tsunami, try to match them up with a "buddy."

The Tsunami Buddy System can also be applied to the customers of your business to ensure their safety by assisting them in safely clearing the evacuation zone.

Training your staff in safe evacuation procedures for customers may help to ensure that everything goes smoothly during a real event. Your tsunami 'Business' Buddy plan should address the needs of customers and staff with a wide range of disabilities and mobility issues.



Recovering From a Destructive Tsunami

The ability to recover from a destructive tsunami will depend entirely on the extent of damage that has occurred and the amount of advance planning and preparation you have done. Immediately following a destructive tsunami, rescue and safety-related operations in the disaster zone will take precedence over other activities and it may be some time before business owners and residents are allowed back to their homes and businesses in the inundated area.

There are things you can do ahead of time to ensure that, should your business sustain damage, the amount of time it will remain closed can be minimized. Remember, there may not be easy access to the information listed below following a tsunami, so doing your research BEFORE the event occurs will ensure that you have all the information at hand to get the business back up and running quickly.

“Disaster Recovery Begins Before the Disaster.” American Red Cross, 2008

Become familiar with agencies such as the Federal Emergency Management Agency (FEMA) and the U.S. Small Business Administration who may administer disaster assistance funds/loans following a tsunami. www.fema.gov

- 1) Check out information on organizations such as the American Red Cross who respond immediately to disasters. www.redcross.org
- 2) Understand the process of obtaining disaster assistance funds and loans and be clear on your eligibility and what essential paperwork you must have in order to file a claim.
- 3) Keep an up-to-date inventory of stock so that you will be able to quickly and concisely list items lost/damaged.
- 4) The more comprehensive your recovery plan is, the quicker you will be up and running again following a destructive tsunami and, with other businesses doing the same, the quicker the local economy will stabilize following the disaster.
- 5) Unfortunately, most insurance policies do not cover damage from tsunamis. If tsunami insurance is something that you are interested in learning more about, talk to your insurance agent. Although insurance varies dramatically on a case-by-case basis, it appears that in the United States some programs like FEMA’s National Flood Insurance Program (NFIP) may include water damage from tsunamis (and hurricanes) in their policies. For more information contact the NFIP.

In the event of a destructive tsunami, the local civil defense agency will work with state and federal authorities to provide all the assistance necessary for the various programs available.

www.floodsmart.gov/floodsmart/



Checklist

Please use this list to check off tasks that you have accomplished in preparing your business for the next tsunami.

- ☐ Check the location of your business in relation to the tsunami evacuation zone.
- ☐ Determine the primary risk of your business or entity.
- ☐ Back up all digital files onto a removable hard drive and keep out of evacuation zone.
- ☐ Make copies of (and scan where possible) all important original paperwork and keep copies outside of the evacuation zone.
- ☐ Mark all filing cabinets and files with a sticker indicating those that need to be removed and their priority when there is time for removal of items during an evacuation (distant tsunami).
- ☐ Create an evacuation plan. This plan can list the names of those responsible for the removal of items, a staff phone tree, a list of items for removal including the locations of these files and their priority, and evacuation route. Each member of your staff should have a role to play in the removal of items and should keep a copy of this plan with them at home or with a friend out of the evacuation zone. Also, be sure to name an alternate staff member in case of absence of the primary staff member.
- ☐ Train staff on how to evacuate themselves and customers to safety during a local tsunami scenario.
- ☐ Keep an evacuation kit at your business.
- ☐ Determine a meeting place for yourself and your family outside of the tsunami evacuation zone. Ask your staff to do the same.
- ☐ Maintain an up-to-date inventory of all your equipment and stock on site and out of the evacuation zone.

Open for Businesssm



Table of Contents

Letter of Introduction	1
Safeguarding Your Investment	5
<i>Open for Business</i>sm Self-Assessment	6
Getting Started	7
What Is at Risk?	8
Protecting Your Critical Resources	9
Developing Your Business Continuity Plan	10
The Business Continuity Forms – Things to Consider	11
Business Continuity Forms	19
Employee Contact List	21
Key Supplier/Vendor Information	22
Key Contacts	23
Critical Business Functions	24
Recovery Location	25
Vital Records	26
Critical Telephone Numbers	27
Supplies	28
Equipment/Machinery/Vehicles	29
Computer Equipment and Software	30
Voice/Data Communications	31
Miscellaneous Resources	32
Disaster Response Checklist	33
Incident Response, Recovery & Restoration Checklist	34
Property Protection Checklist — Protecting Your Building and Its Contents	35
Additional Resources	43
What About Costs?	44
Conclusion	45
IBHS Member Companies	46
<i>Open for Business</i>sm Feedback	47

Open for Businesssm Self-Assessment

Are you concerned that your normal business operations might be interrupted by a natural or human-caused disaster ?

☐ Yes ☐ No ☐ Unsure

Have you determined what parts of your business need to be operational as soon as possible following a disaster, and planned how to resume those operations ?

☐ Yes ☐ No ☐ Unsure

Do you and your employees have a disaster response plan in place to help assure your safety and to take care of yourselves until help can arrive?

☐ Yes ☐ No ☐ Unsure

Could you communicate with your employees if a disaster happened during work hours or after work hours?

☐ Yes ☐ No ☐ Unsure

Can your building withstand the impact of a natural disaster, and are your contents and inventory sufficiently protected so they will not be damaged?

☐ Yes ☐ No ☐ Unsure

Are your vital records protected from the harm that could be caused by a disaster?

☐ Yes ☐ No ☐ Unsure

Are you prepared to stay open for business if your suppliers cannot deliver, your markets are inaccessible, or basic needs (e.g. water, sewer, electricity, transportation) are unavailable?

☐ Yes ☐ No ☐ Unsure

Do you have plans to stay open for business, even if you cannot stay in or reach your place of business?

☐ Yes ☐ No ☐ Unsure

Have you worked with your community — public officials and other businesses — to promote disaster preparedness and plan for community recovery?

☐ Yes ☐ No ☐ Unsure

Have you consulted with an insurance professional to determine if your insurance coverage is adequate to help you get back in business following a disaster?

☐ Yes ☐ No ☐ Unsure

Self-Assessment Results

Your score indicates how well prepared you are for the disruption caused by a natural or human-caused disaster.

7 - 10 Yes: You are well on your way.

4 - 6 Yes: You have lots of work to do.

1 - 3 Yes: You should get started immediately.

*Continue through **Open for Businesssm** to*

- Create a business continuity plan to resume essential business operations.
- Evaluate the exposure of your building and contents to damage caused by natural hazard events.



Getting Started

Open for Businesssm focuses on three categories of protection to help you survive a natural disaster:

- Your human resources
- Your physical resources
- Your business operation

What Your Plan Will Include

Business Continuity Plan

The business continuity plan is composed of 13 key forms for you to complete. The information you record will help you recover your essential business functions and inform individual employees about their responsibilities.

Property Protection Plan

The property protection checklist focuses on the natural hazards of wind (hurricanes, high winds, tornado/hail), flood, earthquake, freezing weather and wildfire. It covers the building structure, the building interior, and exterior components and surroundings. Whether you own or lease your building or office space, you can use the checklist as a guide to make decisions about where you will rent or buy property, and how you expect it to be maintained or improved/upgraded.

You can review the following natural hazards map to determine which hazards are likely to affect you.

Choose Your Team

Before you proceed, decide if you would like others to work with you on this plan.

- If you are a one-person operation or have a couple of employees, you may choose to do the plan yourself.
- If you have 5-10 employees, you may ask one or two of them to help you.
- If you have more than 10 employees, you may want to form a team, perhaps from each department.

Others who might help you with your plan are your accountant, attorney, payroll company, human resources contractor or other individuals and companies that are knowledgeable about your business.

If you decide to create a business continuity plan for each department, be sure one person reviews the plans for duplication of content and consistency. Whatever you decide, the most important thing is to compile the needed information, then deal with any overlaps.

Be sure to select someone knowledgeable about the building characteristics to complete the property protection checklist.

How to Protect Your Assets

It is critically important to protect your base assets with adequate insurance - your place of business, your contents and inventory, and/or your production processes.

Review your current policy with your agent. Most policies do not cover flood or earthquake damage and you may need to buy separate insurance for them. Be sure you understand your policy deductibles and limits.

Consider *business income interruption and extra expense insurance*. Even if you have to close your doors for only a few days, the impact on your revenues and net income can be substantial. Don't assume your business will snap back to its previous revenue level as soon as you reopen. While you are closed to customers, they will go elsewhere and they may take their time finding their way back to you again. And as your revenues decrease, you will have both ongoing and new expenses. That combination can be impossible to handle without business income and extra expense coverage. Your insurance agent will work with you or your accountant to estimate your projected revenues and expenses, calculate anticipated income and then determine the potential losses from a temporary closure.

Even if your basic policy covers expenses and loss of net business income, it may not cover income interruptions due to damage that occurs away from your premises, such as to your key customer or supplier or to your utility company. You can generally buy this additional coverage and add it to your existing policy.

Although insurance can help protect your assets, it alone cannot assure the post-event viability of your business. Without a pre-defined plan to protect people and property, and to resume business operations in the larger community context, most organizations find it very difficult to survive a business outage.



Protecting Your Critical Resources

When you think about the impact natural or human-caused disasters can have on your business, consider your most important resources:

Human Resources

If you are the sole proprietor of your business, then you obviously need to protect yourself and your customers from possible injury in the event a disaster occurs. In small and mid-sized businesses, you need to protect your employees and customers from injury on your premises. You also have to consider the possible impact a disaster will have on your employees' ability to return to work and how your customers can reach you or receive your goods and/or services.

Physical Resources

Whether you own or rent the building where your business is, you and/or your building manager should inspect the physical plant(s) and assess the impact a natural disaster would have on your facilities. The property protection checklist can serve as a guide for that inspection.

If your business operates in an older building, consider having it evaluated by a professional engineer. An engineer's recommendations will help you safeguard your building from potential hazards. Keep in mind that an ideal time to make improvements is during a major addition or renovation.

Whether you are planning to remodel or build an entirely new facility, make sure your plans conform to local building code requirements. These codes reflect the lessons experts have learned from past catastrophes. Contact your local building code official to find out what is required for your project.

If you do not own the building your business is housed in, this is still important information for you to keep in mind if you are relocating to a new facility or expanding your business operations. The building's physical condition and how it will survive a natural disaster could have an impact on your ability to keep your business open following an incident.

Business Continuity

Even if your business escapes a disaster unharmed and your employees are unhurt, there is still a risk that the business will suffer significant losses. These can be broken down into two types of losses:

- Upstream
- Downstream

When some local businesses fail, there is a chain reaction because of the negative impact on the local economy. This guide will outline the steps you can take to assess risk and protect your business' assets from these disturbing possibilities.

Upstream losses are those you will suffer when one of your suppliers is affected by the disaster and cannot deliver the goods or services your business needs. Most businesses depend on daily deliveries, such as bread to a restaurant or machine parts to a manufacturer. If the supplier's building is damaged by the disaster and he cannot keep up his pre-disaster schedule, this upstream loss will affect your firm, even if it's undamaged.

Downstream losses occur when a key customer and/or the lives of residents in your community are affected by a disaster. If everyone in town is digging mud out of buildings and cleaning up debris after a flood, a theater won't have the same number of customers. If supplying a component to a large factory is a major source of your firm's cash flow and that factory is closed by tornado damage, your business will suffer a downstream loss even if it escaped unscathed from the disaster itself.



The Business Continuity Forms — Things To Consider

- Make extra copies of blank forms from the attached CD or download them from http://www.ibhs.org/business_protection.
- Save a blank version of each form so you can duplicate it as needed.
- Save completed forms in more than one medium, e.g. paper copy and on your hard drive or network.
- Store completed forms in several locations, with at least one copy well off site and within reach day or night.
- If you make changes, be sure to discard older copies.

Your business continuity plan works best when it is *realistic, up-to-date, tested and revised as needed*. It must be well known by those responsible for implementation, possibly in the midst of post-emergency chaos.

The following is some guidance to help you as you fill out the forms:

Employees Form

You will use this form to gather information on each employee (and the business owner) so each person can be contacted 24 hours a day. After you have entered all your employees, assign a number to “Call Order” so that employees are called in the desired order. Maintain an up-to-date copy of phone numbers in an accessible and secure location.

As an employer, you want to know whom to contact should any of your employees become injured or fall sick on the job. This information is equally important for notification of their families if your employees cannot leave the workplace following a disaster. With this information, you will be able to contact them at all times to inform them about the status of the business operations, where to report, and what to do.

The person designated as “1” should be the one responsible for the phone tree and any distribution of responsibility for calls by fellow employees. You can always return to each record to enter or change the “Call Order” number.

Since your business cannot resume operations unless employees are able to return to work, you might want to consider:

- Alternate forms of transportation for employees (e.g. carpooling) – determine if any employee has a four-wheel drive or van that could be used.
- Provision of emergency housing for displaced employees.
- Addressing immediate needs of your employees, including short-term financial aid.
- Childcare at your primary or alternate site (be sure to plan ahead with public officials to meet any regulatory requirements).

Payroll continuity is key to continued loyalty of your employees. It helps them handle disaster-related problems at home and meet their personal financial obligations. You may want to establish a company-wide policy for:

- Direct deposit of paychecks for all employees.
- Overtime pay during disaster.
- One week’s pay even if your business is not operational (or whatever you decide).

Plan ahead if you know you will have to deal with security/access issues for your primary or alternate site. If employees need badges or security clearances, be prepared.

If your employees need special licenses for their work, e.g. to move or operate equipment, be sure you have a system in place to get/replace them.

Meet with your employees at least once a year to review emergency plans and to share information on disaster preparedness and protection at home. Find out if any of them has certification for first aid, CPR or as an Emergency Medical Technician (EMT), or if anyone is a ham radio operator. All of these skills could be useful in emergencies.

Suppliers/Vendors Form

You will use this form to record information about your current suppliers and ones you could use as an alternate choice.

Disaster-induced operational problems are not always connected to property damage. They include disruptions in the flow of supplies and in the ability to ship those goods or deliver services.

Your ability to resume operations relies on the ability of your suppliers to deliver what you need on time. To encourage the continuity of the supply chain, there are several things you can do:

- Be sure your principal suppliers, or alternate suppliers, are not all in the same geographical location as you.
- Ensure that your pre-qualified, critical suppliers of services and materials will be available to you when you need them. This could include requesting or requiring that a critical supplier have a mutual aid agreement in place with a similar company to fulfill its commitments, should its normal business functions be interrupted.
- Establish a notification list and procedures for notification.

Take care of credit checks, purchase accounts and other vendor requirements in advance so the vendor can ship replacements immediately.

- Have back-up vendors and shippers in place in case your primary ones are disabled.
- Establish relationships in advance and maintain them.
- Place periodic orders so they consider you an active customer when you need them.
- List suppliers/vendors you can use for your miscellaneous needs at a recovery location, such as office supplies, file cabinets, office furniture, etc.

Require, or encourage, your suppliers to have business continuity plans. You may want to audit them yourself to ensure they are current.

Key Contacts Form

You will use this form to list your key contacts for administration of your business, emergency response and resumption of your critical business functions. Key contacts include your most important customers.

Key contacts consist of those you rely on for administration of your business, such as your bank, your creditors, your insurance agent, accountant, etc. They also include services in the community you need to help you resume operations, such as utilities, emergency responders, emergency medical help, media outlets, business partners and business organizations.

You should have a well-established liaison with municipal authorities, utilities and other service providers before disaster strikes. The effectiveness of this liaison may be enhanced if a business group coordinates it for multiple businesses.

Your key customers are an essential part of this list (*see note, next page), as your economic recovery depends on keeping your customers or clients, or adapting to the changed environment to get new ones.

You need to determine:

- What happened to my customers/clients?
- Were they affected by the disaster?
- Will their buying habits change? Your product or service may be a discretionary purchase or not essential at the time.

If you cannot meet your customers' needs due to your own business interruption, or if they can easily replace your product or service elsewhere, you may lose customers or clients. This highlights the importance of communication before a disaster to build customer loyalty and to inform them about your preparedness for a disaster.

After an event, it is important to keep customers or clients informed about the status of their product or service, delivery schedules, etc., or to develop mutually agreeable alternative arrangements. You could include this communication strategy within one of your *critical business functions*, e.g. *Communications - External*.

You may choose various ways to communicate with your key customers after a disaster, depending on what modes of communication are available. These include, but are not limited to, direct telephone calls, a pre-arranged 800 number for people to call you, e-mail, or announcements by radio or through a newspaper.

**Note: If you have more than 20 key customers, you should include a list of them as one of your Vital Records. Nevertheless, you still may want to include some of your major customers or clients in Key Contacts, as they could be involved with one or more of the critical business functions you identify for your recovery plan.*

Business Functions Form

You will use this form to identify what business functions are critical to your survival and the details about each function. In "Priority," indicate whether the business function has high, medium or low priority.

Whatever the cause of your business interruption, your ability to address the consequences could make the difference between survival and closure.

To help get you started, ask yourself, "What are my most critical tasks in order to stay in business?" If you had a significant loss that affected your business, which business functions would you classify as high priority? As medium priority? As low priority?

Following are some key questions to help you decide what you have to do:

- What are my most critical and time-sensitive business functions?
- How much downtime can I tolerate for each business function?
- Which business functions are necessary to fulfill my legal and financial obligations and maintain cash flow?
- Which business functions are essential to maintain my market share and reputation, or to strategically adjust to changed circumstances?

Some time-sensitive and critical business functions

Administrative functions:

- Recovery location set-up
- Payroll
- Insurance Claims (filing your claim, following up)
- Regulatory Requirements (e.g. time-sensitive reports)
- Debt Obligations (bills due)
- Accounts Receivable
- Communications
 - Internal (e.g. with employees and Board of Directors)
 - External (e.g. with suppliers/vendors and key contacts such as media, customers)

Production of goods and services - your core business - what is it? What are *your* time-sensitive and critical business functions?

Another way to think about your key business functions is to ask yourself, "What if I lose or do not have access to my. . ."

- facility/buildings
- contents/inventory
- people (employees/customers or clients)
- vital records
- equipment
- utilities
- support systems (computers/networks, communications, transportation)
- suppliers

What would be the consequences of the loss of any of these resources? What are my alternatives to help me survive and remain viable?

Recovery Location Form

You will use this form to provide information on your recovery location, that is, where you will conduct business operations following an event.

Ask yourself whether you could recover from an alternate site, or even out of your home temporarily, establish a mutual aid agreement with a similar business, or rent available space at another location if your business location is unusable or inaccessible.

Do you have other facilities or branch offices where you could resume some or all of your operations? What arrangements will you have to make ahead of time to utilize one or more of these locations?

If you are location dependent, do you plan on resuming operations as soon as possible from your primary site?

As you select your recovery location:

- Consider a site that is not on the same electric power grid.

- Factor in the ability of your vendors/suppliers or rental company(ies) to quickly transport critical items such as computers, inventory and equipment to your recovery location.
- Keep an extra of any hard-to-replace parts or essential supplies on hand, and consider storing them in a place that is not vulnerable to the same disaster as your primary facility.
- Work with vendors/suppliers in advance to assure a secure and adequate supply of what you will need.

If you hope to retrieve items from or recover at your primary location, plan ahead for any special security/access control procedures, such as badging. Leave keys and alarm code(s) with a trusted employee or friend, in case you may not be able to get to your business quickly after an emergency.

If your business site suffers damage, you may need to contact an industrial clean-up service and/or a security service to protect your property. Be sure to consult with your insurance agent about proper steps and documentation requirements.

If you rent your primary location space, review your lease for disaster provisions, including who is responsible for what in case of damage from a natural disaster. You may want to add a clause that allows you to get out of the lease in 30, 60 or 90 days if damage is not repaired satisfactorily to the leased property or to adjoining properties on which you count to bring business to you.

Note: If you have not secured a recovery location at the time you are starting to develop this business continuity plan, create an imaginary name, address, etc., so that you can continue on with the planning process. You can still select which staff will be assigned to the recovery location and which business functions will be performed there, and then move on to the following forms. When you have finalized all arrangements for the recovery site, return to this record and enter the actual name and address of the location.

Vital Records Form

You will use this form to identify records that are vital to perform your critical business functions. Use "Media" to indicate if the record is a print copy, on a diskette, etc.

Your business cannot operate without its vital records. The following questions may help you determine what records need to be backed up on one or more "media," maintained off site and/or in storage:

- Is the record required for business success?
- Is it required for legal reasons?
- Is it required by a regulatory agency?
- Is it required to support recovery efforts?

If you answered YES to any of the above, then answer the following:

- Is it impossible to re-create?
- Are copies unavailable at a remote location?

If you answered YES to either one of the last two questions, consider the record vital. It should be duplicated and included in recovery inventories.

If you answered NO to all of the above, then the record is not considered vital and should not be included in recovery inventories.

Examples of vital records include employee data, payroll, financial records, strategic plans, production records, customer/client/patient lists, inventory lists, building plans/blueprints, the lease, insurance records, research data. You can determine which of these is necessary to have available to perform the critical business functions you have identified. You will likely identify other vital records that are particularly critical to your business' survival.

Store a copy of all vital information on site and a second in a safe off-site location. Some experts recommend at least 50 miles away. Make it a critical part of your routine to regularly back up files.

Keep your inventory list current and make a photographic or videotaped record of your inventory.

To help support insurance claims, you will need:

- Historical sales records.
- Income and expense information as shown in recent profit and loss statements and/or income tax forms, as well as recent financial audits.
- Other business records that could assist in projecting what your profits would have been had your business not been interrupted.
- Receipts for equipment, inventory, other insured items.
- Record of extra expenses incurred after the disaster, and of shipments received or sales made after the disaster.

Critical Telephone Numbers Form

You will use this form to list telephone and/or fax lines for your business that are critical to your survival.

Seamless communications with your employees, suppliers/vendors, key contacts and customers following a disaster is important to your survival and continuing viability. Telephone and fax lines are one means of maintaining this communication link.

Your employees will want to get updated information about when and where they should report to work and the status of recovery. You could set up a special number for them to call, with recorded messages, or perhaps an out-of-state message line or contact person/company. An out-of-state number may be more accessible than in-state numbers.

You also will need these phone and fax numbers so you can communicate with your suppliers/vendors, key contacts and customers, to keep them informed about your status and future plans. One solution is to plan ahead to have your telecommunications service provider reroute your telephone and fax numbers to your recovery site.

If you need a phone number for dial-up Internet and e-mail access, be sure to include that.

Also, think about alternative forms of communication should phones not be working, especially to keep in touch with your employees. In anticipation of a break in all phone service, including cell phones, you might invest in some simple two-way radios and pagers that just send signals to each other. Another alternative is to have designated people meet at a prearranged location, assuming it is accessible.

You should list all critical phone and fax lines, enter what each is used for and think about whether it is essential that this number be continuously available. Then, select a solution for how to keep the number operational or an alternative to meet the need. Also, consider listing all these critical numbers in your cell phone or PDA, so you have them readily available.

Supplies Form

You will use this form to list supplies needed to fulfill your critical business functions.

A supply is anything you have not listed in previous forms. It should have an order number and should include items essential to keep equipment or work processes functioning, e.g. special fluid for a machine, forms and/or checks. Plan ahead with your vendors to determine costs and delivery times for these essential items and parts. Include sufficient space at your recovery site for storage.

In addition, consider storing some essential supplies in an accessible place outside your building, in case you need them immediately and cannot re-enter your building after evacuating it. These could include some supplies you know you would need to fulfill a critical business function.

Note: Do not include office supplies, e.g. paper, mail bins, filing cabinets and other items needed for a recovery location. They should be listed in Miscellaneous Resources.

Equipment / Machinery / Vehicles Form

You will use this form for equipment or machinery required to keep your business operational or that would severely curtail operations if it failed. List anything that plugs in, as well as tools and spare parts vital to operation of your equipment or machinery. You may also want to include company-owned vehicles.

You should explore rental options to replace damaged equipment or machinery during the time it is being repaired or replaced and request written estimates of rental, set-up, shipping costs and delivery times. This is particularly important if you rely on equipment that is highly specialized or difficult to replace. Be sure to add the rental companies you have contacted to your Suppliers/Vendors form.

Don't forget your cars/trucks. Plan to protect them, but also have alternate plans to meet your essential transportation needs.

Consider special protection for key tools or small equipment, such as storage in foam-padded storage containers when not in use, preventing damage by accident or during an earthquake. Additional protection for larger valuable, hard-to-replace equipment or machinery is also advisable.

Check your contents insurance, whether it covers the replacement cost of critical equipment or machinery.

Note: Computer equipment should be listed in the Computer Equipment and Software form; telecommunications equipment in the Telecommunications form; and office furniture for your recovery location in the Miscellaneous Resources form.

Computer Equipment and Software Form

You will use this form to list the computer equipment, hardware and software you will need to fulfill your critical business functions.

Business interruption can be devastating, the result of a natural disaster, a power outage, cyber crime, or any other cause. Without access to data and information, business operations can come to a standstill. You might want to consider the services of a data center and disaster recovery facility, where your data is backed up on a regular basis and available to you if your normal business operations are interrupted.

Most businesses are dependent on computers, utilizing desktop and laptop computers and computer networks. Most communicate with or conduct business with their vendors, customers, partners and clients through the Internet. E-business is a rapidly growing segment of the economy. If your company does the majority of its work online, be sure your computer security is current.

If you go to a recovery location, it is likely you will need to lease or purchase computer equipment and replace your software. You may use the form to list what you would order.

When there is sufficient warning about an event, such as a hurricane, you might decide to move some of your computer equipment and software to a safe place, so that it could be utilized at your recovery location. The form provides you with that option. In addition, you could require that all employees take their laptops with them, in order to provide the option to work from home or at a recovery location.

Some disasters occur without warning, though, so you want to be sure you have alternatives available.

Other reminders:

- Keep a backup copy of your computer's basic operating system, boot files, and critical software, and be sure you have copies of your operations manuals.
- Maintain an up-to-date copy of computer and Internet logon codes and passwords.
- Make arrangements with computer vendors to quickly replace damaged vital hardware and software, and/or to meet your needs at your recovery location.
- Request written estimates for rental or purchase, shipping costs and delivery times, if relevant. Be sure to list these companies in your suppliers/vendors form as either primary or alternate vendors.
- Elevate computer equipment normally stored on the floor, e.g. CPU's, and secure in place when flooding is a possibility.

Remember that you should always keep your computer hardware and software licenses up to date.

Voice/Data Communications Form

You will use this form to list your voice and data communications needs. Examples of voice communications include modem, voice mail, Private Branch Exchange (PBX)/Automatic Call Distribution (ACD), and standard telephone. Examples of data communications include cable, DSL or dial-up for your Internet and e-mail access.

Communication with employees, vendors, customers, emergency officials and other key contacts is vital to your ability to resume business operations following a disaster event.

Voice and data communications equipment is only a part of a larger communications plan. One of your *critical business functions* should be *Communication – Internal* and another should be *Communication – External*, so you can notify your suppliers/vendors and key contacts - including your customers — of the status of your business. This plan should include media relations too.

Although there is the possibility that demand for phone service may overwhelm the system, you should consider the following safety nets or alternatives as ways to communicate with your employees, vendors and/or customers:

- Designate one remote voice mail number on which you can record messages for employees
- Arrange for programmable call forwarding for your main business line – if you cannot physically access your business, you can call in and reprogram the phones to ring elsewhere. (Keep in mind that if telecommunications engineers are swamped with requests to redirect phones, faxes and data lines to backup locations, your recovery location could be affected.)
- Consider alternative forms of communication should phones not be working, especially to keep in touch with your employees. In anticipation of a break in all phone service, including cell phones, you might invest in some simple two-way radios and pagers that just send signals to each other.
- Communicate by e-mail, postings on your website, or an emergency messaging system.

As you think about your voice communication needs at your recovery location, determine whether you need speakerphones, voice mail capacity or the ability to record conversations. Also, decide if you need a conference bridge, in order to have conference calls with employees, key contacts, and/or customers to assess disaster damage and to make recovery decisions.

Reminders:

- “Plain Old Telephone Service” (POTS), where the handset is connected to the base, will likely work during a power failure. The connection is direct to the telephone company, which has extensive back-up power.
- Cordless phones rely on electricity on site and may be useless.
- Cell phones may work if cell towers are still functional, but often system overload causes lost connections.
- Surge protection for all computer and phone equipment can prevent a power surge through a telephone line, which can destroy an entire computer through a connected modem. You may want to invest in a battery backup with surge protector.

Miscellaneous Resources Form

You will use this form to list the basics to make your recovery site operational, such as office furniture, safes, mail bins, etc.

Disaster Response Checklist Form

When disaster strikes, you may be on your own for hours or even several days. Emergency services may

not be able to respond right away. The checklist includes supplies to help you take care of your employees, your customers or others on your premises until help arrives. Your Key Contacts will include emergency services you may need, such as fire department, emergency management agency, American Red Cross, etc.

You should be able to put the basic disaster supplies together for under \$100.00. One major purchase (more than \$500) you should consider is a multi-KV generator, pre-wired to the building’s essential electrical current, which you can operate during a power outage. See the “What About Costs?” section for a more detailed discussion of costs.

Do your employees know about your emergency plans?

Meet with your employees at least once a year to review emergency plans. Make sure they know how to safely evacuate the building in an emergency and how to protect themselves and your customers in case of an earthquake or other disaster. Consider First Aid, CPR and other emergency training.

Also do mock disaster drills. In addition to ensuring that employees know how to safely evacuate the building, make sure they know where to meet, to whom to report, when to leave the designated meeting place, and how or where to make contact should they fail to get to the meeting place.

Designate one employee from each work shift to be safety coordinator.

List emergency phone numbers – such as fire department, police department, ambulance service, emergency management agency – in a highly visible place.

Are your employees prepared at home?

Your employees are your most important asset. They will not be able to return to work to help your business resume operations unless their family needs have been met.

Encourage employees to develop and exercise family disaster preparedness plans.

Provide information to employees on how to protect their property and contents/possessions. For more information, go to www.ibhs.org.

Open for Businesssm

Employee Contact List

Use this form to gather information on employees (and the business owner) so that each person can be contacted at any time or place. After you have entered all your employees, assign a number to "Call Order" for each employee. You may choose to sort your employee list alphabetically or by call-down order.

Maintain an up-to-date copy of contact information for each employee in an accessible and secure location.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Name: _____

Position: _____

Key Responsibilities: _____

Home Address: _____

City, State, ZIP: _____

Home Phone: _____ **Cell Phone:** _____

Office Phone: _____ **Pager/Beeper:** _____

FAX: _____

Home Email: _____ **Work Email:** _____

Emergency Contact: _____ **Relationship** _____

Emergency Contact Phone: _____ **Alt Phone:** _____

Notes: _____

Call Order: _____

Certifications:

☐ **First Aid**

☐ **Emergency Medical Technician (EMT)**

☐ **Special Licenses:** _____

☐ **CPR**

☐ **Ham Radio**

☐ **Other:** _____

Open for Businesssm
Key Supplier/Vendor Information

Use this form to record information about your current suppliers and ones you could use as an alternate choice.

Disaster-induced operational problems are not always connected to property damage. They include disruptions in the flow of supplies and in the ability to ship those goods or deliver services. Your ability to resume operations also relies on the ability of your suppliers to deliver what you need on time.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Status: ☐ **Current Supplier/Vendor** ☐ **Back Up Supplier/Vendor**

Company Name: _____

Account Number *(If relevant):* _____

Materials/Service Provided: _____

Street Address: _____

City, State, ZIP: _____

Company Phone *(main):* _____

Primary Contact: _____ **Title:** _____

Primary Contact Phone: _____ **Primary Contact Cell:** _____

Primary Contact Pager: _____ **Primary Contact Fax:** _____

Primary Contact Email: _____

Alt. Contact Person: _____ **Title:** _____

Alt. Contact Phone: _____ **Alt. Contact Cell:** _____

Alt. Contact Pager: _____ **Alt. Contact Fax:** _____

Alternate Contact Email: _____

Website address: _____

Recovery Notes: _____

Open for Businesssm**Key Contacts**

Use this form to list the key contacts for administration of your business. Key contacts consist of those you rely on for administration of your business, such as your bank, your creditors, your insurance agent, accountant, etc. They also include services in the community you need to help you resume operations, such as utilities, emergency responders, media outlets, business partners and business organizations.

Your key customers are an essential part of this list. If you have more than 20 key customers, you should use the Vital Records form instead of listing each one here to avoid making your business continuity plan too bulky. Nevertheless, you still may want to include some of your major customers or clients in Key Contacts, as they could be involved with one or more of the critical business functions you identify for your recovery plan.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Type:

- | | | |
|--|---|--|
| <input type="checkbox"/> Accountant | <input type="checkbox"/> Gas/Heat Company | <input type="checkbox"/> Police Department
(Non-emergency) |
| <input type="checkbox"/> Bank | <input type="checkbox"/> Hazardous Materials | <input type="checkbox"/> Public Works Department |
| <input type="checkbox"/> Billing/Invoicing Service | <input type="checkbox"/> Hospital | <input type="checkbox"/> Small Business Administration
Office |
| <input type="checkbox"/> Benefits Administration | <input type="checkbox"/> Insurance Agent/Broker | <input type="checkbox"/> Telephone Company |
| <input type="checkbox"/> Building Manager | <input type="checkbox"/> Insurance Company (Claims Reporting) | <input type="checkbox"/> Other |
| <input type="checkbox"/> Building Owner | <input type="checkbox"/> Key Customer/Client | |
| <input type="checkbox"/> Building Security | <input type="checkbox"/> Local Newspaper | Explain: _____ |
| <input type="checkbox"/> Creditor | <input type="checkbox"/> Local Radio Station | _____ |
| <input type="checkbox"/> Electric Company | <input type="checkbox"/> Local Television Station | |
| <input type="checkbox"/> Emergency Management Agency | <input type="checkbox"/> Mental Health/Social Service Agency | |
| <input type="checkbox"/> Fire Department | <input type="checkbox"/> Payroll Processing | |

Name of Business or Service: _____

Account Number (If relevant): _____

Materials/Service Provided: _____

Street Address: _____

City, State, ZIP: _____

Company/Service Phone (main): _____

Primary Contact: _____ **Title:** _____

Primary Contact Phone: _____ **Primary Contact Cell:** _____

Primary Contact Pager: _____ **Primary Contact Fax:** _____

Primary Contact Email: _____

Alt. Contact Person: _____ **Title:** _____

Alt. Contact Phone: _____ **Alt. Contact Cell:** _____

Alt. Contact Pager: _____ **Alt. Contact Fax:** _____

Alternate Contact Email: _____

Website address: _____

Recovery Notes: _____

Open for Businesssm

Critical Business Functions

Use this form to identify what business functions are critical to your survival. The following are some key questions to help you decide what they are:

- What are my most critical and time sensitive business functions?
- How much down time can I tolerate for each business function?
- Which business functions are necessary to fulfill my legal and financial obligations and maintain cash flow?
- Which business functions are essential to maintain my market share and reputation, or to strategically adjust to changed circumstances?

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Business Function: _____

Priority: ☐ **High** ☐ **Medium** ☐ **Low**

Employee in charge: _____

Timeframe or Deadline: _____

Money lost (or fines imposed) if not done: _____
(If relevant)

Who performs this function? *(List all that apply)*

Employee(s): _____

Vendor(s): _____

Key Contact(s): _____

Who provides the input to those who perform the function? *(List all that apply)*

Employee(s): _____

Vendor(s): _____

Key Contact(s): _____

Who uses the output from this function? *(List all that apply)*

Employee(s): _____

Vendor(s): _____

Key Contact(s): _____

Brief description of procedures to complete function: *(Consider writing procedures for two scenarios, one for a short disruption, the other for loss of everything.)* _____

Recovery Notes: _____

Open for Businesssm

Recovery Location

Use this form to provide information on your recovery location, that is, where you will conduct business operations following an event. It could be at an alternate site, at a similar business through a mutual aid agreement, your own home, or if you are location dependent, at your primary place of business.

Note: If you have not secured a recovery location at the time you are starting to develop this business continuity plan, create an imaginary name, address, etc., so you can continue with the planning process. You can still select which staff will be assigned to the recovery location and which business functions will be performed there, and then move on to the following forms. When you have finalized all arrangements for the recovery site, return to this record and enter the actual name and address of the location.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Recovery Location: _____

(Include street address, _____
city, state, zip code) _____

Building Owner/Manager: _____

Phone: _____ **Alt Phone:** _____

Pager: _____ **Email:** _____

Directions to recovery location: _____

(i.e. map and directions from _____
Internet site or similar information) _____

Business functions to be performed at recovery location:

Employees who should go to recovery location: _____

Recovery Notes: _____

Open for Businesssm**Vital Records**

Use this form to identify records that are vital to perform your critical business functions. Use "Media" to indicate if the record is print version, on a CD, diskette, etc.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Name of Vital Record: _____**Media:**

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> Network | <input type="checkbox"/> Print Version |
| <input type="checkbox"/> Hard drive | <input type="checkbox"/> Microfilm |
| <input type="checkbox"/> Laptop | <input type="checkbox"/> Internet |
| <input type="checkbox"/> CD | <input type="checkbox"/> Other |
| <input type="checkbox"/> Diskette | Explain: _____ |

Is it backed up?

- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

Media:

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> Network | <input type="checkbox"/> Print Version |
| <input type="checkbox"/> Hard drive | <input type="checkbox"/> Microfilm |
| <input type="checkbox"/> Laptop | <input type="checkbox"/> Internet |
| <input type="checkbox"/> CD | <input type="checkbox"/> Other |
| <input type="checkbox"/> Diskette | Explain: _____ |

How often is it backed Up?

- | | |
|----------------------------------|--|
| <input type="checkbox"/> Hourly | <input type="checkbox"/> Quarterly |
| <input type="checkbox"/> Daily | <input type="checkbox"/> Semi-Annually |
| <input type="checkbox"/> Weekly | <input type="checkbox"/> Yearly |
| <input type="checkbox"/> Monthly | <input type="checkbox"/> Never |

Where is it stored? _____**Can the record be recreated?**

- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|

Business function it supports: _____

Recovery Notes: _____

Open for Businesssm

Critical Telephone Numbers

Use this form to list telephone and/or fax lines that are critical to the survival of your business. Enter what each is used for and think about whether it is essential that this number be continuously available. Then, select a solution for how to keep the number operational or an alternative to meet the need.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Phone Number	Type (Enter Code)	Status (Enter Code)	Description (e.g. hotline, main line, toll free cus- tomer service line, dial-in to network)	Solution (Enter letter)	Related Business Function(s)
	<u>L</u> Local <u>LD</u> Long Dist. <u>800</u> Toll Free <u>F</u> Fax <u>C</u> Cell <u>O</u> Other	<u>C</u> Currently in use <u>E</u> Will establish during recovery		<u>R</u> eroute to recovery location <u>N</u> ew Number Recorded <u>M</u> sg <u>O</u> ther (Explain)	

Recovery Notes: _____

Open for Businesssm**Supplies**

Use this form to list supplies needed to fulfill your critical business functions. A supply is anything you have not listed in previous forms. It should have an order number and should include items essential to keep equipment or work processes functioning, e.g. special fluid for a machine, special forms and/or checks.

If you do not have the supplier recorded on the supplier/vendor form, go back to the form to add the information.

Note: Do not include basic office supplies, e.g. pens, paper, stapler. Do not include office furniture either, e.g. filing cabinets, mail bins, desks or chairs, as they all should be listed in Miscellaneous Resources.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Item	Item Order Number	Quantity	Supplier/Vendor(s):	Related Business Function(s)

Recovery Notes: _____

Open for Businesssm
Equipment/Machinery/Vehicles

Identify the key equipment/machinery necessary to perform your essential business functions, i.e. the equipment or machinery that would shut you down or severely curtail production of goods or services if it failed. This could include tools and spare parts vital to operation of equipment. You may also want to list company-owned vehicles.

When there is adequate warning about an event, such as a hurricane, you might decide to take some of your equipment or machinery that can easily be moved to a safe place, so that it could be used at your recovery location. In that case, you would want to list equipment or machinery you currently own or lease. Some disasters occur without warning, though, so you want to be sure you have alternatives available.

Note: Computer equipment should be listed in the Computer Equipment and Software form; telecommunications equipment in the Voice/Data Communications form; and office furniture for your recovery location in the Miscellaneous Resources form.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Item: _____

Model: _____

Status: ☐ **Currently in use** ☐ **Will lease/buy for recovery location**

Primary Vendor/Supplier: _____

Alternate Vendor/Supplier: _____

Recovery location for installation: _____

Related business function(s): _____

Backup available: ☐ **Yes** ☐ **No**

Order time for replacement: _____

Recovery Notes: _____

Open for Businesssm

Computer Equipment and Software

Use this form to list the computer equipment, hardware and software you will need to fulfill your critical business functions.

If you go to a recovery location, it is likely you will need to lease or purchase computer equipment and replace your software. You may use the form to list what you would order, and in the "Title & Version or Model No.", write "Unknown," or similar words, if you do not yet have that information. Be sure to explain in Recovery Notes. The important thing is that your final plan include what you need to perform your critical business functions.

If you plan to order multiple items of the same type - e.g. keyboards or mice - you can condense the information into one record. You can list relevant details in Recovery Notes.

When there is sufficient warning about an event, such as a hurricane, you might decide to move some of your computer equipment and software to a safe place, so that it could be utilized at your recovery location. In that case, you would want to list equipment you currently own or lease and/or software that you would take, and in the Status field check "Currently in use." Some disasters occur without warning, though, so be sure you have alternatives available.

If you currently own/lease the item, choose the supplier/vendor(s) based on which one(s) you would use to replace the item if it were damaged in a disaster. It is always advisable to have an alternate vendor, though, in case your primary vendor is not available.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Item: _____

Type: ☐ **Computer Hardware** ☐ **Computer Software**

Status: ☐ **Currently in use** ☐ **Will lease/buy for recovery location**

Primary Supplier/Vendor: _____

Alternate Supplier/Vendor: _____

Title & Version or Model No. _____

(Enter Unknown if hardware/software is to be leased/bought for recovery location)

Serial Number _____ **Purchase/Lease Date:** _____

Purchase/Lease Price: _____ **Recovery Install Location:** _____

Quantity (equipment) or No. of Licenses (software): _____

License Numbers (enter one per line) _____

Recovery Notes: _____

Open for Businesssm

Voice/Data Communications

Use this form to list your voice and data communications needs. Communication with employees, vendors, customers, emergency officials and other key contacts is vital to your ability to resume business operations following a disaster event. This form should be used to determine what telecommunications equipment you need to help you with that communication.

If you go to a recovery location, it is likely you will need to lease or purchase telecommunications equipment. You may use the Voice/Data Communications form to list what you would order, and in the "Description & Model No." field, write "Unknown," or similar words, if you do not yet have that information. Be sure to explain in Recovery Notes.

If you plan to purchase or lease multiple items of the same type - e.g. telephones - you can condense the information into one record. List relevant details in Recovery Notes.

*You can download copies of this form from www.ibhs.org/business_protection.
Save a blank version so you can make additional copies as needed.*

Type of Service:	<input type="checkbox"/> Telephone <input type="checkbox"/> PBX w/ ACD (Private Branch Exchange w/ Automatic Call Distribution) <input type="checkbox"/> PC Data Communications <input type="checkbox"/> Cell Phone	<input type="checkbox"/> Fax Machine <input type="checkbox"/> Two-way Radio & Pager <input type="checkbox"/> Other Explain: _____ _____
-------------------------	--	---

Description & Model Number: _____
(Enter Unknown if telecommunications item is to be leased/bought for recovery location)

Status:	<input type="checkbox"/> Currently in use <input type="checkbox"/> Will lease/buy for recovery location	
Voice Communications Features:	<input type="checkbox"/> Voice mail <input type="checkbox"/> Speaker <input type="checkbox"/> Conference	<input type="checkbox"/> Conversation recorder <input type="checkbox"/> Other Explain: _____ _____
Data Communications Features:	<input type="checkbox"/> Cable <input type="checkbox"/> DSL <input type="checkbox"/> T-1	<input type="checkbox"/> Dial-up <input type="checkbox"/> Other Explain: _____ _____

Quantity: _____

Primary Supplier/Vendor: _____

Alternate Supplier/Vendor: _____

Recovery Install Location: _____

Recovery Notes: _____

Open for Businesssm
Miscellaneous Resources

Use this form to list the basics to make your recovery site operational, such as office furniture, safes, mail bins, and other items needed for the recovery location. Consider any unique recommendations for people with special needs.

*You can download copies of this form from www.ibhs.org/business_protection.
 Save a blank version so you can make additional copies as needed.*

Item	Quantity	Primary Supplier/Vendor	Alternate Supplier/Vendor	Recovery Install Location
Chairs				
Desks				
Extension/drop cords, surge protectors and power strips				
File cabinets				
Mail bins				
Portable air conditioners/fans				
Safes				
Tables				
Waste baskets				
Other Explain:				

Open for Businesssm

Disaster Response Checklist

When disaster strikes, you may be on your own for hours or even several days. Emergency services may not be able to respond right away. Check which supplies you have to help you take care of your employees, customers or others on your premises until help arrives. Be sure to purchase the remaining supplies so you are ready when an emergency occurs.

*You can download copies of this form from www.ibhs.org/business_protection
Save a blank version so you can make additional copies as needed.*

☐ **NOAA Weather Alert Radio**

This 24-hour warning monitor is as important as a smoke alarm in homes and businesses. The NOAA Weather Alert Radio with Specific Area Message Encoding (S.A.M.E.) technology that programs the radio for your area can save your life by warning you of severe weather and other hazards at any time. This special radio remains silent until an alert is issued in your community by local authorities. When the alarm sounds, you will be given specific information and instructions on how best to avoid the danger. Most S.A.M.E. Alert Monitors include battery backup.

☐ **Working smoke detectors and fire extinguisher**

Set a schedule to test smoke detectors annually and keep extra batteries on hand. Check the pressure indicator of your fire extinguisher monthly.

☐ **First Aid Kit**

Include scissors, tweezers, a variety of Band-Aids, gauze pads/roller gauze and tape, anti-bacterial wipes, first aid ointment, vinyl gloves, first aid book, and any other items you deem essential. Remember your kit is for “first” aid, not ongoing care.

☐ **Flashlights and Lightsticks**

Keep flashlights and extra batteries in easy to find locations. Non-toxic chemical lightsticks can be taped next to light switches for emergency use.

☐ **AM/FM Radio, battery operated, or wind-up radio**

Maintain a current list of stations in your area that provide emergency updates and that have generator backup to support continuous broadcast. Keep extra batteries for AM/FM radio. Consider a wind-up radio (30 seconds for 30-35 minutes play – solar cells for back up).

☐ **Bottled Water**

Have at least one gallon of water per person per day, to be used for drinking, personal hygiene and cooking. Store in sizes that are easily transportable, should you need to relocate.

☐ **Nonperishable food and utensils**

Stock a supply of non-perishable food such as peanut butter, tuna, beans, crackers, ready-to-eat canned meats, fruits and vegetables, comfort/stress food such as cookies and hard candy, canned juices, powdered milk, etc. Be sure to have a manually operated can opener and plastic utensils.

☐ **Paper supplies**

Keep a supply of note pads, markers, pens, pencils, toilet paper, tissues, paper plates, napkins, and towels on hand.

☐ **Tools and other supplies**

Keep supplies of items such as duct tape, waterproof plastic, shut-off wrench for water and gas, whistle, compass, plastic bucket with tight lid, work gloves, pliers, hammer, plastic garbage bags and ties. A pry bar, shovel, dust masks, eye protection, and a push broom will aid in clean-up operations

☐ **Blankets**

Keep a supply of blankets, pillows if available, cots or mats for sleeping/taking breaks.

☐ **Camera**

Have a disposable camera, or a camera with extra batteries and film, available to record damage.

☐ **Cash/ATM and credit card**

Keep enough cash for immediate needs, and ATM and credit card(s) for emergency use (dependent on electric power availability).

☐ **Emergency Contact List**

Maintain a current emergency contact list for employees and emergency services, such as police, fire and utility companies. Keep in several places, e.g. a PDA, PC at home, or a trusted neighboring business.

Incident Response, Recovery & Restoration

☐ **Move to a safe place**

Leave building

If a partial or complete building evacuation is required, employees will quickly move to their pre-planned meeting points out of doors. Conduct a roll call and report missing employees (and visitors).

Shelter-in-place

A severe thunderstorm, tornado or terrorist incident may dictate that employees seek safety in interior sections of the facility.

☐ **Determine the type and extent of the incident**

- ☐ What happened?
- ☐ When did it happen?
- ☐ What was suspected cause?
- ☐ What is the civil authority response?
- ☐ When can you have access to the building?
- ☐ What are the security issues?
- ☐ What can you do to avoid additional damage?

☐ **Alert employees** – Notify employees of the incident, its impact, and what you want them to do. (It may be as simple as “stay at home” until further notice.)

☐ **Activate Business Continuity Plan**

☐ **Manage the incident**

- ☐ Gather your resources
- ☐ Prepare your alternate site (if appropriate)
- ☐ Activate your critical business functions/procedures

☐ **Restore your business**

When you have resumed business operations - that is, you have recovered your critical business functions - take steps to fully restore your business.

☐ **Debrief**

Learn from the business interruption. If needed, modify your business continuity plan to be better prepared for the next incident.

What About Costs?

A small business owner is always mindful of costs when developing any strategic plan, including a property protection and business continuity plan. This list will give you some idea of the costs you will encounter when putting together your property protection/business continuity plan. The costs either reflect purchases of materials/goods or the value of staff time beyond what would be considered an integral part of the employee's job functions. The costs also consider hiring an outside contractor.

No Costs

- Identify two or three contractors or supply sources for emergency plywood window coverings.
- Calculate the cost of business interruptions for one week, one month and six months.
- Ask your insurance company or agent about policy coverage and prices.
- Write a short checklist of recovery action items for your firm.
- Maintain a current emergency contact list for employees and emergency services, such as police, fire and utility companies.
- Contact your city or county building department to determine the Base Flood Elevation (BFE) and the Design Flood Elevation (DFE) at your location and your building's susceptibility to flooding.
- Write a checklist for how to stay abreast of possible flood watches or warnings.
- Keep your building's flood vents clear of debris or other blockage.
- Check with your local fire department to determine wildfire risk at your location.
- Instruct employees about your company's emergency plans, including evacuation plans and "rally point" in the event of disaster.
- Identify how employees can be contacted if the phone service is disrupted.
- Keep some cash and an ATM card or credit card on hand.

Under \$100

- Purchase a First Aid kit.
- Purchase and store bottled water for emergency use (two days minimum).
- Stock a supply of non-perishable foods, paper plates, napkins, and plastic utensils.
- Purchase a NOAA Weather Alert Radio with S.A.M.E. technology to program for your specific area.
- Buy a stock of flashlights, batteries, pens, paper, paper towels, packing tape, etc. for disaster kit.
- Keep supplies of items such as duct tape, waterproof plastic, shut-off wrench for water and gas, whistle, compass, plastic bucket with tight lid, work gloves, pliers, hammer, plastic garbage bags and ties.
- Purchase/maintain camera and film.
- Purchase an AM/FM radio, battery operated, or wind-up radio
- Purchase a fire extinguisher.
- Restrain desktop computers, compressed gas cylinders and other small items from earthquake shaking.
- Elevate valuable contents on shelves above base flood level.
- Apply asphalt cement under tabs of loose shingles.

- Caulk/insulate around openings in outside walls, roof and attic.

\$100 - \$499

- Provide First Aid and CPR training for employees
- Purchase all items listed in the Disaster Supplies Checklist in *Open for Businesssm*
- Purchase a *small* back-up generator and maintain fuel.
- Maintain your sump pump, if you have one, or purchase one.
- Purchase plywood, and make up and label shutters. Install permanent anchors to allow quick and secure anchorage of shutters.
- Brace major appliances, such as water heaters and furnaces to the floor or wall, in earthquake areas (materials and contractor).

More than \$500

- Purchase and install a multi-KV generator, pre-wired to the building's essential electrical circuits.
- Purchase removable shutters that meet code debris impact requirements and have anchor systems professionally installed.
- Install permanent shutters (roll down, accoridian, etc.) for windows or retrofit the windows to enhance their resistance to wind-borne debris.
- Re-roof with an impact resistant roof covering
- Install high wind connectors in roof system (materials and roofing contractor).
- Re-roof with Class A fire resistant roof covering in wildfire prone areas.
- Hire an engineer to evaluate the building's wind or seismic resistance.
- Conduct a one-hour drill simulating the occurrence of a tornado, flood, or other hazard.
- Send the key safety/emergency response employee to several days of training or conferences.
- Purchase additional insurance (business interruption, loss of income, extra expense, flood, earthquake).
- Store duplicate records off site at a secure facility.
- Store data at a data center and disaster recovery facility.
- Purchase a removable computer storage device; store data off-site.
- Establish a voice communications system to meet your emergency needs – e.g. voice-mail, conference call capability, Private Branch Exchange (PBX)/Automatic Call Distribution (ACD) system.
- Install a monitored smoke alarm system.
- Install lightning protection system.



Guidelines for Design of Structures for Vertical Evacuation from Tsunamis

Second Edition

FEMA P-646 / April 2012



FEMA



Guidelines for Design of Structures for Vertical Evacuation from Tsunamis

Second Edition

Prepared by
APPLIED TECHNOLOGY COUNCIL
201 Redwood Shores Pkwy, Suite 240
Redwood City, California 94065
www.ATCouncil.org

Prepared for
FEDERAL EMERGENCY MANAGEMENT AGENCY
National Earthquake Hazard Reduction Program

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
National Tsunami Hazard Mitigation Program

Michael Mahoney, FEMA Project Officer
Robert D. Hanson, FEMA Technical Monitor

ATC MANAGEMENT AND OVERSIGHT

Christopher Rojahn (Project Executive)
William L. Coulbourne (Project Manager)
Jon A. Heintz (Project Quality Control Monitor)
William T. Holmes (Project Tech. Monitor)

PROJECT MANAGEMENT COMMITTEE (SECOND EDITION)

Ian N. Robertson (Project Technical Director)
Gary Chock
John Hooper
Timothy J. Walsh
Harry Yeh

PROJECT MANAGEMENT COMMITTEE

Steven Baldridge
Frank Gonzalez
John Hooper
Ian N. Robertson
Timothy J. Walsh
Harry Yeh

PROJECT REVIEW PANEL

John Aho
George Crawford
Richard Eisner
Lesley Ewing
Michael Hornick
Christopher P. Jones
Chris Jonientz-Trisler
Marc L. Levitan
George Priest
Charles W. Roeder
Jay Wilson



FEMA



Foreword

This publication was equally funded by the National Oceanic and Atmospheric Administration (NOAA), which leads the National Tsunami Hazard Mitigation Program (NTHMP) and by the Federal Emergency Management Agency (FEMA), which is responsible for the implementation portion of the National Earthquake Hazard Reduction Program (NEHRP).

FEMA initiated this project in September 2004 with a contract to the Applied Technology Council. The project was undertaken to address the need for guidance on how to build a structure that would be capable of resisting the extreme forces of both a tsunami and an earthquake. This question was driven by the fact that there are many communities along our nation's west coast that are located on narrow spits of land and are vulnerable to a tsunami triggered by an earthquake on the Cascadia subduction zone, which could potentially generate a tsunami of 20 feet in elevation or more within 20 minutes. Given their location, it would be impossible to evacuate these communities in time, which could result in a significant loss of life. Many coastal communities subject to tsunami located in other parts of the country also have the same potential problem. In these cases, the only feasible alternative is vertical evacuation, using specially design, constructed and designated structures built to resist both tsunami and earthquake loads.

The significance of this issue came into sharp relief with the December 26, 2004 Sumatra earthquake, the Indian Ocean Tsunami, and the March 11, 2011 Tohoku Japan Tsunami. While these events resulted in a tremendous loss of life, this would have been even worse had not many people been able to take shelter in multi-story reinforced concrete buildings or been able to get to high ground sites after the tsunami warning was delivered. Without realizing it, these survivors were demonstrating the concept of vertical evacuation from a tsunami.

This publication presents the following information:

- General information on the tsunami hazard and its history;
- Guidance on determining the tsunami hazard, including the need for tsunami depth and velocity on a site-specific basis;
- Different options for vertical evacuation from tsunamis;

- Determining tsunami and earthquake loads and structural design criteria necessary to address them; and,
- Structural design concepts and other considerations.

This is the second edition of FEMA P-646, originally published in June 2008. In this second edition revisions were made throughout the document, but particularly to the following items:

- Inclusion of observations and lessons learned from the March 11, 2011 Tohoku tsunami;
- Revision and enhancement of the debris impact expression to remove over-conservatism in the prior edition; and
- Updating of all reference documents to the most current version.

FEMA also issued a companion document in 2009, FEMA P-646A, *Vertical Evacuation from Tsunamis: A Guide for Community Officials*, that presents information on how the use of this design guidance can be encouraged and adopted at the State and local levels.

FEMA is grateful to the original Project Management Committee of Steve Baldridge, John Hooper, Ian Robertson, Tim Walsh, and Harry Yeh. We are also grateful to the Project Review Committee, the members of which are listed at the end of the document, and to the staff of the Applied Technology Council. The updates included in this second edition were made thanks to Gary Chock, John Hooper, Ian Robertson, Tim Walsh, and Harry Yeh. Their hard work has provided this nation with a first document of its kind, a manual on how citizens may for the first time be able to survive a tsunami, one of the most terrifying natural hazards known.

– Federal Emergency Management Agency