

EXHIBIT IV

INFORMATION

Handbook for Emergency Preparedness

Be Prepared —
Be Informed



A Publication by
Hawaiian Electric Company
Maui Electric Company
Hawaii Electric Light Company

www.heco.com

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ALOHA! Electricity is vital to our quality of life, making possible the modern conveniences we take for granted.

At Hawaiian Electric (HECO), Maui Electric (MECO) and Hawaii Electric Light Company (HELCO), we work hard to provide you reliable electric service. But power outages could happen. Problems can range from short, momentary interruptions that merely cause lights to flicker to major outages lasting for days after a devastating hurricane. In today's electronic world, power *interruptions* like these can mean *disruption*. That's why we've prepared this booklet for you. Although the focus is on what to do during an emergency, many of the safety and equipment protection tips can and should be followed at all times.

Please take the time to read this handy guide and keep it nearby. We hope it will help you understand why power outages occur and more importantly, how to minimize the inconveniences and dangers they can cause. Working together, we can be prepared.

Mahalo,



T. Michael May
President and Chief Executive Officer
Hawaiian Electric Company

We gratefully acknowledge the assistance of the Oahu Civil Defense Agency in this project.

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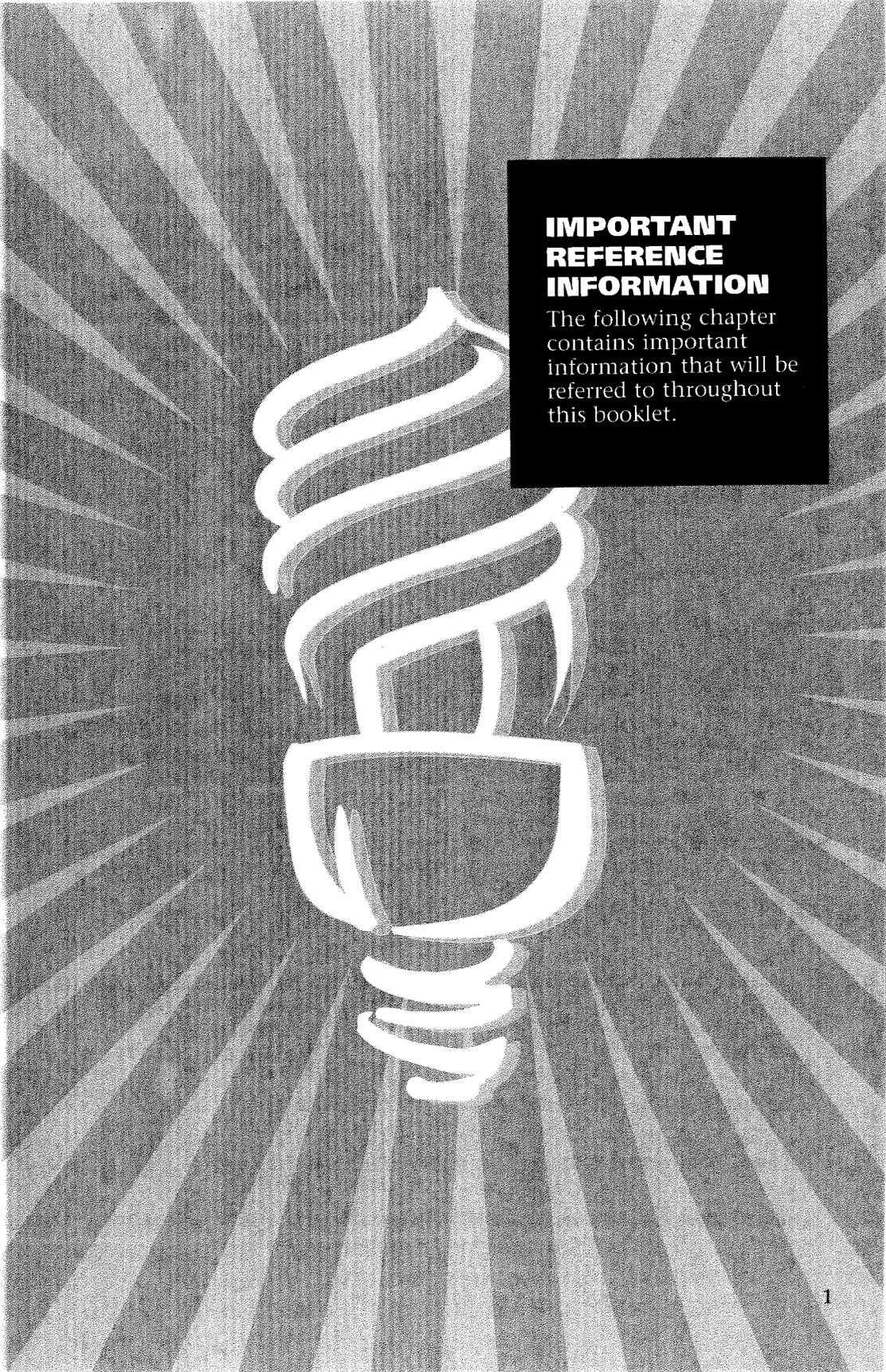
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**IMPORTANT
REFERENCE
INFORMATION**

The following chapter contains important information that will be referred to throughout this booklet.

**Civil
Defense**



Hawaiian Electric, Maui Electric, and Hawaii Electric Light work in close partnership with their respective county Civil Defense agencies and the state Civil Defense office during emergencies and non-emergency-related power outages. This partnership is essential to ensure that correct, timely, and helpful information on the status of electric utility operations under emergency conditions is conveyed to the public through the appropriate Civil Defense Agencies and to Federal, State, and City and County governmental offices.

During times of alert, emergency mobilization, and activation of Civil Defense emergency operating centers, and during the recovery phase of a disaster, the electric utility companies provide coordinators to both the county and state Civil Defense agencies. For the most accurate information, listen on your battery-powered radio to the Civil Defense reports on various counties' Emergency Alert System (see page 7).

For more information on how to prepare for and deal with disasters and emergencies, visit, write, or call your county's Civil Defense office:

Oahu Civil Defense Agency
City and County of Honolulu
650 South King Street
Honolulu, HI 96813
Phone: 523-4121
TDD Service: 527-5476

Maui Civil Defense Agency
County of Maui
200 South High Street
Wailuku, HI 96793
Phone: 270-7285
After Hours: 244-6400

**Hawaii (Big Island)
Civil Defense Agency**
County of Hawaii
920 Ululani Street
Hilo, HI 96720
Phone: 935-0031
After Hours: 935-3311

**Kauai Civil Defense
Agency**
County of Kauai
3990 Kaana Street, Suite100
Lihue, HI 96766
Phone: 241-1800
After Hours: 241-1711

**Important
Telephone
Numbers**

Emergency Police, Fire, Ambulance	911
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Oahu Civil Defense	523-4121
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OAHU

State Civil Defense	733-4300
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HECO Service Center/Dispatch Office <i>(to report power outages, downed power lines, trees on power lines)</i> Hours: 24 hours a day, seven days a week	548-7961
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HECO Education & Consumer Affairs Division Reg. Hours: Mon - Fri; 7:30a.m. - 4:00p.m.	543-7511
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HECO Customer Installations Department, Technical Division <i>(to request marking of underground electrical lines in and around your property, prior to excavation work)</i> Reg. Hours: Mon - Fri; 7:30a.m. - 4:00p.m.	543-5654
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Board of Water Supply Troubleline	748-5010
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Hawaiian Telcom Residential Repair Office (24 Hours)	611 or 1(877)482-3900
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American Red Cross	734-2101
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Streetlights Out City	564-6113
State	831-6714

The Gas Company

Customer Service Hours: Mon. - Fri.; 7:30 a.m. - 4:30 p.m.	535-5933
Emergency Service - 24 hours (menu option 2)	535-5933

**MAUI,
MOLOKAI,
LANAI**

Emergency Police, Fire, Ambulance	911
Maui Civil Defense	
Reg. Hours: Mon. - Fri: 7:45a.m. - 4:30p.m.	270-7285
After Hours (Maui Police Dispatch)	244-6400
State Civil Defense (Oahu)	733-4300
MECO Trouble Service Center/Dispatch Office <i>(to report power outages, downed power lines, trees on power lines, streets lights out)</i>	
Maui	871-7777
Lanai, Molokai	1-877-871-8461
MECO Consumer Services Division <i>(for questions regarding food safety during and after a power outage)</i>	871-2323
Reg. Hours: Mon - Fri; 7:00a.m. - 4:00p.m.	
MECO Energy Delivery Service Requests <i>(to request marking of underground electrical lines in and around your property prior to excavation work)</i>	871-2390
Reg. Hours: Mon - Fri; 7:00a.m. - 4:00p.m.	
Board of Water Supply Troubleline	270-7633
Hawaiian Telcom Residential Repair Office (24 Hours)	611 or 1(877)482-3900
American Red Cross	
Maui	244-0051
Hawaii State Chapter (toll free) From Maui	270-2040
From Molokai 660-2040 From Lanai	568-2040
Streetlights Out	
Maui	871-7777
Lanai, Molokai	1-877-871-8461
The Gas Company Customer & Emergency Service	
Maui	877-6557
Molokai, Lanai	1-800-828-9359

**HAWAII
(Big Island)**

Emergency Police, Fire, Ambulance	911
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Hawaii (Big Island) Civil Defense	935-0031
After Hours	935-3311

State Civil Defense (Oahu)	733-4300
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HELCO Trouble Service Center/Dispatch Office <i>(to report power outages, downed power lines, trees on power lines)</i>	969-6666
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HELCO Educational Services Division Reg. Hours: Mon - Fri; 7:30a.m. - 3:30p.m.	969-0137
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HELCO Engineering Service Requests <i>(to request marking of underground electrical lines in and around your property prior to excavation work)</i> Reg. Hours: Mon - Fri; 7:30a.m. - 3:30p.m.	969-6666
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Board of Water Supply Troubleline	961-8790
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Hawaiian Telcom Residential Repair Office (24 Hours)	611 or 1(877)482-3900
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American Red Cross	
Hilo	935-8305
Kona	326-9488
Hawaii State Chapter (toll free)	530-2040

Streetlights Out	
Reg. Hours: Mon. - Fri.; 7:30a.m. - 4:00p.m.	961-8341
After Hours	935-3311

The Gas Company Customer & Emergency Service	935-0021
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KAUAI

Emergency Police, Fire, Ambulance	911
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Kauai Civil Defense	241-1800
After Hours	241-1711

Kauai Island Utility Cooperative
Member Services
Reg. Hours: Mon. - Fri.: 8:00 a.m. - 4:30 p.m. 246-4300
Troubleline (for emergencies, downed powerlines,
power outages) 246-8200

State Civil Defense (Oahu)	733-4300
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Board of Water Supply Trouble Line	245-5444
After Hours	241-1711

Hawaiian Telcom Residential Repair Office (24 Hours)	611 or 1(877)482-3900
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American Red Cross	245-4919
Hawaii State Chapter (toll free)	240-2040

Streetlights Out	246-8200
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The Gas Company Customer & Emergency Service	245-3301
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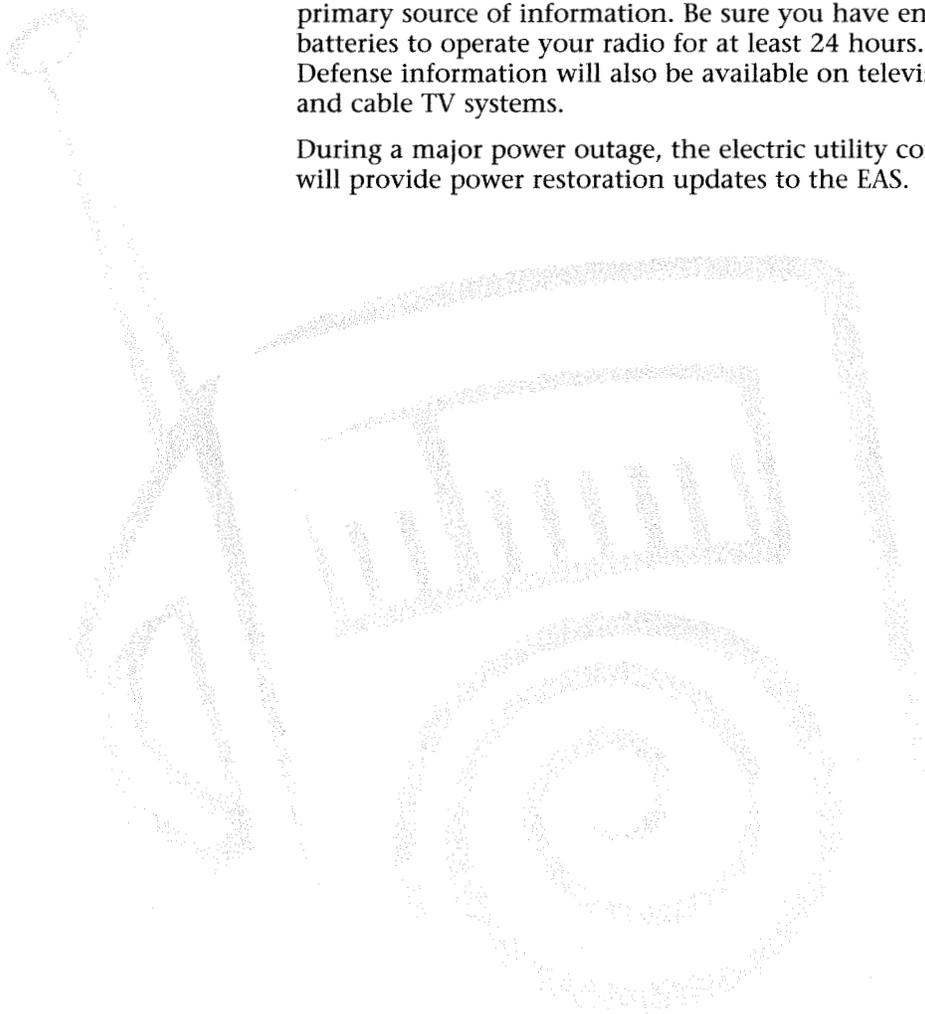
Emergency Alert System

The Emergency Alert System (EAS) is your official source of emergency information and instructions. This information originates from the Civil Defense Emergency Operating Centers.

If the Civil Defense sirens sound, turn on your radio. All radio stations have voluntarily agreed to participate in the EAS. In the event of a power outage, some stations are equipped with back-up generator power and will continue to stay on the air. Stay tuned to these stations for further information and instructions. Take the necessary protective actions as directed and keep tuned to your radio for further updates.

During an emergency, a battery-powered radio will be your primary source of information. Be sure you have enough batteries to operate your radio for at least 24 hours. Civil Defense information will also be available on television and cable TV systems.

During a major power outage, the electric utility company will provide power restoration updates to the EAS.



STORM TRACKS

The Hawaiian Islands sit in the midst of storm tracks. Historically, as many as 13 storms form during Hawaii's hurricane season, which normally runs from June through November. Storms are also known to appear outside this seasonal window. Ranging from tropical depressions to full blown hurricanes, these systems form off the coast of Central America and move in a westerly direction between 10 degrees to 20 degrees North latitude.

Most of the storms dissipate before getting close to the Hawaiian Islands, but if one maintains its intensity as it moves past the Big Island at 19 degrees North, it will tend to curve poleward to the northwest. Later in the season, some storms also form south of Hawaii near the equator. While there have been numerous near misses, two hurricanes did make landfall: Dot in 1959 and Iniki in 1992. And in November 1982, Hurricane Iwa brushed the islands of Kauai and Oahu causing over \$234 million in property damage.

Tracking a storm

This map can be used to track the progress of a storm moving toward Hawaii. Use latitude and longitude coordinates to pinpoint the storm's location when hurricane advisories are released by the National Weather Service (NWS). Latitudes are lines running across the map from side to side. Longitudes are represented by the lines running up and down the map. For example, Lanai, in the center of the island chain, is located at 20.9° N latitude and 157° W longitude.

Remember, hurricanes are very unpredictable. They can change direction and intensity very quickly. Therefore, it is important to listen to the radio for NWS advisories and Civil Defense information.

When the NWS declares a Hurricane Watch, there is a threat of hurricane conditions within 36 hours. This may be your last chance to ensure that all emergency preparations are completed and all emergency supplies are acquired.

When a Hurricane Warning is issued, dangerous storm surge, flooding, and winds are expected in 24 hours or less. Take immediate actions to save life and property. Anticipate sounding of Civil Defense sirens and issuance of evacuation advisories/orders.

Keep in mind, a Hurricane Warning may not always be preceded by a Hurricane Watch.

How hurricanes form

The source of a hurricane's energy is derived from warm ocean water along the equator and the corresponding higher level of humidity. In simple terms, a low-pressure area is created when water-laden clouds release heavy rains as the warm air rises. Surface air spirals inward and upward in a counterclockwise direction to fill the partial vacuum, reaching tens of thousands of feet above sea level to encircle the hurricane's eye. While the eye is almost calm and is often exposed to blue sky, the winds nearest the eye are strongest.

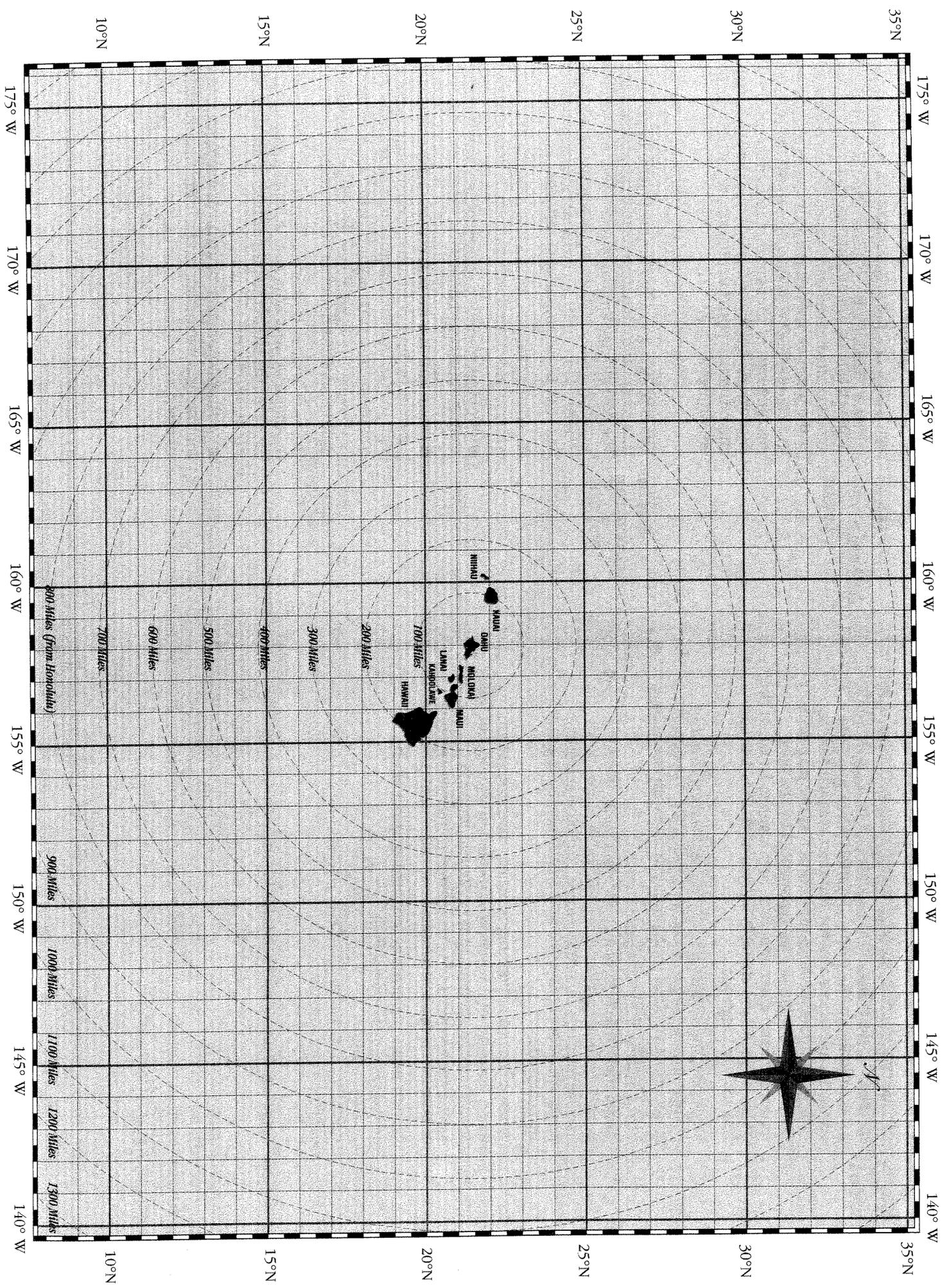
Early warning system

The NWS has an early warning system linked to satellites that record the formation of storms, and then track them. The developing storm area is clearly visible on the satellite pictures, and its progress is monitored locally by the NWS. Here are some of the definitions of terms and signals that you may be hearing during hurricane season.

- Tropical Depression is a low-pressure system or cyclone with sustained winds of less than 39 miles per hour.
- Tropical Storm is a cyclone where winds range from 39 to 73 miles per hour.
- Hurricane is a tropical cyclone with winds of 74 miles per hour or more. Torrential rains, destructive waves, and high waters known as storm surge, may create flood conditions in coastal and low-lying areas. More lives are claimed by storm surge and flooding in most parts of the world than by the winds of a hurricane.

When a Tropical Depression forms, the NWS issues a series of advisories, which include watches and warnings, based on the strength and position of an approaching storm, as follows:

- A Hurricane Watch is issued by the NWS if hurricane conditions are expected to reach the islands within 36 hours.



■ A Hurricane Warning is issued by the NWS when dangerous hurricane conditions are expected to affect the islands within 24 hours or less. Remember, in our island environment, both winds and storm-generated waves present significant hazards. Coastal flooding from the ocean often occurs in low-lying areas, and residents should refer to the phonebook for information on Civil Defense evacuation zones (see Civil Defense Tsunami Evacuation Maps). Torrential rains of tropical storms can also turn small streams into raging torrents, cause dangerous rock and mud slides, and flash flooding.

All NWS advisories, watches, and warnings, including tropical cyclone positions, can be heard on National Oceanic and Atmospheric Administration (NOAA) Weather Radio. NOAA Weather Radio is broadcast directly from the forecast office in Honolulu. Updates are continuously broadcast 24 hours a day. If Civil Defense asks you to evacuate, instructions will be given in the NOAA Weather Radio broadcasts.

NOAA Weather Radio receivers can be purchased at your local radio dealer.

**All storms
are
dangerous**

All storms are dangerous. They come in different shapes and sizes, packing winds as high as 150 mph or more. Damage from these winds can run from light to destructive, depending on both the strength and direction of approach. Storms approaching the islands from the south tend to do more damage than those approaching from other directions. Heavy surf often reaches island shores a day or two ahead of a tropical storm or hurricane, causing damage to beach homes and roadways.

**What
actions
to take**

Prior to the approach of the hurricane season, or before June, is the time to take action by preparing a home survival kit and making emergency plans for the family. Don't wait until a Hurricane Watch is issued to make your preparations. When a Hurricane Watch is declared, make final preparations and review emergency plans with your family.

- When the Civil Defense sirens sound, listen to your radio or TV for instructions. When advised, or if threatened by the conditions in your area, evacuate to sturdy buildings or public shelters and leave areas that may flood.
- Stay indoors during high winds. Don't go "sight-seeing" during or immediately after a storm. You could risk your life as well as the lives of people who may try to help you should you get into trouble. You may also hamper the work of emergency crews.
- Make whatever telephone calls you need to make, but limit those calls to less than a minute if possible. This is to avoid telephone gridlock and to keep lines open for emergency calls. Remember: overloading circuits reduces the efficiency of the entire phone system.

Emergency prepared- ness

The key to successfully weathering a hurricane or tropical storm is being prepared. Here is what you should do:

- Know the warning signals and where shelters are located.
- Always have a home survival kit ready. See page 44 for a checklist.
- Tie down or store all loose objects.
- Bring all potted plants into the house.
- Remove and store lanai furniture.
- Throw deck furniture into the pool.
- Unplug electric appliances you may not need or use.
- Cover all windows and door openings with boards, shutters or other shielding materials. Permanent storm shutters offer the best protection for windows. A second option is to board up windows with 5/8" marine plywood, cut to fit and ready to install. Other alternatives include replacing existing glass with impact-resistant glass, and covering existing glass with a protective film. Tape does not prevent windows from breaking.
- Wedge sliding glass doors at the top. Wedge a dowel or a piece of broom handle into the track of sliding glass doors to prevent them from coming loose when the wind blows.
- Properly secure propane tanks. Remember that propane tanks should never be stored indoors and away from appliances, gas water heaters, and sources of fire. Make sure storage areas are cool, dry, and well ventilated to allow any gas leaks to safely dissipate.
- Assemble insurance documents and place in waterproof containers.
- Secure elevators on the top floor of your condominium.
- Fill up the gas tank of your car.
- Care for pets. See page 43 for more information.

Floods In recent years, Hawaii residents have become all too familiar with the dangers and inconveniences floods can cause. On Oahu, damages caused by the Halloween Eve flood of 2004 were estimated to be in the millions of dollars. Manoa residents shoveled mud and debris out of their homes, while University of Hawai'i officials canceled classes. The City and County of Honolulu and Kaua'i County were designated for federal disaster assistance due to the effects of severe storms, flooding, landslides, and mudslides during February 20 to April 2, 2006.

Floods are one of the most common hazards in the United States. Flood effects can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states.

However, all floods are not alike. Some floods develop slowly, sometimes over a period of days. But flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water that carries rocks, mud, and other debris and can sweep away most things in its path. Overland flooding occurs outside a defined river or stream, such as when a levee is breached, but still can be destructive. Flooding can also occur when a dam breaks, producing effects similar to flash floods.

Be aware of flood hazards no matter where you live, but especially if you live in a low-lying area, near water or downstream from a dam. Even very small streams, gullies, creeks, culverts, dry streambeds, or low-lying ground that appear harmless in dry weather can flood.

How can I protect myself, my family, and my home from a flood?

- Familiarize yourself with these terms:
 - **Flash Flood or Flood Watch:** Flash flooding or flooding is possible within the designated watch area. Be prepared to move to higher ground; listen to NOAA Weather Radio, commercial radio, or television for information.
 - **Flash Flood or Flood Warning:** Flash flooding or flooding has been reported or is imminent. Take necessary precautions at once. If advised to evacuate, do so immediately.
 - **Small Stream Flood Advisory:** Flooding of small streams, streets, and low-lying areas is occurring.
- According to the Federal Emergency Management Agency (FEMA), the smartest thing you can do to prepare for floods is purchase flood insurance. Protection against loss due to floods is not covered under a homeowner's policy. You should contact your property/casualty agent or broker about eligibility for flood insurance, which is offered through the National Flood Insurance Program. Generally, there is a five-day waiting period for this policy to become effective, so don't wait until the last minute to apply.

National Flood Insurance Program:
Customer Service: (888) 379-9531
TTY: (800) 427-5593
Fax: (202) 646-3689
Email Address: FloodSmart@dhs.gov
Website: <http://www.floodsmart.gov>
- Make an itemized list of personal property, including furnishings, clothing, and valuables. Photographs of your home-inside and out-are helpful. This will assist an adjuster in settling claims and will help prove uninsured losses, which are tax deductible.
- Keep your insurance policies and a list of personal property in a safe place, such as a safe deposit box. Know the name and location of the agent(s) who issued these policies.

What should I do to prepare for a flood?

- Know your flood risk and elevation above flood stage—do your local streams or rivers flood easily? If so, be prepared to move to a place of safety. Know the safest route from your home or place of business to high, safe ground should you have to evacuate in a hurry.
- If you live in an area that's frequently flooded, keep on hand materials such as sandbags, plywood, plastic sheeting, and lumber that can be used to protect your property. (Remember, sandbags should not be stacked directly against the outer walls of a dwelling, since when wet, the bags may create added pressure on the structure.)
- Be aware of streams, drainage canals, canyons, and other areas known to flood suddenly. Flash floods can occur in these areas with or without such typical warnings as rain clouds or heavy rain.
- Always have a home survival kit and an evacuation kit ready (see pages 44 and 45).
- Avoid building in a floodplain unless you elevate and reinforce your home.
- Elevate the air conditioner, water heater, and electric panel if susceptible to flooding.
- Install "check valves" in sewer traps to prevent flood water from backing up into the drains of your home.
- Construct barriers (levees, beams, floodwalls) to stop floodwater from entering the building.
- Seal walls in basements with waterproofing compounds to avoid seepage.
- Keep a portable radio, emergency cooking equipment, and flashlights in working order.

What should I do if a flood is likely in my area?

- Keep a battery-powered radio, tuned to a local station, and follow all emergency instructions.
- Do not allow children to play along streams or near drainage ditches. Both of these areas can quickly turn deadly during times of heavy rainfall.

- Hikers should use extreme caution anytime heavy rains threaten. Hawaii streams can go from a trickle to a raging flood within minutes if previous rainfall has been substantial.
- Store drinking water in clean bathtubs, sinks, and in clean containers (you can sanitize these items by first rinsing with bleach. Also, see page 69 for instructions on how to sanitize water). Water service may be interrupted.
- Keep your automobile fueled. If electric power is cut off, gas stations may not be able to operate pumps for several days.

What should I do during a flood?

- Keep a battery-powered radio, tuned to a local station, and follow all emergency instructions.
- The safety of your family is the most important consideration. Since flood waters can rise very rapidly, you should be prepared to evacuate before the waters reach your property.
- If you have a flood-related emergency and need assistance, call 9-1-1.
- If you're caught in the house by suddenly rising waters, move to the second floor and, if necessary, to the roof. Take warm clothing, a flashlight, and portable radio with you. Then wait for help—don't try to swim to safety. Rescue teams will be looking for you.
- IF, AND ONLY IF, TIME PERMITS, there are a number of precautionary steps that can be taken:
 - Turn off all utilities at the main power switch and close the main gas valve. Disconnect electrical appliances. **Do not touch electrical equipment if you are wet or standing in water.**
 - Move essential items, valuable papers, and valuable belongings to upper floors or higher elevations.
 - Board up windows or protect them with storm shutters (to prevent flying glass).
 - Bring outdoor possessions inside the house or tie them down securely. This includes lawn furniture, garbage cans, tools, signs, and other moveable objects that might be swept away or hurled about.
 - Secure your home.

What are the important safety tips to follow if I must evacuate my home?

■ The rule for being safe in a flood situation is simple: HEAD FOR HIGHER GROUND AND STAY AWAY FROM FLOOD WATERS!

- If it is safe to evacuate by car, consider the following:
 - Stock the car with an evacuation kit (see page 45).
 - Do not camp or park your vehicle along streams and ditches, particularly during dangerous conditions. Both of these areas can quickly turn deadly during times of heavy rainfall.
 - Keep the gas tank at least half full, since gasoline pumps will not be working if the electricity has been cut off.

What are the important safety tips to follow while driving in flood conditions?

■ Do not drive where water is over the roads. Parts of the road may already be washed out or the water may be much deeper than it appears.

■ If your car stalls in a flooded area, abandon it as soon as possible. Floodwaters can rise rapidly and sweep a car and its occupants away. Many deaths have resulted from attempts to move stalled vehicles.

- Do not drive into flooded areas.
 - Six inches of water will reach the bottom of most passenger cars, causing loss of control and possible stalling.
 - A foot of water will float many vehicles.
 - Two feet of rushing water can carry away most vehicles, including sport utility vehicles (SUVs) and pick-ups.

■ Be especially cautious at night when it is harder to recognize flood dangers.

What are the important safety tips to follow while walking in flood conditions?

- Try to avoid flooded areas, and don't attempt to walk across stretches of flood waters that are more than knee deep.
- Do not walk through moving water. If the moving water is above your ankles, STOP! Turn around and go the other way. Six inches of moving water can make you fall. If you have to walk in water, walk where the water is not moving. Use a stick to check the firmness of the ground in front of you.

What are the important safety tips to follow after a flood?

- Check for injured persons. Do not attempt to move seriously injured persons unless they are in immediate danger of death or further injury. If you must move an unconscious person, first stabilize the neck and back, then call for help immediately.
- Keep a battery-powered radio with you so you can listen for emergency updates, news reports, and information on whether the community's water supply is safe to drink.
- Stay off the streets. If you must go out, watch for fallen objects, downed electrical wires, and weakened walls, bridges, roads, and sidewalks.
- Avoid floodwaters. The water may be contaminated by oil, gasoline, or raw sewage. The water may also be electrically charged from underground or downed power lines.
- Avoid moving water.
- Be aware of areas where floodwaters have receded. Roads may have weakened and could collapse under the weight of a car.
- Stay away from downed power lines and report them to your electric utility company's Service Center/Dispatch Office at the number listed on pages 3-6.
- Stay out of any building if it is surrounded by floodwaters.

- Use extreme caution when entering buildings; there may be hidden damage, particularly in foundations.
- Use the phone only to report life-threatening emergencies.
- Do not visit disaster areas. Your presence might hamper rescue and other emergency operations.

What are the important safety tips to follow when I return home after a flood?

Return home only when authorities indicate it is safe. Returning home can be physically and mentally challenging. Above all, use caution.

- Refer to "Cleaning up after a storm" on page 70 for safety precautions. Proceed with immediate cleanup measures to prevent any health hazards.
- Use a battery-powered flashlight (not lanterns, torches, or matches) to inspect a damaged home. Flammables may be inside. (Note: The flashlight should be turned on outside before entering—the battery may produce a spark that could ignite leaking gas, if present.)
- Service damaged septic tanks, cesspools, pits, and leaching systems as soon as possible. Damaged sewage systems are serious health hazards.
- Clean and disinfect everything that got wet. Mud left from floodwater can contain sewage and chemicals.
- Call your insurance agent or broker who services your flood insurance policy. The agent will submit a loss form to the National Flood Insurance Program. An adjuster will be assigned to inspect your property as soon as possible. Take pictures of damages. Keep good records of repair and cleaning costs.
- Perishable items that pose a health problem should be listed and photographed before discarding. Discard fresh food and previously opened medicines that have come in contact with floodwaters.
- Cover broken windows and holes in the roof or walls to prevent further weather damage. The expense of these temporary repairs is usually covered under your flood insurance policy (subject to the policy deductible).

■ Flooded basements should be drained and cleaned as soon as possible. Remember, however, that structural damage can occur by pumping out the water too quickly. After the surrounding floodwaters have subsided, begin draining the basement in stages, about one-third of the water volume each day.

■ Refrigerators, sofas, and other hard goods should be hosed off and kept for the adjuster's inspection. A good deodorizer to use when cleaning major kitchen appliances is to add one teaspoon of baking soda to a quart of water. Any partially damaged items should be dried and aired; the adjuster will make recommendations as to their repair or disposal.

■ A drinking water advisory to disinfect the water from the tap may be issued in your community. See page 69 for instructions on how to sanitize water.

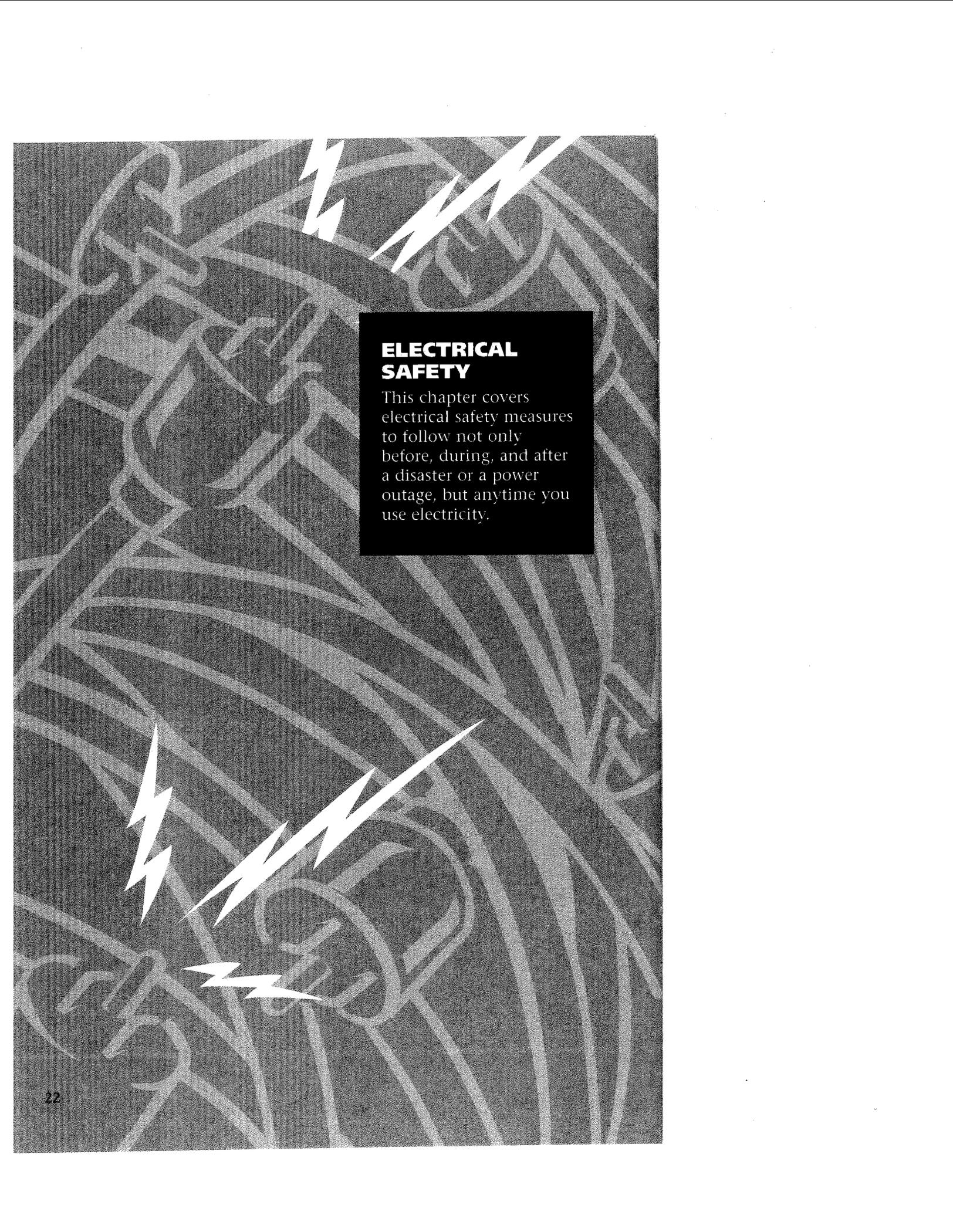
How can I receive help in recovering from a flood?

■ Seek necessary medical care at the nearest hospital. Food, clothing, shelter, and first aid are available from the American Red Cross.

■ The American Red Cross can provide you with a voucher to purchase new clothing, groceries, essential medications, bedding, essential furnishings, and other items to meet emergency needs. Listen to the radio to find out where to go for assistance, or look up American Red Cross in the phone book and call.

■ Listen to your radio for information on assistance that may be provided by the state or federal government or other organizations.

■ If you hire cleanup or repair contractors, be sure they are qualified to do the job. Be wary of people who drive through neighborhoods offering help in cleaning up or repairing your home. Check references.



ELECTRICAL SAFETY

This chapter covers electrical safety measures to follow not only before, during, and after a disaster or a power outage, but anytime you use electricity.

Electricity, like many of the conveniences of the modern world, is something we've come to take for granted. Cooking, cooling, lighting, and refrigeration are just a few of the things electricity makes possible. What we should never take for granted, however, is the power of electricity. Don't be fooled: electricity can be dangerous.

To protect your family and yourself, learn the basic rules of electrical safety and what to do in emergency situations, such as when power lines go down or electrical fires occur.

Remember, electricity always tries to reach the ground. It travels over "conductors" or anything that allows electricity to flow. People, water, trees, damp ground, and metal are excellent conductors. An "insulator" is the opposite of a conductor.

**Circuit breaker
panels,
fuse boxes,
and the
main breaker
switch**

Q: What are circuit breakers and fuse boxes and how do I use them?

A: Your household controls electric service through a panel or box called a circuit breaker panel or fuse box. These days, it's more common for a house to have a circuit breaker panel. Circuit breaker panels or fuse boxes contain breakers or fuses of different capacities. Each circuit's capacity is labeled by "amps," which is a unit that measures the size of an electric current.

Fuses or circuit breakers are devices which limit the amount of current a circuit will carry. They protect the wires and equipment from overheating, which could create fire hazards. They are designed to automatically open or "break" a circuit should the amount of current exceed the rated design of the circuit. Fuses contain a soft metal filament that melts when too much current flows through them. Circuit breakers are designed to trip a switch.

It is important, and good practice, to label fuses or circuit breakers with the location of the circuit (e.g. bathroom, kitchen or bedroom). Labeling your devices will aid you in case of a power outage or when you need to turn the power off before doing repair or maintenance work.

To prevent circuit breakers from sticking or malfunctioning, it's good practice to exercise your breakers once a year by turning them off and on three times.

Q: What is a main breaker or main fusible switch and how do I use it?

A: A main breaker or switch is used to cut off power to your entire home. It is usually located by the electric meter on your home, although some circuit breaker panels also contain the main breaker switch. In an emergency, such as during an appliance fire or while rescuing a person from household electrical shock, cut off the power to your house at the main breaker or switch. However, if it's faster for you to access your circuit breaker panel or your fuse box than the main breaker or switch, turn all the breakers off or unscrew all the fuses to cut off power to the house.

GFCIs **Q: What is a GFCI?**

A: A ground fault circuit interrupter (GFCI) is an inexpensive electrical device that is designed to protect people from severe or fatal electric shocks. Because a GFCI detects ground faults, it can also prevent some electrical fires and reduce the severity of others by interrupting the flow of electric current.

Q: How does a GFCI work?

A: The GFCI constantly monitors electricity flowing in a circuit to sense any loss of current to ground, often times referred to as a ground fault. If the current flowing through the circuit differs by a small amount from that returning, the GFCI quickly switches off power to that circuit. The GFCI interrupts power faster than a blink of an eye to prevent a lethal dose of electricity. You may receive a painful shock, but you should not receive a serious shock injury.

Q: What types of GFCIs are available?

A: Three common types of ground fault circuit interrupters are available for home use. Look for the Underwriter's Laboratories (UL) seal on GFCIs when purchasing them or when specifying the product to your licensed electrician.

Wall Receptacle GFCI - This type of GFCI is the most widely used. It fits into a standard outlet and protects against ground faults whenever an electrical product is plugged into the outlet. Wall receptacle GFCIs are most often installed in kitchens, bath and laundry rooms, and outdoor locations where water and electricity are most likely to be in close proximity. Most receptacle type GFCIs can be installed so that they also protect other electrical outlets farther "down stream" in the branch circuit.

Circuit Breaker GFCI - In homes equipped with circuit breakers, this type of GFCI may be installed in a panel box to give protection to selected circuits. The circuit breaker GFCI serves a dual purpose-not only will it shut off electricity in the event of a ground fault, but it will also trip when a short circuit or an over load occurs. Protection covers the wiring and each outlet, lighting fixture, heater, etc. served by the branch circuit protected by the GFCI in the panel box.

Portable GFCI - Where permanent GFCIs are not practical, portable GFCIs may be used. One type contains the GFCI circuitry in a self-contained enclosure with plug blades in the back and receptacle slots in the front. It can be plugged into a receptacle, and the electrical product is then plugged into the GFCI. Another type of portable GFCI is an extension cord combined with a GFCI. It adds flexibility in using receptacles that are not protected by GFCIs. Portable GFCIs should only be used on a temporary basis and should be tested prior to every use.

Q: Where should GFCIs be installed?

A: GFCIs should be used anywhere a receptacle and a water source are present, such as kitchens, bathrooms, garages and carports, utility or laundry rooms, workshops, outdoor locations, pool and whirlpool spa areas, decks and porches.

In homes that are built to comply with the National Electrical Code (the Code), GFCI protection is required for most outdoor receptacles (since 1973), bathroom receptacle circuits (since 1975), garage wall outlets (since 1978), kitchen receptacles (since 1987), and all receptacles in crawl spaces and unfinished basements (since 1990).

Consider having GFCIs installed if you own a home that does not have GFCIs installed in those critical areas specified in the latest version of the Code. For broad protection, GFCI circuit breakers may be added in many panels of older homes to replace ordinary circuit breakers. For homes protected by fuses, install wall receptacle or portable GFCIs in areas of greatest exposure, such as the bathroom, kitchen, basement, garage, and outdoor circuits.

A GFCI should be used whenever operating electrically powered garden equipment (mower, hedge trimmer, edger, etc.) and tools (drills, saws, sanders, etc.).

Q: How should GFCIs be installed?

A: Circuit breaker and wall receptacle GFCIs should be installed in your home by a licensed electrician. The portable GFCI requires no special knowledge or equipment to install. Whichever type of GFCI is installed, it's important to follow the manufacturer's installation instructions to ensure proper functioning, especially when protecting other outlets downstream in the branch circuit.

Q: How can I be sure that the GFCI is working properly?

A: GFCIs should be tested after installation to make sure they are working properly. Like all products, GFCIs can be damaged over time. GFCIs damaged by lightning or electrical surges may fail to provide adequate protection. Test circuit breaker and wall receptacle GFCIs monthly and after any violent thunderstorm. Test portable GFCIs before each use.

To properly test GFCIs in your home:

1. Push the "Reset" button located on the GFCI receptacle to assure normal GFCI operation.
2. Plug a nightlight (with an "ON/OFF" switch) or other product (such as a lamp) into the GFCI receptacle and turn the product "ON."
3. Push the "Test" button located on the GFCI receptacle. The nightlight or other product should go "OFF."
4. Push the "Reset" button. The light or other product should go "ON" again.

If the light or other product remains "ON" when the "Test" button is pushed, the GFCI is not working properly or has been incorrectly installed. If your GFCI is not working properly, call a licensed electrician who can assess the situation, rewire the GFCI if necessary, or replace the device.

General indoor electrical safety tips

People are good conductors of electricity, particularly when they are standing in water or on a damp floor. Your body can act like a lightning rod and carry the current to the ground. Follow these safety precautions to avoid the risk of injury, or even death:

- Touching a faulty appliance, plug, or bare wire can make you part of the electric circuit and put you at risk of electric shock.
- Frayed wires are dangerous anywhere. They should be repaired at once, or better yet, replaced.
- Replace inflexible electric cords and follow Underwriters Laboratories (UL) guidelines.
- Repair any appliance that sparks, emits smoke, or shocks you.
- Never use any electric appliance while in the tub or shower.
- Don't use any appliance while you're touching metal pipes and faucets or anything wet.
- Outlets near water sources (bathrooms, kitchen sinks, garages, outdoors) should be "ground fault circuit interrupter" (GFCI) protected.
- Never touch an electric cord or appliance while your hands are wet.
- Unplug appliances before cleaning them or removing anything from them (that burnt toast from your toaster, for example).
- Don't yank the cord when unplugging appliances.
- Train children not to put things into electrical outlets. Plastic outlet guards are a good idea.
- Keep work areas clean. Oily rags, newspapers, and sawdust can catch fire from electric sparks.
- Never overload a circuit with high-wattage appliances. Check the wattage on your appliance labels and be sure the combined wattage of all the appliances you want to plug into the same circuit does not exceed 1440 watts for a 15 amp circuit and 1920 watts for a 20 amp circuit. See "Circuit breaker panels and fuse boxes" on page 24 for an explanation of amps.

General outdoor electrical safety tips

- Keep ladders, antennas, kites, balloons, model airplanes, and trees away from overhead power lines.
- If you have a problem with objects coming in contact with the power lines, call your electric utility company's Service Center/Dispatch office at the numbers listed on pages 3-6.
- Never use electric power tools or appliances in the rain or while standing in water.
- For outdoor locations, use only lights, cords, and fixtures intended for outdoor use. Plug into outlets with a "ground fault circuit interrupter" (GFCI or GFI).
- Don't ever climb utility poles or transmission towers.
- Don't let anyone shoot or throw anything at insulators.
- Don't climb into electric utility substations. If you see someone climbing or trespassing into a substation, call 911 or call your electric utility company's Service Center/Dispatch office at the numbers listed on pages 3-6.
- Pad-mounted transformers are for underground wiring. The transformers are inside sturdy metal cabinets, which are locked for safety. Never pry them open. If you find an unlocked door on one of these cabinets, call your electric utility company's Service Center/Dispatch office at the numbers listed on page pages 3-6.
- If you're caught in a lightning storm, stay away from trees and whenever possible, stay dry. Go indoors and keep clear of windows. Unplug the TV and other electronic appliances.
- Never build a swimming pool or other structure under the power line leading to your house.
- Before digging, learn the location of underground power lines. Call your electric utility company at the numbers listed on page 34 for assistance. Check with the cable TV, gas, and water utility companies for assistance in locating their underground cables and pipes.

Downed power lines

Q: What do I do if I see downed power lines? How do I know if they are energized?

A: Most overhead powerlines are not insulated so, when lines from a utility pole fall to the ground, assume they are energized and dangerous. Energized lines can be deceiving by appearing lifeless and harmless. Don't touch these lines! Stay a safe distance away (30 feet or more)!

A live wire touching the ground causes electricity to fan out in a pool, decreasing in strength as it travels away from the center. Running from a fallen line may cause your legs to bridge current from higher to lower voltage and you may receive a shock. Instead, keep your legs together and shuffle away with both feet on the ground. Shuffle a safe distance away (30 feet or more) and away from other utility poles.

If someone is in contact with a fallen line, don't try to rescue them because you risk becoming a victim yourself. Warn others to stay away. Call for help from your electric utility company's Service Center/Dispatch office at the number listed on pages 3-6 or dial:

Oahu	911
Maui	911
Lanai	911
Molokai	911
The Big Island	911
Kauai	911 or 246-8200

Q: What if the downed line is touching a guard rail?

A: A downed line touching a fence or guard rail can energize it for several thousand yards. This poses a danger to anyone coming into contact with these structures.

If someone is in contact with a fallen line or guard rail, don't try to rescue them because you risk becoming a victim yourself.

As described on the previous page, shuffle at least 30 feet away from the downed power line and guard rail.

As in all power line related emergencies, call for help immediately by dialing 911 or call your electric utility company's Service Center/Dispatch Office listed on pages 3-6.

Q: What if the downed power line is touching the car while I'm in it?

A: A car touching a downed line will become energized.

- Remain where you are, if possible, and wait for help.
- If you must get out of the car because of fire or some other hazard, jump free of the car so that your body clears the vehicle before touching the ground.
- **DO NOT STEP OUT OF THE CAR.** You may receive a shock.
- Once you clear the car, shuffle at least 30 feet away, with both feet on the ground as described above.
- As in all power line related emergencies, call for help immediately by dialing 911 or call your electric utility company's Service Center/Dispatch Office listed on pages 3-6.

**Low voltage
and
high voltage
electric
shock**

Q: How do I handle an electrical shock?

A: There are two classifications of electric shock:
Low voltage (household) and High voltage (outdoor).

- Call for emergency medical help immediately by dialing 911.
 - Determine if the person is still in contact with the circuit or power source. If the person is in contact with the circuit or power source assume the circuit is still energized.
 - De-energize the circuit or power source by turning off the power at your fuse box or circuit breaker panel.
 - If you can't turn the power off, use a dry piece of wood, dry plastic or wooden broom, or dry leather clothing to separate the victim from the power source. **Never attempt to remove a person from an energized circuit with your bare hands!**
 - Once the victim is free, if the victim is not breathing and has no heart beat, start CPR immediately; the victim is probably in cardiac arrest. (DO NOT ATTEMPT CPR IF YOU DON'T KNOW THE CORRECT PROCEDURES.)
 - If the victim is conscious, keep them seated and quiet. Ensure that the victim is taken to the hospital for testing and observation.
-

**Low
voltage
(household)**

**High
voltage
(outdoor)**

- If a person is in contact with a power line, assume the line to be energized and dangerous.
- DO NOT attempt to free the person from the power line.
- Stay clear and warn others to keep away (30 feet or more).
- Call immediately for emergency medical help by dialing 911.
- Call your electric utility company's Service Center/ Dispatch Office listed on pages 3-6.

Electrical fires

Q: How do I handle electrical fires?

A: Be prepared. Keep a multi-purpose, type "ABC" (type "C" for electrical fires) fire extinguisher handy. Mount the fire extinguisher in plain view, near an escape route and away from potential fire hazards such as heating appliances. Read the manufacturer's instructions to know how to use and care for your extinguisher.

If there is a fire:

- Make sure everyone has left or is leaving the house before attempting to fight a fire. Don't fight the fire if the fire could block your escape route.
- Make sure someone calls the fire department for help even if the fire seems small and you think you can put it out.
- If the fire is confined to an appliance, electrical cord, outlet, or switch, shut off the power by opening your main breaker, which is usually located near the electric meter; or shut off the circuit breakers at your electric service panel; or unscrew the fuses at the fuse box. Do this only if you can do so without endangering yourself.
- **NEVER USE WATER** on an electrical fire! Water can carry the electricity back to you and you could receive a deadly shock.
- Use your multi-purpose fire extinguisher to put out the fire. If you manage to put out the fire, have the firefighters check to be sure the fire is not smoldering out of plain sight.

**Precautions
to take
when
excavating**

Q: How do I prevent an electrical "dig-in" when doing excavation work on my property?

A: Before excavating, determine the approximate location of underground lines in the work area. Observing pad-mounted electrical equipment or handholes near the work area are good indicators that underground lines exist. You must contact your electric utility's Customer Installations department at the following numbers to coordinate the marking or identification of underground cables. To prevent delays, your electric utility will require at least 72 hours notice. There is no charge for this service.

COMPANY	PHONE	HOURS
Hawaiian Electric Company (Oahu)	543-5654	Mon-Fri 7:30a.m.-4:00p.m.
Hawaii Electric Light Company (Big Island)	969-6666	Mon-Fri 7:30a.m.-3:30p.m.
Maui Electric Company (Maui, Molokai, Lanai)	871-2390	Mon-Fri 7:00a.m.-4:00p.m.

You should also check with the telephone, gas, and TV cable companies before performing any excavation work.

When excavating, verification of underground lines should be performed cautiously, using hand digging methods. It is recommended that "non-metallic" type tools be used.

Q: What do I do if I damage an underground electric line?

A: If an underground power line is damaged during excavation, warn others to keep away and call for help immediately. Call your electric utility company's Service Center/Dispatch office at the number listed on pages 3-6.

If an underground power line is damaged when excavating with a backhoe or other mechanical equipment, the operator should remain on the equipment or vehicle until the equipment can be moved and cleared from the power line.

If the equipment cannot be cleared from the power line, and the operator must get off because of fire or some other hazard, the operator must jump free rather than step off the equipment. The operator should never step down or simultaneously touch the ground and equipment that is in contact with the power line, as this will increase the risk of electrical shock.

The operator should warn others to keep away from the equipment and the area surrounding the damaged underground power line. Have someone call for help immediately by calling your electric utility's Service Center/Dispatch office at the numbers listed on pages 3-6.

Sounds and noises from power lines and transformers

Q: What if I hear sounds and noises coming from power lines and transformers?

A: Most sounds and noises (such as humming or static) are normal, but if you hear unusual sounds (such as an explosion) from the power lines or transformers, please call your electric utility company's Service Center/Dispatch Office at the number listed on pages 3-6.

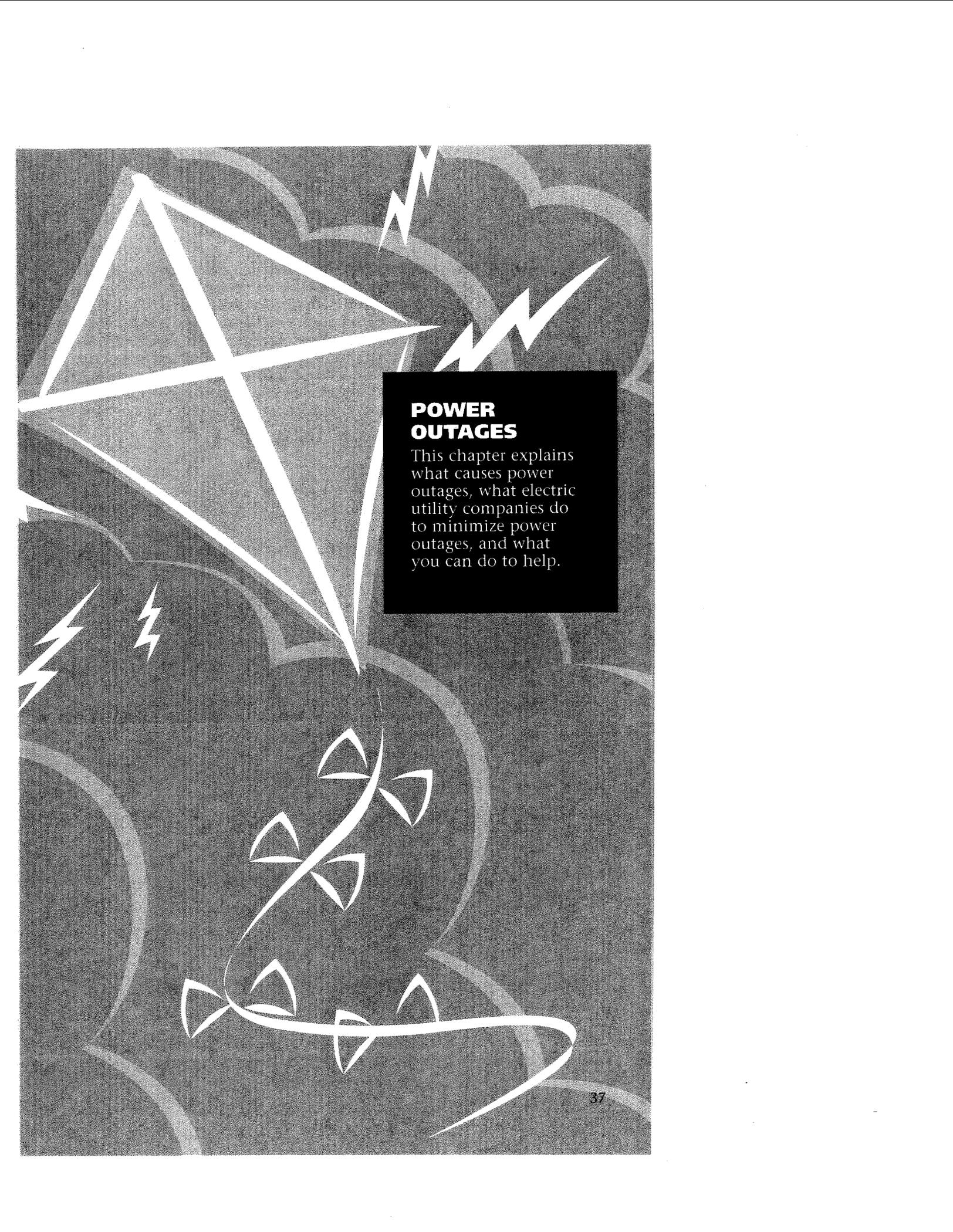
Electrical safety and water damage

Q: If my home gets flooded, when are the electrical outlets safe to use?

A: After a flood, it is wise to have your electrical system inspected by a licensed electrician. In addition to a visual inspection of your system, the electrician should perform tests to determine deterioration in the system.

Depending on the exposure, the age of the system, and other factors, electrical devices or wiring may need to be replaced.

Refer to "Cleaning up after a storm" on page 70 for advice on the safe use of electricity if your home has experienced water damage.



POWER OUTAGES

This chapter explains what causes power outages, what electric utility companies do to minimize power outages, and what you can do to help.

Why do power outages occur?

At your electric utility company, we understand and appreciate that no one likes a power outage. It can cause inconvenience in your normal daily life. We are continuously striving to improve our system and equipment to minimize power outages, but there will always be uncontrollable situations in which a power outage can occur. The following is a list of some of the reasons your lights may go out. Some are obvious, others may come as a surprise to you. For those terms you don't understand, please look in the handy glossary on page 83.

■ **Natural disasters**

- Tropical storms and hurricanes
- Torrential rains
- High winds
- Storm surge (high surf)
- Tsunamis
- Thunderstorms (lightning)
- Earthquakes
- Volcanic eruptions
- Mud slides
- Land slides

■ **Objects coming in contact with overhead lines and other electrical equipment.**

- Trees and branches
- Model airplanes, kites, mylar balloons
- Heavy equipment such as cranes
- Humans and animals
- Damage to overhead transformers

■ **Utility pole damage**

- Vehicle accidents
- Termites, rot, corrosion

- **Damage to our underground cables or equipment**
 - Flooding in the cable vault
 - Excavation work that results in accidental “dig-ins” (damage) to underground cables
 - Damage to pad mounted transformers
 - Cable faults
- **Equipment theft and/or damage**
- **“Switching”**: the electric company sometimes has to reroute power around a problem onto a different circuit to avoid a power outage or serious damage to the power lines and other electrical equipment. This could result in a momentary interruption to your electric service.
- **Electric power generation problems**
 - Rolling black outs
 - Lack of generation capacity
 - Generation problems at the power plants of independent power producers
 - Unscheduled or extended repair and maintenance to our generators
- **Scheduled maintenance and upgrading of the electrical equipment**
- **Electric system additions or removals**
- **Fires**
- **Electrical equipment failures**
- **Flashovers/contamination (i.e. dust, salt) on insulators**
- **Transformer overloads**
- **Overloading on a customer’s household circuit**

**What's
being done
to minimize
power
outages?**

At the electric utility company we:

- Try to ensure that trees do not get close to any unshielded overhead lines or energized equipment, since trees are effective conductors of electricity. This could cause an electrical outage or a potential safety hazard to anyone contacting the tree. HECO has a Vegetation Management Division that will, at your request, come out and inspect and trim your trees if they are at risk of contacting an electrical power line. MECO and HELCO have similar services. You can request this service by calling your electric utility's Service Center/Dispatch office (see pages 3-6).
- Continuously improve our electrical system.
- Install stronger utility poles.
- Perform regular, scheduled maintenance on our power plants and power transmission and distribution systems.
- Have 24-hour Trouble Service. Our crews work around the clock if necessary to get the power back on for you as soon as possible.
- Install distribution automation equipment to improve our response time to power outages.

**What can
you do
to help
minimize
the
occurrence
of power
outages?**

You can:

- Report any damaged electric utility equipment, such as utility poles, transformers, electrical power lines, and insulators by calling your electric utility company's Service Center/Dispatch office (see pages 3-6).
- Have a professional trim trees near electrical power lines.
- Call your electric utility company before performing any excavation work to avoid electrical "dig-ins" (damage) to our underground system (see page 34).
- Report energy theft and break-ins to electric utility substations and transformers by calling 911 or your electric utility's Service Center/Dispatch office (see pages 3-6).
- Never fly kites, balloons, or model airplanes near overhead power lines. Use weights on mylar and latex balloons so they don't get loose and entangled in overhead power lines.
- Never shoot or throw anything at insulators or transformers.



PREPARING FOR A POWER OUTAGE

This chapter provides information on how to prepare for a disaster and a major power outage. It also offers advice on protecting your appliances and electronic equipment from power disturbances.

A major disaster may cause an electric power outage, and it can also interrupt water, telephone, and gas services. Normal household activities such as cooking and bathing may be disrupted. Stores may be inaccessible or closed.

Individual preparation

In an emergency, you must be able to care for yourself and your family. There are certain things you can learn and do to help you cope with almost any type of disaster.

■ **Be prepared.** Develop a family emergency plan now before disaster strikes. Be sure all family members know what to do. Decide where the family will meet if separated, where you will seek shelter, and what to take with you if you must evacuate.

■ **Keep calm.** Take the actions you have planned. Listen to the radio for Civil Defense instructions and information.

■ **Know the warning signals** and where shelters are located. Listen to the Emergency Alert System (see page 7) for shelters and opening times.

■ **Prepare a home survival kit** (see page 44).

■ **Prepare an evacuation kit** (see page 45).

■ **Prepare a first aid kit** (see page 46).

Evacuation procedures

You will not be asked to leave your home unless your life is seriously threatened. If you are forced to evacuate your home:

- Follow Civil Defense instruction, including shelter information, issued over the Emergency Alert System (see page 7), by Police and Fire Department units, and by Civil Air Patrol aircraft.
- Shut off electricity at the main switch, and gas and water at the main valves, if instructed to do so.
- Assemble the family and leave a note for those absent, stating time, destination and telephone number.
- Secure residence if time permits. Lock windows and doors. Wedge sliding glass doors at the top. Wedge a dowel or a piece of broom handle into the track of sliding glass doors to prevent them from coming loose when the wind blows. During evacuation for a hurricane, flood, tsunami, or fire, remember: time is very limited.
- Take evacuation kit and small valuables.
- Provide for pets. Pets are not allowed inside public shelters. If you must leave your home because it is considered unsafe for you, it is unsafe for your pet as well. If you could not arrange sheltering for your pet, as a last resort, your pet can stay in your car parked at an evacuation shelter. Keep the pet in its carrier, and provide food and water. Remember to leave a window slightly open to allow proper ventilation and park in protected, shady area. The Oahu Civil Defense Agency and the Hawaiian Humane Society have prepared a brochure called "Emergency Preparedness Facts for Pet Owners." Information on disaster preparedness for pets is also available at the Oahu Civil Defense website at <http://www.honolulu.gov/ocda/pets.htm> and at the Hawaiian Humane Society website at <http://www.hawaiianhumane.org/>.

Home survival kit checklist

A home survival kit and emergency food and water supply are essential during disasters or extended power outages that leave you confined to your home.

- Portable, battery-powered radio
- Flashlights
- Extra batteries
- Manual can opener and bottle opener
- First aid kit and special medications
- Three to five-day supply of non-perishable foods, needing little or no cooking; high nutrition (See Food Safety Chapter, pages 78-79). Be sure you pack any special dietary foods, baby food, and formula if needed.
- Water: Minimum two quarts per person per day, but preferably, one gallon per person per day, for drinking, cooking, washing, and sanitation. Store as much clean water as possible in clean, non-breakable containers. (See "Water storage", pages 48-49, for safe water storage and purification instructions.)
- Extra pet food
- Personal hygiene, sanitary supplies, and diapers
- Ice chest and ice or frozen ice packs
- Camp stove or canned heat stove, and enough fuel for three to five days; or hibachi and charcoal. (Note: Burning charcoal gives off carbon monoxide. Carbon monoxide has no odor and can kill you. Never burn charcoal inside homes, tents, campers, vans, cars, trucks, garages, or mobile homes.)
- Boards, shutters, or other shielding materials for windows or door openings. Permanent storm shutters offer the best protection for windows. A second option is to board up windows with 5/8" marine plywood, cut to fit and ready to install. Tape does not prevent windows from breaking.
- Candles
- Matches in a water-proof container or a lighter

Evacuation kit checklist

You should have an evacuation kit in case you have to leave your home.

- Portable, battery-powered radio
- Flashlights
- Extra batteries
- Manual can opener and bottle opener
- First aid kit and special medications
- Three to five-day supply of non-perishable foods, needing little or no cooking; high nutrition (See Food Safety Chapter, pages 78-79). Be sure you pack any special dietary foods, baby food, and formula, if needed.
- Water: Minimum two quarts per person per day, for drinking. Store water in clean, non-breakable containers. (See "Water storage", pages 48-49, for safe water storage and purification instructions.)
- Pet food as necessary
- Personal hygiene, sanitary supplies, and diapers
- Sleeping bags or two blankets per person
- One complete change of clothing for each family member
- Important papers and documents (i.e. insurance and mortgage papers) in a waterproof bag

First aid kit checklist

A first aid kit is important. Build or buy a first aid kit containing the items listed below. Check and replenish first aid supplies at least once a year. Medical assistance will be difficult to provide after a disaster strikes. Learn first aid and emergency medical care or keep reference material with your medical supplies. Adults and teenagers are encouraged to take first aid and cardiopulmonary resuscitation (CPR) courses.

-
- | | |
|--|--|
| <input type="checkbox"/> Adhesive tape, roll 2" wide | <input type="checkbox"/> Nose drops* |
| <input type="checkbox"/> Applicators, sterile cotton-tipped | <input type="checkbox"/> Petroleum jelly |
| <input type="checkbox"/> Antiseptic solution* | <input type="checkbox"/> Rubbing alcohol* |
| <input type="checkbox"/> Antibiotics (prescribed)* | <input type="checkbox"/> Red Cross First Aid reference guide** |
| <input type="checkbox"/> Aspirin (or aspirin-free tabs or caps)* | <input type="checkbox"/> Smelling salts |
| <input type="checkbox"/> Bandage, sterile roll, 2" and 4" wide | <input type="checkbox"/> Safety pins, assorted sizes |
| <input type="checkbox"/> Bandages, plastic strip, assorted sizes | <input type="checkbox"/> 8 oz. table salt |
| <input type="checkbox"/> Cough mixture* | <input type="checkbox"/> Sanitary napkins |
| <input type="checkbox"/> Current prescription medicines* | <input type="checkbox"/> Scissors |
| <input type="checkbox"/> Diarrhea medication* | <input type="checkbox"/> Soap |
| <input type="checkbox"/> Ear drops* | <input type="checkbox"/> 4 oz. baking soda |
| <input type="checkbox"/> Laxative* | <input type="checkbox"/> 1 pkg. paper tissues |
| <input type="checkbox"/> Medicine cup | <input type="checkbox"/> Toothache remedy* |
| <input type="checkbox"/> Motion sickness tablets* | <input type="checkbox"/> Tweezers |
| | <input type="checkbox"/> Water purification materials* |
| | <input type="checkbox"/> Plastic garbage bags |

* Check expiration dates and replace as needed.

** First Aid reference guides can be purchased from the American Red Cross.

**Planning
ahead for
special
medical
needs**

If you or someone in your care has a condition which requires continuous or special medication, or are on life support systems, or if your medications require refrigeration, contact your doctor on how to deal with emergencies and power outages.

The following are answers to frequently asked questions:

Q: When I don't have electric power, how do I care for my medications that require refrigeration?

A: Always consult your doctor or pharmacist. Generally, very few medications require refrigeration, but for those that do, such as pediatric antibiotics or some types of insulin, you can keep them in the refrigerator, if the door is kept shut, for up to six hours. After that, it would be best to store medications in an ice chest with ice packs or ice. Some pharmacies have contingency plans for power outages and will reissue medications as needed.

Q: What if the power goes out and I'm on a life support system?

A: Discuss this issue with your physician BEFOREHAND. Ideally, you should have a contingency plan set up with the equipment companies or home health agencies. The plan should include the availability of a back-up generator. If not, call for help by dialing 911, or call the fire department or your hospital. Hospitals, of course, have contingency plans for power outages.

Water storage

Q: Do I need to store water in anticipation of an outage?

A: Yes, you should have enough water to last your family for at least five days. During a major power outage the Board of Water Supply may not have the power to pump water to your home.

Q: How much water should I store?

A: The minimum is two quarts per person per day, but preferably, one gallon per person per day, for drinking, cooking, washing, and sanitation. Be sure to include pets in your calculations.

Q: How do I store the water?

A: Buy commercially bottled water and replace each year, or store tap water using clean, non-corrosive, non-breakable, tightly covered containers such as gallon-size beverage syrup bottles or soft drink bottles.

If water is stored too long, or if you are unsure of the cleanliness of the water, purify the water using one of the following methods:

- boil the water for five to ten minutes, OR
- buy water purification tablets from a pharmacy and use as directed, OR
- to each gallon of water, add 8 drops (approximately 1/8 teaspoon) of chlorine bleach (5.25% hypochlorite as its only active ingredient) and let it sit for a half hour. If it gives off a slight chlorine smell and looks clear, it's okay to use. If you do not smell chlorine or if the water is cloudy, add another 8 drops of bleach to each gallon of water and let it stand another half hour. If you have added a total of 16 drops (approximately 1/4 teaspoon) of chlorine bleach and the water still does not smell like chlorine, do not use the water for drinking or cooking.

Q: How long can I store the water?

A: Containers should be refilled every six to twelve months. Wash the containers and refill with clean water. If you notice that the stored water is cloudy, or has an odor, discard it and refill containers as necessary.

When an emergency is imminent, fill the tub, the washing machine, and all other available containers with water for drinking, cooking, and sanitary needs. For instructions on how to sanitize water, see page 69.

Ice and dry ice

■ It's a good idea to always have a few ice packs frozen to help keep perishable items cold during those unexpected power outages.

■ When you know a power outage may or will occur, freeze ice packs and large blocks of ice (in rinsed out milk cartons or similar containers) before the power goes out. During widespread or prolonged power outages, it may be difficult to find ice.

■ Dry ice can also help keep perishable items cold during a power outage.

■ Safe handling

- Do not touch dry ice with your skin—it can cause severe frostbite. Dry ice temperature is extremely cold at -109.3°F or -78.5°C . Always handle dry ice with care and use tongs, insulated (thick) gloves, an oven mitt, or a towel. If you suspect you have frostbite, seek medical help immediately.
- Never eat or swallow dry ice. Again, the temperature of dry ice is very cold. If you swallow dry ice, seek medical help immediately.
- Do not place dry ice directly on countertops. The cold temperature could cause the surface to crack.

■ Proper storage

- Do not store dry ice in an airtight container. The sublimation (vaporization) of dry ice to carbon dioxide gas will cause an airtight container to expand or possibly explode. The best place to store dry ice is in a styrofoam chest with a loose fitting lid.
- Do not store dry ice in your refrigerator-freezer. The extremely cold temperature will cause the thermostat to turn off the freezer.

■ Ventilation

- Never place dry ice in an unventilated room or car. If you are traveling with dry ice in the car or if you're in a small room with dry ice in it, leave a window slightly open to prevent carbon dioxide gas build up. The sublimated carbon dioxide gas will sink to low areas and replace oxygenated air. This could cause suffocation if breathed exclusively. Leave the area immediately if you start to pant or have difficulty catching your breath, or if your fingernails or lips start to turn blue. This is a sign that you have inhaled too much carbon dioxide gas and not enough oxygen.
- Never lie down in, or place small children or pets in homemade "clouds" created with the sublimation of dry ice. These clouds are made of carbon dioxide gas-people and pets could suffocate if they breathe in too much carbon dioxide gas.

■ Disposal

- To dispose of dry ice, place it in a well ventilated container, outdoors and out of reach from children and pets, and allow it to sublimate.

■ Both ice and dry ice are commercially available. Look in the telephone directory yellow pages under "Ice" and "Dry Ice" for suppliers.

Generators

Some residents have small generators serving as a backup to their electric utility system. Normally, these generators are intended to supply power to only a few household appliances. Before using any generator, be sure to read the manufacturer's manual carefully and follow all instructions. Keep these safety tips in mind when operating these machines:

- Generators should be properly grounded in accordance with the instruction manual provided by the manufacturer.
- Ventilation of the generator's exhaust and cooling systems must be well designed to minimize the impact of noise, dangerous fumes, and overheating.
- Portable generators emit carbon monoxide, a poisonous gas that is odorless. For this reason, portable generators should never be used indoors or outdoors near open doors, windows, or vents.
- Reserve fuel must be stored in a safe place away from the generator or any other equipment that may ignite the fuel. Use containers designed for fuel storage.
- To avoid possible damage to your appliances or generator, use only those appliances that do not exceed the generator's capacity.
- **WARNING:** Do not plug the generator's power into the household outlet because the power can backflow into the utility lines.

If you have questions regarding installation of small portable generators, contact your licensed electrician or the manufacturer of your generator.

Q: Where can I get generators?

A: For the dealer nearest you, look in the telephone directory yellow pages, under "Generators."

Q: How do I determine the size of a generator to purchase?

A: Consult your dealer. It would be helpful to the dealer if you know the wattage of each appliance you plan to power with the generator.

**Protecting
your
appliances
and
sensitive
equipment
from power
disturbances**

We live in an ever more electronic world. Electricity hasn't changed, just the way we use it. In the past, brief power fluctuations were hardly noticed. Today, things are different. We all use electronic equipment at home and at work that's sensitive to even a split-second loss or change in electric power.

On any given day, momentary power interruptions and power fluctuations (power surges or power sags) may occur. These conditions can be caused by utility switching (when the electric utility attempts to isolate a problem in order to maintain power to an area), weather (lightning, wind), damage to the electric utility's equipment, or even the start up of major appliances like refrigerators or air conditioners.

Unanticipated power interruptions and fluctuations

Q: What is a power interruption, a power surge, and a power sag?

A: Power Interruption is a planned or accidental loss of power. An interruption could cause your appliances, lights, and electronic equipment to trip off and your PC hard drive to "crash."

Spike/Surge/Transient (too much voltage) is a sudden upward change in voltage. Although such spikes and surges last only a few milliseconds or less, they can cause serious damage to computers, VCRs, and other sensitive electronic equipment.

Sag (not enough voltage) is a drop in voltage usually lasting only a few seconds. Most equipment will not be damaged by a sag. However, motorized appliances such as air conditioners and refrigerators may be affected.

You have a responsibility to protect your equipment from power interruptions and power fluctuations. The rules of Hawaiian Electric, Maui Electric, and Hawaii Electric Light Companies' tariff, approved by the Public Utilities Commission, say that customers should equip their motors and electronic equipment with devices to protect them from power interruptions and power fluctuations.

Q: What can I do to protect my sensitive equipment from unexpected momentary power interruptions and power fluctuations?

A: Planning ahead is important to minimize or prevent problems associated with unexpected momentary power interruptions and power fluctuations. Here's what you can do:

Be a wise shopper. Buy equipment that is already protected from potential power problems. Some manufacturers provide back up power features in products. Check if the equipment you're buying includes a display carry-over feature or a battery back-up. This eliminates blinking digital displays on microwaves, VCRs, and radio alarm clocks.

Install plug-in surge suppressors. By redirecting energy associated with over-voltage, surge suppressors can provide limited protection against high voltage spikes. Surge suppressors can be purchased at most hardware and electronic supply stores.

Buying a surge suppressor can be a little confusing. Prices and features vary. Avoid making a purchase decision based entirely on lowest cost. It's a good idea to ask the appliance or electronic equipment manufacturer or consult with your owner's manual for the type of suppressor they recommend. Note: not all power strips are surge suppressors.

Here are some things to look for when purchasing a surge suppressor (formally known as transient voltage surge suppressor or TVSS):

■ **Underwriters Laboratories (UL) 1449 seal, second edition, 1998 standard.** This certification indicates that the product meets minimum safety and effectiveness standards.

■ **Low-clamping voltage.** This is the voltage level at which the suppressor "kicks in" to minimize a power surge. Make sure the suppressor has a voltage rating of at least 400 volts or lower. In most cases, the lowest clamping voltage is the best.

■ **LED indicators.** When this light is on, it means the surge protection feature is ready to block a voltage surge. The LED indicator is different from the on/off light.

■ **Special suppressors.** For your TV and VCR, there are suppressors with TV cable/antenna connectors. For your phone answering machine, computer modem, and FAX machine, you can get a suppressor with telephone connectors.

■ **Warranties.** Some surge suppressor warranties offer replacement of the suppressor only. Others pay for repair of equipment damaged as a result of a failed surge suppressor. These manufacturer warranties usually do not compensate you for the time and cost of replacing lost or scrambled computer data. Check the warranty carefully for limits and exclusions.

Consider buying an uninterruptible power supply (UPS). A UPS is an energy storage device that will use power from batteries when the power to your home or office goes out or is unstable. Generally, UPSs are used for computers which are sensitive and intolerant to power fluctuations. UPSs can provide protection against **both over-voltage and under-voltage conditions** and sometimes offer voltage regulation. Because of their price, careful consideration should be given before purchasing one. For suppliers of UPSs, look in the telephone directory yellow pages, under "Computers-Rooms Installations & Equipment" or "Computers-Dealers".

Put your sensitive electronic equipment on a separate circuit. Your computer and microwave should not be on the same circuit as your refrigerator or air conditioner.

Anticipated power interruptions and power fluctuations (due to storms, disasters, rolling blackouts)

During a storm or hurricane situation, especially when power outages have already occurred, turn off and unplug all unnecessary appliances or equipment (i.e. computers, TVs, air conditioners, etc.) Most electronic equipment is partially on, even when turned off and should be unplugged to avoid possible damage. When the power comes back on and is steady (no fluctuations or momentary outages), gradually plug in appliances.





DEALING WITH A POWER OUTAGE

This chapter provides information on what to do in the event of a power outage.

When a power outage occurs and lasts longer than two minutes, we ask for your help and cooperation in our efforts to restore power. The following is a list of common questions and answers that can help you cope with the lack of power, and help the electric utility company restore the power to you as quickly as possible.

**Reporting
a power
outage**

Q: When the power goes out, whom do I call?

A: Call your electric utility company's Trouble Service Center/Dispatch Office:

COMPANY	PHONE	HOURS
Hawaiian Electric Company (Oahu)	548-7961	24 hours a day 365 days a year
Hawaii Electric Light Company (Big Island)	969-6666	24 hours a day 365 days a year
Maui Electric Company (Maui)	871-7777	24 hours a day 365 days a year
Maui Electric Company (Lanai)	1-877-871-8461	24 hours a day 365 days a year
Maui Electric Company (Molokai)	1-877-871-8461	24 hours a day 365 days a year
Kauai Island Utility Cooperative (Kauai)	246-8200	24 hours a day 365 days a year

Q: When reporting a power outage, what information do I need to give the electric utility company?

A: Report your address and your situation. If you know the time the power outage started and the probable cause of the outage (a car accident, a fallen pole, etc.) please report that too.

Restoring the power

Q: When will the power be back on?

A: Power can be restored anytime between a few minutes to several days. It depends on the cause and the severity of the damage to the electric utility's system; the weather conditions; the accessibility of the damaged area; and if special parts are needed to repair the damage. Generally, repairs to underground cables take longer than repairs to overhead lines.

Power interruptions caused by damage to our overhead lines can take anytime from a few minutes to several days to repair. We can usually repair the damage and restore electrical service in less than an hour for lines that are located in easy-to-reach areas. If the damaged lines are in hard-to-reach areas, or if special parts are required, it could take several days to perform the necessary repairs.

Power interruptions caused by damage to our underground system can take anytime from an hour to several days to restore power. If it is a cable problem and we can switch out the faulty cable by restoring service on a standby cable, it can take one to three hours, depending on the length of the cable that needs to be replaced and the number of customers on that cable.

There will be times, such as after a natural disaster, when there is so much damage to our lines, transformers and other equipment. During these times, it is very difficult for us to provide an accurate estimate of when your power will be restored. Be assured, though, that we remain committed to restoring service to all our customers, and our crews will do their best to restore power as soon as possible.

Q: Who's affected by the power outage?

A: For isolated power outages, call your electric utility company's Service Center office at the numbers listed below. During a MAJOR power outage, tune in to the radio broadcast station reports on a battery-powered radio. HECO, MECO, and HELCO will work with their respective County Civil Defense Agencies to provide updates on both radio and TV.

If your area is out of power, and you don't hear any radio broadcast reports mentioning your area's power outage, please call your electric utility company's Service Center Office.

COMPANY	PHONE	HOURS
Hawaiian Electric Company (Oahu)	548-7961	24 hours a day 365 days a year
Hawaii Electric Light Company (Big Island)	969-6666	24 hours a day 365 days a year
Maui Electric Company (Maui)	871-7777	24 hours a day 365 days a year
Maui Electric Company (Lanai)	1-877-871-8461	24 hours a day 365 days a year
Maui Electric Company (Molokai)	1-877-871-8461	24 hours a day 365 days a year

Q: How does the electric utility company decide where and when power gets turned on first?

A: We understand the importance of power for all our customers, but we must prioritize the restoration of power. During any major outage, emergency facilities such as hospitals, the Board of Water Supply, wastewater plants, military facilities, and the airports will have first priority. Once these institutions have their power restored, we will restore power to those areas that are most densely populated, then restore power to the less populated areas.

Q: How does the electric utility company decide where and when to dispatch its crews?

A: Often, our crews are out there during heavy winds and rains, and at all hours of the day and night working to restore power. But there are times, such as during a major storm, that the conditions are too hazardous, even for our crews. As soon as those dangerous conditions have subsided, crews will repair our lines and restore power to our customers as soon as possible.

Crews are dispatched to meet the restoration priorities described earlier. There will be times during a restoration effort, that the crew(s) will have to be pulled off to work on an emergency that has greater priority.

Rolling blackouts

Q: What is a rolling blackout?

A: A rolling blackout is a planned outage which is due to a lack of generating capacity at the power plant. These outages will normally take place in rotating locations on the island.

Q: How does the electric utility company decide when and where rolling blackouts will occur?

A: We regard rolling blackouts as a last resort, but there are times, such as during restoration of power to the island after a major outage, that they are necessary. The time and location of rolling blackouts will depend on the availability of our power plants' generation units and our transmission and distribution circuits. We also take into consideration critical facilities such as hospitals when determining the rolling blackout schedule. We will work with TV and radio broadcast stations to alert customers of affected areas, and the approximate times of these blackouts. Prior to the scheduled start of your area's outage, make sure all your appliances are turned off and unplugged. During the outage, refrain from opening the refrigerator or freezer, and stay tuned to your battery-powered radio for further updates.

Ice and dry ice (availability during a power outage)

During a power outage, you can use ice or dry ice to help keep perishable foods cold. Depending on how widespread and how long the power outage is, ice and dry ice supply may be limited and difficult to find.

Refer to the "Food Safety" chapter on pages 80-81 for guidelines on how long foods will keep in a refrigerator and freezer.

Q: Where can I get ice?

A: Look in the telephone directory yellow pages, under "Ice". During prolonged power outages, listen to your battery-powered radio for announcements on ice pick up sites.

Q: Where can I get dry ice?

A: Look in the telephone directory yellow pages, under "Dry Ice".

Telephones

Q: Will my telephone service be affected by a power outage?

A: Generally, your telephone service will not be affected by a power outage. However, cordless phones rely on electric power to operate their transmitters and to recharge their batteries.

Q: May I use the telephone during a power outage?

A: Make whatever phone calls you need to make, but limit those calls to less than a minute if possible. This is to avoid telephone gridlock and to keep lines open for emergency calls. Remember: overloading the circuits reduces the efficiency of the entire phone system. During major disasters (hurricanes, tsunamis, etc.) you will be requested by the telephone company and the Civil Defense to limit your calls to emergencies only.

Water use and safety (during an extended power outage)

During a major power outage, the Board of Water Supply may not have the power needed to pump water to your home. Under these circumstances, special attention needs to be given to the use of water. If you live in a high-rise, your building's pumps may be out of service (check with your building supervisor). Listen to the radio for Civil Defense reports that mention the need to limit water use in your area. You may need to use the water stored for emergency use, taking the precautions mentioned on page 48 about sanitizing water. You may be able to purchase commercially bottled water for cooking and drinking.

Q: Can I bathe in streams if I don't have any water?

A: No, the Department of Health recommends against it because of the danger of contracting diseases due to contaminated water.

Q: Can I flush my toilet?

A: Minimize the flushing of toilets. If the power is out, there's a good chance the sewer system is without its main power source.

Protection of pets and animals

Q: If I have to go to a shelter, what do I do with my pet(s)?

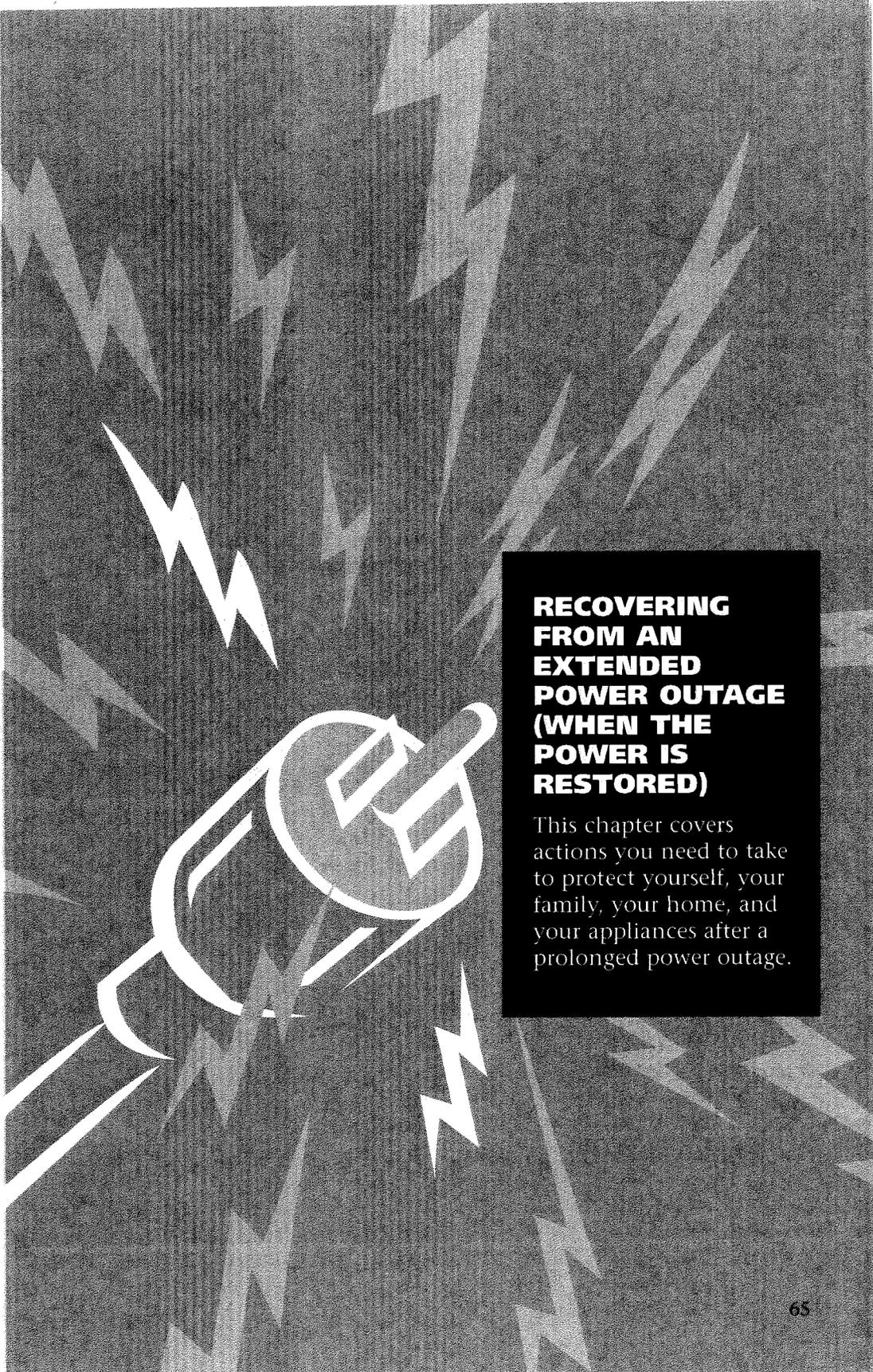
A: Pets are not allowed inside emergency shelters, so plan ahead for their safety and protection. See page 43 for instructions suggested by the Oahu Civil Defense Agency and the Hawaiian Humane Society.

Q: How do I provide oxygen for my fish tank?

A: Consult with your pet shop or veterinarian for specific information, but generally, fish can survive without the pump's aeration system for approximately 2 to 24 hours, depending on the type of fish and the number of fish in the tank. Battery-operated pumps are also available at pet supply stores.

If you are at home, take water from the tank, using a cup, then pour it back into the tank to provide oxygen bubbles for the fish.

If you have a salt water fish tank, it probably has a different aeration system than a fresh water tank. Greater care is needed, so a recommendation is to have a back-up generator for these tanks.



**RECOVERING
FROM AN
EXTENDED
POWER OUTAGE
(WHEN THE
POWER IS
RESTORED)**

This chapter covers actions you need to take to protect yourself, your family, your home, and your appliances after a prolonged power outage.

After your electric service has been restored, there are certain precautions you need to take, including having your household electrical system checked out by a licensed electrician if your home experienced a flood.

After a disaster such as a hurricane or storm, the various utilities' crews will be repairing damaged lines and other equipment. Special care needs to be taken to avoid serious injury, should you come across a downed utility line. Read the chapter on Electrical Safety, pages 22-36, for advice on what to do protect yourself from the hazards of downed lines or damaged electrical equipment.

Minimizing the use of electric power after an outage

Q: When my electric service is restored, can I turn on (or use) all of my appliances?

A: It is generally all right to use your appliances after an isolated power outage, but you may experience momentary power interruptions. However, after a major, island-wide power outage, you can help your electric utility company speed up its efforts to restore service to all customers by turning on only those appliances that are necessary. In most cases, the refrigerator/freezer is the one appliance needed most. Avoid turning on the water heater, range, air conditioner, pool pump, hot tub or spa, clothes washer, clothes dryer, or the dishwasher until they are needed. Then, turn them on one at a time.

Momentary power interruptions

Q: When is it safe to use sensitive electronic equipment (computers, televisions, video cassette recorders, answering machines, cordless phones, microwave ovens, stereo equipment) after a power outage?

A: Power fluctuations, including momentary interruptions, may occur after power is restored, so avoid using sensitive electronic equipment until power to your area has been stabilized (no fluctuations or momentary outages). Turn off and unplug all appliances or equipment not immediately required. Most electronic equipment is partially on, even when turned off and should be unplugged to avoid possible damage. When the power comes back on and is stable, gradually plug in appliances.

Q: What can I do to protect my sensitive equipment from momentary power interruptions?

A: Planning ahead is important to minimize or prevent problems associated with momentary power interruptions. Please refer to the chapter on Preparing for a Power Outage, pages 52-56, under "Protecting your appliances and sensitive equipment from power disturbances" for advice on various options available to help you deal with power interruptions.

**Water use
and safety
(after an
extended
power
outage)**

After a major power outage, especially after a storm, the Board of Water Supply will need your cooperation and assistance in their efforts to provide water. Special attention needs to be given to the use of water:

Q: Can I use water as soon as it's available?

A: During the recovery period, water should be conserved. Do not wash cars or water lawns. Postpone doing laundry for as long as possible.

Q: Is the water safe to drink after an emergency?

A: Listen to the radio for bulletins on whether the water in your area is safe to drink. If you can, buy bottled water for drinking. Water service will be restored as one of the first utility services following a major power outage. Emergency water service will be handled by the National Guard or U.S. military personnel who have the capability of purifying large quantities of water for drinking.

Q: How can I sanitize water from the tap?

A: A drinking water advisory may be issued in your community to disinfect the water from the tap. If such an advisory has been issued, do the following:

1. Fill a large pot with water from the tap.
2. Strain the water through cheesecloth, a sheet, a coffee filter, or other clean, porous material to remove as many solids as you can.
3. Bring the water to a vigorous boil and keep it boiling for at least 10 minutes.
4. Pour the water back and forth between two clean pots. This will help it cool and will also add air to the water to make it taste better.
5. Let the water cool. After it is cool, add 8 drops (about 1/8 teaspoon) of liquid chlorine bleach (5.25% hypochlorite as its only active ingredient) for each gallon of water. Let the water stand for a half hour. If it gives off a slight chlorine smell and looks clear, it's okay to use.
6. If you do not smell chlorine, or if the water is still cloudy, add another 8 drops (approximately 1/8 teaspoon) of liquid chlorine bleach and let it stand for another half hour. If you smell chlorine, it's okay to use. If you have added bleach twice (a total of 16 drops, or about 1/4 teaspoon) and the water still does not smell like chlorine, don't use it for drinking or cooking.

Cleaning up after a storm

The American Red Cross, together with the Federal Emergency Management Agency (FEMA) has published an excellent booklet, "Repairing Your Flooded Home," that takes you through a comprehensive, step-by-step approach in helping you recover from floods or any water damage experienced by you and your home. Much of the advice listed below comes from that booklet.

Please note, HECO, MECO, and HELCO will always advise you to have your home inspected and repaired by a licensed electrician whenever your home has experienced water damage. If your appliances got wet, have them inspected and repaired by a professional before using them. Attempting to inspect and repair your home's electrical system and appliances by yourself could result in serious injury or death.

Q: Is it safe to enter my home after it has been flooded?

A: If there is standing water next to the outside walls of your home, don't go in. You won't be able to tell if the building is safe or structurally sound. Before you go in, walk carefully around the outside of your house and check for loose power lines and gas leaks. You'll know if there is leaking gas if you smell the putrid, distinctive odor that is added to gas to let people know gas is leaking. If you find downed power lines or gas leaks, call your electric or gas utility company.

Q: Is it safe to use electricity in my home after it has been flooded?

A: Electricity and water don't mix. Turn off the power at your home. Even if the electric utility has turned off the power to your area, you must still make certain the power supply to your home is disconnected. You don't want the electric utility company to turn it on without warning while you're working on it.

The electricity must be turned off at the main fuse box or circuit breaker panel (see instructions in the Electrical Safety chapter, page 24). The electric utility company may have removed your electric meter, but this does not always turn off the power supply.

If you have to step in water to get to your main fuse box or circuit breaker, call a licensed electrician. If you can get to your main fuse box or circuit breaker without going through or standing in water, you can turn off the power yourself.

Q: Is it safe to use my appliances after a flood?

A: Check appliances and if the appliances are wet, turn off the electricity at the main fuse box or circuit breaker. Then unplug appliances and let them dry out. Have the appliances checked by a professional before using them again.

Refrigerators, freezers, and ovens may have foam insulation and sealed components that suffered little water damage. But these appliances hold food and so they should be cleaned, disinfected, and checked by a professional or replaced. If your repair person says an expensive appliance should be replaced, get the opinion in writing and discuss it with your insurance adjuster before you spend money for another one.

Q: Where can I rent or lease equipment to help me with the clean-up after a storm?

A: Look in the telephone directory yellow pages, under "Rentals."

**Filing a
claim with
your electric
utility
company**

Q: How do I file a claim with the electric utility company?

A: Power outages during a storm or hurricane are sometimes unavoidable. Equipment and property damage due to loss of power during storm conditions are usually not reimbursable by the electric utility company.

However, if you feel there are circumstances for which you are entitled to a reimbursement, you can send a letter with the necessary information to the appropriate utility company. Or call the Claim Department at the appropriate utility company and a representative will discuss the information we need to review your claim. **For a claim to be valid, it must be filed within thirty (30) days of the interruption of service.**

Oahu

Hawaiian Electric Company, Inc.
Claims Department
PO Box 2750
Honolulu, HI 96840-0001
Phone: 543-4624

Big Island

Hawaii Electric Light Company, Inc.
Attention: Electrical Claims
PO Box 1027
Hilo, HI 96720-1027
Phone: 969-0263

Maui

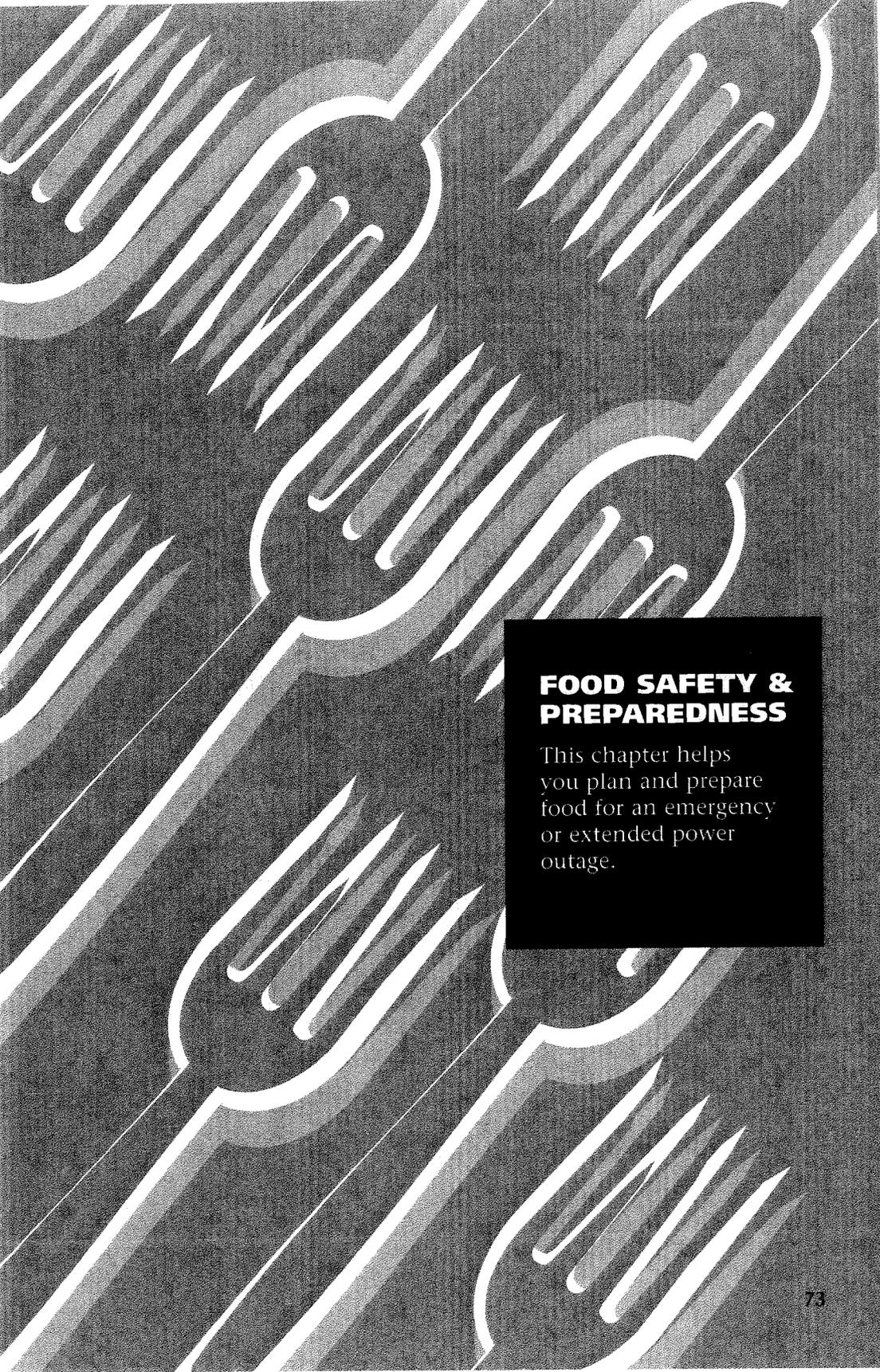
Maui Electric Company, Inc.
PO Box 398
Kahului, HI 96732-0398
Phone: 871-8461

Molokai

Maui Electric Company, Inc.
PO Box 378
Kaunakakai, HI 96748
Phone: 1-877-871-8461

Lanai

Maui Electric Company, Inc.
PO Box 752
Lanai City, HI 96763
Phone: 1-877-871-8461



FOOD SAFETY & PREPAREDNESS

This chapter helps you plan and prepare food for an emergency or extended power outage.

Emergency food storage

Be prepared, and always have on hand an emergency food supply. See page 76 for a suggested menu. See page 78 for a suggested food supply list for two adults and one infant (adjust proportions as appropriate for larger or smaller families). Remember to pack foods for persons with special dietary needs.

- Keep canned foods in a dry place where the temperature is fairly cool. Protect packaged food in tightly closed cans or metal containers.
- Select foods with a shelf life of at least six months, but preferably one year or more.
- Use canned foods that do not require cooking, water, or special preparation.
- Date and rotate food supplies by using the oldest foods first. Replace with a new supply.

Supplies for preparing meals when the power is out

- Disposable plates, forks, spoons, knives
- Disposable hot and cold cups
- Paper napkins or towels
- Bottle opener
- Manual can opener
- Trash bags
- Camp stove or canned heat stove and enough fuel for three to five days; or hibachi and charcoal
- A supply of matches in a water-proof container
- Heavy duty aluminum foil
- Plastic storage bags

**Recipes for
emergency
food
sample
menu**

SALMON CURRY

- 1 can (10 3/4 oz) cream of mushroom soup
- 1/3 cup milk
- 1/2 teaspoon curry powder
- 1 can (7 3/4 oz) pink or red salmon, drained

In a saucepan, combine soup, milk, and curry powder. Break salmon into chunks; add to sauce, stirring gently. Heat thoroughly. Serve with rice. Makes 4 servings.

Note: Tuna may be used in place of salmon. If available, saute 1 cup chopped onions in 2 tablespoons butter or margarine, then follow recipe as written.

QUICK CHICKEN A LA KING

- 1 can (10 3/4 oz) cream of mushroom soup
- 1/2 cup milk
- 1 can (12 1/2 oz) chunked chicken, drained
- 1 can (8 1/2 oz) peas, drained
- Dash of pepper

In a saucepan, combine soup and milk; stir until smooth. Add chicken, peas, and pepper. Heat thoroughly. Serve over rice. Makes 4 to 5 servings.

**Five day
sample
menu**

BREAKFAST	
Day 1	Instant orange drink Cold cereal/milk Crackers with peanut butter and jelly Instant coffee/tea
Day 2	Instant orange drink Hot cereal/milk Crackers with peanut butter and jelly Instant coffee/tea
Day 3	Instant orange drink Cold cereal/milk Crackers/Vienna sausage Instant coffee/tea
Day 4	Instant orange drink Hot cereal/milk Crackers with peanut butter and jelly Instant coffee/tea
Day 5	Instant orange drink Cold cereal/milk Canned luncheon meat with crackers Instant coffee/tea

*HECO recipe — see page 75

LUNCH

DINNER

Tuna with crackers
Canned soup
Canned fruit
Fruit juice
Instant coffee/tea

Canned beef stew
Rice
Canned vegetables
Canned fruit
Instant coffee/tea

Canned chili with beans
Rice
Canned fruit
Fruit juice
Instant coffee/tea

Salmon or Tuna Curry*
Rice
Canned vegetable
Canned fruit
Instant coffee/tea

Canned luncheon meat with crackers
Canned soup
Canned fruit
Fruit juice
Instant coffee/tea

Canned corned beef hash patties
with catsup
Rice
Canned vegetables
Instant coffee/tea

Deviled ham with crackers
Canned soup
Canned fruit
Fruit juice
Instant coffee/tea

Canned pork and beans/
Vienna sausage
Rice
Canned vegetable
Canned fruit
Instant coffee/tea

Canned corned beef with crackers
Canned soup
Canned fruit
Fruit juice
Instant coffee/tea

Quick Chicken a la King*
Rice
Canned vegetable
Canned fruit
Instant coffee/tea

5 day food supply for two adults and one infant

Milk, Canned Meat, Poultry, Fish

FOOD	AMOUNT	APPROX. MONTHS SHELF LIFE
non-fat dry milk	1 box (12 1 qt. envls)	6
tuna	1 can (6 1/2 oz)	12
beef stew	1 can (1 lb 8 oz)	18
chili with beans	2 cans (15 1/2 oz)	18
red or pink salmon	1 can (7 3/4 oz)	12
Vienna sausage	2 cans (5 oz)	18
canned luncheon meat	2 cans (12 oz)	18
corned beef hash	2 cans (15 oz)	18
corned beef	2 cans (12 oz)	18
deviled ham	2 cans (4 1/2 oz)	18
pork and beans	2 cans (16 oz)	18
chunked chicken	1 can (12 1/2 oz)	18
assorted soups	4 cans (10 3/4 oz)	12
cream of mushroom soup	2 cans (10 3/4 oz)	12
assorted fruits (peaches, pears, etc.)	9 cans (16 oz)	18
assorted vegetables (peas, beans)	5 cans (16 oz)	18
peas	1 can (8 1/2 oz)	18
assorted fruit juices (guava, etc.)	10 cans (12 oz)	12-18
seedless raisins	1 box (15 oz)	12
instant hot cereal	1 box (10 oz 8pk)	24
cold cereal (cornflakes, bran, etc.)	1 box (1 lb 4 oz)	12
soda crackers	2 pkg (13 oz ea)	1-2
rice	2 lb	24
cookies	1pkg	1-2

Canned Fruits and Vegetables

Cereals and Baked Goods

Miscellaneous

	FOOD	AMOUNT	APPROX. MONTHS SHELF LIFE
	salad oil	1 pint	3
	sugar, granulated	1 box (1 lb)	24+
	hard candy, gum	as desired	18
	jelly	1 jar (16 oz)	12
	instant orange drink	1 jar (14 oz)	24
	instant coffee	1 jar (4 oz)	18
	instant tea	1 jar (2 oz)	18
	non-dairy creamer	1 jar (6 oz)	18
	salt/pepper	1 small shaker each	indefinitely
	curry powder	1 bottle	indefinitely
	peanuts	1 jar	indefinitely
	mustard	1 jar (6 oz)	indefinitely
	catsup	1 bottle (14 oz)	indefinitely
	lemon-lime soda or gingerale	1 6-pack	12
	peanut butter	1 jar (18 oz)	9
Baby Foods	formula, ready-to-feed	20 cans (8 oz)	12
	or powdered	1 can (16 oz)	6
	fruit juice	5 jars (4 oz)	
	baby cereal	1-2 boxes	12
	plain fruit	15 jars	
	plain meat	10 jars	
	plain vegetables	10 jars	
Pet Food	as needed		

**Food
safety
during and
after a
power
outage**

If the power goes off, keep the refrigerator and freezer closed as long as possible to help keep perishable foods cold.

Q: How long will food remain frozen in the freezer?

A: This depends on the amount, type, and temperature of the food in the freezer, as well as on the insulation of the freezer. Keep the freezer door closed for as long as possible to avoid loss of cold air. Large cuts of meat or poultry will stay frozen longer than baked goods or small items. If you have a fully loaded separate freezer, food may remain frozen for 48 to 72 hours. Food will thaw more quickly in a refrigerator/freezer, but should stay frozen for about 12 hours or longer in a side-by-side refrigerator/freezer or up to 24 hours in a top or bottom-mount freezer.

Q: How long will food be safe in the refrigerator?

A: Use refrigerated foods as soon as possible. It is difficult to make general recommendations about food safety as this depends on the type of food and how it has been prepared or handled. Here are a few guidelines:

- Butter, margarine, and hard cheese are safe unless mold or rancid odors develop.
- Fresh fruits and vegetables are safe as long as they are not mushy or slimy.
- Eggs will be safe for several days if shells have no cracks.
- Fresh meat, poultry, luncheon meats, or frankfurters should be discarded if allowed to warm to room temperature for more than two hours.
- Milk and cream will probably be sour after eight hours without refrigeration.

■ Commercial (purchased) mayonnaise should be kept refrigerated once opened. Discard if left without refrigeration for more than two hours.

■ Vinegar and oil salad dressings, jellies, jams, mustard, catsup, and pickles may be left unrefrigerated unless they have been contaminated by poultry or meat juices. Discard if moldy.

Q: What previously frozen food will be safe to use or refreeze?

A: Meat, poultry, fish, fruits, and vegetables can usually be safely refrozen if they still have ice crystals present or are very cold (40°F or lower), but there will be some loss of quality. Refrozen foods should be used as soon as possible. When cooking these refrozen foods, remember they have been thawed once. If thawing is necessary, do it in the refrigerator or the microwave, not by thawing at room temperature.

Discard any food that has an off color or odor, or food that has warmed to room temperature for an unknown length of time.

Generally, if in question about the food's safety, discard it.

**Other
sources of
useful
information**

■ **American Red Cross, Hawaii State Chapter Website**
www.hawaiiredcross.org

■ **Civil Defense Websites:**

Hawaii County Civil Defense http://www.hawaii-county.com/directory/dir_defense.htm

Kauai County Civil Defense <http://www.kauai.gov>

Maui County Civil Defense
<http://www.co.maui.hi.us/departments/CivilDefense/>

Oahu Civil Defense <http://www.honolulu.gov/ocda/>

State Civil Defense <http://www.scd.hawaii.gov/>

■ **“Disaster Planning: Food”** Prepared by the Hawaii Department of Health, Nutrition Branch.

■ **“Disaster Preparedness for Maui County: A Citizen’s Guide”** Prepared by the County of Maui Civil Defense Agency.

■ **“Electrical Emergency” and “Electrical Safety”**
Prepared by the Hawaii Electric Light Company.

■ **“Emergency Preparedness Facts for Pet Owners”**
Prepared by the Oahu Civil Defense Agency and the Hawaiian Humane Society.

■ **Emergency Preparedness Website** www.heco.com

■ **“Family Disaster Plan”** Prepared by the Federal Emergency Management Agency.

■ **Federal Emergency Management Agency Website**
www.fema.gov

■ **“Guidelines for People with Household Pets”**
Prepared by the Hawaii Civil Defense Agency and Hawaii Island Humane Society.

■ **National Flood Insurance Program website**
<http://www.floodsmart.gov/floodsmart/pages/index.jsp>

■ **National Weather Service National Hurricane Center website** <http://www.nhc.noaa.gov/>

■ **Pacific Disaster Center website** <http://www.pdc.org/>

■ **“Preparing for Hurricanes and Tropical Storms”**
Prepared by the Oahu Civil Defense Agency.

■ **“Preparing for Tsunami”**

Prepared by the Oahu Civil Defense Agency.

■ **“Repairing Your Flooded Home”** Prepared by the American Red Cross and the Federal Emergency Management Agency.

■ **The Civil Defense Section of your phone book.**

GLOSSARY

Amps (amperes) - The size of the electric current flowing through a wire.

Cable Faults - Damaged conductor in an underground cable.

Circuit - The completed path traveled by an electric current.

Circuit Breaker Panel/ Fuse Box - Contains breakers or fuses that limit the amount of current a circuit can carry.

Conductor - Any material that allows electric current to move through it easily, such as copper wire.

Current - The movement of electric charge (e.g., electrons) measured in amperes (A).

Distribution Lines - Power lines that carry the electricity from substations to neighborhoods.

Flashovers - Electric current arcs from the power line to the utility pole or tower. They are visible as a bright, lightning-like flash, accompanied by a loud, booming sound, and result in a momentary drop in voltage that causes your lights to blink.

Generator - Equipment made up of magnets and copper wire. The effect of the magnetic field on the copper wire creates a flow of electricity.

Ground Fault Circuit Interrupter (GFCI) - A sensitive device that shuts off power to a circuit when the amount of current going to a load differs from the amount that returns by approximately five milliamps. GFCI's are found in outlets or circuit breakers.

Guy Wire - A wire that anchors the utility pole or helps maintain the pole in an upright position.

Handhole - A concrete box, containing electric cables, usually located in sidewalks.

Insulator - Any material that will not allow electricity to move through it easily, such as rubber.

Licensed Electrician - State-certified electricians responsible for installing and repairing electrical circuits, components and equipment, according to blue prints or instructions prepared by drafters and engineers.

Main Switch or Main Circuit Breaker - Controls the flow of electricity to the entire house.

Overhead Lines - Power lines that run above the ground and are supported by poles.

Power Fluctuation - Brief reductions or increases in voltage.

Power Interruption - A planned or accidental loss of electric power.

Rolling Blackouts - A planned outage done in rotation, due to insufficient electric power available.

Service Entrance Meter - A meter attached to the service line that registers the amount of electricity used at the location.

Service Line - A power line that comes from outside the property (via underground or overhead distribution lines) to one's property.

Substation - A high voltage area containing transformers that change the voltage of electrical energy.

Surge Suppressor - A device that can protect sensitive equipment from most voltage surges.

Switching - Rerouting electric power from one circuit to another.

Transformer - Pad Mounted and Overhead - An electromagnetic device for increasing or decreasing electrical voltage. Pad mounted transformers are on the ground. Overhead transformers are on utility poles.

Transmission Lines - Power lines that carry electricity from the power plant to substations, or from substation to substation.

Underground Cables - Power lines that are buried beneath the ground.

Uninterruptible Power Supply (UPS) - A rechargeable battery that is placed between your electronic equipment and its normal power source. A UPS provides battery back-up power during a power outage.

Vault - A concrete enclosure containing transformers.

Volt - A unit of electrical pressure; the force at which electrical charges move through conductors.

Watt - A unit of electrical power. A metric measurement of power; the rate of work done or energy expended.

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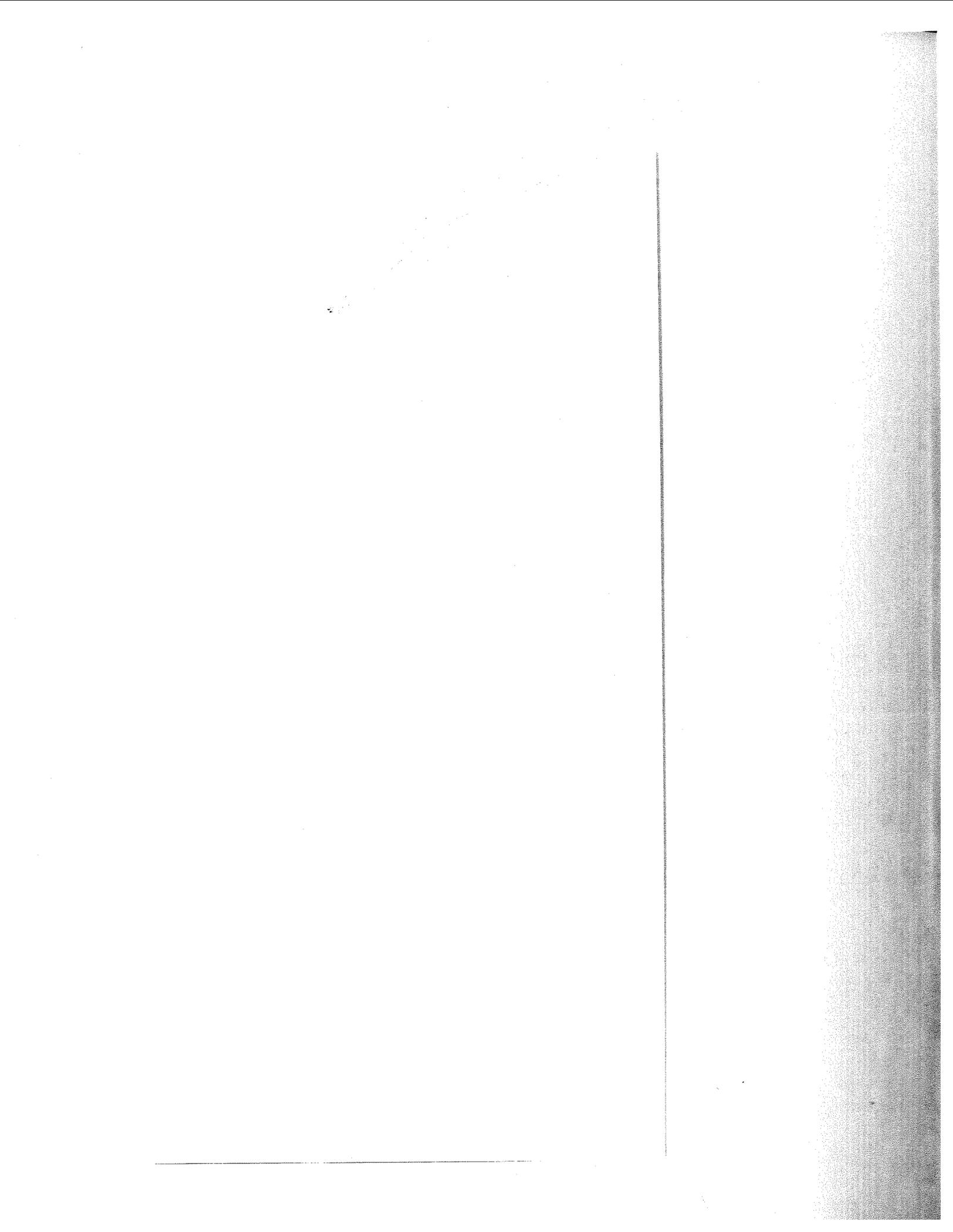
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NOTES





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PO Box 1027 • Hilo, Hawaii 96721-1027