

ARE YOU PREPARED FOR A HURRICANE?

These pages (provided in Adobe PDF format) will provide you with information that will be helpful in making preparations for an approaching storm as well as some tips to help you after the storm. You may want to download and print these files now, as you may not have power if a storm is approaching.

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GENERAL INFORMATION ABOUT HURRICANES

Hurricanes, there are no other storm like them on earth. Hurricanes are products of the Tropical Ocean and atmosphere. Powered by heat from the warm seawater, they are tiered by the easterly trade winds and the temperate westerlies as well as by their own ferocious energy. Around their core, winds grow with great velocity, generating violent seas. Moving ashore, they sweep the ocean inward while spawning tornadoes and producing torrential rains and floods. Each year on average, ten tropical storms (of which six become hurricanes) develop over the Atlantic Ocean, Caribbean Sea, or the Gulf of Mexico. Many of these remain over the ocean. However, about five hurricanes strike the United States coastline every three years. Of these five, two will be major hurricanes (category 3 or greater).

A hurricane is a type of tropical cyclone - the general term for all circulating weather systems over tropical waters. Tropical cyclones are classified as follows:

- Tropical Depression - An organized system of clouds and thunderstorms with a defined circulation and maximum sustained winds of 38 mph or less.
- Tropical Storm - An organized system of strong thunderstorms with a defined circulation and maximum sustained winds of 39 to 73 mph.
- Hurricane - An intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph or higher. In the western Pacific, hurricanes are called "typhoons" and similar storms in the Indian Ocean are called "cyclones".

Timely warnings have greatly reduced the number of hurricane fatalities in the United States. In spite of this, property damage continues to mount due to the explosion of growth along our coastline. There is little we can do about the hurricanes themselves. However, the National Oceanic and Atmospheric Administration's (NOAA) National Hurricane Center and National Weather Service field offices team up with other Federal, state and local agencies; rescue and relief organizations; the private sector; and the news media in a huge warning and preparedness effort to warn the public and help them become better prepared for these storms.

Breeding Grounds

In the eastern Pacific, hurricanes begin forming by mid-May, while in the Atlantic, Caribbean, and Gulf of Mexico, hurricane development starts in June. For the United States, the peak hurricane threat exists from mid-August to late October although the official hurricane season begins June 1 and ends November 30. Over other parts of the world, such as the western Pacific, hurricanes can occur year-round.

Developing hurricanes gather heat and energy through contact with warm ocean waters. The addition of moisture by evaporation from the sea surface powers them like giant heat engines.

Storm Structure

The process by which a disturbance forms and subsequently strengthens into a hurricane depends on at least three conditions. Warm waters and moisture as mentioned above. The third condition is a wind pattern near the ocean surface that spirals air inward. Bands of thunderstorms form, allowing the air to warm further and rise higher into the atmosphere. If the winds at these higher levels are relatively light, this structure can remain intact and allow for additional strengthening.

The center, or eye, of a hurricane is relatively calm. The most violent activity takes place in the area immediately around the eye, called the eye wall. At the top of the eye wall (about 50,000 feet), most of the air is propelled outward, increasing the air's upward motion. Some of the air, however, moves inward and sinks into the eye, creating a cloud-free area.

STORM FURY:

Storm Surge

Storm surge is a large dome of water, often 50 to 100 miles wide that seeps across the coastline near where a hurricane makes landfall. The surge of high water, topped by waves is devastating. The stronger the hurricane and the shallower the water, the higher the storm surge will be. Along the immediate coast, storm surge is the greatest threat to life and property.

Storm Tide

If the storm surge arrives at the same time as the high tide, the water height will be even greater. The storm tide is the combination of storm surge and the normal astronomical tide.

Winds

Hurricane force winds, 74 mph or more, can destroy poorly constructed buildings and mobile homes. Debris, such as signs, roofing material, siding, and small items left outside, become flying missiles in hurricanes. Even well built buildings, if openings in the building envelope, such as doors and windows are not protected may suffer wind damage. Wind blown debris may cause a window to break or a door to fail and allow high winds to enter the home. The interior forces of the wind then work together with the outside forces (creating uplift on roofs) to cause a failure of parts of the building. Winds often stay above hurricane strength well inland. Hurricane Hugo in 1989-battered Charlotte, North Carolina (almost 200 miles inland) with gust of 100 mph, downing trees and power lines.

Heavy Rains and Flooding

Widespread torrential rains often in excess of 6 inches can produce deadly and destructive flooding. This is the major threat to areas well inland.

- Tropical Storm Claudette (1979) brought 45 inches of rain to an area near Alvin, Texas, contributing to more than \$600 million in damage.
- Long after the winds of Hurricane Diane (1955) subsided, the storm brought flood to Pennsylvania, New York, and New England that contributed to nearly 200 deaths and \$4.2 billion in damage.
- Who in this area can forget Hurricane Georges (1998) that caused major flooding from Mississippi through the Florida panhandle.

Tornadoes

Hurricanes also produce tornadoes, which add to the hurricane's destructive power. These tornadoes most often occur in the thunderstorms embedded in rain bands well away from the center of the hurricane. However, they can also occur near the eye wall. Micro bursts, columns of fast moving air, are also produced during hurricanes and are blamed for much of the destruction from Hurricane Andrew (1992) in south Dade County, FL.

THE TEN COSTLIEST HURRICANES IN THE UNITED STATES
(Based on damages at the time the storms occurred)

Ranking	Hurricane	Landfall	Year	Category	Damage (U.S.)
1	Andrew	South FL/LA	1992	4	\$26,500,000,000
2	Hugo	SC	1989	4	\$ 7,000,000,000
3	Fran	NC	1996	3	\$ 3,200,000,000
4	Opal	Northwest FL	1995	3	\$ 3,000,000,000
5	Frederic	AL/MS	1979	3	\$ 2,300,000,000
6	Agnes	Northeast U.S.	1972	1	\$ 2,100,000,000
7	Alicia	TX	1983	3	\$ 2,000,000,000
8	Bob	NC/Northeast U.S.	1991	2	\$ 1,500,000,000
8	Juan	LA	1985	1	\$ 1,500,000,000
10	Camille	MS	1969	5	\$ 1,420,700,000

THE TEN COSTLIEST HURRICANES IN THE UNITED STATES
(Damages adjusted to 1996 dollars)

Ranking	Hurricane	Landfall	Year	Category	Damage (U.S.)
1	Andrew	South FL/LA	1992	4	\$30,475,000,000
2	Hugo	SC	1989	4	\$ 8,491,561,181
3	Agnes	Northeast U.S.	1972	1	\$ 7,500,000,000
4	Betsy	FL/LA	1965	3	\$ 7,425,340,909
5	Camille	MS	1969	5	\$ 6,096,287,313
6	Diane	Northeast U.S.	1955	1	\$ 4,830,580,808
7	Frederic	AL	1979	3	\$ 4,328,968,903
8	New England Storm	New England	1938	3	\$ 4,140,000,000
9	Fran	NC	1996	3	\$ 3,200,000,000
10	Opal	Northwest FL	1995	3	\$ 3,069,395,018

THE TEN MOST INTENSE HURRICANES IN THE UNITED STATES
(AT TIME OF LANDFALL)

Ranking	Hurricane	Year	Landfall	Category	Pressure
					(Millibars/ Inches of Mercury)
1	Florida Keys*	1935	FL Keys	5	892 / 26.35
2	Camille	1969	MS/LA	5	909 / 26.84
3	Andrew	1992	South FL/LA	4	922 / 27.23
4	Florida Keys*	1919	FL Keys/TX	4	927 / 27.37
5	Lake Okeechobee*	1928	FL	4	929 / 27.43
6	Donna	1960	Eastern U.S.	4	930 / 27.46
7	Galveston TX*	1900	Southern TX	4	931 / 27.49
7	Grand Isle*	1909	LA	4	931 / 27.49
7	New Orleans*	1915	LA	4	931 / 27.49
7	Carla	1961	North/Central TX	4	931 / 27.49

*Storms were not named until 1953

STORM NAMES

Since 1953, Atlantic tropical storms have been named from lists originated by the National Hurricane Center and now maintained and updated by an international committee of the World Meteorological Organization (WMO). The lists featured only women's names until 1979, when men and women's names were alternated. Six lists are used in rotation. Thus, the 1999 list will be used again in 2005.

The only time there is a change in the list is if a storm were so deadly or costly that the future use of its name on a different storm would be inappropriate for reasons of sensitivity. If that occurs, then at an annual meeting by the WMO committee, the offending name is stricken from the list and another name is selected. For example, there will never be another Hurricane Andrew or Opal.

2003	2004	2005
Anna	Alex	Arlene
Bill	Bonnie	Bret
Claudette	Charley	Cindy
Danny	Danielle	Dennis
Erica	Earl	Emily
Fabian	Frances	Floyd
Grace	Gaston	Gert
Henri	Hermine	Harvey
Isabel	Ivan	Irene
Juan	Jeanne	Jose
Kate	Karl	Katrina
Larry	Lisa	Lenny
Mindy	Matthew	Maria
Nicholas	Nicole	Nate
Odette	Otto	Ophelia
Peter	Paul	Philippe
Rose	Richard	Rita
Sam	Shary	Stan
Teresa	Tomas	Tammy
Victor	Virginie	Vince
Wanda	Walter	Wilma

HURRICANE SURVEILLANCE AND FORECASTING

The National Hurricane Center, located in Miami, Florida provides the official hurricane information, forecasts, advisories, watches and warnings to the public.

The center issues complete advisories every six hours during the life of a tropical depression, tropical storm, and hurricane. To obtain the data necessary to provide this information, the National Hurricane Center uses all of the following methods.

Satellite

Geostationary (GOES) satellites orbiting the earth at an altitude of about 22,000 miles above the equator provide imagery both day and night. The satellite imagery helps provide estimates of the location, size, and intensity of a storm and its surrounding environment.

Reconnaissance Aircraft

The U. S. Air Force Reserve "Hurricane Hunters" provides most of the operational reconnaissance during a hurricane. Their pilots fly into the core of a hurricane to measure wind, pressure, temperature, and humidity as well as provide an accurate location of the center of the storm. This data is transmitted to the National Hurricane Center for use in forecasting the track of the storm. The National Oceanic and Atmospheric Administration (NOAA) also fly aircraft into hurricanes to aid scientists in better understanding these storms and to improve forecast capabilities. In 1998, NOAA began flying a Gulfstream jet at high altitudes above hurricanes to assist in obtaining data used in forecasting. NOAA flights also provide operational support when required.

Radar

When a hurricane gets close to the coast, land-based radars monitor it. The National Weather Service (NWS) has installed Doppler weather radars across the country, which has added new dimensions to hurricane warning capabilities. They provide detailed information on hurricane wind fields and their changes. Local NWS offices are able to provide more accurate short-term warnings for floods, tornadoes, and inland high winds. For this area, the National Weather Service has sites in Tallahassee and Tampa. See Web Site at <http://weather.noaa.gov/radar/national.html>.

National Hurricane Center Computer Models

The National Hurricane Center uses several different computer models to aid in forecasting the path, speed, and strength of hurricanes. Data from weather satellite sensors, reconnaissance aircraft, and other sources are fed into the computer models. The National Hurricane Center also has a computer storm surge model. This model provides guidance on storm surge height and the extent of flooding it will cause.

AREAS AT RISK FROM HURRICANES

Coastal Areas and Barrier Islands

All Atlantic and Gulf coastal areas of the United States are subject to hurricanes and tropical storms. Although rarely struck by hurricanes, parts of the Southwest United States and Pacific coast suffer heavy rains and floods each year from the remnants of hurricanes spawned off the Mexican coast.

Over the past 20 years, coastal areas and barrier islands have become densely populated. Due to their location, limited number of evacuation routes, barrier islands are especially vulnerable to hurricanes. People on barrier islands and in vulnerable coastal areas may be ordered by local officials to evacuate well in advance of a hurricane landfall. Hurricane evacuation clearance times, the time it takes for people at risk to move to a place of safety, will vary depending on the number evacuating, evacuation routes, and quickness of response to evacuation orders. If you are asked to evacuate, do so IMMEDIATELY! If you are a Levy County resident, please check the storm surge maps at our web site, www.levyeoc.com.

Inland Areas

Hurricanes affect inland areas with high winds, floods, and tornadoes. You might remember that Hurricane Opal (1995) produced winds of 100 mph in the Atlanta, Georgia area and spawned tornadoes in Maryland that killed at least one person. Listen carefully to local authorities to determine what threats you can expect and take the necessary precautions to protect yourself, your family, and your property.

THE UNITED STATES HURRICANE PROBLEM:

Population Growth

The United States has a significant hurricane problem. Our shorelines attract large numbers of people. From Main to Texas, our coastline is filled with new homes, condominiums, and cities, built on sand and waiting for the next storm to threaten the residents and their dreams.

There are nearly 50 million permanent residents along the hurricane-prone coastline, and the population is still growing. The most rapid growth has been in the Sunbelt from Texas through the Carolinas. Florida, where over 80% of the residents live within 20 miles of the coast and hurricanes are most frequent, leads the nation in new residents. In addition to the permanent residents, the holiday, weekend, and vacation populations swell in some coastal areas 10 to 100 fold.

Perception of Risk

Over the past 10 years, the warning system has provided adequate time for people on the barrier islands and the immediate coastline to move inland when hurricanes have threatened. However, it is becoming more difficult to evacuate people from risk areas because roads have not kept pace with the rapid population growth. The problem is further compounded by the fact that 80 to 90 percent of the population now living in hurricane-prone areas has never experienced the core of a "major" hurricane. Many of these people have been through weaker storms. The result is a false impression of a hurricane's damage potential.

Another factor is the ability to forecast the track and/or point of landfall of a hurricane over extended periods. Hurricane forecasting is not an exact science. Over the past 10 years, even with new technology, the margin of error in forecasting where a hurricane will impact the coast 72 hours in advance is about 250 miles. That margin of error is still about 75 miles 24 hours in advance. Unfortunately, due to long clearance times, and the need to have the evacuation complete before arrival of tropical storm force winds, evacuation orders in this area must be issued between 72 - 24 hours prior to expected landfall. Therefore, in some cases, evacuations are conducted and the storm may not make landfall where forecast when the decision to evacuate was made by local officials.

These factors often lead to complacency and delayed actions, which could result in the loss of many lives.

Frequency of Hurricanes

During the 70's and 80's, major hurricanes striking the United States were less frequent than the previous three decades. Since 1995 there has been a significant increase in hurricane activity and that trend is expected to continue through this decade. There has also been an increase in the number of intense hurricanes, which causes much concern. With the tremendous increase in population along the high-risk areas of our shorelines, we may not fare as well in the future. In the final analysis, the only real defense against hurricanes is the informed readiness of your community, your family and you.

GLOSSARY OF COMMONLY USED TERMS

Best Track

A term used by the hurricane forecasters, which represents a subjectively smoothed path, versus a precise and very erratic fix-to-fix path, used to represent tropical cyclone movement. It is based on an assessment of all available data.

Coastal Flood Warning

An alert issued by the National Weather Service when developing conditions may cause coastal flooding due to major tidal piling and extensive beach run up from high surf. Issued 12-36 hours in advance of potential coastal flooding.

Coastal Flood Watch

A warning issued by the National Weather Service when major tidal piling and/or extensive beach run up from high surf is in progress or imminent and poses a serious threat to life and property. Usually issued within 12 hours of expected coastal flooding.

Cyclone

An atmospheric closed circulation rotating counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

Emergency Alert System (EAS)

Formerly known as the Emergency Broadcast System (EBS). It is a system designed to permit government officials to issue up-to-date and continuous emergency information and instructions to the public, via radio and television, in case of a threatening or actual emergency.

Evacuation Clearance Times

The lead-time that a populated coastal jurisdiction must have to safely relocate all residents of vulnerable areas to a safer area from an approaching hurricane. This time can also be perceived as the necessary amount of time between the issuance of the local official evacuation order and the projected arrival of sustained tropical storm force winds (40 mph) and/or flooding. In Levy County, hurricane evacuation clearance times for a Category 4 or 5 storm are over 24 hours.

Eye Wall/Wall Cloud

An organized band of clouds immediately surrounding the center of a tropical cyclone. Eye wall and wall cloud is used synonymously.

Flash Flood Watch

A watch issued by the National Weather Service which indicates flash flooding or flooding is possible within the designated watch area, but the occurrence is neither certain nor imminent.

Flash Flood Warning

A warning issued by the National Weather Service, which indicates that flash flooding has been reported, or is imminent. (This usually lasts six hours or less.)

Flood Warning

A warning issued by the National Weather Service which indicates the expected severity of flooding (minor, moderate, or major), as well as where and when the flooding will begin. (This usually lasts six hours or more.)

Forward Speed (Hurricane)

The rate of movement of the hurricane eye in miles per hour or knots. If you track hurricanes and use official advisories for your information, be aware that Public Advisories show wind speeds in miles per hour (mph) and Forecast Advisories show wind speeds in knots (Kt). Generally 1 knot = 1.15 miles per hour.

Gale Warning

A warning issued by the National Weather Service when sustained winds within the range of 39-54 miles per hour are either predicted or occurring. Gale warnings are not normally issued during tropical storm situations.

High Wind Warning

A high wind warning is defined as 1-minute average surface winds of 40 mph or greater lasting for 1 hour or longer, or winds gusting to 58 mph or greater regardless of duration that are either expected or observed over land.

Hurricane

A type of tropical cyclone - the general term for all circulating weather systems over tropical waters. The Cyclone becomes a hurricane when the constant surface wind speed reaches 74 mph or greater. These winds blow in a counter clockwise spiral around the relatively calm center of an extremely low pressure known as the eye of the hurricane. Around the eye wall or rim of the eye, wind may gust to more than 200 miles per hour. The entire storm dominates the ocean surface and lower atmosphere over tens of thousands of square miles. Hurricanes are categorized by intensity from 1 - 5 with category 5 being the most intense.

Hurricane/Tropical Storm/Tropical Depression Advisories

Notices, issued by the National Hurricane Center that are numbered consecutively for each tropical depression, storm and hurricane, describing the present and forecasted position and intensity of the storm. Advisories are issued at six-hour intervals at midnight, 6:00 AM, noon, and 6:00 PM, Eastern Daylight Time. Intermediate advisories are sometimes issued at three-hour intervals between regular advisories. Bulletins provide additional information. Each advisory gives the name, eye position, intensity and movement of the storm. Public Advisories give certain specific information for public use and Forecast Advisories provide more detailed forecast information with the current position and forecast positions at 12, 24, 36, 48 and 72 hours.

Hurricane Eye

The relatively calm area near the center of the storm. In this area, winds are light and the sky is often only partly covered by clouds. The size of the eye varies greatly with each storm.

Hurricane Landfall

The point in time when the eye, or physical center of the hurricane reaches the coastline from the hurricane's approach over water. It is important to remember that the most intense area of the storm will be up 50 miles to the right of the eye and up to 20 miles to the left of the eye. Hurricane force winds may extend up to 100 miles or greater from the eye of the storm.

Hurricane Local Statement

A public release by the local National Weather Service office in or near a threatened area giving specific details for its warning area on (1) weather conditions, (2) evacuation decisions made by local officials, and (3) other precautions necessary to protect life and property.

Hurricane Track

Line of movement of the eye of the hurricane through an area. It is important to remember that hurricane advisories only provide the location of the center or eye of the storm. Some hurricanes have hurricane force winds 100 miles or greater and tropical storm force winds 200 miles or greater from the center of the storm. When tracking a hurricane, you should also track the wind fields, which are provided in hurricane advisories.

Hurricane Season

The portion of the year having a relatively high incidence of hurricane activity. In the Atlantic, Caribbean and Gulf of Mexico, hurricane season begins June 1 and ends November 30.

Hurricane Warning

A warning issued by the National Hurricane Center for a specific area when hurricane conditions are expected within 24 hours. Hurricane warnings identify coastal areas where winds of at least 74 miles per hour are expected to occur. A warning may also describe coastal areas where dangerously high water or exceptionally high waves are expected, even though winds may be less than hurricane force. Hurricane warnings are added to hurricane advisories and list the areas where the warning is in affect.

Hurricane Watch

An alert issued by the National Hurricane Center for a specific area when hurricane conditions are a real possibility, usually within 36 hours. When a hurricane watch is issued, everyone in the watch area should listen for further advisories and be prepared to act quickly if hurricane warnings or other official orders are issued.

NOAA Weather Radio

A twenty-four hour continuous broadcast of existing and forecasted weather conditions. In this area, the broadcasts are issued by the Jacksonville, Florida Office of the National Weather Service and transmitters are located in Gainesville (162.475 MHz) or Ocala (162.525 MHz). Some weather radios have the ability to be placed in an "alert" mode and will only activate or turn on when a severe weather alert is issued or the user depresses a button to listen to the broadcast.

Severe Thunderstorm Warning

A warning issued for a specific area by the National Weather Service when a severe thunderstorm has been sighted or indicated on radar. These storms are capable of producing damaging winds greater than 55 miles per hour, frequent lightning, heavy rainfall and/or hail.

Severe Thunderstorm Watch

An alert issued by the National Weather Service when conditions are favorable for development of severe thunderstorms. These storms are capable of producing damaging winds greater than 55 miles per hour, frequent lightning, heavy rainfall and/or hail.

SLOSH (Sea, Lake and Overland Surges from Hurricanes)

A computerized model which is able to estimate the overland tidal surge heights that result from hypothetical hurricanes with selected characteristics in pressure, size, forward speed, track and wind speed. The resultant tidal surge action is then applied to a specific locale's shoreline configuration, while also incorporating the unique bay and river configurations, water depths, bridges, roads, and other physical features. The model then estimates open coastline heights as well as surge heights over land, thus predicting the areas that will be inundated by water during a specific category of hurricane. This data is then used to produce storm surge maps for each region along the coast.

Small Craft Advisory

A warning issued by the National Weather Service for winds from 20 - 33 knots inclusive or for sea conditions either forecasted or occurring, which are considered potentially hazardous to small boats in coastal waters.

Special Marine Warning

A warning issued by the National Weather Service for hazardous weather conditions, usually of short duration, not adequately covered by existing marine warning. Such weather conditions include sustained winds or gusts of 35 knots or greater.

Storm Surge

The large dome of water, often 50 to 100 miles wide, that sweeps across the coastline near where a hurricane makes landfall. The surge of high water, topped by waves is devastating. The stronger the hurricane and the shallower the offshore water, the higher the storm surge will be. In the United States, most deaths from hurricanes are as a result of storm surge. In this area, a storm surge of over 20 feet is possible with a category 4 or 5 hurricane.

Storm Tide

If the storm surge arrives at the same time as the high tide, the water height will be even greater. The storm tide is the combination of the storm surge and the normal astronomical tide.

Sustained Wind

The surface wind obtained by averaging observed value over a one-minute period.

Tornado

A relatively short-lived local storm, which is composed of violently rotating columns of air that descend in the familiar funnel shape from a thunderstorm system.

Tornado Warning

A warning issued by the National Weather Service when a tornado has been sighted or has been detected on radar. Warnings will give the location of the tornado, the area immediately affected by the warning and the direction of travel. In this area, tornadoes sometimes occur quickly and dissipate before a warning can be issued.

Tornado Watch

An alert issued by the National Weather Service when weather conditions are favorable for a tornado to develop and that the sky should be monitored.

Tropical Cyclone

A circulating weather system, generally originating over tropical oceans, distinguished by torrential rains and damaging winds that reach a maximum very near the low pressure center. These systems circulate counter clockwise around a low pressure center in the Atlantic, Caribbean, Gulf of Mexico and Eastern Pacific are called a Tropical Depression, Tropical Storm or Hurricane, based on wind speed.

Tropical Depression

A tropical cyclone in which the maximum sustained surface wind is 38 miles per hour or less. When the cyclone reaches this stage, it is given a number (i.e. Tropical Depression #4).

Tropical Disturbance

A moving area of thunderstorms over tropical waters that maintains its identity for at least 24 hours.

Tropical Storm

A warm core tropical cyclone in which the maximum sustained surface wind is in the range of 39 - 73 miles per hour. When the cyclone reaches this stage, it is given a name.

Tropical Storm Warning

A warning issued by the National Hurricane Center when tropical storm conditions (sustained winds between 39 and 73 miles per hour) are expected to affect a specified coastal area, within 24 hours.

Tropical Storm Watch

An alert for a specified coastal area that tropical storm conditions (sustained winds between 39 and 73 miles per hour) are possible, usually within 36 hours. A tropical storm watch is not normally issued if the system is forecast to attain hurricane strength.

Tropical Wave

A westward moving trough of low pressure embedded in the deep easterly current. It tends to organize low-level circulation and may travel thousands of miles with little change in shape, sometimes producing significant shower and thunderstorm activity along its path.

Water Spout

A relatively small tornado over a body of water with winds rarely exceeding 50 miles per hour.

Weather Advisory

Information issued regularly by the National Weather Service to alert the public to possible hazardous conditions that may be caused by severe weather.

SAFFIR/SIMPSON HURRICANE SCALE

The Saffir/Simpson Hurricane Scale is used by the National Weather Service to give public safety and government officials an assessment of the potential wind and storm surge damage from a hurricane. The scale ranges from Category 1, the least intense to Category 5, the strongest. Herbert Saffir, a Dade County Florida Consulting Engineer, and Dr. Robert H. Simpson, a former Director of the National Hurricane Center developed the scale. The scale assessment categories are as follows:

Category 1 - Winds of 74 - 95 mph and storm surge generally 4 - 5 feet above normal. Damage limited to unanchored mobile homes, shrubs, and trees. Some damage to poorly constructed signs. Limited coastal road flooding and minor pier damage may occur. Hurricanes Erin in 1995 and Danny in 1997 were category 1 hurricanes.

Category 2 - Winds of 96 - 110 mph and storm surge generally 6 - 8 feet above normal. Some roofing material, door, and window damage to buildings. Considerable damage to shrubbery and trees. Some trees blown down. Considerable damage to mobile homes, poorly constructed signs, and piers. Coastal and low-lying escape routes may flood as the storm approaches land. Small craft in unprotected anchorages break moorings. Hurricane Bertha in 1996 was a category 2 hurricane when it hit the North Carolina coast.

Category 3 - Winds of 111 - 130 mph and storm surge generally 9 - 12 feet above normal. Some structural damage to homes and utility buildings with unprotected openings and a minor amount of curtain wall failures. Foliage blown off trees. Large trees blown down. Mobile homes and poorly constructed signs are destroyed. Coastal and low-lying escape routes will flood as the storm approaches the coast. Storm surge and waves will destroy coastal small structures with larger structures damaged by floating debris. Hurricane Opal in 1995 was a category 3 hurricane when it made landfall near Pensacola Beach.

Category 4 - Winds 131 - 155 mph and storm surge generally 13 - 18 feet above normal. More extensive curtain wall failures with some complete roof structure failure on buildings without proper anchoring and strapping. Shrubs, trees, and all signs are blown down. Complete destruction of mobile homes. Extensive damage to unprotected doors and windows. Coastal and low-lying escape routes will flood as the storm approaches the coast. Storm surge will cause major damage to structures near the coast and floating debris will cause damage to inland buildings near the coast. Hurricane Hugo in 1989 and Hurricane Andrew in 1992 were category 4 hurricanes.

Category 5 - Winds in excess of 155 mph and storm surge generally greater than 18 feet. Complete roof failure on many residences and commercial buildings without proper strapping and anchoring. Some complete building failures with small utility buildings blown away. All shrubs, trees, and signs blown down. Complete destruction of mobile homes. Severe and extensive damage to unprotected doors and windows. Coastal and low-lying areas will flood as the storm approaches the coast. Destruction of structures along the coast from storm surge and waves. Extensive damage to inland homes near the coast from floating debris. Hurricane Gilbert in 1988 and hurricane Camille in 1969 were category 5 storms.

CATEGORY	WINDSPEED	MILIBARS	INCHES	STORM SURGE
1	75 - 95 MPH	1000 - 980	+28.94	4 - 5 FEET
2	96 - 110 MPH	979 - 965	28.91 - 28.50	6 - 8 FEET
3	111 - 130 MPH	964 - 945	28.47 - 27.91	9 - 12 FEET
4	131 - 155 MPH	944 - 920	27.88 - 27.17	13 - 18 FEET
5	> 155 MPH	< 920	< 27.17	> 18 FEET

BEFORE THE STORM

Every year, prior to hurricane season, your family should review your hurricane plan and make changes as necessary. If you plan to evacuate, your plan should include where you will go, the route to get there, when you will leave and what to take with you, and what preparations you will make to your home.

If you plan to stay, make sure that you have all of the supplies necessary to be on your own for at least 72 hours. If you are planning to go to an evacuation shelter, have your shelter supplies kit packed and ready. Make sure that you have all the materials on hand to protect your home and that you prepare your home no later than when a hurricane warning is issued. You should also trim dead wood and limbs from your trees. Don't forget to make arrangements for your pets.

If a storm is threatening the area, listen to local media for information and actions to be taken. In addition you should:

- Fuel your vehicle. You will need it if the storm hits and power is out.
- Bring in outdoor objects such as lawn furniture, toys and garden tools.
- Install your storm shutters or plywood and secure all doors.
- Prepare boats as appropriate.
- Turn up refrigerators and freezers to their coldest settings.
- Turn off small appliances that are not needed.
- If you evacuate, turn off your air conditioner. If you stay at home and the power goes off, turn off your air conditioner. Turn it back on only after power has been restored in your area.
- Turn off all LP tanks.
- Fill sinks and bathtubs with water.
- Get an extra supply of cash. Banks and ATM's may not be operational immediately after the storm.
- Call an out of town friend or family member to let them know of your plans. Then instruct other family members to call that person for information about your family after the storm. It is usually easier for you to call out of the area after a storm than it is for others to call into the area.

Tracking a Storm

When tracking a storm, it is important to remember that a hurricane is not a point on a map. The coordinates that are provided by the National Hurricane Center only indicate the location of the center or eye of the storm. Some hurricanes have tropical storm force winds over 200 miles from the center, and hurricane force winds 75 miles or greater from the center. It is these wind fields that should be tracked. The center of the storm may make landfall 50 - 100 miles away from this area, however strong winds, storm surge, and heavy rains may cause severe damage locally.

It is also important to recognize that hurricane forecasting is not an exact science and that there is a significant margin of error, especially at long range, in forecasting the area of landfall for a storm. Over the past 10 years, the margin of error in forecasting landfall is over 250 miles, 72 hours before landfall. That margin of error is still over 75 miles, 24 hours before landfall. Due to the long evacuation clearance times for this area, evacuation orders may have to be issued 48 hours or more before landfall.

Watches and Warnings (Official Watches and Warnings are issued by the National Hurricane Center)**Tropical Storm Watch**

Issued when tropical storm conditions (39 - 73 mph winds) are possible in the specified watch area, usually within 36 hours.

Tropical Storm Warning

Issued when tropical storm conditions (39 - 73 mph winds) are expected in the specified warning area, usually within 24 hours.

Hurricane Watch

Issued when hurricane conditions (74 mph or greater winds) are possible in the specified watch area, usually within 36 hours. During a hurricane watch, be prepared to take immediate action to protect your family and property in case a hurricane warning is issued.

Hurricane Warning

Issued when hurricane conditions are expected in the specified warning area, usually within 24 hours. Storm preparations should be completed.

Note: Due to the amount of time required for evacuation of this area, evacuation orders may be issued before a hurricane watch or warning has been issued by the National Hurricane Center.

YOUR HURRICANE PLAN

Everyone who lives in Florida should have a hurricane plan. Developing a hurricane plan should involve the whole family, including children, and should be updated each year prior to June 1. Consider the following when your family is developing your hurricane plan:

1. What is the risk?

To determine if you will be required to evacuate, you need to know if you are in a hurricane evacuation zone, and if so, which zone you are in. You can determine this by calling the Levy County Emergency Management Office at 352-486-5213 or visiting their website at "www.levyeoc.com". If you live in a mobile home anywhere within the county, you should also plan to evacuate.

2. Do you plan to evacuate?

If you live in an evacuation zone or mobile home, you will be required to evacuate. If you do not live in an evacuation zone or mobile home, the decision to evacuate should be made early and stated in your plan. If you plan to evacuate, leave early. Residents who wait until the last minute to evacuate will probably encounter heavy traffic and lengthy delays in reaching their destination. Talk with you employer/s to ensure that you will be able to evacuate and have time to prepare your home.

3. Where will you go?

You should determine where you would go when you evacuate. It is not necessary to go a long distance for evacuation. Plan to stay with a friend or relative that lives outside of the evacuation zone in the local area and who properly prepares their home. If you plan to go to a motel/hotel, make your reservations early. You will need reservations during a major evacuation. Hurricane evacuation shelters are available if you have no other place to go.

4. How will you get there?

Once you have determined where you will go, plan the routes you will use to get there. Remember, if you don't leave early you may encounter heavy traffic and delays. Select routes other than major highways if possible to help avoid heavy traffic. In addition to having a map with the routes marked, it is a good idea to drive at least part of the route to become somewhat familiar with it.

5. Prepare your home

Whether you stay or leave, you should take the measures necessary to prepare your home. Additional wind bracing, protecting the windows and doors, and securing or removing loose objects from outside your home will provide good protection from hurricane force winds. More details on preparing your home are available in other sections of this manual

6. Communications

You should develop a communications plan for others to obtain information about you after the storm. Suggestions for developing a communications plan are available in other sections of this manual.

PROTECTING YOUR HOME FROM THE WINDS OF A HURRICANE

During a hurricane, homes may be damaged or destroyed by high winds and wind blown debris that can break windows and doors, allowing high winds inside the home. In extreme storms, such as Hurricane Andrew, the force of the wind alone can cause weak places in your home to fail. Another thing to remember is that during a hurricane, tornadoes are often spawned in squalls as the storm approaches.

After Hurricane Andrew, a team of experts examined homes that failed as well as some that had survived. They found four areas that should be checked for weakness - the roof, windows, doors, and if you have one, garage doors. In this brochure, we discuss some things that you can do to make your home stronger and safer. It may be necessary for you to make some improvements or install temporary wind protection.

You can shutter now. Or you can shudder later.

Chances are that's what will happen when a hurricane heads towards your area and you realize you haven't made any plans to secure your home. "Take the necessary steps ahead of the hurricane's arrival to protect your home and its contents.

It is very important that you do these projects **now**, even if you plan to evacuate, and **before** a hurricane threatens.

While these projects, if done correctly, can make your home safer during a hurricane, they are no guarantee that your home will not be damaged or even destroyed. You will however, be safer in a well constructed, properly prepared home or building, than you will in a vehicle stuck in traffic on the roadway. If you are told by authorities to evacuate, do so immediately, even if you have prepared your home.

The Roof:

During a windstorm, the force of the wind pushes against the outside of your home. That force is passed along from your roof to the exterior walls and finally to the foundation. Homes can be damaged or destroyed when the energy from the wind is not properly transferred to the ground. The introduction of wind forces inside the home increase the "uplift" pressure and roof failure is likely.

The first thing you should do is to determine what type of roof you have. Many homes have "gabled" roofs and are more likely to suffer damage during a hurricane due to the absence of proper wind bracing. A gabled roof has a flat end, looking similar to an A, with the outside wall going to the top of the roof. Another popular residential roof type is the "hip" roof. Hip roofs have much of the necessary wind bracing built into their design and do not require much additional bracing.

The end wall of a gabled roof takes a beating during a hurricane, and those that are not properly braced can collapse, causing major damage to the home. In most homes, gabled roofs are built using manufactured trusses. Sheets of roof sheathing, usually plywood or oriented strand board (OSB), are fastened to the trusses with nails or staples, then a roofing material is fastened to the sheathing. In many cases, the only thing holding the trusses in place is the sheathing on top. This may not be enough to hold the roof in place during a hurricane. Installing additional truss bracing makes your roof's truss system much stronger.

To inspect your roof's bracing, you need to go into the attic. While working in your attic, you should wear clothing that covers your skin, work gloves, a hat, eye protection, and a dust mask. If your attic does not have a floor, be careful to walk only on the wood joists, or install boards wide enough to walk on as you work. Notice how the plywood is attached to the truss system. If most of the large nails or staples coming through the sheathing have missed the truss, consider having the sheathing properly installed. There are also some glue products that can be added from inside the attic to help bond the sheathing to the trusses.

Truss Bracing

Now look for truss bracing. In gabled roofs, truss bracing usually consists of 2X4's that run the length of the roof. If you do not have truss bracing, it should be installed. You can do this yourself or hire a professional. Install 2X4's the length of your roof, overlapping the ends of the 2X4's across two trusses. Braces should be installed 18 inches from the ridge, in the center span, and at the base, with 8 - 10 feet between the braces. Use 3 inch, 14 gauge, wood screws or two 16d (16 penny) galvanized common nails at each truss. Because space in attics is generally limited, screws may be easier to install.

Gable End Bracing

Bracing of the gable end will also be necessary. Gable end bracing consists of 2X4's placed in an "X" pattern from the top center of the gable to the bottom center brace of the fourth truss, and from the bottom center of the gable to the top center of the fourth truss. Use two 3 inch, 14 gauge, wood screws or two 16d galvanized common nails to attach the 2X4's to the gable and to each of the four trusses. It is a good idea to use angle brackets or "L" brackets to attach the 2X4 bracing to the gable end for additional fastening support.

Hurricane Straps

While in your attic check to see if hurricane straps or clips have been installed. Hurricane straps may be difficult to locate in the attic but you will find them where the truss meets the wall. It may be necessary to move some insulation to determine if hurricane clips or straps are present. Hurricane clips and straps are designed to help hold the roof to your walls. Straps work better because they can be installed completely over the truss and attached to the wall top plate as well as the wall stud. Hurricane straps may be difficult for the homeowner to install and you may need to call a professional to retrofit your home with hurricane clips or straps. If you are replacing your roof, it is a good idea to have your contractor remove the first row of sheathing to determine if hurricane clips or straps are installed. If not, it is easily done at that time with minimal cost. New codes require hurricane straps so you should check with your local government-building officials to see when hurricane straps were required in your area.

Exterior Doors and Windows:

The exterior walls, doors and windows form the protective shell of your home, sometimes called the "building envelope". If your home's protective shell is broken, high winds can enter and put additional pressure on your roof and walls, causing damage. The weakest part of the building envelope is the windows and doors and you can protect your home by strengthening or protecting them.

Points of Failure:**Entry Doors:**

Single entry doors come in different styles and type of construction. It is recommended that when replacing entry doors, you do so with an approved, impact tested door. You should also have the contractor use a dead bolt lock with a bolt long enough to penetrate the 2X4 framing of the door and ensure that the strike plate is installed with screws long enough to penetrate the door framing. You can also protect entry doors with plywood or commercial shutters if you are not staying in the house. If you stay in the house during a hurricane, you must leave at least one door accessible for quick egress if it becomes necessary.

Double entry doors have an active and an inactive (fixed) door. Check to see how your door is secured at the top and bottom. The bolts and pins that secure most doors are not strong enough. Some manufacturers provide reinforcing bolt kits made specifically for their doors. These reinforcing bolts will ensure that the inactive door is secured as good as possible. Of course, as stated above, doors may need additional protection from flying debris, especially doors with windows.

Double-wide Garage Doors:

Double-wide (two car) garage doors can pose a problem during a hurricane because they are so large that they wobble as the high winds blow and can pull out of their tracks or collapse from wind pressure. Flying debris may also damage some garage doors, especially those with glass. If garage doors fail, high winds can enter your home through the garage and blow out windows, doors, walls and even the roof. Current codes require garage doors to withstand winds of at least 110 mph but older doors will require additional bracing to help prevent failure. Some garage doors can be strengthened with retrofit kits from the door manufacturer. Check with your door manufacturer to see if a retrofit kit is available for your door. If not, you can strengthen your garage door at its weakest points. This involves installing horizontal bracing onto each panel. The bracing should consist of 2X4's attached to each vertical support of your door.

Garage Door Bracing

You may also need heavier hinges, stronger springs, and stronger center and end supports. After you have retrofitted your door, it may not be balanced. To check, lower the door about halfway and let it go. If it goes up or down, the springs will need adjusting. The springs are dangerous and should be adjusted by a professional. The track on your garage door is also a point of failure during a hurricane. You should also check the track on your garage door. With both hands, grab a section of each track and see if it is loose or if it can be twisted. If so, a stronger track should be installed. Make sure that it is anchored to the solid wood inside the wall with heavy wood bolts or properly attached to masonry with expansion bolts.

Protecting Windows and Doors

Chances are that's what will happen when a hurricane heads towards your area and you realize you haven't made any plans to secure your home. Take the necessary steps ahead of the hurricane's arrival to protect your home and its contents.

Plywood Storm Shutters:

Installing plywood shutters over all exposed windows and other glass surfaces is the least expensive and more effective ways to protect your home. Plywood shutters that you make yourself, if installed properly, can offer a high level of protection from flying debris during a hurricane. Plywood shutters can be installed on all types of homes. You should cover all windows, french doors, sliding glass doors and skylights. Before installing plywood shutters, check with your local building official to find out if a building permit is required. It is important that you have your shutters ready before hurricane season and that you mark and store them so they can be easily installed during a hurricane.

Measure each window and each door that has glass, and add 8 inches to both the height and width to provide a 4-inch overlap on each side of the opening. Sheets of plywood are generally 4X8 feet and you should use a minimum thickness of 5/8 inch, exterior grade. Thicker plywood will offer slightly better protection. Tell your local building supply retailer the size and number of openings you need to cover to determine how many sheets will be needed.

To install plywood shutters you will need bolts, wood or masonry anchors, large washers, a drill with the proper size and type of bit, a circular saw, hammer, and wrenches to fit the bolts. Be sure to wear eye protection and work gloves.

For windows 3 feet by 4 feet or smaller installed on a wood frame house, use 1/4 inch lag bolts and plastic coated anchors. The lag bolts should penetrate the wall and frame surrounding the window at least 1 3/4 inches to anchor into the 2X4 wall stud. For larger window, use 3/8 inch lag bolts that penetrate the wall and frame surrounding the window at least 2 inches. For windows 3 feet by 4 feet or smaller installed on a masonry house, use 1/4 inch expansion bolts and galvanized permanent expansion anchors. The expansion bolt should penetrate the wall at least 1 inch. For larger windows, use 3/8 inch expansion bolts that penetrate the wall at least 1 inch.

Cut the plywood to the measurements for each opening. Drill holes 2 inches from the outside edge of the plywood at each corner and at 12-inch intervals. Drill four holes in the center area of the plywood to relieve pressure during a hurricane. Place the plywood over the opening and mark each hole position on the outside wall. Drill holes with the appropriate size and type of bit for the anchors. Install the anchors, the plywood, and the bolts to ensure a proper fit. On wood-frame houses, make sure that the anchors are secured into the solid wood that frames the door or window and not just into the siding or trim. Mark each shutter so you will know where it is to be installed and store them and the bolts together in an accessible place. If the opening is larger than one sheet of plywood, you will need to make shutters with 2X4 bracing. This bracing can be two 2X4's at the middle and bottom of the two sheet of plywood, evenly spaced, with the 2 inch side attached to the inside of the storm shutter. Attach the 2X4's to the outside of the storm shutter with 2 inch, 10 gauge wood screws before installing the shutter.

Commercial Hurricane Shutters

Another way to protect the openings in your home is to install commercial hurricane shutters. Hurricane shutters are available in various types and price ranges. You should thoroughly review each type of hurricane shutter before purchasing to determine which type best suits your need and price range. Another consideration should be impact testing and product certification from an approved testing laboratory. Southern Building Code Congress International (SBCCI) certification and the Dade County Building Code product certification are the only impact certifications that are currently accepted by the South Florida Building Code, one of the strongest building codes for wind in the nation.

What is impact testing?

To simulate the effects of a hurricane, several tests are now performed to determine a product's effectiveness against those wind forces. These tests are "Impact" test and "Design Pressure" test, both performed by a Certified Independent Engineering Laboratory.

- The "large missile" test is performed by shooting a six foot long, nine pound 2 X 4 from an air cannon at 34 mph. This simulates 150 mph wind carrying large debris. This is used for openings below three stories and elevations of 30 feet or less.
- The "small missile" test is performed using small steel balls, or gravel to simulate the effects of airborne gravel and rocks. This is used for buildings over 3 stories or greater than 30 feet in height.
- Positive and negative pressure tests are performed to test the ability of the shutter system to withstand "static" (constant), "cyclic" (gusts), "negative static" (constant vacuum), and "negative cyclic" (vacuum gusts), wind pressures. Static testing is performed to determine the strength of the system when subjected to constant wind forces, both negative and positive. Cyclic testing is performed using wind bursts, 1 - 3 seconds in duration, which are gradually increased until the shutter fails. Ratings are then given to specify the test load. For example, a 41.2 per square foot (PSF) rating is equivalent to approximately 120 mph winds.

Types of Hurricane Shutters:

Hurricane Panels

Hurricane panels can be used anywhere on the ground level or that you can safely reach with a ladder. They are installed when needed and stored when not needed. They can be installed using the direct mount method, using wing nuts to attach to permanent fasteners in the wall, or installed in a track system that can be permanently mounted or removable. Hurricane panels are primarily used to reduce the overall cost of protecting your home, without compromising strength. Entry doors, sliding glass doors, or ground level windows are the best place to use hurricane panels. Installing hurricane panels above the first floor can be difficult and dangerous, although it can be done with the proper ladders and at least two people.

Accordion Shutters

Accordion shutters, one of the strongest shutter systems manufactured, are becoming a very popular system in this area because of the performance and price. This system is permanently installed, slides easily and quickly from side to side, and stacks out of view from inside the home when open. The operation is manual and the shutters can be closed from inside or outside most homes. Accordion shutters are very effective, especially when covering large areas of glass such as sliding glass door, window walls, patios, and openings above the first floor. Accordion shutter systems also provide security for extended absences from your home since they can be easily closed and locked.

Bahama Awning Hurricane Shutters

Bahama awning shutters offer wind protection as well as energy savings. They shade the window from heat gain due to direct sunlight and are very popular in South Florida. For hurricane protection, this system incorporates either a lexan sheet or solid sheet of aluminum to reinforce them for impact resistance. These shutters can be operated from inside only on single or double-hung windows.

Colonial Hinged Hurricane Shutters

Colonial hinged hurricane shutters look like a standard decorative shutter but have a much stronger attachment system. They too, incorporate either a lexan sheet or solid aluminum sheet to reinforce them for hurricane protection. These are fully functional and can also be used to provide energy savings when closed.

Roll Down Hurricane Shutters

Roll down shutters are probably the most recognized in the industry and offer combined good wind protection with ease of operation. These shutters are operated from inside the home, either manually or by electric motors, which also allows them to be used for security and energy efficiency. There are many options available with this type of system but the obvious advantage is for use above the ground floor level. Typically, roll down shutters are the most expensive of all the shutters systems but are also the easiest and quickest to operate.

Other Hurricane Protection Systems:**Impact Resistant Glass Systems**

Impact resistant glass has been used for many years in commercial applications such as bulletproofing, security and protection from high winds on skyscrapers. Residential applications are now becoming popular and window systems are now available that meet the Dade County and SBCCI impact certifications. One great advantage of impact resistant glass systems is that the protection is always there, 24 hours a day, 365 days a year, without having to install or close a shutter. These systems are typically expensive but should be considered if building a new home or replacing existing windows. Consideration should be given to the possibility of having to replace the window (or windows) if it is impacted hard enough to break the glass.

Impact Glass Film Systems

Window film systems have become very popular in recent years, especially for security. There are many manufacturers of window film as well as many different types of protection that is offered. If you are considering window film for hurricane protection, you should ask the vendor for all impact testing certifications and information. Because you will be installing a window film on an existing window, a film system that "anchors" to the window frame will usually provide you with the best protection. Once again, consideration should be given to the possibility of having to replace the window and film if it is impacted hard enough to break the glass.

EMERGENCY GENERATORS

When using an emergency generator during a power failure, extreme care must be taken to ensure your safety as well as others who might be working to restore your power. **NEVER CONNECT YOUR GENERATOR TO THE HOUSE CURRENT.** A licensed electrician must make all permanent connections. If not properly connected, a generator may feed electrical current to service wires and place power company service personnel in danger.

When using a portable generator, plug the appliances directly into the generator. Other safety tips are listed below:

- Do not operate your generator inside the home. It must be located in a well-ventilated area with airflow sufficient for cooling the engine and exhausting carbon monoxide fumes.
- Cover your generator and protect it from the elements to prevent electrical shorting and rusting. Make sure that nothing comes in contact with the exhaust system and that the exhaust is kept clear.
- Do not overload your generator. It must have a maximum wattage rating greater than your anticipated requirement.
- Never put fuel in your generator while it is running or the exhaust is still hot. The heat from the exhaust may ignite the fumes from the fuel.
- Never store gasoline inside your home or in an area where open flame is present, such as a water heater or other appliance with a pilot light or gas burner.

Frequently Asked Questions About Generators:

1. What size generator do I need?

Depending on their wattage output, generators will run anything from a small lamp to a number of large appliances.

The following chart can be used as a guideline to help you to determine what size generator you will need for the items you wish to operate. Most “total electric homes” of 1,200 to 3,000 square feet would require a 3,000 to 5,000 watt generator (not including the air conditioning/heating system). Some appliances, such as air conditioners, heaters, refrigerators, pumps and other motors, require more wattage at startup then a reduced wattage to operate. The startup wattage should be considered when determining the size of the generator.

Wattages on the following chart are averages. Check your appliance label for accurate wattage.

Appliance	Run Wattage	Start Wattage
Light bulb	40 - 100 watts	N/A
Television	400 watts	N/A
Microwave	800 - 1000 watts	N/A
Toaster Oven	1500 watts	N/A
Portable Heater (5,000 BTU)	1500 watts	1800 watts
Refrigerator/Freezer	1000 watts	3000 watts
Water Heater	3500 - 4500 watts	N/A
Coffee Maker	1300 watts	N/A
Air Conditioner (20,000 BTU)	3200 watts	7500 watts
Electric Blanket	500 watts	N/A
Clothes Washer	1000 watts	3500 watts

2. What is the difference between rated and maximum watts?

A generator's rated wattage is the amount of power produced continuously, while maximum wattage is the power produced for short periods of time (such as a motor starting).

3. How are generators protected from overload?

Most generators feature AC circuit breakers. In the event of overloading, the circuit breaker will shut the unit down and trip. If this occurs, the overload condition must be corrected and the circuit breaker reset.

4. How long will my generator run?

Runtime will vary depending on several factors. The fuel tank capacity and how hard the generator works are the greatest factors in determining the runtime of your generator. Most new generators will provide information on fuel consumption and various load percentages, as well as the capacity of your fuel tank. With these two pieces of information, you can determine the runtime of your generator. Example: If your generator uses 1 gallon of fuel per hour at full load, and the fuel tank capacity is 8 gallons, then you can operate your generator at full load for 8 hours. Remember, never fuel a generator while it is running or while the exhaust system is hot. You should also exercise your generator on a regular basis to ensure its operating condition.

5. What kind of extension cords should I use?

Since your generator will be outside, you should use an extension cord rated for outdoor use. Make sure that the extension cord is rated for the wattage of the appliance or appliances that you will be using.

COMMUNICATIONS PLAN

It is a good idea to develop a communications plan for family and friends who live out of the area to use to get information about your family following a hurricane. After a hurricane, telephone service may be interrupted. If you stayed at home or in the local area, it is often easier for a long distance call to be made out of the affected area than it is to receive calls from out of the area. If you evacuate, it may still be necessary to have a communications plan so that others know where you are.

Choose a family member or friend who lives out of the area to be the contact for all other family members and friends to get information. Prior to hurricane season each year, notify all of your family and friends of your plan and the name and telephone number of the contact person. If a hurricane is threatening, you then provide the information to the contact person on a regular basis. All other family members and friends then call the contact person for information.

PROTECTING VALUABLE RECORDS

Many of us assume that a flood, storm or other disaster will always happen to someone else and we may postpone the tasks of taking care of important family papers. Protecting family papers and records is just one part of being prepared to deal with natural disasters.

The following checklist is provided to suggest some convenient and effective methods of keeping family papers and records safe but available when they are needed most - following a natural disaster or death. Valuable papers to keep in your safe deposit box or other safe place may include:

1. Stock and bond certificates	13. Automobile Titles
2. Property records, deeds, titles or leases	14. Military Service Records
3. Household Inventory	15. Copyrights and Patents
4. Financial Contracts and Promissory Notes	16. Adoption/Custody Papers
5. Copy of Wills	17. Passports
6. Educational Diplomas and Degrees	18. Citizenship Papers
7. Birth Certificates	19. Religious Records
8. Death Certificates	20. Income Tax Returns
9. Marriage Certificates	21. Retirement Papers
10. Social Security Cards and Papers	22. Insurance Policies
11. Government Savings Bonds	23. A copy of a list of all your important papers
12. Important Receipts and Bills of Sale	

An up-to-date household inventory is a very valuable resource. When making an inventory, don't overlook tools stored in the garage, lawn furniture, or food in the freezer. The inventory should list each item with a description, model number, serial number, and date of purchase, purchase price and current replacement cost.

You should also include pictures or a video of each item in your inventory. An accurate inventory should help you determine if you have enough insurance to cover the contents of your home. Make sure you keep your inventory current by updating it annually.

Keep these valuable papers in a safe place at home. You might want to keep copies in your safe deposit box.

1. Guarantees and Warranties	5. Appliance Manuals
2. Employment Records	6. Current Bank Information
3. Employee Benefits Information	7. Health Records
4. Loan Payment Books	

HURRICANE CHECKLIST FOR BOATERS

More than 40,000 boats are registered along this area of the Gulf Coast. In addition, hundreds of boats visit this area every year. Levy County lacks sufficient harbor for all of these boats if a hurricane threatens.

About 25 percent of hurricane fatalities are boaters trying to secure their boats in worsening storm conditions. Be smart. Plan and prepare now. Don't become a hurricane statistic.

Preliminary Actions:

- Develop a plan of action before hurricane season begins. Locate a safe place to moor your boat during a hurricane. Obtain permission from the appropriate persons to moor your boat. For keelboats, make certain there is enough water at low tide.
- Make a practice run to check accessibility, depth of water, bridges, locating aids, and obstructions to navigation.
- Consolidate all records including insurance policies, a recent photo of your boat, boat registration, equipment inventory, marina lease agreements and telephone numbers of the appropriate authorities. Keep this information in your possession at all times. You may need them when you return to check your boat after the storm.
- Inform the local Marine Patrol or police officials of your secured vessel's identification and location.
- Vacations, business trips, or other reasons for being out of town during hurricane season require you to make plans for your boat's safety. Ask someone knowledgeable of boat safety procedures to care for your boat if necessary.
- Check your marina contract or policy. Know your responsibilities and liabilities with your boat and marina.

Equipment:

- Have available lines of adequate length (several hundred feet) and size (minimum 5/8") and preferably nylon, for strength and stretch. Have more line than you think you will need. Larger boats require larger diameter line.
- Use chafing gear for all lines to protect them from wear at contact points. Old rags are very good for this use. If water hose is used, make sure it is large enough for the line.
- Use fenders of adequate size and strength (old tires are good) to protect your boat from other boats, sea walls, etc.
- Have weather radio equipment and communications equipment available.
- Use oversize anchors and all methods available to improve holding power.
- Keep fuel tanks full during a hurricane.
- Keep batteries fully charged. An extra battery is a good idea. Keep bilge pumps in working order.

Securing the Boat:

- Prepare in advance, a checklist of things needed to secure your boat. Assemble equipment and supplies and keep them together in a convenient location.
- If available, you may choose to fasten your boat to a large tree. Some trees are stronger than manmade pilings. Ensure that the trees you have selected are alive and have a good root system.
- Storm tides in this area can reach over 20 feet above normal. When securing your lines, take care to consider tide fluctuation. If tied too short, your boat can be pulled under or be damaged as the tide rises.
- Wind direction reverses itself in a hurricane. Secure your boat for all directions. Use more than one anchor.
- Strip your boat of all moveable equipment such as canvas, sails, dinghies, radios, and cushions. Lash down all items that you cannot remove.
- Seal all openings to make your boat as watertight as possible. Air conditioning duct tape can be used as a sealer.
- If you leave your boat on a davit, leave the boat drains open.

Securing the Boat on a Trailer:

- Place wooden blocks between the frame member and the axle inside each wheel. Let about half of the air out of the tires. Fill the boat 1/3 full of water to help hold it down. The blocks will prevent damage to the trailer springs as a result of the additional weight.
- Tie your boat and trailer securely to a strong object such as a large tree using heavy-duty line.
- If your boat cannot be secured in this manner, remove the boat from the trailer. Partially fill the boat with water and tied down the trailer.

When a Hurricane Warning is issued:

- Leave early for safe harbor. Do not block the passage of other boats in the waterway. Cooperate with other skippers to secure their boats. Follow the directions of the Coast Guard. Remember, there may not be room for your boat at the last minute.
- Do not stay aboard your boat. Even small hurricanes have wind gust above 100 mph. Wind gust can blow someone off the deck. Rescue efforts are not possible during a hurricane. Even if you live on board, do not stay on board during a hurricane. Seek safe shelter on land.
- Do not attempt to leave the area. Seas are usually very rough when a hurricane watch or warning is issued and you would be required travel long distances.

After the Hurricane:

- Check for damage to your boat and equipment before moving it.
- When proceeding to homeport, watch carefully for obstructions, loose debris in the water, etc. Markers and other aids to navigation could be missing.
- Vessels that sink during a storm are not considered boating accidents and do not require a report by the Florida Marine Patrol. You may request an "Owner's Report Form" from your local Marine Patrol Office.
- Sunken vessels must be removed from the water. Do not abandon a sunken vessel.

HURRICANE SUPPLIES KIT

- Non-Perishable Food
- Drinking Water and Other Desired Drinks
- Special Dietary Items
- Baby Food, Formula, Diapers and Other Items
- Medications
- Battery Powered Radio and/or TV
- Flashlights or Lanterns
- Extra Batteries
- Manual Can Opener
- Disposable Plates, Cups and Utensils
- Disposable Washcloths and Towels
- First Aid Kit
- Ice Chest and Ice
- Matches
- Non-Electric Clock
- Sterno
- Toiletries
- Fuel Can
- Plastic Drop Cloth
- Fire Extinguisher
- Cellular Phone With Extra Batteries
- Portable Generator
- Extension Cords
- Tool Kit
- Sun Screen
- Extra Clothes
- Extra Cash
- Insect Repellent
- Books, Magazines, Toys, Cards and Games for Entertainment
- Important Papers (Insurance Policies, Bank Account Numbers, Family Contacts, Medical Information)

EMERGENCY FOOD SUPPLIES

You don't need to go out and buy unfamiliar foods to prepare an emergency food supply. You can use canned foods, dry mixes and other staples on your cupboard shelves. In fact, familiar foods are important. They can lift morale and give a feeling of security in times of stress. Also, canned foods won't require cooking, water or special preparation.

If your water supply is limited, try to avoid foods that are high in protein, and don't stock salty foods, since they will make you thirsty. Try to eat salt-free crackers, whole grain cereals and canned foods with high liquid content. The following are recommended short-term food supplies.

Short-Term Food Supplies

Following a hurricane, electrical power may be out for at least several days, making it difficult to buy food, therefore your emergency food supply should last at least 72 hours. Even though it is unlikely that an emergency would cut off your food supply for a greatly extended period, you might consider preparing a supply that will last a week or longer.

The easiest way to develop an extended stockpile is to increase the amount of basic foods that you normally keep on your shelves. Remember to compensate for the amount you eat from other sources (such as restaurants and work lunches) during an average period. You may already have an extended supply of food on hand. Keeping it fresh is simple. Just rotate your supply once or twice a year.

Special Considerations to Keep in Mind

As you stock food, take into account your family's unique needs and tastes. Try to include foods that they will enjoy and that are also high in calories and nutrition. Foods that require no refrigeration, preparation or cooking are best. Individuals with special diets and allergies will need particular attention, as will babies, toddlers and the elderly.

Nursing mothers may need liquid formula, in case they are unable to nurse. Canned dietetic foods, juices and soups may be helpful for the ill or elderly. Make sure you have a manual can opener and disposable utensils. And don't forget non-perishable foods for your pets.

How to Store Your Short-Term Stockpile

Keep canned foods in a dry place where the temperature is fairly cool (not above 70 degrees Fahrenheit and not below freezing). To protect boxed foods from pests and extend their shelf life, store the boxes in tightly closed cans or metal containers.

Rotate your food supply. Use foods before they go bad, and replace them with fresh supplies, dated with ink or marker. Place new items at the back of the storage area and older ones in front. Your emergency food supply should be of the highest quality possible. Inspect your reserves periodically to make sure there are no broken seals or dented containers.

How to Cook if the Power Goes Out

For emergency cooking you can use a fireplace, or a charcoal grill or camp stove outdoors only. You can also heat food with candle warmers, chafing dishes and fondue pots. Canned food can be eaten right out of the can. If you heat in the can, be sure to open the can and remove the label first.

Consider the amount of cooking time needed for particular foods. If you have limited heat for cooking, choose foods that cook quickly. Do not cook frozen foods unless you have ample heat for cooking. Most frozen foods require considerably more cooking time and heat than canned goods.

Observe Health Precautions

If you are without refrigeration, open only enough food for one meal. Some foods can be kept a short time without refrigeration. Cooked vegetables, meat, and meat dishes can be kept un-refrigerated from noon until the evening meal. Do not keep these dishes overnight without refrigeration.

Do not serve foods that spoil easily, such as ground meats, creamed foods, hash, custards, meat pies, and any food containing mayonnaise. These foods are high risk for botulism poisoning.

If necessary, substitute canned and powdered milk for fresh milk. Canned milk will keep safely for a few hours after you open the can. If you are using milk to feed a baby, open a fresh can for each bottle. Use only boiled or distilled water to mix powdered milk. Use powdered milk immediately after it is mixed.

Prepare and eat foods in their original containers, if possible. Water for washing dishes may be scarce.

SHELTER SUPPLIES KIT

Plan on going to an Evacuation Shelter? If so, there are some things that you should know about going to a shelter. Hurricane evacuation shelters are provided for public use in the event a hurricane evacuation becomes necessary and you have no other place to go. Hurricane evacuation shelters are usually crowded, noisy, and there are no generators, so when the power goes out, they are dark and unventilated. It is highly recommended that if you plan to evacuate your home, you make arrangements to stay with a friend or relative who lives outside of the evacuation area or flood zones, in a well constructed home. You will probably be more comfortable, certainly in a less crowded environment and among friends.

Remember, alcohol, weapons and pets are not permitted in public shelters.

If you go to a public shelter, you will need to take the following items:

- A change of clothing, rain gear and sturdy shoes.
- Toiletries and personal items.
- Blankets or sleeping bag, and a pillow.
- Identification.
- Games, toys, books or other entertainment.
- Special items needed for infants or elderly family members.
- Any special dietary needs.
- Non-perishable foods for snacks.
- Battery operated radio and flashlight with extra batteries.
- Any medications that you take.

WATER

Stocking water reserves and learning how to purify contaminated water should be among your top priorities in preparing for an emergency. You should store at least a one-week supply of water for each family member. While everyone's needs differ, depending on age, physical condition, activity, diet and climate, the general rule of thumb is to store a total of one gallon of water, per person, per day.

How to Store Emergency Water Supplies

You can store water in thoroughly washed plastic, glass, fiberglass or enamel-lined metal containers. Heavy plastic containers such as soft drink bottles work best and are more durable. Of course, you can always purchase bottled water from a local retailer but if you choose to store tap water, you should treat it with a preservative, such as chlorine bleach, to prevent the growth of microorganisms. Use liquid bleach that contains 5.25 percent sodium hypochlorite and no soap.

Add four drops of bleach per quart of water (or two teaspoons per 10 gallons), and stir. Seal your water containers tightly, label them and store them in a cool, dark place.

Three Easy Ways to Purify Water

If you run out of stored, purified water you can always use the water stored in your home water heater or plumbing. You can also seek water from sources outside your home such as rainwater, streams, ponds, etc but it must be purified before use.

In addition to having a bad odor and taste, contaminated water can contain microorganisms that cause diseases such as dysentery, cholera, typhoid and hepatitis. You should therefore purify all water of uncertain purity before using it for drinking, food preparation or hygiene.

There are many ways to purify water. None are perfect. Often the best solution is a combination of methods. Before purifying, let any suspended particles settle to the bottom, strain them through layers of paper towel or clean cloth. Three easy purification methods are outlined below. These measures will kill microbes but will not remove other contaminants such as heavy metals, salts, and most other chemicals.

1. Boiling is the safest method of purifying water. Bring water to a rolling boil for 10 minutes, keeping in mind that some water will evaporate. Let the water cool before drinking. Boiled water will taste better if you put oxygen back into it by pouring it back and forth between two containers. This will also improve the taste of stored water.
2. Chlorination uses liquid chlorine bleach to kill microorganisms. Add two drops of bleach per quart of water (four drops if the water is cloudy) stir and let stand for 30 minutes. If the water does not taste and smell of chlorine at that point, add another dose and let stand for another 15 minutes.
3. Purification tablets release chlorine or iodine. They are inexpensive and available at most sporting goods stores and some drugstores. Follow the package directions. Usually one tablet is enough for one quart of water. Double the dose for cloudy water.

There is also a more rigorous purification method that will remove other contaminants. Distillation will remove microbes, heavy metals, salts and most other chemicals. It involves boiling water and then collecting the vapor that condenses back to water. The condensed vapor will not include salt and other impurities. To distill, fill a pot halfway with water. Tie a cup to the handle of the pot's lid so that the cup will hang right side up when the lid is upside-down. Put the lid on the pot upside-down (making sure the cup is not dangling into the water), and boil the water for 20 minutes. The water that drips into the cup from the lid is distilled.

PETS

Pets are not allowed inside public hurricane shelters due to public health and safety reasons. Your pet is your responsibility and advanced planning is essential. It could save your pet's life and provide some comfort to you and your family during the storm.

If you evacuate and take your pet with you, make sure that pets are permitted at your planned destination. Some hotels and motels do not accept pets, so check this when making your reservations. You may choose to board your pet at a local kennel or veterinary clinic.

When transporting your pet, use a pet carrier (portable kennel). These are available at many local department stores and pet shops. Your pet should be able to stand up and turn around inside the carrier. Make sure that you have an ample supply of food and water for your pet as well as any medications. Be sure your pet's vaccinations are up-to-date. This is especially important for those of you who plan to board your pet. Most boarding kennels will require proof of current rabies and distemper vaccinations before accepting your pet.

Be sure that your pet wears a properly fitted collar with a current license and rabies tag at all times.

If you plan to evacuate and leave your pet at home...

- Prepare an area for your pet to use inside the house away from windows. Consider an easily cleaned utility room, garage, bathroom or tiled area.
- Do not leave your pet outside or tied up during a storm.
- Leave only dry foods that are relatively unappealing to prevent overeating. Use sturdy food containers.
- Do not leave any pet vitamins or mineral supplements. Overeating of these treats may cause salt poisoning.
- Leave water for pets in a sturdy, no spill container or bathtub.
- Birds must eat daily to survive. If you must leave them behind, use special food dispensers.
- Never leave a cat alone in the same room with a dog. Even if they are normally friendly, the storm may scare them and trouble may ensue.
- Provide pet access to high places, such as counter tops, in case your home floods.
- Leave difficult or dangerous animals in special crates or cages.

After the storm, be careful in allowing your pet(s) outdoors. Familiar scents and landmarks may be altered. Your pet may become confused and lost. Snakes and downed power lines are two of the dangers your pet may encounter.

DURING THE STORM

If you stay at home during a hurricane, you should take the following precautions in addition to those mentioned in the “Before the Storm” section.

1. Stay away from windows and doors, even if they are covered. If you live in a two-story home, go to an interior first floor room.
2. As the storm approaches, move your family to an interior section of the house such as a hallway, bathroom or closet.
3. Close all interior doors and brace exterior doors if possible.
4. Lie on the floor, under a sturdy object if possible. Some protection is afforded by covering with a mattress during the height of the storm.
5. If the eye of the storm passes over, it will be calm for a short period of time. **REMAIN INDOORS!** As soon as the eye passes over, winds will increase rapidly to hurricane force from the opposite direction.
6. Remain calm. It may take several hours for the storm to pass.
7. Listen to local media for the most current information.

AFTER THE STORM

1. Keep listening to your local radio or TV stations for information. If you evacuated, return home only when authorities advise that it is safe.
2. Cooperate fully with local authorities and public safety officials.
3. Drive only if it is absolutely necessary. Immediately following the passage of the storm, debris and floodwaters may be covering roadways, making them impassible. Emergency crews will be working to clear roadways but it may take hours or even days to clear them all. Avoid sightseeing. Roads may be closed for your protection so if you encounter a barricade, turn around and go another way.
4. Do not drive in flooded areas. Avoid weakened bridges and washed out roadways.
5. Stay on firm ground. Moving water only six inches deep can sweep you off your feet. Standing water may also be electrically charged from downed power lines.
6. Beware of downed power lines. Lines may be charged and dangerous.
7. Beware of snakes, insects and animals driven to higher ground by floodwaters.
8. Enter your home with extreme caution. Beware of fallen objects or damaged roofs and wall sections. Watch for nails, splinters, holes in walls or floors, and wet or falling sections of ceiling, undermined foundations and gas leaks. Use flashlights for light. Do not use matches, torches or other open flame.
9. Remove shutters or plywood and open windows and doors to ventilate or dry your home if necessary.
10. Check gas, water and electrical lines and appliances for damage. Do not attempt to repair damaged gas or electrical lines. Call a professional.
11. Do not drink or prepare food with tap water until you are certain that it is not contaminated. The Health Department will issue advisories regarding drinking water in your area.
12. If your home has been flooded, flush plumbing fixtures with buckets of water to be sure they are open. Have health authorities inspect your sanitary disposal system. Water may have backed up into the septic tank, which in turn backs up into the plumbing system. This could cause a health hazard.
13. Avoid using candles and other open flames indoors. Use a flashlight or other battery powered lighting.
14. Do not use food that has come in contact with floodwaters. Some foods can be salvaged if properly packaged. Consult local health officials if in doubt.
15. Use the telephone for emergencies only.
16. Start clean up as soon as possible, especially if your home was flooded. Take pictures of all damage before you begin clean up or repairs, for insurance purposes. Thoroughly dry and clean your house before trying to live in it.
17. Take all furniture and rugs outside to dry.
18. Dry and air bedding, clothing, and rugs as soon as possible to prevent mildew.
19. Be sure children are safe and being cared for at all times. Never leave young children alone or allow them to play in damaged buildings or unsafe areas.
20. Give special attention to cleaning children's toys, cribs, playpens, and play equipment. Boil any items a toddler or baby might put in his/her mouth. Discard stuffed toys, waterlogged toys, and non-cleanable toys.
21. Wear protective clothing on legs, arms, feet and hands while cleaning up debris. Wear rubber gloves while scrubbing flood damaged interiors and furniture.
22. Never connect portable generators to your house. Use them only to run the necessary appliances and plug the appliance into the generator.

REFRIGERATED AND FROZEN FOOD

After a hurricane, electrical power may be out for several days. Refrigerated and frozen foods may spoil after a few days without power but there are some steps that you can take to help keep your food longer. Prior to a storm, turn your refrigerator and freezer to the coldest setting. If possible, remove foods from your refrigerator that you plan to use during and immediately after the storm and place them in an ice chest filled with ice. Freeze plastic containers of water and place in your freezer and refrigerator, then do not open the doors unless absolutely necessary. This will help maintain food-preserving temperatures for a longer period. You can also use dry ice in your freezer. It is also a good idea to cover the freezer with quilts or blankets, making sure that you do not obstruct any air ventilation openings.

FOODS IN THE FREEZER:

Thawing rate

With the door closed, food in most freezers will stay frozen 1 to 3 days, even in the summer. The thawing rate depends on:

- The amount of food in the freezer. A full freezer will stay cold longer.
- The kind of food in the freezer. A freezer full of meat will stay cold longer than a freezer full of baked goods.
- The temperature of the food. The colder the food, the longer it will stay frozen.
- The quality of the freezer. A well-insulated freezer will keep food frozen longer than one with little insulation.
- Size of the freezer. The larger the freezer, the longer food will stay frozen.

Thawing and Refreezing

- Foods that have been frozen and thawed require the same care as foods that have never been frozen. You can safely refreeze foods if they still contain ice crystals. If thawed less than 2 days, you may refreeze food that has been kept cold (about 40 degrees). Use refrozen food as soon as possible.
- Partial thawing and refreezing does reduce the quality of foods, particularly fruits, vegetables and prepared foods. Red meats are affected less than many other foods by partial thawing and refreezing.
- Thawed fruits can be refrozen if they still taste and smell good. Fruits usually ferment when they start to spoil.
- Care should be taken in determining whether or not thawed meat and poultry should be refrozen. Meats and poultry become unsafe to eat when they start to spoil. Therefore, each package should be examined before determining whether or not it should be refrozen. If the color or odor of the thawed food is poor or questionable, dispose of it, as it may be dangerous to eat.
- Do not use melted ice cream.

Foods in the Refrigerator

- Meat will keep much longer if it is thoroughly cooled as soon as it is taken out of the refrigerator. You can extend your food supply by cooking all unspoiled meat immediately, and refrigerating it until you are ready to reheat and serve it.
- Meats least apt to spoil quickly are large, solid, de-boned pieces of fresh beef or lamb, such as rump roast or leg of lamb.
- Chopped meats, like hamburger, spoil quickly. Pork, fish and poultry also spoil quickly. Throw them out if they have been out of refrigeration for several hours or more. Do not trust your sense of smell with these foods.
- Cured meats, such as ham or bacon, will be safe to eat, even after several days without refrigeration.
- Eggs can be kept several days in a cool place without refrigeration, if the shell is not cracked.

- Hard cheese will usually keep well at room temperatures. Other cheeses, such as cream cheese, opened containers of cheese spread, and cottage cheese, spoil quickly.
- Milk spoils quickly without refrigeration. Do not use any milk with a sour smell or taste.
- Custards, creamed foods, or any foods containing mayonnaise, spoil quickly. These foods are likely growing places for organisms causing food poisoning. Throw out any of these foods if they reach room temperature. Spoilage often cannot be detected since there may be no bad odor or taste.

CONTAMINATED FOODS

Contaminated food can be a problem following any storm involving flooding.

Floodwaters can carry silt, raw sewage, oil, or chemical wastes. Bacteria in floodwater can contaminate food, making it unsafe to eat.

Inspect any food in the house after a flood. Floodwater may have covered it, dripped on it, or seeped into it. Some foods (see below) are protected by their containers. If you are in doubt about the safety of food, throw it out. Do not risk disease.

Use the following guidelines when deciding which foods to discard and which to save:

Food to Discard

Do not attempt to save the following foods:

1. Opened containers and packages, which have come in contact with floodwater.
2. Unopened jars and bottles with paper seals, such as those containing mayonnaise or salad dressing.
3. Containers of spices, seasonings, and flavorings.
4. Flour, sugar, and coffee in canisters.
5. Paper, cloth, fiber, or cardboard boxes, even if the contents seem to be dry. This includes salt, cereals, pasta products, rice, and any "sealed" packages of crackers or cookies within a larger paper box.
6. Dented, bulging, or leaking, tin cans. Cans, which have been tossed about and are found far from their normal storage spot. Seams on these cans may have been weakened or their seals broken, causing contamination or spoilage.
7. Jam or jelly sealed with paraffin.
8. Containers with non-sealed, fitted lids, such as cocoa or baking powder.
9. Commercially bottled carbonated beverages, if the cap is crusted with silt.
10. Foil or cellophane packaged foods.
11. All fresh vegetables and fruits which do not have a peel, shell, or coating, that can be removed before use; leafy vegetables. Also, fruit with damage at the stem end that would allow water to contact the inside.
12. Fresh meat, fish, and poultry, which have been in contact with flood waters.
13. Home canned foods, even if the jar seems tightly sealed. NOTE: In some cases, tightly sealed home canned foods may be safe, depending on the flood conditions. If your supply of canned food is extensive, contact the Levy County Cooperative Extension Service. The Extension Service can advise you on how to evaluate your canned goods.

Food to Use

The following foods are safe if you wash and sanitize their containers before use. Also wash, sanitize, and peel fruits or vegetables:

1. Undamaged tin or aluminum cans. For added safety, boil food for 10 minutes before using. Be sure to wash and sanitize the food container BEFORE opening the can.
2. Potatoes. Wash, sanitize, dry, peel, and cook before using.
3. Citrus fruits. Wash well, sanitize, and peel before using.
4. Apples and other fruits can be sanitized, peeled, and cooked before eating. Do not eat raw fruit, even if it has been sanitized.

To Disinfect Cans and Commercial Glass Jars:

All cans and commercial glass jars must be washed and sanitized before they are opened.

1. Remove labels and wash the container in a strong detergent solution. Use a scrub brush. Remove all silt.
2. Immerse scrubbed containers for 15 minutes in a chlorine solution. Household bleaches contain from 2% to 6% chlorine. The amount of bleach to add to the water depends on the percent of chlorine used:

% of chlorine in bleach	Volume of bleach to add to 1 quart of water	Volume of bleach to add to 1 gallon of water
2%	1 tablespoon	2 tablespoons
4%	3/4 tablespoon	1 tablespoon
6%	1/2 tablespoon	3/4 tablespoon

3. Remove containers from the chlorine solution. Air-dry the containers before opening. Re-label the container if not used immediately. Use the canned food as soon as possible since the container may rust. Store containers in a clean, safe place.
4. The chlorine solution is not reusable. Make a fresh solution after each 15-minute time span.

To Disinfect Fruits and Vegetables:

1. Wash the fruit or vegetable in a strong detergent solution with a scrub brush. Remove all silt.
2. Soak the fruit or vegetable in a chlorine solution for 15 to 20 minutes.
3. Rinse thoroughly with safe drinking water.
4. Peel if possible and cook thoroughly before eating. Refer any specific questions to health authorities or your County Extension Agent. If in doubt, throw it out!

CLEAN-UP AND REPAIR AFTER THE STORM

Priorities for clean up and repair will vary with the type and severity of the damage. Buildings may not be habitable during the repair process. Before purchasing cleaners and disinfectants, take inventory of what needs to be cleaned (walls, floors, appliances, etc). Buy only cleaning products for the type of work required.

- Take photos of all damage for insurance claims and tax deductions. Keep records of all expenses.
- Assemble a first aid kit for minor injuries that may occur while cleaning or repairing.
- Examine the building's structure. Check foundations for settling, cracking, or undermining. Examine walls, floors, and windows to determine what repairs are necessary. You may need to hire a professional contractor, architect or engineer to perform a structural evaluation. Consider temporary repairs until extensive work can be completed.
- Make temporary repairs to holes in roofs, walls and windows. A licensed contractor should make permanent repairs.
- Have a licensed electrician inspect and repair the electrical system. Take electrical appliances to a professional service repairman for necessary inspection and repair.
- Repair and clean your water system. Disinfect wells and water systems.
- Shovel out mud and silt before it dries.
- Wash flooded walls and floors with a hose before they dry. Start at the bottom and work upward.
- Scrub and disinfect walls and floors.
- Start your heating system, if possible. The heating system may need cleaning and reconditioning before it is operational. Use the heat to speed up drying.
- Dry out walls and floors. If necessary to improve drying, strip the walls of their drywall to the water level. Drill holes in exterior siding. Complete drying may take months.
- Repair buckled walls and floors.
- Make decisions about saving or discarding household contents. Clean, disinfect, and dry household items, furniture, carpets, clothing, dishes and bedding.
- Treat items for mildew.
- Care for damaged trees, shrubs, and lawn. It is important that broken limbs and fallen trees be removed as soon as possible to avoid any fire hazard as damaged foliage dries.
- Repaint, repair, and refinish all salvageable items.

CHECKING DAMAGED BUILDINGS

SAFETY PRECAUTIONS FOR ENTERING DAMAGED BUILDINGS:

1. Check for structural damage. Make sure the building is not in danger of collapse. If you are unsure of the structural integrity of the building, do not enter. A building inspector, architect, engineer or professional contractor may need to inspect the building before you enter.
2. If you must enter a building at night, carry a battery-operated flashlight. Do not use a flame as a source of light. Do not smoke.
3. Turn off any outside gas lines at the tank or meter. Let the building air for several minutes to remove gas fumes or odors.
4. Look for obvious electrical problems, shorts, or broken wires. Stay clear of broken wires and obvious problems. Have a licensed electrician inspect and repair any damage to your electrical system.
5. Watch for loose ceiling material.
6. Open as many doors and windows as possible to remove moisture, odors, and flammable or toxic gases. If windows are stuck tight, take off window strips and remove the entire window sash. If a door is stuck, drive out the door's hinge pins with a screwdriver and hammer, and remove the door.

FLOOD DAMAGE:

Foundations

If you are not qualified to judge the stability of a foundation, hire a contractor to make this inspection. Examine foundations and supports for undermining. If walls or foundations have settled or cracked, stay clear, and call a professional contractor.

Walls and Ceilings

1. Wash out mud, dirt, and debris as soon as possible. Clean walls and floors before mud and silt dries.
2. Start cleaning from the top floor or upper limits of flooding and work down toward the first floor.
3. Check walls with a level or plumb bob.
4. Brace walls as necessary.
5. To speed up drying of flooded or wet studding and insulation, remove all siding strips or plaster from upper and lower parts of the walls. Do not repaint walls until they are completely dry. This could take several months if the building has been flooded. Wet insulation is probably ruined and should be discarded.

Floors

1. Flooded or wet wooden floors will dry out slowly. Drying too quickly could cause the floors to crack or split from uneven drying. If the central heating system is working, keep the temperature of the house at 60 to 70 degrees to hasten drying without causing additional problems.
2. To prevent further buckling and warping, drive nails where the floor tends to lift or bulge.
3. After floors are completely dry, plane or sand them level.
4. If floors are too badly damaged to be refinished, lay a new floor over the old, or cover with carpet, vinyl or linoleum.
5. If a concrete floor is badly damaged, break it up and install a new floor. If the damage is minor, patch the floor with a rich mixture of concrete containing no coarse gravel aggregate.

WIND DAMAGE:

Wind damage to buildings is not always readily apparent. After a severe windstorm, hurricane, or tornado, examine all buildings for hidden damage. Undetected damage could weaken a structure, creating a hazard. Prompt repair, even if only temporary, is usually less expensive in the long run.

Roof

Inspect the roof. Check the roof on the inside and outside. Don't check the roof from the ground unless the structure has severe damage to the walls or foundation, or it is too steep or too high to climb. If a ground inspection is necessary, use binoculars. When checking the roof, look for:

1. Damaged or missing shingles. Check asphalt shingles for cracks at the butt end where they may be weak from flexing. Make sure individual shingles have not blown off. Thoroughly inspect shingles on the ridge, gable ends, and eaves. Use plastic sheeting or roll roofing for temporary repair on solid deck roofs covered with asphalt shingles, wood shingles, or roll roofing. Use patching compounds to repair minor leaks. Look for loose nails on metal roofing. Inspect the entire roof, with particular attention to gable ends, eaves, and ridge cap. If the nails are loose, hammer them back in as soon as possible. If the nails don't hold when hammered back in, take the nails out and put #12 or #14 metal screws in the old nail holes. Use aluminum screws on aluminum roofing, and steel screws on steel roofing. Re-nail the roofing material 3 to 4 inches away from the old nail holes with ring or screw type nails. Replace damaged metal roofing.
2. Potential leaks. On a sunny day, go outside the building, close the doors, and inspect the roof carefully. While looking for holes in the roof, inspect the ridge, gable ends, and eaves, for possible structural separation.

Foundation

Inspect the foundation. The plate should not be separated from the studding where the foundation meets the walls. On block foundations, inspect the mortar joints to make sure the block with the plate bolt hasn't separated from the wall. On stone or concrete foundations, check to see that the plate bolts are not loose.

Interior

Inspect the interior of the building for structural damage. Check the framing for ridge separation, loose knee braces, and loose rafters or trusses where they join the walls.

CHECKING AND RESTORING ELECTRICAL SERVICE

**It is highly recommended that you have the electrical system in your home or business inspected by a licensed electrician. Having the inspection performed by a professional is the only safe way to ensure that your electrical system is not damaged and is safe for use. After a hurricane, it is sometimes difficult to schedule a professional in a timely manner and the following information is provided if you choose to perform your own inspection and temporary repairs. You must follow these safety procedures to insure your safety. All permanent repairs must be permitted and inspected by a local building official and will probably require the services of a licensed electrician.

Caution: Always wear rubber gloves and rubber soled shoes or boots for all work with and around electrical circuits. Rubber is an insulator. It will help protect you from electrical shock.

FLOODING:

Turning The Power Off

When touching any switches, stand on a dry board and use a dry stick or rubber gloves to pull handles.

1. Turn off the main breaker or pull the main fuse, and any other breakers or fuses that control outbuildings.
2. Remove or unscrew all branch circuit fuses or turn all circuit breakers off to insure that all power is off. This should be done on the inside electrical panel as well as the outside electrical panel.
3. Disconnect all plug-in equipment and turn off the switch at each piece of permanently installed equipment. Turn off all light switches and unscrew all light bulbs.

Clean And Dry The System

If floodwater covered any of your first floor electrical outlets and switches, they are probably wet. Outlets and switches must be dried before service can be restored.

1. Make sure all electrical power is off as described above. Remove the covers from switches, convenience outlets, and other electrical connections. Clean out mud and dirt with clean water using a garden hose and nozzle. Allow wires and connections to dry.
2. Use extreme caution in cleaning mud and dirt from the outside main power box. Since the power lines enter here, and the only way to insure that the power is off is to have the meter removed or disconnected by the local power company, this is the most dangerous part of the electrical system. Turning off the main breaker will not turn off all of the electrical power in this circuit box and the box may be hot. Always assume that the power lines are hot, even if a test light shows the power is off. Never hose out a hot switchbox, therefore you should only hose out the main outside power panel if the meter has been removed and capped, or if the power company has disconnected your service from the main line. Do not try to remove the electric meter. A licensed electrician or the power company must do this. Always wear rubber gloves and rubber soled shoes or boots. Do not touch anything wet or stand in water while working on the electrical panel.
3. Allow electrical wires and connectors to dry completely. This may take days, depending on how wet the system is and if any heat is available.

OTHER DAMAGE:

Checking The System For Electrical Shorts And Other Damage

If the building has been damaged by wind, it must be inspected for damage to the electrical system. A licensed electrician should perform this inspection. If an electrician is not available, the following information is provided to assist you in performing the inspection yourself. You must follow all of these safety tips to insure your safety.

1. Some damage may be obvious. There may be exposed, loose or dangling wires. Always consider these wires hot until all of the procedures outlined in "Turning Off The Power" above, have been completed. If there is obvious damage, loose, exposed or dangling wires, do not attempt to make repairs or perform any of the checks below. Repair work must be permitted, inspected and performed by a licensed electrician. If there is damage to wires that enter your building, past the point where the power company service wires connect, it is your responsibility for repair. The power company is not responsible for the entry service to your building.
2. If there is no obvious damage, exposed, loose, or dangling wires, it may be safe for you to perform your own inspection and testing of your electrical system. Always wear rubber gloves and rubber soled shoes or boots when performing these tasks.
3. To begin the inspection and test, make sure that all breakers are turned off or all fuses are removed from the electrical panel inside the home. Turn the main breaker on or plug in the main fuse on the outside main electrical panel and look for sparks or smoking wires, which would indicate a short. If you see any evidence of shorts, turn the main breaker off or pull the main fuse, and terminate the inspection and test now. You will need to have a licensed electrician make repairs and perform an inspection before power can be restored.
4. If there are no problems after turning on the main breaker or plugging in the main fuse, you may proceed with the test. If you have fuses instead of breakers, pull the main fuse and replace or screw in all branch fuses that were removed or unscrewed when you turned the power off. Now plug in the main fuse again and proceed with the test as directed below.
5. If you have breakers and there is a main breaker in the inside electrical panel, make sure all of the branch breakers are off and turn the main breaker on.
6. Screw in one fuse or turn on one circuit breaker. If the fuse doesn't blow or the breaker does not trip, wait at least 15 minutes to check for other problems. Smoking wires and sparks will indicate trouble. If there is any problem or if the fuse blows or breaker trips, the circuit should be turned off until repairs can be made by a licensed electrician. If there are still no signs of a problem, carefully inspect all parts of the circuit you are checking (i.e. Plug an appliance into each outlet and turn on all lights on the circuit).
7. Repeat step 6 for each branch circuit, one at a time.
8. If you had flooding and performed the cleaning measures above and have checked all the circuits and found them in good condition, once again remove all fuses or turn off all breakers and remove the main fuse or turn off the main breaker. Replace wires in electrical receptacles, switches and junction boxes. Replace covers and then check each branch circuit again (step 6) after replacing the main fuse or turning the main breaker back on.
9. For the next 24 hours, be careful when using receptacles and switches. There may be delayed problems that could cause electrical shocks. Do not plug in electrical appliances that have been flooded until they have been checked or repaired by a professional.
10. If some of the circuits are faulty, it should be turned off and not used. Use only undamaged circuits. Do not overload undamaged circuits with too many lights or appliances until normal capacity is restored. A licensed electrician must repair all faulty or damaged circuits.

FINDING AND REPAIRING LEAKS IN ROOFS

Causes of Leaks

1. Defective flashing may be detected by wet spots near a chimney or outside wall. On sloping roof valleys and at junctions of dormers and the roof, look for corroded, loose, or displaced flashing. Defective flashing often occurs around dormers and plumbing vent pipes.
2. On flat roofs, check for choked or clogged downspouts. Accumulated water on the roof above the flashing may cause leaks.
3. Roofing, especially wood or composition shingles usually deteriorates first on southern exposures. Check southern slopes for cracking or deterioration.
4. Wet spots on plain roofs are usually caused by missing shingles or holes in roofing. To find holes, look for light coming through places in unsealed attics. Stick a straw through the hole to mark the spot on the outside.

Making Temporary Repairs of Leaks

Methods of repair will depend on the kind of roofing and the nature and extent of the leak.

1. Missing shingles: Replace missing shingles with similar shingles or pieces of rust-resistant metal. In an emergency you can use metal cut from a tin can.
2. Paint the metal on both sides and slip it under the upper layer of shingles. Be careful not to dislodge or loosen good shingles.
3. Cut out old nails with a long thin cold chisel.
4. Cover exposed nails with roofer's cement.

Holes

1. Patch small holes with metal screws. Use neoprene washers in low places.
2. Repair large holes by using a metal sheet or heavy plastic or canvas and elastic roofer's cement. Apply cement carefully over the patch. Keep the plastic or canvas tight and cover with roofer's cement to keep from sagging into the hole.

Cracks

1. Brush on two coats of roof coating.
2. Place a heavy cloth, plastic or light canvas over the cracked area, extending the cloth approximately 6 inches beyond the cracked area. Use a roofing brush to smooth out the material and brush on two thin coats of roof coating. Keep cloth smooth while brushing. Do not walk on any patched section.

MAKING AN INSURANCE CLAIM AFTER A STORM

The following tips may be helpful when filing and settling an insurance claim following a disaster. Remember, you bought insurance to take care of emergencies and you should be satisfied with the way insurance companies honor their part of the contract.

It is up to you to make sure that you fully understand what your insurance policy covers, deductibles, and the amounts of coverage. Contact your insurance agent and request a meeting to discuss your insurance coverage. Standard homeowners insurance does not cover damage caused by rising water. If you live in a low-lying area, a flood zone or storm surge area, you should purchase Flood Insurance.

It is very important that you have an inventory of all items in your home. That inventory should include a description of the item, serial and model numbers, original purchase price and a picture of the item. Keep this inventory in a safe place or take it with you if you evacuate. This will make it easy to prove your losses and ensure that you claim everything that was lost or damaged.

Making a Claim

1. Contact your insurance agent as quickly as possible. Let them know about your losses. If you are relocated temporarily, provide the address and phone number that you can be reached. The claim process may begin in one of two ways. Your insurance company may send a claim form for you to complete or an adjuster may visit your home first, before you are asked to fill out any forms.
2. Take pictures of the damage, if possible, before beginning repairs. If you repair small items such as TV antennas, window covering, or fences before the adjuster arrives, it may be difficult to prove the damage. Pictures can also be used as evidence for tax deductions.
3. Protect your property from further damage or theft. Patch roofs temporarily. Cover broken windows or holes in walls with plywood, canvas or plastic. If household furnishings are exposed to weather, move them to a safe location for storage. Save receipts for what you spend and submit them to your insurance company for reimbursement. Do not make permanent repairs without first consulting your agent. Unauthorized permanent repairs may not be reimbursed.
4. Most homeowner's policies cover additional living expenses. Your insurance company should advance you money if you need temporary shelter, food, and clothing because you can no longer live in your home and your clothes have been ruined. They will also advance you money if you need to replace major household items immediately to continue living there.
5. Keep receipts for everything you spend. Make sure the check for additional living expenses is made out to you and not your mortgage company, bank or other lender. This money has nothing to do with repairs to your home and you may have difficulty depositing or cashing the check without their signature.
6. If your car was damaged and you have "comprehensive" coverage in your auto insurance policy, you should also contact your auto insurance company.
7. Keep accurate records:
 1. A list of cleaning and repair bills, including materials and the cost of rental equipment.
 2. A list of any additional living expenses you incur if you have to temporarily move out of your home due to severe damage. Keep all motel and restaurant receipts as well as car rental receipts.
 3. A list of all actual losses, including furniture, appliances, clothing, paintings, artifacts, food and equipment, regardless of your intent to replace the objects. Photographs of ruined homes or objects are excellent evidence for later documentation.
8. Try to document the value of each item lost. Bills of sale, canceled checks, charge account records and insurance evaluations are good evidence. If you have no such records, estimate the value, and give the place and date of purchase.

Preparing for the Adjuster

- An adjuster is a person professionally trained to assess the damage. The more information you have about your possessions, the faster your claim can be settled. Your home inventory will be of great benefit.
- Have your list of damaged items and any pictures of the damage ready for the adjuster. Don't forget to list every item including clothing, sports equipment, tools, china, and linens, etc.
- Don't throw away damaged items because the adjuster will want to see them.
- Identify the structural damage to your home and other buildings on your property. Make a list of everything you want to show the adjuster when they arrive. In some cases, the adjuster may recommend hiring a licensed engineer or architect to inspect the property to ensure it is safe. You should also get the electrical system checked. Most insurance companies will pay for these inspections.
- If possible, get written bids from reliable, licensed contractors on the repair work. This should make adjusting the claim faster and simpler. Beware of door-to-door salesmen. Sometimes undependable workers enter a damaged area, make cheap repairs, and leave before residents discover that the repairs are inadequate. Contact the local Construction Competency Board for information on local contractors.
- Remember, homeowner's insurance policies usually don't cover flood damage (rising water) but they do cover other kinds of water damage. For example, they would generally pay for damage from rain coming through a hole in the roof or a broken window as long as the hole was caused by a hurricane or other disaster covered in the policy. You will need a separate flood insurance policy to cover flood damage from any rising water. Contact your insurance agent regarding your coverage and the need for flood insurance.
- If your home was severely damaged, you may have to rebuild sections in accordance with current building codes. In some cases, complying with the current code may require a change in design or building materials and may cost more. Generally, homeowner's insurance policies will not pay for these extra costs. Some insurance companies offer an endorsement that pays for a specified amount toward such changes.
- Most insurance companies will pay for removal of trees that have fallen on your home, but they will not pay to remove trees that have fallen and haven't caused any damage to your home. Neither will they pay to replace trees or shrubbery that have been damaged.
- Don't be in a hurry to settle your claim. Although you may want to have your damage claim settled as quickly as possible, it is sometimes advisable to wait until all damage is discovered. Damages, which have been overlooked in an early estimate, may become apparent later. If you are dissatisfied with the settlement offer, talk things over with your agent and adjuster. Unresolved disputes or dissatisfaction with your insurance company should be reported to the Florida Insurance Commissioner's Office. Remember, now is the time you should get an "insurance checkup". Contact your insurance agent and make sure that you know and understand what your policy covers and doesn't cover. After a disaster is not the time for surprises and finding out that you are not covered for losses.

USEFUL WEBSITES

Levy County Emergency Operations Center	www.levyeoc.com
State of Florida Division of Emergency Management	www.floridadisaster.org
Federal Emergency Management Agency (FEMA)	www.fema.gov
National Weather Service, Tampa Office	www.srh.noaa.gov/tbw/
National Hurricane Center	www.nhc.noaa.gov
Storm Prediction Center (Severe Weather Forecast)	www.spc.noaa.gov
American Red Cross	www.redcross.org
USA Today Hurricane Information	www.usatoday.com/weather/whur0.htm
Lowe's - How to Build Hurricane Shutters	www.loweshomesafety.org/se_hguide2001.pdf

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