



# **Hurricane & Tropical Storm Catastrophe Action Plan & Checklists**





## STEP 1: Be Informed

The hurricane and tropical storm season in the United States and surrounding seas, begins June 1<sup>ST</sup> and runs through November 30<sup>TH</sup>, with the most destructive storms occurring in August and September. During this season, there is potential for significant wind, water and flood damage. The key to minimizing hurricane and tropical storm-related damage is having an organized Catastrophe Action Plan. This plan should incorporate catastrophe

action planning, pre-hurricane preparations, monitoring storm conditions and damage and post-hurricane actions.

This guide will help minimize damage and provide suggestions to assist you in developing a plan if you don't already have one. If you already have a plan, this guide will suggest additional items that may not be included. The key is to develop and maintain an action plan for conditions and/or procedures specific to your facilities.

It is important to remain informed and understand the terminology. By international agreement, all cyclone circulation originating over tropical waters are referred to as "tropical cyclones" and classified by form and intensity as follows:

### Terms to Know

**Tropical Disturbance ::** A moving area of thunderstorms in the tropics that maintains its identity for 24 hours or more.

**Tropical Depression ::** Rotary circulation at surface, highest constant wind speed 38 miles per hour (33 knots).

**Tropical Storm ::** Distinct rotary circulation, constant wind speed ranges from 39 – 73 miles per hour (34 – 63 knots).

**Hurricane ::** A tropical cyclone with winds of 74 miles per hour or greater that is usually accompanied by heavy rain, thunder, lighting, coastal tidal surges and possible tornadoes. These storms are also known as typhoons in the Western Pacific and cyclones in the Indian Ocean and South Pacific Ocean around Australia.

**Hurricane Watch ::** Issued for a coastal area where there is a threat of hurricane conditions within 24 – 36 hours.

**Hurricane Warning ::** Issued when hurricane conditions are expected in a specified coastal area in 24 hours or less. Actions for protection of life and property should begin immediately.

**Flash Flood Watch ::** A flash flood is possible in the area; stay alert.

**Flash Flood Warning ::** A flash flood is imminent; take immediate action.

### Hurricane Categories

The Saffir-Simpson Hurricane Scale is a measurement scale ranging from 1 to 5 of hurricane wind and ocean surge intensity. Category 1 is a weak hurricane where as Category 5 is the most intense.

■ Hurricane Charley damages tennis courts on Aug. 13, 2004.

**The key to minimizing hurricane & tropical storm-related damage is having an organized Catastrophe Action Plan.**

## What to Expect

### Category 1 Hurricane

Light damage primarily to tree foliage and shrubbery. Moderate damage to unanchored mobile structures and poorly constructed signs. Minimal damage to other structures. Low-lying coastal roads flooded.

### Category 2 Hurricane

Considerable damage to shrubbery and tree foliage. Extensive damage to exposed mobile structures and poorly constructed signs. Some damage to roofing materials of buildings. Coastal and low-lying inland roads flooded two to four hours prior to arrival of storm center. Evacuation of shoreline residences and coastal islands.

### Category 3 Hurricane

Significant damage to shrubbery and trees, many large trees blown down. Many downed trees result in impaired overhead electrical and telephone lines. Mobile and smaller structures and poorly constructed signs near coast will be destroyed. Other buildings may sustain some roof, window and door damage. Larger structures near coast will be damaged by flooding, waves and floating debris. Substantial flooding in coastal areas and low-lying inland roads will flood three to five hours before storm center arrives. Flat terrain 5 ft. (1.5 m) or less above sea level will be flooded inland 8 miles (13 km) or more. Evacuate low-lying residences within several blocks of shoreline.



■ General Adjusters on site at a customer's destroyed grapefruit packaging plant after the 2004 hurricane season.

### Category 4 Hurricane

Shrubs, trees and most signs blown down with accompanying power and telephone impairments. Mobile and small structures will be destroyed. Roof failure on many smaller residences. Extensive damage to substandard roofs, windows, and doors. Flooding of flat terrain 10 ft. (3 m) or less above sea level as far inland as 6 miles (9.6 km). Considerable damage to lower floors of structures near shore due to flooding, waves and floating debris. Low-lying inland roads flooded three to five hours before storm center arrives. Significant erosion of beaches. Evacuation of all residences within 500 yards of shoreline and of single-story residences on low ground within 2 miles (3.2 km) of shore.

### Category 5 Hurricane

Shrubs, trees and most signs blown down. Mobile and smaller structures destroyed. Roof failure on many residences and poorly designed industrial buildings. Extensive damage to roofs, windows, and doors, as well as electrical distribution and transmission towers and overhead telephone lines. Flooding of flat terrain 10 ft. (3 m) or less above sea level as far inland as 6 miles (9.6 km). Considerable damage to lower floors of structures less than 15 ft. (4.6 m) above sea level and within several blocks of shore due to flooding, waves and floating debris. Low-lying inland roads flooded three to five hours before storm center arrives. Significant erosion of beaches. Evacuation of residential areas located in low-lying terrain within 5 to 10 miles (8 to 16 km) of shore.

## STEP 2: Be Prepared

### Catastrophe Action Plan

Planning often prevents an emergency from becoming a catastrophe. The Catastrophe Action Plan should provide answers to basic questions of who, what, where and when. It should identify specific personnel, property and capital necessary to get back into operation. Planning will help you set priorities and allocate your resources. Include enough detailed information for the plan to be effectively executed.

- Develop a comprehensive emergency action plan and update regularly. The plan should be flexible to effectively adapt to changing conditions.
- Organize and train an emergency action team. The emergency action team leader must have the authority to implement the action plan. This would include shutting down operations and sending employees home. Notify local authorities when personnel are staying on site (team members should only remain on site when safe to do so).
- Staff and train the members of the action plan and provide regular drills. Employees trained in emergency measures are more likely to function effectively and without panic.
- Develop checklists for action items (activities) to be done at predetermined times. In this packet we've included:

**A Pre-Hurricane Checklist ::** A compilation of action items to be done in preparation for hurricane and tropical storm season. It also identifies persons assigned to specific responsibilities.

**An Impending Hurricane Checklist ::** A list of activities (action items) that should be done in preparation for an impending hurricane. It also identifies the person responsible for each activity, the time needed to complete that activity, who completed the activity and when.

**During Hurricane Checklist ::** This list provides an outline of actions to be taken during the storm, if safe to do so.

**Hurricane Recovery Checklist ::** This list identifies potential areas of concern that may require action by emergency response personnel to minimize the damage.



■ A Liberty Mutual adjuster with a salvage and inventory consultant inside a 16,000 square foot bookstore flooded by Hurricane Jeanne.

## STEP 3: Follow Through

Once a hurricane or tropical storm threatens the area, immediately implement the Catastrophe Action Plan. Be willing to modify the plan to address the specific circumstances of the emergency as needed.

### Information

For additional information contact your Liberty Mutual Property account team or email: [propertyengineering@libertymutual.com](mailto:propertyengineering@libertymutual.com) or call: 715-842-6691.



## The Saffir-Simpson Classification System for Hurricanes

Category	Wind Speeds	Pressures	Storm Surge	Damage
1	74 – 95 mph ( 120 – 153 km/hr )	> 28.93 in ( > 980 mb )	4 – 5 ft. ( 1.2 – 1.5 m )	Light
2	96 – 110 mph ( 154 – 177 km/hr )	28.5 – 28.92 in ( 965 – 979 mb )	6 – 8 ft. ( 1.8 – 2.4 m )	Moderate
3	111 – 130 mph ( 179 – 209 km/hr )	27.91 – 28.49 in ( 945 – 964 mb )	9 – 12 ft. ( 2.7 – 3.6 m )	Extensive
4	131 – 155 mph ( 211 – 249 km/hr )	27.17 – 27.9 in ( 920 – 944 mb )	13 – 18 ft. ( 4 – 5.5 m )	Extreme
5	> 155 mph ( > 249 km/hr )	< 27.17 in ( < 920 mb )	> 18 ft. ( > 5.5 m )	Catastrophic





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While following the procedures and information outlined in this brochure may aid in developing an action plan, they do not contemplate every potential for loss or damage. Therefore, every situation should be reviewed by you in an effort to take all appropriate steps and precautions to minimize the risk of Hurricanes & Tropical Storms. No duty or undertaking is intended or assumed by Liberty Mutual Property by this publication as it is informational in purpose.

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PERSON RESPONSIBLE	Action Item	COMPLETED BY / WHEN
	<b>1:</b> Maintain a current list of telephone numbers and contacts for emergency action team members, emergency management (civil defense), local police and fire departments, medical facilities, utilities, contractors, vendors, etc.	
	<b>2:</b> Contact local authorities to plan and coordinate activities before the need for emergency action. That way both of you will be better prepared.	
	<b>3:</b> Designate a person to monitor weather conditions and keep the action plan leader up to date on weather conditions before, during, and after a hurricane.	
	<b>4:</b> Arrange backup communications such as two-way radios or cellular phones.	
	<b>5:</b> Arrange an off-site emergency communications control center such as a hotel meeting room just outside the hurricane area in case it becomes too dangerous to remain on site.	
	<b>6:</b> Provide diesel or gasoline-driven emergency generator on site with full tank, and reserve fuel on hand. (High demand may make it difficult to obtain a generator. Advance arrangements and/or retainers may assure availability.)	
	<b>7:</b> Determine which company records are vital and make plans to protect/relocate them.	
	<b>8:</b> Identify vulnerable and/or critical equipment and processes. Provide instructions for safely shutting down processes, data processing equipment, etc. Consider disconnecting and relocating critical equipment to higher elevations.	
	<b>9:</b> Identify key equipment and stock that will need to be protected with tarpaulins or waterproof covers.	
	<b>10:</b> Identify a hot site (an off-site data processing location for immediate business resumption) or a cold site (an off-site location ready for set up of your own data processing equipment). Also, consider an off-site business recovery facility where you can resume general business operations.	
	<b>11:</b> Identify actions to take in the event of live electrical wires, leaking gas, flammable liquids, corrosive/toxic materials and damage to foundations or underground piping.	
	<b>12:</b> Evaluate the interdependency of your facilities and develop a contingency plan.	
	<b>13:</b> Maintain ongoing agreements with contractors for supplies and repairs needed after a hurricane. When possible, use contractors who are outside potential hurricane areas. Local contractors may also have storm damage or local authorities' needs may be given a higher priority.	

PERSON RESPONSIBLE	Action Item	COMPLETED BY / WHEN
	<b>14:</b> Maintain emergency supplies throughout hurricane season. (Drinking water, nonperishable food, medical supplies, flashlights, batteries, walkie-talkies, portable pumps, hose, emergency lighting, lumber, plywood, nails, hand and power tools, plastic covers and tarpaulins, etc.)	
	<b>15:</b> Maintain straps or other means on hand to brace/anchor yard storage, signs, cranes, and roof-mounted equipment.	
	<b>16:</b> Inspect and repair roof flashings, coverings, drains, gutters, and edge strips. Remove debris and unrestrained materials from roofs.	
	<b>17:</b> Inspect and maintain sign, stack and tower supports, guy wires, and anchor points.	
	<b>18:</b> Repair or replace loose or worn door and window latches, hardware and seals.	
	<b>19:</b> Provide prefitted hurricane shutters and/or plywood for windows and doorways where practical. If possible, install them in advance and leave them in place for the hurricane season.	
	<b>21:</b> Prepare for hurricane-related flooding with sandbags and an ample supply of brooms, mops, squeegees, and absorbents to help remove water.	
	<b>22:</b> Trim or remove any large trees that could fall and damage buildings, or impair fire protection, or electrical power and communication lines, etc.	
	<b>23:</b> Arrange for site security after a hurricane.	
	<b>24:</b> Prepare space for inside storage of dumpsters, yard equipment, and yard stock.	
	<b>25:</b> Evaluate approaches to your facility for bridges or other low lying areas for emergency access and employee safe routes to return to work.	
	<b>26:</b> Advise employees how they will be notified when to return to work. (Local radio or TV station public service announcement, telephone call, etc.)	
	<b>27:</b> Establish priority/back-up personnel or rotation personnel for critical operations and/or processes. Employees may also have personal emergencies and may or may not be available to return to work promptly.	



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PERSON RESPONSIBLE	TIME TO COMPLETE	Action Item	COMPLETED BY / WHEN
		1. Monitor and map the hurricane to keep up to date on the storm's progress.	
		2. Implement the hurricane emergency action plan. Take specific actions at the predetermined times as outlined in the plan.	
		3. Shut down operations that depend on outside power sources in an orderly manner, following established procedures.	
		4. Ensure emergency supplies and equipment are on hand and ready for the on-site emergency action team. <ul style="list-style-type: none"> <li>• 3-day supply of drinking water and nonperishable food</li> <li>• medical supplies/first-aid kits</li> <li>• flashlights and batteries</li> <li>• walkie-talkies and/or cellular phones (with spare batteries)</li> <li>• portable pumps and hose</li> <li>• emergency lighting</li> <li>• lumber, plywood, nails</li> <li>• hand and power tools</li> <li>• plastic covers and tarpaulins</li> </ul>	
		5. Obtain cash for post-hurricane needs such as buying food and supplies or paying employees and contractors.	
		6. Protect and/or relocate vital records off site. Include: blueprints, structural records, utility plans.	
		7. Relocate water sensitive equipment and materials to safe areas away from exterior doors and windows and up off the floor.	
		8. De-energize and cover computers, machinery, and stock with tarpaulins and waterproof covers.	
		9. Check and clear floor drains.	
		10. Isolate or remove any chemicals that can react violently with each other.	
		11. Shut down gas-fired equipment and shut off main gas valves.	
		12. Shut down all noncritical and nonessential electrical equipment.	
		13. Disconnect the main electrical feeds to the facility, if possible.	

PERSON RESPONSIBLE	TIME TO COMPLETE	Action Item	COMPLETED BY / WHEN
		<b>14.</b> Inspect and make repairs to roof drains, gutters, and flashing.	
		<b>15.</b> Secure roof-mounted equipment such as HVAC units and exhaust vents.	
		<b>16.</b> Check guy wires on antennas, stacks, and towers.	
		<b>17.</b> Remove TV and radio antennas and satellite dishes from the roof.	
		<b>18.</b> Remove unrestrained materials from the roof.	
		<b>19.</b> Close and latch exterior doors, windows, and roof hatches.	
		<b>20.</b> Install hurricane shutters/plywood over doors and all windows. Where shutters can not be installed, tape both sides of the glass to minimize damage from wind driven rain and flying glass.	
		<b>21.</b> Clean out storm drains, culverts, and catch basins.	
		<b>22.</b> Fill all aboveground and underground tanks with product or water.	
		<b>23.</b> Verify that all fire protection equipment is in service.	
		<b>24.</b> Check/maintain all necessary backup equipment such as emergency generators and communication systems/devices.	
		<b>25.</b> Fill the fuel tanks of generators, fire pumps, and all company-owned vehicles.	
		<b>26.</b> Conduct a yard inspection for unrestrained materials, specifically: <ul style="list-style-type: none"> <li>Remove loose yard debris.</li> <li>Relocate nonessential yard equipment to a safe indoor location; furniture, trash receptacles, portable planters, portable signs, dumpsters, etc.</li> <li>Relocate yard storage of raw and finished goods indoors or secure.</li> <li>Secure yard storage of flammable liquids drums or move them to a safe location away from important buildings.</li> <li>Anchor all portable buildings and trailers to the ground.</li> <li>Secure scaffolds and cranes. Secure scaffolds to the building. Fasten rail crane chassis to track with bolts and clamps.</li> <li>Brace outdoor signs.</li> </ul>	

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**Emergency personnel should stay at the facility only if safe to do so.**

PERSON RESPONSIBLE	Action Item	COMPLETED BY / WHEN
	1. Patrol the property continuously when safe to do so and watch for roof leaks, pipe breakage, fire, or structural damage.	
	2. Constantly monitor any boilers that must remain on line.	
	3. During power failure, turn off electrical switches to prevent re-energizing of equipment until necessary checks are completed.	

Use the additional space provided for site-specific action items.

# Hurricane Recovery Checklist 1 of 1

## Catastrophe Action Plan

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PERSON RESPONSIBLE	Action Item	COMPLETED BY / WHEN
	1. Secure the site and provide watch service if necessary.	
	2. Survey facilities for damage. If damage has occurred, contact the Liberty Mutual Property Claims Service Center at 800-259-2184 as soon as possible. Take photographs of the damage.	
	3. Look for safety hazards such as live electrical wires, leaking gas, flammable liquids, corrosive/toxic materials, and damage to foundations or underground piping.	
	4. Repair automatic sprinkler protection and/or water supplies to get protection back in service as soon as possible. Use Liberty Mutual Property Fire Protection Impairment Procedures whenever sprinkler protection and/or water supplies are impaired.	
	5. Contact Liberty Mutual Property at 800-541-5224 to report impairments to fire protection systems or for assistance in restoring systems.	
	6. Restore fire protection systems if necessary.	
	7. Conduct 2" main drain and alarm tests on automatic fire protection sprinkler systems to verify public water supply availability.	
	8. Contact key personnel and notify contractors to start repairs. Control smoking and use Hot Work Permits where applicable. Maintain fire-safe conditions at all times.	
	9. Begin salvage as soon as possible to prevent further damage: <ul style="list-style-type: none"><li>• Cover broken windows and torn roof coverings immediately.</li><li>• Separate damaged goods.</li></ul>	
	10. Clean roof drains and remove debris from roofs.	
	11. Visually check for open bus bars, conductors, and exposed insulators before re-energizing electrical systems.	
	12. Check refrigerated items for spoilage if there has been a power failure.	
	13. Limit access to freezers and refrigerated areas during periods of interrupted electrical service to maintain the temperatures as long as possible.	

Use the additional space provided for site-specific action items.