

Guide to hurricane emergency action plans

Introduction

Is your building located in a hurricane-prone region? If so, you should have a hurricane emergency action plan in place. Hurricane prone regions exist around the world. For the U.S., the regions include the states along the Atlantic and Gulf coasts, Puerto Rico, the U.S. Virgin Islands, Guam and American Samoa.

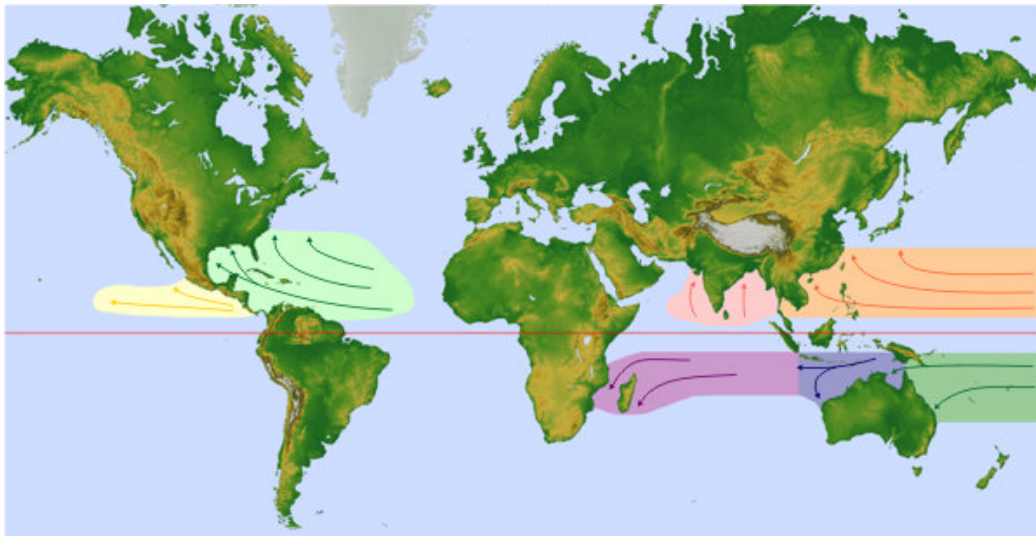


Figure 1. Tropical regions where hurricanes are born. Source - National Weather Service
<http://www.srh.noaa.gov/srh/jetstream/tropics/tc.htm>

Objective

A hurricane emergency action plan should be a living document. It should be reviewed and updated each year before hurricane season begins and after any major storm. It should address actions to take before hurricane season begins, when a hurricane watch is issued, when a hurricane warning is issued, during a hurricane, and after a hurricane.

Guidance

Integrating the hurricane plan

When implementing a hurricane plan, consider other plans, systems or practices that will be essential to weathering and recovering from a storm. For example:

- Review emergency power systems. Are they sized and arranged to carry the appropriate loads? In addition to the traditional emergency loads, the system should carry loads needed to maintain the internal building environment such as chillers and HVAC systems. For multi-story buildings, emergency power should carry elevators so all floors will be accessible for service and repairs. The fuel supply for the emergency power system should be sufficient to support the system for the anticipated duration of normal power interruption or the anticipated time frame to resume fuel deliveries.
- Verify there is a program in place for the routine back-up critical computer data. The data should be backed-up to a location that will not be affected by the hurricane.
- Verify the practices for installing important electronic equipment such as medical diagnostic equipment, computers and telephone systems. Electronic equipment should be located at least 4 inches above the floor to reduce the exposure to water damage.
- Verify the location of utility disconnects and that shutoffs are located and identified with suitable markings. This specifically includes electric and fuel gas utilities and would also apply to medical gases in healthcare facilities.
- Verify the practice of skidded stock at least 4 inches above the floor to reduce exposure to water damage.
- Identify vital business records (e.g. technical drawings, electronic files, paper files). Make plans to protect or relocate them to a safe location.
- Verify that there is a contact list for all facility personnel. The list should include contact information for the most likely destination in the event of an evacuation. This will assist in locating personnel after a storm.

Before hurricane season begins

- Review the hurricane plan. Make sure it is current.
- Verify there is a designated person on site at all times during hurricane season with the authority to implement the hurricane emergency action plan. This includes ordering process shutdowns and facility evacuations.
- If responsibilities are assigned to specific individuals, update the assignments if positions or personnel have changed.
- Make sure dedicated hurricane supplies and equipment are on hand. Order replacement materials as needed. See Appendix A for a sample list of supplies and equipment.
- Maintain a roofing company under contract to respond quickly should repairs be needed before or after a storm. Having a contract in place will allow faster access to critically needed repair services.
- Schedule an inspection of the building envelope. Have your roofing contractor check the condition of roof coverings and flashing. Verify rooftop equipment is secure and connections and fasteners holding equipment in place are not corroded. Consider adding strapping or bracing to reinforce rooftop equipment. Verify all glass is intact, windows and door closed tight and weather seals are in good condition.
- Verify inspection, testing and maintenance of all emergency generators are up to date. Check the entire fuel system including centralized bulk fuel storage tanks and fuel transfer pumps.
- Inspect and test all dewatering pumps and sump pumps controlling water that could otherwise inundate the building during a storm. Make sure they are connected to emergency power and operate correctly while on emergency power.
- Where manual storm shutters, plywood coverings or flood gates are used to protect the building during a hurricane, verify all needed materials are on hand, readily available and in good condition. Verify the personnel needed to install or place manual protective systems are available at all times during hurricane season. Verify all personnel involved with installing these manual systems has been trained and practiced

before hurricane season begins. Know how long each manual operation will take and how many people will be needed. This should be based upon actual timed practice drills.

When hurricane season begins

For the continental U.S. and Caribbean, hurricane season extends from June 1st to November 30th. During hurricane season, maintain an awareness of hurricane activity. Check the National Hurricane Center Website daily at <http://www.nhc.noaa.gov/index.shtml> for hurricane forecasts and advisories. Also, consider signing up for Tropical Cyclone Advisory Mailing Lists at <http://www.nhc.noaa.gov/signup.shtml>, but be aware this is an experimental email alert system and should not be the sole source of maintaining hurricane awareness.

When a hurricane watch is issued

A hurricane watch is issued 36 hours before a hurricane may become a threat. Once a watch is issued, take actions such as:

- Check building roofs. Make repairs to coverings and flashing as needed.
- Remove loose equipment and debris from roofs.
- Verify roof drains are clear of obstructions.
- Fill fuel tanks serving emergency generators and other vital services.
- Verify dewatering pumps are in-service and working.
- Verify outside drains and catch basins are clean.
- Remove debris from outdoor areas.
- Remove loose, outdoor, inactive equipment.
- Back-up computer data.
- Ship out as much stock as possible.
- Verify all stock is skidded at least 4 inches above the floor.
- Review construction projects. Remove loose equipment and temporarily brace new construction.

When a hurricane warning is issued

A hurricane warning is issued 24 hours before a hurricane may become a threat. Once a warning is issued, take actions such as:

- Protect or relocate vital business records.
- Remove all loose outdoor storage or equipment.
- Anchor portable buildings or trailers to the ground.
- Secure outdoor storage or equipment that cannot be moved.
- Begin installation of manual protection systems (e.g. shutters, plywood covers and flood gates).
- Raise critical equipment off floors (e.g. PC towers).
- Move critical equipment from below grade areas.
- Cover critical stock and equipment with waterproof tarpaulins.
- Initiate an orderly shutdown of production equipment and systems that rely upon normal power.
- Turn off fuel gas services.
- Turn off non-essential electrical systems.
- Verify all fire protection systems are in service (e.g. water supplies, fire pumps, sprinklers, fire alarms and special extinguishing systems).

During a hurricane

If an emergency response team (ERT) is to remain onsite during the storm, consider the following:

- The ERT should consist of volunteer members willing to remain onsite during the hurricane (if allowed by local authorities).

- Carefully determine whether the location, design and building construction make it a safe place for ERT members to remain during the storm.
- The ERT members should be trained in all aspects of the emergency action plan and include representatives with decision-making authority as well as knowledge of facility operations.
- Security personnel may also be required.
- Prepare an ERT supply kit that includes items necessary during and immediately after the storm. This includes two-way radios, portable AM/FM radios, flashlights, lanterns, plenty of batteries, rubber boots, gloves, blankets or sleeping bags, first-aid kit, spare clothing and an adequate supply of shelf-stable food and water to last at least 72 hours.
- Anticipate loss of electrical power and municipal drinking water for several days following the storm.
- Conduct drills to test all aspects of the action plan on an annual basis. Ensure the plan reflects current conditions at the location. Request feedback from ERT members to assess the effectiveness of the plan and identify areas for improvement.
- Storm-tracking procedures should be developed. The ERT should include personnel capable of monitoring conditions using various media and equipment (e.g., radio, television, Internet and portable phone).
- If the facility is in an area known to be exposed to a flood or storm surge, specific response procedures should be developed as part of the emergency action plan to manage the water exposures.
- During the height of the storm, the ERT personnel should remain in a location that has been secured from wind and flood.

After a hurricane

- When returning to the site, bring identification, additional supplies and cameras to document conditions. Communicate with the ERT to determine what supplies are needed.
- Survey the site for hazards:
 - Live electrical wires
 - Broken glass and sharp metal
 - Leaking fuel gases or flammable liquids
 - Damaged building features or contents that could shift or collapse
 - Paved or hardscape areas undermined by wave action and subject to collapse
- Reinforce appropriate management loss prevention programs including:
 - Controlling the use of smoking materials
 - Using hot work permits to manage all cutting or welding operations
- Verify the status of protection systems. Check water supplies, fire pumps, automatic sprinklers, fire alarms and security systems.
- Manage impairment for protection systems:
 - Expedite repairs.
 - Post fire watch in area with impaired fire protection.
 - Post security personnel in areas where building or site access is not suitably controlled.
- Survey the damage and initiate repairs immediately:
 - Promptly notify contractors to avoid waiting in line for service.
 - Establish repair priorities, including the building envelope and fire protection systems.
- Begin salvage as soon as possible to prevent further damage:
 - Protect the building and contents from further damage.
 - Separate damaged goods.
 - Save all damaged goods.
 - Avoid accumulations of combustible materials inside the building.
 - Avoid storage in areas with impaired fire protection.
- Maintain contact with corporate management and your insurance broker.
- Contact Zurich to report claims and fire protection impairments.
- Clear roof drains, balcony drains and ground level catch basins and drains in preparation for future rain events.
- Have qualified personnel thoroughly check all utility systems and hazardous processes before returning them to service.

- Restore HVAC system to maintain or restore building interior environment.

Conclusion

When a hurricane threatens your facility, be prepared to manage rather than react. Develop, implement, practice and maintain a comprehensive hurricane emergency action plan. A successful outcome begins before hurricane season starts.

Appendix A – sample list of hurricane supplies and equipment

- Emergency lighting
- Lumber and nails/screws
- Tape for windows
- Sandbags
- Roofing paper
- Tarpaulins
- Caulk
- Duct tape
- Power and manual tools
- Shovels and axes
- Chainsaws and fuel
- Nonperishable food and drinking water
- Cell phone with charged spare batteries
- Two-way radios with charged spare batteries
- Flashlights with spare batteries

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