

Hurricane Response

August 31, 2010

[Subscribe to this eNewsletter](#)

Volume 3, Issue 2

“...LARGE AND INTENSE HURRICANE EARL CHURNING NORTHWESTWARD OVER THE ATLANTIC... A HURRICANE WATCH HAS BEEN ISSUED FOR THE EAST COAST OF THE UNITED STATES FROM NORTH OF SURF CITY NORTH CAROLINA TO THE NORTH CAROLINA/VIRGINIA BORDER...”

Hurricane Earl Advisory Number 26 issued by the National Hurricane Center, 500 PM AST Tuesday, August 31

Hazard Mitigation

Hazard mitigation can substantially reduce the damage caused by hurricanes. Property insurer FM Global compared the loss history of its policyholders that implemented its loss prevention recommendations with those with outstanding recommendations to complete. FM found that those policyholders that fully implemented its preparedness recommendations had on average 75% to 85% lower dollar losses than those policyholders that did not implement such measures [FM Global data provided to InterCEP¹].

Prior to hurricane season survey the entire property and inspect all buildings to identify vulnerabilities. Begin at the roof level and inspect the flashing along the perimeter. Repair loose or damaged flashing and ensure sufficient mechanical fasteners are used.

Inspect the roof covering for evidence of ponding, blistering, alligating, delamination, surface erosion, or cracks that could result in tears or leaks. Verify that all access panels and doors to mechanical equipment and roof hatches have been properly secured. Confirm that all antennas, satellite dishes, and other appliances installed on the roof have been secured to withstand hurricane wind forces.

Inspect all exterior walls for openings that could be penetrated by wind and evaluate methods to protect when a storm watch is issued. Consider installing glazing rated to withstand debris impact

or hurricane shutters on exterior glass that is especially vulnerable. Check all exterior doors especially loose fitting, large overhead doors. Make exterior doors weather tight and equip them with secure latches.



Figure 1. Boarded glass store front in Louisiana
FEMA News Photo

Inspect exterior storage, tanks, equipment, signs, and vehicle storage and verify they are properly anchored to withstand expected wind forces. Identify what can be moved inside a building or removed from the site, if a storm watch is issued.

Focus on critical building areas, equipment, and utilities including data centers and process systems. Evaluate means to protect against damage from water entry in the event of structural damage or flooding.

Resources

There are many resources needed for hurricane preparedness. First, identify the complement of staff, including contract employees, needed to prepare your facility in the available time between a hurricane watch and hurricane warning.

Procure materials and equipment to prepare the facility including storm shutters, plywood, sandbags, and the power tools, equipment, and supplies to install them. A supply of tarpaulins and plastic sheeting can be used to cover valuable furnishings or equipment and provide temporary



© 2010 Preparedness, LLC

protection after a storm. Service pumps and emergency generators to ensure they are in good condition, and calculate the required quantity of fuel for each.

Procure weather monitoring equipment and ensure reliable access to broadcast and internet weather reports including forecasts from the National Hurricane Center. On-site weather monitoring equipment enable you to monitor local wind conditions and rainfall.

Evaluate communications capabilities assuming that landline telecommunications may be interrupted. Test communications equipment including two-way radios and satellite telephones. Evaluate how communications equipment could be used if roof mounted antennas are damaged.

Stockpile supplies for cleanup and repairs. Don't forget food and water for employees restoring the facility.

Arrange in advance for procurement of equipment, supplies, and contractors from firms located well outside the immediate area for cleanup, repair, and restoration of buildings, equipment and stock. Establish mutual aid agreements with other company facilities outside the storm's potential impact area.

Hurricane Preparedness

Write a hurricane preparedness plan that includes multiple phases:

- Before hurricane season
 - Tropical Storm or Hurricane Watch
 - Tropical Storm or Hurricane Warning
- During the Storm (only if personnel must and are authorized to remain on-site during a storm)
- After the Storm

Watch and warning phases can be expanded to include additional actions when a major hurricane has been forecast and to address a facility's vulnerabilities to hurricane hazards.

Before Hurricane Season

Preparedness prior to hurricane season begins with conducting or reviewing the facility's hurricane risk assessment, which is the basis for the hurricane plan.

Contact public officials to obtain the latest information on wind fields, storm surge, and flooding, which should be incorporated into your plan. If available, obtain official credentials for managers that will enable them to re-enter your facility after a storm but before the area is opened to the general public.

Walk the entire site and facility top to bottom to evaluate vulnerabilities and hazard mitigation. Complete hazard mitigation activities as soon as possible.

Review property insurance coverage including flood coverage, which may require a special endorsement. Evaluate business interruption limits especially if multiple facilities may be impacted by a single storm.

Verify that all resources required for preparing the facility for a hurricane are available and in good condition. This includes all pumps, generators, communications equipment, personal protective equipment, hand and power tools, and supplies.

Conduct training of all staff, so they know their role and responsibilities as defined in the plan. Conduct a tabletop exercise to familiarize the leaders of your hurricane preparedness and response team with the plan and identify any gaps or deficiencies.

Storm or Hurricane Watch

When a hurricane watch is issued, hurricane conditions are possible within 36 hours.

- Physically check all emergency and communication s equipment including generators, transfer switches, lighting, portable pumps, and radios. Test all and ensure that generators will start automatically



Figure 2. Sand bagged store front in Louisiana (FEMA News Photo)

and power transfers properly. Check oil levels and fuel tanks and fill to capacity.

- Fill all propane gas, fuel oil or other storage tanks (both aboveground and buried) to prevent them from floating.
- Identify any hazardous materials that could react with water and relocate outside the path of the storm or protect from contact with water.
- Fill available portable fuel tanks (for portable power equipment) and store in a location protected from wind and flood.

- Inspect roof edging strips, gutters, flashing, covering, and drains. Remove anything from the roof that is not secured.
- Inspect rooftop air handling units to ensure that latches are securely fastened.
- Inspect exterior signs supports, guy wires, and anchorages; secure as necessary.
- Check for weak door and window latches and hardware or for insecure panel fastenings.
- Check roof, floor and yard drains to ensure they are clear and unobstructed.
- Clean out street catch basins and drains to prevent street flooding.
- Cover exterior building make-up air or ventilation louvers by securely fastening a sheet of plywood to the inside of the opening. Remove after the storm has passed in order to provide adequate ventilation.
- Fasten sheets of heavy plywood over exterior windows and doors to prevent breakage that will exacerbate wind damage to the roof system as well as allow water to enter the building. Taping windows can be done to minimize the flying glass hazard, if windows can't be covered with plywood.
- Check grounds and remove dead limbs, prop weakly rooted trees, clean up loose debris, and move all articles or equipment that can be picked up by high winds inside—if it isn't bolted down, move it inside.
- Empty trash compactor and/or dumpster; make sure any compactor is secured properly.
- Cover valuable electronic equipment, artwork, furniture, etc.

Hurricane Warning

When a hurricane warning is issued, sustained winds greater than 74 mph or higher associated with a hurricane are expected in a specified coastal area in 24 hours or less. Preparations must be rushed to completion before any mandated evacuation order is issued.

After the Storm

A damage assessment protocol should be developed and assignments made to quickly assess the condition of infrastructure, buildings, utilities, furniture, equipment, and supplies. Prior to conducting the damage assessment, identify hazards such as downed electrical lines, leaking hazardous materials (e.g., liquids and gases), broken glass, and collapse hazards. Prohibit entry into unsafe areas.

- Cover up openings in the building shell with plastic sheeting or tarpaulins, begin salvage operations, and cleanup debris and remove standing water as soon as it is safe to do so.

- Inspect electrical and process systems and equipment for water damage before restarting.
- If electrical or electronic equipment is exposed to water, keep it turned off until it has been dried, cleaned and checked by a trained individual.
- Drain, clean and lubricate any machinery before testing. Contact the manufacturer, if possible, for recommendations.
- Do not operate boilers until they have been inspected and tested.
- Compile a report with the results of the damage assessment to begin the insurance claims process.

Family Preparedness

In addition to planning for your facility, be sure to provide preparedness information for employees to share with their families. Distribute information from Ready.gov and your local emergency management agency.

Ask all employees to develop a family disaster plan that includes a communications plan. Encourage them to prepare a family disaster kit. Make sure that you have emergency contact information for all employees, which includes the name and telephone numbers for a distant relative who can be contacted if the employee has evacuated.

Hurricane Preparedness

We can help you develop your hurricane preparedness and response plan:

- Conduct a hurricane risk assessment to identify vulnerabilities and opportunities for risk mitigation
- Define roles, responsibilities, authorities, and tasks for hurricane preparedness, response, and recovery
- Identify the resources needed for preparedness and recovery; evaluate the adequacy of existing resources
- Write a phased hurricane preparedness and response plan
- Conduct training and facilitate exercises to familiarize personnel with the plan

If you need assistance, please [contact us](#).

Coordination with emergency management officials is essential to ensure you have the latest forecast, are aware of the timing for issuance of mandatory evacuation orders, and understand the

time needed to safely evacuate on crowded roads.

The availability of resources to prepare a facility becomes limited when a hurricane watch is issued as businesses and citizens compete for materials and labor. Employees have to prepare their own homes and ensure the safety of family members.

A hurricane plan that accurately identifies the resources and time needed to prepare a facility has the greatest chance of success. Procuring necessary resources before hurricane season and arranging in advance for labor to assist with hurricane preparations is essential. Providing resources to protect the homes of managers will allow them to focus their attention on preparing your facility.

Build a project management plan that defines major tasks and the resources and time needed for completion. Use the timeline to calculate when preparations must begin, so they are completed before a mandatory evacuation order is issued.

Planning Resources

The following are some of the numerous planning resources available online. This list is periodically updated at the [Preparedness, LLC website](#).

- [National Hurricane Center](#)
- [Tropical Cyclone Advisory Mailing Lists](#)
- NHC [Hurricane Preparedness](#)

Additional Resources

Links to dozens of documents to help you with your preparedness program can be found on the [“Resources” page](#) of the Preparedness, LLC website.

Check out our [blog](#) if you are interested in developments in national standards, industry best practices, current events, and what it means for your preparedness program.

- [Natural Hazards Center](#), at the University of Colorado at Boulder
- Educational and preparedness information from Federal Emergency Management Agency
- [Historical Hurricane Tracks](#), National Oceanic and Atmospheric Administration, Coastal Services Center (interactive mapping application that allows you to easily search and display Atlantic Basin and Eastern North Pacific Basin tropical cyclone data)
- [The Deadliest, Costliest, and Most Intense United States Tropical Cyclones From 1851-2007](#), National Weather Service, Tropical Prediction Center
- [Atlantic Seasonal Hurricane Forecast](#), The Tropical Meteorology Project at Colorado State University (Professors William M Gray and Philip J. Klotzbach)
- [Tropical Storm Risk](#), (resource for forecasting the risk from tropical storms worldwide)
- [National Hurricane Survival Initiative](#), (public-private partnership to educate hurricane-vulnerable individuals)
- [Hurricanes: The Greatest Storms on Earth](#), NASA's Earth Observatory
- [Community Hurricane Preparedness](#), (computer-based learning) provides information about how the NWS forecasts future hurricane behavior and more
- [Keeping Disaster Site Workers Safe During Cleanup and Recovery Operations](#), U. S. Occupational Safety & Health Administration

All of these resources can be accessed [here](#).

About Preparedness, LLC

Preparedness, LLC is a client-focused risk consulting company. Our mission is to assist our clients safeguard people, protect property and minimize business interruption. Our vision is to thoroughly understand each client's business and become a long-term, trusted advisor.

If you would like a copy of our self-assessment checklist; have questions; or need assistance with the development, implementation, or evaluation of your preparedness program, please contact us.

643 Massapoag Avenue
Sharon, MA 02067-3112
Tel. 781.784.0672 Fax. 781.784.3731
info@preparednessllc.com,
www.preparednessllc.com

¹ <http://www.nyu.edu/intercep/events/20061009-256.html>

