



ROMAN CATHOLIC ARCHDIOCESE OF BOSTON

Hurricane Preparedness Guide for Institutions



2020 Hurricane Season

TABLE OF CONTENTS

| | |
|--|-----------|
| What is a Hurricane? | 1 |
| Hurricane Classifications: The Saffir-Simpson Hurricane Scale | 1 |
| Hurricane Threats | 3 |
| Storm Surge | 3 |
| High Winds..... | 3 |
| Heavy Rains | 3 |
| Tornadoes in the Wake of Hurricanes | 3 |
| Hurricanes in New England | 4 |
| Hurricane Irene..... | 4 |
| Hurricane Advisories: Watches and Warnings | 4 |
| Pre-Planning for a Hurricane | 5 |
| Business Continuity Planning | 5 |
| Ensuring Key Supplies | 5 |
| Securing Your Facilities in Advance | 5 |
| Reinforce or Replace Garage Doors | 5 |
| Install Storm Shutters or Plywood Covers for Windows | 6 |
| Brace Gable End Roof Framing | 6 |
| Grounds Keeping and Routine Maintenance..... | 6 |
| Backup Systems | 6 |
| Securing Vital Records | 6 |
| Electronic Records..... | 7 |
| Safeguarding the Blessed Sacrament | 7 |
| Inventory of Office Equipment and Valuables | 7 |
| Preparing a Disaster Emergency Kit | 7 |
| Establishing Facility Shutdown Procedures | 8 |
| Staying Informed | 8 |
| Wireless Emergency Alerts..... | 9 |
| Determining How You Will Communicate With Staff | 9 |
| Orders to Evacuate | 9 |
| Transportation | 10 |
| Making a Plan for Pets | 10 |
| Shelter-in-Place | 11 |
| Tornado Warning | 12 |
| Returning After an Evacuation | 12 |
| Gas Leaks | 12 |
| Electrical Damage | 12 |
| Generators | 13 |
| Chainsaws | 13 |
| Downed Power Lines | 13 |
| Chemical Hazards | 13 |
| Reporting a Claim | 13 |
| Glossary of Terms | 14 |
| Appendices | 15 |

The Office of Risk Management promotes the safety and security of our program participants by assisting locations in controlling losses, responding to claims, and creating a culture of risk awareness. As the active period of the hurricane season approaches, we have created this hurricane preparedness guide, outlining measures you can take to help mitigate damages and save lives in the event of a hurricane. If you have any questions or concerns about any of the information contained herein, please call the Office of Risk Management at 617-746-5742.

What is a Hurricane?

A hurricane is a type of tropical cyclone - a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has a closed low-level circulation. Tropical cyclones rotate counterclockwise in the Northern Hemisphere. A tropical cyclone that has winds of 38 mph or less is called a **tropical depression**. When the tropical cyclone's winds reach 39-73 mph, it is called a **tropical storm**. When winds exceed a constant speed of 74 miles, the storm is considered a **hurricane**.

The eye of a storm is usually 20-30 miles wide and the overall diameter of the hurricane may extend over 400 miles. A hurricane can last for two weeks or more over open water and can run a path across the entire length of the Eastern Seaboard. Hurricanes generally lose about half their intensity in the 12 hours after landfall.

The Atlantic Hurricane Season begins June 1 and ends November 30 of each year. Historically, the most active time is mid-August through mid-October. The National Oceanic and Atmospheric Administration (NOAA) reports that each year, an average of eleven tropical storms develop over the Atlantic Ocean, Caribbean Sea and Gulf of Mexico. Many of these remain over the ocean and never impact the U.S. coastline.

Hurricane damage costs billions of dollars. During the 20th century, 23 hurricanes each caused damage in excess of \$1 billion (adjusted for inflation). In an average 3-year period, roughly five hurricanes strike the U.S. coastline, killing approximately 50-100 people anywhere from Texas to Maine. The good news is that the number of people injured or killed has been declining, largely due to improvements in forecasting and emergency preparedness. This proves that although hurricanes cannot be controlled, our vulnerability can be reduced through preparedness.¹

Hurricane Classifications: The Saffir-Simpson Hurricane Scale

The Saffir-Simpson Hurricane Scale was developed to categorize hurricanes according to the strength of their winds. A Category 1 storm has the lowest wind speeds while a Category 5 hurricane has the strongest.

¹ Source for pages 1-3: "Hurricane Basics." NOAA May 1999: <http://hurricanes.noaa.gov/pdf/hurricanebook.pdf>

The following table shows the breakdown:

| Category | Sustained winds | Damage |
|--------------|-----------------|---|
| 1 | 74-95 mph | Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely to result in power outages that could last a few to several days. |
| 2 | 96-110 mph | Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks. |
| 3 (major) | 111-129 mph | Devastating damage will occur: Well-constructed frame homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water may be unavailable for several days to weeks after the storm passes. |
| 4 (major) | 130-156 mph | Catastrophic damage will occur: Well-constructed frame homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will likely last weeks to possibly months. Most of the area may be uninhabitable for weeks or months. |
| 5 (major) | >157 mph | Catastrophic damage will occur: A high percentage of frame homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months. |

Although the scale is helpful in terms of assessing potential damage from a storm, please note that these classifications are relative as lower category storms can sometimes inflict greater damage than higher category storms, depending on where they strike and the particular hazards they bring. Hurricane Katrina was a Category 3 storm when it made a second landfall in southeast Louisiana, yet it caused catastrophic damage due to the storm surge and subsequent collapse of the levee system. Tropical storms can also produce significant damage and loss of life, mainly due to flooding. *For a detailed description of the Saffir-Simpson Scale, see Appendix A.*

Hurricane Threats

Depending upon your geographic location, hurricanes have the potential to inflict damage in numerous ways. Storm surges, high winds, heavy rains and tornadoes are the greatest threats posed by hurricanes.

Storm Surge

A storm surge is a large dome of water (50-100 miles wide) that sweeps across the coastline close to where a hurricane makes landfall. **It is the greatest potential threat to life and property associated with hurricanes.** It has the greatest potential to kill more people than any of the other hurricane hazards. For this reason, NOAA advises that those who may be affected by a storm surge plan for a storm that is one category more intense than is forecast.

High Winds

High winds begin well before a hurricane makes landfall. The amount of damage inflicted by these winds depends upon whether your community has an effective mitigation program in place and has prepared in advance of the storm. High winds can damage or demolish structures. In addition, severe injuries can result if someone is hit by wind-swept debris.

Heavy Rains

Hurricanes typically produce rainfall of 6-12 inches or more, often resulting in severe flooding. In general, rains are heaviest with slower moving storms (less than 10 mph). The heaviest rains usually occur in a 6-hour period before landfall and 6 hours after. However, as was the case with Hurricane Irene, storms can last for days, depending upon the inland weather features they interact with. Flash floods and mudslides are a danger for inland areas, and inland flooding has been the primary cause of hurricane fatalities over the past 30 years.

Tornadoes in the Wake of Hurricanes

FEMA defines tornadoes as incredibly violent local storms that extend to the ground with whirling winds that can reach 300 mph. When there is a hurricane, often a tornado will follow, adding to the storm's destructive power. NOAA's studies have shown that more than half of the landfalling hurricanes produce at least one tornado. Although tornadoes associated with hurricanes are less intense than those that occur in the Great Plains, the effects of tornadoes when added to hurricane-force winds can produce substantial damage. Although scientists are closer to predicting tornadoes than they were a few years ago, it is still difficult to predict tornadoes far in advance; therefore, **preparedness is critical.**

NOAA Tornado Facts

When associated with hurricanes, tornadoes are not usually accompanied by hail or extensive lightning, clues that citizens in other parts of the country watch for.

Tornado production can occur for days after landfall when the tropical cyclone remnants maintain an identifiable low pressure circulation.

Tornadoes can also develop at any time of the day or night during landfall. However, by 12 hours after landfall, tornadoes tend to occur mainly during daytime hours.

Hurricanes in New England

The Massachusetts Emergency Management Agency (MEMA) warns residents of Massachusetts that hurricanes are not just coastal events. The small size of the state means that everyone in the Commonwealth can be severely impacted by a major storm. MEMA also points out that New England is in the “unenviable position” of receiving all three types of hurricane threats.

Depending upon the storm’s track and landfall location, Massachusetts can experience:

1. Coastal inundation from the storm surge
2. Widespread inland river flooding
3. Widespread wind damage

For a brief synopsis of past hurricanes in the New England area, see Appendix B.

Hurricane Irene

August 2011 saw the arrival of Hurricane Irene. Hurricane Irene made landfall in North Carolina on August 27 as a Category 1 hurricane. By the time it made another landfall near Atlantic City, New Jersey the next day, it was downgraded to a tropical storm. Thus, to New Englanders it is technically referred to as Tropical Storm Irene. Even though Irene was not as powerful as predicted, it inflicted tremendous damage in its aftermath, mostly due to catastrophic flooding and widespread loss of electricity. According to the Boston Globe, “Hurricane Irene wound up by most estimates as one of the top ten most destructive and deadly hurricanes to hit the US since 1980.”²

In fact, the World Meteorological Organization chose to retire the name Irene, something that is done when a storm is so deadly or costly that the future use of its name on a different storm would be inappropriate. In the New England area, Vermont suffered the greatest damage with the destruction of bridges, roads, homes and farms. Irene is an example of how even a tropical storm can inflict major damages.

Hurricane Advisories: Watches and Warnings

The National Hurricane Center issues advisories to alert citizens of the possibility of hurricanes. A **hurricane watch** is issued when hurricane conditions (sustained winds of 74 mph or higher) are **possible** within the specified area. Hurricane preparedness activities become difficult once winds reach tropical storm force; therefore, hurricane watches are issued 48 hours in advance of the anticipated onset of tropical storm-force winds.

A **hurricane warning** is issued when hurricane conditions are **expected** somewhere within the specific area. Warnings are generally issued 36 hours in advance of the hurricane. In addition to the media, there are many ways citizens can receive these advisories. See **Staying Informed** on page 8 and a list of Emergency Alert Stations on page 10.

² Lane Turner. “The Big Picture.” Boston Globe 29 August 2011, http://www.boston.com/bigpicture/2011/08/hurricane_irene.html

Pre-Planning for a Hurricane

There are actions you can take year-round to prepare your staff and facilities for hurricane season. In addition to taking steps to safeguard individuals and protect the physical plant, you will also want to secure important valuables and vital documents and ensure the continuity of critical business activities by employing the principles of Business Continuity Planning.

Business Continuity Planning

Business Continuity Planning (BCP) is a critical element of an organization's crisis management efforts. In the case of a hurricane, business interruption can come in the following forms:

- Suspension of operations due to an evacuation order of your facility
- Curtailment of operations due to high rates of absenteeism among staff who may be in evacuation areas, even if your institution is not located in an evacuation zone
- Reduction of critical supplies due to interrupted supply lines
- Damage to the facility or interruption in utility service

How will your operations be affected if your facility has to close for one day, or two or more days? Can some employees work remotely? What infrastructure support is needed to enable a shift to an at-home workforce? How quickly will you be able to resume operations after the evacuation order is rescinded; do you have remediation plans in place for flooding, loss of power or structural damage to the facility? Do you have a temporary location from which your staff can operate in the event of extended interruption or extensive repairs to your facility? The answers to these questions depend upon the nature of your operations, as well as the particulars of the emergency situation.

Ensuring Key Supplies

A hurricane and the ensuing aftermath (floods, power outages) may put a strain on the supply chain. As a result, critical supplies that your business relies upon may not be delivered. Plan ahead by meeting with your vendors to ensure they have contingency plans in place – do they have backup suppliers who will deliver the product to you? Do you need to find a back up yourself? Does your business have the capacity to stockpile supplies?

Securing Your Facilities in Advance

Make modifications to your facility in advance to help protect it from the effects of hurricanes and other natural disasters. Check with your local building official to see what modifications will work for your facility. Call the **Boston Building & Structures Division** at 617-635-5306 and ask to speak with a building inspector, or consult an independent consultant or engineer.

Reinforce or Replace Garage Doors

High winds can damage garage doors or even blow them in. To help protect your garage and its contents, reinforce existing garage doors or replace doors that are not working properly.

Install Storm Shutters or Plywood Covers for Windows

High winds and windblown debris can easily break unprotected windows. Besides the damage to the windows, wind, glass and debris entering your building has the potential to cause interior damage and injure occupants. If you are not able to install storm shutters, be sure to invest in plywood covers. Keep pre-drilled plywood coverings in an easily accessible storage area that will allow you to do a quick installation before the arrival of a severe hurricane or evacuation.

Brace Gable End Roof Framing

Gable end roofs are more susceptible to damage by high winds than hip roofs or flat roofs. If the framing of the gable end and the rest of the roof are not adequately braced to resist the wind, the roof can fail. If your facility has a gable roof, check to see if the roof framing is adequately braced. If you are unsure, check with the local building department or a member of your facilities management department. After inspecting your roof framing, a building official can tell you if bracing is required and how it should be added. *See Appendix E for a FEMA fact sheet.*

Grounds Keeping and Routine Maintenance

Maintaining your grounds and performing routine facility maintenance throughout the year is critical to ensure that your facilities are prepared for whatever emergency may arise. Procedures such as pruning trees year-round, regularly removing damaged or dead branches and removing dead trees should be a part of your regular maintenance routine. In addition, be sure that drains and gutters are unobstructed and clear of debris and inspect roofs for damage or leaks.

When a hurricane is imminent, you will need to secure anything that might tear loose or blow away, such as garbage cans, grills, potted plants, signs or lawn furniture. The basic rule is that if it is not nailed down, find a secure place for it. To prepare, be sure to designate and clear out an area to store these objects ahead of time, such as a garage or basement.

Backup Systems

Consider the need for backup systems. Be sure all equipment is fully operational and properly installed. FEMA recommends the following:

- Portable pumps to remove flood water
- Alternate power sources such as generators or gasoline-powered pumps
- Battery-powered emergency lighting

Securing Vital Records

When Hurricane Katrina hit New Orleans in August 2005, many sacramental records were lost in the floods or badly contaminated from mold and other environmental factors. The Catholic News Service reported that two months after Katrina, sacramental records from 25 of the archdiocese's 151 parishes and missions were still unaccounted for.³

³ Ron Brocato. "Archivists Work to Save Parish Sacramental Records from Mold, Mildew." Catholic News Service 28 October 2005: <http://www.catholicnews.com/data/stories/cns/0506159.htm>

Besides protecting sacramental records, articles of incorporation, contracts, blueprints, tax records, archival photographs and employee records are some of the vital documents that businesses need to preserve in the event of a hurricane. The first step is to identify exactly which records are vital. Next, develop a plan to secure these documents, such as contracting with a record management company.

To ensure the safety and preservation of vital records on a daily basis, begin by using bindings and paper that are permanent, durable and acid-free. Use only archival-quality ink. If these documents are subjected to water, mold or humidity, archivists may be able to restore them if the proper ink and paper were used to create these documents. Permanent, inactive records should be stored in boxes (preferably water-tight plastic bins) on high shelves. Do not store files in the basement. Please note that filing cabinets and safes are generally not waterproof.

Electronic Records

To protect electronic records from permanent loss, it is vital that locations set up a procedure to remotely back up files. There are many companies that provide this service. Be sure, however, to investigate the integrity of the company and ask questions about the security measures used. Security measures vary from provider to provider. Ask the following questions: How often will backups be done? What kind of physical security is in place for the actual hardware that the data will be stored on? What encryption methods will be used? Will your data be on a dedicated server or a shared server? If you are using a shared server, what barriers are in place to keep your information separate from other organizations?

Safeguarding the Blessed Sacrament

If your facility has a chapel in which Mass is celebrated, special precautions must be taken in regard to the Blessed Sacrament. If consecrated hosts are kept on premises, plan to have a priest retrieve the Blessed Sacrament and sacred vessels, or make plans for the reverent consumption of the Blessed Sacrament prior to an evacuation. Unconsecrated hosts that are left behind should be stored in airtight and preferably waterproof containers.

Inventory of Office Equipment and Valuables

In order to help expedite the claims process after a hurricane event, it is important to keep an inventory of office equipment and valuables. The easiest way to do this is to take photos and store the photos electronically. Start by taking a photo of each wall and the interior of every room where equipment and valuables are kept. Alternatively, document each item in writing.

Preparing a Disaster Emergency Kit

It is critical that you have enough supplies together to ensure that basic needs are being met. You will want to prepare a disaster emergency “kit” that serves as a resource for two purposes: 1.) in the event you are told to shelter-in-place and are not able to leave the facility for some time; and 2.) if an evacuation order is issued and you have only 36 – 48 hours to leave your location. In addition to lacking the time to go shopping for the necessary supplies, you will not be able to

rely on local stores to keep their shelves stocked during an emergency. It is critical that you gather supplies ahead of time to utilize if homebound or bring with you if you are evacuated. Your kit should include items such as non-perishable food, water, prescriptions, a first-aid kit, cash and toiletries. *For a more complete list, see Appendix C.*

Establishing Facility Shutdown Procedures

In order to safeguard your property and operations, it is critical that you establish shutdown procedures for your facilities in advance of an evacuation order. These procedures should include the following:

- Close and lock all windows and doors.
- Close storm shutters or board up windows with pre-drilled plywood.
- Safely shut off the electricity, gas and water supplies at main switches and valves.
- Elevate valuable items and documents to high shelves within your office, or plan to take them with you.
- Remove papers from lower drawers of desks and filing cabinets and place them in plastic bags or containers on top of cabinets.
- Move unanchored items inside (outdoor hanging signs, trash cans). Not only will these items be damaged, but in high winds they may inflict damage on others.
- Use plywood to protect glass showcases.
- Place sandbags in spaces where water can enter.
- Change voicemail messages and update website (if applicable) to reflect close of business.

Staying Informed

Because NOAA broadcasts cannot be heard on a simple AM/FM radio receiver, all institutions should be equipped with a NOAA weather radio receiver. Find a radio equipped with a warning signal, and be sure to store a set of backup batteries with your radio. There are many radio receiver options, but NOAA suggests buying one that carries the Public Alert logo:



For more information on purchasing a NOAA Weather Radio, please see: <https://rcabrisk.org/noaa-radio/>

Smart Phone Apps

There are also NOAA Weather Radio apps for smart phones that can be programmed to alert you when NOAA issues a weather advisory for your area. For more information, search for "NOAA Weather Radio" on the iTunes app store or Android Marketplace.

Wireless Emergency Alerts

In May 2012, the federal government and wireless carriers launched a service called Wireless Emergency Alerts (WEA), a system to automatically warn people of dangerous weather emergencies via text messaging to cellphones. Federal, state, local and tribal government agencies will issue the alerts. The service is free and no sign-up is required. Warnings will be location-based so that if you live in Massachusetts and are visiting Florida when a hurricane is expected to make landfall in Miami, you will receive an alert. The text alerts will be brief and are intended to prompt people to seek more information. They are similar to text messages but will not cost the receiver, nor will it count against the receiver's text plan. A National Weather Service spokesman warned, however, that people should not rely only on mobile devices for weather warnings since such devices can lose power; it is still critical to own a NOAA weather radio. To find out more about Wireless Emergency Alerts, check with your cellphone carrier.

Determining How You Will Communicate With Staff

Make plans in advance to communicate with employees before and after a hurricane. If you subscribe to a communications system, please use this system to keep staff up-to-date about office closings, evacuation and return to work protocols. If you do not subscribe to a communications system, please maintain a list of email addresses and a calling tree list and designate the appropriate individuals to send emails and/or make phone calls.

In addition, communicate your own individual plan to others. In advance, designate someone as your out-of-area contact and keep this person informed of your whereabouts; e.g., when you are evacuating, what shelter you are going to, and when you plan to return home.

Orders to Evacuate

All locations must adhere to local government recommendations and ordinances in regard to evacuations. Because hurricanes are closely tracked and can be followed for as long as a week before reaching New England, in general residents and businesses are given enough warning ahead of time to enable them to take precautionary steps, including evacuation. How will you know if an evacuation order has been issued? First, it is important to stay tuned to local television and radio stations and, if possible, listen to reports on a NOAA weather alert radio. **All organizations should be equipped with a NOAA weather radio that is stored with a set of backup batteries.**

In addition, the Office of Risk Management will issue Risk Alerts to keep you advised. Alerts will be sent to you via email, unless you specify otherwise; please check email frequently during these times. Your local Emergency Management Office is the best resource to help you determine the evacuation plans in place for your community, including proposed evacuation routes and locations of shelters. *Please see Appendix H for contact information.*

In general, if you or any of your staff meets any of the following criteria, plans should be made to be among the first to evacuate:

- Residents of low-lying areas
- Persons living in manufactured housing
- Persons with special needs, including health or mobility-related concerns

If ordered to evacuate, you will want to give staff time to return to their homes and prepare themselves and their families for evacuation. Determine in advance which staff members are willing and able to stay until the doors close and which ones need more time for their families.

Transportation

In the event of an evacuation, if you do not have personal transportation, make plans with relatives, friends or colleagues, or contact your local Emergency Management Office. If possible, check with staff and ensure that everyone has a means to evacuate. Carpooling among staff members might be an option worth exploring. It is important that you have a means of evacuation that includes the ability to bring your emergency supply kit with you. If you have a vehicle, make certain you keep the fuel tank full if evacuation is a possibility. Gas stations may be closed during an emergency, run out of fuel or be unable to pump gas during power outages. Be aware of designated evacuation routes. Keep the car radio tuned to an EAS station.

EAS Stations

State Primary Facility: WBMX Radio: 104.1 FM

Boston^[SEP] State Alternate Facility – WBZ Radio, Boston: 1030 AM

Local Primary Facilities:

Greater Boston WBMX Radio, Boston: 104.1 FM

Southeastern WPLM Radio, Plymouth: 99.1 FM

Cape & Islands WQRC Radio, Barnstable: 99.9 FM

Central WSRS Radio, Worcester: 96.1 FM

Connecticut River Valley WHYN Radio, Springfield: 560 AM; 93.1 FM

Berkshire WBEC Radio, Pittsfield: 1420 AM

Making a Plan for Pets

Most shelters will only allow seeing-eye dogs and other service animals. In many communities, SMART (The State of Massachusetts Animal Response Team) may be able to assist at these facilities with animal sheltering accommodations. To be safe, try to make boarding plans in advance for your pet. Put together a kit of necessities, such as collars and leashes, a 3-5 day

supply of food and water, a manual can opener, bowls, litter boxes and a week's supply of medications that your pet may be taking.

Shelter-in-Place

When a hurricane is approaching (and your institution is not located in an evacuation zone), state or local public safety officials may instruct you to shelter-in-place. Shelter-in-place is a standard protective action utilized in emergency management. It is used most often during an accident or event in which hazardous materials have been released into the atmosphere, but also during dangerous conditions, when it is best to be indoors and not outside or on the road.

As with evacuations, you may be alerted in a variety of ways. Learn what methods are utilized in your community. Methods used to provide shelter-in-place instruction could include:

- Outdoor sirens or horns
- The Emergency Alert System (EAS) information provided on TV/radio
- NOAA Weather Alert Radio
- 'All Call', 'Reverse 911' or 'Code Red' – one of a number of automated telephoning system for sending recorded messages
- Commercial news media
- Residential Route Alerting, which dispatches public safety vehicles through neighborhoods announcing messages with public address systems
- U.S. Coast Guard Marine Broadcast

The following are steps to take only when instructed to shelter-in-place and are not to be completed ahead of time:

- If instructed, you should immediately go indoors.
- Close and lock all doors and windows. Locking is preferred since it generally ensures that the door or window is shut tight.
- Close drapes, blinds and window shades.
- Protect windows with pre-drilled plywood sheets.
- Go to a room in the center of your home with the fewest windows and doors.
- Take your disaster kit to that location.
- Keep pets indoors and gather additional food and water supplies for them.
- Continue to monitor the EAS and other media for official messages and instructions.
- Stay inside until officials say otherwise.
- If you are in your vehicle and are advised to shelter-in-place, and are very close to your home, office or a public building, go there immediately.

Tornado Warning

Tornadoes can occur with little or no warning. If a tornado warning is issued, it means that a tornado has been sighted in the area or is indicated by radar – take shelter immediately. Take the same steps as those outlined above, EXCEPT you will want to find shelter underground, if possible. If an area underground is not available, then find a small interior room on the lowest floor without windows. Once in the shelter, personnel should protect their heads with their arms and crouch down.

FEMA warns that auditoriums, cafeterias and gymnasiums that are covered with a flat, wide-span roof are not considered safe. In addition, lightweight modular offices or mobile home-size buildings offer no protection from tornadoes – plan to evacuate these structures immediately.

Returning After an Evacuation

Determine ahead of time which staff members will be among the first to return to the location after the hurricane to survey damages and make sure the facility is safe for the remaining staff members to return. Keep in mind that downed power lines may result in loss of power and an interruption in telephone communications. When returning, be sure to do so during the daytime in order to avoid the need for lights. If returning at night, use a flashlight but do not use candles in case of a gas leak.

Watch for debris on the road while driving. Take care when entering a structure that has been damaged. If possible, listen to the radio or contact authorities to find out if sewage lines are intact before turning on the water or using the toilet. If water supplies become contaminated, the health department will issue a boil water order immediately after a hurricane passes. Be aware of possible structural, electrical or gas-leak hazards. Inform your out-of-area contact of your status.

Gas Leaks

If you smell gas or suspect a leak, turn off the main gas valve, open all windows and leave the building immediately. Notify the gas company, the police, fire departments or State Fire Marshal's office (telephone: 978-567-3111) and do not turn on the lights, light matches, smoke or do anything that could cause a spark. Do not return until you are told it is safe to do so.

Electrical Damage

If you see frayed wiring, notice sparks when you restore power, or smell an odor of something burning (and there is no fire), immediately shut off the electrical system at the main circuit breaker and notify your utility company. All electrical equipment and appliances must be completely dry before returning them to service. It is advisable to have a certified electrician check these items if there is any question.

Generators

It is against the law and a violation of electrical codes to connect generators to your dwelling's electrical circuits without the approved automatic-interrupt devices. If a generator is plugged in when electrical service is restored, a major fire may result. In addition, the improper connection of a generator to your dwelling's electrical circuits may endanger line workers helping to restore power in your area. If you wish to hard-wire a generator to your building, hire a licensed electrician to do the installation. Make sure the generator is equipped with an approved cut-off switch that will automatically disconnect the home from the power grid when the generator is being used.

During times of natural disasters such as hurricanes, many fatalities result from carbon monoxide poisoning. To avoid carbon monoxide poisoning, never use a generator indoors or in an attached garage. Place the generator outside where exhaust fumes will not enter enclosed spaces and away from windows or any air-intakes to your building.

Chainsaws

The improper use of chainsaws is a common cause of injury after hurricanes. Learn proper safety procedures and operating instructions before operating any gas-powered or electric chainsaw. Use extreme caution to avoid electrical shock. As with any power equipment, wear a safety face shield or eyeglasses and gloves.

Downed Power Lines

If power lines are lying on the ground or dangling near the ground, **DO NOT** touch them. Notify your utility company as soon as possible that the lines have been damaged, or that the power lines are down. Do not attempt to move or repair the power lines. Do not drive through standing water if downed power lines are in the water. If a power line falls across your car while you are driving, continue to drive away from the line. If the engine stalls, do not turn off the ignition. Stay in your car and wait for emergency personnel. Do not allow anyone other than emergency personnel to approach your vehicle.

Chemical Hazards

Be aware of potential chemical hazards you may encounter upon your return. Floodwaters and high winds may have moved or buried hazardous chemical containers of solvents or other industrial chemicals. Contact your local fire department about inspecting and removing hazardous chemical containers. Avoid inhaling chemical fumes. If any propane tanks are discovered, do not attempt to move them yourself. These represent a very real danger of fire or explosion, and if any are found, the fire department, police, or your State Fire Marshal's office should be contacted immediately.

Reporting a Claim

Immediately contact the ORM Claims Manager at 617-746-5743, or go to our website and fill out a claims form: www.rcabrisk.org/forms

Glossary of Terms

Advisory - Advisories are issued for weather situations that cause significant inconveniences but do not meet warning criteria and, if caution is not exercised, could lead to life-threatening situations. Advisories are issued for significant events that are occurring, are imminent, or have a very high probability of occurrence.

Hurricane Warning - An announcement that hurricane conditions (sustained winds of 74 mph or higher) are expected somewhere within the specified area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane warning is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds.

Hurricane Watch - An announcement that hurricane conditions (sustained winds of 74 mph or higher) are possible within the specified area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical-storm-force winds.

Major Hurricane - A hurricane that is classified as Category 3 or higher.

Saffir-Simpson Hurricane Wind Scale – A one-to-five categorization based on the hurricane's intensity at the indicated time. The scale provides examples of the type of damage and impacts in the United States associated with winds of the indicated intensity. **See Appendix A for more details.**

Storm Surge - An abnormal rise in sea level accompanying a hurricane or other intense storm, and whose height is the difference between the observed level of the sea surface and the level that would have occurred in the absence of the cyclone. Storm surge is usually estimated by subtracting the normal or astronomic high tide from the observed storm tide.

Storm Tide - The actual level of seawater resulting from the astronomic tide combined with the storm surge.

Tornado - Incredibly violent local storms that extend to the ground with whirling winds that can reach 300 mph. When there is a hurricane, often a tornado will follow, adding to the storm's destructive power.

Appendices

Appendix A: Saffir-Simpson Hurricane Scale

Appendix B: New England Hurricanes of Note

Appendix C: Hurricane Emergency Kit Checklist

Appendix D: Hurricane Preparation Checklist

Appendix E: FEMA Fact Sheet on Brace Gable End Roof Framing

Appendix F: Returning Home After a Hurricane Checklist (Red Cross)

Appendix G: Resources

APPENDIX A
SAFFIR-SIMPSON HURRICANE SCALE

| Category | Winds (1 min sustained winds in mph, kt, and km/hr) | Summary | People, Livestock, and Pets | Mobile Homes | Frame Homes | Apartments, Shopping Centers, and Industrial Buildings | High-Rise Windows and Glass | Signage, Fences, and Canopies | Trees | Power and Water | Example |
|----------|---|--|--|--|--|--|--|--|--|--|---|
| 1 | 74-95 mph 64-82 kt 119-153 km/hr | <i>Very dangerous winds will produce some damage</i> | People, livestock, and pets struck by flying or falling debris could be injured or killed. | Older (mainly pre-1994 construction) mobile homes could be destroyed, especially if they are not anchored properly as they tend to shift or roll off their foundations. Newer mobile homes that are anchored properly can sustain damage involving the removal of shingle or metal roof coverings, and loss of vinyl siding, as well as damage to carports, sunrooms, or lanais. | Some poorly constructed frame homes can experience major damage, involving loss of the roof covering and damage to gable ends as well as the removal of porch coverings and awnings. Unprotected windows may break if struck by flying debris. Masonry chimneys can be toppled. Well-constructed frame homes could have damage to roof shingles, vinyl siding, soffit panels, and gutters. Failure of aluminum, screened-in, swimming pool enclosures can occur. | Some apartment building and shopping center roof coverings could be partially removed. Industrial buildings can lose roofing and siding especially from windward corners, rakes, and eaves. Failures to overhead doors and unprotected windows will be common. | Windows in high-rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. | There will be occasional damage to commercial signage, fences, and canopies. | Large branches of trees will snap and shallow rooted trees can be toppled. | Extensive damage to power lines and poles will likely result in power outages that could last a few to several days. | Hurricane Dolly (2008) is an example of a hurricane that brought Category 1 winds and impacts to South Padre Island, Texas. |

APPENDIX A
SAFFIR-SIMPSON HURRICANE SCALE

| Category | Winds (1 min sustained winds in mph, kt, and km/hr) | Summary | People, Livestock, and Pets | Mobile Homes | Frame Homes | Apartments, Shopping Centers, and Industrial Buildings | High-Rise Windows and Glass | Signage, Fences, and Canopies | Trees | Power and Water | Example |
|----------|---|--|---|--|--|--|---|---|---|--|---|
| 2 | 96-110 mph 83-95 kt 154-177 km/hr | <i>Extremely dangerous winds will cause extensive damage</i> | There is a substantial risk of injury or death to people, livestock, and pets due to flying and falling debris. | Older (mainly pre-1994 construction) mobile homes have a very high chance of being destroyed and the flying debris generated can shred nearby mobile homes. Newer mobile homes can also be destroyed. | Poorly constructed frame homes have a high chance of having their roof structures removed especially if they are not anchored properly. Unprotected windows will have a high probability of being broken by flying debris. Well-constructed frame homes could sustain major roof and siding damage. Failure of aluminum, screened-in, swimming pool enclosures will be common. | There will be a substantial percentage of roof and siding damage to apartment buildings and industrial buildings. Unreinforced masonry walls can collapse. | Windows in high- rise buildings can be broken by flying debris. Falling and broken glass will pose a significant danger even after the storm. | Commercial signage, fences, and canopies will be damaged and often destroyed. | Many shallowly rooted trees will be snapped or uprooted and block numerous roads. | Near-total power loss is expected with outages that could last from several days to weeks. Potable water could become scarce as filtration systems begin to fail. | Hurricane Frances (2004) is an example of a hurricane that brought Category 2 winds and impacts to coastal portions of Port St. Lucie, Florida with Category 1 conditions experienced elsewhere in the city. |

APPENDIX A
SAFFIR-SIMPSON HURRICANE SCALE

| Category | Winds (1 min sustained winds in mph, kt, and km/hr) | Summary | People, Livestock, and Pets | Mobile Homes | Frame Homes | Apartments, Shopping Centers, and Industrial Buildings | High-Rise Windows and Glass | Signage, Fences, and Canopies | Trees | Power and Water | Example |
|----------|---|--|---|---|---|---|---|---|--|---|--|
| 3 | 111-130 mph 96-113 kt 178-209 km/hr | <i>Devastating damage will occur</i> | There is a high risk of injury or death to people, livestock, and pets due to flying and falling debris. | Nearly all older (pre- 1994) mobile homes will be destroyed. Most newer mobile homes will sustain severe damage with potential for complete roof failure and wall collapse. | Poorly constructed frame homes can be destroyed by the removal of the roof and exterior walls. Unprotected windows will be broken by flying debris. Well-built frame homes can experience major damage involving the removal of roof decking and gable ends. | There will be a high percentage of roof covering and siding damage to apartment buildings and industrial buildings. Isolated structural damage to wood or steel framing can occur. Complete failure of older metal buildings is possible, and older unreinforced masonry buildings can collapse. | Numerous windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. | Most commercial signage, fences, and canopies will be destroyed. | Many trees will be snapped or uprooted, blocking numerous roads. | Electricity and water will be unavailable for several days to a few weeks after the storm passes. | Hurricane Ivan (2004) is an example of a hurricane that brought Category 3 winds and impacts to coastal portions of Gulf Shores, Alabama with Category 2 conditions experienced elsewhere in this city. |

APPENDIX A
SAFFIR-SIMPSON HURRICANE SCALE

| Category | Winds (1 min sustained winds in mph, kt, and km/hr) | Summary | People, Livestock, and Pets | Mobile Homes | Frame Homes | Apartments, Shopping Centers, and Industrial Buildings | High-Rise Windows and Glass | Signage, Fences, and Canopies | Trees | Power and Water | Example |
|----------|---|---|---|---|---|--|--|--|--|--|--|
| 4 | 131-155 mph 114-135 kt 210-249 km/hr | <i>Catastrophic damage will occur</i> | There is a very high risk of injury or death to people, livestock, and pets due to flying and falling debris. | Nearly all older (pre- 1994) mobile homes will be destroyed. A high percentage of newer mobile homes also will be destroyed. | Poorly constructed homes can sustain complete collapse of all walls as well as the loss of the roof structure. Well- built homes also can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Extensive damage to roof coverings, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will break most unprotected windows and penetrate some protected windows. | There will be a high percentage of structural damage to the top floors of apartment buildings. Steel frames in older industrial buildings can collapse. There will be a high percentage of collapse to older unreinforced masonry buildings. | Most windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. | Nearly all commercial signage, fences, and canopies will be destroyed. | Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. | Power outages will last for weeks to possibly months. Long- term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months. | Hurricane Charley (2004) is an example of a hurricane that brought Category 4 winds and impacts to coastal portions of Punta Gorda, Florida with Category 3 conditions experienced elsewhere in the city. |

APPENDIX A
SAFFIR-SIMPSON HURRICANE SCALE

| Category | Winds (1 min sustained winds in mph, kt, and km/hr) | Summary | People, Livestock, and Pets | Mobile Homes | Frame Homes | Apartments, Shopping Centers, and Industrial Buildings | High-Rise Windows and Glass | Signage, Fences, and Canopies | Trees | Power and Water | Example |
|----------|--|---|--|--|--|--|---|--|---|--|--|
| 5 | > 155 mph > 135 kt > 249 km/hr | <i>Catastrophic damage will occur</i> | People, livestock, and pets are at very high risk of injury or death from flying or falling debris, even if indoors in mobile homes or framed homes. | Almost complete destruction of all mobile homes will occur, regardless of age or construction. | A high percentage of frame homes will be destroyed, with total roof failure and wall collapse. Extensive damage to roof covers, windows, and doors will occur. Large amounts of windborne debris will be lofted into the air. Windborne debris damage will occur to nearly all unprotected windows and many protected windows. | Significant damage to wood roof commercial buildings will occur due to loss of roof sheathing. Complete collapse of many older metal buildings can occur. Most unreinforced masonry walls will fail which can lead to the collapse of the buildings. A high percentage of industrial buildings and low-rise apartment buildings will be destroyed. | Nearly all windows will be blown out of high-rise buildings resulting in falling glass, which will pose a threat for days to weeks after the storm. | Nearly all commercial signage, fences, and canopies will be destroyed. | Nearly all trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. | Power outages will last for weeks to possibly months. Long-term water shortages will increase human suffering. Most of the area will be uninhabitable for weeks or months. | Hurricane Andrew (1992) is an example of a hurricane that brought Category 5 winds and impacts to coastal portions of Cutler Ridge, Florida with Category 4 conditions experienced elsewhere in south Miami-Dade County. |

APPENDIX B

NEW ENGLAND HURRICANES OF NOTE

Source: <http://www.mass.gov/>

The Great Colonial Hurricane of 1635^[1] - August 25, 1635. This was the first historical record of an intense hurricane striking New England. The highest winds have been estimated at Category 3 or greater, with winds of 115-plus mph. The storm's eye passed between Boston and Plymouth causing at least 46 casualties. A 20-foot tidal surge was reported in Boston, ruining farms throughout the area. Reports from Governor William Bradford describing the drowning of dozens of Native Americans, the toppling of thousands of trees and the flattening of houses suggest that this storm possessed even greater intensity than the storms of 1815 and 1938.

The Great September Gale of 1815^[1] - September 23, 1815. This was the first major hurricane to impact New England in 180 years. It initiated in the West Indies, growing to a Category 3 with winds of 135 mph. After crossing Long Island, New York, the storm came ashore at Saybrook, Connecticut, funneling an 11-foot storm surge up Narragansett Bay. There, it destroyed 500 houses, 35 ships and flooded Providence, Rhode Island. Impacting Central and Coastal Massachusetts, 'The Great Gale' destroyed the bridge over the Neponset River, connecting Dorchester and Milton, Massachusetts. At least 38 deaths have been attributed to this disaster.

The September Gale of 1869^[1] - September 8, 1869. A Category 3, this 'September Gale' was first observed in the Bahamas. It ultimately made landfall in Rhode Island just west of Buzzards Bay, dissipating in Northern Maine. This storm was very compact, but intense. It was reported to have been only 60 miles wide, but it caused extensive damage in Rhode Island, Massachusetts and Maine. Fortunately, its arrival coincided with low tide lessening the storm surge and resulting damage.

The Great New England Hurricane of 1938^[1] - September 21, 1938. This Category 5, which has also been dubbed "The Long Island Express", was first detected in the Tropical Atlantic. As it slowly moved northward, it suddenly accelerated to a forward motion of 60 to 70 mph, when it was 100 miles east of North Carolina. Without warning, it made landfall as a Category 3, during an astronomically high tide along Long Island, New York and the Connecticut coast. The Blue Hill Observatory, outside of Boston, measured sustained winds of 121 mph, with gusts of 183 mph. Storm surges of 10 to 12 feet inundated portions of the coast from Long Island to Southeastern Massachusetts, most notably in Narragansett Bay and Buzzards Bay. Heavy rains of 3" to 6" produced severe flooding, particularly in areas of Western Massachusetts and along the Connecticut River. Downtown Providence, Rhode Island was impacted by a 20-foot storm surge. Sections of the Towns of Falmouth and Truro on Cape Cod were under 8 feet of water. The widespread destruction resulting from this storm included 600 deaths and 1,700 injuries. Over \$400 million in damage occurred, including 9,000 homes and businesses lost and 15,000 damaged. Damage to the Southern New England fishing fleet was catastrophic, as over 6,000 vessels were either destroyed or severely damaged.

The Great Atlantic Hurricane of 1944^[1] – September 14-15, 1944. Sometimes compared to the Great Hurricane of 1938, this storm was first detected northeast of the Lesser Antilles. From there, it hugged the United States coast, crossing Long Island, New York, the Rhode Island Coast, emerged into Massachusetts Bay and impacted Maine. With 140 mph winds, this Category 4, produced hurricane force winds over a diameter of 600 miles causing over \$100 million damage. 70-foot high waves were also reported. Up to 11” of rain fell in areas of New England. 390 deaths, mostly at sea, were attributed to this hurricane. It wreaked havoc on World War II shipping, sinking a U.S. Navy destroyer and minesweeper, as well as two U.S. Coast Guard cutters.

Hurricane Dog ^[1] – September 11-12, 1950. A strong Category 5, Hurricane Dog reached a peak intensity of 185 mph. First observed east of the Lesser Antilles on August 30th, this was a major hurricane that never actually made landfall, passing within 200 miles of Cape Cod. However, it was responsible for the deaths of at least a dozen fishermen off the New England coast. It also caused about \$3 million damage. To this day, it retains the record for the longest continuous duration for a Category 5 Atlantic Hurricane of 60 hours, from September 5th through September 8th. ‘Dog’ also fluctuated between Category 4 & 5 strength on four different occasions, which is also a record.

Hurricane Carol ^[1] – August 31, 1954. This compact, but powerful Category 2 battered New England, killing 68. With 100 mph winds, gusting up to 135mph, Carol caused over \$461 million in damage, destroying 4,000 homes, 3,500 cars, and over 3,000 boats. This was arguably the most destructive storm to hit Southern New England since 1938. It formed as a tropical storm near the Bahamas, making brief landfall along the Outer Banks of North Carolina. The storm passed over Long Island, through Central New England into Canada, bringing a storm surge of 14.4 feet to Narragansett Bay and New Bedford Harbor. Over 6” of rain fell. Water depths reached 12 feet in downtown Providence, Rhode Island. Some consider Carol the worst storm in the history of Cape Cod. All of Rhode Island, much of Eastern Connecticut, and much of Eastern Massachusetts lost power, with a 95% loss of telephone service. The name Carol has been retired.

Hurricane Edna ^[1] – September 11, 1954. Edna arrived right on the heels of Hurricane Carol. It formed off of Barbados, reaching Category 3 strength at the Outer Banks of North Carolina, with its highest winds of 120 mph. Before striking New England, its eye split into two different ones, up to 60 miles apart at times, moving over Cape Cod & the Islands where peak gusts were recorded at 120 mph. Its eastern track, which resulted in heavy rain and major inland flooding, adding 5” to 7” of rain to Carol’s previous 6”. The storm was responsible for 29 deaths and \$40 million damage. Ultimately, it made landfall near Eastport, Maine, becoming one of Maine’s worst-ever hurricanes. The name Edna has been retired.

Hurricane Diane ^[1] – August 17-19, 1955. Born in the tropical Atlantic, this storm reached Category 3 status as it followed the path of Hurricane Connie of 5 days earlier. Maximum winds were recorded at 120 mph. Although it weakened to a Tropical Storm as it reached the Southern New England coast, Diane dropped heavy rain of 10” to 20”, setting flood records throughout the region. The storm was blamed for between 185 and 200 deaths. The \$832 million damage qualified it as the most costly hurricane in U.S. history until Hurricane Betsy in 1965. The name Diane has been retired.

Hurricane Donna ^[1]~~[SEP]~~ **September 12, 1960.** This Category 5 Cape Verde-type hurricane impacted most of the Caribbean Islands and every state on the U.S. Eastern seaboard. It recorded 160 mph winds with gusts up to 200 mph. Donna holds the record for retaining ‘major hurricane’ status of Category 3 or better in the Atlantic basin for the longest period of time. From September 2-11, it sustained winds of 115 mph as it roamed the Atlantic for 17 days. It is the only one on record to produce hurricane-force winds in Florida, the Mid-Atlantic States and New England. Donna hit New England in Southeast Connecticut with sustained winds of 100 mph, gusting to 125-130 mph, cutting diagonally through the region to Maine. It produced pockets of 4” to 8” of rain as well as 5- to 10-foot storm surges. The storm ultimately killed 364, and caused over \$500 million in damage. The name Donna has been retired.

Hurricane Gloria ^[1]~~[SEP]~~ **September 27, 1985.** Hurricane Gloria was a powerful Category 4 Cape Verde-type storm that prowled the Atlantic for 13 days, with highest winds of 145 mph, making landfall at Milford, Connecticut. In spite of arriving during low tide, it caused severe beach erosion along the New England coast, as well as the loss of many piers and coastal roads. There was a moderate storm surge of 6.8 feet in New Bedford, Massachusetts. The storm left over 2,000,000 people without power. It dropped up to 6” of rain in Massachusetts, causing many flooding issues in the region. Although casualties were relatively low with 8 deaths, damage reached \$900 million. The name Gloria has been retired.

Hurricane Bob ^[1]~~[SEP]~~ **August 19, 1991.** Formed east of the Bahamas, Hurricane Bob made landfall in New England near New Bedford, Massachusetts with 115 mph winds, cutting a path across Southeastern Massachusetts towards the Gulf of Maine. Peak winds of 125 mph were recorded in the Towns of Brewster and Truro on Cape Cod. Over 60% of the residents of Southeastern Massachusetts and Southeastern Rhode Island lost power. There were 4 different reports of tornados as Bob came ashore. Buzzards Bay saw a 10 to 15-foot storm surge. A number of south-facing beaches on the islands of Nantucket and Martha’s Vineyard lost 50 feet of beach to erosion. Bob was blamed for 18 storm-related deaths. The damage total for Southern New England was set at \$1 billion. The name Bob has been retired.

Hurricane Irene ^[1]~~[SEP]~~ **August 22, 2011.** Irene became a hurricane on August 22 and intensified to a Category 3 hurricane on the Saffir-Simpson Hurricane Wind Scale on August 24 while centered between Mayaguana and Grand Inagua in the Bahamas. It gradually weakened after crossing the Bahamas, making landfall in North Carolina on August 27 as a Category 1 hurricane. Irene made another landfall the next day as a tropical storm very near Atlantic City, New Jersey. The center moved over Coney Island and Manhattan, New York, the same day. Irene caused widespread damage across a large portion of the eastern United States as it moved north-northeastward, bringing significant effects from the mid-Atlantic through New England. The most severe impact of Irene was catastrophic inland flooding in New Jersey, New York, Massachusetts and Vermont. The name Irene has since been retired.

Hurricane Sandy – October 29 – 30, 2012. This storm affected Southern New England with its outer bands producing heavy storm surge, winds, and rainfall before the storm's landfall in New Jersey. Sandy devastated the Jersey Shore, New York City, parts of Long Island and the Connecticut and Rhode Island coastlines. Flooding and power outages (roughly nine million customers total) lasted several days, while thousands of trees, telephone poles and traffic light stanchions were snapped. A total of approximately \$71.4 billion in property damage was left in Sandy's wake after it made landfall and its center went over Pennsylvania and New York. Sandy killed 5 people in New England (4 in Connecticut and 1 in New Hampshire).

Emergency Kit Checklist

Eating and Drinking

- ☐ Non-perishable food (3-Days)
- ☐ Water (Gallon per person/per day)
- ☐ Can opener
- ☐ Utensils

Medical Pack

- ☐ Extra prescription medicine
- ☐ First-Aid kit
- ☐ Hearing aids
- ☐ Eyeglasses and prescription
- ☐ Mosquito repellent

Electronics

- ☐ Cell phone charger
- ☐ Battery-operated radio
- ☐ Extra batteries
- ☐ Flashlights

Other

- ☐ Bedding/sleeping bags
- ☐ Duct tape
- ☐ Tarp
- ☐ Rope
- ☐ Toilet paper
- ☐ Toiletries
- ☐ Extra set of keys
- ☐ Sunglasses
- ☐ Money, checks or credit cards

- ☐ Contact details for out-of-area contact person
- ☐ Important account passwords

For Priests

- ☐ Blessed Sacrament
- ☐ Sacred Vessels
- ☐ Sacramental registers
- ☐ Payroll information

Notes

Checklist – Hurricane Preparation

Maintenance Checklist

- ☐ Check gutters and drains – ensure they are free of debris or any other type of obstruction.
- ☐ Remove outside furniture and anything not anchored down.
- ☐ Close and lock doors to any storage sheds.
- ☐ Remove any dead or damaged branches.
- ☐ Remove satellite rooftop dishes.
- ☐ Close and if possible lock all doors and windows.
- ☐ Shutter windows or install plywood covers.
- ☐ Unplug computers and other office equipment from outlets.
- ☐ Turn refrigerator and freezer to the coldest setting; keep closed as much as possible so that food will last longer if power goes out.
- ☐ Turn off propane tanks and unplug small appliances.
- ☐ Fill your car's gas tank.

General Office Checklist

- ☐ File papers and books.
- ☐ Move important files to top shelves.
- ☐ Be sure to back up files electronically if backups are not taken automatically.
- ☐ If putting sensitive information on a thumb drive, be sure to password-protect it.

Emergency Kit

- ☐ If sheltering in place, bring emergency kit to area of dwelling where you will be staying.
- ☐ If being evacuated, keep kit near front door and remember to bring it with you.
- ☐ **Be sure to listen to a NOAA Weather Radio for critical information from the National Weather Service.**
- ☐ **Keep your out-of-state contact informed of your plans.**

Brace Gable End Roof Framing


FEMA

PROTECTING YOUR PROPERTY FROM HIGH WINDS

Gable end roofs are more susceptible to damage from high winds than hip or flat roofs. The gable end presents a large, flat obstacle to the wind and receives its full force. If the framing of the gable end and the entire roof is not adequately braced to resist the wind, the roof can fail. Roof failures, especially in unbraced gable roofs, are a common cause of major damage to structures and their contents in high winds.

If your property has a gable roof, check to see whether the roof framing is braced. The top figure shows a cutaway view of an unbraced gable end roof. This is a truss roof, but some gable end roofs are constructed with rafters rather than trusses. Both types should be braced as shown in the bottom figure. If you are unsure whether your gable end roof is adequately braced, check with your local building department. After inspecting your roof framing, a building official can tell you whether bracing is required and if so, how it should be added.

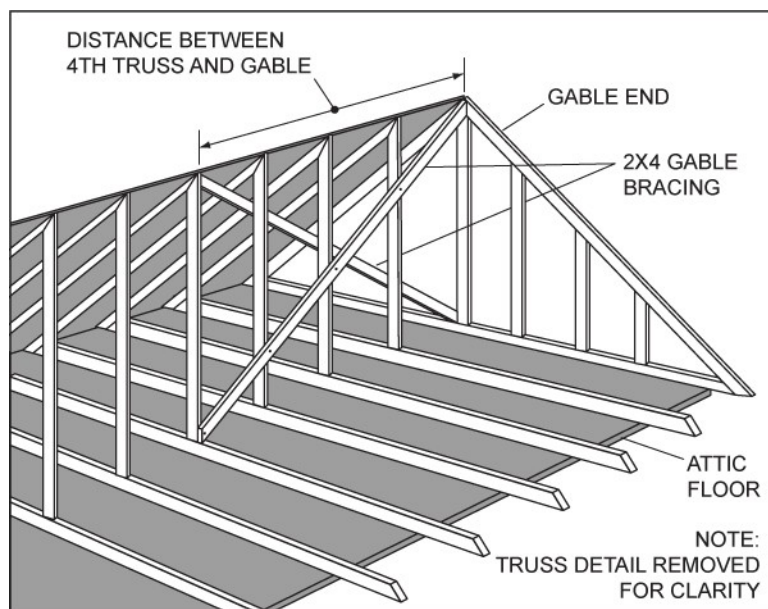
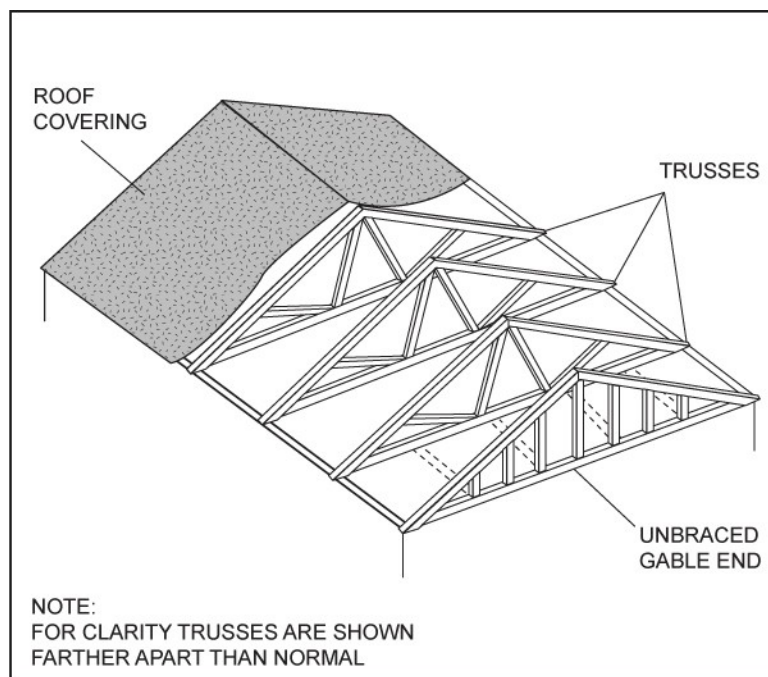
BENEFITS OF UTILIZING THIS MITIGATION STRATEGY

- Helps to prevent roof failure, which can lead to major damage of a structure and its contents
- Helps to prevent injuries to occupants

TIPS

Keep these points in mind if you have bracing added to a gable end roof:

- ✓ Bracing can be added fairly easily, but you should have a contractor perform the work to make sure that the bracing is properly designed and attached.
- ✓ If you have a building official inspect your roof framing, ask about other changes you may be able to make to your property to protect it from high winds.



- ✓ The detail featured on this Fact Sheet provides increased resistance of the gable end to wind loads. For another gable end retrofit that meets current building code requirements, see FEMA P-804, *Wind Retrofit Guide for Residential Buildings*.

ESTIMATED COST

If you hire a contractor to brace a gable end roof, you can expect to pay about \$100 for each gable end. This figure is for a gable end about 30 feet long. Bracing longer gable ends may be slightly more expensive.

OTHER SOURCES OF INFORMATION

Institute for Business & Home Safety (IBHS), <http://www.disastersafety.org>.

FEMA 247, *Against the Wind: Protecting Your Home from Hurricane Wind Damage*, December 1993, <http://www.fema.gov/library/viewRecord.do?id=1641>.

FEMA 488, *Hurricane Charley in Florida: Mitigation Assessment Team Report, Observations, Recommendations and Technical Guidance*, Chapter 8, "Building Envelope Performance," April 2005, <http://www.fema.gov/library/viewRecord.do?id=1444>.

FEMA 489, *Hurricane Ivan in Alabama and Florida: Mitigation Assessment Team Report, Observations, Recommendations and Technical Guidance*, August 2005, <http://www.fema.gov/library/viewRecord.do?id=1569>.

FEMA P-499, *Home Builder's Guide to Coastal Construction*, "Roof Sheathing Installation," Technical Fact Sheets No. 7.1, December 2010, <http://www.fema.gov/library/viewRecord.do?id=2138>.

FEMA 549, *Hurricane Katrina in the Gulf Coast: Mitigation Assessment Team Report, Building Performance Observations, Recommendations, and Technical Guidance*, July 2006, <http://www.fema.gov/library/viewRecord.do?id=1857>.

FEMA P-804, *Wind Retrofit Guide for Residential Buildings*, December 2010, <http://www.fema.gov/library/viewRecord.do?id=4569>.

The Federal Alliance for Safe Homes (FLASH), <http://www.flash.org>.

To view and download FEMA publications visit the FEMA Library at <http://www.fema.gov/library>. To obtain FEMA publications please call 1-800-480-2520 or fax 1-240-699-0525 Monday through Friday 8 a.m. – 5 p.m. EST. You may also email your request to FEMA-Publications-Warehouse@dhs.gov. Please provide the title, item number, short number, and quantity of each publication, along with your name, address, zip code, and daytime telephone number.

Returning Home After a Hurricane or Flood

Preparing to return home after evacuating will keep you safer while inspecting and cleaning up the damage to your home. Before traveling, ensure local officials have declared that it's safe to enter your community and that you have the supplies you will need. Follow the suggestions below for returning to, inspecting and cleaning your home.

Items to Take When Returning Home:

- ☐ Government-issued photo ID and proof of address
- ☐ Important phone numbers
- ☐ Bottled water and non-perishable foods
- ☐ First aid kit
- ☐ Cleanser/hand cleaning gel for personal use
- ☐ Hygiene products and toilet paper
- ☐ Insect repellent and sunscreen
- ☐ Long-sleeved shirts, long pants, sturdy waterproof boots and work gloves
- ☐ Flashlight, portable radio and extra batteries
- ☐ Cameras for photos of damage for insurance claims

Before returning



- ☐ Find out if it is safe to enter your community or neighborhood. Follow the advice of your local authorities.
- ☐ Carry plenty of cash. ATMs may not work and stores may not be able to accept credit or debit cards.
- ☐ Bring supplies such as flashlights, batteries, bottled water and nonperishable foods in case utilities are out.
- ☐ Create back-up communication plans with family and friends in case you are unable to call from affected areas.
- ☐ Plan for delays when traveling. Bring other items that will make the trip more comfortable. Keep the fuel tank of your vehicle as full as possible in case gas stations are crowded, out of fuel or closed.
- ☐ Carry a map to help you route around heavy traffic or impassable roads.
- ☐ Find out if local medical facilities are open and if emergency services are functioning again. Do NOT call 9-1-1 or the local emergency number to do this.
- ☐ Understand that recovery takes time. Focus on the positive and have patience. Others will have similar frustrations.

First inspection



- ☐ If possible, leave children and pets with a relative or friend. If not, keep them away from hazards and floodwater.
- ☐ Beware of snakes, insects and other animals that may be in or around your home.
- ☐ Before entering your home, look outside for damaged power lines, gas lines, foundation cracks and other exterior damage. It may be too dangerous to enter the home.
- ☐ If you smell natural gas or propane, or hear a hissing noise, leave immediately and contact the fire department.
- ☐ If your home was flooded, assume it is contaminated with mold. Mold increases health risks for those with asthma, allergies or other breathing conditions.
- ☐ Open doors and windows. If the house was closed more than 48 hours, let it air it out before staying inside for any length of time.
- ☐ Turn off the main electrical power and water systems until you or a professional can ensure that they are safe. NEVER turn the power on or off, or use an electrical tool or appliance while standing in water.
- ☐ Check the ceiling and floor for signs of sagging. Water may be trapped in the ceiling or floors may be unsafe to walk on.

Using Generators Safely

- ☐ When using a portable generator, connect the equipment you want to power directly to the outlets on the generator. Do not connect a portable generator to a home's electrical system.
- ☐ If you are considering getting a generator, get advice from a professional, such as an electrician. Make sure that the generator you purchase is rated for the power that you think you will need.
- ☐ Wear protective clothing, including rubber gloves and rubber boots.

Cleaning your home



- ☐ Be careful when moving furnishings or debris, because they may be waterlogged and heavier.
- ☐ Throw out all food, beverages and medicine exposed to flood waters and mud, including canned goods and containers with food or liquid that have been sealed shut. When in doubt, throw it out.
- ☐ Some cleaning solutions can cause toxic fumes and other hazards if mixed together. If you smell a strong odor or your eyes water from the fumes or mixed chemicals, open a window and get out of your home.
- ☐ Throw out items that absorb water and cannot be cleaned or disinfected (mattresses, carpeting, cosmetics, stuffed animals and baby toys).
- ☐ Remove all drywall and insulation that has been in contact with flood waters.
- ☐ Clean hard surfaces (flooring, countertops and appliances) thoroughly with hot water and soap or a detergent.
- ☐ Return to as many personal and family routines as possible.

Caution: Carbon Monoxide Kills

- ☐ Never use a generator, grill, camp stove or other gasoline, propane, natural gas or charcoal-burning devices inside a home, garage, basement, crawlspace or any partially enclosed area. Locate unit away from doors, windows and vents that could allow carbon monoxide to come indoors.
- ☐ The primary hazards to avoid when using alternate sources for electricity, heating or cooking are carbon monoxide poisoning, electric shock and fire.
- ☐ The initial symptoms of CO poisoning are similar to the flu (without fever). The most common symptom is headache. Others are fatigue, shortness of breath, nausea and dizziness. At higher concentrations, impaired vision and coordination and irritability may occur. Eventually, people can become lethargic, lapse into unconsciousness and die.

Let Your Family Know You're Safe

If your community has experienced a flood, or any disaster, register on the American Red Cross Safe and WellWeb site available through **RedCross.org** to let your family and friends know about your welfare. If you don't have Internet access, call **1-866-GET-INFO** to register yourself and your family.

Appendix G

Resources

For the tech-savvy, The National Hurricane Center has a Facebook page and a twitter feed. The **NOAA NWS National Hurricane Center** page provides updates about the NHC outreach and education campaign and other items that might be of interest to the public throughout the year. During the hurricane season, the site contains a daily tropical weather update for both the Atlantic and eastern North Pacific basins, as well as alerts regarding any tropical cyclone activity as needed. **The NHC Facebook page is found at:** www.facebook.com/US.NOAA.NationalHurricaneCenter.gov

National Hurricane Center Twitter page:

<http://www.nhc.noaa.gov/twitter.shtml>

NHC has two Twitter accounts. The one for the Atlantic basin is: **@NHC_Atlantic**

National Hurricane Center Website:

<http://www.hurricanes.gov>

American Red Cross of Northeast Massachusetts:

<http://www.northeastmassredcross.org/>

Massachusetts Emergency Management Agency:

<http://www.mass.gov/eopss/agencies/mema/>

Federal Emergency Management Agency (FEMA):

<http://www.fema.gov/hazard/hurricane/index.shtm>

FEMA Boston Office

Tel: (617) 223-9540

Massachusetts Emergency Management Agency

Tel: (508) 820-2000

State Fire Marshal's Office

Tel: (978)-567-3111