



Hurricane Preparedness

Hurricane season runs from June 1 through November 30 but that doesn't mean that's the only time hurricanes can occur. In April of 2017, Tropical Storm Arlene formed in the mid-Atlantic and had winds of 50 miles per hour before it dissipated. In 2016, Hurricane Alex formed in January and Tropical Storm Bonnie formed in late May. In 2021, Tropical Storm Ana formed on May 22 near Bermuda and only lasted two days reaching only minimal tropical storm strength. No matter when a storm forms, early preparation is crucial to minimize the impact of tropical storms on people and property. This bulletin provides an overview of some of the key steps to consider before there is an imminent threat of a tropical storm making landfall on the Texas coast. It also provides a listing of important resources that can help your center in its disaster preparations as well as dealing with the aftermath of a storm.

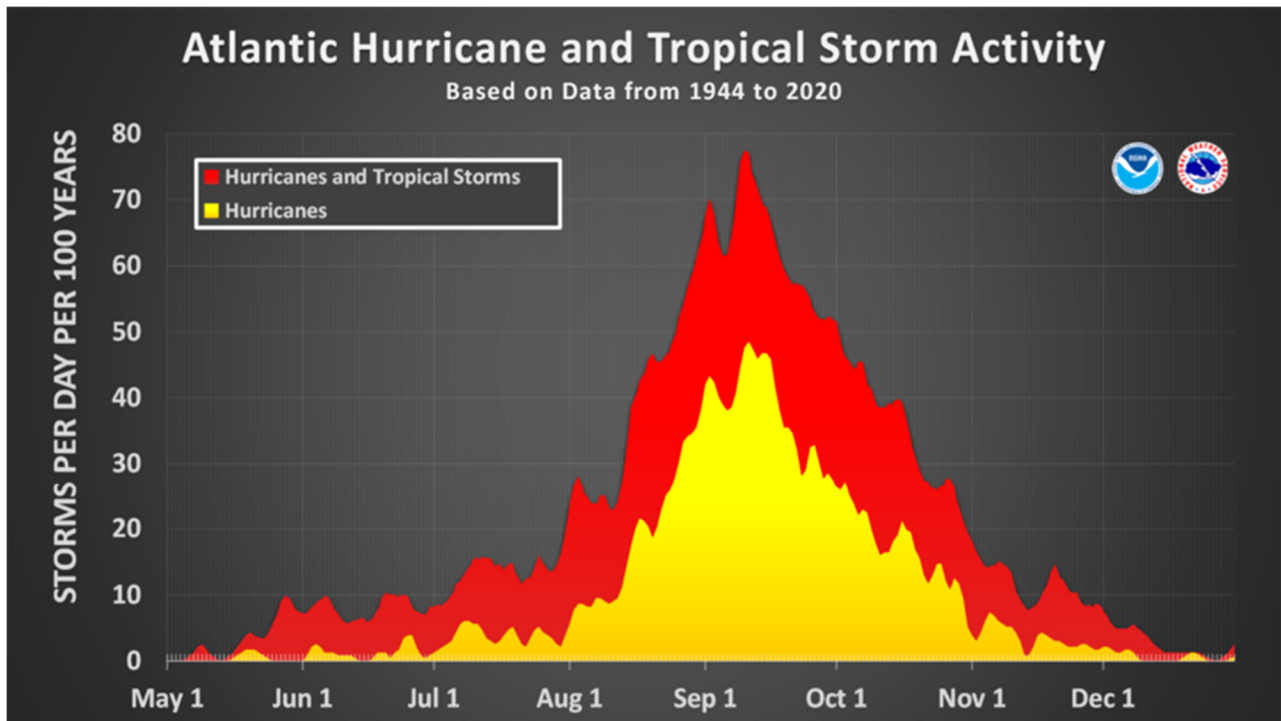
Exposures

The 2022 Hurricane season was an above normal season with fourteen named storms of which eight became hurricanes and two reached major hurricane status (National Hurricane Center). Major Hurricane Ian made landfall in Florida as a category 4 storm. NOAA recently changed its thirty-year period for average number of storms to 1991 through 2020. This raises the average number of named storms to 14 with seven hurricanes, three of which will be major hurricanes.

Current predictions by forecasters at Colorado State University for 2023 show 11 named storms including 6 hurricanes. Forecasters at CSU also estimate that the 2023 season will be below average but with greater uncertainty due to the potential strength of the El Nino now developing in the Pacific.

Historical data from the National Hurricane Center indicates that Texas is second behind Florida in the number of direct hits by hurricanes since recordkeeping began in 1851. Both states have long coastlines which increase the probability that tropical storm damage will occur in any given year. Between 1851 and 2022, Texas was hit by 70 hurricanes, of which 21 were classified as major storms (category 3-5).

The month of September is by far the most active single month for hurricane strikes along the Gulf and Atlantic Coasts. The month of August has been the most active month for major hurricanes hitting Texas. The threat of major hurricanes begins to move from west to east during August, with major hurricanes beginning to favor the East Coast of the United States by late September.



NOAA

Monitoring

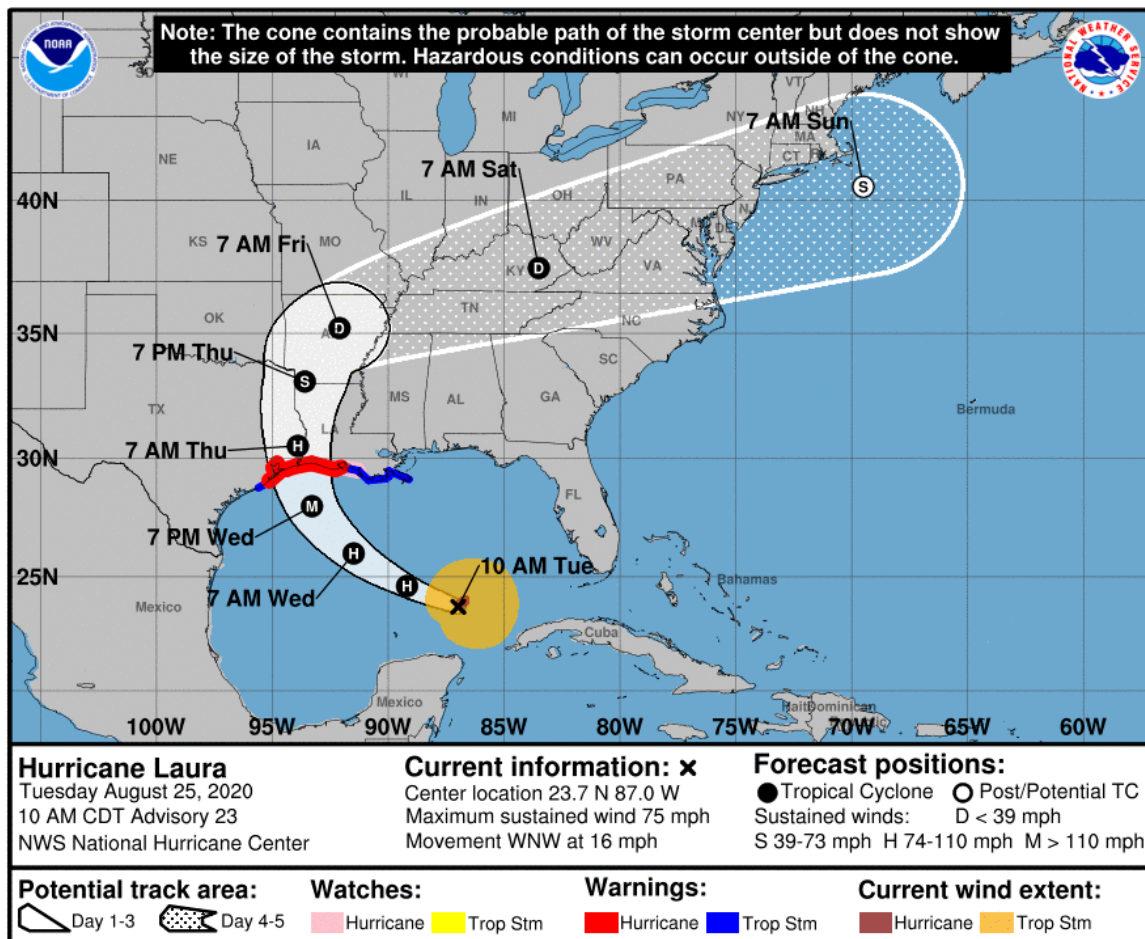
The National Weather Service provides current information on hurricanes through the National Hurricane Center's web site (www.nhc.noaa.gov). This includes the latest forecasts and advisories. The site also includes other tools to help track storms like storm plotting maps, a distance calculator using GPS coordinates and specific predictions of strength and landfall.

NOAA weather radio (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from a nearby National Weather Service office. NWR broadcasts warnings, watches, forecasts, and other hazard information 24 hours a day. Local media outlets and especially television have excellent meteorological teams that do a great job of keeping their local communities informed about the progress of tropical storms. Local coverage can be crucial when life threatening conditions worsen as a storm nears the Texas coast.

Persons involved in emergency planning and preparations should be familiar with the terminology used by forecasters. For example:

- A “**hurricane watch**” means that a hurricane has become a threat to coastal areas. It indicates that hurricane conditions are possible within 36 hours.
- A “**hurricane warning**” means that hurricane force winds (74 miles per hour or greater) are expected within a specific coastal area within 24 hours.
- **Saffir–Simpson** hurricane scale is like the Enhanced Fujita scale used to rate tornados. Its metrics are listed in the table below.

- **Storm surge** is the combination of tide and the amount of water being pushed by winds toward the coast. It is the most damaging and deadly aspect of tropical storms.
- **Storm quadrant** is the area of the storm in quarters. The northeast quadrant of a storm usually causes the most damage because the forward motion of the storm combines with the counterclockwise circulating wind field to increase the intensity of wind and storm surge. This is also an area where the most tornados occur over land.
- **Cone of Uncertainty** is a graphic representation of the predicted path of the hurricane or tropical storm as it approaches land. It is based on observations and models produced by the National Hurricane Center. The actual track of the hurricane is likely to fall within the delineation of the cone.



A hurricane's intensity, speed and direction can change rapidly, so the threat to areas of the coast can also change quickly. Therefore, it is necessary to monitor the National Hurricane Center's forecasts as well as local radio and television newscasts whenever a hurricane is in the Gulf of Mexico.

The intensity of a hurricane is measured by the Saffir-Simpson scale. The scale is based on sustained wind speeds, storm surge, and potential property damage. Hurricanes reaching category 3 and above are classified as major hurricanes because of their potential for loss of life and property damage.

Typical Characteristics of Hurricanes by Category			
Category	Winds (mph)	Surge (feet)	Damage
1	74-95	4 to 5	Minimal
2	96-110	6 to 8	Moderate
3	111-130	9 to 12	Extensive
4	131-155	13 to 18	Extreme
5	>155	>18	Catastrophic



Source: NOAA

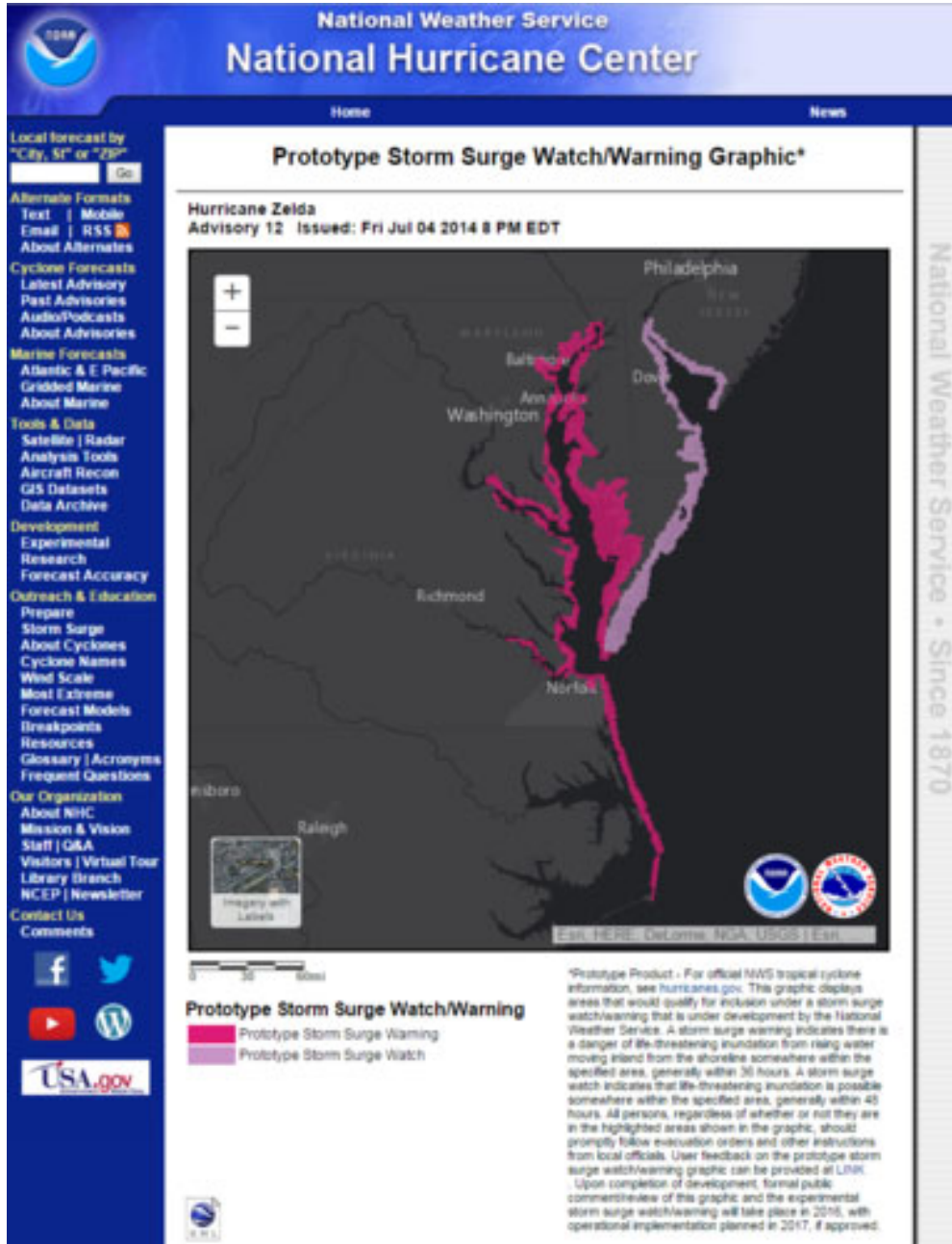
After the unusually large and destructive storms Ike and Sandy which only reached category 2 status the National Hurricane Center began to think about factoring in storm surge as a more prominent element in their warnings. Although neither of these storms reached the coast at greater than category 2 strength, their huge destructive force was equivalent to many stronger storms because of their size and storm surge. In response, the National Hurricane Center now reports more information about the height and areas expected to be impacted by storm surge. According to the National Weather Service

Beginning with the 2017 hurricane season, the National Weather Service (NWS) will issue storm surge watches and warnings to highlight areas along the Gulf and Atlantic coasts of the continental United States that have a significant risk of life-threatening inundation from an ongoing or potential tropical cyclone, a subtropical cyclone, or a post-tropical cyclone.

The areas affected will be characterized by “breakpoints” like those used to describe the extent of coast likely to be impacted by a storm. For instance, the extent of Ike’s impact was finally characterized as the Gulf coast between “Morgan City, Louisiana, and Baffin Bay, Texas.” *NWS Hurricane Warning, Thursday, September 11, 2008* (a stretch of the Gulf coast of 500 miles.) Similar descriptions will now be used to describe impact areas of significant storm surge. It is noteworthy that Ike’s storm surge of 18 feet places it in Category 4, similar to the storm surge caused by Laura in 2020 or Ian in 2022.

The National Hurricane Center will also be issuing Storm Surge watches and warnings illustrated on coastal maps to strongly emphasize the extreme danger posed by storm surge. An example of the new product is shown below:



-  Storm Surge Warning
-  Storm Surge Watch



Prototype Storm Surge Watch/Warning Graphic*

Hurricane Zelda
Advisory 12 Issued: Fri Jul 04 2014 8 PM EDT

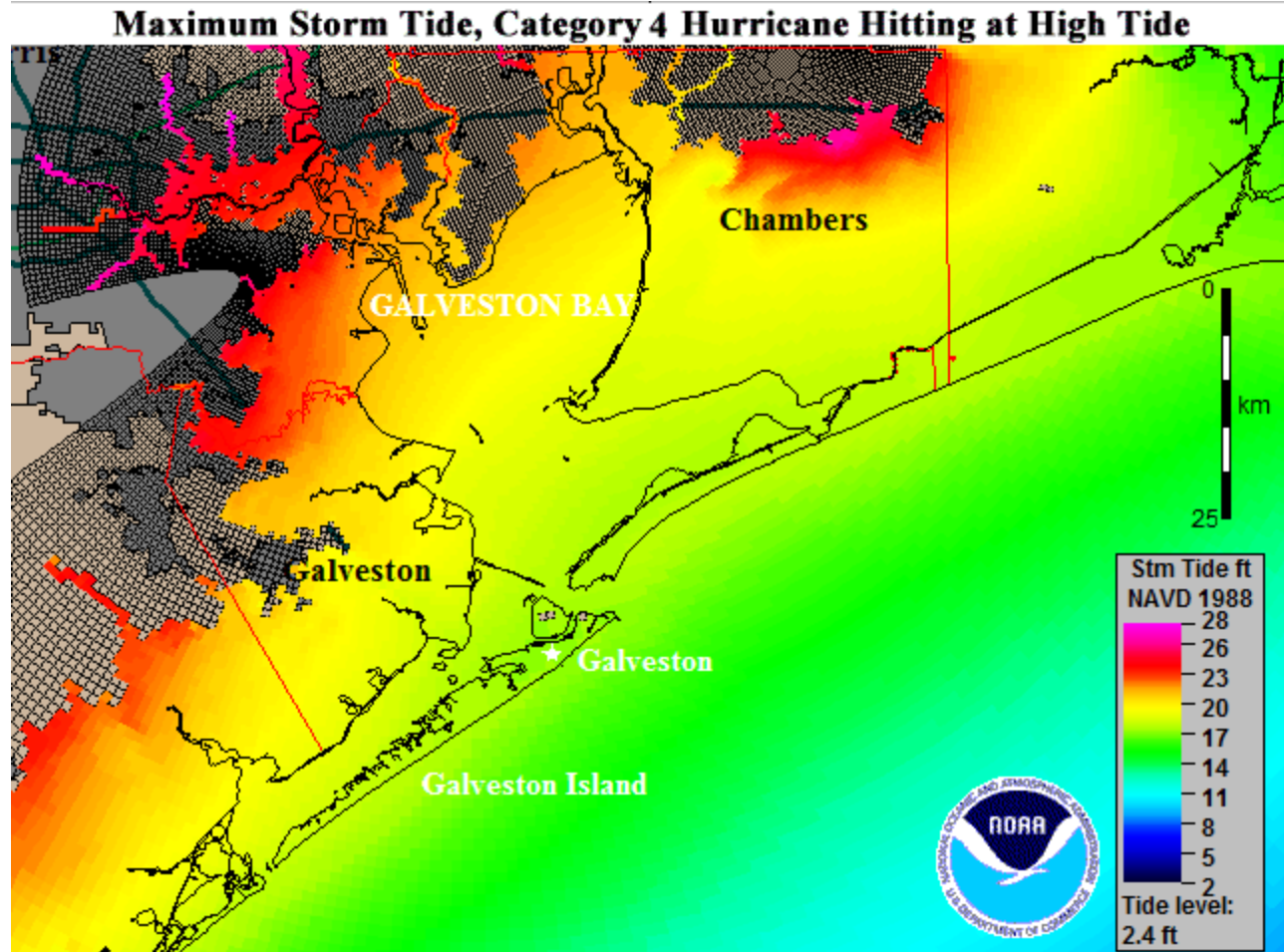
Prototype Storm Surge Watch/Warning

-  Prototype Storm Surge Warning
-  Prototype Storm Surge Watch

*Prototype Product - For official NWS tropical cyclone information, see hurricanes.gov. This graphic displays areas that would qualify for inclusion under a storm surge watch/warning that is under development by the National Weather Service. A storm surge warning indicates there is a danger of life-threatening inundation from rising water moving inland from the shoreline somewhere within the specified area, generally within 36 hours. A storm surge watch indicates that life-threatening inundation is possible somewhere within the specified area, generally within 48 hours. All persons, regardless of whether or not they are in the highlighted areas shown in the graphic, should promptly follow evacuation orders and other instructions from local officials. User feedback on the prototype storm surge watch/warning graphic can be provided at LINK. Upon completion of development, formal public comment periods of this graphic and the experimental storm surge watch/warning will take place in 2016, with operational implementation planned in 2017, if approved.

Another recent development is that the National Hurricane Center will now declare and track Potential Tropical Cyclones from their earliest detection and development before they become official “tropical storms.” The description of this term in the glossary at the end of this bulletin gives more information about this category which came into use in 2017.

Additional resources for monitoring the formation and path of tropical storms are available from some particularly good independent web sites. The following list gives a brief description of the site, some of the features, and its address:



Storm surge impact map for Galveston Bay area based on a Category 4 storm at high tide, NOAA

- **Accuweather.com** is good web site with a hurricane section with tracking and prediction capabilities. www.accuweather.com
- **The National Data Buoy Center** is a specialized site that shows information from buoys tethered in the ocean, including the Gulf of Mexico. The buoys report real time wind and sea state information such as wind speed, direction, gusts, wave height, and barometric pressure. Information from buoys offshore Texas can give current

information about storm conditions as a tropical storm approaches the coast. www.ndbc.noaa.gov

- **The Tropical Meteorology Project** at Colorado State University makes annual predictions of tropical cyclone activity. This web site gives the predictions and reviews their historical accuracy. <http://tropical.colostate.edu/>
- Local radio and television stations often have competent and well-equipped meteorologists who do a very good job of predicting, warning, and tracking the storm as it approaches. They are familiar with local place names that may be important in identifying areas that should evacuate or take shelter.

Planning and Preparation

The following is an overview of suggested planning and preparation activities. This is intended as a general outline that can be used to begin a hurricane preparedness planning process or to evaluate an existing plan. Consult our website for information in Exhibits A, B, and C that provide more detailed examples of actual procedures and provides templates for Emergency Response Plans for Wind and Flood. Many of the recommendations for preparation and response are generic to any kind of disaster.

Steps to Take Before Hurricane Season

The most basic element is an emergency response plan that addresses issues such as preservation of human life, property, emergency response actions, evacuation procedures, disaster recovery, and roles of key personnel. The response plan should be in writing, posted on your website, and provided to employees along with periodic training on hurricane procedures. The plan should be as specific as possible regarding responsibilities, timing, and needed actions or results. Some key elements that should be addressed in the planning process include:

Communications

The ability to communicate before, during, and after an emergency can be critical, so communication procedures should be planned in advance. Maintain a list of contacts with telephone numbers, cell phone numbers, e-mail addresses, and home addresses. Supply cell phones or satellite phones to key personnel if necessary. Satellite phones may be the only communication system that works after a storm if cell towers are destroyed. Consider setting up a toll-free telephone number for employees and clients to call for messages. E-mail and social media such as Facebook, Instagram, and Twitter could also supplement a center's ability to communicate with staff and the public. Prepare for the possibility of complete disruption of landline or cell phone service for some period after the passage of a storm. Procedures and communication enhancements developed during the pandemic lock down can be implemented or maintained. Work from home, telehealth, and meeting software like TEAMS, Webex, or Zoom may allow the center to continue services during and after the storm.

Data and Records

The ability to resume business quickly after a storm depends on having reliable back-up systems for computer data and methods of preserving paper documents that have not been scanned into an electronic health records system yet. This may involve a secure

on-site system or transfer of data and records to another location. Develop plans for safeguarding financial, personnel, consumer files, and other records essential for operations. Secure back-up server sites or cloud sites could also be used to store important data and programming.

Buildings and Facilities

Items such as roofs and freestanding structures are often most vulnerable to storms. Repairing or securing these items early may help prevent extensive damage later. Anything that is unsecured outside could become a destructive missile if high winds hit your location. Storm surge can also batter buildings and facilities with objects carried by the waves. Hail, tornados, and high wind associated with thunderstorms can be just as devastating though shorter in duration. Tornado activity is most frequent in the northeast quadrant of a tropical storm.

Supplies and Materials

Storm preparations may require the use of plywood or shutters to protect doors and windows. Some materials or equipment may need to be covered with tarps or plastic sheets. Acquire these items early to ensure that they are available when a hurricane watch is announced. Emergency supplies such as flashlights, battery-powered radios, extra batteries, non-perishable food, drinking water, portable generators, and fuel should also be on the list of items to have on hand. Make sure that fuel supplies are adequate for emergency generators necessary to keep vital facilities operating. Vehicles should also be filled with gasoline or diesel before the storm arrives as widespread power outages may make it impossible to refuel for a period after the storm passes. Safely store jerry cans of gasoline or diesel so they are accessible for use after the storm.

A “best practice” for storm preparation is to have standby contracts in place for additional pumps, generators, and services like water and mold remediation. If arrangements are not made before a storm, the center may stand in line with hundreds of other individuals and entities needing the same services.

Monitor and Track

Any tropical disturbances that look like they might come into the Gulf of Mexico should be monitored. Keep your staff aware of tropical activity in the Gulf of Mexico or western Atlantic that might enter the Gulf. When Gulf waters are very warm, tropical systems can develop very quickly. Hurricane Humberto went from barely tropical depression status 60 miles from High Island to a category one storm 15 miles from the coast in less than 24 hours. Factors like forward speed, outer rain bands, storm surge, and high tides can close off evacuation routes long before the body of a storm comes ashore.

Also monitor local weather conditions for severe thunderstorm or tornado activity.

Financial Provisions

Paying staff and purchasing necessities after the storm should also be part of your plan. Widespread electrical outages could make ATMs inoperable so there should be some cash on hand to pay for supplies or lodging for staff who must return soon after the storm

passes. Communications outages may make the use of credit or debit cards impossible. Other evacuated staff will also need to be paid if administrative facilities are closed for an extended period. Work with your bank to make sure direct deposit of payroll can be continued.

Physical Provisions

Essential Staff may need to ride out the storm to help keep vital services operating during, and immediately after, the storm. Provisioning for their safety should be accomplished long before Hurricane season. Some centers may have access to hardened sites that have been built to withstand hurricane force winds and be above storm surge elevations. If you don't have a hardened site, use a sturdy, well-protected building that can withstand high winds and is not in an area subject to storm surge. Check your location against the storm surge maps published by NOAA and illustrated above. Choose to co-locate with another entity or the Emergency Management system in your area if an adequate shelter is not available in your own schedule of facilities. Monitoring of the expected path of a storm will help you plan where to go to get out of the way of the most destructive quadrant of a storm.

Steps to Take When a Hurricane Watch is Issued

When a hurricane watch is issued for your area, it is time to activate the emergency response plan and to start taking steps to protect people and property. For example, non-essential personnel should be notified of evacuation plans. Preparations should also begin for protection of facilities and equipment. This should include moving vehicles or equipment inside a building or to a safe location, as well as securing items stored outside. If you have access to a parking garage, consider storing as many vehicles as possible above ground level to prevent flooding. Vehicles that will be used for evacuation or recovery efforts should be fully fueled at this time. Computer data should be backed up and records either protected or moved to a safe location.

This is also the time to make sure that emergency equipment is working and that there is an adequate supply of non-perishable food, first-aid supplies, batteries, and drinking water. Test cell and satellite phones at this time.

If prior arrangements with other centers to accept group home or crisis unit evacuees have not been made, now is the time to find centers that can help. In making arrangements, remember that hurricanes that strike the Texas Gulf coast usually move north and may impact other centers as they track away from the coast. In 2020, Hurricane Hanna came ashore on South Padre Island and headed northwest up the Rio Grande Valley. Wind gusts of over 50 miles per hour were recorded at McAllen Airport over 70 miles from landfall. Other storms moving through East Texas have brought hurricane and tropical storm force winds as far north as Lufkin, Tyler, and Longview. Hurricane Harvey hit the Texas coast as a category 4 storm then moved north toward Bastrop, turned to the east, and settled over southeast Texas where it dumped over 60 inches of rain. It even moved back over the Gulf for a couple of days where it restrengthened to Tropical Storm status before moving ashore again near Cameron, Louisiana. Harvey finally dissipated in Kentucky.

The effects of storm surge are graphically illustrated by the following photographs of the Crystal Beach area on Bolivar Peninsula before and after Hurricane Ike.



Bolivar Peninsula near Crystal Beach before and after Ike, USGS

Steps to Take When a Hurricane Warning is Issued

Close monitoring of forecasts and advisories is critical when a hurricane warning has been issued. Building protection activities should be completed as soon as possible and remaining employees should be relocated to a safe area according to evacuation instructions issued by the responsible local emergency officials. Employees who are

required to be on duty during the storm should be given time to see to their families and homes before they are required to be back at their posts.

Steps to Take After a Storm

When the storm is over, persons surveying the facilities for damage should use caution, especially in flooded areas. Flood waters are full of contaminants, biological hazards, displaced snakes, and other animals. Personnel should be trained to avoid hazardous situations such as fallen utility lines and flooded roadways. When conditions permit, a preliminary inspection should be made to assess the stability of flooded or wind-damaged buildings. If feasible, temporary repairs should be made to protect facilities and their contents from further damage. When initial damage assessments have been completed, employees should be notified of the condition of the facilities and the estimated schedule for returning to work. Employees entering a storm affected area after the storm has passed, should carry identification credentials that will allow them to pass checkpoints and reach their offices and clinics. As the storm passes, people should stay in shelter unless it becomes too dangerous because of destruction of the shelter or rapidly rising water. In most cases, emergency responders are also sheltering and will not be able to help.

Post-Storm Recovery

After an initial damage assessment has been made, the person responsible for the recovery efforts for the center should report the claim to the Fund using the appropriate Property Loss Notice that can be found on the Fund's website at <https://www.tcrmf.org/resources-tcrmf-actual-content/liability-and-property-loss-notices/>. The Fund's claims adjusters will set up claims for damaged property and arrange for inspections by the Fund's independent adjusters or by engineers. These inspections will provide a detailed assessment of damages and cost to repair or replace damaged property. Do not begin repairs other than protection from further damage until our adjusters have seen and documented the damaged property.

Also, report any workers' compensation injuries incurred by employees who are working before, during, or after the storm. Clean up and repair after the storm are particularly hazardous and may expose employees to different kinds of work than they normally do. Exposure to waterborne toxins, pathogens, animals, and snakes can also cause serious injuries. Proper PPE such as gloves, hard hats, rubber boots, waders, and hazardous material suits may be required.

FEMA

Following a hurricane, recovery assistance is available through the Federal Emergency Management Administration (FEMA). After a natural disaster or man-made event that causes extensive damage, FEMA coordinates with the state to implement the Public Assistance Grant Program. FEMA's Public Assistance Program provides supplemental federal disaster grant assistance for the repair of disaster-damaged, publicly owned, facilities. To maximize recovery from this program it is essential that complete and accurate records are kept of all expenditures and staff time devoted to the recovery

process. The following discussion of FEMA policies and procedures was prepared after the Winter Storm of 2021 but is applicable to any disaster that FEMA responds to.

The Federal Emergency Management Agency wants people to know they are not the first to call after a disaster. They will tell you to call your insurance company first. Then they might be able to help you with some of the things insurance doesn't cover. In fact, the current FEMA website states: If you sustained damage from snow and ice during the winter storms and you have insurance, **contact your insurance company** and then FEMA. Your insurance claim information is needed to determine eligibility for federal assistance.

This advice applies to individuals, businesses, and public entities. According to FEMA, there is a step-by-step process for working with them after a disaster under the Individual Assistance (IA) program. Once a disaster has been declared and you experience damage to your center, you can begin the application process by going online at www.disasterassistance.gov accessible 24 hours a day. (FEMA bulletin, March 11, 2021). You can also contact them at 1-800-621-3362. FEMA's involvement depends on a formal disaster declaration before they can begin helping.

Through the "Public Assistance Program, (PA) FEMA provides supplemental Federal grant assistance for debris removal, emergency protective measures, and the restoration of disaster-damaged, publicly owned, facilities." The key to an effective relationship with FEMA is documentation. The first thing you need to document is your claim to the insurance company and any of their responses including claim denials, settlements of your claim, or a delay letter that documents no official decision yet by your insurance company.

To initiate FEMA assistance, the first step is to file a property claim loss notice with the Fund by completing and emailing the applicable Property Loss Notice. Current Loss Notices are found on the TCRMF website at <https://www.tcrmf.org/resources-tcrmf-actual-content/liability-and-property-loss-notice/>. For prompt claim set-up all Loss Notices should be emailed to 5856TCRMF@sedgwick.com. This email address is also at the top of each Loss Notice form.

After a center files a claim with the Fund, download a copy of FEMA's "Public Assistance Program and Policy Guide." This 277-page book documents the steps necessary to meet FEMA requirements when filing a "Request for Public Assistance. (RPA)" Any FEMA awards will come through a "Recipient" or a "*non-Federal entity that receives a Federal award directly from a Federal awarding agency to carry out an activity under a Federal program.*" (*Public Assistance Program and Policy Guide*) This is usually a state or tribal government. In most cases the "recipient" in Texas is the Texas Department of Emergency Management or TDEM.

The Recipient's first step in the award process requires the Recipient to complete an application for assistance and submit the required documentation before awards can be given. Elements the Recipient must implement include an agreement with FEMA, a payment management system, an administrative plan, and a hazard mitigation plan. For a public entity seeking an award (the Applicant) go to the TDEM website for "Public Assistance Resource" to submit a request for public assistance (RPA). If your entity has an existing account from a previous disaster, you will use that to apply. If not, you can obtain one through the FEMA Grants Portal. That is also where the application for assistance is located.

The FEMA website has very good descriptions of the process public entities must use to get help. Start with [fema.gov](https://www.fema.gov) and go to the "Disasters and Assistance" section, then to "Assistance for Governments and Non-Profits Program Overview." FEMA will continue to emphasize the need for effective documentation of all expenses associated with emergency recovery or long-term recovery projects. They will direct you to the Grants Portal to account for all activities associated with damage claims. According to the website, "Applicants can use the Public Assistance Grants Portal to:

- Register for and update an applicant profile
- Submit a Request for Public Assistance
- Upload project documentation"

Access requires a username and password. The best piece of advice offered by FEMA and our members who have dealt with FEMA is to document, document, document.

Source – FEMA website and bulletins, Texas Department of Emergency Management website

The Fund

Texas Council Risk Management Fund loss control consultants take to the field immediately after a storm has passed to assess the immediate needs of members and offer assistance. They will also coordinate with claims staff so necessary resources can be marshaled for effective and rapid response to claims. They do not handle or report claims. Reporting the claim must be done by the member to insure complete and accurate information is conveyed in the claim report.

Co-occurring Disasters

Portions of this edition of the Hurricane Bulletin were written during the Covid-19 pandemic that has been affecting centers across the state. Hurricanes can potentially affect every center in Texas depending on the path it takes after crossing the coast, but their main impact is near the coast. The pandemic is a realistic co-occurring disaster because it is not weather related and has broad impact on all centers. A recent poll by an organization named Get Ready, Florida about Florida citizens' fears about the 2020 Hurricane season revealed serious concerns about any kind of disaster or a hurricane's impact exacerbated by the pandemic. The poll revealed that Florida residents were concerned about:

- Strain on first responders

- More business closures
- Fewer shelters due to social distancing
- Would it be safe to evacuate?
- Ability to care for elderly or high-risk people
- Affordability of supplies

Another important element is communications with staff, clients, and their families. Logistics and to-do lists cannot be allowed to overcome leadership's availability to his or her staff. Conduct regular debriefings and briefings as needed because of changing conditions. (Also debrief after the emergency to learn what successes and failures you had during the events.) Maintain channels for communication with staff and clients during the event. This may become difficult if power is out and communications networks are damaged. Use local radio stations to help get your messages out.

RESOURCES

A. Planning and Preparation

1. National Oceanic and Atmospheric Administration (NOAA)
National Hurricane Center—hurricane forecasts, advisories, and other information
www.nhc.noaa.gov/
National Weather Service—weather warnings, forecasts, and other information
www.nws.noaa.gov/
2. FM Global
<https://www.fmglobal.com/research-and-resources/nathaz-toolkit/windstorm>
3. Federal Emergency Management Administration (FEMA)
<https://www.fema.gov/>
4. Texas Division of Emergency Management
<https://www.tdem.texas.gov/>

B. After the Storm

1. National Institute of Occupational Safety and Health (NIOSH)
Hurricane Response: Storm and Flood Cleanup
<http://www.cdc.gov/niosh/topics/emres/flood.html>
2. Centers for Disease Control and Prevention (CDC)
Clean Up Safely After a Hurricane—Resources on specific cleanup topics
www.cdc.gov/disasters/cleanup/index.html
3. Consumer Product Safety Commission CPSC Safety Alert: Portable Generator Hazards
http://www.cpsc.gov/s3fs-public/portgen_0.pdf
4. Occupational Safety and Health Administration (OSHA)
<https://www.osha.gov/hurricane>
Fact Sheets on Natural Disaster Recovery
<https://www.dol.gov/general/disasterrecovery>
5. Texas Department of State Health Services
<https://texasready.gov/>

C. FEMA Recovery Assistance

1. FEMA
Public Assistance Program for the repair, replacement, or restoration of disaster-damaged, publicly owned facilities
www.fema.gov/public-assistance-local-state-tribal-and-non-profit

D. File a Claim

Texas Council Risk Management Fund
10535 Boyer Blvd. Suite 100
Austin, Texas 78758

Download a property loss notice from the TCRMF website at <https://www.tcrmf.org/resources-tcrmf-actual-content/liability-and-property-loss-notices/>.

For prompt claim set-up all Loss Notices should be emailed to 5856TCRMF@sedgwick.com.

This email address is also at the top of each Loss Notice form.