



BEST PRACTICE GUIDE TO HISTORIC PROPERTY OWNERS' HANDBOOK

**OUR RESILIENT
HERITAGE** ★ ≡
2022-2032
**TEXAS STATEWIDE
HISTORIC PRESERVATION PLAN**

TEXAS
HISTORICAL
COMMISSION 
REAL PLACES TELLING REAL STORIES

MAY 2023

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NOTES

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The 2022-2032 Texas Statewide Historic Preservation Plan included the creation of several related publications: the *Statewide Assessment of Disaster-Related Threats and Recommendations*; the *Best Practice Guide to Local Government Planning*, and the *Historic Property Owners' Handbook*. These documents are posted on the THC website: [Texas Historical Commission](#)

BASTROP COMPLEX FIRE OF 2011, PHOTO COURTESY OF MARK WINSLETT



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ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation	NTHP	National Trust for Historic Preservation
CDBG	Community Development Block Grant	OTHM	Official Texas Historical Marker
CHC	County Historical Commission	RTHL	Recorded Texas Historic Landmark
ESHPP	Emergency Supplemental Historic Preservation Fund	SAL	State Antiquities Landmark
CLG	Certified Local Government	SHPO	State Historic Preservation Office
DOE	Determination of Eligibility	TARL	Texas Archeological Research Laboratory
FEMA	Federal Emergency Management Agency	TAMU	Texas A&M University
GIS	Geographic Information System	TCP	Traditional Cultural Places
HABS	Historic American Building Survey	TDA	Texas Department of Agriculture
HAER	Historic American Engineering Record	TDEM	Texas Division of Emergency Management
HPF	Historic Preservation Fund	THC	Texas Historical Commission
HTC	Historic Texas Cemetery	THPO	Tribal Historic Preservation Office
HUD	U.S. Department of Housing and Urban Development	THSA	Texas Historic Sites Atlas
NOAA	National Oceanic and Atmospheric Administration	TMSP	Texas Main Street Program
NHL	National Historic Landmark	TPTF	Texas Preservation Trust Fund
NPS	National Park Service	TPWD	Texas Parks and Wildlife Department
NRI	National Risk Index	TSTC	Texas State Technical College
NRHP	National Register of Historic Places	TSU	Texas State University
		TxDOT	Texas Department of Transportation
		USDA	U.S. Department of Agriculture
		WMA	Wildlife Management Area

FLOODING FROM HURRICANE HARVEY





HANDBOOK PURPOSE

This is a companion document to *Our Resilient Heritage—2022-2032 Texas Statewide Historic Preservation Plan* and its accompanying *Statewide Assessment of Disaster-Related Threats and Recommendations*. The latter report provides much more detail on how to identify disaster risk to historic properties. This handbook is a simplified supplement that provides information to private historic property owners so that they can prepare for future or imminent disasters. While there are many types of historic properties, this document focuses primarily on buildings as they are the most common type that owners protect.

The handbook briefly explains the definition of a historic property and how owners can register their properties to be eligible for tax incentives and other benefits. The handbook then describes how to identify the disaster risks that are most likely to be encountered in your area, using the Federal Emergency Management Agency's National Risk Index and local history as reference points, along with factors at the individual property level that should be considered. This document also presents disaster preparation suggestions, for both long-term planning and where imminent disaster threats may be present. The list of additional sources and links in the handbook's final sections offers property owners extended assistance in their preparedness process.



HISTORIC PROPERTIES- AN OVERVIEW

The term “historic properties” has a particular meaning in historic preservation as it refers to buildings, cemeteries, landscapes, and archeological sites that have been formally recognized or designated as landmarks and historic districts at the federal, state and/or local level as being historically, architecturally, or culturally significant. This recognition often comes with legal protections and obligations for the property and its owners. It should be noted, however, that your property does not need to be formally registered or landmarked for disaster preparation effects to be useful. The overall guidelines and protective measures in this handbook are intended to assist anyone who owns an older building to find disaster preparedness ideas that will help retain their building’s historic character. The designation is purely voluntary; none of the formal historic property designations listed in this section will be imposed on you as a private property owner unless the designation was already listed in the deed when you purchased your property.

SOME OF THE PRIMARY FACTORS THAT MAKE A PROPERTY ELIGIBLE TO BE RECOGNIZED AS A HISTORIC PROPERTY INCLUDE:

AGE

Must normally be at least 50 years old.

SIGNIFICANCE

Association with a definable historic event, person, or trend, represents distinctive architecture or design, or has the potential to yield valuable archeological information.

INTEGRITY

Must retain the most important architectural features from its period of significance.

EXAMPLES OF PRIVATE PROPERTIES THAT CAN BE CONSIDERED FOR HISTORIC PROPERTY DESIGNATION (INDIVIDUALLY OR IN A HISTORIC DISTRICT) IF THEY MEET THE CRITERIA INCLUDE:



Single-Family Residences



Multi-Family Residences



Commercial Buildings



Places of Worship



Cemeteries



Archeological Sites

Benefits and Responsibilities of Registering a Historic Property: Owners can benefit from registering their historic properties in several ways:

- ❑ When owners help register and administer their privately owned commercial or residential buildings as historic districts, they can often feel a sense of pride and contribute to a community's sense of place and authenticity. Buildings in historic districts tend to retain higher property values.
- ❑ Many Texans have a strong attachment to the way their town, city or county developed historically. Each community's story is unique and preserving their historic properties can help current and future owners retain local identity and historical connections.
- ❑ Registered historic properties can be eligible for financial incentives such as tax credits for preservation and rehabilitation projects. This includes federal and state historic preservation tax credits and a sales tax exemption on labor. Information on these tax incentives is presented on the THC's [website](#).

Owning registered historic properties also comes with responsibilities. Two include:

- ❑ Any work performed on a registered or landmarked historic property must not significantly alter the property's main character-defining architectural or design features. This can require using guidelines developed by the local community or a resource such as *The Secretary of the Interior's Standards for the Treatment of Historic Properties*.
- ❑ Historic property owners must follow their local jurisdiction's ordinances, especially the building codes and permit processes that ensure owners manage their historic properties appropriately and provide the resources to keep their historic designation. Ask your local building department if they have recognized your property as historic and, especially if it is in a designated historic district, request information about their requirements.

The following discussion presents information on the various types of federal, state, and local historic property designations. As noted above, applying for historic designation for an individual private property is the owner's choice. Unless you purchased your property with a designation already listed on the deed, the designation is a wholly voluntary action.

Federal Definition of Historic Property: The National Park Service (NPS) is the federal agency responsible for national historic preservation programs, including the National Register of Historic Places (NRHP). The NRHP was created in 1966 with the passage of the National Historic Preservation Act, which established guidelines that sites, districts, buildings, structures, and objects that are at least 50 years old can be listed on the NRHP if they meet at least one of the following criteria:

- A. are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. are associated with the lives of persons significant in our past; or
- C. embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. have yielded, or may be likely to yield, information important in prehistory or history.

In addition to having significance in one of the above categories, to be NRHP-eligible a property must also retain historic and architectural integrity. There are seven aspects of integrity: location, setting, association, design, materials, workmanship, and feeling. A property does not need to retain all seven aspects but must retain enough to convey its significance. The aspects of integrity most important for conveying its significance will depend on applicable significance criteria. The NPS has [numerous bulletins](#) available online about applying the NRHP criteria and assessing integrity. The THC also has [resources available](#) to help nominate your property to the NRHP.

Your property may already be listed in the NRHP by a previous owner or be located in an NRHP-listed or NRHP-eligible historic district by a previous survey. Ways to see if that is the case are discussed in the next section. While property owners are, of course, encouraged to maintain the property so that it remains historically accurate, it is important to note that as a private owner, the NRHP regulations do not limit your ability to use your property in any way, including restricting your ability to alter, manage or sell it, requiring public access, or requiring that it be maintained, repaired or restored.

State Historic Property Recognition: The State of Texas does not have a specific regulatory definition of a historic property in the same manner as the National Historic Preservation Act. The THC uses other processes to recognize important Texas historic resources, even if they have not been recognized or assessed for their eligibility for the NRHP. Key state designations for historic properties are described below. An exception to property owner autonomy would be if the property owner accepts local, state, or federal grant funding that requires work on the building to meet The Secretary of the Interior's Standards and/or filing of a preservation easement at the county clerk's office.

The Antiquities Code of Texas and State Antiquities Landmarks: Exceptional local and state historic properties are recognized through the Antiquities Code of Texas (ACT), enacted in 1969. The ACT is limited to non-federal lands and is administered by the THC. Its purpose is to identify and manage important historic properties, including archeological sites, for current and future generations of Texans.

The ACT contains provisions that are used by the THC in concert with local jurisdictions and private landowners to designate State Antiquities Landmarks (SALs). Historic buildings and other aboveground historic resources must be listed (not just eligible for listing) in the NRHP before they can be designated as SALs, but archeological sites do not have the same prerequisite. A building, structure, object, or archeological site that is designated a SAL receives the highest legal protection under Texas law. When proposed work (demolition or rehabilitation) will affect a building that is designated as a SAL, the property owner must [submit an application](#) to the THC for antiquities permit at least 60 days before any work commences. The THC will evaluate the proposed activities, determine if a permit is needed and, if so, help guide the owner through the process.

Any group or individual may nominate a historic property that meets the criteria for official SAL designation. Upon receipt of a complete nomination, the THC determines whether the property is eligible for designation and schedules the nomination for consideration at one of the commission's public meetings. Nominations are first considered by the Antiquities Advisory Board, which makes recommendations to the commission. The commission allows a comment period prior to a final designation vote at their next scheduled meeting. If approved, the designation is recorded in county deed records and conveyed to the new owner when the property is sold.

Recorded Texas Historic Landmarks (RTHLs) are buildings and structures at least 50 years old that are recognized by the state as being historically and architecturally significant. Nearly 4,000 properties have received this honor to date. The designation requires the private landowner to purchase and display an RTHL marker but does not oblige the owner to allow public access to their property.

A key expectation of any building awarded RTHL designation is that its exterior appearance retains its historical features and integrity. Renovations to a RTHL cannot occur without first notifying the THC at least 60 days beforehand and allowing the agency to review the proposed project actions and provide its comments. If what are deemed inappropriate alterations to the structure are performed, it can lose its RTHL designation. Nominations for RTHL generally are accepted in the spring and are first made by contacting the local County Historical Commission [here](#). The THC has developed a [brochure](#) that details the benefits of recording a property as a RTHL and how to nominate it.

Official Texas Historical Markers (OTHM)s are found in all 254 Texas counties and recognize a wide variety of individual historic properties as well as important Texas community events, people, organizations, military sites, and cemeteries. These markers are

educational in purpose and number over 13,000, making the program one of the most visible to residents around the state. While the markers themselves do not assign legally protected historic property status, they may help indicate significant individual buildings and structures that could receive that status. Like RTHLs, applications to erect an OTHM are first made through the local County Historical Commission. Information about applying for a historical marker can be found on the THC's [website](#).

Cemetery Preservation Program: The THC estimates that there are 50,000 or more places of human interment in Texas, many of them unmarked and therefore subject to destruction from development. They are part of Texas' cultural heritage and residents who own or know of a historic cemetery on their property are encouraged to contact the THC so that these burial places can be included within the official inventory. The THC can designate eligible burial places as [Historic Texas Cemeteries](#) and has developed guidelines to aid interested parties in obtaining this recognition in this effort, including installing a historical marker.

Texas Main Street Program: Historic businesses and homes located in downtown settings can have particular importance to those communities. The historic feeling and characteristics of these areas can improve local tourism and the general quality of life for their residents. Unfortunately, many downtown areas have become rundown and neglected over time. Texas, through the THC and the creation of the Texas Main Street Program, was an early supporter of assisting towns and cities in recognizing and revitalizing these historic districts. This effort is tied to Main Street American, a program developed in 1981 by the National Trust for Historic Preservation. Financial resources can be available to jurisdictions who participate. A current list of participating Texas Main Street communities can be found on the THC website [here](#).

Family Land Heritage Program: The Texas Department of Agriculture started the Family Land Heritage program in 1974 to recognize farms and ranches that have been in continuous operation by the same family for at least 100 years. Over 3,700 properties have been recognized in this manner, spread over 220 counties. Farms and ranches recognized by the program are not automatically designated as historic properties but may be eligible for other programs such as RTHL designation or listing in the NRHP based on surviving buildings or their significance to local history. Those who qualify for the program receive a certificate and can obtain a Texas Century Farm or Ranch plaque to display on their property. The family's history is also formally documented in the Department of Agriculture's Family Land Heritage Registry. Information on applying for the Family Land Heritage Program can be found on the departments website [here](#).

Historic Texas Lands Plaque: Texas private landowners who promote archeological research on their property can be recognized with a Historic Texas Lands Plaque. This plaque the following actions:

- Transferred ownership of one or more significant archeological sites to the THC, another state agency, or a suitable nonprofit organization such as a land trust. Transfers can occur by selling land or creating a permanent conservation easement.
- Designated one or more archeological State Antiquities Landmarks and filed the paperwork with the relevant county office.
- Allowed substantial and significant archeological research on their property.

Applications for the Historic Texas Lands designation and plaque can be made through the THC website [here](#).

Local Designations for Historic Properties: Historic properties can also be recognized exclusively at the local level of government. Some properties may hold individual landmark status due to their association with a particular historic person or due to their architectural significance. Most privately owned historic properties are designated as contributors to local historic districts.

A historic district is any set of multiple historic-age resources that are significant as a whole collection. For private property owners, this commonly includes residential neighborhoods, commercial areas, or farmsteads. Historic districts can be locally designated under a municipal historic preservation ordinance or zoning code, officially listed in the NRHP, or determined eligible by the THC or by a local building department.

Owners of properties in local historic districts are typically required to seek approval from the local building department for any exterior alterations, demolition, or new construction. The Certificate of Appropriateness is a specific type of building permit that is unique to historic buildings under local jurisdiction and is used to confirm that the proposed alterations will not destroy any of a property's character-defining features.

Conservation districts are similar to but somewhat different from historic districts. Although conservation districts may lack enough architectural cohesion to be designated full historic districts, they allow neighborhood residents and local governments, to create and enforce design standards in addition to any deed restrictions or zoning requirements for included parcels. Design standards are intended to retain architectural cohesion between the existing buildings and new construction and might include setback requirements, height limits, exterior building materials, or garage placement.

The Main Street Program focuses on “strengthening communities through preservation-based economic development in older and historic downtowns and neighborhood commercial districts.”¹ Main Street areas often overlap with commercial historic districts; however, a commercial historic district is not necessarily a designated Main Street and not every designated Main Street is a commercial historic district. The THC [website](#) maintains a list of current main street communities.

Explore the following avenues to determine if your property has been designated historic:

- Contact your local building department, planning department, or historic preservation office.
- Check the National Register of Historic Places database.
- Access the THC's Texas Historic [Sites Atlas](#) and the Texas Department of Transportation's Historic Resources of Texas Aggregator.
- Get in touch with your local County Historical Commission [chair](#).
- Contact the Texas Historical Commission [architectural reviewer](#) for your county.
- Reach out to your homeowner association.
- Consult a local historical association.

If your property has been registered as a historic property, talk to your local historic preservation officer or building official. Ask what, if any, restrictions are in place before you perform make any significant alterations to your property, especially to its exterior.

¹ [Main Street America: Who We Are](#)

ASSESSING AND PLANNING FOR DISASTER RISK TO YOUR HISTORIC PROPERTY

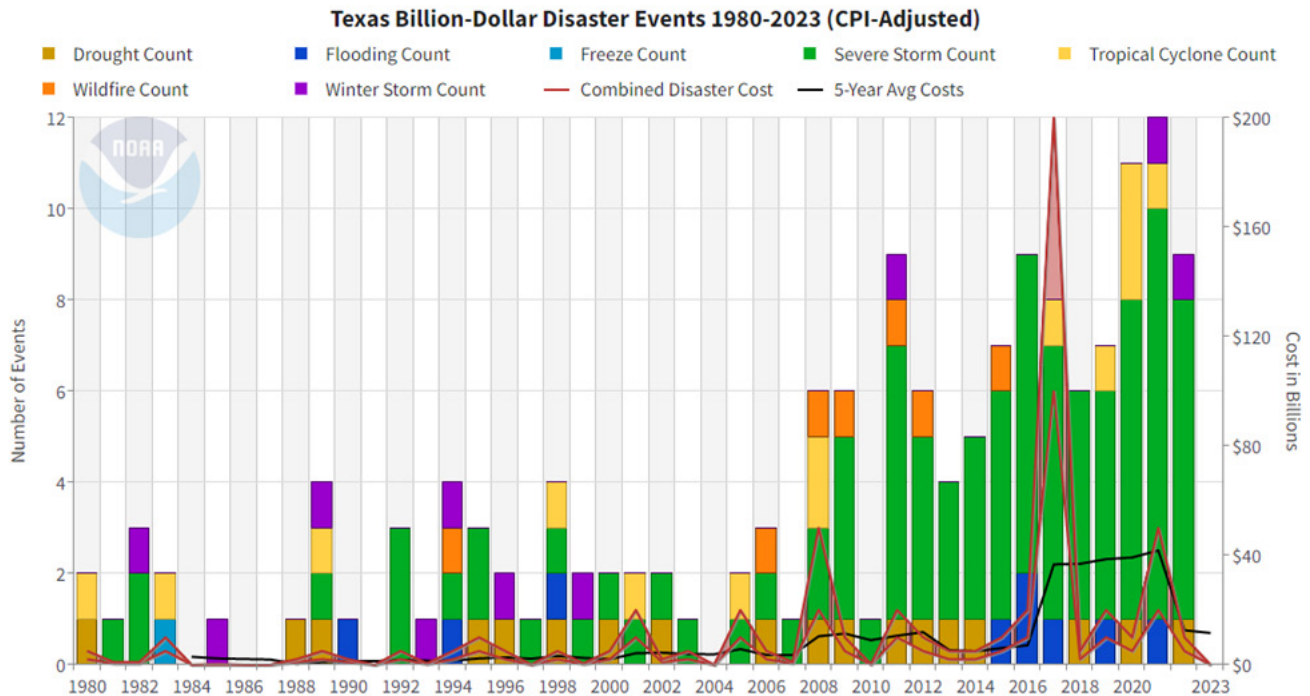
Disaster planning for your historic property compares directly with the risks that your entire community faces. Knowing what types of disasters could affect your area can be somewhat reliably determined by past events, but not entirely. The graph below shows the dramatic increase in disaster frequency and severity within the state by the number of events that have caused over \$1 billion in damage, a threshold that is adjusted for inflation in the graph and does not include the many other disasters that caused a lesser dollar amount of damage. This suggests that the disaster risk types that Texas communities experience have not changed but the intensity of events when they occur can be higher than those past experiences.

GALVESTON ISLAND




FREQUENCY AND COST OF DISASTER EVENTS IN TEXAS: 1980 TO APRIL 10, 2023

(SOURCE: NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION)



“ It should be noted, however, that your property does not need to be formally registered or landmarked for disaster preparation effects to be used. ”



“ Disaster planning for your historic property compares directly with the risks that your entire community faces. Knowing what types of disasters could affect your area can be somewhat reliably determined by past events, but not entirely. ”

The Federal Emergency Management Agency (FEMA) has developed the National Risk Index (NRI) through a partnership with academia, private industry, and local, state, and federal governments. The NRI, updated on a regular basis, can also help you recognize the most likely types of risks that may be faced in your county or census tract. Although the overall risk index value is focused on economic and resident risk rather than risk to physical properties, the model's projected frequency at which each disaster category could occur offers property owners helpful information. Your local emergency management office can also provide this information; ask for a copy of the community's current hazard mitigation plan.

After determining the likeliest disaster types to affect your community, evaluate your specific property in relation to the following key risk factors:

- ❑ **Geographic position:** For example, properties near waterways will be more likely to experience flooding. Properties near the coast will be more susceptible to high winds and storm surge.
- ❑ **Construction materials used:** For example, stone buildings have less risk of wind and fire damage than wood-framed buildings.
- ❑ **Elevation:** For example, properties at higher elevations will generally experience reduced flood risk.
- ❑ **Architectural design features:** For example, flat roofs have increased risk of collapse from heavy ice or winter storm snowfall weight.
- ❑ **Landscaping on property:** For example, heavily wooded surroundings are at increased wildfire risk as well as from damage if nearby trees were to topple over.
- ❑ **Condition:** For example, properties in need of repair can be impacted much more during disasters than those in good condition.

ACTIONS TO TAKE BEFORE A DISASTER HAPPENS

After a disaster strikes it can be difficult to determine its effects on a historic property unless the property's condition beforehand was fully documented. Without that information your historic property may become ineligible for post-disaster funding, or you may accidentally perform inappropriate changes during repairs (such as installing vinyl framed windows) which may result in the property no longer being eligible for its historic designation.

The following section provides some suggestions for actions to take before a disaster occurs, with specific reference to the most common disaster types encountered in Texas. Please note that any modifications to a historic property should always be coordinated with your local historic preservation officer, building department and/or the THC to ensure they are appropriate for that type of structure and will not negatively affect its historic significance.



GENERAL CONSIDERATIONS

- ❑ Collect and digitize important records of your historic property, such as your deeds, land survey, architectural drawings, historic photos, and inspection reports. Upload them to a cloud-based server such as via your cell phone company or email provider.
- ❑ Take photos from all angles of the property, especially the exterior. Close-ups of key architectural features such as windows, doors, foundation, porches, and stairways can help show how they were built and what kinds of construction materials were used. Update photographs at least every three years to demonstrate your information is recent to as needed after a disaster occurs. Also update photographs during every major renovation.
- ❑ Develop an emergency plan before a disaster occurs to identify how you will protect the property from the types of hazard(s) you face. Consult [Ready.gov](#) for useful information on how to personally prepare for a disaster, including the types of supplies to keep on hand, financial preparations, and how to determine evacuation routes. The safety of residents during a disaster event is paramount!
- ❑ Store essential disaster mitigation materials in advance of a disaster. Items such as pre-cut plywood to cover building windows and sandbags to floodproof building entrances will often quickly become unavailable after a disaster warning is sent out; having them on-hand will allow you to install them more quickly.
- ❑ Purchase adequate insurance coverage. Historic properties must retain their key architectural characteristics to keep that designation. Properties damaged by a disaster will normally need to be repaired using appropriate time-period construction materials and methods, such as those outlined in the [Secretary of Interior's Standards for Rehabilitation](#). Your local government may also have published guidelines on appropriate design and construction materials if your property is in a historic district. These repairs can be more expensive than what is afforded under a standard insurance policy; purchase an insurance policy with a value that covers the “historic replacement cost” or “historic property valuation clause.” If you cannot find an agent familiar with historic properties, the NTHP has an insurance entity specifically focused on coverage for individual buildings.

Most Texas communities are included within the National Flood Insurance Program. Determine if your community is one of them by referring to the [“community status” webpage](#) or by asking your insurance agent. You can check if your property is located in a designated floodplain by exploring FEMA’s [Flood Map Service Center](#). High risk is defined as properties that are projected to have a one percent or greater annual projection of flooding, also commonly referred to as the “100-year floodplain.” This is commonly misconstrued in the media as “once in a century storms” after a severe event. The key aspect is that this flood risk is estimated at minimum to be One per cent chance per year. It is certainly possible (and happens often) that properties flood repeatedly, even in a five- or ten-year period. Another factor that can be advised is that the FEMA maps can be wrong as many are based on old or unverified data. This can cause people to believe they are at a reduced flooding risk. Since properties within Zone X (designated outside the floodplain) often experience flood damage, purchase flood insurance for your property regardless of its floodplain. The NTHP offers [additional information](#) on protecting historic properties from flooding.

- ❑ Take advantage of tax credits and exemptions, if available, to help keep your property well maintained and more resilient to disaster effects. Some local governments grant property tax exemptions for buildings designated as RTHLs or local landmarks. Your property may also be eligible for the Federal Historic Rehabilitation Tax Credit Program, which applies to the rehabilitation of some historic income-producing buildings such as rental housing, hotels, offices, commercial, and industrial buildings, and certain agricultural facilities. The Texas Historic Preservation Tax Credit Program may also provide a parallel tax credit of 25 percent that can be applied to the state franchise tax or state insurance premium tax. More information on these tax credits can be found in the THC's [website](#).
- ❑ When anticipating a disaster, monitor reliable weather news sources (NOAA Weather Radio preferred) to avoid speculation or confusion that can come from multiple news sources. In the event of an imminent potential disaster, the Weather Radio station will automatically set off an alarm and provide information on where the disaster is located and how to prepare. You can find the [NOAA stations that cover your community](#) online.
- ❑ Your community may have set up procedures that can assist you after a high wind or flooding disaster. In 1997, the Texas Legislature enacted a windstorm exemption for historic properties that are NRHP-eligible or NRHP-listed, RTHLs, or at least 50 years old, are designated by a municipality as historic landmarks, and registered as such with the THC before a disaster occurs. The exemption allows owners to preserve their property's integrity by repairing with historically appropriate construction materials, even if these materials do not meet current hurricane code standards, thus preserving the property's historic integrity. If you believe your property could be eligible, contact your local historic preservation office and/or THC staff immediately to discuss how your property can be registered with the THC before a disaster strikes.

A second exemption is provided under the National Flood Insurance Program, which allows for historic properties to avoid the need for elevation after being substantially damaged by a flood if that action would destroy a building's historic integrity. Substantial damage is normally defined as the post-disaster building repair costs ("improvements") higher than 50 percent of the property's pre-disaster value. Communities may exempt historic buildings from this requirement by modifying the definition of substantial improvement in their building ordinances. The jurisdiction can also issue variances for historic buildings during the disaster recovery permitting process; improvements, including elevation, must be the minimum necessary to preserve a building's historic character while also retaining a property's status as historic.

- ❑ Additional funding may be available to help repair damaged historic properties and retain their historic integrity when a historic property is damaged by a severe disaster event and the owner submits a post-disaster application for federal assistance to FEMA or to a Texas General Land Office disaster program. When submitting an application, include a statement that your property has been designated historic at the local, state, or federal level as that could hasten the delivery of those funds.

SPECIAL CONSIDERATIONS FOR MUSEUMS AND LIBRARIES

Museums and libraries will have different mitigation preparation needs as their historic properties are often not the buildings themselves but the many unique and irreplaceable historical objects, artwork, and texts that they contain. The [Institute of Museum and Library Services](#)' website details methods and grants that may assist in post-disaster recovery needs. The Heritage Emergency National Task Force, a joint venture between FEMA and the Smithsonian Institution, provides education and training to museum and library leaders, first responders and emergency managers to help prepare for disasters and address their aftermath; they can be contacted by email at culturalrescue@si.edu. The American Institute for Conservation also offers tip sheets, support, and assistance through their [National Heritage Responder program](#), which can be accessed online or by individuals via email, NHRpublichelpline@culturalheritage.org, and by institutions via phone, (202) 661-8068.

Disaster preparation planning for museums and libraries is similar to other historic properties, although the number of items involved may make the process more time consuming.

Some suggestions in addition to the disaster-specific measures discussed below include:

- ❑ Keep an up-to-date digital record of all items in the collection, including photos of artwork, exhibit items, and especially rare books or maps. Secure the inventory through uploading it to a cloud-based server.
- ❑ Elevate stored items, particularly those that are considered rare and fragile, in rooms without windows whenever possible to reduce flooding or high wind damage.
- ❑ Generate a prioritized list of items that will be evacuated offsite, if conditions will allow.
- ❑ Elevate climate control equipment to reduce the risk that it shorts out from flooding, preventing prolonged outages that could result in interior mold growth.

HURRICANE HARVEY AERIAL | CREDIT: ISTOCK

HIGH WIND EVENTS (TORNADOES, TROPICAL STORMS, AND HURRICANES)

A tornado is a violently rotating column of air extending from the ground to the supercell thunderstorm above it, which is defined by a rotating updraft and strong vertical wind shear. Tornadoes generally develop within moist and warm air that advances alongside or ahead of colder air fronts. Most tornadoes are weak, but those with funnel speeds above 110 miles per hour are categorized as strong and have significant risk to cause major damage (see chart). The course of a tornado is unpredictable and, due to the way it reaches the ground surface, it is possible for one side of a street to experience destruction while buildings on the other side survive comparatively unscathed. Strong winds can cause damage to historic properties directly by causing them to shift in position, affecting their structural integrity. In the case of buildings, strong winds can blow out windows or doors or remove roofs, thereby also exposing their interiors to any accompanying or future precipitation. Winds can also cause nearby trees to fall onto historic properties as well as other forms of indirect damage.

Tropical storm and hurricane season along the Texas Gulf Coast typically runs from June 1 to November 30; however, it is possible to have a high wind event outside of those dates. Between 1851 and 2016, 289 hurricanes reportedly affected the continental United States. Sixty-three of these (21.7 percent) struck Texas, 20 of which were major hurricanes classified as Category 3 or above.¹ Hurricanes can damage historic properties directly through high winds (see chart) and tornado formation. Substantial damage can also occur through heavy rainfall and storm surge (water violently being rapidly driven onshore); review the flood mitigation section below. Tornadoes associated with hurricanes most often happen in rain bands far away from the center of the hurricane, but they can occur near the eyewall. These tornadoes are usually weaker than standard tornadoes, described above, and are normally short-lived but can still cause heavy localized damage to aboveground historic properties caught in their path.

THE ENHANCED FUJITA TORNADO SCALE

EF CATEGORY	GUST WIND SPEED (MPH)	DAMAGE LEVELS
0	65 TO 85	SEE HTTPS://WWW.WEATHER.GOV/OUN/EFSCALE
1	86 TO 110	
2	111 TO 135	
3	136 TO 165	
4	166 TO 200	
5	>200	

¹ [Texas Comptroller of Public Accounts: Fiscal Notes](#)

THE SAFFIR-SIMPSON HURRICANE SCALE

EF CATEGORY	GUST WIND SPEED (MPH)	DAMAGE LEVEL	TYPICAL DAMAGE IMPACTS
1	74 TO 95	<i>EXTREMELY DANGEROUS WINDS WILL PRODUCE SOME DAMAGE</i>	<i>WELL-CONSTRUCTED FRAME BUILDINGS COULD HAVE DAMAGE TO ROOF, SHINGLES, VINYL SIDING AND GUTTERS. LARGE BRANCHES OF TREES WILL SNAP, AND SHALLOWLY ROOTED TREES MAY BE TOPPLED.</i>
2	96 TO 110	<i>EXTREMELY DANGEROUS WINDS CAN CAUSE EXTENSIVE DAMAGE</i>	<i>WELL-CONSTRUCTED FRAME BUILDINGS COULD SUSTAIN MAJOR ROOF AND SIDING DAMAGE. MANY SHALLOWLY ROOTED TREES WILL BE SNAPPED OR UPROOTED AND BLOCK NUMEROUS ROADS.</i>
3	111 TO 129	<i>DEVASTATING DAMAGE CAN OCCUR</i>	<i>WELL-BUILT FRAMED BUILDINGS MAY INCUR MAJOR DAMAGE OR REMOVAL OF ROOF DECKING AND GABLE ENDS. MANY TREES WILL BE SNAPPED OR UPROOTED, BLOCKING NUMEROUS ROADS.</i>
4	130 TO 156	<i>CATASTROPHIC DAMAGE CAN OCCUR</i>	<i>WELL-BUILT FRAMED BUILDINGS 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.</i>
5	>156	<i>CATASTROPHIC DAMAGE WILL OCCUR</i>	<i>A HIGH PERCENTAGE OF FRAMED BUILDINGS WILL BE DESTROYED, WITH TOTAL ROOF FAILURE AND WALL COLLAPSE. FALLEN TREES AND POWER POLES WILL ISOLATE RESIDENTIAL AREAS.</i>

Mitigation measures to consider:

- Conduct regular maintenance to prevent or fix structural damage. Inspect your historic property at least once a year if possible.
- Install strapping to reinforce the roof and foundation, and/or retrofit internally weak structural areas to current building code.
- Install impact-resistant glass or shutters on windows and doors. These may require special design to conform to the overall appearance of the historic building.
- Reinforce the foundation, walls and large doorways using brackets or other supports.
- Hire a professional arborist to assess the condition of any large trees near your historic property to identify health or rot issues that could increase their potential to fall during high winds. Trim trees and overhanging branches.
- Install lightning protection through lightning rods, grounding wires, and surge protectors.
- Store pre-cut plywood on-site to rapidly secure windows and doors.

- ❑ Evaluate objects around the property for their potential to become airborne projectiles during high winds and secure them with anchors or removed and stored before a predicted high-wind event.
- ❑ Tornadoes can develop with little warning and follow unpredictable paths, making advance preparations nearly impossible. Construct or retrofit a nearby reinforced shelter that can safely hold the total number of people inhabiting your historic property.

FLOODING EVENTS (COASTAL AND INTERIOR)

Coastal flooding occurs when sea water from the Gulf of Mexico inundates or covers normally dry coastal landforms. It can result from short-term or longer-term events. The primary short-term event comes from water being rapidly driven onshore by hurricanes, tropical storms, or other high-wind occurrences. Storm surge and waves can batter aboveground historic properties close to the shoreline and cause erosion that destroys archeological features and moves or redeposits artifacts to other locations. Storm surge can also reverse a waterway's course, making it flow upstream or overflow its banks, which can cause channel erosion and flood damage miles inland.

Interior flooding is flooding away from the Gulf Coast that generally results from slow-moving storms inundating an area with rainfall. Streets in urban areas that receive a lot of rain in a short time can easily flood if there is a large number of paved streets, sidewalks, and other impervious surfaces. However, the area that received the rainfall will not necessarily be the place that floods. As watersheds collect and funnel water downstream, the effects multiply and ultimately overflow the creek or riverbanks many miles from the original rainfall event. Interior flooding can be exacerbated by several factors such as flash floods (heavy rain in areas where the soil has baked dry), burn scars after wildfire events, snowmelt, and dam or levee failures.

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After a disaster strikes it can be very difficult to determine its effects on a historic property unless the property's condition beforehand was fully documented. Without that information your historic property may become ineligible for post-disaster funding, or you may accidentally perform inappropriate changes during repairs, which may result in the property no longer being eligible for its historic designation.

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Floodwater can affect historic properties in two primary ways. Interior areas will typically experience flooding from rising waters due to heavy rainfall that overwhelms the stormwater drainage capacity or from streams or rivers overflowing their banks, spilling into the area. Resources close to the coast are also at risk of extreme tidal surges that can extend a wall of water directly properties; this possibility can also exist in interior areas directly downstream from reservoirs if dams fail.

Mitigation measures to consider:

- ❑ Identify your historic property's precise elevation through a civil survey and compare that to the current [FEMA floodplain map](#) to determine flood risk. Given that these maps are based on historical data rather than future projections, purchasing a National Flood Insurance Program policy is recommended, even if not in a designated high-risk flood area.
- ❑ Floodplain category Zone V is a very high-risk flood zone in coastal areas. The "V" stands for "velocity" because this zone can face damage from strong waves during storm surge as well as from higher flood levels. Hire a professional engineer to retrofit historic buildings located within this zone to improve their ability to withstand storm surge.
- ❑ Help prevent flooding by ensuring your building has adequate drainage systems. This includes installing gutters and downspouts, clearing out any debris from drainage systems, and redirecting water away from your building. The landscapes around your building can also be graded to direct water away.
- ❑ Clogged or damaged drainage systems can cause water to accumulate around buildings. Regularly inspect and clear drainage systems to avoid this.
- ❑ Implement erosion controls if your historic property is located near a stream or riverbank.
- ❑ Plant vegetation and trees around your building to help absorb water and reduce the risk of minor flooding events. This can include creating green roofs, rain gardens, and bioswales.
- ❑ Apply a waterproof coating to floors or walls to help prevent water from seeping into the building. This can include adding a waterproof membrane to the foundation, installing sealant around windows and doors, and using waterproof materials for flooring.
- ❑ Retrofit nonresidential buildings using dry floodproofing methods if elevation is not possible.
- ❑ Store sufficient sandbags on site to rapidly secure low areas, particularly doors and other openings. Also consider inflatable barriers.
- ❑ Elevate HVAC systems at least two feet above the projected base flood elevation to prevent prolonged outages that will result in interior mold growth.

WILDFIRE EVENTS

A wildfire is an uncontrolled, destructive fire that originates in woodland or brush and then spreads quickly over an area. If conditions are right, it can spread very quickly, decimating any combustible building in its path. Prolonged drought can greatly exacerbate the situation by creating very dry timber and brush that, in turn, increase the probability of a wildfire starting as well as its geographic spread and severity. Wildfires pose the greatest risk to rural above-ground historic properties that are located near easily combustible materials such as forests, brush, or maturing crops. However, wildfires can also spread and threaten or consume buildings in urban areas. For example, in Bastrop in 2011 and 2022, over 300 wildfires occurred in West and Central Texas, leading to a state-level disaster declaration.

Wildfires can be one of the most difficult disaster types for historic property owners to mitigate. Standard treatments often involve using materials that are not compatible with the original construction. Some measures that can be explored include:


- ❑ Contact local fire authorities for advice on how to best protect your historic building from wildfires. These officials will have the most up-to-date information on fire prevention and protection measures in your area.
- ❑ Clear vegetation and debris around your building to help reduce the risk of fire spreading to the building. A minimum of 30 feet of clearance around the structure is recommended; remove tree limbs within 15 feet of the ground surface, thin a 15-foot-wide distance between tree crowns and ensure no part of a tree is within six feet of your building. If this level of protection is not possible since your property is on a slope, focus mitigations on the downslope area, as fire spreads more easily uphill.
- ❑ Remove vegetation that touches historic buildings, particularly ivy, and clear leaf debris and other organic buildup from rain gutters.
- ❑ Conduct regular maintenance, such as cleaning gutters and removing dead vegetation, leaves, and pine needles to help prevent embers from igniting the building.
- ❑ Install sprinkler systems to help protect the building from wildfires by keeping grass and nearby vegetation healthy and less prone to ignite. Interior sprinkler systems can also help minimize damage when fire enters a building.
- ❑ Class A-rated noncombustible roofing materials and metal, tile, or slate roofing materials are more fire-resistant than wood or asphalt shingles. Class A fire resistant siding, windows and doors are also preferred but can only be used in certain cases where they will not harm your property's historic integrity.
- ❑ Wood fences can become an unintentional fuel source. If installing a new fence in wildfire-prone areas, specific metal. If wood is required, heavy/thick wood is less prone to ignite than thinner boards.
- ❑ Cover any historic building exterior air vents with 1/4-inch or smaller corrosion-resistant mesh to prevent embers from entering the building.
- ❑ Texas A&M Forest Service operates a [wildfire tracking system](#) that is updated continuously during a wildfire event. Monitor this system regularly during wildfires located within 100 miles of your location.

WINTER STORM EVENTS (FREEZING TEMPERATURES AND SNOWFALL)

Texas generally experiences more temperate climates than northern states. Extended periods of very cold weather can cause electrical failures and freeze water pipes, which in turn can cause flooding inside buildings later. Winter storms can also result in abnormally high snow and ice loads; the weight can further damage buildings by collapsing roofs. For example, the severe winter storm designated Uri in 2021 caused an estimated \$80 to \$130 billion in damage and affected all 254 counties. The greatest threat of winter storms is to buildings.

Mitigation measures to consider:

- Check insulation levels at exterior floors, exterior walls, attics and other unheated accessible areas to ensure they meet current recommended R-rated insulation levels. Specifically wrap any exposed water pipes in high-rated insulation.
- Install heavy curtains or blinds over windows to help keep heat inside the building.
- Maintain the roof in good condition to prevent leaks after heavy snowfall and reduce heat loss.
- Add caulking or weather stripping to exterior doors and windows.
- Carefully use portable space heaters in areas of your building that are particularly cold or in need of extra heat.
- Ensure adequate ventilation to prevent moisture buildup in your building, which can cause damage to wood and other materials. Proper ventilation can also help prevent freezing. Set up automated systems to alert building managers or caretakers if temperature or humidity levels fall outside safe ranges.
- Regularly inspect your building's exterior and repair cracks or holes to prevent cold air from entering.
- Open faucets to slowly drip during the entire period of freezing temperatures.
- Identify where the main water shutoff valve is located and how to operate it in the event of a leak.
- Hire a professional arborist to assess the condition of any large trees near your historic property to verify that they can sustain ice and snow buildup without breaking.
- In some cases, temporary covers or enclosures may be used to protect your building from freezing temperatures. For example, a temporary roof or enclosure may be erected over an exposed section of the building during construction work or repairs.
- Reinforce your building's roof with additional support beams or steel trusses to help distribute the weight of heavy snow and prevent structural damage.
- Install gutter systems to help prevent ice dams and direct water away from your building's foundation.
- Install snow guards on the roof to prevent snow from sliding off in large chunks, which can be dangerous for people walking below and can cause building damage.
- Install de-icing systems, such as heating cables or mats, on the roof to prevent ice buildup and ice dams.
- Prepare a snow removal plan in place to prevent buildup during heavy precipitation periods.



“ Develop an emergency plan before a disaster occurs to identify how you will protect the property from the types of hazard(s) you face. ”

HAIL AND ICE STORM EVENTS

Hail is a type of solid precipitation that can occur during strong thunderstorms when water particles in the upper, colder parts of the atmosphere freeze before falling to the ground. Many counties in Texas experience hail on a regular basis with little damage; however, under certain conditions, hail greater than the size of a baseball can occur (see graph below). This can cause considerable damage to aboveground historic properties, particularly to roofs of historic residences. Other parts of historic buildings and most structures will usually not experience significant impact.

Ice storms are like hail since they are a form of precipitation. The difference is that raindrops form in the clouds and fall as a liquid and the ground surfaces are cold enough to immediately freeze the rain on contact. At least 0.25 inches of ice must accumulate before a rainstorm is normally designated as an ice storm. The risks to aboveground historic properties are greatest. The additional weight of large ice accumulations can damage or collapse buildings and structures such as bridges. Mitigation measures are the same as in the preceding section on winter storm events.

THE NOAA/TORRO HAIL SYSTEM

SCALE	INTENSITY CATEGORY	TYPICAL DIAMETER (IN)	SIZE COMPARISON	TYPICAL DAMAGE IMPACTS
H0	HARD HAIL	UP TO 0.33	PEA	NO DAMAGE
H1	POTENTIALLY DAMAGING	0.33-0.6	MARBLE	SLIGHT GENERAL DAMAGE TO PLANTS
H2	POTENTIALLY DAMAGING	0.6-0.8	DIME	SIGNIFICANT DAMAGE TO VEGETATION
H3	SEVERE	0.8-1.2	NICKEL TO QUARTER	DAMAGE TO GLASS AND PLASTIC STRUCTURES, PAINT AND WOOD SCORED
H4	SEVERE	1.2-1.6	PING PONG BALL	WIDESPREAD GLASS DAMAGE
H5	DESTRUCTIVE	1.6-2.0	GOLF BALL	DESTRUCTION OF GLASS, DAMAGE TO TILED ROOFS
H6	DESTRUCTIVE	2.0-2.4	EGG	BRICK WALLS PITTED
H7	VERY DESTRUCTIVE	2.4-3.0	TENNIS BALL	SEVERE ROOF DAMAGE
H8	VERY DESTRUCTIVE	3.0-3.5	BASEBALL	MODERATE STRUCTURAL DAMAGE
H9	SUPER HAILSTORMS	3.5-4.0	GRAPEFRUIT	EXTENSIVE STRUCTURAL DAMAGE. RISK OF SEVERE OR FATAL INJURIES.
H10	SUPER HAILSTORMS	>4.0	SOFTBALL AND UP	EXTENSIVE STRUCTURAL DAMAGE. RISK OF SEVERE OR FATAL INJURIES.

Mitigation measures to consider:

- ❑ Include provisions that cover hail damage in the insurance policy for your historic property.
- ❑ Hire a contractor after significant hail events to examine the roof for damage and possible replacement.
- ❑ Install impact-resistant roofing materials such as metal, slate, tile, and asphalt.
- ❑ Install protective screens over skylights and other vulnerable areas to help prevent hail or ice from damaging the building.
- ❑ Trim surrounding trees as overhanging branches near your building can break and become projectiles during hailstorms.
- ❑ Install historically appropriate shutters on windows and doors to provide an additional layer of protection against hail. Installing hail guards over these areas can also provide an extra layer of protection.
- ❑ Install lightning protection such as lightning rods, grounding wires, and surge protectors; historic buildings are particularly susceptible to lightning strikes, which can accompany hailstorms.
- ❑ Install protective netting over the roof and any vulnerable areas. The netting should be strong enough to withstand the force of the hailstones and securely fastened to the building to prevent it from damaging the roof.
- ❑ Maintain gutters and downspouts; blocked or damaged gutters can cause water to back up and damage the roof while poorly functioning downspouts can cause water to accumulate around the foundation and lead to structural damage.

JOHN HOWLAND WOOD HOUSE, BAYSIDE, REFUGIO COUNTY, DAMAGED BY HURRICANE HARVEY





ADDITIONAL INFORMATION SOURCES

The **Federal Emergency Management Agency (FEMA)** is responsible for coordinating and aiding individuals as well as state and local governments in the aftermath of presidentially declared disasters. FEMA directly conducts damage assessments to determine the extent of damage to historic properties (especially public buildings) and assess their eligibility for disaster assistance. FEMA will coordinate its response with the THC and the Advisory Council on Historic Preservation through programmatic agreements to ensure that historic preservation standards and guidelines are followed in the recovery process. FEMA also has programs to support hazard mitigation measures to reduce the risk of future disasters and protect historic properties. Websites for additional information include:

- [National Risk Index](#)
- [Ready.Gov \(with Department of Homeland Security\)](#)
- [Floodplain Management Bulletin - Historic Structures](#)

The **Texas Department of Emergency Management (TDEM)** is the state agency responsible for coordinating and managing state-level emergency response and recovery efforts during disasters. During and after disasters TDEM provides guidance and resources to local jurisdictions, such as coordinating search and rescue operations, debris removal, and temporary protective measures, including for historic properties when these have been identified.

- [Disaster Portal](#)
- [TexasReady.Gov \(with Texas Department of State Health Services\)](#)

The **Texas Historical Commission (THC)** has a large role in disaster recovery for historic properties in Texas. When disasters occur, the THC assists by collaborating with local communities as well as state and federal agencies to assess the disaster's impact. This can include coordinating emergency stabilization and salvage efforts to protect historic structures from further damage, and for long-term recovery. The THC also provides expertise on historic preservation techniques, materials, and best practices for post-disaster rehabilitation and assists with regulatory compliance and permitting requirements.

- [Disaster Resources for Historic Properties](#)
- [Texas Historic Sites Atlas](#)
- [Texas Statewide Preservation Plan](#)
- [County Historical Commission Outreach](#)
- [Texas National Register of Historic Places](#)
- [Texas Main Street Resources](#)
- [Cemetery Preservation](#)

OTHER INFORMATION WEBSITES

National Fire Protection Association

- [Codes and Standards](#)

National Institute of Building Sciences

- [Climate Adaptation, Mitigation and Resiliency](#)

National Institute of Building Sciences

- [National Hurricane Preparedness](#)
- [Weather Radio Coverage and Channels](#)

National Park Service

- [Disaster Resources for Historic Property Owners](#)
- [Publications of the National Register of Historic Places](#)
- [Secretary of the Interior's Standards for the Treatment of Historic Properties](#)
- [Guidelines on Flood Adaptation for Rehabilitating Historic Buildings](#)

National Trust for Historic Preservation

- [Disaster Recovery](#)
- [Flood Insurance and Historic Buildings](#)
- [Main Street America Resource Center](#)
- [National Trust Insurance Services](#)

National Weather Service

- [Disaster Preparedness](#)
- [Tornado Safety](#)
- [Wildfire Preparedness](#)

Texas A&M University

- [Fires & Wildfires](#)

Texas Department of Transportation

- [TxDOT Historic Resources Aggregator](#)
- [Hurricane Evacuation Routes](#)

Texas State Law Library

- [Texas Building Codes](#)

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REAL PLACES TELLING REAL STORIES