Why and how to prepare for severe convective storms

Historically, some of the largest and costliest weather events in the United States were hurricanes along the Gulf and Atlantic coasts. Over the past few years, severe convective storms (SCS) have accounted for more property damage than hurricanes. According to an article published in The Insurance Journal, written by William Rabb,

> *"Blake Berscheid, (VP of Energy and Complex Property for Brown & Brown Insurance) looked at NOAA data for smaller but still-costly storms. He found that from 1980 to 2005, the U.S. saw just 2 to 4 severe convective storms – not hurricanes or tropical storms – per year that produced losses of $1 billion or more.*
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> *But in the last six years, the number has jumped to 18 such events annually, on average.*
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> *And for the last four decades, the average annual loss was about $9 billion. For the last three years, the annual loss has soared to $27 billion. This year alone, through August [2023], the economic losses have reached $44 billion from severe convective storms."*

According to the National Oceanic and Atmospheric Administration (NOAA), 2023 recorded 28 billion-dollar weather and climate events resulting in a total cost of $93.1 billion. Of the 28 events, 19 were severe storm related (not hurricane or tropical) with a total cost of $54.2 billion.

Historically, Texas, Oklahoma, Kansas and Nebraska have been the hardest hit with severe storms, but more convective storms are now also hitting Iowa, Alabama and Mississippi.

The same article by Rabb cites a 2023 study from Swiss Re Management and Swiss Re Institute that asserts the higher property losses are not just from increased convective storms but are caused, in part, by inflation and the fact more structures and people are located where the storms are occurring.

Because more buildings are being built and people are migrating to areas where convective storms frequently occur, it is essential to take preventive measures to protect at-risk buildings and occupants.

PREPARE FOR STRONG WIND AND TORNADOS

Unlike hurricanes, which take days to develop and afford equal time for preparation, severe convective storms may develop in only a few hours, offering very little time for preparation. Because of this, preventive maintenance and disciplined preparation are key to minimizing property damage and preserving life.

Heavy rain, high winds, hail and tornados have been documented in every state in the U.S. A tornado has been documented in the U.S. during each month and on every day of the year. High winds can cause a significant amount of damage to an inadequately maintained building. Owners should frequently inspect the building, especially the roof.

- Membrane roofing should not be loose, torn or brittle.
- Rocks on ballasted roofing should thoroughly cover the membrane beneath the stone. Because wind pressure is higher at the roof edges and corners, the stones should be piled higher at the corners and along the roof edges.
- Shingles should not be brittle, torn, curled or easily lifted.
- Metal roof covering should not move or be lifted easily. Look for loose or missing fasteners, rust or corrosion.
- Sheet metal and flashing covering parapets and walls should be tight and secure.
- Inspect the edges around roof penetrations like vents and skylights for signs of cracking or deteriorating seals.
- Make sure roof drains and scuppers are clear of debris.
- Clear all debris off the roof that can get carried away in the wind or that will float and clog drains or scuppers.
- Clean and inspect gutters, downspouts, water run-off sloped away from building, and water collection areas.

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A licensed roofing contractor will not only inspect your roof for damage or potential problems but they can also identify specific weather vulnerabilities and will aid in the development of a reasonable repair or replacement plan to further protect your building from weather-related damage.

In addition to the roof, common building breach points should be maintained and, when necessary, prepared for high winds. The most common building breach points are garage doors, double-entry doors and windows.

Overhead doors are usually the first part of the building to fail. Once wind gets into the building through such a large opening, it will increase pressure inside of the building eventually pushing out windows, doors and sometimes lifting the roof. Because of this, it is important to maintain overhead doors. Repair damaged or bent door panels or sections. Replace broken windows in the panels and, when high wind is expected, additional inside bracing should be installed to improve the structural integrity of the door.

Double-entry doors that open inward and do not have a solid center piece holding the two doors together (the astragal), should be secured with additional bracing prior to a wind event.

Unless the glass in exterior windows and doors has a high impact rating, if available, make sure there are enough window and door coverings to protect the glass from breaking due to the pressures exerted by the wind or impact from flying debris. If time is short, window and door coverings should first be applied to the side of the building that will face the oncoming wind. If the building is equipped with shutters, inspect them on a scheduled basis and after every wind event to make sure they do not have visible damage or deterioration. Damaged shutters should be repaired or replaced.

Visually inspect the building for other vulnerabilities. Look for loose siding, cracked exterior insulation finishing system (EIFS) or stucco, distressed stone or veneer. Pay particular attention to siding, end caps or flashing at the corners where wind speed and pressure will be greatest. Immediately secure, repair or replace any component that is loose or shows visible damage or deterioration.

Inspect the perimeter of the building and lot. Anchor or secure smaller outside buildings, awnings and sheds. Secure outdoor furniture and other objects that could be blown away or knocked over and damaged. Prune or thin trees around a building. Do not allow branches to extend over buildings. Keep wood or metal panel fences repaired. Replace rotting panels and posts before they get blown over.

PREPARE FOR FLOOD

During heavy rain events, most preventive measures focus on protecting the lower levels of a building. However, the roofing system is one of the most overlooked parts of the building and its failure often results in the costliest property damage claims. A building with a roofing system that cannot quickly and efficiently remove accumulating rainwater will be compromised by the added weight.

Frequently inspect roof drains, eaves troughs and scuppers. Remove debris from the roof that could be blown off or clog drains, downspouts and scuppers. Roof drain covers (domes) should not be damaged and must be securely fastened in place. Remove debris around the dome that could inhibit water flow to the drain.

Four inches of rainwater covering a 20 ft x 20 ft area will add 8,400 lbs. of weight to the roof.

Six inches of rainwater covering the same 20 ft x 20 ft area will add 12,600 lbs. to the roof.

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If possible, move valuable commodities to another location or store them on upper levels of the building. Pre-planning activities may involve making arrangements to have trucks or trailers available on short notice so the items can be quickly moved to a safe location.

If parked or stored in a flood-prone area, move vehicles and portable equipment to a location that is less susceptible to flood.

Make sure sump pumps are working and the backup power supply (generator or battery) has been tested and can perform for several hours. Make sure the pump discharge area is free of debris and water will not flow back into the basement.

PREPARE FOR HAIL

Exterior components of a building's heating and air conditioning system are susceptible to hail damage. Most HVAC equipment manufacturers design and sell hail guard systems for their units. Less expensive alternatives are available and made of expanded metal or heavy wire mesh with openings no larger than ½ to 1 inch.

Skylights and solar panels are also susceptible to hail damage and should be equipped with coverings that provide impact resistance or have attached hail guards.

PREPARE FOR LOSS OF POWER

In times of local emergency, such as power failure that frequently follows a severe storm, generators available for rent will be in high demand and will quickly become unavailable. Some rental companies will allow a business to pre-pay or reserve a specific generator for a reasonable monthly fee. Under this arrangement, if there is a local emergency, pre-pay customers will be the first to receive a generator that meets their business demands. It is advisable to make sure the building has the appropriate cords and connectors so the generator can be quickly hooked up, reducing business downtime.

If your business has made the investment in a permanently installed and dedicated generator, make sure it is on a preventive maintenance schedule. Have it tested at the start of the storm season and make sure you have enough fuel for several days. If the fuel source is gasoline or diesel fuel, be sure to keep the supply fresh by rotating out new for old fuel throughout the year.

If you have a product that needs to be frozen or refrigerated, arrangements may be made to move the product to another warehouse. A cooperative, mutual-aid arrangement may be made with a nearby business ally, where they will make part of their operation available to you if your business is impacted and you will do the same if their business is impacted.

PREPARE FOR BUSINESS CONTINUITY

> "An ounce of prevention is worth a pound of cure." -Benjamin Franklin
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> "It takes as much energy to wish as it does to plan." -Eleanor Roosevelt
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> "The best defense is a good offense, and I intend to start offending right now." -James T. Kirk (Star Trek television show)

One of the best things an owner can do to protect their business and the people who work for them, is to think about some of the bad things that can happen to their business, then take action to prevent or mitigate those worst-case scenarios.

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Pre-planning, identifying threats, developing plans, taking action and securing commitments long before the weather event occurs can make a considerable difference in how quickly a business returns to normal once the storm has passed. If the peril is power loss, make arrangements for temporary power. If it is flood, obtain permission and plan to store vehicles, trailers and portable equipment at an open lot on higher ground. Transportation and warehousing may need to be pre-arranged to secure perishable commodities. Business continuity must be deliberate, planned and exercised.

A business continuity plan will include identifying ways the business will communicate with employees and customers, before, during and after the event. The plan will define methods that will be used to secure and protect data and other valuable business records. The plan will describe the arrangements made to remotely receive income, make payments and, if needed, reschedule appointments and conduct business meetings.

Some business operations that rely on electrical power or utilize a complex production process often cannot shut down in an instant. The business continuity plan will identify the safest procedures to follow when shutting down and restarting the operation.

CONCLUSION

Wind, hail, flood and loss of power are only a few of the perils that can accompany a severe convective storm. Lightening can spark a fire or cause extensive damage to sensitive electrical or computer-controlled equipment. In the spring, severe convective storms can precede a significant temperature drop resulting in frost or freezing conditions, damaging new crops coming out of the ground.

The three primary keys to avoiding or minimizing business interruption, property loss and potential harm to life, rests in:

- Pre-planning.
- Preventive maintenance and inspections.
- Paying attention to changing weather conditions so appropriate measures can be taken.

For additional planning and prevention measures, see the following resources or contact a UFG risk control consultant.

RESOURCES

https://www.fema.gov/blog/how-prepare-hurricane-season

https://www.noaa.gov/hurricane-prep

https://www.fema.gov/emergency-managers/risk-management/hurricanes

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