

“USUAL” WEATHER IN “UNUSUAL” PLACES:

HOW TO PROTECT YOUR BUSINESS IN THE NEW YEAR

Severe weather affects us all — every region of the United States is prone to one or more natural hazards, be it extreme winter weather, flooding or windstorms. But over the past few years, several regions of the country have confronted unexpected weather patterns that have damaged property and disrupted lives. Fortunately, businesses can do more than just complain about the unusual weather — there are tested and cost-effective measures that can be taken to reduce losses from storms that occur outside their traditional geographic boundaries. This article highlights some recent weather that has had business owners complaining and offers suggestions for what to do about it.



Cold Weather: Arctic Air

The term “polar vortex” has been in the news as a result of a few significant cold spells across a large portion of the U.S., including in most southern states. In fact, many cold air outbreaks can be linked to this feature and its sibling the “polar front.” Although it often seems to coincide with memorable winter weather, the polar vortex is not transient like a winter storm but is a permanent state of wind across the North and South Poles on a year-round basis (although it is strongest during the winter season).

Recently, there have been several significant southward expansions of the cold arctic air into regions that have not seen similar conditions in the previous five to ten years. Additionally, because the weather pattern has become more amplified, it has been more difficult to break down and thus has lasted longer in northern and southern regions. While arctic air outbreaks have been observed throughout U.S. weather history, residents new to certain areas may not be as prepared as they could be for such conditions.

WINTER WEATHER PROBLEMS AND SOLUTIONS

As is well-known in higher latitudes, winter weather can cause a variety of property damage issues, ranging from burst pipes to downed gutters and roof collapse. Many business owners in the northern tier of states consider preparing for ice and snow to be an important part of their annual maintenance, but the record southern snowfalls and low temperatures associated with the 2014 polar vortex are a reminder of the need for businesses in almost every region to prepare buildings and business operations for extended periods of freezing and below-freezing weather.

FROZEN AND BURST PIPES

Frozen and burst pipes are the leading cause of property damage due to winter weather. When water freezes in a pipe, it expands just like a can of soda put into the freezer to chill. If it expands enough, the pipe (like the can) bursts. When the ice thaws, the water escapes through the openings, and serious damage results.

Generally, commercial structures in northern climates are built with water pipes located on the inside of the building insulation, protecting the pipes from subfreezing weather. However, water pipes in southern zones can be more vulnerable to winter cold spells because they are more likely to be located in unprotected areas outside of the building insulation (e.g., in attics, crawl spaces and outside walls). According to research by the Building Research Council at the University of Illinois, as well as a survey of practicing plumbers, uninsulated pipes begin to freeze when temperatures hit about 20 degrees F.

The following suggestions will help business owners prevent damage from frozen pipes:

- Pipes in attics and crawl spaces should be protected with insulation (fiberglass or foam sleeves).
- Heating cables and tapes are also effective in freeze protection. Select a heating cable with the UL label and a built-in thermostat that turns the heat on when needed. (Without a thermostat, the cable has to be plugged in each time and might be forgotten.) Follow the manufacturer’s instructions closely.
- Doors on cabinets under sinks should be left open during cold spells to allow the warmer air of the room to circulate around the pipes.
- Exterior pipes should be drained or enclosed in two-inch fiberglass insulation sleeves.
- Pipes leading to the exterior should be shut off and drained at the start of the winter. If these exterior faucets do not have a shut-off valve inside the building, have one installed by a plumber.
- During periods of extreme cold temperatures, let faucets drip slowly to keep water flowing through pipes that are vulnerable to freezing. Ice might still form in the pipes, but an open faucet allows water to escape before the pressure builds to where a pipe can burst. If the dripping stops, it may mean that ice is blocking the pipe; keep the faucet open, since the pipe still needs pressure relief.

For further information on frozen and burst pipes, see www.disastersafety.org/freezing_weather/prevent-frozen-pipes.

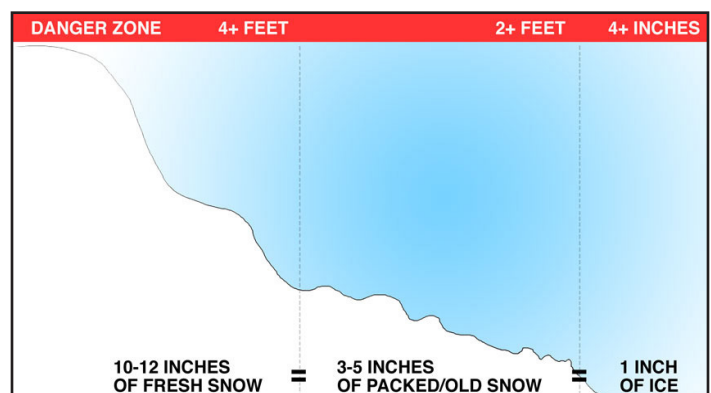
SNOW AND ICE ISSUES

While unusual in southern states, record snowfalls over the past several years have resulted in roof collapses as far south as Arizona, Georgia, and the Carolinas. As part of preventive maintenance, it is a good idea for property owners to find out their roof’s capacity for snow. This will depend on the slope

of the roof, its structure and condition, and how deep and heavy the snow is — a particular concern where water mixed with snow may make it heavier than the equivalent volume of lightly packed snow. A structural engineer can determine the maximum loads a roof can withstand, as well as provide practical solutions to improve roof strength. Learn more about preventing roof collapse at www.disastersafety.org/freezing_weather/reducing-roof-risks.

Additionally, the following suggestions will help business owners prevent water intrusion and roof and gutter damage from heavy snow or ice build-up:

- Inspect gutter hangers, spikes, fasteners, seams, guards and downspouts for securement. Heavy snow or ice can cause gutters to weaken and sag, leading them to break away from the building and allow for water intrusion.
- Inspect gutters and remove any accumulated debris or vegetation. These materials can trap snow and ice and add to the loads on the gutters, which may cause them to detach and increase the risk of water damage.
- Take action to prevent ice dams. Ice dams are ridges of ice that form at the edge of a roof or around drains and prevent melting snow from draining off the roof — a particular concern in areas where eaves may remain colder than the roof surface above. The water that backs up behind an ice dam can leak into the building and cause damage to walls, ceilings, insulation and other areas. Learn more about preventing ice dams at www.disastersafety.org/freezing_weather/preventing-ice-dams-on-businesses.



Not all types of snow weigh the same. The above chart looks at the differences between fresh snow, packed snow, and ice. A structural engineer can determine the maximum loads your roof can withstand, as well as provide practical solutions to improve roof strength.

Derechos: Damaging Thunderstorms

A derecho is a widespread and long-lived windstorm associated with a rapidly moving complex of thunderstorms. The majority of observed wind speeds are usually 60-70 mph; however, wind gusts can reach speeds of 80-100 mph. Derechos typically develop in the Midwest region of the U.S. but once mature can travel several hundred miles, impacting areas well away from their place of origin. In areas that have no memory of or experience with a strong derecho, they can catch residents and business owners unprepared, damaging property and leaving homes and businesses without power for days.

In June 2013, two damaging derechos occurred in different regions of the U.S. On June 13, the first derecho caused extensive damage throughout the Midwest, central Appalachians, and Mid-Atlantic states. A second, more widespread and intense derecho occurred the following day and traveled across the southeastern U.S., resulting in major wind damage throughout North Carolina, Virginia, and Maryland. Over an 18-hour timespan, the two storms covered approximately 1,100 miles with a total of 295 severe thunderstorm and tornado warnings issued, according to the National Weather Service's Storm Prediction Center (SPC). The storms caused extensive damage in 18 states from Iowa to South Carolina as a result of significant straight-line winds and isolated tornadoes.

DAMAGING THUNDERSTORMS PROBLEMS AND SOLUTIONS

High-wind weather systems of all scales (e.g., hurricanes, tornadoes, coastal lows, derechos, etc.) can cause significant damage to commercial buildings in both coastal and inland areas. Building components vulnerable to high-wind damage include the roof system, walls, windows and doors, and attached structures.

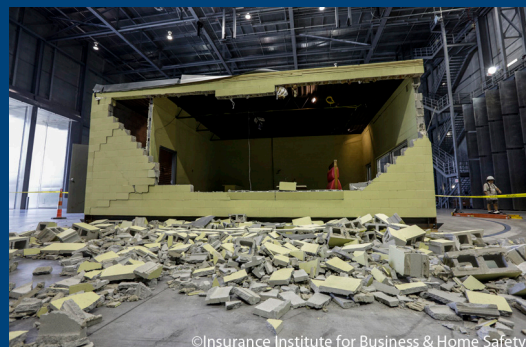
Commercial building codes help to protect the substantial investment that business owners have in their facilities, inventories, operations and employees, and should be incorporated into any building construction or renovation. The technical requirements outlined in the codes are a practical means of achieving life safety protections, and the codes incorporate minimum design wind speeds as determined by American Society of Civil Engineers (ASCE) standards committee.

However, since building codes are minimum acceptable standards for life safety and public welfare protection, they may not provide businesses with as much property protection as they need to prevent significant damage-related disruptions. Business owners wishing to utilize stronger and cost-effective wind protections can take advantage of

COMMERCIAL HIGH- WIND TESTING

To demonstrate how businesses can reduce wind damage to their buildings, the Insurance Institute for Business & Home Safety (IBHS) conducted a commercial high-wind test in July 2012 at its state-of-the-art Research Center. The test compared "common" versus "stronger" construction practices for small retail/service masonry structures. The exact same materials were used to construct both buildings; however, the focus was on how these materials were installed.

Modest reinforcement of the walls, as well as the addition of a continuous load path by tying the roof to the walls and the walls to the foundation, resulted in 90 percent less damage repair costs for the "stronger" building than for the "common" construction building (\$4,680 vs. \$44,709 respectively — not taking business interruption losses into account). These improvements only added approximately five percent to the cost of the "stronger" building — an amount that is less than the sales tax in many states. Learn more about IBHS' commercial high-wind testing and the specific recommendations for building owners that resulted from the research at www.disastersafety.org/ibhs-commercial-building-wind-demo.



At a 105 mph wind gust, the equivalent to 85 mph one-minute sustained winds, the wall separated from the "common practice" building and the masonry side wall collapsed during the first full-scale high-wind test of commercial structures at the IBHS Research Center.

two sets of IBHS FORTIFIED standards developed specifically for commercial construction and retrofit/repair:



- FORTIFIED for Safer Business™, a set of all-hazards protection building standards for new commercial construction; and



- FORTIFIED Commercial™, an incremental building standards approach for making new and existing commercial buildings more resistant to damage from specific types of weather.

Although they differ somewhat in their details, both sets of standards offer businesses cost-effective protections against high winds. Learn more at www.disastersafety.org/FORTIFIED.

Western Wind Storms

Although many people associate high wind risks with the eastern U.S. because of hurricanes and Nor'easters, the West Coast has long been susceptible to severe windstorms. These events often are driven by strong areas of low pressure originating in the North Pacific Ocean, most common in the winter months. The systems are capable of bringing heavy rains and damaging winds to coastal regions and higher elevations. For example, a single wind event in 1993 in the Pacific Northwest resulted in nearly 750,000 people losing power, and damage estimated at over \$100 million. While the Pacific Northwest most often bears the brunt of these strong systems, they can affect lower latitudes such as the California coastline during El Nino conditions or when other climatic conditions fall into place. These strong systems also carry the potential for other weather hazards such as severe thunderstorms, flooding and tornadoes to parts of the U.S. which may not be accustomed to these types of severe weather.

Due in part to the same weather pattern which has produced significant drought conditions across much of the western third of the U.S., there has been a recent lack of these strong windstorms. But in 2014, as El Nino conditions became more prevalent, these types of storms returned. In December 2014, for example, the strongest winter storm since 2009 battered several western states causing high winds, flash floods, debris slides, and widespread power outages. Although many residents and business owners were unprepared for the recent storms, it is prudent for businesses and homeowners to prepare for them as history has shown they can occur in these regions.

WESTERN WIND STORMS PROBLEMS AND SOLUTIONS

As discussed earlier in this article in reference to derechos, implementing the latest commercial codes during retrofits and construction can be effective in protecting businesses from western windstorms. In fact, the western U.S. has several "special" wind zones in their codes in which the minimum ASCE design standard is strengthened to take into account

such strong windstorms. IBHS' FORTIFIED commercial construction standards also can provide a stronger, code-plus protection against high winds, in addition to other hazards that might be an issue in the region. Further high-wind protection recommendations are available at www.disastersafety.org/high_winds.

Additionally, although drought has received the most attention in recent years, businesses in all western states should be aware of the possibility that heavy rains from these strong storms can cause overtopping of rivers, creeks, and drainage systems, and flash flooding almost anywhere. Further information on preparing for and protecting businesses from floods can be found at www.disastersafety.org/commercial_maintenance/the-power-of-water-how-to-prepare-and-protect-your-business-from-floods.

The Importance of Business Continuity Planning

"Usual" weather in "unusual" places is just one example of unexpected events that can disrupt a business and adversely affect the bottom line. That is why it is important to plan for potential business interruptions, regardless of the specific cause, in order to reduce losses, get a jump start on recovery, and re-open as quickly as possible. A business continuity plan is an organized way of doing just that. By gathering information needed after any type of disruption and defining the steps required to keep the business running in its aftermath, a business can continue to deliver its critical products and/or services at an acceptable level, even if there is damage to its facility, inventory, or customary operations.

Business continuity planning is easy to put into practice. IBHS has created OFB-EZ™, a free business continuity planning toolkit to help businesses translate professional continuity concepts into an actionable plan. OFB-EZ provides a simple eight-step process that does not require users to be an expert in business continuity planning. To download OFB-EZ, go to www.disastersafety.org/open-for-business.

Planning for unexpected emergencies and interruptions can help business owners prepare for the risks they face regularly, as well as the severe weather that can be an occasional but unwelcome visitor to their region. This important activity will ensure owners are ready to protect their most important asset — their business — no matter the situation that they encounter.