Best Practices for Large Retail Outlets in Preparation for Severe Wind and Tornado Emergencies

A Best Practice Statement of the American Meteorological Society
(Adopted by the AMS Council on Council 30 September 2020)

The public is best served when all three sectors of the Weather Enterprise contribute and capitalize on one another's strengths. This Enterprise, consisting of government, academic, and commercial sectors, has developed a cooperative partnership that has led to new advances, efficiencies, and best practices, thereby providing people and businesses with the world's most useful weather forecasts and warnings, resulting in ever-increasing savings of lives and property (see https://www.weather.gov/about/weather-enterprise for more information).

The cooperation between sectors, mediated by the American Meteorological Society, is the global standard—a shining example for other fields to maximize the contributions of government, academia, and the commercial sector to the ultimate benefit of the American public.

Why best practices are necessary:

Unfortunately, when severe weather is possible or imminent, too often customers of retail stores are either unaware of the threat or not aware of the safe sheltering options available. If left to the last minute, some may take shelter in an unsuitable location during an imminent weather emergency when a more appropriate shelter is available, potentially resulting in injuries or, in extreme cases, unnecessary fatalities. Additionally, customers are often at risk attempting to leave quickly at the last minute. In many cases, this results from a lack of situational awareness—knowing the appropriate response to the weather emergency in any location leads to much better outcomes for everyone.

Sheltering issues can occur in any public venue—malls, large department stores and retail outlets, schools, stadiums, and supermarkets are just some examples. Each public place has its own unique set of challenges when it comes to sheltering people from weather impacts. For that reason, this best practice will begin a series, each individually focused on needs of a specific public location. This best practice focuses on challenges, success factors, and other considerations for large retail stores.

Large retail outlet stores, often referred to as "big box stores," are typically built with long-span roofs that create expansive shopping areas that can accommodate a large number of people. The vulnerability of these roofs to tornadoes or severe thunderstorm winds potentially puts many customers and employees at risk. An incomplete or inadequate understanding of where to seek shelter within these buildings may contribute to preventable losses, pose a threat to people and contribute to injuries, harm, or even in extreme cases, fatalities. Fortunately, with planning and outreach, businesses can be aware of the risks, proactively consider these factors in their construction and safety plans, and leverage extensive signage, outreach, and employee safety training and drills to promote a much safer response when severe weather affects their organization. Note, long-span roofs are also susceptible to collapse due to snow/ice load, which creates an additional threat not specifically addressed here that businesses should be aware of and might want to consider while addressing these safety plans.

Real life examples demonstrate that having a safety plan and taking swift protective action can save lives—e.g., the store manager who insisted customers rush into a walk-in cooler while the building collapsed around them during the tornado in Joplin, Missouri, on 22 May 2011. Others in a similar situation have been less prudent—e.g., Home Depot customers in New Jersey on 24 June 2017 gathered by the front door as it blew open to watch a tornado move through the parking lot. Clearly, there is a need for public safety outreach when it comes to what can and should be done to improve safety in large retail outlet stores during weather emergencies.

Who should observe these best practices:

The best practices outlined below are primarily intended for owners, operators, managers, and safety supervisors of large retail outlets (aka "big box stores"). Employees and customers of these outlets should also find the information useful. Emergency managers who work with these retail outlets should also use these best practices in supporting an integrated warning concept.

Specific best practices:

In general, retail store managers should proactively evaluate their store's risk, designate a refuge area within their facilities, and develop a plan to monitor the situation and make employees and customers aware. The designation of a refuge area should be developed in consultation with structural design and safety professionals. Retail store managers should practice exercising the severe weather plan so employees are ready if the plan needs to be utilized.

Understand your weather risk. Large retail outlets have numerous options to understand and mitigate their weather risk. When developing a severe weather plan, facility managers should consider integrating all weather threats into their emergency action plans in a manner that emphasizes the response to the threat. While tornadoes and damaging winds are an obvious threat, the store may also be vulnerable to other hazards posed by thunderstorms (e.g., flooding in low lying areas, large hail, frequent lightning) that should be considered simultaneously. Severe thunderstorms often include frequent lightning. So it is important that facility managers consider, for example, the advice contained in documents like the NWS Lighting Safety for Large Venues, https://www.weather.gov/safety/lightning-toolkits. To assess their weather risk, store managers should consult with:

- Local or county emergency management agencies:
  https://www.ready.gov/community-state-info.

- The Warning Coordination Meteorologist (WCM) at the local National Weather Service (WFO):
  The WCM can assist with the process of becoming a "StormReady Community" or at the very least a "Weather-Ready Nation Ambassador"
  https://www.weather.gov/wrn/ambassadors. The local WCM will explain the specific requirements for the store's location (see https://www.weather.gov/stormready/contact for contact information).

- America's Weather Industry:

Private sector companies and individuals in America's Weather Industry can provide tailored support for retail locations throughout the world and regularly engage their clients on the subject matter specifically addressed within this best practice document. Contact information is available through The American Weather and Climate Industry Association, http://www.awcia.org/members.html; the American Meteorological Society, https://wcdirectory.ametsoc.org/; the National Weather Association, https://nwas.org/membership/corporate-members/; and the Association of Certified Meteorologists, http://certifiedmeteorologists.org/find-an-expert-meteorologist.htm.

- In addition, big box stores planning site construction could also learn of weather risks from the American Society of Civil Engineers (ASCE) and the National Retail Federation (NRF).

Identify a safe place for employees and customers

- If there is not already a tornado safe room or shelter *in the store*, the store should determine what could be done to create one, or at the very least identify safe places nearby. The shelter should meet FEMA Guidelines or ICC/NSSA 500 standards (see https://www.fema.gov/emergency-managers/risk-management/safe-rooms).

- Alternatively, consult a professional engineer or someone within the company that is familiar with the building engineering plans to determine your Best Available Refuge Area (BARA) if a tornado safe room or shelter is not installed.

Create a severe weather plan

- FEMA's Severe Wind and Tornado Ready Business Toolkit (available at https://www.ready.gov/sites/default/files/2020-04/ready_business_severe-wind-tornado-toolkit.pdf) provides guidance for businesses specific to those weather hazards. Additional guidance, information and examples for other hazards (e.g. hurricanes, flooding, and extreme heat) can be found at https://www.ready.gov/business.

- Many communities have "Hazard and Vulnerability Assessments" and "Threats and Hazards Identification Risk Assessments" already written in their pre-disaster mitigation plans, which includes risk and hazards assessments at the local, county and/or state level. These are excellent resources for stores to consider.

- Identify who will monitor the weather, preferably a manager, and *how*. The National Weather Service Weather Forecast Office in Chicago offers a Weather Watcher video tutorial that has general applications to most locations (available at https://youtu.be/ZmH6vnup92o).

- The store should have multiple sources to receive weather watches and warnings, which could include:
    - NOAA All-Hazards Weather Radio
    - Weather apps or subscription services from America's Weather Industry
    - FEMA or American Red Cross Tornado Apps
    - Local TV/Radio broadcasts

- Clearly identify and label the store's refuge or shelter area. Create designated spots for employees to stand, for example, at the end of each aisle, to direct customers to the refuge area should the need arise.

- Estimate how long it will take to move employees and customers to the designated refuge or shelter area. This will help identify how much time is needed to enact the plan on a severe weather day.

- Create specific messages or public address announcements to inform customers on appropriate actions to take during the course of an event. According to the National Institute of Standards and Technology (NIST) Technical Note 1827 "General Guidance on Emergency Communications Strategies for Buildings, 2nd Edition," (https://www.nist.gov/publications/general-guidance-emergency-communication-strategies-buildings-2nd-edition) in general, an effective warning message should include:
    1. Who is providing the message? (i.e., the source of the message)
    2. What should people do? (i.e., what actions occupants should take in response to the emergency and if necessary, how to take these actions)
    3. When do people need to act? (in rapid-onset events, the "when" is likely to be "immediately")
    4. Where is the emergency taking place? (i.e., who needs to act and who does not)
    5. Why do people need to act? (including a description of the hazard and its dangers/consequences)

    Refer to NIST Technical Note 1827 for more detailed messaging strategies and templates, see https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.1827.pdf. These messages should be codified in the facility's emergency action plan. The development of "canned" public address messages that allow staff to press play and then seek shelter themselves at the same time is encouraged.

- Every store employee must be trained on their emergency action plans to the extent that they are aware of what their activation triggers are, who the information will come from, and what their part of the execution will be. This training should be performed for all current employees annually, all new employees as part of onboarding, and exercises should be held biannually. The plan should be reviewed and practiced at regular intervals.

- Store management should file their weather emergency action plan with the local emergency manager and public safety officials, to ensure their coordination and awareness.

When actionable weather is possible, imminent, or actually occurring

- Maintain situational awareness by having the designated weather watcher:
  - monitor weather radar
  - monitor multiple sources for potential weather warnings
  - communicate important messages to employees and consumers
  - coordinate actions in accordance with the store's plan
  - serve as the primary point of contact with a consultant from America's Weather Industry or outside meteorologist
- Do not let pandemic concerns prevent anyone from seeking refuge from severe weather. If a public space is the best available refuge from severe weather, take steps to ensure everyone follows CDC guidelines for physical distancing and disease prevention (see https://www.ametsoc.org/index.cfm/ams/about-ams/ams-statements/statements-of-the-ams-in-force/tornado-sheltering-guidelines-during-the-covid-19-pandemic/ for more information).

For references and more information:

- FEMA Ready Business Toolkit
  - https://www.ready.gov/business
- NWS Commercial Vendors Website within the United States
  - https://www.nws.noaa.gov/im/more.htm
- NWS StormReady Program (includes contact information to NWS Offices)
  - https://www.weather.gov/stormready/
- NWS Weather-Ready Nation Ambassadors
  - https://www.weather.gov/wrn/ambassadors
- NWS Weather Watcher Tutorial (guide on weather evaluation and monitoring process)
  - https://youtu.be/ZmH6vnup92o
- NIST Technical Note 1827
  - https://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.1827.pdf
- AMS Tornado Sheltering Guidelines during the COVID-19 Pandemic
  - https://www.ametsoc.org/index.cfm/ams/about-ams/ams-statements/statements-of-the-ams-in-force/tornado-sheltering-guidelines-during-the-covid-19-pandemic/
- AMS Certified Consulting Meteorologists
  - https://www.ametsoc.org/index.cfm/ams/education-careers/careers/ams-professional-certification-programs/directories-of-ams-certified-individuals/list-of-ams-certified-consulting-meteorologists-ccm/
- Association of Certified Meteorologists
  - http://certifiedmeteorologists.org/find-an-expert-meteorologist.htm.
- CNN Blogs: Joplin, Missouri Survivor Stories
  - http://news.blogs.cnn.com/2011/05/24/joplin-tornado-survivor-glad-he-heeded-the-sirens-for-once/

- Inside Edition: Shoppers Take Shelter Inside Home Depot as Tornado Touches Down Outside
    - https://www.insideedition.com/headlines/24141-shoppers-take-shelter-inside-home-depot-as-tornado-touches-down-outside

Questions and comments about this document should be directed to:
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[This statement is considered in force until September 2025 unless superseded by a new statement issued by the AMS Council before this date]