



Winter Preparedness: Essential Tips for Facility Managers



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Introduction

Winter brings more than just cold weather. It poses risks that, if unaddressed, can lead to severe problems for facilities. Heavy snow, high winds, and freezing rain from winter storms halt operations, impair road and facility access, and increase safety risks. Storms can cause power outages, interrupt supply chains, and lead to building damage from falling branches or other debris—but that’s not all.

Freezing temperatures can cause expansion and contraction in plumbing and other building materials, potentially creating fractures or weakening integrity over time. Cold weather can also strain heating and ventilation systems, which must work harder to maintain internal temperature, increasing energy consumption and the risk of equipment failure.

Accumulating snow and ice create additional physical and safety challenges. Snow adds weight to roofs, potentially causing structural stress or collapse in buildings that aren’t designed to handle heavy loads. Ice formation on walkways and parking lots poses a significant slip-and-fall risk, endangering the safety of employees, tenants, and visitors.

Without a proactive winter preparedness plan, facilities risk disruptions, costly damage, and potential safety hazards. This white paper provides a comprehensive guide to winter preparation, covering key areas like structural integrity, heating efficiency, snow and ice management, emergency preparedness, and technology integration.

The average cost of a winter storm is \$4.5 billion, while the average cost of a freeze is \$4.0 billion.

Source: NOAA

The Costs of Winter Storms for Businesses

Winter storms create substantial financial burdens for businesses across various sectors, impacting infrastructure, operations, employee productivity, and customer relations. Property and infrastructure damage is one of the most direct costs, with snow and ice placing strain on building structures. Roof collapses, broken windows, and burst pipes are common outcomes, leading to expensive repairs that can range from a few thousand dollars for minor issues to millions for more extensive damages. For example, water damage from burst pipes requires immediate repair and may lead to mold growth, necessitating additional remediation efforts. Inventory losses are also common, as moisture or cold exposure can damage products and equipment. Here are some other issues that can put a financial strain on businesses during the winter season.



Operational Downtime

Snow and ice hinder commutes and disrupt supply chains, costing industries, especially those reliant on in-person operations, thousands per hour in lost productivity, delayed shipments, and reduced revenue.



Employee-Related Costs

Icy conditions can cause slip-and-fall injuries, leading to worker compensation claims and potentially higher liability insurance premiums overtime. Businesses may also encounter higher labor costs due to overtime or the need to hire temporary staff in response to severe weather.



Rising Utility Costs

Facilities often need more heating during extreme cold snaps, leading to significant increases in energy costs. For businesses reliant on constant electricity, backup power systems are crucial, but fuel and maintenance for generators can elevate expenses during prolonged outages.



Customer Impact & Lost Sales

Poor weather conditions decrease foot traffic, which directly reduces sales. Moreover, supply chain interruptions and delays may harm customer satisfaction and damage long-term relationships with clients.

Proactively addressing these risks by taking the preparedness measures that follow can minimize disruptions and reduce the need for costly repairs and downtime.

Winter storms, including snow, ice, freezes, and floods, caused nearly \$6 billion in insured losses in 2022, the second-highest year on record for winter storm insured losses in the last 10 years. The third most expensive winter event since 1950 occurred in December 2022, with \$3.5 billion in insured losses.

Source: Aon



Top 10 Costliest U.S. Winter Events By Insured Losses, 1950-2023, in millions of dollars (1)

Rank	Date	Event	Location	Insured losses when occurred	In 2023 Dollars (2)
1	Feb. 12-20, 2021	Polar Vortex, Texas Freeze	TX, OR, WA, CO, NV, AR, OK, GA, NC, FL, IL, IN, IA, WI, OH, PA, VA, NC, SC, LA, MO, MS	\$14,900	\$17,466
2	Dec. 21-26, 2022	Winter Storm	NATIONWIDE	\$7,700	\$7,985
3	Mar. 11-14, 1993	Blizzard	AL, CT, DE, FL, GA, KY, LA, MA, MD, ME, MS, NC, NH, NJ, NY, OH, PA, RI, SC, TN, TX, VA, VT, WV	\$2,000	\$4,413
4	Feb. 16-22, 2015	Winter Storm, Winter Damage	CT, DC, DE, IL, KY, MA, MD, ME, MI, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA, VT	\$2,100	\$2,754
5	Dec. 17-30, 1983	Winter Damage, Cold Wave	AL, AR, CO, CT, DE, FL, GA, IA, ID, IL, IN, KS, KY, LA, MA, MD, MI, MN, MO, MS, MT, NC, ND, NE, NJ, NY, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, WA, WI, WV, WY	\$880	\$2,674
6	Jan. 5-8, 2014	Winter Damage, Cold Wave	AL, GA, IL, IN, KY, MD, MI, MO, MS, NC, NJ, NY, OH, PA, SC, TN, VA	\$1,750	\$2,303
7	Dec. 10-13, 1992	Winter Storm	CT, DE, MA, MD, NJ, NY, PA, RI, VA, WV	\$1,000	\$2,169
8	Nov. 24-30, 1950	Winter Storm	CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT	\$170	\$2,168
9	Mar. 1-3, 2018	Winter Storm	CT, DC, DE, MA, MD, NC, NJ, NY, PA, RI, VA	\$1,755	\$2,165
10	Jan. 29, 1951	Ice Storm	TN, TX, VA, AL, KY, MS, LA, GA, WV, VA, NC, SC	\$150	\$1,818

(1) Includes losses sustained by private insurers and government-sponsored programs such as the National Flood Insurance Program. Ranked on losses in 2023 dollars. Subject to change as loss estimates are further developed. As of January 2024.

(2) Adjusted for inflation by Aon using the U.S. Consumer Price Index.

Source: Aon

Structural Inspections and Maintenance

Preventive maintenance is critical for winter readiness, ensuring that facilities can withstand harsh weather without compromising safety or functionality.

Roof and Gutter Care

Inspect roofs and gutters regularly to prevent snow and ice buildup, which can lead to ice dams and leaks. Ice dams form when snow melts on a warm roof and refreezes at the colder edge, causing water to pool and potentially seep into the building. Cleaning debris from gutters and ensuring proper drainage prevents water backup and mitigates leak risks. Additionally, reinforcing vulnerable sections of the roof with added support can prevent potential collapses.



Seal Windows & Doors

Gaps around windows and doors let cold air seep in, reducing heating efficiency and increasing energy costs. Properly sealing these gaps with caulking or weatherstripping helps maintain a stable internal temperature. Also inspect insulation in walls, attics, and crawlspaces, as adequate insulation reduces the demand on heating systems and ensures a comfortable environment for occupants.

Optimizing HVAC Systems

HVAC systems are the backbone of winter comfort and efficiency. Follow these tips to ensure you are prepared and safe during the cold months.



Schedule Pre-Winter HVAC Checkups: This is essential to ensure heating components are functioning optimally



Use Portable Heaters Carefully: Portable heaters may be needed for certain areas but should only be used as recommended to avoid overloading circuits or creating fire hazards.



Change Air Filters Regularly: This prevents breakdowns, reduces fire risk, and supports optimal air quality in enclosed spaces.



Plumbing Systems

Water damage from frozen pipes is a common and costly winter issue. Facility managers must prioritize plumbing maintenance to mitigate this risk.



Insulate Pipes

Insulating pipes in unheated or exposed areas such as basements, attics, and crawlspaces is vital. Wrapping pipes with insulation foam or heat tape reduces the risk of freezing. Pipes exposed to extreme cold are especially vulnerable, as water expands when it freezes, often causing pipes to crack or burst, resulting in significant water damage.



Prepare Sprinkler Systems

Verify that sprinkler system water gongs and fire department connections are self-draining. All wet sprinkler systems, wet standpipe systems, and other protective systems with piping located in areas that are subject to freezing and cannot be adequately heated or heat traced should be shut off and drained.



Inspect for Leaks

Inspect plumbing systems to identify and repair leaks or weaknesses in the piping. Check for signs of moisture accumulation, such as damp walls or ceilings, and resolve these issues before they escalate. Identifying leaks early prevents expensive repairs and potential operational downtime.



Enhance Emergency Readiness

Check for easy access to water shutoff valves in case of emergencies, as shutting off the water quickly can prevent extensive water damage. Installing smart leak detectors provides real-time alerts for unusual moisture levels or leaks, enabling swift action that could prevent a small issue from becoming a major one.



Snow and Ice Removal

Developing a reliable plan for snow and ice removal is essential to maintaining accessibility and safety during winter.

Safe walkways and parking areas should be a priority. Snow-covered walkways pose slip hazards, and parking lots must be cleared to allow safe access for vehicles. Establish a plan for regularly clearing these areas throughout the winter, with emphasis on high-traffic zones. Make sure any snow removal equipment is readily available and in good working condition. If you outsource snow removal, consider securing a contract with a reliable provider before winter begins.

Choosing the appropriate de-icing materials and application techniques minimizes environmental impact and enhances safety. Common options include rock salt, calcium chloride, and sand; however, eco-friendly de-icing agents are available to reduce environmental impact.

Schedule de-icing strategically to ensure maximum effectiveness, with particular attention to high-risk areas such as:



Steps



Ramps



Entrances

United States Billion-Dollar Disaster Events 1980-2024 (CPI-Adjusted)



From 1980 through November 2024, 400 confirmed weather/climate disaster events have had losses exceeding \$1 billion each in the United States, including 9 freezes and 24 winter storms.

Source: NOAA

Power Systems

Winter storms frequently lead to power outages due to heavy snowfall, ice accumulation on power lines, and high winds that damage utility infrastructure. For facilities, having reliable backup power solutions is crucial to maintaining continuous operations and ensuring safety.

Backup Generators

Generators are one of the most effective solutions, providing emergency power to critical systems like heating, lighting, security, and essential machinery. Facilities with backup generators should prioritize fuel management, as a prolonged power outage may necessitate additional fuel reserves to ensure uninterrupted power. Diesel or natural gas-powered generators are commonly used, but alternative power solutions like battery storage systems or renewable energy backups, such as solar with battery storage, are increasingly viable options.



Strategic Emergency Lighting

Navigating a facility in the dark can pose significant risks, especially in larger or multistory buildings. Place emergency lighting strategically in hallways, stairwells, high-traffic areas, and any locations where exits are located. This lighting should automatically engage during a power outage to guide occupants safely to exits or designated shelter areas. Battery-powered lighting is essential, but also consider long-term options like renewable-powered emergency lights, which provide extended durability during multiday outages.

Regular Testing & Maintenance

Regular testing of backup power systems is critical to ensure they function properly when needed. Conduct monthly or quarterly tests of generators, emergency lights, and battery backup systems, including full load testing where the generator powers essential systems to verify its reliability under strain. Test battery-powered emergency lights for runtime duration to ensure they meet safety requirements. In addition, establishing a documented maintenance schedule that includes fuel checks, filter replacements, and control system tests can prevent power system failures at critical times.

Emergency Preparedness and Communication

Developing a comprehensive winter emergency response plan is essential. The plan should address protocols for power outages, evacuation routes, shelter-in-place options, and procedures for notifying emergency contacts. Training staff on emergency protocols ensures that everyone knows what actions to take in various winter-related emergencies.



Ensure clear communication channels to keep staff informed of changing weather conditions and potential hazards.



Confirm that staff receive training on safety protocols and emergency response actions.



Provide regular updates on the facility's preparedness level, weather forecasts, and procedural reminders to improve response readiness and reduce confusion in an emergency.

Using Technology for Proactive Winter Management

Modern technology offers solutions that can anticipate winter conditions and help facility managers proactively manage buildings. Here are some examples of how technology can help:



Weather Monitoring Tools

Real-time weather monitoring tools provide updates on impending storms, temperature changes, and snowfall levels. With this information, facility managers can implement preventative measures, such as pre-salting walkways or activating backup heating, to reduce risk. Many weather monitoring platforms offer customizable alerts for specific weather conditions.



Thermal Imaging

This technology uses infrared radiation to produce thermograms that visualize temperature differences and detect hidden leaks, allowing for prompt repairs while minimizing disruption to ongoing operations.



Risk Assessment Software

Technology solutions like ATI Restoration's RealRisk Monitor™ evaluate vulnerabilities and prioritize preparation tasks. RealRisk Monitor's data can support informed decision-making, from infrastructure reinforcements to emergency planning.

Partner With Experts for Comprehensive Winter Preparation

Winter preparedness often requires expert insight to ensure a facility's vulnerabilities are effectively managed. Investing in comprehensive winter preparedness strategies can protect both physical assets and people.

Partnering with a disaster recovery expert provides access to resources that enhance winter readiness. From emergency flood response to mold remediation and structural repair, ATI Restoration offers a full suite of services to address winter challenges quickly and efficiently. Our expertise in disaster recovery ensures a rapid response to minimize downtime and support facility resilience.



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