



Fire Prevention Tips for Commercial and Multifamily Properties

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Introduction

Fires are among the most devastating disasters that commercial and multifamily property owners can face. Beyond the immediate destruction of physical assets, the ripple effects—business disruptions, tenant displacement, and emotional distress—can be severe and long-lasting.

Fires in multifamily properties and commercial buildings account for billions of dollars in damages annually and numerous injuries and fatalities.

Prevention is the first line of defense for fire-related disasters. Proper planning and proactive measures can significantly reduce the risk of fires, safeguarding lives and property. In this whitepaper, we'll review fire prevention strategies for commercial and multifamily properties, focusing on practical actions that you can take to prevent fires and steps for how to respond if a blaze breaks out in your facility.

In 2023, there were 76,500 fires and 400 deaths in multifamily residences and 118,000 fires in nonresidential buildings that led to 150 deaths, 1,300 injuries, and \$3.3 billion in property damage.

Source: NFPA

Understanding Fire Risks in Commercial and Multifamily Properties

Fire hazards in commercial and multifamily properties are often preventable but remain a persistent threat. Key risks to address include cooking, electrical malfunctions, and equipment malfunctions.

Cooking is the leading fire risk in commercial properties, particularly in multifamily properties. The frequent buildup of grease in exhaust systems, combined with unattended cooking, can quickly escalate a small flame into a full-blown fire.

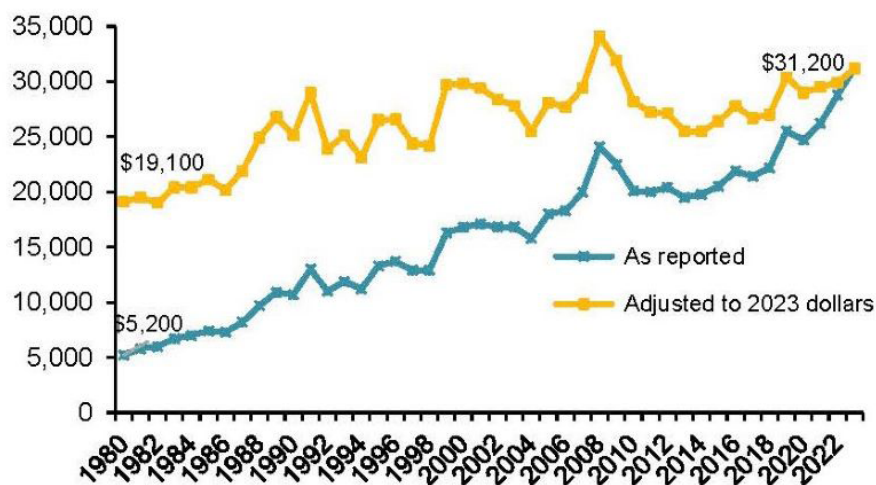
Electrical systems are a leading cause of fire incidents, particularly in older properties with outdated wiring or overloaded circuits. When circuits are pushed beyond their capacity or wiring degrades over time, the likelihood of electrical sparks increases, often leading to catastrophic fires. Similarly, improper use of electrical devices, such as overreliance on extension cords or power strips, exacerbates these risks.

Equipment malfunctions also play a significant role, with space heaters and poorly maintained boilers being frequent culprits. The improper placement of heating equipment near flammable materials, coupled with the lack of routine servicing, can create a dangerous combination.

Finally, human factors such as arson, carelessness in discarding smoking materials, and the improper storage of flammable substances contribute to the risk.

Property owners must adopt proactive measures, including regular maintenance, fire safety education, and advanced suppression technologies, to mitigate these risks.

Average Loss per Structure Fire: 1980-2023



Excludes the \$33.4 billion loss from 9/11/2001, which would adjust to 64.4 billion in 2023 dollars.

This graph shows that the average loss per structure fire, adjusted for inflation, was 1.6 times higher in 2023 (\$31,200) than in 1980 (\$19,100).

Source: NFPA

Proactive Fire Prevention Strategies

A proactive fire prevention strategy starts with rigorous inspections and maintenance schedules, ensuring property owners address potential hazards promptly.



Schedule annual inspections of electrical systems to identify issues like frayed wiring or overloaded circuits.



Upgrade outdated infrastructure to meet regulatory requirements and ensure critical safety measures.



Regularly service heating systems, including boilers and HVAC units, to ensure efficient operation and minimize the risk of malfunctions that could spark a fire.

In addition to maintenance, fire suppression systems should be tested regularly (see our checklist on page 9 for a recommended schedule). Neglecting the upkeep of sprinkler systems and fire extinguishers can render them ineffective during an emergency. For buildings still relying on outdated suppression systems—such as manual or mechanically triggered deluge and pre-action systems, dry pipe systems requiring high air pressure, and conventional sprinklers with large orifice heads that waste water and cause damage—modern alternatives such as foam-based extinguishing agents or gas-based systems in sensitive areas, like server rooms, are well worth the investment.

Adopting fire-resistant materials in construction and furnishing also plays a significant role. Fires in commercial buildings, especially those with open layouts like warehouses or offices, can spread rapidly due to abundant oxygen and combustible materials.

How Quickly Can a Fire Spread?



Commercial Building Fires

A fire can double in size every **30–60 seconds** if left unchecked.



Multifamily Building Fires

Flames can spread between units in **2 to 5 minutes**, especially in older buildings without modern sprinkler systems and fireproofing.

Tips for Slowing the Spread

Materials such as concrete, brick, and treated wood slow the spread of flames, offering crucial extra minutes for evacuation and firefighting efforts. Commercial furnishings, including curtains and furniture, should meet fire safety standards to further reduce risk.

Broken gas lines caused one of the largest fire loss incidents in recent history in the United States. In 2022, a Kansas gas distribution plant suffered losses of \$200+ million.

Source: NFPA

Preparing for Emergencies

Preparedness is a cornerstone of fire safety. Evacuation plans must be carefully tailored to the layout of each floor, accounting for factors such as accessibility for individuals with disabilities. Clearly marked exits, illuminated pathways, and prominently displayed evacuation maps ensure that everyone can quickly find their way out in an emergency.

Fire drills are essential for reinforcing these plans. Drills help tenants and employees develop the muscle memory needed to react effectively under pressure by simulating realistic scenarios, such as blocked exits or power outages. Assembly points should be designated in safe, accessible locations, away from the building and emergency vehicle routes.

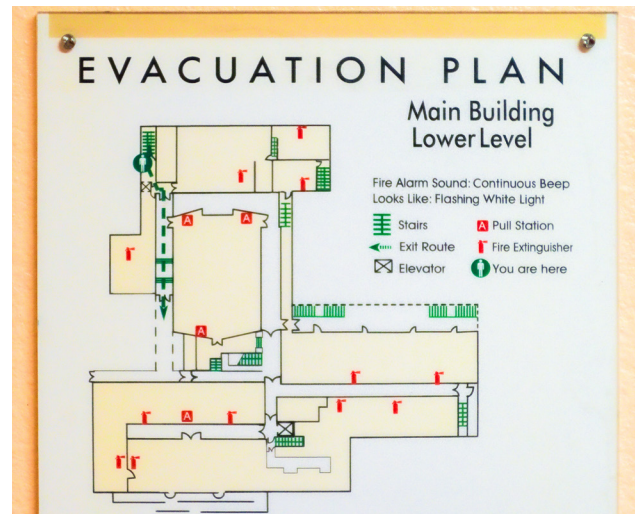
Education is equally critical. Tenants and employees must be trained on how to evacuate and on how to identify potential fire hazards and use fire extinguishers. For diverse communities, offering multilingual safety materials can bridge communication gaps and ensure everyone understands their role in maintaining fire safety.

Multifamily Properties

Multifamily properties face unique challenges due to their density and the diversity of their occupants. Shared spaces such as kitchens, hallways, and laundry rooms require stricter safety policies. Cooking-related fires, for example, can be reduced by installing commercial-grade kitchen exhaust systems and mandating their regular cleaning to prevent grease buildup. Policies that discourage unattended cooking or the use of unauthorized appliances further minimize risks.

Outdoor spaces, including balconies, present another set of challenges. Activities such as grilling or using fire pits should be prohibited in these areas, and tenants should be directed to designated spaces designed for such purposes. Ensuring that outdoor areas are constructed with fire-resistant materials can add another layer of protection.

Engaging tenants in fire safety is an ongoing effort. Regular meetings, newsletters, and workshops provide platforms for discussing fire prevention and addressing tenant concerns. For families with children, additional education on childproofing, such as keeping lighters and matches out of reach, is vital. Creating a culture of awareness and responsibility among tenants is one of the most effective ways to reduce risks in multifamily properties.



Commercial Properties

Commercial properties, ranging from office buildings to warehouses, present diverse fire safety challenges. One critical area is the safe storage of hazardous materials. Store chemicals, flammable liquids, and cleaning agents in fireproof cabinets and keep them in ventilated areas away from heat sources. Warehouses must maintain clear pathways and avoid overstocking items near sprinkler systems to ensure that firefighting measures are not obstructed.

Server rooms require specialized attention due to the high value and flammability of electronic equipment. Non-water-based fire suppression systems, such as halon or FM-200, are recommended to protect sensitive equipment while avoiding water damage.

Employee training plays a significant role in commercial property fire safety. Designating fire wardens ensures that there are individuals on-site who are well-versed in evacuation procedures and hazard identification. Frequent refresher training sessions help keep all employees alert and prepared for emergencies.



Navigating Compliance and Insurance

Adhering to fire safety regulations is a legal obligation and a critical safety measure. Local and state fire codes often require regular inspections and upgrades to meet evolving standards. Accessibility considerations, such as ramps and visual alarms, ensure that evacuation plans are inclusive and effective for all occupants. Property owners should collaborate with fire safety consultants to stay ahead of regulatory changes and ensure compliance.

How Insurance Supports Fire Preparedness

Keep Your Coverage Current

Property owners must review their policies regularly to ensure adequate coverage for structural damage, business disruption, and tenant displacement.

Detailed Documentation

Detailed documentation of safety measures, including maintenance logs and inspection reports, can facilitate smoother insurance claims and demonstrate diligence in preventing fires.

Leveraging Technology for Fire Prevention



Advancements in technology have revolutionized fire prevention, offering tools that provide early detection and actionable insights. Real-time monitoring systems, equipped with Internet-of-Things-enabled sensors, can detect anomalies such as smoke, gas leaks, or rapid temperature increases. These systems can send alerts directly to property managers and first responders, significantly reducing response times.

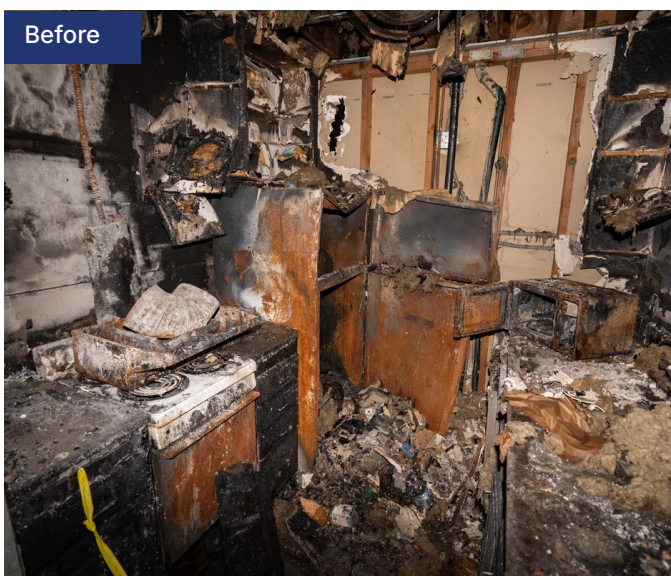
Predictive analytics powered by artificial intelligence (AI) is another game-changer. AI can pinpoint high-risk areas and suggest targeted preventive measures by analyzing historical data and identifying patterns. Digital twin technology allows property owners to create virtual models of their buildings, enabling them to simulate fire scenarios and test the effectiveness of safety measures in a controlled environment.

Virtual reality (VR) also has a role in enhancing training programs. Simulated fire drills in a VR setting provide a safe and immersive way for occupants to practice emergency procedures, building their confidence and preparedness for real-life scenarios.

Recovery and Long-Term Resilience

Despite the best efforts, fires can still occur, making a robust recovery plan indispensable. Facilities must be prepared to spring into action to secure the site and reduce the risk of further damage. Long-term recovery involves structural repairs and mitigation of damage from water, smoke, soot, and other particulates.

In the event of a fire, being prepared can significantly minimize damage and help ensure a smooth recovery. Use this checklist on the following page to help safeguard your commercial property and facilitate restoration efforts.



Fire Preparedness Checklist

Preventive Measures for the Future

- Schedule Annual Electrical Inspections:** Have a professional electrician check your building's wiring, circuit breakers, and outlets for frayed wiring, overloaded circuits, and outdated systems.
- Service Heating and Ventilation Systems:** Retain a certified HVAC specialist to conduct routine maintenance of boilers, HVAC systems, and space heaters. Locate heating equipment away from flammable materials.
- Test Fire Suppression Systems:** Regularly inspect all sprinklers, fire extinguishers, and other suppression systems to confirm they are operational. Consider upgrading to foam-based or gas-based systems in high-risk areas like server rooms.

Suggested Test Timeline for Fire Suppression Systems

Monthly

Visually inspect your system to check for obvious signs of damage, leaks, and obstructions. Verify that gauges and indicators are operational and show normal system status.

Quarterly

Have a specialist review the system's activation mechanisms, alarms, and tamper switches. For clean agent, carbon dioxide or kitchen hood systems, inspect components like nozzles, hoses, and tanks.

Annually

A qualified technician should inspect all components, replace parts as needed, test sprinkler water flow, check fire pumps, valves, and backflow preventers, refill extinguishing agents, and test alarms and detection devices.

Every Five Years

Have a professional inspect the internals of the sprinkler system for corrosion and sediment buildup and test pressurized components like standpipes and hoses.

- Incorporate Fire-Resistant Building Materials:** Use specially treated materials to reduce fire damage severity and slow flame spread, providing vital extra time for occupant evacuation.

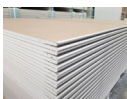
Fire-Resistant Materials



Treated Wood: Treated wood is infused with fire-retardant chemicals that delay combustion, making it an excellent choice for framing and interior finishes. This material is particularly beneficial in multifamily properties where dense occupancy increases evacuation time.



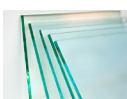
Concrete and Masonry: Concrete is noncombustible and effective at containing fires. Masonry materials like brick also resist high heat and are less likely to crumble or weaken during a fire, helping to contain the spread of flames and smoke.



Fire-Rated Gypsum Board: Gypsum board contains additives like glass fibers that enhance its ability to resist heat, making it ideal for fire-rated walls and ceilings.



Metal Cladding and Roofing: Noncombustible metals such as steel and aluminum are excellent for roofing and exterior cladding. They provide a durable, fire-resistant envelope for buildings, reducing the chances that exterior fires will spread into the structure.



Glass with Fire-Resistant Coatings: Fire-resistant glass can contain fires for extended periods. This glass is often paired with fire-rated frames to create a barrier against heat and smoke while maintaining visibility for occupants and first responders.

- **Upgrade Furnishings to Meet Fire Safety Standards:** Select curtains, furniture, and other furnishings that comply with modern fire-resistance standards.
- **Install Tech-Enabled Fire Detection Systems:** Equip properties with real-time monitoring systems to detect smoke, gas leaks, and rapid temperature increases.

Fire Detection Technology

These technologies can help facilities build a robust fire safety infrastructure, ensuring early detection, effective suppression, and enhanced preparedness. This approach protects lives and assets, ensures compliance with modern safety standards, and reduces liability risks.



Detection and Monitoring Systems

- **Smart Smoke and Fire Detectors:** Provide real-time monitoring for smoke, heat, and carbon monoxide with IoT integration, remote alerts, and advanced sensors to detect slow-burning or fast-spreading fires.
- **Gas Leak Detectors:** Monitor hazardous gases like carbon monoxide, methane, and propane, triggering alerts before dangerous levels are reached and integrating with HVAC systems to shut off gas flow.
- **Heat and Temperature Sensors:** Detect rapid temperature changes that could indicate a fire before smoke appears, integrating with fire suppression systems for automatic activation.
- **IoT-Enabled Monitoring Systems:** Use interconnected devices and predictive analytics to monitor environmental conditions, identify high-risk areas, and provide real-time dashboards for multiple properties.

Advanced Fire Safety Technologies

- **Digital Twin Technology:** Digital twins create virtual models of physical properties, enabling simulation of fire scenarios to test evacuation plans and safety measures.
- **Predictive Maintenance Tools:** Predictive tools use AI to analyze fire safety data, identifying issues before failures occur and providing real-time diagnostics for alarms, sprinklers, and detectors.
- **HVAC Smoke Control Systems:** These systems detect smoke in air ducts, prevent spread through HVAC, and use automatic dampers and smoke detectors for immediate response.
- **Video Surveillance with Fire Analytics:** Cameras equipped with fire analytics detect visual signs of fire, such as flame patterns or smoke, and send alerts to property managers.



- ❑ **Store Hazardous Materials Safely:** Select curtains, furniture, and other furnishings that comply with modern fire-resistance standards.
- ❑ **Conduct Fire Safety Training:** Educate employees and tenants on evacuation procedures, hazard identification, and fire extinguisher use.
- ❑ **Perform Regular Fire Drills:** Simulate real-life fire scenarios, such as blocked exits, to prepare occupants for emergencies. Conduct these drills at least twice a year.
- ❑ **Tailor Evacuation Plans to Accessibility Needs:** Ensure clear signage, illuminated pathways, and inclusive evacuation routes for individuals with disabilities.
- ❑ **Review Insurance Policies:** Confirm that your coverage includes fire and smoke damage.
- ❑ **Develop or Revise a Disaster Recovery Plan:** Include preferred vendors and emergency contacts for rapid response.



Immediate Response

- ❑ **Contact Emergency Services:** Call 911 to report the fire immediately.
- ❑ **Evacuate the Premises:** Ensure all employees and occupants follow the evacuation plan and safely exit the building.
- ❑ **Notify your Insurance Provider:** Report the incident to your insurer to start the claims process.
- ❑ **Contact a Restoration Professional:** Call a trusted provider to secure the property and begin recovery.

Property Security

- ❑ **Secure the Building:** Secure broken windows and doors with boards to prevent unauthorized access and further damage. Install fencing around the property to deter trespassers and ensure safety.
- ❑ **Cover the Roof:** Use a tarp to cover damaged areas of the roof to protect against weather exposure.

Cleanup and Restoration



Remove Debris: Prepare for restoration by removing hazardous debris, charred materials, and other waste.



Remove Smoke and Soot: Clean surfaces and air ducts to eliminate harmful residues and improve air quality.



Extract Water: Address water damage from firefighting efforts using industrial-grade pumps and dehumidifiers.



Neutralize Odors: Use professional deodorization techniques to eliminate lingering smoke odors.

Contents Restoration

- ❑ **Inventory Contents:** Catalog and assess damage to furniture, equipment, inventory, and other assets.
- ❑ **Salvage and Clean Contents:** Use appropriate cleaning methods for different materials, such as electronics, fabrics, and documents. Remove items requiring off-site cleaning and restoration.
- ❑ **Dispose of Nonsalvageable Materials:** Document and properly dispose of irreparable items and report losses to your insurer.

Structural Restoration

- ❑ **Abate Lead and Asbestos:** Address any hazardous materials exposed during the fire.
- ❑ **Clean and Decontaminate the Building:** Remove soot, smoke, and water contaminants from walls, ceilings, and floors.
- ❑ **Reconstruct damaged areas:** Perform needed repairs and rebuilding to restore the property to its pre-fire condition.

HVAC and Air Quality

- ❑ **Clean the Ducts:** Inspect and clean air ducts to remove soot and smoke residue.
- ❑ **Repair the HVAC System:** Assess and replace damaged HVAC components.
- ❑ **Install HEPA Filters:** Upgrade filtration to ensure superior air quality post-restoration.



Conclusion

Effective fire prevention requires a comprehensive approach that combines regular maintenance, advanced technology, and a commitment to education and preparedness. Commercial and multifamily property owners can reduce risks, protect lives, and ensure compliance with fire safety regulations by implementing the strategies outlined in this whitepaper. ATI Restoration remains a trusted partner in prevention and recovery, offering expert guidance and support every step of the way. For more information or to discuss how we can assist with your fire prevention or recovery needs, [contact us today](#).

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