NEW JERSEY FIRE SPRINKLER HIGH-RISE GUIDE

New Jersey High-Rise Building Fire Sprinkler Protection Survey

An overview of fire sprinkler protection in high-rise buildings throughout New Jersey.

2018 EDITION

New Jersey Fire Sprinkler Advisory Board

Save Lives. Protect Property.

NFSA NATIONAL FIRE SPRINKLER ASSOCIATION PENJERDEL CHAPTER

ABSTRACT

Fatal fires in high-rise buildings in cities such as Honolulu, Pittsburgh, and London demonstrate the dangers associated with unsprinklered and partially sprinklered high-rise buildings. These buildings, regardless of their use, present unique challenges to fire safety professionals and to the fire departments that respond to fires that occur in them.

The New Jersey High-Rise Building Fire Sprinkler Protection Survey will highlight the issue so that the public, elected officials, and fire officials are well-informed of the degree of fire protection present in high-rises in the State of New Jersey.

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RESEARCH METHODOLOGY

On July 20, 2005, the New Jersey High-rise Fire Safety Coalition published a study entitled *High-rise Building Protection Survey and Cost/Impact Study*. This study identified and examined 1,248 high-rise buildings in New Jersey.

On December 8, 2017, the New Jersey Division of Fire Safety provided the New Jersey Fire Sprinkler Advisory Board and the NFSA PenJerDel Chapter with a document that listed 426 high-rise buildings with varying levels of fire sprinkler protection.

These two documents were compared and consolidated into a single list which was then verified by contacting building owners and fire officials by phone or email. If after two or more of our inquiries went unanswered, the information was verified through website photographs, virtual tours, or by performing onsite surveys. In many instances, the website www.emporis.com was used to gather building information such as the year built, occupancy use and number of stories. Additionally, the list of approved hotels and motels for federal travelers maintained by FEMA was consulted. Only hotels that have an automatic fire sprinkler system in each guest room (for buildings that are four or more stories tall) appear on that list and therefore were eliminated from this survey.

Excluded from this report are fifteen buildings where information was unavailable. We were unable to access several of these buildings. In other instances, the buildings were abandoned or under construction or renovation. An additional four buildings that are scheduled for demolition by the end of 2018 were also excluded from this report.

ACKNOWLEDGMENTS

On behalf of the New Jersey Fire Sprinkler Advisory Board and the PenJerDel Chapter of the National Fire Sprinkler Association, we would like to thank the fire officials, fire officers, building owners, and other fire safety professionals who responded to our requests for information. We would like to thank the New Jersey Division of Fire Safety for allowing us to utilize their data. We would also like to extend our thanks to the men and women of Sprinkler Fitters Local 696 who assisted with conducting site visits at many locations throughout the state. Without their cooperation, this report would not have been possible.

THE UNIQUE CHALLENGES OF HIGH RISE FIRES

High-rise buildings possess several inherent and unavoidable design elements that put the occupants at a higher risk for injury or death when a fire occurs.

High-rises provide limited means of ingress and egress for both occupants and firefighters. With much of the building existing so far above grade, the height of windows makes them impractical to serve as emergency exits. The occupants are then forced to use a limited number of stairwells to reach a safe exit. These same stairwells are also being utilized by firefighters to access the fire. Firefighters must navigate the stairwells and spend an exorbitant amount of time and energy climbing the stairs while wearing heavy fire-resistant clothing and breathing apparatus and carrying hoses and equipment to the floor of the fire. The height of these buildings also makes getting the amount of water necessary to effectively fight the fire more difficult for firefighters. The ability of the occupants to self-evacuate must also be taken into consideration as many high-rise buildings are dedicated to housing senior citizens who may have limited mobility or require continuous supplemental oxygen.

Previous fires that have been permitted to go unchallenged by fire sprinklers in high-rise buildings have demonstrated their ability to rapidly produce large amounts of deadly smoke and toxic gases. The stairwells, elevators, and ventilation systems can act as chimneys, transmitting smoke and toxic gases throughout the building making escape routes uninhabitable. Occupants may be forced to shelter in place and await rescue by firefighters, forcing firefighters to perform hundreds of rescues while other crews are attempting to extinguish the fire. High-rise fires are extremely demanding on emergency response resources and require specialized training, tactics, and equipment.

GLOSSARY OF TERMS

(as used in this report)

COMBINATION RESIDENTIAL/COMMERCIAL – A building that is divided nearly equally between residential use and commercial use.

COMMERCIAL BUILDING – A building that provides space used for a retail trade or business. This includes, but is not limited to, offices, warehouses, and retail stores.

FULLY SPRINKLERED – A building that is protected by a fire sprinkler system throughout.

HIGH-RISE BUILDING – Any building or structure having floors used for human occupancy located either more than six (6) stories or more than seventy-five (75) feet above the lowest level accessible to a fire department vehicle.

HOSPITAL – A building providing medical and surgical treatment and nursing care for sick or injured people. These buildings are usually in operation twenty-four hours per day and may be occupied by individuals who cannot self-evacuate.

PARTIALLY SPRINKLERED – A building that is not fully sprinklered but has at least one (1) sprinkler head in the building.

PRIVATE – Refers to privately-owned properties. Private property is property that is owned by an individual or group of individuals, rather than by the government or society at large.

PUBLIC – Refers to publicly-owned properties. Public property is property that is owned by the government or one of its agencies, divisions, or entities. This includes, but is not limited to, property owned by federal, state, county, or municipal governments, housing authorities, and state universities.

RESIDENTIAL BUILDING – A building that provides sleeping accommodations for purposes other than health care or detention and correctional. This includes, but is not limited to, apartments, condominiums, lodging and rooming houses, hotels, motels, and dormitories. This also includes residential buildings providing retail or office space on <u>only</u> the first floor.

STANDPIPE – A pipe and attached hose valves and hose (if provided) used for conveying water to various parts of a building for firefighting purposes.

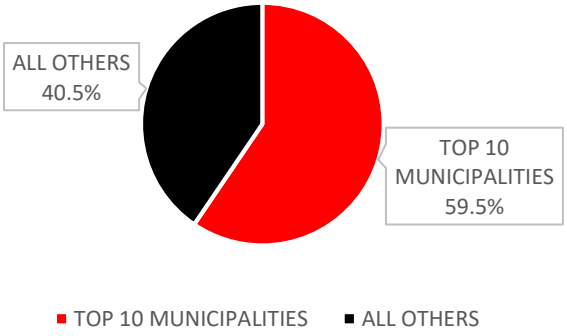
UNSPRINKLERED – A building that is not equipped with any components of a fire sprinkler system. The building may or may not be equipped with standpipes.

SURVEY RESULTS

UNSPRINKLERED:	153
PARTIALLY SPRINKLERED:	342
	495

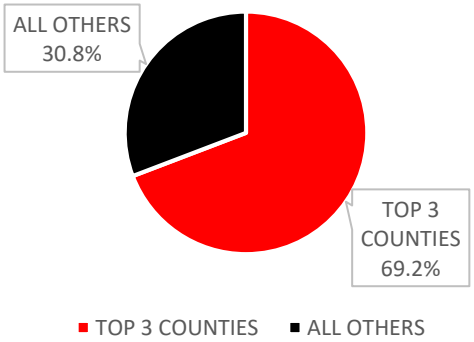
GREATEST NUMBER OF BUILDINGS NOT FULLY SUPPRESSED (BY MUNICIPALITY):

1	NEWARK	91	18.3%
2	JERSEY CITY	43	8.7%
3	FORT LEE	35	7.1%
4	HACKENSACK	27	5.4%
5	PATERSON	25	5.0%
6	HOBOKEN	17	3.4%
7	TRENTON	17	3.4%
8	WEST NEW YORK	16	3.2%
9	EAST ORANGE	13	2.6%
10	ATLANTIC CITY	12	2.4%
	TOTAL:	**296**	**59.5%**



GREATEST NUMBER OF BUILDINGS NOT FULLY SUPPRESSED (BY COUNTY):

1	ESSEX	124	25.1%
2	HUDSON	122	24.6%
3	BERGEN	81	16.4%
	TOTAL:	**327**	**69.2%**



AVERAGE AGE OF THE BUILDINGS (AT THE TIME OF PUBLICATION): 56.5 YEARS

- OLDEST: 120 YEARS OLD — THOMAS J STEWART APTS, JERSEY CITY, NJ (1898)
- NEWEST: 30 YEARS OLD — OCEAN POINT CONDOS, LONG BRANCH, NJ (1988)
  CLAREMONT COVE, JERSEY CITY, NJ (1988)

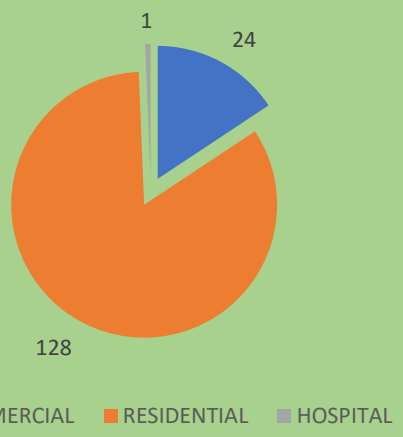
AVERAGE NUMBER OF STORIES: 12.6 STORIES

- TALLEST: 44 STORIES — GALAXY TOWERS CONDOS BLDGS 1-3, GUTTENBERG, NJ
- SHORTEST: 6 STORIES — SHARED BY 30 BUILDINGS THROUGHOUT NJ

UNSPRINKLERED BUILDINGS

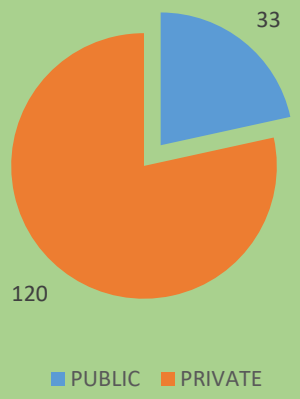
OCCUPANCY

COMMERCIAL:	24
RESIDENTIAL:	128
COMBINATION	0
HOSPITAL	1
	153

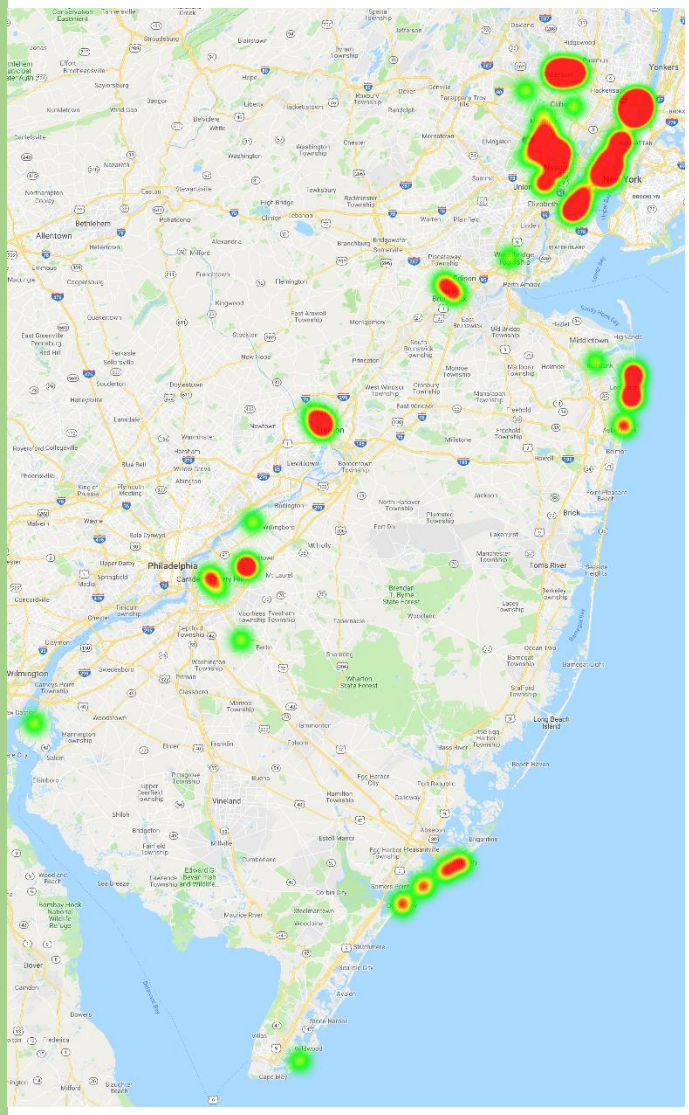


OWNERSHIP

PUBLIC:	33
PRIVATE:	120
	153



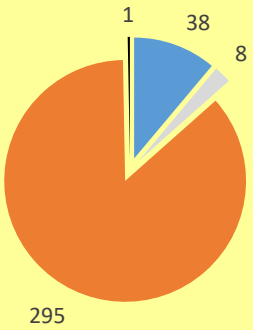
CONCENTRATION MAP



PARTIALLY SPRINKLERED BUILDINGS

OCCUPANCY

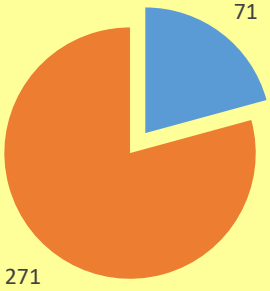
COMMERCIAL:	38
RESIDENTIAL:	295
COMBINATION	1
HOSPITAL	8
	342



COMMERCIAL HOSPITAL RESIDENTIAL COMBINATION

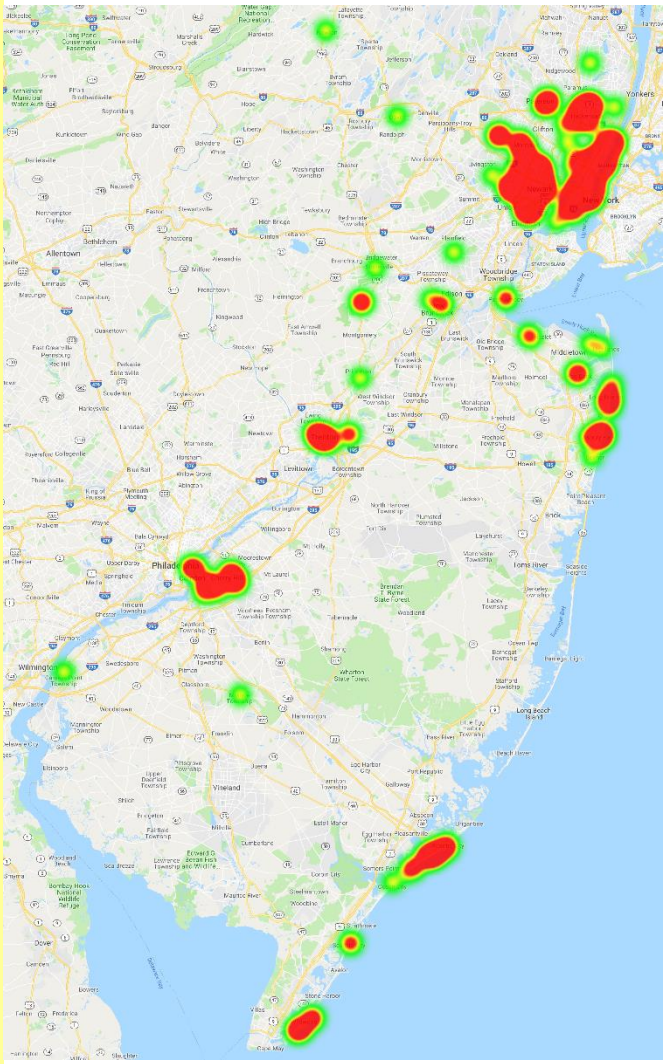
OWNERSHIP

PUBLIC:	71
PRIVATE:	271
	342



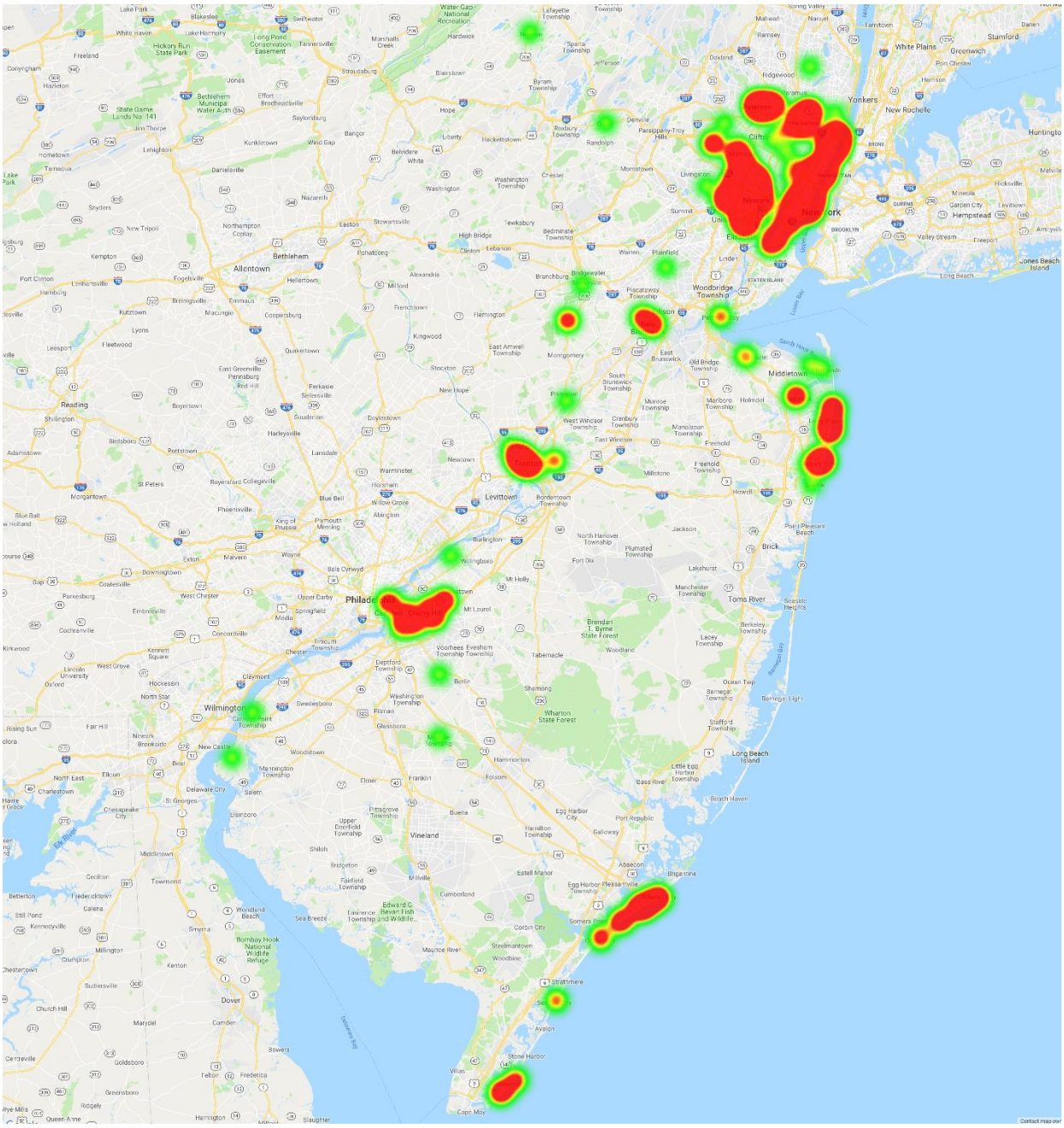
PUBLIC PRIVATE

CONCENTRATION MAP



GEOGRAPHICAL BREAKDOWN

PARTIALLY SPRINKLERED & UNSPRINKLERED



Notable High-Rise Fires

MGM Grand Hotel

3799 South Las Vegas Boulevard,
Las Vegas, NV 89109
United States

Friday, November 21, 1980

Fatalities: 78 Civilians and 7 Employees
Damage estimate: $300 Million (USD)

(AP Photo/Marco Garcia) The Associated Press

Occupancy:	**Casino Hotel**
Height:	**26 stories, 306 feet**
Total Units:	**2,078**
Year Built:	**1973**

During construction, the $192,000 price tag for the installation of a fire sprinkler system was deemed impractical for the $106 million building. There were over 5,000 people staying in the MGM Grand Hotel and Casino on Friday, November 21, 1980. Over 600 people were injured and another 85 lost their lives after flames broke out around 7 a.m. As a result, and within 90 days, Nevada changed its fire safety laws requiring all hotels taller than 55 feet to be retrofitted with fire sprinkler systems. All future buildings three stories or more would be required to be sprinklered also.

First Interstate Bank

707 Wilshire Boulevard
Los Angeles, CA 90017
United States

Wednesday, May 4, 1988

Fatalities: 1 Civilian
Damage estimate: Over $50 million (USD)

flickr

Occupancy:	**Commercial Offices**
Height:	**62 stories, 858 feet**
Square Feet:	**17,500 per floor (net usable)**
Year Built:	**1973**

A fire that killed a maintenance worker and injured 40 people, destroyed 5 floors of the First Interstate Bank building. A fire sprinkler system (which was not required) was 90% installed in the building but was inoperative. The city of Los Angeles subsequently enacted high-rise retrofit ordinances (effective August 21, 1988) requiring all high-rise buildings to be equipped with a fire sprinkler system.

Meridian Bank Building

One Meridian Plaza
Philadelphia, PA 19102
United States

Saturday, February 23, 1991

Fatalities: 3 Firefighters
Damage estimate: $100 million (USD), demolished 1999

WPVI

Occupancy:	**Commercial Offices**
Height:	**38 stories, 492 feet**
Square Feet:	**17,000 per floor (net usable)**
Year Built:	**1973**

The fire at One Meridian Plaza burned for 19 hours, killing 3 firefighters and completely consuming 8 floors of the building before it was finally extinguished by 10 activated sprinkler heads on the 30th floor. Mayor Wilson Goode later signed a law requiring all nonresidential buildings taller than 75 feet to have fire sprinkler systems installed by 1997. An estimated three hundred buildings in the city were affected by the law. The Meridian Bank Building was ultimately dismantled in 1999.

Westview Towers

6115 Granton Street
North Bergen, NJ 07047
United States

Sunday, August 9, 1998

Fatalities: 4 Civilians
Damage estimate: Unknown

Occupancy:	**Residential Apartments**
Height:	**20 stories, 200 feet**
Total Units:	**285**
Year Built:	**1976**

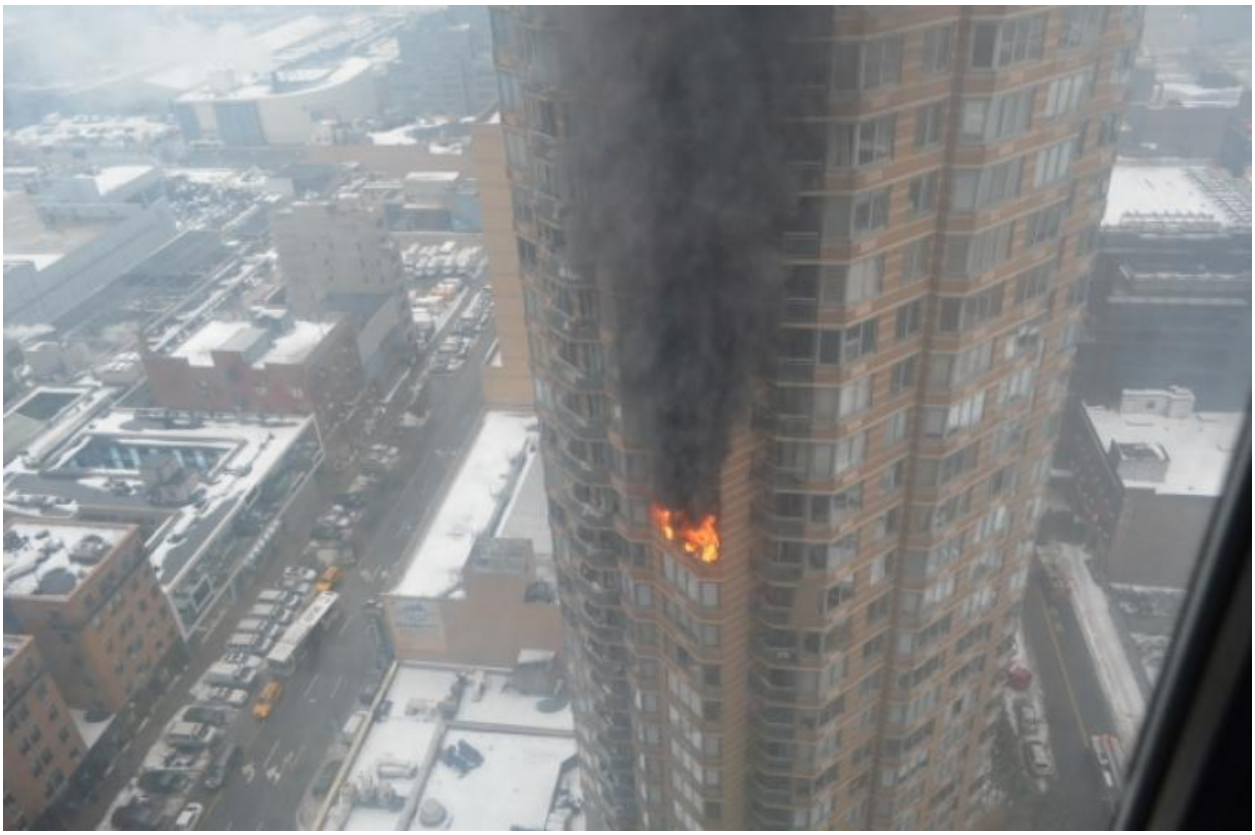
On Sunday, August 9, 1998, a fire was reported at 4:48 p.m. on the fourth floor of the twenty story building. Several witnesses reported hearing explosions as smoke quickly filled the hallways. The building housed approximately 400 low income and elderly residents. One of the four victims fell to her death as firefighters were positioning a ladder to her fourth-floor balcony.

South Park Apartments

124 West 60th Street
New York, NY 10023
United States

Wednesday, December 23, 1998

Fatalities: 4 Civilians
Damage estimate: Unknown



Occupancy:	**Residential Apartments**
Height:	**51 stories, 516 feet**
Total Units:	**500**
Year Built:	**1986**

Four people lost their lives and 22 were injured when a wall mounted heater short-circuited in apartments 19D and 19E (combined into a single living space and owned by the family of actor Macaulay Culkin) causing a fire which reached 4 alarms. The fire was noticed shortly after 9:30 a.m. and quickly spread, making evacuating from floors above the fire very difficult.

Cook County Administration Building

69 West Washington Street
Chicago, IL 60602
United States

Friday, October 17, 2003

Fatalities: 6 Civilians
Damage estimate: Unknown

Chicago Tribune

Occupancy:	**Commercial Offices**
Height:	**35 stories, 475 feet**
Square Feet:	**22,600 per floor**
Year Built:	**1964**

Just after 5 p.m. on Friday, October 17, 2003, flashes of fire were seen coming from the door of a 12th floor storage room. Immediately, smoke began filling the southeast stairwell where firefighters would eventually discover 14 victims suffering from smoke inhalation. Six victims were dead at the scene while 8 others were admitted to the hospital in critical condition.

Wedgwood Senior Apartments

6701 Blanco Road
San Antonio, TX 78216
United States

Sunday, December 28, 2014

Fatalities: 5 Civilians
Damage estimate: Unknown

Cynthia Esparza, For The Express-News

Occupancy:	**Residential Senior Citizen Apartments**
Height:	**11 stories, 157 feet**
Total Units:	**297**
Year Built:	**1965**

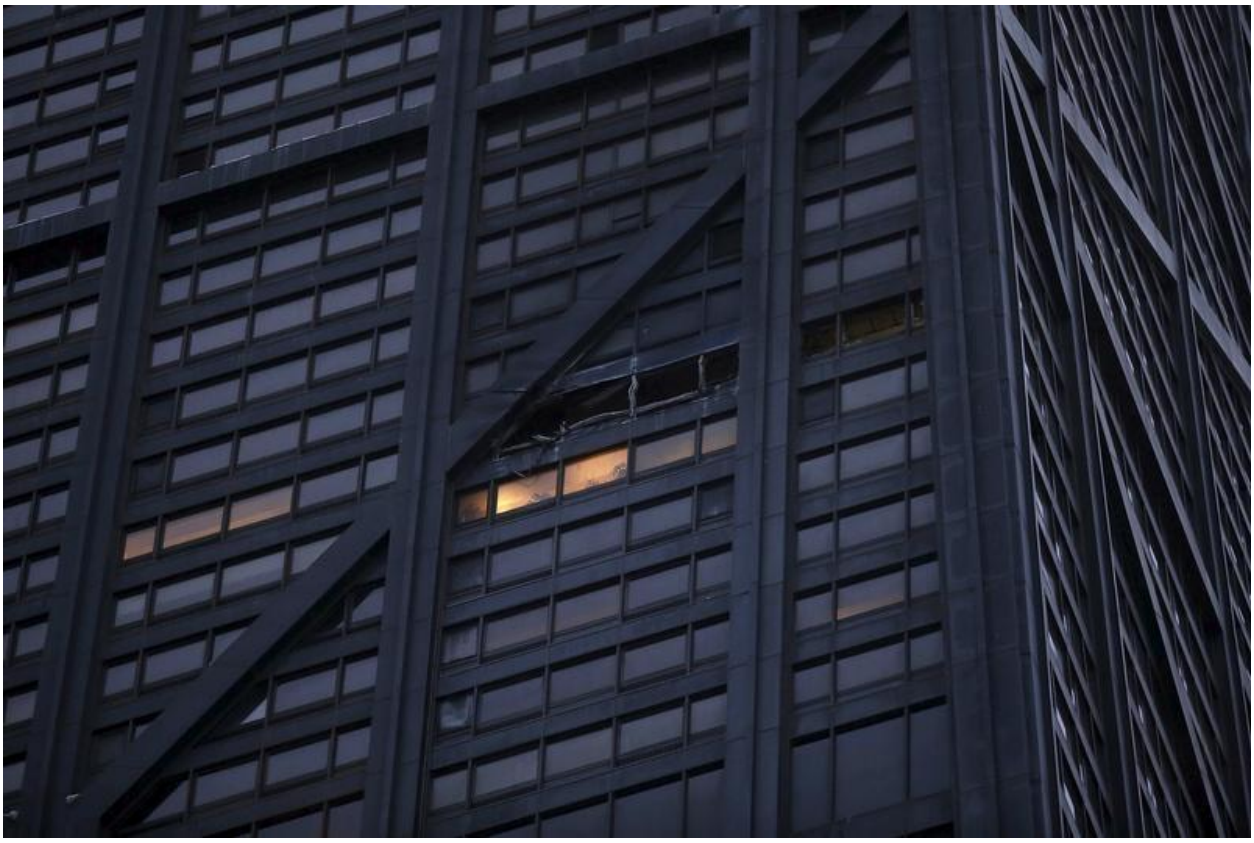
A fire on the third floor killed 5 and injured 10 residents of the Wedgewood Senior Apartments. The building was not required to have a fire sprinkler system at the time it was built. As a result of this fire, a law was passed in 2016 requiring all Bexar County high-rise residential buildings in which the population is majority elderly or mobility-impaired to be retrofitted with fire sprinklers by 2027.

John Hancock Center

875 N Michigan Avenue
Chicago, IL 60611
United States

Saturday, November 21, 2015

Fatalities: None
Damage estimate: Unknown



Reuters

Occupancy:	**Residential Condominiums**
Height:	**100 stories, 1128 feet**
Total Units:	**700**
Year Built:	**1975**

Five people sustained minor injuries when fire erupted on the 50th floor of the John Hancock Center. The fire was contained to the unit where the fire was accidentally started by a candle. The building was not evacuated during the fire. As a result of this fire, and other fires in this building, some residents have questioned the safety standards of high-rise buildings.

Midtown Towers

643 Liberty Avenue
Pittsburgh, PA 15222
United States

Monday, May 15, 2017

Fatalities: 1 Civilian
Damage estimate: Unknown

WPXI News

Occupancy:	**Residential Apartments**
Height:	**18 stories, 239 feet**
Total Units:	**Unknown**
Year Built:	**1907**

On Monday, May 15, 2017 flames could be seen coming from the sixth floor of the Midway Towers. A 75-year old resident was killed in the blaze. More than 100 people were displaced by the fire. Current fire codes and city ordinances have no requirements for fire sprinkler systems in older high-rise buildings.

Grenfell Tower

North Kensington
London, England W11 1TG
United Kingdom

Wednesday, June 14, 2017

Fatalities: 71 Civilians
Damage estimate: Unknown

Occupancy:	**Residential Apartments**
Height:	**24 stories, 220 feet**
Total Units:	**127 apartments and other mixed-use areas on lower floors**
Year Built:	**1974**

On Wednesday, June 14, 2017, the London Fire Brigade responded a fast-moving fire on the sixth floor of the Grenfell Tower. It took firefighters more than 24 hours to bring the blaze under control. While 65 people were successfully rescued, 71 people were killed as a result of the inferno. Recently installed exterior cladding may have contributed to the rapid spread of the fire.

Marco Polo Apartments

2333 Kapiolani Boulevard
Honolulu, HI 96826
United States

Friday, July 14, 2017

Fatalities: 4 Civilians
Damage estimate: $1.7 Million (USD)

(AP Photo/Marco Garcia) The Associated Press

Occupancy:	**Residential Condominiums**
Height:	**36 stories, 365 feet**
Total Units:	**538**
Year Built:	**1971**

On Friday, July 14, 2017, fire broke out on the 26th floor of the Marco Polo Apartments in apartment 2602. Three civilians lost their lives the day of the fire while a fourth victim died several weeks later. Thirty units were destroyed, 50 units sustained fire, heat or smoke damage, and 130 units sustained water damage. Local lawmakers are currently exploring high-rise fire sprinkler retrofit legislation.

The PenJerDel Chapter of the NFSA is a group of professionals whose shared interest is advocating for the widespread acceptance and usage of fire sprinklers. Members come from a variety of different fields, from fire services to education and marketing, but they all share a common goal: to save lives and protect property. In accordance with its mission, the PenJerDel chapter is committed to promoting the fire sprinkler industry, protecting the fire sprinkler industry, and strengthening the National Fire Sprinkler Association.

The PenJerDel Chapter works closely with members of local communities, including firefighters, educators, and elected officials, to accomplish this goal.

The Chapter offers several educational events that highlight fire sprinkler effectiveness, including burn trailer demonstrations, side-by-side burns, grant burns, and training seminars.

The mission of the New Jersey Fire Sprinkler Advisory Board (NJFSAB) is to save lives and protect property by educating the public about fire safety, demonstrating the benefits and effectiveness of fire sprinklers in suppressing and reducing the impact of fires, and supporting fire-safe building codes and legislation. NJFSAB is a cooperative partnership advocating installation and proper care of the sprinkler systems. Headquartered in Hamilton New Jersey, the Board is comprised of unionized workers (Sprinkler Fitters Local 696), local leaders, code committee members, contractors and businesses who represent fire sprinkler construction, production, distribution, and installation.

NJFSAB provides many educational events each year that showcase the effectiveness of fire sprinkler systems. These events include fire sprinkler trailer demonstrations, side-by-side live fire demonstrations, and various training seminars. NJFSAB also offers grants for interested communities and fire departments wishing to create their own side-by-side room demonstrations.

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New Jersey Fire Sprinkler Advisory Board
Save Lives. Protect Property.

NFSA NATIONAL FIRE SPRINKLER ASSOCIATION
PENJERDEL CHAPTER

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