



**RESEARCH**

# **Large Loss Fire in the United States 2014**

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Stephen G. Badger

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## **Acknowledgements**

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## **Introduction**

Six fires in apartment complexes under construction were among the largest fires in the country last year, which totaled more than \$654 million in direct property loss across all categories

Over the past 10 years, the number of large-loss fires in the United States, defined as fires that result in property damage of at least \$10 million, has ranged from 16 to 45 a year, with an average of approximately 25 fires per year. In 2014, 25 large-loss fires caused a total of almost \$654.3 million in direct property losses. While these fires accounted for just 0.002 percent of the estimated number of fires in 2014, they accounted for 5.6 percent of the total estimated dollar loss. They also accounted for five civilian deaths, 15 civilian injuries, and 10 firefighter injuries.

Fifteen of those fires—nine more than in 2013—resulted in more than \$20 million each in property damage. These fires, which included 13 in structures as well as one boat fire and a wildfire, resulted in a combined property loss of \$518.6 million, which represents 79.3 percent of the total loss in large-loss fires and 4.5 percent of the total fire losses in the United States for 2014.

The largest fire of 2014 in terms of direct property loss was a pier fire in California that resulted in more than \$100 million in damage. The smoky fire, which was reportedly started by a welder's torch, smoldered for more than 32 hours and burned under the pier and a warehouse on the 150-foot (46-meter) wharf, resulting in a partial collapse of the warehouse floor. Nearly 1,000 dock workers were evacuated from the area, and two cargo ships were moved to safer locations in the harbor. No injuries were reported.

A number of buildings under construction were also damaged in high-loss fires. Six apartment buildings or complexes in various stages of completion and a department store under renovation sustained losses totaling \$187 million.

## **Where the fires occurred**

Of the 25 large-loss fires that occurred last year, 21 involved structures and resulted in a total property loss of \$579.4 million, or 88.6 percent of the combined losses for all large-loss fires. The other four fires—three vehicle fires one wildfire—resulted in combined losses of \$74.9 million, or 11.4 percent of the losses in all of the large-loss fires.

Of the 21 large-loss structure fires, seven occurred in structures that were under construction or being renovated, resulting in a combined loss of \$187 million. Six of the structures were apartment buildings, and one was a department store.

In six of these structures, automatic detection equipment had yet to be installed. Detection equipment had been installed in one of the buildings but was not yet operational. Five other buildings had no suppression equipment. Suppression systems had been installed in two buildings, but they were not yet operational.

Six fires occurred in stores and office properties. Four large-loss fires occurred in stores in 2014 and caused \$64.2 million in damage, while two fires in office buildings caused \$76.5 million in damage, for a combined loss of \$140.7 million

Another four large-loss fires occurred in storage properties, resulting in a combined loss of \$164.7 million. The pier and warehouse fire alone resulted in a loss of just over \$100 million.

Two fires in industrial properties resulted in a combined loss of \$35 million last year. One started in the gas distribution system of a compressor building and the other occurred in a nuclear energy plant.

One fire in a single-family home resulted in a loss of \$22 million, while a single fire in a meat-packing plant caused a loss of \$30 million.

Three of the four non-structure, large-loss fires involved vehicles, including a cargo ship and a yacht. The third vehicle fire involved six special-purpose trucks used at a gas well drilling facility and designed to carry specialized equipment such as pumps and drills, as well as sand or cement. These fires caused a combined loss of \$45.1 million. The fourth non-structure fire was a wildland/urban interface fire that destroyed 65 structures, 46 of which were single-family homes, and burned more than 26,000 acres (10,522 hectares), for a loss of \$29.8 million.

### **How the fires started**

The cause of ignition was reported for 16 of the 25 large-loss fires of 2014, including 13 of the structure fires, two of the vehicle fires, and the wildland/urban interface fire. Five structure fires started when heat sources were installed or placed too close to combustibles or when hot work was done too close to combustibles. One of these five fires involved a heater used to dry drywall compound that was placed too close to stacked wood at a construction site, while another started when grinding work was being done too close to woodwork. The other three were ignited by heat from welding or cutting operations.

Two of the structure fires were intentionally set, one in a department store and the other at an apartment building under construction. Two more structure fires were caused by arcing or a short circuit, one above boxed goods and the other in wiring. One fire started when embers, sparks, or flames escaped from a fireplace, while another occurred when an aircraft crashed into a flight safety building. The remaining two fires resulted from roof work, but no other details were provided.

In 15 of the 21 structure fires, the properties were open and operating; 14 were at full operation and one was in partial operation. In five of the 21 structure fires, the properties were closed and unoccupied. Six of the structure fires broke out between 11 p.m. and 7 a.m. and caused a direct property loss of \$120.2 million.

Welding operations were also the cause of two vehicle fires. Another large-loss vehicle fire was due to a part failure.

### **Detection and suppression systems**

Information about automatic fire or smoke detection equipment was reported for 18 of the 21 large-loss structure fires. Eleven occurred in properties that had no automatic detection equipment. This includes six of the buildings that were under construction. Of the systems in

the seven other structures for which information was reported, only one did not operate. The building was under construction, and the system had been installed but was not yet operational.

Information about automatic suppression equipment was reported for 18 of the 21 structure fires. Eleven had no suppression equipment at all, including five of the buildings under construction or being renovated. Of the remaining seven structures, two had wet-pipe systems that operated and controlled or helped control the fire, two had systems installed that were not yet operational, and three had systems that were not in the area of origin and did not operate.

Of the fires for which presence of both detection and suppression equipment was reported, 11 had neither an operational detection system nor an operational suppression system. Both types of systems were operational in four fires. Two structures had detection equipment only, and one had suppression equipment only.

### **What we can learn**

There were four more large-loss fires in 2014 than there were in 2013, for a 19 percent increase. However, there was a decrease of \$190.5 million, or 22.6 percent, in associated property losses in 2014 compared to the year before. This is due in large part to the fact that one fire in 2013 resulted in more than \$400 million in losses; none of the large-loss fires of 2014 resulted in damage of that magnitude.

In eight of the past 10 years, at least one fire has resulted in a loss of more than \$100 million—in 2014, that fire was the pier fire in California—and over that period a total of 21 fires have resulted in more than \$100 million in losses. One of those fires, a wildfire, resulted in more than \$1 billion in losses, and nine other wildfires did more than \$100 million in damage. Of the other 11 fires to reach the \$100 million mark, nine were structure fires and two were vehicle fires. In 2014, for the first time in several years, the highest loss in terms of direct property damage was not a wildland fire.

The large losses in buildings under construction illustrate the vulnerability of building projects when they are not protected by suppression systems. NFPA 241, *Safeguarding Construction, Alteration, and Demolition Operations*, contains several provisions for protecting buildings during construction, including installing sprinklers and other protection features as soon as possible.

Adhering to the fire protection principles reflected in NFPA's codes and standards is essential if we are to reduce the occurrence of large-loss fires and explosions in the United States. Proper construction, proper use of equipment, and proper procedures in chemical processes, storage, and housekeeping will make fires less likely to occur and help limit fire spread should a fire occur. Proper design, maintenance, and operation of fire protection systems and features can keep a fire that does occur from becoming a large-loss fire.

### **Where we get our data**

NFPA identifies potential large-loss incidents by reviewing national and local news media, including fire service publications. A clipping service reads all U.S. daily newspapers and

notifies NFPA's Fire Analysis and Research Division of major large-loss fires. NFPA's annual survey of the U.S. fire experience is an additional data source, although not the principal one.

Once a fire has been identified, we request information about it from the fire department or agency having jurisdiction. We also contact federal agencies that have participated in investigations, as well as state fire marshals' offices and military sources. The diversity and redundancy of these data sources enable NFPA to collect the most complete data available on large-loss fires.

This report only covers fires for which NFPA has an official dollar-loss estimate. Other fires may result in large losses, but no official information on the amount of damage was reported.

**About the author**

Stephen G. Badger is a fire data assistant in NFPA's Fire Analysis and Research Division and a retired firefighter from the Quincy Fire Department, Massachusetts

**Table 1.**  
**Large-Loss Fires that Caused \$10 Million or more in Property Damage, 2005-2014**

Year	Number of Fires	Number of Fires Causing \$10 million or more in 2005 Dollars	Direct Property Damage (in Millions)	
			Unadjusted	In 2005 Dollars
2005	16	16	\$217	\$217
2006	15	15	\$380	\$358
2007	39	39	\$3,393	\$3,139
2008	25	25	\$2,322	\$2,023
2009	20	20	\$950	\$899
2010	12	12	\$652	\$539
2011	16	16	\$820	\$649
2012	17	17	\$1,463	\$1,166
2013	13	13	\$845	\$637
2014	20	20	\$654	\$493

Number of fires and unadjusted loss are based on data from studies that appeared in previous annual large-loss studies. Some of the information may differ from previously published material because material was updated after publication.

Adjustment for inflation is based on the Consumer Price Index using 2005 as a base year. Note that adjustment for inflation not only reduces the total dollar loss for each year but also reduces the number of fires when adjusted losses large enough to qualify as large loss fires.

Source: NFPA's Fire Incident Data Organization (FIDO).

**Table 2.**  
**Large-Loss Fires of \$20 Million or more in 2014**

Incident and Location	Loss in Millions
Pier fire, California	\$100.2
Airport flight safety building, Kansas	\$61.5
Apartment building under construction, Texas	\$50.0
Apartment building under construction, California	\$41.0
Meatpacking plant, Iowa	\$30.0
Wildland urban fire complex, California	\$29.8
Apartment building under construction, California	\$27.1
Yacht fire, California	\$25.1
Dry goods warehouse, Wisconsin	\$25.0
Gas distribution plant, South Carolina	\$25.0
Building under renovation, Iowa	\$22.0
Single-family home, Texas	\$22.0
Mercantile (numerous businesses), Ohio	\$20.0
Apartment building under construction, Texas	\$20.0
Grain elevator explosion and fire, Ohio	\$20.0
<b>Total Losses</b>	<b>\$518.7</b>

Sums may not equal totals due to rounding errors.

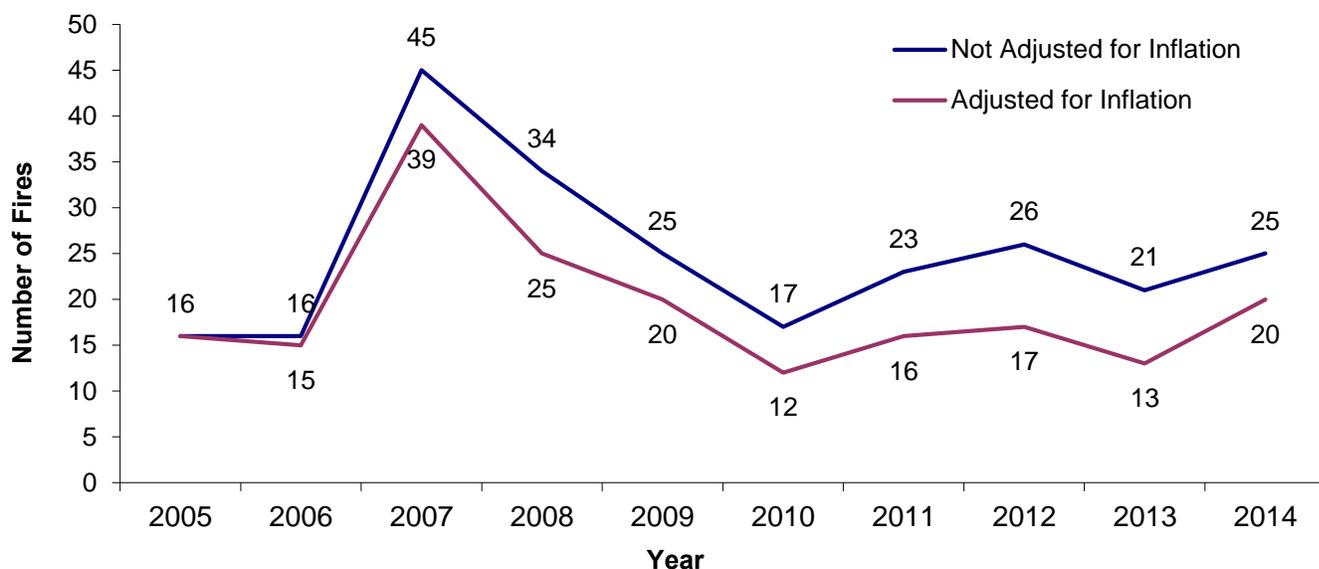
Source: NFPA's Fire Incident Data Organization (FIDO).

**Table 3.  
2014 Large-Loss Fires by Major Property Use**

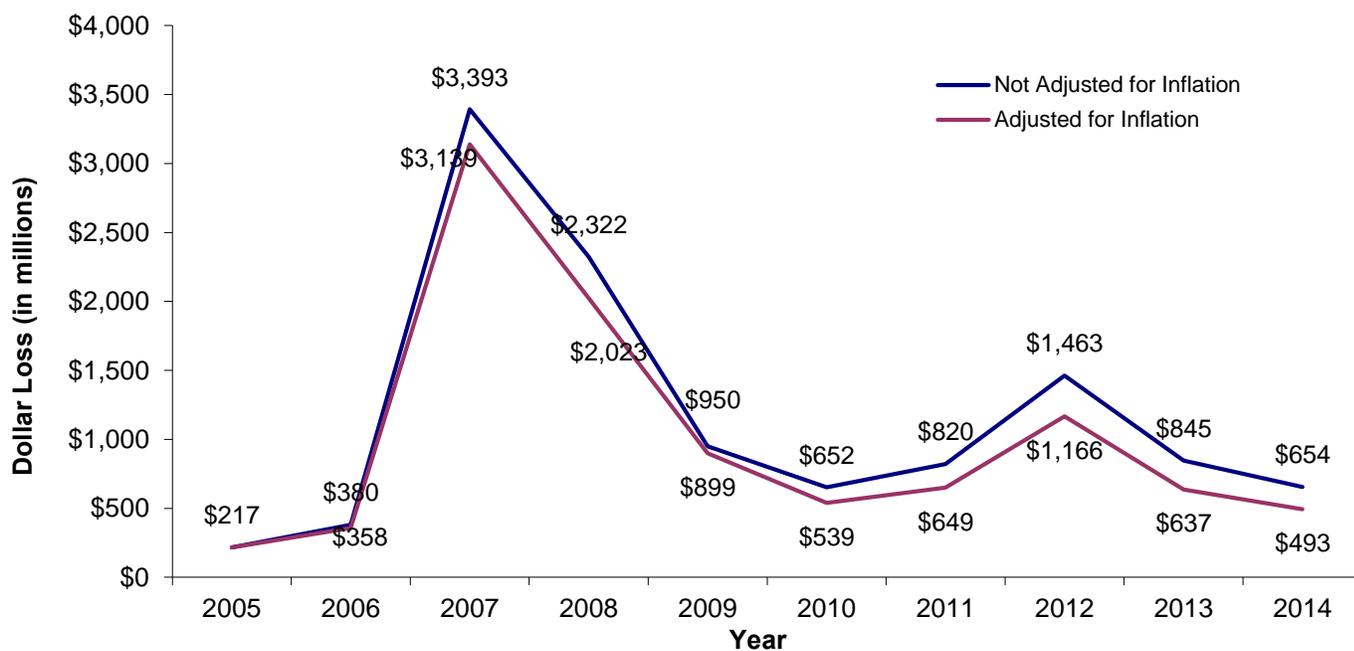
<b>Property Use</b>	<b>Number of Fires</b>	<b>Percent of Fires</b>	<b>Total Dollar Loss</b>	<b>Percent of Loss</b>
Special Property	7	28%	\$187,030,000	28.6%
Stores/Offices	6	24%	\$140,673,894	21.5%
Storage	4	16%	\$164,700,000	25.2%
Vehicles	3	12%	\$45,050,000	6.9%
Industry	2	8%	\$35,000,000	5.3%
Manufacturing	1	4%	\$30,000,000	4.6%
Wild Fires	1	4%	\$29,800,000	4.6%
Residential	1	4%	\$22,000,000	3.4%
<b>Total</b>	<b>25</b>	<b>100.0%</b>	<b>\$654,253,894</b>	<b>100.0%</b>

Source: NFPA's Fire Incident Data Organization (FIDO).

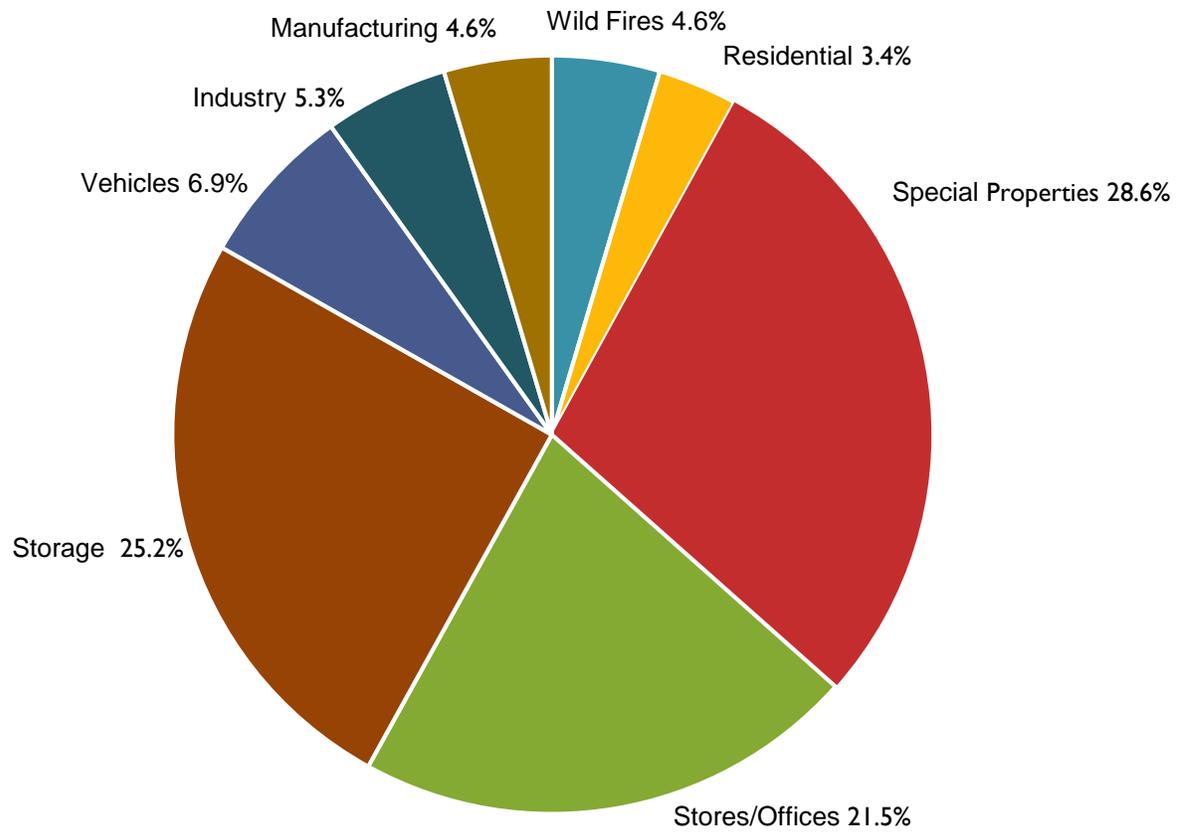
**Figure 1.**  
**Large-Loss Fires, Unadjusted and Adjusted for Inflation**  
**(2005-2014)**



**Figure 2.**  
**Direct Dollar Loss in Large-Loss Fires, Unadjusted and Adjusted**  
**(2005-2014)**



**Figure 3.  
Large-Loss Fires by Major Property Use 2014**



## 2014 LARGE-LOSS FIRE INCIDENTS

### SPECIAL PROPERTIES

#### Texas

##### Month, Time of Alarm, Dollar Loss

March, 12:26 p.m., \$50 million

##### Property Characteristics and Operating Status

This was a five-story, 396-unit, 375,000-square-foot (34,839-square-meter) apartment complex of unprotected wood-frame construction that was still under construction. Workmen were on site.

##### Fire Protection Systems

There was no automatic detection or suppression equipment.

##### Fire Development

The cause and origin have not been determined. The complex was in the final stages of construction, but some areas were still open, allowing a strong wind to blow through and spread the fire. Flying brands damaged a nearby house, and several automobiles were damaged in a parking area near the building.

##### Contributing Factors and Other Details

As firefighters set up for a defensive attack on the fire, a worker was spotted on a balcony on the fifth floor. As fire began spreading from the building behind him, he dropped to the fourth floor, where firefighters rescued him with an aerial ladder.

#### California

##### Month, Time of Alarm, Dollar Loss

March, 4:55 p.m., \$40.9 million

##### Property Characteristics and Operating Status

This was a 322,000-square-foot (29,915-square-meter), six-story apartment building of unprotected wood-frame construction that was under construction. The fire department report did not reveal whether anyone was at the site at the time of the fire.

##### Fire Protection Systems

There was no automatic detection or suppression equipment.

##### Fire Development

A fire broke out on the building's roof when a hot or smoldering object ignited structural members. It was not reported what that object was.

##### Contributing Factors and Other Details

The loss to the structure totaled \$40.5 million, with an additional \$450,000 in damage to its contents. Two firefighters were injured fighting this fire.

## California

### Month, Time of Alarm, Dollar Loss

December, 1:20 a.m., \$27.1 million

### Property Characteristics and Operating Status

This was a seven-story, 180,000-square foot (16,723-square-meter) apartment building of unprotected wood-frame construction that was under construction. No one was at the site at the time.

### Fire Protection Systems

There was no automatic detection or suppression equipment.

### Fire Development

This was an incendiary fire, but the point of origin was not reported.

### Contributing Factors and Other Details

Arriving firefighters used heavy-stream equipment from the ground and aerial ladders to attack the fire, which was so intense that it damaged several nearby structures, including a 16-story office building. Damage was listed as \$24.6 million to the structures and \$2.5 million to the contents.

## Iowa

### Month, Time of Alarm, Dollar Loss

March, 12:52 a.m., \$22 million

### Property Characteristics and Operating Status

This former department store was a 37,488-square-foot (3,483-square-meter), eight-story building of unprotected ordinary construction that was undergoing renovations. There was no one at the site at the time of the fire.

### Fire Protection Systems

The building had no automatic detection or suppression equipment. Both systems had been removed for renovations. A system was present. It was not reported if this system was used or not.

### Fire Development

The cause and origin have not been determined.

### Contributing Factors and Other Details

Upon arrival, firefighters found the top two floors fully involved in flames.

## Texas

### Month, Time of Alarm, Dollar Loss

July, 6:09 p.m., \$20 million

### Property Characteristics and Operating Status

This five-story, 300-unit, 60,000-square-foot (5,574-square-meter) apartment building of unprotected ordinary construction was under construction and workers were on site.

### Fire Protection Systems

There was no automatic detection equipment. A full-coverage wet-pipe sprinkler system had been installed, but it was not yet operational.

## **Fire Development**

A worker grinding and cutting metal caused a small fire in a wall, which travelled up the wall and spread laterally throughout the building.

## **Contributing Factors and Other Details**

The worker who started the fire thought it had been extinguished and continued working. Arriving firefighters found that the hydrants in the area were inoperable, but the cause of the problem was not reported.

## **Maryland**

### **Month, Time of Alarm, Dollar Loss**

April, 4:11 a.m., \$17 million

### **Property Characteristics and Operating Status**

This four-story, 149-unit, 30,000-square-foot (2,787-square-meter) apartment building of unprotected wood-frame construction was under construction. No one was at the site at the time of the fire.

### **Fire Protection Systems**

An automatic detection system had been installed, but it was not yet operational. Its type and coverage were not reported. There was also a full-coverage automatic suppression system of unspecified type installed, but it was not yet operational, either.

### **Fire Development**

The fire started in a fourth-floor hallway when a 225,000 BTU heater placed within 8 inches (20 centimeters) of stacked wooden millwork ignited the wood. The heater was used to dry drywall compound.

### **Contributing Factors and Other Details**

The fire spread into voids in the attic and throughout the building. Arriving firefighters went into a defensive attack due to the amount of fire visible.

## **Wisconsin**

### **Month, Time of Alarm, Dollar Loss**

August, 7:30 p.m., \$10 million

### **Property Characteristics and Operating Status**

This 105-unit, 150,000-square-foot (13,935-square-meter) apartment building of unprotected wood-frame construction was under construction. No one was at the site at the time.

### **Fire Protection Systems**

The automatic detection and suppression equipment had yet to be installed.

### **Fire Development**

The fire of undetermined cause broke out on the third floor.

### **Contributing Factors and Other Details**

This was a wind-driven fire. Firefighters also protected 12 nearby single-family homes, which sustained some heat damage. Two firefighters were injured fighting this fire.

## STORES AND OFFICES

### Kansas

#### Month, Time of Alarm, Dollar Loss

October, 9:50 a.m., \$61.5 million

#### Property Characteristics and Operating Status

This one-story, 60,000-square-foot (5,574-square-meter) flight safety building was operating and occupied.

#### Fire Protection Systems

The fire department report did not indicate if the building had a detection or automatic suppression system. It was reported, however, detectors would not have made a difference due to the type of incident.

#### Fire Development

Shortly after takeoff, a twin-engine aircraft crashed into the wall and roof of the flight safety building. It slid across the roof, causing its fuel cells to leak jet-fuel, which caught fire instantly. The burning jet-fuel ran down into the building.

#### Contributing Factors and Other Details

The pilot of the plane and three people in a flight simulator inside the building died in this fire.

### Ohio

#### Month, Time of Alarm, Dollar Loss

March, 1:15 p.m., \$20 million

#### Property Characteristics and Operating Status

This was a 25,440-square-foot (2,363-square-meter), three-story mercantile building of heavy-timber construction that contained numerous businesses, which were open and operating.

#### Fire Protection Systems

There was no automatic detection or suppression equipment.

#### Fire Development

The fire of undetermined cause broke out on the roof, which was being worked on at the time. The fire spread horizontally through many of the building's voids and concealed spaces.

#### Contributing Factors and Other Details

Multiple roofs and ceilings had been added over the older ones during previous renovations, hampering firefighters' efforts to reach the hidden fire. Two firefighters were injured fighting this fire.

### Illinois

#### Month, Time of Alarm, Dollar Loss

November, 3:56 a.m., \$17.2 million

#### Property Characteristics and Operating Status

This was a two-story, 180,588-square-foot (16,777-square-meter) department store of unprotected-ordinary construction. There was no one in the store at the time.

### **Fire Protection Systems**

A smoke detection system operated, but the coverage was not reported. A wet-pipe sprinkler system also operated and contained the fire.

### **Fire Development**

The fire broke out in a rear shipping and receiving area when an arc from an electrical short circuit in a heater above cardboard boxes of goods ignited the stack of boxes.

### **Contributing Factors and Other Details**

HVAC smoke evacuation units were switched off at the time of the fire, allowing the smoke to spread throughout the store. No reason was given as to why they were off. Damage to the structure was estimated at \$25,000, while smoke damage to its contents was estimated at slightly more than \$17.1 million.

## **Texas**

### **Month, Time of Alarm, Dollar Loss**

October, 10:13 p.m., \$15 million

### **Property Characteristics and Operating Status**

This one-story department store of unprotected ordinary construction was operating and occupied. The ground floor area was not reported.

### **Fire Protection Systems**

The store had a complete coverage detection equipment of unreported type, which operated and alerted the occupants. Two of the building's wet-pipe sprinklers also operated and helped control the fire. The sprinkler system coverage was not reported.

### **Fire Development**

This fire was intentionally set in the storage area.

### **Contributing Factors and Other Details**

Damage to the structure was estimated at \$15,000, while smoke damage to its contents was estimated at \$15 million. One civilian was injured during the fire. An arrest has been made in the arson case.

## **Wisconsin**

### **Month, Time of Alarm, Dollar Loss**

May, 1:50 a.m., \$15 million

### **Property Characteristics and Operating Status**

This was a four-story, 366,379-square-foot (34,038-square-meter) office building of protected non-combustible construction. There were a few workers and a security officer in the building.

### **Fire Protection Systems**

A full coverage heat and smoke detection system operated. A partial-coverage wet-pipe sprinkler system was not in the area of the fire and did not operate.

### **Fire Development**

A fire of undetermined origin broke out under a desk in a cubicle.

### **Contributing Factors and Other Details**

Arriving firefighters found that the fire had burned until it depleted the oxygen in the area, leaving a small fire burning that they quickly extinguished. However, the building ventilation system did not operate, allowing the entire structure to fill with smoke. The area of origin, a large

room with 66 cubicles and numerous electronic appliances and computers, was heavily damaged by fire, heat, and smoke. The detection system sounded a general alarm, so firefighters had to search the entire building for the fire.

## **California**

### **Month, Time of Alarm, Dollar Loss**

February, 11:52 a.m., \$12 million

### **Property Characteristics and Operating Status**

This one-story, 12,500-square-foot (1,161 square-meter) auto repair shop was open and operating at the time of the fire.

### **Fire Protection Systems**

No information was reported.

### **Fire Development**

The fire was started by a welding torch, but no further information was reported. Upon arrival, firefighters found the shop fully involved and went to a defensive attack.

### **Contributing Factors and Other Details**

The fire also damaged several vehicles parked near the building. Damage to the structure was estimated at \$2 million, and damage to its contents, the vehicles, and repair equipment was estimated at \$10 million.

## **STORAGE**

## **California**

### **Month, Time of Alarm, Dollar Loss**

September, 6:41 p.m., \$100 million

### **Property Characteristics and Operating Status**

This fire occurred on and under a 150-foot (46-meter), 20,000-square-foot (1,858-square-meter) pier of heavy timber construction that contained a steel warehouse. The pier was in use at the time of the fire.

### **Fire Protection Systems**

There was no automatic detection or suppression equipment.

### **Fire Development**

The fire was started along the top of the pier by a welding operation, although the sequence of events was not reported. Arriving firefighters found heavy smoke and a fire burning under the pier in creosote-soaked timbers.

### **Contributing Factors and Other Details**

Firefighters aggressively attacked the fire from the top of the pier, from fire boats, and with divers in the water. During the fire, two cargo ships were moved to a safer location, and several shipping terminals were closed as port workers were evacuated. Firefighters reported that the fire was also burning beneath a large steel warehouse on the pier. Fire caused the warehouse's floor to collapse and large rolls of steel wire to spill into the water below. This added to the dangerous conditions firefighters faced. Damage to the pier was estimated at \$100 million, and damage to its contents was estimated at \$200,000

## Wisconsin

### Month, Time of Alarm, Dollar Loss

December, 6:59 p.m., \$25 million

### Property Characteristics and Operating Status

This 1,200-square-foot (111-square-meter), two-story dry goods warehouse of unprotected ordinary construction was part of a cheese packaging plant. The warehouse was operating at the time of the fire.

### Fire Protection Systems

The building had no automatic detection equipment. A dry-chemical suppression system was present, but it was not located in the area of the fire and did not operate.

### Fire Development

This fire of undetermined cause began behind a cardboard box in a shipping and receiving area.

### Contributing Factors and Other Details

Workers discovered smoke and flames behind a row of palletized cardboard boxes and used at least two extinguishers in an unsuccessful attempt to extinguish the fire. As the fire grew, the building was evacuated. Arriving firefighters found it extremely difficult to reach the seat of the fire because of the heavy smoke and high heat in the warehouse. They tried several times to attack the fire, even trying to breach concrete walls, to no avail. Finally, a large ventilation fan was brought to the scene and put into operation, allowing firefighters to enter the warehouse and extinguish the remaining fire. Structural damage was estimated at \$3 million, and damage to its contents was estimated at \$22 million.

## Ohio

### Month, Time of Alarm, Dollar Loss

August, 4:11 p.m., \$20 million

### Property Characteristics and Operating Status

The ground floor area of this five-story grain elevator of unprotected-ordinary construction was not reported. The facility was operating at the time of the explosion and fire.

### Fire Protection Systems

There was no automatic detection or suppression equipment.

### Fire Development

The cause and origin have not been determined.

### Contributing Factors and Other Details

Seven workers and inspectors were injured in the explosion and fire.

## Georgia

### Month, Time of Alarm, Dollar Loss

June, 7:31 a.m., \$19.5 million

### Property Characteristics and Operating Status

This 200,000-square-foot (18,581-square meter), 20-foot-high (6-meter) warehouse of unprotected noncombustible construction was operating at the time of the fire. It contained finished hardwood lumber.

### Fire Protection Systems

There was no automatic detection or suppression equipment.

## **Fire Development**

This fire began in a storage area, but the cause has not yet been determined.

## **Contributing Factors and Other Details**

Arriving firefighters found heavy fire and smoke showing from the building and initiated an interior attack. Shortly thereafter, they switched to a defensive attack when they became aware that finished lumber was stacked up to 18 feet high (5.5 meters) inside the building. During the fire, firefighters from more than 38 fire departments responded with 88 pieces of apparatus and more than 220 firefighters. By the time the fire was extinguished, three days later, millions of board feet of finished hardwood lumber had been destroyed. One firefighter was injured fighting the fire.

## **INDUSTRY**

### **South Carolina**

#### **Month, Time of Alarm, Dollar Loss**

August, 1:57 p.m., \$25 million

#### **Property Characteristics and Operating Status**

This was a three-story, 7,200-square-foot (669-square-meter) compressor building of unprotected, noncombustible construction at a gas distribution plant that was operating at the time of the fire.

#### **Fire Protection Systems**

An automatic detection system, the coverage of which was not reported, operated. There was no automatic suppression equipment. The plant fire department was on scene when the local fire departments arrived.

#### **Fire Development**

The cause and origin has not been determined.

#### **Contributing Factors and Other Details**

Upon arrival, firefighters found heavy fire in the building. When they determined that the structure had been structurally compromised, they initiated defensive operations. As they extinguished hot spots after bringing the fire under control, fire crews saw a severe thunderstorm approaching and lowered all aerial equipment to wait out the storm before continuing their work. Damage to the structure was estimated at \$2 million, while damage to its contents was estimated at \$23 million.

### **Illinois**

#### **Month, Time of Alarm, Dollar Loss**

April, 1:27 p.m., \$10 million

#### **Property Characteristics and Operating Status**

This two-story, 10,000-square-foot (929-square meter) nuclear energy plant was operating at the time of the fire.

#### **Fire Protection Systems**

The fire department report contained no information about automatic detection or suppression equipment.

#### **Fire Development**

The fire broke out in the electrical system when an arc from a short circuit ignited wiring.

### **Contributing Factors and Other Details**

The fire burned in an area containing a large amount of electrical supplies and equipment for the operation of the plant. Structural damage was estimated at \$5 million, and damage to its contents was estimated at \$5 million.

## **RESIDENTIAL**

### **Texas**

#### **Month, Time of Alarm, Dollar Loss**

November, 1:51 a.m., \$22 million

#### **Property Characteristics and Operating Status**

The residents of this 9,000-square-foot (836-square-meter), three-story single-family home of unprotected wood-frame construction were at home at the time of the fire.

#### **Fire Protection Systems**

There was a full coverage of smoke alarms, which operated and notified the residents. There was no automatic suppression equipment.

#### **Fire Development**

The fire broke out in a first-floor utility crawl space when a spark or flame from a natural gas fireplace ignited structural members below it. The fire spread throughout the house through numerous voids.

#### **Contributing Factors and Other Details**

Firefighters had difficulty reaching the fire in the void. The structure damage was estimated at \$13 million, and damage to its contents was estimated at \$9 million. One firefighter was injured fighting this fire.

## **MANUFACTURING**

### **Iowa**

#### **Month, Time of Alarm, Dollar Loss**

March, 7:15 p.m., \$30 million

#### **Property Characteristics and Operating Status**

This one-story, 181,210-square-foot (16,834-square-meter) meat packaging plant was of unprotected, noncombustible construction. The plant was operating at the time.

#### **Fire Protection Systems**

The automatic detection system operated. Its type and coverage was not reported. The automatic wet-pipe sprinkler system was not located in the area of the fire and did not operate.

#### **Fire Development**

The fire occurred when various combustibles and plywood wall coverings ignited during welding operations. No additional information was reported.

#### **Contributing Factors and Other Details**

The building's roof collapsed, but the fire department report did not say at what point during the fire this occurred or if it hindered firefighting operations. Damage to the structure was estimated at \$15 million, while damage to its contents was estimated at \$15 million.

## Vehicles

### California

#### Month, Time of Alarm, Dollar Loss

June, 9:10 a.m., \$25 million

#### Property Characteristics and Operating Status

This fire occurred aboard a 102-foot (31-meter) yacht that had been taken out of the water and propped on stilts for maintenance work.

#### Fire Protection Systems

There were automatic detection and suppression systems in the boat's engine and mechanical rooms, although their type and operation were not reported.

#### Fire Development

The cause and origin has not been determined.

#### Contributing Factors and Other Details

Workers spotted the fire and notified the fire department. It was not clear whether it was workers in the boat yard or at this yacht who spotted the smoke.

### Texas

#### Month, Time of Alarm, Dollar Loss

June, 2:47 p.m., \$10 million

#### Property Characteristics and Operating Status

The size and contents of this cargo ship, which was docked, were not reported. There were workers on the ship at the time of the fire.

#### Fire Protection Systems

No information was reported.

#### Fire Development

The fire started when hot embers from a cutting torch ignited railroad ties. No additional information was reported.

#### Contributing Factors and Other Details

Damage to the ship was estimated at \$2 million, while damage to its cargo was estimated at \$8 million. The type of cargo was not reported. Two firefighters were injured fighting this fire.

### Texas

#### Month, Time of Alarm, Dollar Loss

July, 5:13 p.m., \$10 million

#### Property Characteristics and Operating Status

This fire involved six trucks at gas well site. It was not reported if anyone was at the site at the time.

#### Fire Protection Systems

No information was reported.

#### Fire Development

The fire began when a part failed, but the sequence of events was not reported.

### **Contributing Factors and Other Details**

Arriving firefighters found six trucks burning, exposing a 250-gallon (946-liter) barrel of hydrochloric acid and explosives. The trucks were carrying pumps, drilling equipment, or equipment used at drill sites.

## **WILDFIRE**

### **California**

#### **Month, Time of Alarm, Dollar Loss**

May, 11 a.m., \$29.8 million

#### **Setting**

This wildland/urban interface fire complex included 14 different fires burning in grass and brush and wooded areas over the same period of time. A complex is defined by the U.S. Forest Service as two or more individual fires located in the same general area that are assigned to a single incident commander or unified command.

#### **Climate**

On the days of the fires, the temperature was 94°F to 103°F (34°C to 39°C), the relative humidity was in single digits, and winds of 6 to 16 mph (10 to 26 kph) were gusting up to 24 mph (39 kph).

#### **Origin and path**

At the time, the cause of only one of the 14 fires was listed as unintentional and involved sparks from power equipment being used at a construction site. The causes of the other 13 fires were undetermined.

#### **Contributing Factors and Other Details**

The area was suffering a drought with only a trace of rain reported in the month before the outbreak, and only a few inches or centimeters in the previous year. Temperatures were very hot, with gusty winds, and it was considered a high-risk day for wildfire. The fires burned 26,000 acres (10,522 hectares) and destroyed 65 structures, including 46 single-family homes. During the fires, 121,000 residents were asked to evacuate their homes.