



### 4.3.18 Urban Fire and Explosions

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Urban fire and explosion hazards incorporate vehicle and building/structure fires as well as overpressure rupture, overheat, or other explosions that do not ignite. This hazard occurs in denser, more urbanized areas statewide and most often occurs in residential structures. Urban fires can more easily spread from building to building in these denser areas. Furthermore, urban fires are a more significant threat in areas with a significant proportion of buildings over 50 years of age. Urban fires and explosions often begin as a result of other hazards, particularly storms, lightning strikes, drought, transportation accidents, hazardous materials releases, criminal activity (arson), and terrorism (PA HMP 2013).

This section provides a hazard profile and vulnerability assessment of the urban fire and explosions hazard for Pike County.

#### Location and Extent

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Structural and urban fires within Pike County have had a detrimental impact on life, property, and the local economy over the past decade. The age of many residential structures within the region combined with changes in building construction and materials has increased the threat of fire loss that is occurring on a regular basis.

As defined by the National Fire Protection Agency (NFPA) in the *NFPA 901: Standard Classifications for Incident Reporting and Fire Protection Data*, a structure fire is defined as “Any fire inside, on, under, or touching a structure.” This definition includes any mobile residential structure such as a mobile or modular home, but does not include roadworthy vehicles such as recreation vehicles (NFPA 2011). Significant urban fires are limited to densely populated areas of the County that contain large and/or multiple buildings. Urban fires may start in single structure, but spread to nearby buildings or throughout a large building if adequate fire control measures are not in place.

Significant explosions are most common in densely populated areas and at industrial facilities that utilize combustible hazardous materials. Explosions can also occur in conjunction with automobile, boat, and rail accidents. All such explosions can turn into fires, spreading to nearby structures.

#### Range of Magnitude

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The severity of urban fires is measured according to the losses associated with the incident. The impact to the local economy is minimal with the loss of a residential structure, but effects of the loss of a large manufacturing facility that employs a large number of people can be extensive. Likewise, the impact to the local environment from a single residential fire is minimal, while the impact from an industrial or commercial fire can take years to measure. Finally, the loss of life caused by urban fires appears to be opposite of the previous two impacts. The loss of life is more likely to be associated with a residential fire than an industrial or commercial building fire. Building compositions combined with the time of day of the incident are risk factors that can increase the chance for the loss of life during a residential-type fire.

Although most instances of fire do not reach disaster proportions, the sum of the impact of all small fires is often much greater than the impact of the few major fire and explosion hazards that occur. There are additional economic consequences related to this hazard. Urban fires and explosions may result in lost wages due to temporarily or permanently closed businesses, destruction and damage involving business and personal assets, loss of tax base, recovery costs, and lost investments on destroyed property. The secondary effects of urban fire and explosion events relate to the ability of public, private, and non-profit entities to provide post-incident relief. Human services agencies (community support programs, health and medical services, public



assistance programs and social services) can be affected by urban fire and explosion events as well. Effects may consist of physical damage to facilities and equipment, disruption of emergency communications, loss of health and medical facilities and supplies, and an overwhelming load of victims who are suffering from the effects of the urban fire, including loss of their home or place of business.

A worst-case urban fire event in Pike County occurred in 1998 when the largest fire ever recorded in Pike County occurred at the Altec-Lansing warehouse in Milford Township. The fire burned through the 80,000 square foot space and resulted in \$6 million in damages.

### Past Occurrence

Pike County experiences a number of urban fire and explosion events each year, most of which are small and affect a limited number of structures. PEIRS data indicates that from 2002-2009, there have been 19 urban fire events reported to PEMA (see Table 4.3.18-1). Of the municipalities in Pike County, both Dingman and Westfall Townships had the highest number of urban fires reported to PEIRS with four events reported by each. Please note that since PEIRS is a voluntary reporting system, this is not an inclusive list of fires in the County. Since 2009, Pike County has experienced mainly residential structure fires and explosions. Pike County indicated that a total of 1,472 fire incidents occurred in the County from 2010 to October 2016 (Pike County 2016). The table below includes events identified in PEIRS and other sources.

**Table 4.3.18-1. Urban Fire Events in Pike County, 2003 to 2016**

Community	Type of Event	Date	Description of Event
Blooming Grove Township	Tire Fire	03/26/2003	Tire fire at the Lord's Valley Towing junkyard; no injuries reported
Westfall Township	Vehicle Fire	06/25/2003	A tractor-trailer fire occurred on I-84, closing one lane; cleanup and recovery done by My Place Towing
Delaware Township	Structure Fire	01/24/2005	Residential structure fire; one fatality reported
Dingman Township	Structure Fire	04/26/2005	Residential structure fire completely destroyed a home; three fatalities reported
Milford Township	Structure Fire	09/11/2005	Riding stable fire; no injuries reported
Westfall Township	Structure Fire	02/14/2006	Residential structure fire; one fatality and two injuries reported
Blooming Grove Township	Vehicle Fire	05/09/2006	Truck fire on I-84, no traffic backup; small amount of diesel fuel spilled onto road; cleanup coordinated by local emergency units; no injuries reported
Milford Township	Structure Fire	10/02/2006	Residential structure fire; State Route 6/209 temporarily closed; no injuries reported
Blooming Grove Township	Vehicle Fire	05/25/2007	A tractor-trailer fire occurred on I-84, closing the westbound exit ramp; trailer was hauling water and orange juice; no injuries reported
Dingman Township	School Fires	09/26/2007	Fire at Dingman-Delaware Primary School in the Delaware Valley School District; no injuries reported
Westfall Township	Structure Fire	12/08/2007	Commercial structure fire; one fatality reported
Westfall Township	Structure Fire	12/09/2007	Residential structure fire; no injuries reported
Lehman Township	Structure Fire	08/09/2008	Residential structure fire; one fatality reported
Dingman Township	Structure Fire	09/18/2008	Residential structure fire; no injuries reported
Delaware Township	Vehicle Fire	10/14/2008	Vehicle fire at intersection of State Route 739 and Nichercronk; thirty gallons of diesel fuel spilled; cleanup coordinated by emergency personnel
Milford Township	Vehicle Fire	12/29/2008	Tractor-trailer carrying chickens caught fire on I-84; accident impeded eastbound traffic
Dingman Township	Structure Fire	01/23/2009	Fire at Hilltop Xtra Mart Gas Station; no injuries reported



Community	Type of Event	Date	Description of Event
Shohola Township	Structure Fire	03/27/2009	Residential structure fire and barn fire; no injuries reported
Lehman Township	Structure Fire	03/30/2009	Residential structure fire; one fatality reported
Shohola Township	Structure Fire	10/03/2014	8 100-lb. propane tanks self-vented
Westfall Township	Structure Fire	09/24/2016	Commercial structure
Dingman Township	Vehicle Fire	09/25/2016	Description of event not available
Porter Township	Structure Fire	09/27/2016	Residential home
Delaware Township	Vehicle Fire	09/30/2016	Description of event not available

Sources: Pike County HMP 2011; Pike County 2016

Pike County also has record of several additional large fires or explosions that taxed the county’s fire organization beyond normal daily operations:

- February 1981 – a large fire gutted the Arlington Hotel outside Milford in Dingman Township,
- September 1981 – a large fire in Milford Borough destroyed an auto body shop and several apartments,
- March 1982 – a large fire in Milford Borough destroyed a vacant hotel,
- 1991 – Several businesses destroyed along Route 739 in Blooming Grove Township,
- September 1992 – Several businesses destroyed at a strip mall along Route 739 in Blooming Grove Township,
- June 1994 – Milford Borough – a large portion of the Tom Quick Inn was gutted,
- March 1996 – Lehman Township – Pocmont Resort was destroyed,
- February 1997 – Several businesses destroyed along Route 739 in Blooming Grove Township,
- June 1998 – Milford Township – Altec-Lansing – lightning ignited the largest fire to ever hit Pike County, destroying an 80,000 square feet of warehouse space, resulting in more than \$6 million in damage. The warehouse was full of complete product awaiting shipment. More than 30 fire departments from Pennsylvania, New Jersey and New York fought unsuccessfully (This fire occurred at the same time the county was dealing with tornadoes at the western end of the county and was caused by the same storm front. Other fires also occurred during the same period).
- February 2005 – Westfall Township – a fire at the lumberyard at Luhr’s Ace Hardware caused a reported \$1 million in damage,
- March 2005 – Lackawacken Township – a fire destroyed the main building Masthope Ski facility.
- November 2008 – A Columbia Gas Transportation and Storage Company pipeline exploded near the intersection of Route 6 and I-84. The company raised the pressure in the line during a test which caused the pipe to explode and a large piece of pipe to be flung one hundred yards through the air. No injuries were reported (Kane, Tom, The River Reporter, 2008)
- January 19, 2011 – Westfall Township – a log cabin in the Township was destroyed by a fire. One person died as a result of the fire (Brelje 2011).





- June 13, 2012 – an explosion destroyed a home in the community of Gold Key Estates located in Dingman Township. The explosion occurred while men were working on the water system of the home. Three people, including the homeowner, were in the house at the time of the explosion. All three escaped with minor injuries (Brelje 2012).

### Future Occurrence

Many factors contribute to the cause of urban fires and explosions. Due to the various factors, urban areas in Pennsylvania are considered at risk to one degree or another. Minor urban fires can be expected every day in Pennsylvania. Major fires will continue to occur several times a year, particularly in dense, urban areas with aging building stock. However, the probability of future occurrences may decrease with the construction of new buildings to building codes that address fire prevention, detection, and extinguishments. Also, continued efforts to increase public awareness of the dangers of urban fires will help to mitigate injury, death, and property loss. The probability of future occurrence may increase in communities whose populations are growing and where new areas are developed (PA HMP 2013).

For the 2017 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of urban fire and explosion events for Pike County. Information from the 2012 Pike County HMP, PEIRS, input from Pike County, and local newspapers were used to identify the number of urban fire and explosion events that occurred between 1950 and 2015. Using these sources ensures the most accurate probability estimates possible. The table below shows these statistics, as well as the annual average number of events and the estimate percent chance of an incident occurring in a given year. Based on these statistics, there is an estimated 100-percent chance of an urban fire or explosion event occurring in any given year in Pike County.

Table 4.3.18-2. Probability of Future Urban Fire and Explosion Events

Hazard Type	Number of Occurrences Between 1950 and 2015	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years) (# Years/Number of Events)	Probability of Event in any given year	Percent chance of occurrence in any given year
Urban Fires and Explosions	1,332	20.49	0.05	1.0	100%

Sources: Pike County HMP 2012; Pike County 2016

Based on available historical data, the future occurrence of urban fire and explosion events can be considered *possible* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4) with minor events happening more frequently than major fires or explosions in the future.

### Vulnerability Assessment

The potential for urban fire and explosions is not limited to any one area of the County; however structures most at risk include the aging building stock constructed prior to established building codes. Human error can play an important role in creating the potential for a major urban or forest fire. The vulnerability of the citizens and property of Pike County to fire and related incidents depends on many factors. A positive factor helping to mitigate the risk is the advanced fire services provided within the County. On the negative side, many homes and business have not been updated to current fire safety codes. The risk of loss caused by fire increases each year that these structures go without safety updates. In Pennsylvania, the most vulnerable population groups are the elderly, age 65 and over, and the low-income earners. The elderly had the highest number of deaths resulting from fire and all population groups. The elderly represent a large portion of the population spectrum.



Although newer buildings are constructed with higher safety standards and with more fire-resistant material, large numbers of older, highly vulnerable buildings remain throughout Pike County. Until these buildings are upgraded or replaced, the risk will continue.

As the population of the County increases, the number of housing units increases. Although the majority of this housing growth has been single family type buildings, there has been an increase in townhouse buildings being built, including senior housing apartments being built in Matamoras and Westfall. In addition, there are additional units of this type being proposed in other areas of the County. The majority of this growth is in areas with little or no central water supply system. In addition, there has been and continues to be commercial growth, including several retail stores in excess of 100,000 square feet.

Areas where large buildings are located or development is closely spaced should be considered more vulnerable to urban fire and explosion events; in Pike County, these denser jurisdictions include Matamoras and Milford Boroughs. However, Pike County as a whole is low density in comparison with other counties in Pennsylvania (U.S. Census, 2000).

The quick response of fire departments in the County helps reduce loss of life and property damage from urban fires and explosions. Pike County is protected by 19 volunteer fire departments – 16 are located within the County. The Lumberland, NY fire department provides initial response to a small portion of Westfall and Shohola Townships at Pond Eddy, PA; the Welcome Lake, PA (Wayne Co.) provides protection for the upper portion of Lackawaxen Township and Greene-Dreher (Wayne Co.) provides protection for a portion of Greene Township. Dispatch for all county-based departments except for Bushkill is through the County's 9-1-1 center. Bushkill is dispatched from Monroe County.

Although many departments have seen a significant reduction in available help, most have added to their apparatus arsenals. Currently there are approximately 30 engines, 20 tankers, 5 ladder trucks, and an assortment of rescue and support-type vehicles. The most common pump sizes are 1,000 and 1,250 gallons per minute (GPM). However, there are some with capacities of 1,500 GPM to over 2,000 GPM. Most engines are now carrying 750 or 1,000 gallons of water and the average tanker size is over 2,000 gallons. In addition, there is over 5 miles of large diameter (4" or 5") hose throughout the county.