

## **Fires – Urban and Rural (Wildfires)**

### **General**

A National Fire Protection Administration (NFPA) 2013 Report, “U.S. Fire Experience by Region” cites 2007-2011 Annual Averages. For the Northeast, which includes Pennsylvania, there were 4.6 fires per one thousand population; 11.3 civilian fire deaths per million population; 71.8 civilian fire injuries per million population; and a property loss per capita of \$34.60. This compares to Nationwide: 4.6; 9.6; 56.2 and \$34.40.

From 1992-2001, Pennsylvania had an average fire death rate above the national average, with an average between 11-17 per million population. This is due primarily to the state’s high population density. In 2001, Pennsylvania averaged 3.01 civilian deaths per 1000 fires and \$22,609 in property loss per fire. In 2009, the USFA recorded a fire death rate of 13.4 per million for Pennsylvania. This was above the 2009 national average of 11.0 per million and ranked the Commonwealth as the 17<sup>th</sup> highest state that year.

All fires can broadly be categorized as either wildfire or urban fire. Both categories have been responsible for some of the nation’s largest, deadliest, and most destructive disasters.

Perry County participates in the PennFIRS reporting program with the Office of the State Fire Commissioner. PennFIRS provides statewide fire information and reporting system. The Office of the State Fire Commissioner is working with county agencies to encourage them to participate in PennFIRS as first level data collections sites to assure that this statewide data network works as smoothly and efficiently as possible. While there is no requirement that county EMA or 911 agencies get involved in the PennFIRS program, the valuable information available through PennFIRS can be beneficial and become an important resource.

Perry County has one of the lowest fire death rates in the Commonwealth. The number of fire incidents has increased over the past ten years; however, some of this increase can be attributed to wild fires created by drought conditions that have affected the county multiple times over the past ten years.

Some of the worst fires occurring over the past 20 years include the Clouse Family Farm Fire where 7 children perished, the Square fire in New Bloomfield which destroyed two buildings west of the county owned Rhinesmith Hotel, White & Wingate saw mill in Perdix, R & S Distributors, the apartment building fire in Duncannon, the Big Bee fire in Marysville, the Dollar Store fire in Center Township, Tuscorara Hardwood in Elliottsburg and several commercial Mulch Pile fires. All of these fires caused major economic loss.

Perry County has implemented burn bans during dry periods both at the county level and more frequently at the municipal level.

### **Wildfires**

The most frequent causes of devastating wildfires are droughts, arson, and human carelessness. During the drought of 1999, almost 8,500 acres of forest were burned in Pennsylvania. Pennsylvania

may lose around 10,000 acres of forestland per year because of wildfires. In 2012 there were 717 wildfires in Pennsylvania, burning 3,186 acres. The 2012 national fire season was slightly below normal for number of reported wildfires (90 percent of the 10-year average). There were 67,774 wildfires reported nationally (compared to 74,126 wildfires reported in 2011). The number of acres burned in 2012 was 9,326,238, or 128 percent of the national 10-year average.

### **Urban**

The term “urban fires” generally refers to any fire involving structures, whether residential or commercial, and should not be deemed to mean only fires in a city (urban) setting. Although urban fires can start from numerous causes, major fires are often the result of other hazards such as storms, droughts, transportation accidents, hazardous material spills, criminal activity (arson), or terrorism. Small structural fires occur often and will not have a large impact on an area, but will increase insurance rates.

### **History**

#### **Wildfires**

According to the National Climatic Data Center (NCDC), no significant wildfires have been recorded in Perry County from January 1950 to the present.

Perry County is located in the Tuscarora State Forest District 3 (D-3). According to the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Forestry, the Tuscarora District experienced 117 fires from 2000-2012 which destroyed a total of 310.01 acres of forest. This equates to an average of nine (9) wildfires per year affecting an average of 23.8 acres per year. The Tuscarora District has a very low amount of incidents when compared to other forest districts.

**Table C.4  
Tuscarora District Wildfires  
2000-2012**

<b>Year</b>	<b>Forest District</b>	<b>Number of Fires</b>	<b>% of Statewide Fires</b>	<b>Acres</b>	<b>% of Statewide Acres</b>
2012	Tuscarora (D-3)	15	2.1	50.8	1.6
	State Totals	717	n/a	3,186	n/a
2011	Tuscarora (D-3)	10	5.0	41.7	7.2
	State Totals	202	n/a	579.1	n/a
2010	Tuscarora (D-3)	15	2.6	25.6	0.8
	State Totals	569	n/a	3,98.3	n/a
2009	Tuscarora (D-3)	8	1.3	37.5	0.6
	State Totals	619	n/a	6,064.9	n/a
2008	Tuscarora (D-3)	5	0.7	1	0.0
	State Totals	689	n/a	7,670.4	n/a
2007	Tuscarora (D-3)	13	2.4	24.1	2.1
	State Totals	540	n/a	1,140.3	n/a
2006	Tuscarora (D-3)	17	1.9	72.3	0.9
	State Totals	912	n/a	7,919.8	n/a
2005	Tuscarora (D-3)	9	1.1	13.5	0.3
	State Totals	806	n/a	4,268.2	n/a
2004	Tuscarora (D-3)	1	0.5	.1	0.0
	State Totals	205	n/a	2,779.6	n/a
2003	Tuscarora (D-3)	5	1.2	13.7	0.7
	State Totals	408	n/a	2,026.9	n/a
2002	Tuscarora (D-3)	2	0.3	.71	0.0
	State Totals	639	n/a	2,903	n/a
2001	Tuscarora (D-3)	9	1	7	0.1
	State Totals	856	n/a	7,135	n/a
2000	Tuscarora (D-3)	8	1	22	.46
	State Totals	736	n/a	4,799	n/a

*Source: DCNR Bureau of Forestry*

**Urban**

Pennsylvania as a state has experienced major suburban fires in the past ten years. Fires can be triggered by an accidental cause, deliberately set, or could be triggered by other disaster events such as flooding, storms, drought conditions, transportation accidents and Hazardous Material incidents. With this in mind, a fire as a secondary event may result in a very complex situation. Over the past 20 years, fire deaths have declined, however the number of incidents continue to be increasing. Perry County has one of the lowest fire death rates in the commonwealth.

**Vulnerability**

**Wildfires**

Although no significant wildfires have been recorded by the NCDC for Perry County, the rural nature of the County makes it prone to wildfires. The size and impact of a wildfire depends on its location, climate conditions, and the response of firefighters. If the right conditions exist, these factors can usually mitigate the effects of wildfires. However, in times of drought, wildfires can be devastating.

The leading cause of wildfires is human carelessness and negligence, causing 98 percent of wildfires in Pennsylvania. Lightning strikes also have the potential to cause a wildfire. The table below depicts lightning-caused wildfires in Pennsylvania from 1999-2012.

**Table C.5  
Pennsylvania Statewide Wildfires Caused by Lightning  
1999-2012**

<b>Year</b>	<b>Cause</b>	<b>Fires</b>	<b>Acres Destroyed or Affected</b>
1999	Lightning	39	145
2000	Lightning	13	372
2001	Lightning	6	68
2002	Lightning	23	64.1
2003	Lightning	7	35.1
2004	Lightning	1	1.5
2005	Lightning	11	59.0
2006	Lightning	7	57.5
2007	Lightning	21	14.0
2008	Lightning	6	20.3
2009	Lightning	2	29.5
2010	Lightning	10	258.6
2011	Lightning	3	0.4
2012	Lightning	10	23.1

*Source: DCNR Bureau of Forestry*

Wildfires are most common in the spring (March – May) and fall (October – November) months. During spring months, the lack of leaves on the trees allows the sunlight to heat the existing leaves on the ground from the previous fall. The same theory applies for the fall; however, the dryer conditions are a more crucial factor.

**Urban**

The vulnerability for a fire greatly depends on the vulnerability of other hazards. As mentioned above, most fires result from the secondary effect of another hazard. The probability of a fire occurring has increased with population growth. This is due to human error and carelessness, which are other factors contributing to urban fires. This risk also increases as the use of wood burning and

kerosene space heaters increases. The elderly (65 and older) tend to be more vulnerable to fires than any other age group. They also experience the highest number of deaths per fire. The second most vulnerable age group is those who are aged 14 and younger. These groups are generally affected while they are at home. And in the case of children, they may often be home alone. Additionally, many homes destroyed by urban fires are often the older homes in the community. Fire can spread faster in areas with higher concentrations of housing, as opposed to rural areas. The potential secondary effects of an urban fire include utilities failure and hazardous materials spill.

As with all fires, the response time of emergency personnel can greatly mitigate the effects of a fire. This is particularly critical in urban fires, due to the potential for loss of life and property. The USFA defines “response time” as beginning at the moment of ignition and continuing until the fire is extinguished. A January 2006 report by the USFA’s National Fire Data Center shows that regardless of region, season, or time of day, structure fire response times are generally less than five minutes 50 percent of the time, less than six minutes 61 percent of the time, and less than eight minutes 75 percent of the time. On average, 98.7 percent of all response times are 20 minutes or less nationwide, with the 90<sup>th</sup> percentile of response times to structure fires less than 11 minutes. It is important to note, however, that as population densities increase, fire stations are situated to cover less geographic area, which may ultimately contribute to reduced response times.

### **Probability**

The probability of an urban fire occurring in Perry County is relatively high; however, the impacts of the fire depend greatly on its location and magnitude. Most urban fires are quickly contained and cause only localized damage, due to the proximity and rapid response time of emergency services personnel.

While the County does not have a documented wildfire history, there still remains a probability that one could occur. However, this probability is low. Wild fire susceptibility is greater during drought conditions. With Perry County having a high frequency of drought declarations, the potential exists for lightning or human carelessness to start wildfires.

### **Maximum Threat**

#### **Urban**

Urban fires often occur in heavily populated and developed areas. The highest risk would be those homes located in boroughs that are considered row homes, or not sufficiently separated to avoid exposure from an adjacent building.

The majority of all urban fires affect only a few structures before being contained. However, the greatest risk is the potential of an urban fire to spread from one structure to another faster than local emergency services can provide the resources to control it. For this reason, the more densely developed areas of Marysville, Duncannon, Bloomfield, and New Buffalo Boroughs, especially where older homes and businesses are clustered, are at greatest risk.

Some municipalities have adopted fire codes requiring inspection of new homes being built.

Fire department personnel are becoming better trained, with increased numbers of local level training available through the State Fire Academy, and an increased awareness of the level of training required for the growing number of situations.

### **Wildfires**

The surrounding rural municipalities of Perry County are at greatest risk for wildfires. Densely wooded areas, such as public and privately owned forests and recreation, are at particularly high risk, due to the availability and concentration of fuel. A fire may result from a lightning strike or human carelessness.

### **Secondary Effects**

If an urban fire or wildfire is not contained, certain secondary hazards may affect Perry County. Power outages may be the most prevalent of these hazards.

Health hazards could also result from a wildfire or urban fire. The potential for brief periods of airborne ash, smoke, or soot to cause long-term health problems raises concerns among segments of the County's population who have pulmonary problems, heart disease, or breathing problems. The release of hazardous materials caused by a fire could cause a public health emergency.

### **Urban**

Urban fires can damage infrastructure and property. Temporary population displacements could occur as the result of large fires, and the economic impact from widespread fires which affect critical infrastructure, vital economic industries, or private residences could be high.

### **Wildfire**

Wildfires can damage lands and resources reducing vegetation and can causing soil erosion. Soil erosion leads to soil runoff, which can impact the health of the County's watersheds by contaminating these water sources and making them unfit for drinking. Reduced vegetation and soil erosion can result in mudslides when precipitation returns, causing a significant hazard to vital transportation arteries. Existing forage for livestock and wildlife can be destroyed, further straining the ecosystem.