



4.3.19 Wildfire

A wildfire is an unplanned fire that burns in a natural area. Wildfires can cause injuries or death and can ruin homes in their path. Wildfires can be caused by humans or lightning, and can happen anytime, though the risk increases in period of little rain. In Pennsylvania, 98% of wildfires are caused by people (PEMA 2020).

4.3.19.1 Location and Extent

Wildfires take place in less developed or completely undeveloped areas, spreading rapidly through vegetative fuels. They can occur any time of the year, but mostly occur during long, dry, hot spells. Any small fire, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness, negligence, and ignorance. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Wildfires in Pennsylvania can occur in open fields, grass, dense brush, and forests.

Wildfires can occur at any time of the year, but are most likely in Pike County during a drought, and can occur in fields, grass, and brush as well as in the forest itself. Under dry conditions or droughts, wildfires have the potential to burn forests as well as croplands.

Because a majority (an estimated 78.9-percent) of Pike County’s land cover is forest, the potential geographic extent of wildfires is quite large (USGS 2011). Under dry conditions or droughts, wildfires have the potential to burn forests as well as croplands. The greatest potential for wildfires is in the spring months of March, April, and May, and the autumn months of October and November; 83-percent of all Pennsylvania wildfires occur in these two time periods. In the spring, bare trees allow sunlight to reach the forest floor, drying fallen leaves and other ground debris. In the fall, dried leaves are also fuel for fires.

Table 4.3.19-1. Land Use Summary for Pike County

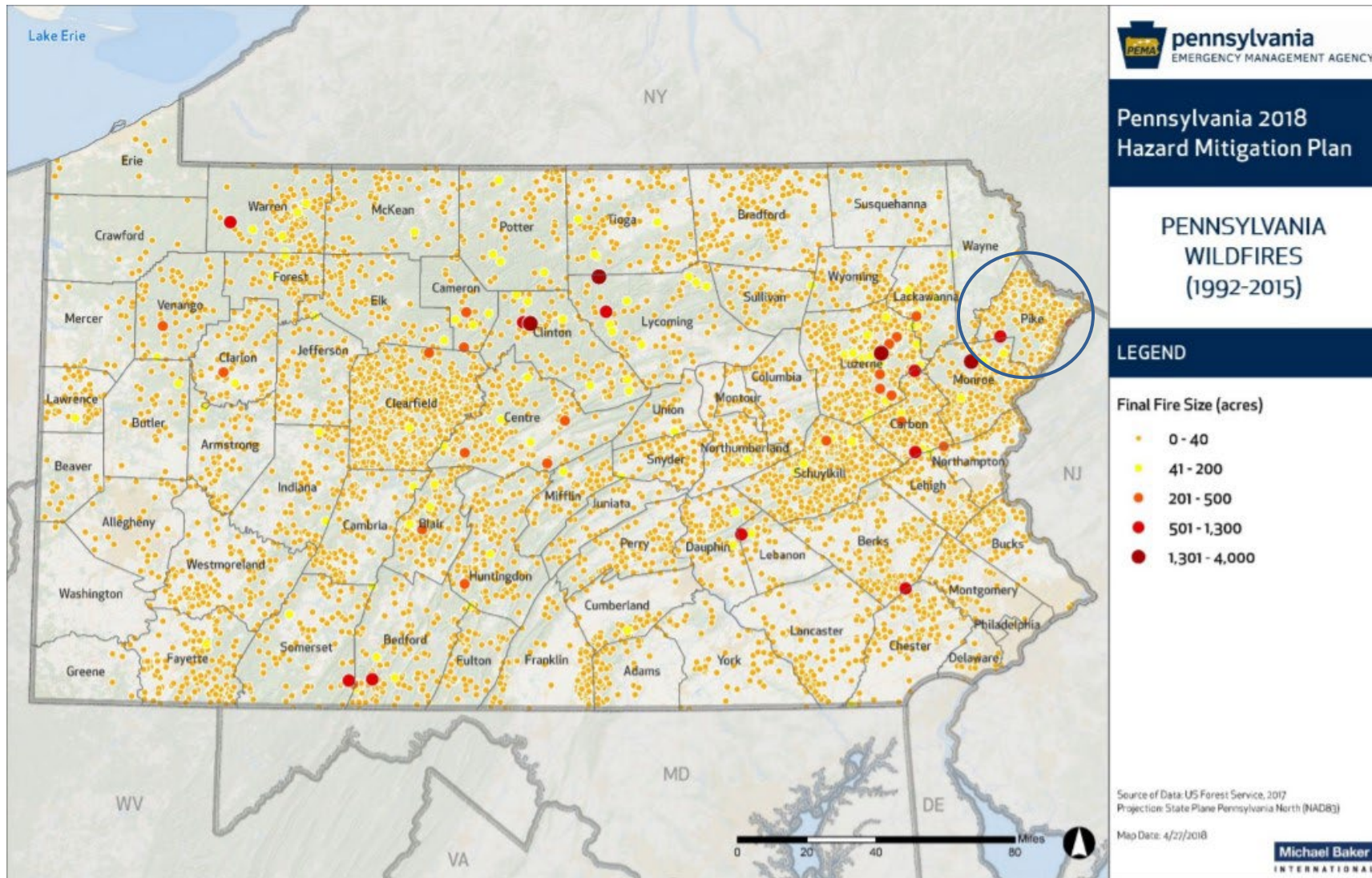
Land Use Category	Total Area (square miles)	Percent of Total
Agricultural	0.2	<1%
Barren Land	2.9	<1%
Forest	447.3	78.9%
Rangeland	2.5	<1%
Urban Built Up	46.2	8.1%
Water	20.7	3.6%
Wetland	47.3	8.3%
Total	567.2	100%

Source: USGS 2011

Figure 4.3.19-1 illustrates the land cover across Pike County. As the figure shows, a majority of Pike County is forested. Figure 4.3.19-2 shows the locations of wildfires throughout Pennsylvania from 1992 to 2015, as presented in the 2019 Pennsylvania State HMP. Wildfires are known to be an underreported event. Many wildfires occur every year and are suppressed by volunteer fire departments without any response or assistance from BOF.



Figure 4.3.19-2. Location of Wildfire Events responded to by BOF from 1992-2015



Source: PEMA 2018

Note: Blue circle was added to highlight Pike County's location within Pennsylvania.



According to the Pennsylvania 2019 Standard State All-Hazard Mitigation Plan, areas of the Commonwealth that have large home developments built in volatile fuel types are at risk for catastrophic wildfires. Many areas of the state are at risk for large wildfires, but northeastern Pennsylvania is the most at risk for loss of life and/or property due to the number of homes at risk for wildfires. This area has large home developments built in volatile fuel types including scrub oak, mountain laurel, blueberry, and huckleberry. If spring weather conditions were perfect for a fire (i.e. clear sky, high winds, low relative humidity, and a prolonged period of dry weather), it is possible that 10,000 acres could burn in areas of Monroe or Pike Counties (PEMA 2018).

Several tools are available to estimate fire potential location and extent, including (but not limited to) the Wildland/Urban Interface, Wildland Fire Assessment System and PA DCNR Priority Landscape Analysis. These tools are discussed in further detail below.

Wildland/Urban Interface (WUI)

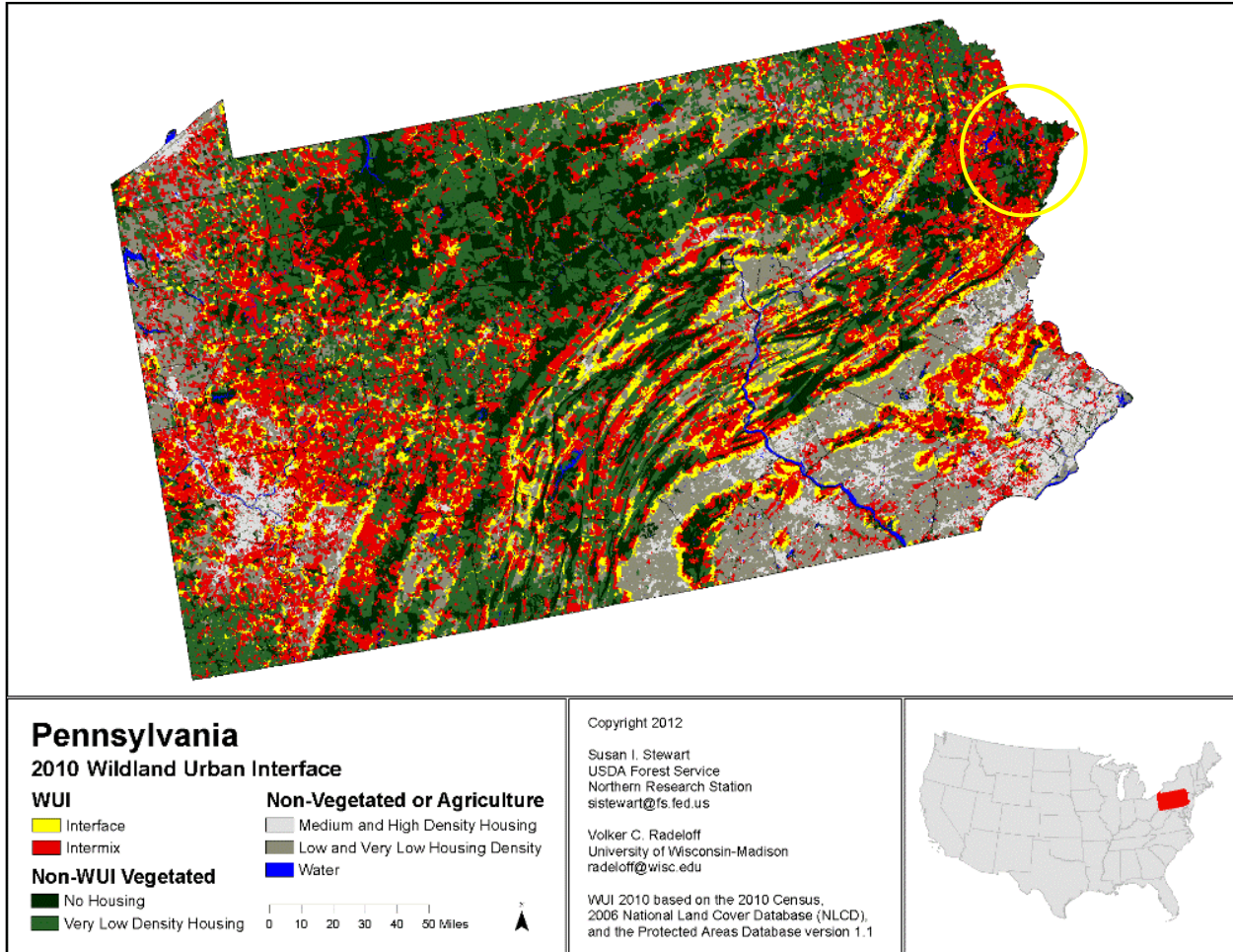
The WUI is the area where houses and wildland vegetation coincide. The WUI is divided into two categories: intermix and interface. Intermix WUI are areas where housing and vegetation “intermingle.” Intermix areas have more than one house per 40 acres and have more than 50 percent vegetation. Interface WUI are areas with housing in the vicinity of contiguous wildland vegetation. Interface areas have more than one house per 40 acres, have less than 50 percent vegetation, and are within 1.5 miles of an area larger than 1,235 acres that is more than 75 percent vegetated (Stewart et al. 2005).

The California Fire Alliance determined that areas within 1.5 miles of wildland vegetation are the approximate distance that firebrands can be carried from a wildland fire to the roof of a house. Therefore, even structures not located within the forest are at risk from wildfire. This buffer distance, along with housing density and vegetation type, were used to define the WUI (Stewart et al. 2005).

Concentrations of WUI can be seen along the east coast of the United States including the area around Pittsburgh, Pennsylvania, and the eastern half of Pennsylvania. Pike County is identified as having many areas of very low-density housing or no housing due to the large amount of forested area. Areas where recreation and tourism dominate are also places where WUI is common (Stewart et al. 2005). Figure 4.3.19-3 depicts the WUI for Pennsylvania in 2010, and Figure 4.3.19-4 illustrates the WUI for Pike County. Concentrations of WUI areas greater than 50 percent are classified as WUI (intermix or interface) in the County.



Figure 4.3.19-3. 2010 WUI for Pennsylvania

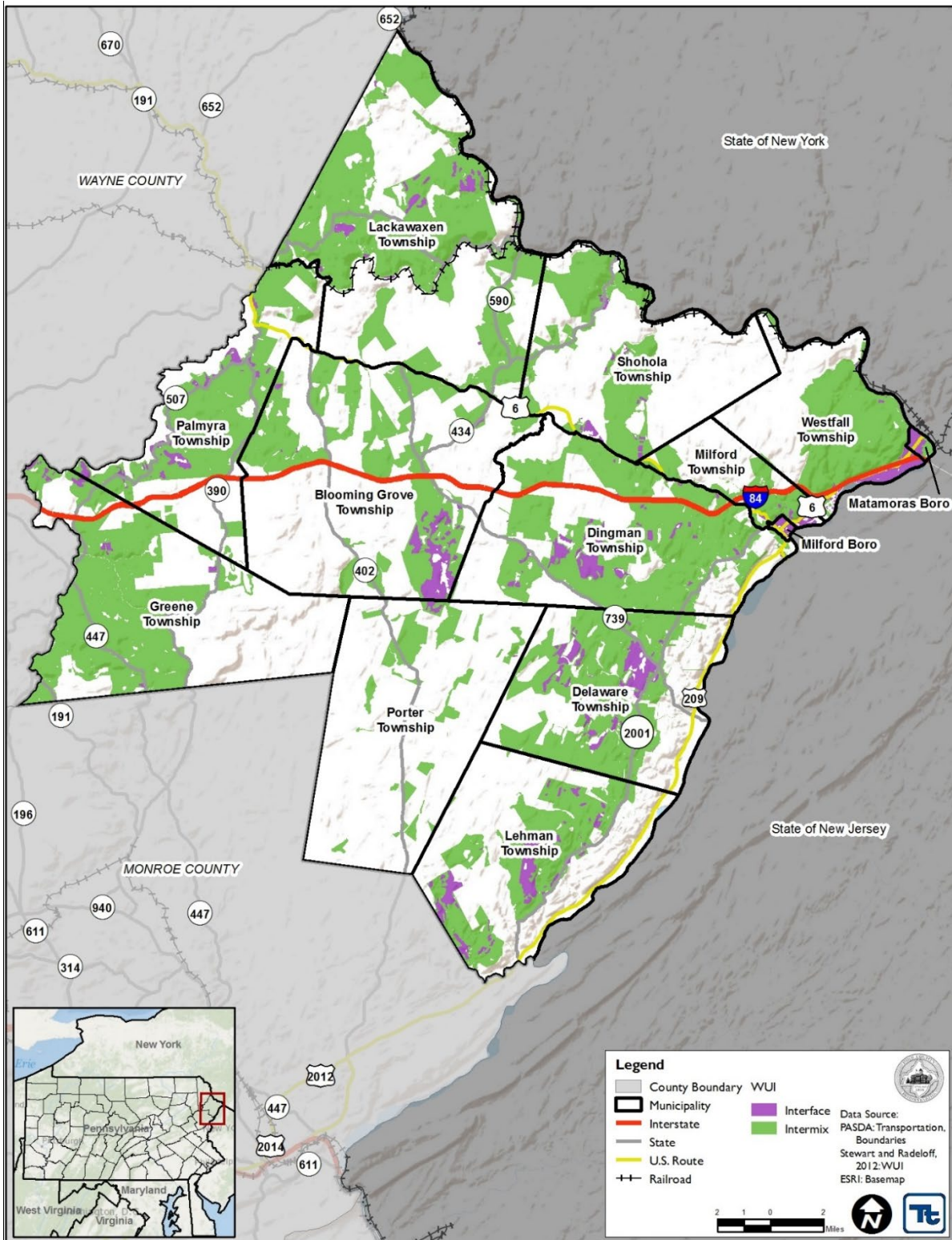


Source: Stewart 2015

Note: Yellow circle highlights Pike County's location within Pennsylvania.



Figure 4.3.19-4. WUI for Pike County



Source: Stewart and Radeloff 2012



Wildland Fire Assessment System (WFAS)

The Wildland Fire Assessment System (WFAS) is an Internet-based information system maintained at the National Interagency Fire Center (NIFC) in Boise, Idaho, that provides a national view of weather and fire potential, including national fires danger, weather maps and satellite-derived “Greenness” maps (U.S. Forestry Service [USFS] 2016). Each day during the fire season, national maps of selected fire weather and fire danger components of the National Fire Danger Rating System (NFDRS) are produced by the WFAS (USFS WFAS 2012). The Fire Danger Rating level, described in Table 4.3.19-2 below, takes into account current and antecedent weather, fuel types, and both live and dead fuel moisture. The adjective class rating is a method of normalizing rating classes across different fuel models, indexes, and station locations. It is based primarily on a fuel model cataloged for the station, the fire danger index selected to reflect staffing levels, and climatological class breakpoints. Local station managers provide this information to USFS (USFS WFAS 2012).

Table 4.3.19-2. Fire Danger Rating and Color Code

Fire Danger Rating and Color Code	Description
Low (L) (Dark Green)	Fuels do not ignite readily from small firebrands, although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering and burning in irregular fingers. There is little danger of spotting.
Moderate (M) (Light Green or Blue)	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
High (H) (Yellow)	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly, and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while they are small.
Very High (VH) (Orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
Extreme (E) (Red)	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash (trunks, branches, and tree tops) or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Source: USFS 2012

Pennsylvania Department of Conservation and Natural Resources (PA DCNR) Priority Landscape Analysis

The PA DCNR conducted a wildfire priority landscape analysis identifying areas where wildland fires are predicted to occur and become problematic. The areas are classified into high, medium, and low categories. The high classification is defined as an area prone to extreme fire behavior, with the potential to cause extensive property damage, or that could threaten the safety of the Commonwealth’s citizens. The following five datasets were used for this analysis:

- 2002 WUI
- 2006 LANDFIRE
- 2002 – 2008 Pennsylvania Wildfire Point Origin Occurrences
- Percent Slope

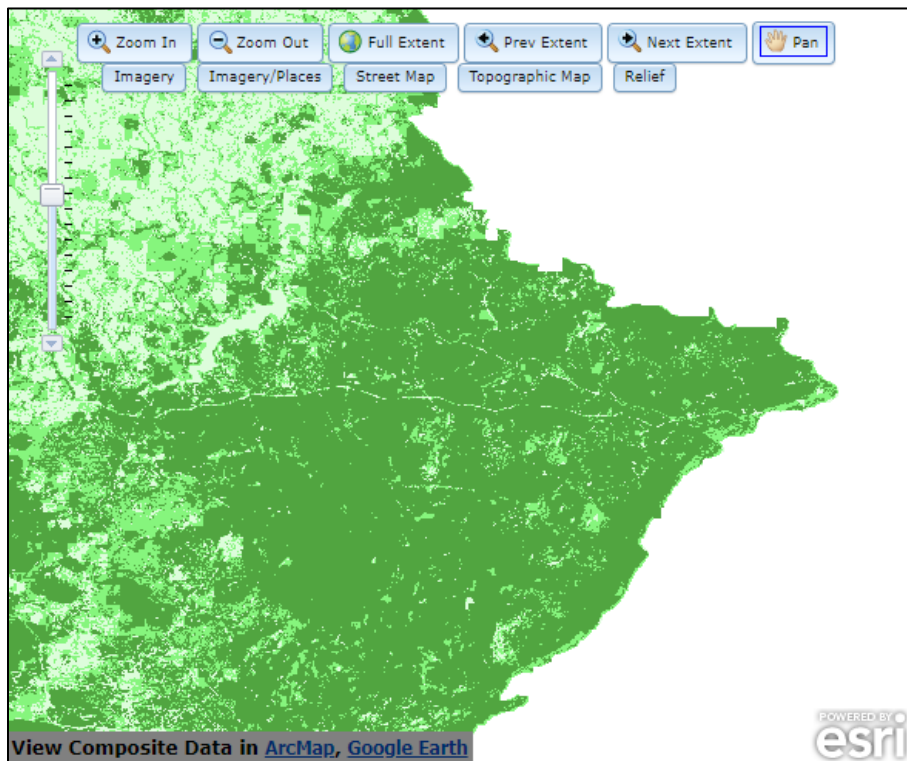


- 2009 Local Assessment of Values, Risks, Hazards.

The WUI classifies areas where homes and other human development meet or intermingle with undeveloped land. LANDFIRE characterizes the land’s vegetation into fuel models that predict various fire behavior intensities. The Pennsylvania wildfire Point Origin Occurrences are records of wildland fire origins that have been reported. Percent slope aids in predicting fire behavior from the terrain. The local assessment of values, risks, and hazards is a municipality-based rating system; this assessment has been made by local wildland fire managers (PA DCNR 2021). Figure 4.3.19-5 illustrates the output for the wildfire priority landscapes model for Pike County.

The greatest potential for wildfires is in the spring months of March, April, and May, and the autumn months of October and November. These months generally bring clear skies, high winds, low relative humidity, and prolonged periods of dry weather. In the spring, bare trees allow sunlight to reach the forest floor, drying fallen leaves and other ground debris. The same theory applies for the fall; however, the drier conditions are a more crucial factor. People cause most wildfires in Pennsylvania, often by burning debris. Several fires have started in a person’s backyard and traveled through dead grasses and weeds into bordering woodlands. According to the Pennsylvania Emergency Management Agency (PEMA) Standard All-Hazard Mitigation Plan, 92 percent of Pennsylvania wildfires burn less than 10 acres and are suppressed within the first burning period (PEMA 2013).

Figure 4.3.19-5. Wildfire Priority Landscapes in Pike County



Source: PA DCNR 2021

Notes: Low Priority = 0–0.21 (light green); Medium Priority = 0.21–0.35 (medium green); High Priority = 0.35–1 (dark green)
Pike County location within yellow circle

4.3.19.2 Range of Magnitude



Wildfire events in Pike County can range from small fires that can be managed by local firefighters to large fires burning many acres of land. Large events may require evacuation from one or more communities and necessitate regional or national firefighting support. The impact of a severe wildfire can be devastating. A wildfire has the potential to kill people, livestock, fish, and wildlife. They often destroy property, valuable timber, forage, and recreational and scenic resources.

In addition to the risk wildfires pose to the general public and property owners, the safety of firefighters is also a concern. Although loss of life among firefighters does not occur often in Pennsylvania, it is always a risk. More common firefighting injuries include falls, sprains, abrasions or heat-related injuries such as dehydration. Response to wildfires also exposes emergency responders to the risk of motor vehicle accidents and can place them in remote areas away from the communities that they are chartered to protect.

While some fires are not human-caused and are part of natural succession processes, a wildfire can kill people, livestock, fish and wildlife. They often destroy property, valuable timber, forage and recreational and scenic values. The most significant environmental impact is the potential for severe erosion, silting of stream beds and reservoirs, and flooding due to ground-cover loss following a fire event. Wildfire can also have a positive environmental impact in that they burn dead trees, leaves, and grasses to allow more open spaces for new vegetation to grow and receive sunlight. Another positive effect is that it stimulates the growth of new shoots on trees and shrubs and its heat can open pine cones and other seed pods.

The worst-case scenario for Pike County occurred in April 2016 known as the “16-Mile Fire”. More than 100 firefighters from local and out-of-state fire companies were deployed to battle a large wildfire near the border of Pike and Monroe Counties. Two cabins, three seasonal homes and six outbuildings were destroyed by the fire. More than 8,000 acres burned in state-owned forest and private property.

4.3.19.3 Past Occurrence

Wildfires are a constant threat in Pike County. According to the Pike County Department of Public Safety, there have been 724 wildfire events in Pike County between January 1, 2017 and December 31, 2021. Table 4.3.19-3 shows the number of wildfire events per municipality for this time period. Of all of Pike County’s jurisdictions, Lackawaxen Township had the most wildfires between 2017 and 2021.

Table 4.3.19-3. Wildfire Events in Pike County, January 1, 2017 to December 31, 2021

Community	Number of Structural Fires
Blooming Grove Township	62
Delaware Township	83
Dingman Township	147
Greene Township	28
Lackawaxen Township	174
Lehman Township	40
Matamoras Borough	0
Milford Borough	4
Milford Township	25
Palmyra Township	61



Community	Number of Structural Fires
Porter Township	13
Shohola Township	24
Westfall Township	63
Pike County (Total)	724

Source: Pike County Department of Public Safety 2022

In addition to the events identified above, the following provides details regarding several severe events that impacted Pike County:

- April 1990 – a large wildfire burned approximately 200 acres of woodlands located at the end of Firetower Road in Westfall and Shohola Townships.
- March 1999 - a controlled burn performed by the National Park Service accidentally spread due to rapid changes in weather conditions. The wildfire burned close to 500 acres and required several days and resources and manpower from several states to extinguish.
- April 2016 – 16-Mile Fire – More than 100 firefighters from local and out-of-state fire companies were deployed to battle a large wildfire near the border of Pike and Monroe Counties. Two cabins, three seasonal homes and six outbuildings were destroyed by the fire. More than 8,000 acres burned in state-owned forest and private property.

4.3.19.4 Future Occurrence

In Pennsylvania, wildfire events will continue to occur each year. However, the likelihood of one of those fires attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response. Weather conditions, particularly drought events, increase the likelihood of wildfires occurring. Additionally, invasive forest insects can increase the likelihood of wildfires occurring; insects that attack and kill trees increase the total wildfire fuel available in wooded areas. Climate change is also likely to increase the probability of future wildfires. Prolonged periods of drought caused by climate change can potentially increase the length of the wildfire season and provide a more favorable climate for ignition (Pennsylvania HMP 2018).

For the 2022 HMP update, the most up-to-date data was provided by the Pike County Department of Public Safety to calculate the probability of future occurrence of wildfire events for Pike County. This information was used to identify the number of wildfire events that occurred between January 1, 2017 and December 31, 2021. Using this source ensures the most accurate probability estimates possible. Information on occurrence for previous years using the same methodology was not available, resulting in less reliable statistical analysis. Therefore, the probability of occurrence was calculated using 2017 to 2021 as it was the best available information. 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 a wildfire event occurring in any given year in Pike County.



Table 4.3.19-4. Probability of Future Wildfire Events

Hazard Type	Number of Occurrences Between 2017 and 2021	Percent chance of occurrence in any given year
Wildfires	724	100%

Sources: Pike County Department of Public Safety 2022

Based on available historical data, the future occurrence of wildfires in Pike County can be considered *highly likely* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4). However, the likelihood of one of those fires attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response. Weather conditions like drought and wind can increase the likelihood of wildfires occurring. Any fire, without the quick response or attention of fire-fighters, forestry personnel, or visitors to the forest, has the potential to become a wildfire.

4.3.19.5 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed and vulnerable in the identified hazard area. The following text evaluates and estimates the potential impact of the wildfire hazard on the County, including:

- Impact on (1) life, health and safety; (2) general building stock; (3) critical facilities; (4) economy; and (5) future growth and development
- Effects of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time.

Impact on Life, Health, and Safety

As demonstrated by historical wildfire events, potential losses include human health and life of residents and responders. The most vulnerable populations include emergency responders and those within a short distance of the interface between the built environment and the wildland environment.

The County land within the WUI data was overlaid on the 2010 U.S. Census population data to estimate the Pike County population vulnerable to the wildfire hazard (U.S. Census 2010). The census blocks with their center within the hazard area were used to calculate the estimated population exposed to the wildfire hazard. Table 4.3.19-5 summarizes the estimated population exposed by municipality.



Table 4.3.19-5. Estimated Population Located within the WUI in Pike County

Municipality	Total Population (American Community Survey 2015-2019)	Number of Persons Located in the Wildland-Urban Interface Wildfire Hazard Area	Percent of Total	Number of Persons Located in the Wildland-Urban Intermix Wildfire Hazard Area	Percent of Total	Estimated Population Located Within the Wildland-Urban Interface/Intermix Wildfire Fuel Hazard Area	
						TOTAL Number of People (Interface and Intermix)	Percent of Total
Blooming Grove Township	4,645	1,636	35.2%	2,393	51.5%	4,030	86.7%
Delaware Township	7,063	2,637	37.3%	3,859	54.6%	6,496	92.0%
Dingman Township	11,619	2,756	23.7%	8,064	69.4%	10,820	93.1%
Greene Township	3,825	763	20.0%	2,522	65.9%	3,286	85.9%
Lackawaxen Township	5,020	688	13.7%	3,998	79.6%	4,686	93.3%
Lehman Township	10,183	3,385	33.2%	6,376	62.6%	9,761	95.9%
Matamoras Borough	2,336	2,208	94.5%	126	5.4%	2,334	99.9%
Milford Borough	1,172	1,155	98.5%	0	0.0%	1,155	98.5%
Milford Township	1,329	289	21.7%	916	68.9%	1,205	90.7%
Palmyra Township	3,215	920	28.6%	1,897	59.0%	2,817	87.6%
Porter Township	400	54	13.6%	172	42.9%	226	56.5%
Shohola Township	2,133	743	34.8%	1,168	54.7%	1,911	89.6%
Westfall Township	2,513	1,251	49.8%	1,060	42.2%	2,311	92.0%
Pike County (Total)	55,453	18,486	33.3%	32,550	58.7%	51,036	92.0%

Source: U.S. Census 2010, Stewart and Radeloff 2012

Notes: The 2020 Census was not available during the planning process; therefore, the 2019 American Community Survey was used population statistics.

WUI Wildland-Urban Interface



Impact on General Building Stock

The most vulnerable structures to wildfire events are those within the WUI. Buildings constructed of wood or vinyl siding are generally more likely to be damaged by the fire hazard than buildings constructed of brick or concrete. The WUI was overlaid on the default building inventory in Hazards U.S. – Multi-Hazard (HAZUS-MH) to estimate the replacement cost of buildings and on the County provided spatial layer of buildings to estimate number of structures exposed to the wildfire hazard in Pike County. The replacement cost value (RCV) of the census blocks with their center in the WUI was totaled. Table 4.3.19-6 summarizes the estimated building stock inventory exposed by municipality.

Table 4.3.19-6. Building Stock Replacement Value and Structures Located within the WUI in Pike County

Municipality	Total GBS RCV	Estimated GBS RCV Exposed	Percent of Total	Total Number of Structures	Number of Structures in Hazard Area	Percent of Total
Blooming Grove Township	\$1,160,095,000	\$952,006,000	82.1%	3,998	3,343	83.6%
Delaware Township	\$1,496,677,000	\$1,370,343,000	91.6%	4,253	3,895	91.6%
Dingman Township	\$1,984,820,000	\$1,837,445,000	92.6%	5,480	4,997	91.2%
Greene Township	\$956,640,000	\$795,710,000	83.2%	3,275	2,929	89.4%
Lackawaxen Township	\$1,231,170,000	\$1,117,412,000	90.8%	4,562	4,069	89.2%
Lehman Township	\$1,992,003,000	\$1,887,895,000	94.8%	5,995	5,775	96.3%
Matamoras Borough	\$377,318,000	\$377,318,000	100.0%	972	972	100.0%
Milford Borough	\$413,430,000	\$357,170,000	86.4%	718	670	93.3%
Milford Township	\$670,787,000	\$336,893,000	50.2%	784	609	77.7%
Palmyra Township	\$1,244,483,000	\$1,155,235,000	92.8%	3,981	3,700	92.9%
Porter Township	\$388,599,000	\$252,871,000	65.1%	912	583	63.9%
Shohola Township	\$759,299,000	\$680,794,000	89.7%	2,311	2,101	90.9%
Westfall Township	\$383,781,000	\$295,530,000	77.0%	1,175	977	83.1%
Pike County (Total)	\$13,059,102,000	\$11,416,622,000	87.4%	38,416	34,620	90.1%

Source: HAZUS-MH v3.1; Stewart and Radeloff 2012

Notes:

- GBS General Building Stock
- RCV Replacement cost value
- WUI Wildland-Urban Interface

Impact on Critical Facilities

A number of critical facilities are located in the wildfire hazard area. Many of these facilities are the locations for vulnerable populations (schools) and responding agencies to wildfire events (fire and police). Table 4.3.19-7 summarizes the number of critical facilities identified by the County plan participants that are located within the Wildland-Urban Interface Wildfire Hazard Area. Table 4.3.19-7 summarizes the number of critical facilities located within the Wildland-Urban Intermix Wildfire Hazard Area. Table 4.3.19-8 summarizes the number of critical facilities located in the Wildland-Urban Intermix Hazard Area. Table 4.3.19-9 summarizes the number of lifeline facilities located in the Wildland-Urban Interface and Intermix Hazard Areas.



Table 4.3.19-7. Number of Critical Facilities in the Wildland-Urban Interface Wildfire Hazard Area in Pike County

Municipality	Number of Critical Facilities Located in the Wildland-Urban Interface Wildfire Hazard Area										
	Cell Tower	Central Water Facility	Day Care	Fire	Medical	Municipal Building	Nursing Home	Police	School	Shelter	Wastewater
Blooming Grove Township	0	0	0	1	0	0	0	0	0	0	0
Delaware Township	0	0	2	0	1	0	0	0	0	0	0
Dingman Township	0	0	2	0	0	0	0	0	0	0	0
Greene Township	0	0	0	0	0	0	0	0	0	0	0
Lackawaxen Township	0	0	0	1	0	0	0	0	0	1	0
Lehman Township	0	1	1	0	0	0	0	0	0	0	0
Matamoras Borough	0	1	2	0	0	1	0	1	0	1	0
Milford Borough	0	0	3	1	0	1	0	1	0	0	0
Milford Township	0	0	0	0	0	1	0	0	0	0	0
Palmyra Township	1	0	0	1	0	0	0	0	0	0	0
Porter Township	0	0	0	0	0	0	0	0	0	0	0
Shohola Township	0	0	0	0	0	0	0	0	0	0	0
Westfall Township	1	0	0	1	0	0	4	0	4	3	1
Pike County (Total)	2	2	10	5	1	3	4	2	4	5	1



Table 4.3.19-8. Number of Critical Facilities in the Wildland-Urban Intermix Wildfire Hazard Area in Pike County

Municipality	Number of Critical Facilities Located in the Wildland-Urban Intermix Wildfire Hazard Area											
	Cell Tower	Correctional	County Bldg	Day Care	EMS	EOC	Fire	Medical	Municipal Building	Police	School	Shelter
Blooming Grove Township	3	1	2	0	0	1	1	1	1	1	0	0
Delaware Township	1	0	0	1	1	0	1	0	1	0	0	1
Dingman Township	3	0	0	1	0	0	1	0	0	0	0	1
Greene Township	1	0	0	0	0	0	1	0	1	0	0	1
Lackawaxen Township	1	0	0	0	2	0	3	0	1	0	0	2
Lehman Township	1	0	0	2	0	0	1	0	1	0	0	2
Matamoras Borough	0	0	0	0	0	0	1	0	0	0	1	1
Milford Borough	0	0	0	0	0	0	0	0	0	0	0	0
Milford Township	1	0	0	1	0	0	0	0	0	0	0	1
Palmyra Township	2	0	0	0	0	0	0	0	1	0	3	4
Porter Township	0	0	0	0	0	0	0	0	0	0	0	0
Shohola Township	0	0	1	1	0	0	2	0	1	0	0	0
Westfall Township	0	0	0	0	0	0	0	0	1	0	0	0
Pike County (Total)	13	1	3	6	3	1	11	1	8	1	4	13



Table 4.3.19-9. Number of Lifelines in the Wildland-Urban Intermix Wildfire Hazard Area in Pike County

FEMA Lifeline Category	Number of Lifelines	Number of Lifelines Located in the Wildland-Urban Interface Wildfire Hazard Area	Number of Lifelines Located in the Wildland-Urban Intermix Wildfire Hazard Area
Communications	26	2	13
Food, Water, Shelter	28	8	13
Health and Medical	12	5	4
Safety and Security	57	14	29
Pike County (Total)	123	29	59

Source: Stewart and Radeloff 2012; Pike County 2021
WUI Wildland-Urban Interface

Impact on the Economy

Wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed businesses and decreases in tourism. Wildfire can also severely damage roads and infrastructure. Portions of Interstate I-84, US Routes US-6 and US-209, and multiple State Routes including, PA-434, PA-2001, PA-402, and PA-390 run through WUI areas. This factor should be considered to determine evacuation routes for Pike County residents.

Impact on the Environment

According to the USGS, post-fire runoff polluted with debris and contaminants can be extremely harmful to ecosystem and aquatic life (Teclé A., Neary D. 2015). Studies show that urban fires, in particular, are more harmful to the environment than forest fires (Radeloff et al. 2018). The age and density of infrastructure within Pike County can exacerbate consequences of fires on the environment because of the increased amount of chemicals and contaminants that would be released from burning infrastructure. These chemicals, such as iron, lead, and zinc, may leach into the storm water, contaminate nearby streams, and impair aquatic life.

Future Changes That May Impact Vulnerability

Understanding future changes that impact vulnerability in the County can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The County considered the following factors to examine potential conditions that may affect hazard vulnerability:

- Potential or projected development.
- Projected changes in population.
- Other identified conditions as relevant and appropriate, including the impacts of climate change.

Projected Development and Changes in Population

Areas targeted for potential future growth and development in the next 5 years have been identified across the County at the municipal level. It is anticipated that any new development and new residents in the WUI will be exposed to the wildfire hazard.

Estimated population projections provided by the Center of Rural Pennsylvania indicate that Pike County’s population will continue to decrease into 2040, decreasing the total population to approximately 54,257 persons (The Center of Rural Pennsylvania 2014). The 2010 Census for Pike County reported a total population of 57,369 and an estimated



2019 population of 55,453. This is approximately at 3.3-percent decrease. However, the population increased to 58,535 (5.6-percent increase) according to the 2020 Census. It is anticipated that the County's population will increase over the years, exposing more residents to the wildfire hazard, especially if located in WUI areas.

Climate Change

According to USFS, climate change will likely alter the atmospheric patterns that affect fire weather. Changes in fire patterns will, in turn, affect carbon cycling, forest structure, and species composition. Climate change associated with elevated greenhouse gas concentrations may create an atmospheric and fuel environment that is more conducive to large, severe fires (USFS 2011).

Fire interacts with climate and vegetation (fuel) in predictable ways. Understanding the interactions of climate, fire, and vegetation interactions is essential for addressing issues associated with climate change that include:

- Effects on regional circulation and other atmospheric patterns that affect fire weather
- Effects of changing fire regimes on the carbon cycle, forest structure, and species composition, and
- Complications from land-use change, invasive species, and an increasing WUI (USFS 2011)

It is projected that higher summer temperatures will likely increase the high fire risk by 10 to 30-percent. Fire occurrence and area burned could increase across the United States as a result of the increase of lightning activity, the frequency of surface pressure and associated circulation patterns conducive to surface drying, and fire-weather conditions, in general, which are conducive to severe wildfires. Warmer temperatures will also increase the effects of drought and increase the number of days each year with flammable fuels and extending fire seasons and areas burned (USFS 2011).

Pennsylvania's Department of Environmental Protection (PADEP) was directed by the Climate Change Act (Act 70 of 2008) to initiate a study of the potential impacts of global climate change on the Commonwealth. The June 2009 Pennsylvania Climate Impact Assessment's main findings indicate Pennsylvania may be at increased risk for wildfires, but it is unclear how large the increase in risk will be (Shortle and others 2009).

Future changes in fire frequency and severity are difficult to predict. Global and regional climate changes associated with elevated greenhouse gas concentrations could alter large weather patterns, thereby affecting fire-weather conditions that are conducive to extreme fire behavior (USFS 2011).

Change of Vulnerability Since the 2017 Hazard Mitigation Plan

As the data and resources become available, a custom building inventory can be generated to capture the construction of structures (such as roofing material, fire detection equipment, and structure age) to further refine the vulnerability analysis. As stated earlier, buildings constructed of wood or vinyl siding are generally more likely to be damaged by the fire hazard than buildings constructed of brick or concrete. The proximity of these building types to the WUI should be identified for further evaluation. Development and availability of these data would permit a more detailed estimate of potential vulnerabilities, including loss of life and potential structural damages.

In locations where homes are at risk for wildfires, the BOF's WUI Guidance Document is available to assist homeowners, community associations, local government, and developers to assess and mitigate the potential



dangers of a wildfire. The guidance also provides information for developing an action plan in coordination with local emergency managers. Communities at risk for wildfires can adopt by local ordinance the “International Wildland-Urban Interface Code” of the Uniform Construction Code.