



### 4.3.19 Utility Interruptions

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A utility interruption, or power failure, is defined as any interruption or loss of fuel service from disruption of power transmission caused by accident, sabotage, natural hazards, or equipment failure (also referred to as a loss of power or power outage). A significant power failure is defined as any incident of a long duration that would require the involvement of the local or State emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter.

This section provides a profile and vulnerability assessment of the utility interruption hazard for Pike County.

#### Location and Extent

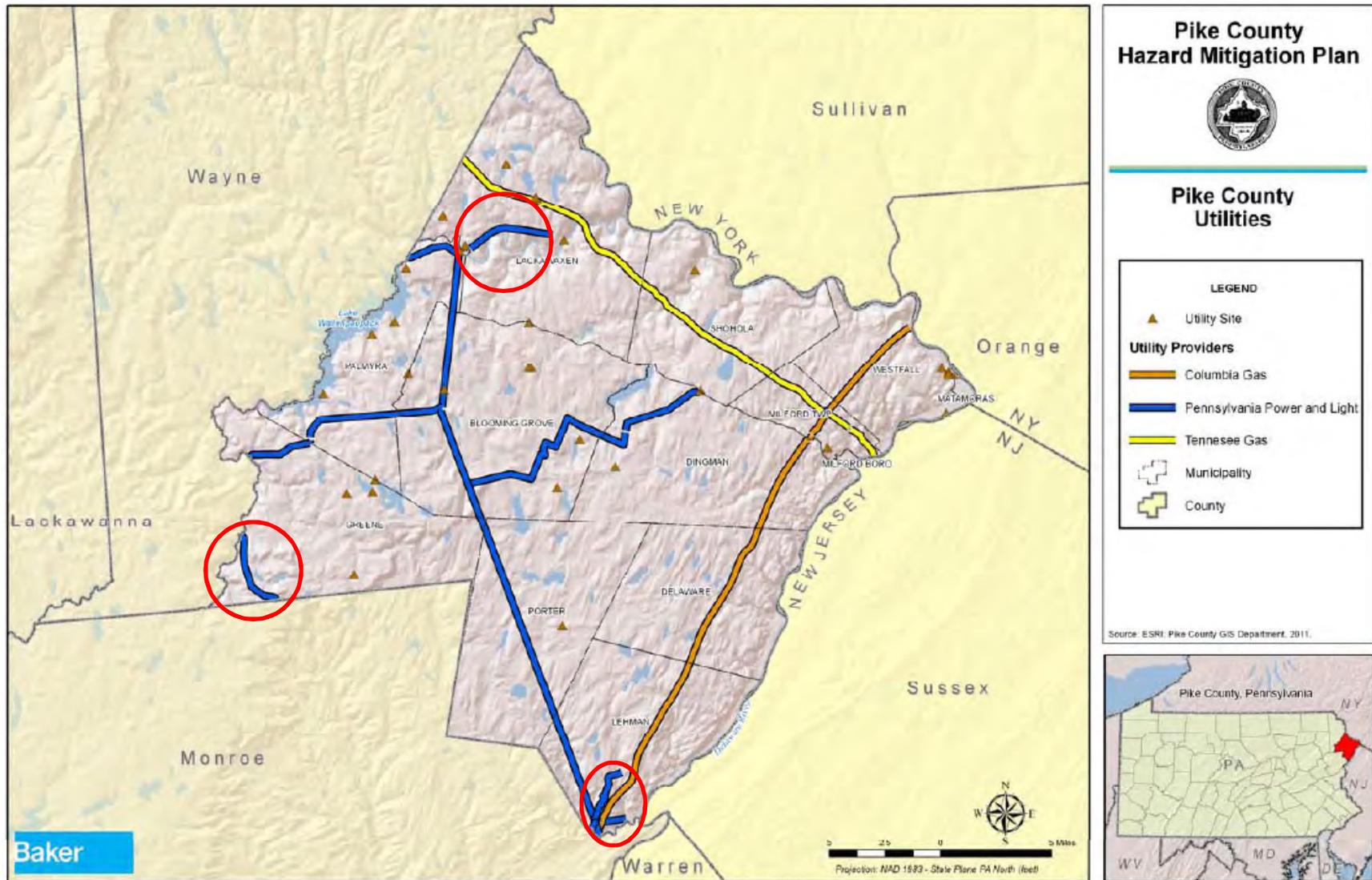
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Utility interruptions in Pike County include disruptions in water, fuel, electric and telecommunications capabilities. In Pike County the focus is primarily on power failures which are often a secondary impact of another hazard event. For example, severe thunderstorms or winter storms could bring down power lines and cause widespread disruptions in electricity service. Strong heat waves may result in rolling blackouts where power may not be available for an extended period of time. Local outages may be caused by traffic accidents or wind damage. Utility interruptions and power failures can take place throughout the County.

Utility interruptions can also be caused by disruptions in service to pipeline transmission lines. Columbia Gas and Tennessee Gas have pipelines that bisect the County (Figure 4.3.14-1). In addition, there are countless miles of residential connections to larger water, gas, and liquid pipelines. Lines can become damaged by cold temperatures thus causing cracks and disruptions in service. Public water service can also be impacted by dam failures which would cause a break in water service.



Figure 4.3.19-1. Location of Utilities in Pike County



Source: Pike County HMP 2012

Note: Red circled areas of Pennsylvania Power and Light are not presented on shapefile provided by Pike County





### Range of Magnitude

Generally speaking, the most severe utility interruptions are regional power outages. Regional loss of power affects lighting; heating, ventilation, and air conditioning (HVAC) and other support equipment; communications; fire and security systems; and refrigerators, which can in turn cause loss of water and sewer service, and food spoilage. These effects are especially severe for individuals with functional needs and the elderly.

At a minimum, power outages can cause short-term disruption in the orderly functioning of businesses, government operations, and private citizen functions and activities. Examples of everyday functions that would be affected by power outages include traffic signals, elevators, and retail sales. A worst case scenario for utility interruption in Pike County occurred in January 2005 when an ice storm caused major power outages effecting thousands of customers in Monroe, Carbon, Lackawanna, Wayne and Pike Counties. Because of the amount of equipment damage caused by the ice, some areas did not have power restored for over a week. Fortunately, Pike County did not have damage to the extent of its neighbors to the southwest.

Sabotage also plays a role in some utility outages. Sabotage may be the direct result of a malicious attack against utilities, or may be the secondary effect of the theft of copper wiring. In report published in October 2010 titled “An Updated Assessment of Copper Wire Theft from Electric Utilities,” the U.S. Department of Energy’s (DOE) Office of Electricity Delivery and Energy Reliability reported that United States-based utilities suffer several million dollars’ worth of copper thefts annually (DOE 2010). The estimated minutes of outages experienced by utilities nationwide as a result of copper theft were 456,000 or about 7,600 hours (American Public Power Association [APPA] 2012).

### Past Occurrence

In Pike County, minor power outages occur annually, approximately two to five times each year. They are most often associated with winter storms and wind storms. Table 4.3.14-1 displays utility interruption events reported to PEIRS between 2002 and 2009.

Table 4.3.19-1. Utility Interruption at Pike County from 2002 to 2009

Date	Location	Type
01/17/2002	TOWNSHIP OF PALMYRA	Phone outage
03/02/2002	BUSHKILL	Phone outage
07/24/2002	TOWNSHIP OF DINGMAN	Power outage
01/18/2003	TOWNSHIP OF DELAWARE	Power outage
01/22/2003	TOWNSHIP OF DINGMAN	Power outage
11/14/2003	COUNTYWIDE	Phone outage
12/11/2003	TOWNSHIP OF DELAWARE	Power outage
06/16/2004	TOWNSHIP OF LEHMAN	Phone outage
08/26/2004	TOWNSHIP OF BLOOMING GROVE	Phone outage
09/26/2004	TOWNSHIP OF MILFORD	Power outage
10/10/2004	TOWNSHIP OF BLOOMING GROVE	Phone outage
01/06/2005	COUNTYWIDE	Power outage
01/24/2005	TOWNSHIP OF WESTFALL	Phone outage
03/24/2005	TOWNSHIP OF WESTFALL	Power outage
06/09/2005	MATAMORAS	Phone outage
06/10/2005	TOWNSHIP OF WESTFALL	Power outage



Date	Location	Type
06/17/2005	COUNTYWIDE	Power outage
02/19/2006	COUNTYWIDE	Power outage
07/20/2006	MATAMORAS	Water Main Break
10/25/2006	MATAMORAS	Water Main Break
08/09/2007	TOWNSHIP OF BLOOMING GROVE	Phone outage
06/10/2008	TOWNSHIP OF WESTFALL	Phone outage
10/28/2008	COUNTYWIDE	Power outage
01/17/2009	COUNTYWIDE	Phone outage

Pike County has record of several other utility interruptions in addition to those above mentioned:

- Pike County was affected by the November 1965 power outage that blacked out the entire northeastern United States.
- Pike County was affected by the nationwide gasoline shortages during the 1970s and had its share of long lines, high prices and facilities without product. Provisions were made in each situation to insure adequate supplies for emergency vehicles.
- The majority of the electrical outages have been weather related, being caused by snow and ice storms to windstorms. Recent long term outages include spring 1997 snowstorm that brought down trees and wires, blacking out large portions of the county for days; an August 1997 series of thunderstorms that left widespread outages and the tornado outbreak of May 1998.
- In August 2003, a large portion of northeast and north central United States as well as a large portion of Canada was hit by an electrical outage. The eastern portion of Pike County that is served by Orange and Rockland Utilities was affected and was without power for several hours.
- Met Ed has experienced numerous outages in its portion of coverage in Pike County. In many cases, it appears that the cause is the utility companies’ inability to meet the demands of an increasing population. Unfortunately, many of these outages have occurred in the winter months.
- August 28 – September 3, 2011 – Hurricane Irene had a large impact on Pennsylvania and its electric distribution companies. The storm brought high winds and heavy rain to the eastern third of Pennsylvania. The wind and rain caused over 750,000 customer outages at the peak of the storm. Total number of Pike County Light & Power customers impacted by the outage was 4,366 customers (Bureau of Technical Utility Services 2012).
- October 2012 – Hurricane Sandy had a large impact on Pennsylvania and its electric distribution companies. The storm brought tropical storm winds and heavy rain to the eastern third of Pennsylvania as well as high winds throughout the center of the state. Approximately 1.79 million customers experienced an outage at some point as a result of the storm. During Hurricane Sandy, Pike County was without power from October 29<sup>th</sup> through November 9<sup>th</sup>. Total number of Pike County Light & Power customers impacted by the outage was 4,487 (Bureau of Technical Utility Services 2013).
- March 22, 2014 – A power outage from Pike County to Middletown, New York affected approximately 16,000 residences and businesses. In Pike County, 4,400 customers were without power. The outage was widespread in the county between Dingmans Ferry, Matamoras, Milford Borough, and Milford and Westfall Townships. The outage was due to equipment failure at a substation. Power was restored by the early afternoon (Pocono Record 2014).
- December 5, 2015 – A substation in Middletown, New York failed and knocked out power in Orange and Sullivan Counties in New York State as well as Pike County, Pennsylvania. Approximately 52,000 customers were without power in these counties. Power was restored by the early evening (abc7NY 2015).



- August 15, 2016 – Thousands of customers were without power for a few hours in Pike County as a result of equipment problems at a substation. At the peak of the outage, approximately 9,000 customers were impacted. Power was restored by the early evening (Over 2016).

### Future Occurrence

Minor power failure events (i.e. short outage) events may occur several times a year for any given area in the County, while major (i.e. widespread, long outage) events take place once every few years. Power failures are often occurrences during severe weather and therefore, should be expected during those events. For the 2017 HMP update, the most up-to-date data was collected to calculate the probability of future occurrence of utility interruption events for Pike County. Information from the 2012 Pike County HMP, the Pennsylvania Bureau of Technical Utility Services, input from Pike County, and local newspapers were used to identify the number of utility interruption 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 a utility interruption event occurring in any given year in Pike County.

Table 4.3.19-2. Probability of Future Utility Interruption 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
Utility Interruption	1,402	21.57	0.05	1.0	100%

Sources: Pike County HMP 2012; Pike County 2016; Pennsylvania Bureau of Technical Utility Services 2012 and 2013

Based on available historical data, the future occurrence of utility interruption events can be considered *highly likely* as defined by the Risk Factor Methodology probability criteria (refer to Section 4.4) with minor events happening more frequently than major or long term interruptions in the future.

### Vulnerability Assessment

Utility interruptions most severely affect individuals with access and functional needs (e.g., children, the elderly, and individuals with special medical needs). Special medical equipment will not function without power. Likewise, a loss of air conditioning during periods of extreme heat or the loss of heating during extreme cold can be especially detrimental to those with medical needs, children, and the elderly. A lack of clean, potable water has health implications for all residents.

All facility infrastructure considered critical are vulnerable to utility interruptions, especially the loss of power. The establishment of reliable backup power at these facilities is extremely important to continue to provide for the health, safety, and well-being of Pike County’s population. As stated above, areas of the County were without power for more than 10 days as a result of Hurricane Sandy. Any critical facilities within these areas without emergency back-up power would have been unable to provide assistance to the community for an extended period of time. The impact Hurricane Sandy had on the County illustrates the importance of critical facilities installing emergency generators to ensure adequate emergency response in all situations.

No data regarding economic impacts from utility interruptions in Pike County is available. However, utility interruptions can cause economic impacts stemming from lost income, spoiled food and other goods, costs to the owners or operators of the utility facilities, and costs to government and community service groups.