Table 4.3.25-4 State Critical Facilities vulnerable to urban fires and explosions by Critical Facility Type	
STATE CRITICAL FACILITY TYPE	**NUMBER OF IMPACTED FACILITIES**
Transportation	34
Water	21
TOTAL VULNERABLE CRITICAL FACILITIES	***1,879***

4.3.25.8. Jurisdictional Loss Estimation

In the nine jurisdictions most vulnerable to urban fire and explosion events there are over two million potentially impacted buildings. These buildings have a combined replacement cost of $620 billion (Table 4.3.25-5). As the densest jurisdiction in the Commonwealth with the highest proportion of old housing stock, Philadelphia is the jurisdiction that is the most threatened by urban fire events. Philadelphia has over $200 billion of exposure and 778,715 impacted buildings.

Table 4.3.25-5 Estimated jurisdictional losses due to urban fires and explosions.		
COUNTY	**NUMBER OF IMPACTED BUILDINGS**	**DOLLAR VALUE OF EXPOSURE, BUILDING AND CONTENTS**
Allegheny	706,960	$180,606,811,000.00
Cambria	102,381	$21,746,588,000.00
Delaware	281,319	$86,856,472,000.00
Lackawanna	147,658	$33,533,470,000.00
Luzerne	217,160	$47,952,052,000.00
Northumberland	42,505	$8,092,723,000.00
Philadelphia	73,299	$15,599,858,000.00
Schuylkill	778,715	$201,276,171,000.00
TOTAL	***2,464,194***	***$620,706,349,000.00***

4.3.25.9. State Facility Loss Estimation

State facility losses will range in magnitude from small-scale damages resulting from smoke or water to complete destruction or collapse by fire or explosion. If the identified state facilities were to be destroyed in an urban fire or explosion incident, the replacement value of all facilities would be approximately $14,260,359,516.

4.3.26. Utility Interruption

4.3.26.1. Location and Extent

Utility interruption includes any impairment of the functioning of telecommunication, gas, electric, water, or waste networks. These interruptions or outages occur because of geomagnetic storms, fuel or resources shortage, electromagnetic pulses, information technology failures, transmission facility or linear utility accident, and major energy, power, or utility failure. The focus of utility interruptions as a hazard lies in fuel, energy, or utility failure; this hazard is often secondary to other natural hazard event, particularly transportation accidents, lightning strikes, extreme heat or cold events, and coastal and winter storms.

Utility interruptions occur throughout the Commonwealth but usually are small-scale, localized incidents. Utility interruptions are possible anywhere there is utility service. Figure 4.3.26-1 and Figure 4.3.26-2 illustrate the geographic extent and mileage of gas pipelines and liquid pipelines per county.

Figure 4.3.26-1 Liquid pipeline mileage per county (PHMSA, 2013).

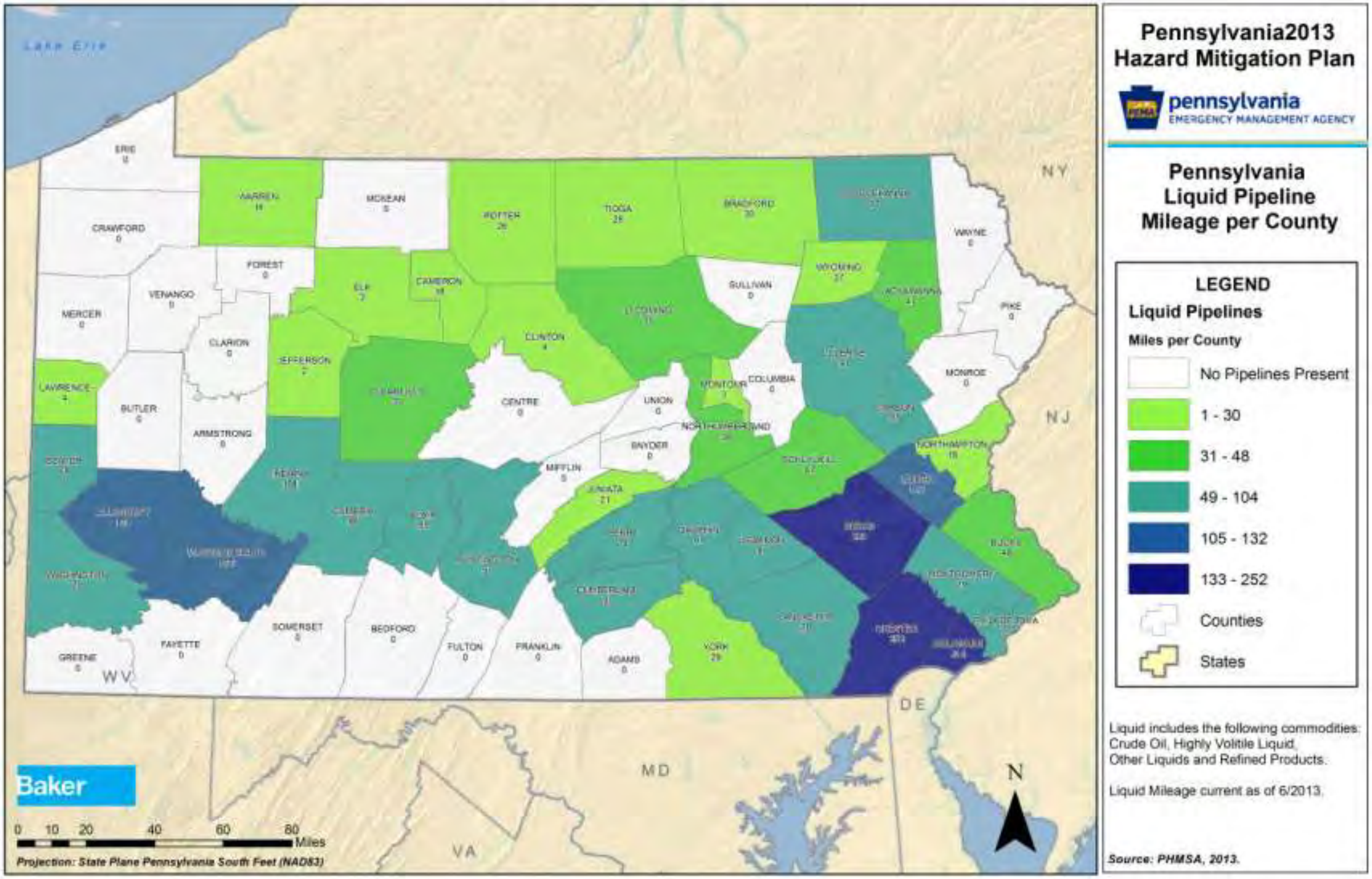
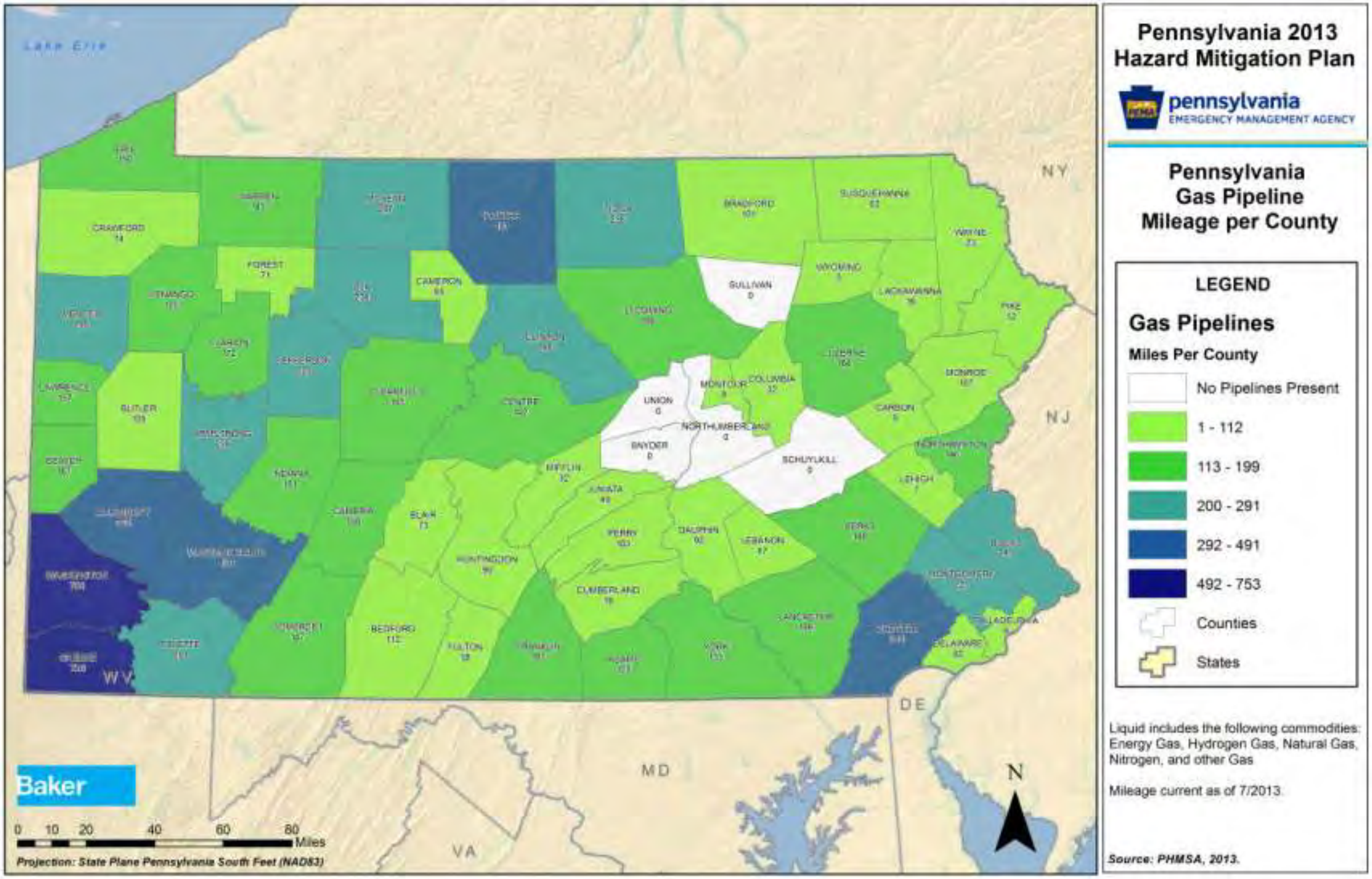


Figure 4.3.26-2 Gas pipeline mileage per county (PHMSA, 2013).



This hazard has the possibility to affect a significant number of Pennsylvanians. According to the 2011 estimates of the American Community Survey, there are 4.9 million occupied housing units in the Commonwealth; of these units, 51% use utility gas, 19.7% use fuel oil or kerosene, and 20.7% use electric power to heat their homes (US Census, 2008). This means that should a utility interruption occur statewide, nearly 4.6 million households could be without heat or cooling. Beyond home heating, PUC estimates that there are 8.7 million electric, gas, water, and waste customers under their purview in Pennsylvania; there are also 6.8 million telephone wire lines active. Table 4.3.26-1 illustrates these customers by utility.

Table 4.3.26-1 Snapshot of PUC users in Pennsylvania (PUC, 2012).*

UTILITY	NUMBER OF CUSTOMERS	NUMBER OF PROVIDERS
Electric	5,748,281	11
Natural Gas	2,888,230	23
Water	128,439	57
Waste	44,850	35

**Represents only customers under the jurisdiction of the PUC, not all utility customers in Pennsylvania.*

Beyond PUC, there are many other utility providers in Pennsylvania. The table below summarizes the populations of water utility users in each county as well as a breakdown of populations by primary source of water.

Table 4.3.26-2 Community Public Water Supply Populations by County and Primary Source (DEP, 2013)

COUNTY	GROUND	GROUND OR PURCHASED GROUND UNDER SWI	PURCHASED GROUND	PURCHASED SURFACE	SURFACE	GRAND TOTAL
Adams	23,783	550	0	0	16,183	40,516
Allegheny	21,076	0	3,405	193,467	1,217,833	1,435,781
Armstrong	15,917	300	400	7,175	18,949	42,741
Beaver	55,429	90	6,708	15,699	60,608	138,534
Bedford	8,553	1,102	115	0	7,810	17,580
Berks	108,856	10,558	413	58,316	130,118	308,261
Blair	15,223	90	0	15,864	69,340	100,517
Bradford	27,073	600	2,099	0	0	29,772
Bucks	90,715	2,489	1,704	300,241	153,978	549,127
Butler	18,900	0	2,500	46,423	44,644	112,467
Cambria	21,417	108	2,871	17,406	96,632	138,434
Cameron	0	0	0	0	3,558	3,558
Carbon	32,229	0	0	968	11,274	44,471
Centre	75,140	1,495	0	0	74,175	150,810
Chester	53,471	0	0	31,055	139,938	224,464

Table 4.3.26-2 Community Public Water Supply Populations by County and Primary Source (DEP, 2013)

COUNTY	GROUND	GROUND OR PURCHASED GROUND UNDER SWI	PURCHASED GROUND	PURCHASED SURFACE	SURFACE	GRAND TOTAL
Clarion	5,987	0	1,698	1,250	20,655	29,590
Clearfield	10,255	55	0	4,810	40,840	55,960
Clinton	5,932	539	0	10,040	32,456	48,967
Columbia	21,263	2,069	0	0	21,500	44,832
Crawford	34,361	0	1,100	225	2,363	38,049
Cumberland	27,689	2,070	35	0	168,056	197,850
Dauphin	19,042	0	993	0	232,794	252,829
Delaware	401	0	0	7,054	138,100	145,555
Elk	692	0	0	1,763	31,589	34,044
Erie	37,553	0	598	25,592	188,569	252,312
Fayette	2,550	0	0	44,616	261,213	308,379
Forest	4,645	0	0	0	0	4,645
Franklin	36,381	794	0	1,500	55,006	93,681
Fulton	399	2,000	0	0	0	2,399
Greene	0	0	0	1,700	49,895	51,595
Huntingdon	6,645	2,000	0	0	20,172	28,817
Indiana	4,113	0	0	1,371	41,001	46,485
Jefferson	1,646	0	0	2,120	23,383	27,149
Juniata	4,321	825	0	0	4,450	9,596
Lackawanna	7,569	0	0	0	150,225	157,794
Lancaster	62,848	43,886	0	17,810	190,838	315,382
Lawrence	3,478	0	0	5,300	60,140	68,918
Lebanon	10,618	9,500	0	6,751	57,000	83,869
Lehigh	51,641	0	1,081	77,514	122,450	252,686
Luzerne	35,356	0	185	2,488	240,459	278,488
Lycoming	17,808	1,585	0	0	60,025	79,418
Mc Kean	8,790	0	0	577	23,725	33,092
Mercer	17,429	0	940	5,979	58,970	83,318
Mifflin	1,072	0	461	0	27,070	28,603
Monroe	60,107	0	0	0	35,245	95,352
Montgomery	43,086	3,920	0	139,224	1,011,259	1,197,489
Montour	445	0	0	1,602	4,897	6,944
Northampton	19,063	0	725	7,754	273,762	301,304
Northumberland	1,909	625	0	0	83,859	86,393

Table 4.3.26-2 Community Public Water Supply Populations by County and Primary Source (DEP, 2013)

COUNTY	GROUND	GROUND OR PURCHASED GROUND UNDER SWI	PURCHASED GROUND	PURCHASED SURFACE	SURFACE	GRAND TOTAL
Perry	8,454	0	100	0	2,812	11,366
Philadelphia	0	0	0	0	1,600,000	1,600,000
Pike	43,420	2,400	0	0	0	45,820
Potter	5,834	1,150	0	0	1,370	8,354
Schuylkill	37,602	0	0	55	85,092	122,749
Snyder	12,155	1,965	0	0	4,950	19,070
Somerset	30,508	0	900	5,422	23,697	60,527
Sullivan	1,588	0	0	0	0	1,588
Susquehanna	3,812	0	0	0	8,399	12,211
Tioga	6,480	45	0	399	12,374	19,298
Union	1,479	0	0	333	3,690	5,502
Venango	33,674	0	6,903	0	2,076	42,653
Warren	21,751	0	0	0	1,040	22,791
Washington	0	0	0	5,030	36,880	41,910
Wayne	27,142	0	90	0	0	27,232
Westmoreland	1,185	0	0	5,815	241,633	248,633
Wyoming	8,172	0	0	0	0	8,172
York	35,918	0	0	37,822	213,669	287,409
(blank)	0	0	0	0	0	0
Grand Total	**1,412,050**	**92,810**	**36,024**	**1,108,530**	**8,014,688**	**10,664,102**

An emerging utility concern is the overall dependence on internet access. Telecommunications companies operate throughout the Commonwealth; each of these is subject to outages of a few minutes to weeks.

4.3.26.2. Range of Magnitude

The most severe utility interruptions will be regional or widespread power and telecommunications outages. With the loss of power, electrical powered equipment and systems will not be operational. Examples may include: lighting; HVAC and ancillary support equipment; communication (i.e. public address systems, telephone, computer servers, and peripherals); ventilation systems; fire and security systems; refrigerators, sterilizers, trash compactors, office equipment; and medical equipment. This can cause food spoilage, loss of heat or air conditioning, basement flooding (sump pump failure), lack of light, loss of water (well pump failure), lack of phone service, or lack of internet service. However, this is most often a short-term nuisance rather than a catastrophic hazard.

The severity of a utility interruption can be compounded with extreme weather events, especially winter weather events. Interruptions can also be more severe for special needs populations that are dependent on electronic medical equipment. Utility interruptions can significantly hamper first responders in their efforts to provide aid in a compound disaster situation, especially with losses of telecommunications and wireless capabilities. Telecommunications interruptions will also hinder first responders' efforts. Additionally, an internet outage could be crippling to the economy of the state; for example, the Department of the Treasury no longer cuts checks except when absolutely necessary. Instead, payroll and invoicing is done electronically.

In a possible worst-case scenario, a winter storm event causes widespread power outages, leaving citizens without heat in the midst of subzero temperatures. The power outage also means that elderly populations or others at risk of health problems due to the lack of heat are unable to call for assistance or leave their homes. Power lines are unable to be repaired because of the magnitude of the storm, and the power outage lasts for several days.

4.3.26.3. Past Occurrence

Utility interruptions are largely minor, routine events, but there has been one Presidential Declaration of Emergency and two Gubernatorial Disaster Declarations in which a utility interruption was a major component of a disaster. A series of bankruptcies in 1972 led to the major steam heat provider in Lower Merion Township to cut off heat to residents with no intention to resume service in the wintertime; the governor declared the event a disaster. December 1974 brought heavy snow that led to widespread power outages in the Southwestern Counties, leading to a Gubernatorial Disaster Declaration. In January 1977, the nation's gas shortage coupled with severe winter weather led to a President's Declaration of Emergency.

In more recent years, PEIRS collects information on utility interruption incidents. As show in Table 4.3.26-3, there have been 3,317 utility outage incidents reported by local jurisdictions.

Table 4.3.26-3 Utility outage events reported to PEIRS, 2001-2009 (PEIRS)

EVENT TYPE	2001	2002	2003	2004	2005	2006	2007	2008	2009*
Boil water	0	0	0	1	1	8	19	10	4
Energy shortages	0	1	3	2	3	1	2	0	3
Phone outages	70	51	53	77	90	79	113	159	84
Power outages	104	135	119	165	214	216	285	325	119
Underground utility	0	4	8	8	4	11	16	9	3
Water main break	35	36	42	42	53	63	178	217	72
Utility Outages - total	**209**	**227**	**225**	**295**	**365**	**378**	**613**	**720**	**285**

**Events totaled through June 2009*

WebEOC, PEMA's emergency incident reporting software from 2010-2012, does not report specifically on utility interruptions. It is assumed that utility interruptions have continued in recent years, especially in conjuction with severe weather, but there is no specific count from PEMA.

The Public Utilities Commission also catalogs past occurrences of gas distribution and transmission incidents and hazardous liquid utility incidents. As shown in Table 4.3.26-4, there have been 150 of these incidents from 1999-2013 resulting in 16 deaths, 38 injuries, and $65,531,173 of property damage (PUC, 2013).

Table 4.3.26-4 Utility interruption events reported to Pennsylvania Public Utilities Commission, 2002-2013 (PUC, 2013).

GAS DISTRIBUTION INCIDENTS				
DATE	LOCATION	INJURIES	FATALITIES	PROPERTY DAMAGE ($)
01/11/2002	Palmer	0	0	$175,420
03/03/2002	Doylestown	0	0	$175,420
03/09/2002	Royersford	0	0	$233,893
09/12/2002	Huntingdon Valley	0	0	$233,893
09/16/2002	Mccalmont	2	0	$0
09/20/2002	Pittsburgh	0	1	$87,710
12/19/2002	Pittsburgh	4	0	$0
01/17/2003	Pittsburgh	1	0	$575,342
02/04/2003	Philadelphia	0	0	$230,136
02/12/2003	Jacobus	3	0	$287,671
03/11/2003	Ford City	0	1	$57,534
05/03/2003	Bridgeville	3	0	$115,068
05/22/2003	Conshohocken	0	0	$93,205
08/23/2003	Macungie	0	0	$155,342
11/01/2003	Beaver Falls	1	0	$11,506
12/17/2003	Trappe	0	2	$0
12/23/2003	Mount Oliver	0	1	$0
01/11/2004	Huntingdon Valley	0	0	$340,731
03/26/2004	Lancaster	1	0	$68,373
04/25/2004	Springdale	1	0	$178,770
05/10/2004	Rices Landing	0	0	$139,699
05/12/2004	Irwin	0	0	$206,494
06/29/2004	Ardmore	0	1	$0
08/21/2004	Pittsburg	1	0	$113,577
08/21/2004	Dubois	0	2	$852,963
08/29/2004	Irwin North Huntingdon	0	0	$94,563
09/17/2004	Mccandless Twp	0	0	$113,577
09/17/2004	Robinson Township	0	0	$272,584
09/18/2004	Mckees Rocks	0	0	$567,885
09/18/2004	Mckeesport	0	0	$128,120
09/21/2004	Pittsburgh	0	0	$592,892
09/21/2004	Penn Hills	0	0	$114,426
09/21/2004	Center	0	0	$128,584
02/07/2005	New Hope	0	0	$560,876
02/08/2005	Bensalem	0	0	$125,955
03/16/2005	Coraopolis	2	0	$185,555
03/23/2005	Bangor	0	0	$117,533

Table 4.3.26-4 Utility interruption events reported to Pennsylvania Public Utilities Commission, 2002-2013 (PUC, 2013).

GAS DISTRIBUTION INCIDENTS				
DATE	**LOCATION**	**INJURIES**	**FATALITIES**	**PROPERTY DAMAGE ($)**
09/25/2005	Philadelphia	1	1	$39,990
10/20/2005	Wall Borough	1	0	$0
06/03/2006	Richmond Twp.	1	0	$169,977
09/02/2006	West Lampeter	0	0	$268,543
12/09/2006	Allentown	0	0	$1,061,678
02/17/2007	Bethlehem	0	0	$415,451
02/19/2007	Pittsburgh	1	0	$0
02/28/2007	Spry	0	0	$212,918
08/22/2007	Ambridge	1	0	$223,493
08/28/2007	South Londonderry Twp	0	0	$94,730
01/05/2008	East Prospect	0	0	$203,250
02/07/2008	Philadelphia	0	0	$925,000
02/17/2008	Ringgold	1	0	$119,060
03/05/2008	Plum Borough	1	1	$702,000
05/21/2008	Hummelstown	0	0	$479,400
09/02/2009	Bedford Twp	0	0	$103,046
12/26/2009	Swedeland	0	0	$268,771
04/26/2010	Newston Square	1	0	$4,550
01/18/2011	Philadelphia	3	1	$378,802
02/09/2011	Allentown	3	5	$1,693,885
04/25/2011	Brookhaven	1	0	$0
10/31/2011	Millersville	0	0	$469,263
02/12/2013	Altoona	0	0	$264,479
GAS TRANSMISSION INCIDENTS				
DATE	**LOCATION**	**INJURIES**	**FATALITIES**	**PROPERTY DAMAGE ($)**
09/10/2003	Chester Springs	1	0	$0
09/28/2004	Aliquippa	0	0	$193,080
10/12/2004	Summit	0	0	$345,269
05/17/2005	Bedford	0	0	$228,691
05/31/2005	Wind Ridge	0	0	$148,235
08/24/2005	Washington	0	0	$129,768
04/09/2006	Delmont	0	0	$427,480
06/03/2006	Unknown	1	0	$59,025
09/18/2006	Addison	0	0	$230,516
12/18/2006	Hyner	0	0	$169,830
07/20/2007	Unknown	0	0	$281,641
12/01/2007	Harrison Valley	0	0	$837,456
02/18/2008	Mountain Top	0	0	$300,000
02/18/2008	Mountain Top	0	0	$510,000
09/30/2008	Delmont	0	0	$350,000
11/05/2008	Unknown	0	0	$1,849,692
01/15/2009	Elizabeth	0	0	$2,542,735
07/12/2009	Chester Springs	0	0	$100,113

Table 4.3.26-4 Utility interruption events reported to Pennsylvania Public Utilities Commission, 2002-2013 (PUC, 2013).

DATE	LOCATION	INJURIES	FATALITIES	PROPERTY DAMAGE ($)
GAS DISTRIBUTION INCIDENTS				
DATE	**LOCATION**	**INJURIES**	**FATALITIES**	**PROPERTY DAMAGE ($)**
08/23/2009	Clearville	0	0	$106,037
11/04/2010	Jefferson Hills	0	0	$120,734
11/03/2011	Aretmas	0	0	$567,824
01/06/2012	Luthersburg	0	0	$121,301
04/13/2012	Marietta	1	0	$251,170
05/05/2013	Cummings Twp	0	0	$109,402
HAZARDOUS LIQUID INCIDENTS				
DATE	**LOCATION**	**INJURIES**	**FATALITIES**	**PROPERTY DAMAGE ($)**
01/01/2002	Greensburg	0	0	$962
02/21/2002	Tinicum	0	0	$2,409,102
07/21/2002	Sinking Spring	0	0	$102,913
09/26/2002	Emmaus	0	0	$445,800
10/28/2002	Montoursville	0	0	$118,116
03/19/2004	Lima	0	0	$459,419
06/25/2004	Nicholson	0	0	$87,397
07/10/2004	Moon	0	0	$132,430
07/22/2004	Emmaus	0	0	$943,541
08/02/2004	Allentown	0	0	$117,609
02/01/2005	Allentown	0	0	$5,668,293
10/17/2005	Emmaus	0	0	$17,538,392
11/23/2005	Sharon Hill	0	0	$277,858
12/27/2006	Sylvania	0	0	$6,368
05/16/2007	Shamokin	1	0	$2,935,165
04/21/2008	Boothwyn	0	0	$182,000
06/12/2008	Manheim	0	0	$92,400
06/26/2008	Coraopolis	0	0	$110,600
11/25/2008	Murrysville	0	0	$1,124,000
05/08/2009	Aston	0	0	$351,320
12/29/2009	Aston	0	0	$2,818,138
03/25/2010	Philadelphia	0	0	$102,089
02/02/2011	Nether Providence	0	0	$3,253
02/08/2011	Sharon Hill	0	0	$261,533
03/20/2011	Shippingport	0	0	$765,186
09/26/2011	Aston	0	0	$370,769
06/17/2012	Emmaus	0	0	$87,000
07/13/2012	Emmaus	0	0	$380,538
01/04/2013	Ainking Spring	0	0	$225,400

4.3.26.4. Future Occurrence

Utility interruptions will continue to occur annually with minimal impact. Widespread utility interruption events usually occur approximately once every five years, usually as a secondary effect of an extreme weather event. These interruptions should be anticipated and first responders should be prepared during severe weather events.

Aging infrastructure also brings risk in the form of potential utility interruptions. Population growth, urbanization and climate change can put strain on existing assets used to deliver utilities. In many utility systems, significant portions of the equipment and facilities date from the growth periods of the 1950's and 1960's that followed World War II. As this equipment ages, it deteriorates from the constant wear and tear of service. As it ages, it reaches a point at which it will either fail on its own or as a result of outside forces (storms, loads it was designed to handle but no longer can, etc.). These failures cause service interruptions and can require expensive emergency repairs. In addition as repairs have taken place along transmission routes, there is often a mix of new and old equipment along the line, as repair and not replacement is generally the choice made to resolve an issue.

The wholesale replacement of a system is not a feasible solution for utility companies. This would require the interruption of services while the replacement occurs, as well as accessing the existing system (which may lay under roads, private property, or other inconvenient places). Utility companies face the challenge of managing the issue of the aging infrastructure. They are tasked with reducing the effects of aging equipment while also controlling the deterioration of the existing system as much as possible. This balance will be tenuous as transmission equipment continues to age and break down. These breakdowns will likely lead to more frequent utility disruptions as time goes by.

4.3.26.5. Environmental Impacts

The most significant impact associated with utility interruptions is when the interruption involves a release of hazardous materials. This hazardous material may be released in a pipeline accident or when a material is in transit. For a complete discussion on the impacts of a hazardous materials release, please see Section 4.3.19. Utility pipelines carrying flammable materials also have the possibility of exploding or starting a fire.

There are a number of secondary impacts associated with utility interruptions. First, interruptions could affect the ability of the government to function, especially if backup power generation/supply is inadequate or unavailable. Utility interruptions also can reduce the efficient and effective communication that is essential to first responders. Heating loss and severe cold can also impact the health and safety of at-risk populations like young children, the elderly and disabled individuals.

4.3.26.6. Jurisdictional Vulnerability Assessment

As stated in Section 4.2.2, jurisdictional and state critical facility vulnerability assessments were completed by spatially overlaying hazards with census tracts and state critical facility layers in GIS. When spatial analysis determined that the hazard would impact a census tracts within a county or the location of state critical facilities these locations where deemed vulnerable to the hazard. Loss estimates were prepared based on the value of the facilities impacted by census tract and by state critical facility. Each hazard uses a methodology that is specific to the type of risk it may cause; Table 4.2.2-2 includes a complete methodology description for vulnerability assessments and loss estimates for each hazard.

All jurisdictions are vulnerable on some level to utility interruptions, but because this hazard often occurs in conjunction with other hazards, jurisdictions that have been identified as more vulnerable to winter storms, temperature extremes, tornado, hail events, and lightning strikes may be more vulnerable to a utility interruption.

Table 4.3.26-4 lists which counties did and did not profile utility interruptions, along with any ranking. As stated in Section 4.1, the decision by a county to profile a hazard is one indicator of the presence of risk from that hazard. This indicator should be viewed complementary to other analysis in this section. Together this analysis from reputable sources addresses different aspects of risk for a full risk profile.

Of the 28 counties which currently have calculated risk factor values for utility interruption, the average value is 2.3; this average does not include Lebanon, Montour, Perry, and Philadelphia, who use an alternate Risk Factor/Ranking system. The State Risk Factor for utility interruption is 22.8, while the Pennsylvania THIRA scored utility interruptions as a 7 out of 10. For more details on the State Risk Factor and THIRA rankings, please see Section 4.1.

Table 4.3.26-5 Counties profiling utility interruption hazards with hazard ranking and risk factor (if available).

COUNTY	PROFILED HAZARD	DID NOT PROFILE HAZARD	RANKING (IF AVAILABLE)	RISK FACTOR (IF AVAILABLE)
Adams		X		
Allegheny		X		
Armstrong		X		
Beaver	X		Low	1.7
Bedford	X		High	3.0
Berks		X		
Blair		X		
Bradford	X		Not Ranked	No RF
Bucks	X		Low	1.9
Butler	X		Medium	2.0
Cambria	X		High	3.3
Cameron	X		High	3.2
Carbon	X		Medium	2.4
Centre	X		Medium	2.1
Chester		X		
Clarion		X		
Clearfield		X		
Clinton		X		
Columbia	X		Medium	2.0
Crawford		X		
Cumberland	X		Medium	2.0

Table 4.3.26-5 Counties profiling utility interruption hazards with hazard ranking and risk factor (if available).

COUNTY	PROFILED HAZARD	DID NOT PROFILE HAZARD	RANKING (IF AVAILABLE)	RISK FACTOR (IF AVAILABLE)
Dauphin		X		
Delaware	X		Medium	2.0
Elk		X		
Erie	X		Medium	2.2
Fayette	X		High	2.5
Forest		X		
Franklin		X		
Fulton		X		
Greene		X		
Huntingdon	X		Not Ranked	No RF
Indiana	X		Medium	2.1
Jefferson	X		High	3.1
Juniata	X		Medium	2.2
Lackawanna		X		
Lancaster		X		
Lawrence		X		
Lebanon*	X		Not Ranked	9.5
Lehigh	X		High	2.5
Luzerne		X		
Lycoming	X		High	2.7
McKean	X		Medium	2.3
Mercer	X		High	2.5
Mifflin	X		Not Ranked	No RF
Monroe	X		Medium	2.4
Montgomery	X		High	2.6
Montour*	X		Not Ranked	9.5
Northampton	X		High	2.5
Northumberland	X		Medium	2.1
Perry*	X		Not Ranked	9.5
Philadelphia**		X		
Pike	X		Medium	2.3
Potter		X		
Schuylkill		X		

Table 4.3.26-5 Counties profiling utility interruption hazards with hazard ranking and risk factor (if available).				
COUNTY	**PROFILED HAZARD**	**DID NOT PROFILE HAZARD**	**RANKING (IF AVAILABLE)**	**RISK FACTOR (IF AVAILABLE)**
Snyder	X		Medium	2.4
Somerset		X		
Sullivan		X		
Susquehanna	X		Medium	2.1
Tioga	X		Low	1.9
Union		X		
Venango		X		
Warren	X		Medium	2.0
Washington		X		
Wayne	X		Not Ranked	No RF
Westmoreland	X		Not Ranked	No RF
Wyoming		X		
York	X		Not Ranked	No RF

* Lebanon, Montour, and Perry use an alternate weighted ranking where Risk Factor = Frequency x [(0.25 x Critical facilities) + (0.40 x Social) + (0.25 x Economic) + (0.10 x Environmental)]. While this risk factor was used to comparatively rank hazards, the number does not correspond to a high-medium-low rating.

**Philadelphia uses an A, B, C rating system where A is high, B is medium, and C is low.

4.3.26.7. State Facility Vulnerability Assessment

All state facilities are somewhat vulnerable to utility interruptions. Some key indicators of increased vulnerability to utility interruption include the presence of ground- or basement-level utilities, reliance on electronic banking (like the Department of the Treasury), or facilities located in isolated or in wooded areas where a downed tree might cause a utility interruption. According to Carnegie Mellon University's CyLab, the case of cyber-security threats, locations with publicly accessible or shared computer workstations are more vulnerable to malicious internet outages.

Facilities that have independent generators are less vulnerable to the effects of this hazard. Additionally, efforts by DGS to complete COOP and COG plans for state agencies will help to reduce overall state facility/state agency vulnerability to utility interruptions, as these plans take into account situations in which an agency might need to move to an alternate location due to a utility outage. Other statewide efforts that will help prepare state entities for utility interruptions, including cyber-attacks, include trainings on the Homeland Security Exercise Evaluation Program, trainings for the Office of Administration/IT staff, and trainings with PJM, a regional transmission organization that coordinates the movement of electricity in 13 states and the District of Columbia.

Also, the 55 energy facilities, 37 water facilities, and 59 chemical manufacturing facilities (which includes fuel producers) may experience greater revenue losses as the Commonwealth's utility providers. There is added vulnerability for state facilities located in jurisdictions that are prone to severe weather events.

4.3.26.8. Jurisdictional Loss Estimation

In the majority of utility interruption events, jurisdictional losses will be minimal. However, long-term and widespread outages can cause significant economic losses stemming from lost income, costs to government and social services agencies, costs to the utility provider, and the cost of spoiled commodities. For example, the Anderson Economic Group estimated that the August 14, 2003 blackout that caused more than 50 million people to lose power for 31 hours had a total economic cost of between $4.5 and $8.2 billion. While this was a regional event that impacted the most of the Northeast and parts of Canada, it indicates how significant utility interruptions can be. Additionally, a significant reduction in the supply of any energy resource would impose serious personal and economic hardship on individuals, businesses, and industry. Escalating energy cost compounded with prolonged winter weather conditions could place adequate home heating fuel beyond the reach of elderly and low-income individuals. Also, in more prolonged utility interruption events, there may be illnesses and deaths related to heat or cold exposure.

4.3.26.9. State Facility Loss Estimation

While unlikely that a utility interruption would cause damage to a critical facility beyond a short-term loss in power, HVAC systems, and/or productivity, the total replacement cost of all state critical facilities is $47,153,872,495.