

## Appendix L - Consequence Analysis Matrix

For the consequence analysis, local, state, and federal agencies and organizations throughout the Commonwealth were asked to identify natural and human-made hazards that would have the largest consequences on their agency or organization and to provide comments regarding the impacts of certain hazards identified as having large consequences. A total of 19 agencies and organizations participated. The summary of the consequence analysis is found in Section 4.5 of the plan. The tables in Appendix L provide a more detailed summary of the consequence analysis by hazard.

There are 33 natural and human-made hazards profiled in Section 4.3 of the SHMP. The following sub-sections of each profile address impacts, vulnerability, and losses of the hazard in the Commonwealth:

*4.3.33 for each hazard.5. Environmental Impacts*

*4.3.33 for each hazard.6. State Facility Vulnerability Assessment and Loss Estimation*

*4.3.33 for each hazard.7. Jurisdictional Vulnerability Assessment and Loss Estimation*

The profiled impacts, vulnerability, and losses are types of consequences that address and relate to the consequence analysis outlined in EMAP. Profiled hazards are ranked using RF analysis; this analysis is used across the Commonwealth in HMPs so that ranking is comparable across county plans and in the SHMP. The following table shows the rank of hazards; there are several hazards that received the same RF in the analysis; the higher the RF value, the greater the hazard risk.

HAZARD NATURAL(N) OR MAN-MADE(M)	RISK FACTOR (RF)
1. Flood, Flash Flood, Ice Jam (N)	3.4
2. Winter Storm (N)	3.1
3. Utility Interruption (M)	2.8
4. Hurricane, Tropical Storm, Nor'easter (N)	2.6
5. Cyber-terrorism (M), Environmental Hazard – Hazardous Materials Release (M)	2.5
6. Dam Failure (M), Nuclear Incident (M), Transportation Accident (M), Wildfire (N)	2.4
7. Extreme Temperature (N)	2.3
8. Coastal Erosion (N), Environmental Hazard - Coal Mining (M), Environmental Hazard - Gas and Liquid Pipelines (M), Environmental Hazard - Unconventional Oil and Gas Wells (M), Environmental Hazard - Conventional Oil and Gas Wells (M), Landslide (N), Lightning Strike (N), Opioid Addiction Response (M), Tornado, Wind Storm (N)	2.2
9. Invasive Species (N), Radon Exposure (N)	2.1
10. Civil Disturbance (M), Drought (N), Pandemic (N), Terrorism (M)	2
11. Building and Structure Collapse (M), Earthquake (N), Hailstorm (N), Urban Fire and Explosion (M)	1.9
12. Levee Failure (M), Mass Food/Animal Feed Contamination (M), Subsidence, Sinkhole (N)	1.7

As outlined in detail in Section 4.1.6, RF values were obtained by assigning varying degrees of risk to five categories for each of the 33 hazards profiled. Those five categories are probability, impact, spatial extent, warning time and duration. Each degree of risk was assigned a value ranging from 1 to 4, which was multiplied by a weighting factor. The weighting factor derived from a review of best practice plans and agreed upon by the SPT is shown in the blue box

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below. To calculate the RF value for a given hazard, the sum of all five categories equals the final RF value, as demonstrated in the example equation:

$$\text{Risk Factor Value} = [(Probability \times .30) + (Impact \times .30) + (Spatial \text{ Extent} \times .20) + (Warning \text{ Time} \times .10) + (Duration \times .10)]$$

The following summarizes each of the five categories used for calculating a RF for each hazard.

**PROBABILITY:** What is the likelihood of a hazard event occurring in a given year?

- 4 = (highly likely) greater than 90% annual probability
- 3 = (likely) between 50% and 90% annual probability
- 2 = (possible) between 1% and 49.9% annual probability
- 1 = (unlikely) less than 1% annual probability

**IMPACT:** In terms of injuries, damage, death, and economic impact, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?

- 4 = (catastrophic) high number of deaths/injures possible. More than 50% property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.
- 3 = (critical) multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one week.
- 2 = (limited) minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.
- 1 = (minor) very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.

**SPATIAL EXTENT:** How large of an area could be impacted by a hazard event? Are impacts localized or regional?

- 4 = (large) between 50 and 100% of area affected
- 3 = (moderate) between 10 and 50% of area affected
- 2 = (small) between 1 and 10% of area affected
- 1 = (negligible) less than 1% of area affected

**WARNING TIME:** Is there usually some lead time associated with the hazard event? Have warning measures been implemented?

- 4 = less than 6 hours
- 3 = 6 to 12 hours
- 2 = 12 to 24 hours
- 1 = more than 24 hours

**DURATION:** How long does the hazard event usually last?

- 4 = more than 1 week
- 3 = less than 1 week
- 2 = less than 24 hours
- 1 = less than 6 hours

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## Ranking Result by Hazard for Pennsylvania

HAZARD NATURAL (N) OR MAN-MADE (M)	RISK ASSESSMENT CATEGORY					Risk Factor (RF)
	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	
Flood, Flash Flood, Ice Jam (N)	4	3	3	4	3	3.4
Winter Storm (N)	4	2	4	2	3	3.1
Utility Interruption (M)	4	2	2	4	2	2.8
Hurricane, Tropical Storm, Nor'easter (N)	2	3	3	1	4	2.6
Cyber-terrorism (M)	2	3	2	4	2	2.5
Environmental Hazard - Hazardous Materials Release (M)	4	2	1	3	2	2.5
Dam Failure (M)	1	3	2	4	4	2.4
Nuclear Incident (M)	1	3	2	4	4	2.4
Transportation Accident (M)	4	1	2	4	1	2.4
Wildfire (N)	4	1	2	3	2	2.4
Extreme Temperature (N)	4	1	2	1	3	2.3
Coastal Erosion (N)	4	1	1	1	4	2.2
Environmental Hazard - Coal Mining (M)	2	2	2	3	3	2.2
Environmental Hazard - Gas and Liquid Pipelines (M)	2	2	2	3	3	2.2
Environmental Hazard - Unconventional Oil and Gas Wells (M)	2	2	2	3	3	2.2
Environmental Hazard -Conventional Oil and Gas Wells (M)	2	2	2	3	3	2.2
Landslide (N)	4	1	1	4	1	2.2
Lightning Strike (N)	4	1	1	4	1	2.2
Opioid Addiction Response (M)	3	2	1	4	1	2.2
Tornado, Wind Storm (N)	3	2	1	4	1	2.2
Invasive Species (N)	2	2	2	1	4	2.1
Radon Exposure (N)	3	1	2	1	4	2.1
Civil Disturbance (M)	3	1	1	4	2	2
Drought (N)	2	1	3	1	4	2
Pandemic (N)	2	1	3	1	4	2
Terrorism (M)	1	3	1	4	2	2
Building and Structure Collapse (M)	3	1	1	1	4	1.9
Earthquake (N)	2	2	1	4	1	1.9
Hailstorm (N)	3	1	1	4	1	1.9
Urban Fire and Explosion (M)	2	2	1	4	1	1.9
Levee Failure (M)	1	2	1	3	3	1.7
Mass Food/Animal Feed Contamination (M)	1	2	2	2	2	1.7
Subsidence, Sinkhole (N)	3	1	1	2	1	1.7

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## 1. Coastal Erosion

HAZARD SUMMARY		FREQUENCY OF HAZARD
There are two areas in PA subject to potential coastal erosion hazards; the Lake Erie and Delaware River shorelines.		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Low impact to majority of public since coastal erosion only exists in Erie, Bucks, Delaware and Philadelphia Counties</li> <li>• There may be isolated incidents of distressed citizens</li> <li>• Public may not be able to visit beach during erosion repair</li> <li>• Low impact to responders</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Minimal impact on operations</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Moderate impact on property near or on the coastlines</li> <li>• Facilities and infrastructure near the coastlines could be impacted</li> <li>• If erosion occurs near development or infrastructure, impacts may include the release of chemically hazardous (e.g. heating fuels) or biohazardous materials (e.g. sewage), or contamination of beaches with construction materials</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low impact in Erie and minimal impact in SE PA since Delaware shoreline is typically hardened near essential services and businesses</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact since area impacted is small and event is episodic in nature</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Minimal impact since area impacted is small</li> <li>• Impact includes property damage, including public amenities</li> <li>• May need to replenish beaches (on Presque Isles and estimated 38,000 cubic yards of sand is replenished annually)</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Minimal impact in both Erie and SE PA since erosion is a geological process through which shoreline naturally evolve</li> <li>• Some hardening measures may not be environmentally sound and impact role of coast as a natural barrier</li> </ul>	

## 2. Drought

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>The current climate in PA, when compared to many other states across the U.S., is generally water-rich. However, like all other states, PA is subject to periodic droughts that impact the Commonwealth's ability to meet its water needs. Droughts are regional climatic events which can impact large areas ranging from several counties in Pennsylvania to the entire mid-Atlantic region.</p>		<p>_____ Annual Event            _____ Every 5 years or less  <u>  X  </u> Every 10 years or less            _____ Every 30 years or less            _____ Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Drought conditions may require water use restrictions, which could cause distress to agricultural concerns</li> <li>• Increase in heat-related illnesses</li> <li>• Infants, children, elderly, access and functional needs populations, and pets may require more attention</li> <li>• Increased risk of dehydration</li> <li>• Prolonged exposure to severe conditions</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact</li> <li>• With respect to PEMA, the Agency has alternate water options available</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Low impact to property, facilities, and infrastructure</li> <li>• Heat-sensitive components may be compromised</li> <li>• Affects land and water supply</li> <li>• Reservoir levels could be threatened</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Moderate to severe impact on agriculture and agribusiness</li> <li>• Low impact to the delivery of services</li> <li>• Non-essential services (e.g. public property watering) may be suspended</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Could impact views of people involved in agriculture</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• High impact to agri-business, public utilities, and other industries reliant upon water for production or services</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Low impact</li> <li>• A reduction in ground water supplies creates a situation conducive to sinkholes</li> <li>• Non-domesticated animals will be directly impacted</li> <li>• Flora may die off; loss of trees; loss of bio-diversity</li> <li>• Lower water levels in reservoirs, lakes, and ponds</li> <li>• Reduced stream flow</li> <li>• Reduced soil quality and erosion issues</li> <li>• Increase dust or pollutants</li> </ul>	

## 3. Earthquake

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Earthquake events in PA typically do not impact areas greater than 100 km from the epicenter. PA's strongest earthquakes with in-state epicenters have persistently occurred in an area near Lancaster County and Spring Township in Berks County.</p>		<p>_____ Annual Event                      _____ Every 5 years or less  <u>  X  </u> Every 10 years or less                      _____ Every 30 years or less                      _____ Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Minimal impact to public and responders based on likely severity of earthquakes in PA</li> <li>• Risk to health and safety from falling debris</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Minimal impact to operations based on likely severity of earthquakes in PA</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Minimal impact expected; though if there were a higher magnitude earthquake in PA it would likely impact property and infrastructure more than other categories</li> <li>• Potential property damage and injuries due to the failure and collapse of structures from the ground shaking</li> <li>• Impacts to infrastructure could include train derailments, pipeline failures, and utility interruptions</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Minimal impact expected</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact expected</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Minimal impact expected</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Minimal impact expected</li> <li>• Some secondary hazards caused by earthquakes (fire, hazardous material release, landslides, flash flooding, avalanches, dam failure) could disrupt natural ecosystems, water quality, and vegetation</li> </ul>	

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## 4. Extreme Temperature

HAZARD SUMMARY		FREQUENCY OF HAZARD	
PA can experience many different temperature extremes. High temperatures of 90°F or above occur about ten days per year at any one location and freezing temperatures occur on an average of 100 or more days per year.		<input checked="" type="checkbox"/>	Annual Event
		<input type="checkbox"/>	Every 5 years or less
		<input type="checkbox"/>	Every 10 years or less
		<input type="checkbox"/>	Every 30 years or less
		<input type="checkbox"/>	Greater than 30 years
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Extreme heat leads to an increase in heat-related illnesses</li> <li>• Extreme cold, without heat and shelter, can cause hypothermia, frost bite, and death</li> <li>• Infants and children, elderly and access and functional needs populations, and pets may require more attention</li> <li>• Increased risk of dehydration</li> <li>• Prolonged exposure to severe conditions</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Negligible impact to municipal, county, state, and federal government and authorities</li> <li>• With respect to PEMA, activation of the Agency's COOP Plan would occur if the heating or cooling system failed in the building</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Negligible impact to property, facilities and infrastructure</li> <li>• Extreme heat can overwhelm the power grid leading to utility interruptions</li> <li>• Extreme cold can cause utility pipes to burst and interrupt distribution of utilities</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Minimal impact to the delivery of services, though cost of delivering services may increase for heating or cooling</li> <li>• Non-essential services may be suspended</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact; though link to climate change could impact public perception</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• High impact to tourism, agri-business, public utilities, and other industries tasked with caring or comfort</li> <li>• Can result in elevated utility costs to consumers</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Low impact</li> <li>• Non-domesticated animals will be directly impacted</li> <li>• Flora may die off</li> <li>• May be associated with drought conditions and can damage or destroy vegetation, dry up rivers and streams, and reduce water quality</li> </ul>		

## 5. Flood, Flash Flood, Ice Jam

HAZARD SUMMARY		FREQUENCY OF HAZARD	
<p>Flooding in PA is usually associated with abnormally high and intense rainfall amounts. Flood sources in PA include rivers, creeks, streams, and lakes. However, portions of southeastern PA along the Delaware River are subject to tidal or storm surge flooding.</p>		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years	
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High risk to loss of life and injury, displacement, increased distress</li> <li>• May affect drinking water; can increase risks to public health</li> <li>• Risk to life and safety while responding to populations affected by flooding</li> <li>• May cause crop or animal loss/contamination creating food supply issues</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Operations may be interrupted if affected by flooding               <ul style="list-style-type: none"> <li>◦ Depending on the severity of the flood event day-to-day operations could be interrupted due to an activation of the State Emergency Operations Center. Staff may also be deployed to deliver resources and conduct damage assessments.</li> </ul> </li> <li>• Staffing difficulties are possible (personnel unable to drive to work)</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• High impact</li> <li>• Transportation infrastructure closures and isolated populations</li> <li>• Roadway erosion</li> <li>• Varying levels of damage to structures in low-lying areas</li> <li>• Utilities interruption likely; extent and duration of outage depends on flood severity</li> <li>• Historic resources likely affected as significant portion of the state's oldest communities are located in flood-prone areas</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• High risk to disruption of basic life support systems, typically for short duration</li> <li>• Public access to state facilities and parkland may be shut down</li> <li>• Agencies/businesses serving public could have closures or reduced operating hours</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• High impact on confidence of government during flooding, especially if flooding and impact on services is prolonged</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Impact dependent on severity of flooding</li> <li>• High impact on insurance industry</li> <li>• High impact storm type for PA; severe flooding in June 2006 totaled more than \$379,600,000 in FEMA disaster assistance</li> <li>• If state facilities/parkland closed for extended period, there will be economic loss to state departments and communities</li> <li>• Loss of crops impacts agricultural community</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Increased risk of exposure to hazardous materials</li> <li>• Stream contamination</li> <li>• Displacement of wildlife may increase public health and safety issues</li> <li>• Increased arboviral vectors</li> <li>• Erosion and associated contamination</li> <li>• Sinkholes</li> </ul>		



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## 6. Hailstorm

HAZARD SUMMARY		FREQUENCY OF HAZARD
Hailstorm events can occur in all areas of PA. Hail precipitation is often produced at the front of a severe thunderstorm system or in conjunction with a tornado event.		<input type="checkbox"/> Annual Event <input checked="" type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Minimal impact to public and responders</li> <li>Could damage some property and vehicles</li> <li>People are at risk for if they don't seek immediate shelter</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Minimal impact to operations</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Minimal impact expected; could damage some property and vehicles</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Minimal impact to most services; moderate to high impact on agriculture depending on crop cycle at time of storm</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Minimal impact expected</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Moderate to high impact on agriculture</li> <li>Moderate impact to insurance and banking (home and crop)</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Minimal impact to non-agriculture environment</li> <li>Damage to trees, shrubbery, and other vegetation</li> <li>Crops such as corn and soybeans can be damaged to the point of total loss, particularly if an event occurs later in the growing season</li> </ul>	

## 7. Hurricane, Tropical Storm, Nor'easter

HAZARD SUMMARY		FREQUENCY OF HAZARD
PA does not have any open-ocean coastline. However, the impacts of coastal storm systems such as hurricanes, tropical storms, and nor'easters can extend well inland.		<input type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input checked="" type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Injuries or casualties caused by preventable circumstances</li> <li>Food and water issues if residents are unprepared to shelter in place for duration of event</li> <li>Injuries/fatalities possible when responding to calls for service during the event</li> <li>Increased fatigue and stress from hazardous conditions</li> <li>Road obstructions likely and could affect access of first responders</li> <li>Status of responder's family will affect the responder's ability to perform his/her duties</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Local governments may have to shut down non-essential functions for duration of event               <ul style="list-style-type: none"> <li>Depending on the severity of the event day-to-day operations could be interrupted due to an activation of the State Emergency Operations Center. Staff may also be deployed to deliver resources and conduct damage assessments.</li> </ul> </li> <li>State EOC is not in floodplain, but is on hill and make be impacted by wind</li> <li>Generators are available to sustain State EOC</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Moderate to high damage expected in floodplains if tropical storm or remnants of tropical storm stall over PA</li> <li>Damage to roadways and bridges expected in floodplains</li> <li>Utilities interruption likely, damage to utility poles; extent and duration of outage depends on flood severity</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Moderate to high disruption in the service delivery in impacted area</li> <li>Agencies/businesses serving public may need to operate at a satellite location</li> <li>Public access to state facilities and parkland may be shut down</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>High impact on confidence of government during tropical storms and related flooding, especially if impact on services is prolonged</li> <li>Link to climate change could impact public perception</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>High impact storm type for PA, for example Lee/Irene remnant storm cost more than \$200 million in damage</li> <li>If state facilities/parkland closed for extended period, there will be economic loss to state departments and communities</li> <li>Impact on businesses and citizens unable open or get to work</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Negligible damage to environment</li> <li>Can cause damage to trees and other vegetation</li> </ul>	

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## 8. Invasive Species

HAZARD SUMMARY		FREQUENCY OF HAZARD	
PA plays host to a number of invasive pathogens, insects, plants, invertebrates, fish, and higher mammals.		<input checked="" type="checkbox"/>	Annual Event
		<input type="checkbox"/>	Every 5 years or less
		<input type="checkbox"/>	Every 10 years or less
		<input type="checkbox"/>	Every 30 years or less
		<input type="checkbox"/>	Greater than 30 years
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Minimal impact to public and responders</li> <li>Dead and dying trees and plants can be fuel for wildfire thus increasing need for firefighting</li> <li>Animal invasive pathogens can impact public health</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Minimal impact to operations</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Minimal impact</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Minimal impact to most services</li> <li>Moderate to high impact on agriculture and timber industries</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Minimal impact expected</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Moderate to high impact on agriculture and timber industries, lawncare and landscape supply</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Moderate to high impact on environment</li> <li>Can cause significant changes to ecosystem, biodiversity</li> <li>Loss of vegetation</li> </ul>		

## 9. Landslide

HAZARD SUMMARY		FREQUENCY OF HAZARD	
Rockfalls and other slope failures occur in areas of PA with moderate to steep slopes. Many slope failures are associated with precipitation events – periods of sustained above-average precipitation, specific rainstorms, or snowmelt events. Areas experiencing erosion, decline in vegetation cover and earthquakes are also susceptible to landslides.		<input checked="" type="checkbox"/>	Annual Event
		<input type="checkbox"/>	Every 5 years or less
		<input type="checkbox"/>	Every 10 years or less
		<input type="checkbox"/>	Every 30 years or less
		<input type="checkbox"/>	Greater than 30 years
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Public impact depends on extent of landslide; could impact roadways and property</li> <li>Typically, landslides impact roadways thus requiring emergency and or public works response potentially in hazardous conditions</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Minimal impact to operations</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Public impact depends on extent of landslide; could have minimal to high impact on property, facilities and infrastructure</li> <li>Likely to impact roadways in PA</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Minimal impact to most services; moderate to high impact on roadways</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Minimal impact expected</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Economic impact depends on extent of landslide; typically, minimal impacts for roadway delays, but can include substantial roadway construction costs</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Minimal impact on environment</li> <li>Could be sign of an environment problem or change, for instance additional run-off from hilltop development could cause slide</li> <li>Changes in topography</li> <li>Damage or destruction of vegetation</li> <li>Increased sediment runoff</li> <li>Landslides can potentially create flood effects when they descend into water bodies, diverting or entirely blocking water flows</li> </ul>		

## 10. Lightning Strike

HAZARD SUMMARY		FREQUENCY OF HAZARD
Lightning events occur across the entire Commonwealth. Although different areas experience varying event frequencies, lightning strikes occur primarily during the summer months.		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Minimal impact to public and responders</li> <li>Could initiate urban fire or wildfire thus increasing need for firefighting</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Minimal impact to operations; potential impact if lightning strikes government facility</li> <li>With respect to PEMA, in the event of lightning striking the transfer station that powers PEMA Headquarters (HQ) causing heavy damage to UPS power, staff would initially be sent home and depending on how long it took to restore, the Agency's COOP Plan would be activated</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Minimal impact; could cause temporary utility interruption</li> <li>Could cause property damage through igniting urban fire or wildfire</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Minimal impact to most services</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Minimal impact expected</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Minimal impact since it is a localized hazard likely to impact one property at a time</li> <li>Could result in death/injuries to livestock</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Minimal impact on environment</li> <li>Damage/death to trees</li> <li>Ignition of wildfires</li> </ul>	

## 11. Pandemic and Infectious Disease

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Pandemic and infectious disease events cover a wide geographical area and can affect large populations, potentially including the entire population of the Commonwealth.</p>		<p> <input type="checkbox"/> Annual Event  <input type="checkbox"/> Every 5 years or less  <input type="checkbox"/> Every 10 years or less  <input checked="" type="checkbox"/> Every 30 years or less  <input type="checkbox"/> Greater than 30 years                 </p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Potential for high impact to public and responders</li> <li>• Pandemic diseases cause sudden, pervasive illness in all age groups</li> <li>• Pandemic impacting responders and their families could impact available responders and care givers</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Potential for high impact</li> <li>• Pandemic could impact number of staff reporting to work</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Minimal impact</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Potential for high impact to service delivery and supply chain</li> <li>• May only be able to deliver essential services</li> <li>• Pandemic could impact number of staff reporting to work in various business sectors</li> <li>• Agencies/businesses serving public could have closures or reduced operating hours</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Potential for high impact in public confidence due to difficulty maintaining continuity of operations (COOP) due to personnel losses</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Potential for high impact to economy as people cannot report to work and stay home to avoid illness</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Minimal impact on environment</li> </ul>	

## 12. Radon Exposure

HAZARD SUMMARY		FREQUENCY OF HAZARD	
Each county in PA is classified as having a <i>low</i> , <i>moderate</i> , or <i>high</i> radon hazard potential. Most counties across the Commonwealth, particularly counties in eastern PA, have a <i>high</i> hazard potential.		<input checked="" type="checkbox"/>	Annual Event
		<input type="checkbox"/>	Every 5 years or less
		<input type="checkbox"/>	Every 10 years or less
		<input type="checkbox"/>	Every 30 years or less
		<input type="checkbox"/>	Greater than 30 years
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Wide-spread hazard in PA with minimal impact on public since it is widely mitigated</li> <li>• Minimal impact on responders; long-term health risk that does not require response</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Minimal impact to operations</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Minimal impact; though reporting is required when selling residential properties</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Minimal impact to all services</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact expected</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Minimal impact since it is easily and commonly mitigated</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Minimal impact on environment; tends to only affect living, breathing organisms such as humans or pets that are routinely in contained areas where the gas is released</li> </ul>		

## 13. Subsidence, Sinkhole

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>There are two common causes of subsidence in PA: 1) dissolution of carbonate rock such as limestone or dolomite and 2) mining activity. Sinkhole, surface depressions and limestone areas are scattered across the southern portion of PA.</p>		<p><input checked="" type="checkbox"/> Annual Event  <input type="checkbox"/> Every 5 years or less  <input type="checkbox"/> Every 10 years or less  <input type="checkbox"/> Every 30 years or less  <input type="checkbox"/> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Low impact on public outside of immediate collapse</li> <li>• Risk to health if drinking water is contaminated due to sinkhole encroaching into the aquifer</li> <li>• Low incidence requiring emergency workers; mostly addressed via public works or property owner</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Minimal impact</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Minimal impact overall, high impact potential for individual properties</li> <li>• Long-term subsidence or sinkhole formation can fracture or lead to the collapse of building foundations and roadways</li> <li>• Sinkholes can affect the infrastructure by draining unfiltered water from streams, lakes, and wetlands directly into the aquifer</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low impact on delivery of services</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact on public confidence</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Low impact across economy; high impact potential for individual properties and businesses</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Moderate impact to the environment; sinkholes can affect the environment by threatening water supplies by draining water from streams, lakes, and wetlands directly into the aquifer</li> <li>• Increased potential for groundwater contamination</li> <li>• Vegetation can be damaged during abrupt subsidence events</li> </ul>	



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## 14. Tornado, Windstorm

HAZARD SUMMARY		FREQUENCY OF HAZARD
Both tornado and windstorm events can occur throughout PA. Tornado events are usually localized.		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Tornadoes in PA typically impact small areas; though the impact on these areas can be moderate to high</li> <li>Windstorms can impact large areas, but will typically cause minimal damage</li> <li>Potential for fatalities and injuries resulting from tornadoes</li> <li>Emergency responders could be exposed to conditions including downed utility line, hazardous materials, and debris</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Direct impact of tornado on a government facility is unlikely</li> <li>Windstorm could require using generator/alternate power</li> <li>With respect to PEMA, Agency has multiple generators available to provide back-up power to the building</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Tornadoes and windstorm can have a moderate to high impact on property, facilities and infrastructure</li> <li>Utilities interruption likely; extent and duration of outage depends on severity</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Local disruption in services, typically of short duration</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Minimal impact on public confidence</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Moderate to high impact on affected area's economy</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Moderate impact; debris and hazardous materials could be released into the environment</li> <li>Likely causes severe damage to plant species</li> </ul>	

# Appendix L

## 15. Wildfire

HAZARD SUMMARY		FREQUENCY OF HAZARD
Wildfires occur throughout wooded and open vegetation areas of PA. Clearfield County and the state's eastern counties have experienced the largest number of wildfires.		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Health affected from smoke inhalation</li> <li>• Displacement possible; large events may require evacuation</li> <li>• Potential loss of human life</li> <li>• Special needs populations will require more attention</li> <li>• High risk to health and safety of responder</li> <li>• Response involves different jurisdictions at all levels of government</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Could require re-location based on location of wildfire</li> <li>• PEMA staff within the Bureau of Special Deployment and Response Office may be deployed to provide resources and assist with Incident Management Teams (IMTs)</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Moderate impact to the transportation and utility infrastructure, damage to properties and recreational areas</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Moderate impact to the delivery of services</li> <li>• Services likely to be temporarily interrupted in affected areas</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact; though link to climate change could impact public perception</li> <li>• Public frustration as government balances environmentally appropriate response (allow understory and deadwood to burn) with public desire to save homes</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Potential for impact agricultural and timber industry</li> <li>• High impact on insurance industry</li> <li>• Potential impact on tourism as a result of loss of recreational land</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact to ecosystem – loss of wildlife and vegetation</li> <li>• Future land erosion and sediment relocation from burnt over areas into streams and waterway</li> </ul>	

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## 16. Winter Storm

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Winter storms consist of cold temperatures, heavy snow or ice and sometimes strong winds. They are regional events that most often impact a large area, or even all of PA. Average annual snowfall across PA ranges from 11 inches in the southeast to over 100 inches in the northwest.</p>		<p><input checked="" type="checkbox"/> Annual Event</p> <p><input type="checkbox"/> Every 5 years or less</p> <p><input type="checkbox"/> Every 10 years or less</p> <p><input type="checkbox"/> Every 30 years or less</p> <p><input type="checkbox"/> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Risk of hypothermia and extreme loss of heat if residents are not prepared for conditions</li> <li>• Infants, children, elderly, access and functional needs populations, and pets will require more attention</li> <li>• Low impact to emergency workers</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact to government; non-essential workers and services may be suspended during snow</li> <li>• PEMA staff within the Bureau of Special Deployment and Response Office may be deployed to provide resources and assist with Incident Management Teams (IMTs)</li> <li>• Depending on the severity of the event day-to-day operations could be interrupted due to an activation of the State Emergency Operations Center. Staff may also be deployed to deliver resources and conduct damage assessments.</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Risk of electrical outages and frozen or broken water pipes</li> <li>• Road closures due to ice or debris on roadway</li> <li>• Depletion of oil heating supplies</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low Impact; non-essential workers and services may be suspended during snow</li> <li>• Services are delayed or postponed</li> <li>• Organizations that use vehicles to provide services could be subjected to unsafe conditions</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Public confidence in government impacted by the ability of state and local government to clear snow and ice and restore safe driving conditions</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Increased expenses organizations that use vehicles to provide services</li> <li>• Could have negative impact on agriculture if storm happens late or early in season</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Minimal impact on environment</li> <li>• Trees and streams may be impacted depending on the amount of precipitation and wind</li> </ul>	

## 17. Building and Structure Collapse

HAZARD SUMMARY		FREQUENCY OF HAZARD
Buildings and other engineered structures may collapse if their structural integrity is compromised, especially due to effects from other natural or human-made hazards. Older buildings or structures, structures that are not built to standard codes, or structures that have been weakened are most susceptible.		<input type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input checked="" type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Moderate impact on public and responders; these are localized incidents that can result in death and injury</li> <li>Risk to public's and/or responders' health and safety from falling debris or unstable structural conditions</li> <li>Potential impacts public health in short-term due to potential debris field</li> <li>Public may not be able to use roads</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Low impact to government operations overall</li> <li>Inspections and code enforcement responsibilities may increase as a result of an incident</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>High impact on building/structures and nearby infrastructure affected by collapse</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Minimal impact on delivery of services</li> <li>Road closures could temporarily impact delivery of goods and services</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Public confidence in government highly impacted if state and local government is responsible for maintaining the condition of the building/structure</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Low impact on affected area's economy; high impact potential for individual properties and/or structures</li> <li>Bridge collapse can result in substantial roadway construction costs</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Minimal impact; debris from collapse can impact air quality in the short-term</li> <li>Collapse over water bodies may lead to water contamination and/or water flow or habitat disruption</li> </ul>	

## 18. Civil Disturbance

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Civil disturbance is a broad term that is typically used by law enforcement to describe one or more forms of disturbance caused by a group of people. The concentration of federal buildings in Philadelphia and state government buildings in Harrisburg may be targets of civil disturbance.</p>		<p>Annual Event</p> <p><input checked="" type="checkbox"/> Every 5 years or less</p> <p><input type="checkbox"/> Every 10 years or less</p> <p><input type="checkbox"/> Every 30 years or less</p> <p><input type="checkbox"/> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Typically, civil disturbances have minimal impact on the public</li> <li>Moderate to high impact on responders that are addressing a potentially hostile group</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Minimal impact to operations unless a specific operation is being targeted, for instance a protest at a school board would have moderate to high impact school board employees in that building</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Minimal impact; though group could vandalize or destroy property or block traffic</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Minimal impact, though services at impacted building could be suspended</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>There are many variables that will impact the public's view of the civil disturbance including tactics used by protestors (peaceful vs. destroying property), public sympathy and identification with the topic being protested, and tactics used by responders</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Typically, minimal impact</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Typically, minimal impact</li> </ul>	

## 19. Cyber-Terrorism

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Cyberterrorism is a broad term that refers to acts associated with the convergence of terrorism and cyberspace. Generally, cyberterrorism involves unlawful attacks or threats against computers, networks, and the information stored therein to intimidate or coerce a government or its people to achieve political or social objectives. These acts can range from taking control of a host website, to using networked resources to directly cause destruction and harm.</p>		<p><input checked="" type="checkbox"/> Annual Event  <input type="checkbox"/> Every 5 years or less  <input type="checkbox"/> Every 10 years or less  <input type="checkbox"/> Every 30 years or less  <input type="checkbox"/> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Risk to public depends on the type of cyber-attack; potential high impact on public if sensitive public data is compromised leading the identity theft</li> <li>• Minimal impact to responders</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Minimal to high impact depending on the type of cyber-attack; attack can cause severe disruptions to operations highly dependent on information technology</li> <li>• Restoration of operations dependent on the number of professional staff available to address cyber threat</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Minimal to moderate impact depending on the type of cyber-attack; attack can cause severe disruptions to facilities and infrastructure that are highly dependent on information technology</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Minimal to moderate impact depending on the type of cyber-attack</li> <li>• Services can be interrupted during the event and while researching cause of the cyber-threat or implementing mitigation strategies to prevent further loss</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Potential high impact on confidence of government to maintain integrity and security of sensitive data</li> <li>• Confidence may be impacted by the timing of notification to those whose information was compromised</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Minimal to high impact depending on the type of cyber-attack; a large-scale cyberterrorism event could disrupt the state's economy and potentially threaten its economic stability</li> <li>• Potential high impact for individual if identity theft leads to loss of personal assets</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Minimal impact on the environment</li> <li>• Environment may be affected if a hazardous materials release or nuclear incident occurred because of critical infrastructure failure as a result of cyberterrorism</li> </ul>	

# Appendix L

## 20. Dam Failure

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Dam failure most often occurs during or after a massive rainfall, flooding, or spring thaws, sometimes with little to no warning. PA DEP identifies 3,429 dams in the Commonwealth. In addition, the USACE operates 49 dams in the Commonwealth.</p>		<p>_____ Annual Event            _____ Every 5 years or less            _____ Every 10 years or less            _____ Every 30 years or less  <input checked="" type="checkbox"/> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Risk depends on size and location of dam</li> <li>• High hazard dam failures could cause loss of life and injury, displacement, increased distress</li> <li>• If the dam's purpose is water supply, downstream communities will lose access to potable water</li> <li>• Risk to life and safety while responding to populations affected by flooding</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Operations may be interrupted if affected by flooding</li> <li>• Staffing difficulties are possible (personnel unable to drive to work)</li> <li>• PEMA Area Offices and the Bureau of Special Deployment and Response Office may be deployed to assist counties and IMTs</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• High impact to dam and to structures in dam inundation area</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• High impact on confidence of government to maintain infrastructure if dam failure is a result of poor maintenance</li> </ul>	
<b>ECONOMIC CONDITION ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact and potential losses in dam inundation area</li> <li>• Moderate to high impact in dam inundation area</li> <li>• Potential for secondary hazardous materials releases</li> <li>• Water velocities could result in destruction of trees and other vegetation</li> </ul>	

## 21. Environmental Hazard – Coal Mining

HAZARD SUMMARY		FREQUENCY OF HAZARD
Mining, including surface, underground, and open-pit operations, has been an important economic activity in Pennsylvania since before the 1860s. Counties underlain by coal deposits are at highest risk of environmental hazards resulting from coal mining activities. This area includes the majority of southwest Pennsylvania, as well as the jurisdictions in northeast Pennsylvania, particularly in Lackawanna, Luzerne, and Schuylkill Counties		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High impact to the health and safety of people in the impacted area</li> <li>• Active and abandoned mines can also result in injury and loss of human life (mine collapse, entrapment, explosions, equipment malfunction, drowning in abandoned mines, etc.)</li> <li>• Minimal to high impact on responders depending on the type of event (ex. high if addressing mine collapse)</li> <li>• Protective actions required for responders</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• High impact to property, facilities, and infrastructure in the impacted area</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low impact to the delivery of services</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Isolated coal mining incidents could impact public confidence in government's ability to protect workers and/or the public</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Isolated coal mining incidents could have impact on local economy; coal mining remains significant industry in PA</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact on the environment</li> <li>• Potential degraded groundwater and surface water</li> <li>• Surface elevation changes, subsidence</li> <li>• Mineral-waste disposal from mining contain combustible materials that cause long-term air quality problems, if ignited</li> </ul>	



## 22. Environmental Hazard – Conventional Oil and Gas Wells

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>There are approximately 130,000 conventional oil and gas wells drilled in Pennsylvania. Conventional wells are defined as traditional vertical wells.</p>		<p><input checked="" type="checkbox"/> Annual Event  <input type="checkbox"/> Every 5 years or less  <input type="checkbox"/> Every 10 years or less  <input type="checkbox"/> Every 30 years or less  <input type="checkbox"/> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High impact to the health and safety of people in the impacted area</li> <li>• Private water supplies such as domestic drinking water wells near oil and gas wells at risk of contamination from brine and other pollutants including methane</li> <li>• Methane leaks pose risk of fire and explosion, which could lead to injury or death</li> <li>• Protective actions required for responders</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• High impact to property, facilities, and/or infrastructure in the impacted area</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low impact to the delivery of services</li> <li>• Service disruption for oil and natural gas</li> <li>• Potential disruptions and closures to critical infrastructure and services, including transportation routes and emergency medical services</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Impact on economic condition dependent on the type and extent of incident</li> <li>• May lead to displacement of residential communities or businesses</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact on the environment</li> <li>• Risk of groundwater, surface water, and soil contamination; contamination impacts vegetation and aquatic life</li> </ul>	

## 23. Environmental Hazard – Unconventional Wells

HAZARD SUMMARY		FREQUENCY OF HAZARD
Unconventional wells are drilled deep into shale rock formations that contain and produce natural gas and are found thousands of feet underground. These wells use horizontal drilling techniques that use large quantities of high-pressured water mixed with sand and other additives including hydrochloric and muriatic acid, to hydraulically fracture the rock.		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High impact to the health and safety of people in the impacted area</li> <li>• Risk of drinking water contamination</li> <li>• Protective actions required for responders</li> <li>• Information on new techniques for drilling needs to be shared with emergency responders for safe response</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• High impact to property, facilities, and infrastructure in the impacted area</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low impact to the delivery of services</li> <li>• Service disruption for oil and natural gas</li> <li>• Potential disruptions and closures to critical infrastructure and services, including transportation routes and emergency medical services</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Unconventional gas well drilling is new to PA and impacts public confidence in government significantly</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Unconventional gas well drilling is a large economic growth industry in PA and an incident at a well has the potential for a large economic impact</li> <li>• May lead to displacement of residential communities or businesses</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact on environment</li> <li>• Potential water contamination</li> <li>• Surface water depletion</li> <li>• Overall environmental impacts of unconventional wells are still being studied</li> </ul>	

## 24. Environmental Hazard – Hazardous Materials Releases

HAZARD SUMMARY		FREQUENCY OF HAZARD	
Hazardous materials can include toxic chemicals, infectious substances, biohazardous waste, and any materials that are explosive, corrosive, flammable, or radioactive. Hazardous material releases can occur wherever hazardous materials are manufactured, used, stored, or transported.		<input checked="" type="checkbox"/>	Annual Event
		<input type="checkbox"/>	Every 5 years or less
		<input type="checkbox"/>	Every 10 years or less
		<input type="checkbox"/>	Every 30 years or less
		<input type="checkbox"/>	Greater than 30 years
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High impact to the health and safety of people in the impacted area</li> <li>• High risk to public health and safety, potential for injury and death</li> <li>• May require shelter-in-place</li> <li>• Emergency responders exposed to hazardous conditions</li> <li>• Protective actions required for responders</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• High impact to property, facilities, and infrastructure in the impacted area</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low impact to the delivery of services</li> <li>• Potential disruptions and closures to critical infrastructure and services, including transportation routes and emergency medical services</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• High impact expected for isolated hazardous material releases</li> <li>• Response time of emergency response teams will impact public confidence</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Potential impact from isolated hazardous material releases depending on extent of incident; cost of recovery/clean-up efforts</li> <li>• May lead to displacement of residential communities or businesses</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact to the areas of highest concentration</li> <li>• Risk of contamination of water, soil, and air</li> <li>• Damage to plant and wildlife communities</li> </ul>		

## 25. Environmental Hazard – Gas and Liquid Pipeline

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Pipeline systems are defined by federal regulations as all parts of a pipeline facility through which a hazardous liquid or gas moves, including piping, valves, pumps or compressors, metering and delivery stations, and storage and breakout tanks. In Pennsylvania, these pipeline systems cross both rural and densely populated areas, and range in length from a few thousand feet to hundreds of miles.</p>		<p><input checked="" type="checkbox"/> Annual Event  <input type="checkbox"/> Every 5 years or less  <input type="checkbox"/> Every 10 years or less  <input type="checkbox"/> Every 30 years or less  <input type="checkbox"/> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High impact to the health and safety of people in the impacted area</li> <li>• Pipeline failure can result in explosion threatening public safety and welfare and resulting in injury or loss of life</li> <li>• May require shelter-in-place</li> <li>• Protective actions required for responders</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• High impact to property, facilities, and infrastructure in the impacted area</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Low impact to the delivery of services</li> <li>• Service disruption for oil and natural gas</li> <li>• Potential disruptions and closures to critical infrastructure and services, including transportation routes and emergency medical services</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Minimal impact; potential impact for isolated and major pipeline failure incidents</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Impact on economic condition dependent on the type and extent of incident</li> <li>• Residential, commercial, and industrial energy supply losses</li> <li>• May lead to displacement of residential communities or businesses</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact to the areas of highest concentration</li> <li>• Risk of contamination of water, soil, and air</li> <li>• Damage to plant and wildlife communities</li> </ul>	

# Appendix L

## 26. Levee Failure

HAZARD SUMMARY		FREQUENCY OF HAZARD	
A total of 317 levee segments and 63 floodwall segments levees have been identified throughout PA via FEMA, with at least one levee in 51 of 67 counties.		<input type="checkbox"/>	Annual Event
		<input type="checkbox"/>	Every 5 years or less
		<input type="checkbox"/>	Every 10 years or less
		<input type="checkbox"/>	Every 30 years or less
		<input checked="" type="checkbox"/>	Greater than 30 years
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Levee failure likely to be combined with riverine flooding and have impacts related to flooding</li> <li>Could cause loss of life and injury, displacement, increased distress</li> <li>Risk to life and safety while responding to populations affected by flooding</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Operations may be interrupted if affected by flooding</li> <li>Staffing difficulties are possible (personnel unable to drive to work)</li> <li>PEMA Area Offices and the Bureau of Special Deployment and Response Office may be deployed to assist counties and IMTs</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>High impact</li> <li>Transportation infrastructure closures and isolated populations</li> <li>Varying levels of damage to structures in low-lying areas</li> <li>Utilities interruption likely; extent and duration of outage depends on flood severity</li> <li>Flood waters will back-up sanitary sewer systems and inundate wastewater treatment plants</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>High risk to disruption of basic life support systems, typically for short duration</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>High impact on confidence of government to maintain infrastructure if levee failure is a result of poor maintenance</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Impact dependent on severity of flooding</li> <li>High impact on insurance industry</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Increased risk of exposure to hazardous materials</li> <li>Water contamination</li> <li>Displacement of wildlife may increase public health and safety issues</li> <li>Increased arboviral vectors</li> </ul>		

## 27. Mass Food and Animal Feed Contamination

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Mass food or animal feed contamination hazards occur when food or food sources are contaminated with pathogenic bacteria, viruses, or parasites, as well as chemical or natural toxins. These events can happen at any time and in any place in PA and are sometimes regional or even national events. PA is one of the nation's leading agricultural producers with over 7,000 dairy farms.</p>		<p>_____ Annual Event            _____ Every 5 years or less            _____ Every 10 years or less            _____ Every 30 years or less  <u>  X  </u> Greater than 30 years</p>
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Impact on depends on extent of event; public could be subjected to illness, hospitalization, or death</li> <li>• Minimal impact to emergency responders</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Low impact</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Low impact to property, facilities, and infrastructure</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Moderate to severe impact on agriculture, food production, and food service industries</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Public confidence related to extent of illness and cost of contamination</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• High impact agriculture, food production, and food service industries</li> <li>• Shortage of food supply causing increased food costs</li> <li>• Potential losses from fear-based cancellation of food orders could cause a surplus of animals on farms that agricultural producers cannot feed but also cannot sell</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Low impact</li> <li>• Potential risk results from waste disposal of significant numbers of animals</li> </ul>	

## 28. Nuclear Incident

HAZARD SUMMARY		FREQUENCY OF HAZARD
Nuclear power is an important source of energy in the Commonwealth, and there are five nuclear power stations in Beaver, Dauphin, Luzerne, Montgomery, and York Counties.		<input type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input checked="" type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High impact to the health and safety of personnel in the 10-mile emergency planning zone</li> <li>• Cause the evacuation of 1,000s of residents</li> <li>• Emergency responders exposed to hazardous conditions</li> <li>• Protective actions required to protect responders from radiation exposure</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• PEMA staff within the Bureau of Special Deployment and Response Office may be deployed to provide resources and assist with Incident Management Teams (IMTs)</li> <li>• Depending on the severity of the event, day-to-day operations could be interrupted due to an activation of the State Emergency Operations Center</li> <li>• Would require additional environmental monitoring and surveying</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Low impact to property, facilities, and infrastructure</li> <li>• Air, land, and waterway restrictions in impacted area</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Could impact delivery of services to and from 10-mile emergency planning zone immediately and agriculture in the 50-mile ingestion pathway zones</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Response to a nuclear incident would have a high impact on public confidence</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• High impact to the economic and financial community of the impacted area</li> <li>• High impact to the agriculture in the 50-mile ingestion pathway zones</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact to the areas of highest concentration of radiological particulate</li> </ul>	

## 29. Opioid Addiction

HAZARD SUMMARY		FREQUENCY OF HAZARD
<p>Opioid addiction occurs when an individual becomes physically dependent on opioid, a class of drugs that reduces pain. Opioid is used as a broad term and includes opiates, which are drugs naturally extracted from certain types of poppy plants, and narcotics.</p>		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• High impact on affected population; in PA, overdoses caused by opioids have become the leading cause of accidental death</li> <li>• Potential high impact on responders; responders also face exposure risk, particularly to synthetic fentanyl</li> <li>• Education and training may be needed for new types of potential responders that are now addressing the growing crisis</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• Operations may be impacted as a result of the significant amount of time and resources required to address the crisis</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Minimal impact on property, facilities, and infrastructure</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• Delivery of services, particularly first responders and other medical-related services, may also be impacted by the amount of time and resources now devoted to addressing the crisis</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Level of public outreach/education to increase awareness of opioid epidemic impacts public confidence in governance</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• Low to moderate impact on the economy</li> <li>• Operational costs to county coroner offices have increased</li> <li>• Loss of productivity of opioid addicts</li> <li>• Increasing costs of treating and incarcerating opioid addicts</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Low impact on the environment</li> <li>• Traces of opioids and other drugs have been found in streams, rivers, and lakes</li> </ul>	



## 30. Terrorism

HAZARD SUMMARY		FREQUENCY OF HAZARD
Terrorism can take many forms and terrorists have a wide range of personal, political, or cultural agendas. Therefore, there is no location that is not a potential terrorist target.		<input type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input checked="" type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>• Impact on public could range from minimal to high</li> <li>• Any terrorism incident likely to have high impact on emergency responders</li> <li>• Protective actions required to protect responders from hazardous exposure</li> <li>• Increase in stress and fatigue</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>• High impact if government is target</li> <li>• With respect to PEMA, depending on the severity of the attack PEMA staff may be deployed to provide resources and assist with Incident Management Teams (IMTs)</li> <li>• Depending on the severity of the event day-to-day operations could be interrupted due to an activation of the State Emergency Operations Center</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>• Impact could range from minimal to high on property, facilities, and infrastructure depending on what is targeted</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>• High impact to the delivery of services in targeted area</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>• Attack within the state could result in low public confidence</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>• High impact to the economic condition of the impacted area, since terrorism attempts to change the operations of a target</li> <li>• Industries, infrastructure, and/or the delivery of services could be shut down from the incident</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• High impact on environment if CBRNE dispersal</li> </ul>	

## 31. Transportation Accident

HAZARD SUMMARY		FREQUENCY OF HAZARD
Transportation accidents are defined as accidents involving highway, air, and rail travel. These incidents are collectively the costliest of all hazards in the Commonwealth in terms of lives lost, injuries, and economic losses. PA has the fifth largest state highway system in the United State.		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>High impact to public since this is a common hazard</li> <li>Safety of responders is a concern if fire or hazardous materials are present at incident</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Minimal impact to operations</li> <li>Depending on the severity of the event day-to-day operations could be interrupted due to an activation of the State Emergency Operations Center</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Minimal impact expected</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Minimal impact expected; though traffic can be delayed near incident</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Public confidence in government impacted by the ability of state and local government to restore and maintain safe driving conditions</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Minimal impact expected; though traffic can be delayed near incident</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Minimal impact expected; though accident can involve hazardous materials</li> </ul>	

## 32. Urban Fire and Explosion

HAZARD SUMMARY		FREQUENCY OF HAZARD
Urban fire and explosion hazards include 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.		<input checked="" type="checkbox"/> Annual Event <input type="checkbox"/> Every 5 years or less <input type="checkbox"/> Every 10 years or less <input type="checkbox"/> Every 30 years or less <input type="checkbox"/> Greater than 30 years
IMPACTS		
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Typically impact small areas; though the impact on these areas can be moderate to high, may result in displacement of people</li> <li>Emergency responders exposed to hazardous conditions</li> </ul>	
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>High impact if fire is at a government facility</li> <li>PEMA currently serves as an alternate site for portions of the Department of Health (DOH) and the Governor's Office</li> </ul>	
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Moderate to high impact on property, facilities and infrastructure affected by the incident</li> </ul>	
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Local disruption in services, typically of short duration</li> </ul>	
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>Minimal impact on public confidence</li> </ul>	
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Moderate to high impact on affected building or area</li> <li>Potential loss of homes, personal assets, businesses</li> </ul>	
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Moderate impact; debris and hazardous materials could be released into the environment</li> </ul>	

## 33. Utility Interruption

HAZARD SUMMARY		FREQUENCY OF HAZARD	
Utility interruptions occur throughout the Commonwealth, but usually are small-scale, localized incidents. Utility interruptions are possible anywhere there is utility service.		<input checked="" type="checkbox"/>	Annual Event
		<input type="checkbox"/>	Every 5 years or less
		<input type="checkbox"/>	Every 10 years or less
		<input type="checkbox"/>	Every 30 years or less
		<input type="checkbox"/>	Greater than 30 years
IMPACTS			
<b>PUBLIC AND RESPONDERS</b>	<ul style="list-style-type: none"> <li>Typically impacts small areas; though the impact on these areas can be moderate to high</li> <li>If widespread and long-term, utility interruption could threaten the continuity of the food supply</li> <li>Emergency responders may need to use generator power</li> <li>Can reduce the efficient and effective communication that is essential to responders</li> </ul>		
<b>CONTINUITY OF OPERATIONS AND PROGRAM OPERATIONS</b>	<ul style="list-style-type: none"> <li>Would need generator power if essential service government facility is impacted</li> <li>PEMA staff within the Bureau of Special Deployment and Response Office may be deployed to provide resources; staff may also be deployed to deliver resources and conduct damage assessments depending on the type/extent of the utility disruption</li> <li>Depending on the severity of the event day-to-day operations could be interrupted due to an activation of the State Emergency Operations Center</li> </ul>		
<b>PROPERTY, FACILITIES, AND INFRASTRUCTURE</b>	<ul style="list-style-type: none"> <li>Minimal impact expected</li> </ul>		
<b>DELIVERY OF SERVICES</b>	<ul style="list-style-type: none"> <li>Local disruption in services, typically for short duration</li> </ul>		
<b>PUBLIC'S CONFIDENCE IN JURISDICTION'S GOVERNANCE</b>	<ul style="list-style-type: none"> <li>High impact on confidence of government, especially if impact on services is prolonged</li> </ul>		
<b>ECONOMIC CONDITION</b>	<ul style="list-style-type: none"> <li>Impact dependent on duration of interruption</li> <li>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</li> </ul>		
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>Minimal impact expected</li> <li>Most significant environmental impact associated with utility interruptions is when the interruption involves a release of hazardous materials</li> </ul>		