

4 Risk Assessment

4.1.6. THIRA and SHMP Relationship

For the purposes of this SHMP, *risk* is defined as the potential for damage, injury, or death as a result of natural or human-made hazard events. The risk assessment included in this section seeks to determine which hazards are most significant in Pennsylvania, identify regions or jurisdictions most at risk, and provide guidance for development of mitigation actions. The structure of the information presented in the risk assessment is similar to what was included in the SHMPs since 2010. This structure helps to: 1) clearly and effectively communicate how and to what extent the Commonwealth is exposed to each hazard; 2) improve consistency of the plan with the *Disaster Mitigation Act of 2000 (DMA)* and requirements of *44 CFR Part 201*; and 3) follow the PA Standard Operating Guide and ease the risk roll-up from local plans to the SHMP. Data sources have been updated to include the best available information (see Section 2.5).

The SHMP Risk Assessment complements the 2017 Pennsylvania Threat and Hazard Identification and Risk Assessment completed by PEMA to meet the requirements of CPG 201. The THIRA, along with the State Homeland Security Strategy, is a complementary planning processes that focus on identifying key gaps and accomplishments in core capabilities. Table 4.1.1-1 compares the THIRA and the SHMP.

SHMP AND HIRA	SSHS AND THIRA
Focus on mitigation	Focus on identifying capability and resource gaps
Detailed hazard profiles including geographic extent, range of magnitude, past occurrence, probability and future occurrence, environmental impacts, and loss estimation	Adds in a threat component and chooses natural, technological, and adversarial hazards that will stress the “overall system” the most.
The grant program primarily focuses on natural hazards and actions that can be taken to reduce/eliminate the impact of the hazard	The grant program focuses on identifying gaps and taking action to reduce the gaps in order to build, maintain, and sustain a capability

As mentioned in Section 5.5, the THIRA is an important planning mechanism to integrate into the SHMP. The THIRA process was used to develop and/or revise worst-case scenarios, and its ranking is referenced in each hazard profile (see Figure 4.1.8-1). There was also some discussion amongst the planning team as to whether the SHMP should only cover natural hazards while the THIRA should cover man-made hazards. However, the SPT decided to keep the plans as separate but complementary mechanisms to maintain the Commonwealth’s all-hazards approach to mitigation.

The RF ranking system is not that same as the ranking system used in the Pennsylvania THIRA. While the hazards listed in these two planning mechanisms are similar the THIRA must account for a threat component. The Pennsylvania THIRA also breaks out hazards in terms of natural, technological, and human caused. Threats and hazards were evaluated based on likelihood and vulnerability.

Likelihood was rated on a scale of 1 - 5 where 1 indicates unlikely occurrence and 5 indicates very high likelihood or imminent occurrence within the Commonwealth. The vulnerability of the Commonwealth to each threat and hazard was ranked using the following scale:

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- 1) A potential incident would have a very small geographic footprint. People are easily protected by evacuation, sheltering in place or through other simple protective measures.
- 2) People are not so easily protected by evacuation or sheltering in place but protective measures generally remain simple.
- 3) A potential incident would have a moderate geographical footprint. Buildings may be vulnerable to some damage and therefore may not offer protection to people in more prone areas of the building. Critical infrastructure, resources, industry, and systems may be vulnerable to some damage, interruption, and/or failure. Protective measures may be extensive.
- 4) Buildings may be vulnerable to moderate damage or more and therefore will only provide protection to people in designated safe areas. Advanced preparation for effective protective measures will be required. Critical infrastructure, resources, industry, and systems may be vulnerable to moderate damage, interruption, and/or failure.
- 5) A potential incident would have a large geographical footprint. During this incident, people, structures, critical infrastructure, resources, industry, and systems in the affected area are completely vulnerable and will likely be destroyed or severely damaged.

Worse “probable” case scenarios were developed for the hazards of concern. These scenarios were developed in order to create events that would stress the core capabilities as defined in the National Preparedness Goal and Comprehensive Preparedness Guide 201: Threat and Hazard Identification and Risk Assessment Guide (CPG 201). By stressing capabilities, the workgroup participants were able to identify gaps in core capabilities to guide further planning and investment justifications. The overall goal of the THIRA process is to evaluate the Commonwealth’s capabilities for addressing all-hazards events across the 5 Mission Areas: Prevention, Protection, Mitigation, Response, and Recovery.

Figure 4.1.6-2 shows the Risk Ranking results from the SHMP HIRA and the THIRA for comparison. Most hazards track similarly with some exceptions and emphasis placed on threat to increase rankings for some THIRA results.