



Franklin County Emergency Management and Homeland Security

Risk Assessment for Franklin County 2016

Executive Summary



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Franklin County Emergency Management and Homeland Security (FCEM&HS) is a local government agency in Franklin County, Ohio, responsible for coordinating county-wide emergency/disaster planning, education, warning, response, and recovery to minimize the adverse impact of disasters on people and property in the county. Performing a risk assessment for Franklin County provides FCEM&HS with the basis for planning and implementing measures to reduce the risks associated with the greatest threats and hazards confronting the county.

This 2016 Franklin County Risk Assessment, funded by Fiscal Year 2013 Pre-Disaster Mitigation funds administered through the Ohio Emergency Management Agency (OEMA), is a detailed study of the hazards most likely to impact Franklin County. Nineteen threats and hazards – dangerous events such as winter storms, floods and terrorist attacks – were analyzed and ranked according to the potential risk they pose.

PURPOSE: The purpose of the 2016 Franklin County Risk Assessment is to enhance the County’s decision-making process in regards to homeland security and emergency management by providing decision-makers with risk-based information that differentiates various decision options under consideration. Thus, the primary users of the Risk Assessment are those within the County who are responsible for managing the risks related to natural disasters, technological failures and man-made acts of terrorism.

The U.S. DHS publication titled “DHS Risk Lexicon, September 2010”, defines risk as the “potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences”. Risk assessment is described as the “product or process which collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision making.”¹

In summary, an assessment of the community’s threats, hazards, and risks provides the basis for planning and implementing measures to reduce the negative consequences of a disaster or catastrophic event. Directly eliminating threats or hazards is usually very difficult or even impossible. Risk reduction is more likely to be achieved by either addressing the community’s vulnerabilities to the threats and hazards or by controlling their associated risks by strengthening the community’s prevention, protection, mitigation, response, and recovery capabilities.

METHODOLOGY: FCEM&HS worked over an extended period to collect and assess information related to 19 potential natural, technological and human-caused threats and hazards that may occur in the future. A workgroup of representatives within the county estimated the risks posed by these threats and hazards according to a pre-determined risk

¹ “DHS Risk Lexicon,” Department of Homeland Security Risk Steering Committee, last modified September 2010 <http://www.dhs.gov/xlibrary/assets/dhs-risk-lexicon-2010.pdf>

scoring methodology based on the probability of occurrence and associated negative consequences. The relative risk scoring methodology does not calculate absolute risk values; rather, it is a more user-friendly screening tool for estimating the level of risk that can be used to support planning and decision-making efforts. The information used to estimate the likelihood that each threat or hazard might occur included:

- A Likelihood of Occurrence Factor: The frequency at which an event has happened in the past or may happen in the future based on available intelligence.
- A Special Circumstance Factor: A condition or factor expected to have some bearing on the occurrence of a particular threat or hazard (i.e., mitigation efforts which decrease the number of homes in a floodplain, acts of terrorism directed at particular infrastructure sites, etc.).

Should the threat or hazard occur, the information used to estimate the resulting negative consequences included:

- Loss of Life Factor: The number of likely fatalities in the impacted area.
- Injury Factor: The number of likely casualties in the impacted area requiring hospitalization/outpatient care.
- Relocation Factor: The number of people likely to be relocated from their homes.
- Property Damage Factor: The amount of property damage expected in an impacted area.
- Economic Impact Factor: The potential total economic impact of the event including any loss in commerce, employment incomes, as well as reconstruction and recovery costs.
- Speed of Onset Factor: The length of warning time that may be expected prior to the impact of the event.

Table 1: Weight Factors

Factor	Weight
Likelihood of Occurrence	15
Special Circumstance	10
Loss of Life	30
Injuries	25
Property Damage	15
Economic Impact	15
Relocation	10
Speed of Onset	10

In addition, weighted factors were used by the Workgroup to reflect the relative importance they assigned to each of the above likelihood and consequence factors. For ease of comparison the Total Weighted Score will be used in all references to ranking.

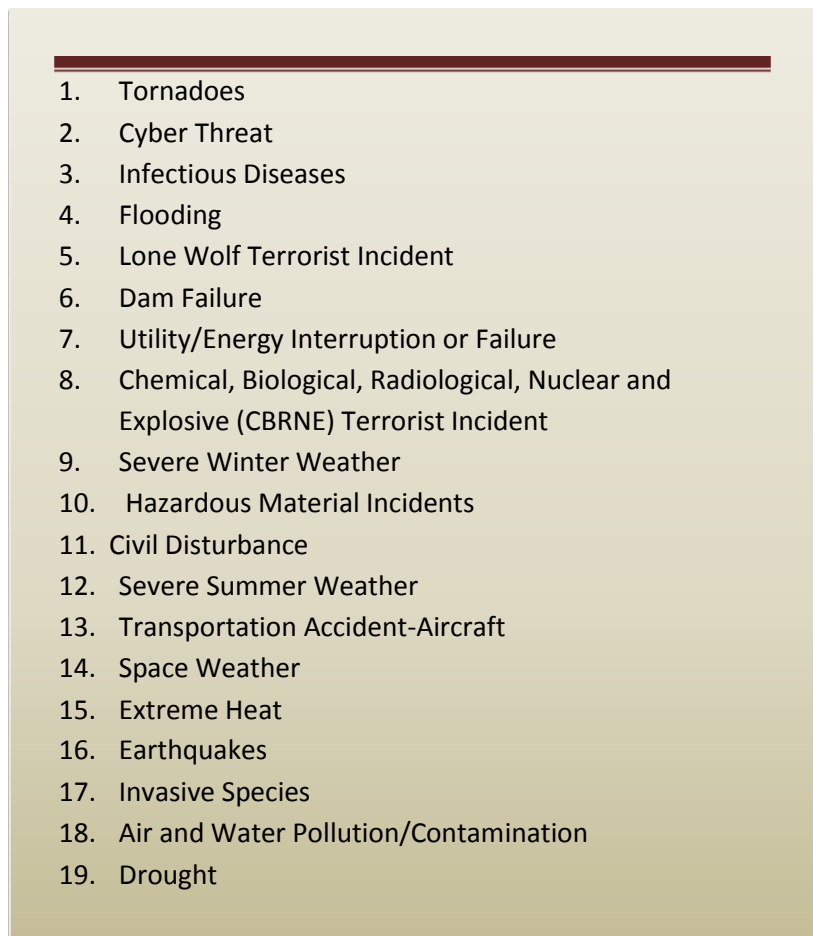
THREAT AND HAZARD IDENTIFICATION: In response to the events of September 11, 2001, federal guidance regarding risk assessments has emphasized the need for local governments to add the threat of terrorist acts to the list of hazards evaluated as part of the risk assessment process. The FCEM&HS Workgroup assessed three terrorist events: a

CBRNE (chemical, biological, radiological, nuclear, explosive) attack where an improvised explosive device (IED) was detonated at a sporting event, a school shooting conducted by a “lone-wolf” terrorist, and a cyber-intrusion attack that successfully disrupted the power grid for a prolonged period. These types of events are referred to as “low probability, high consequence” events because 1) the likely occurrence of any one of these terrorist attacks within Franklin County is low in comparison to natural disasters and technological failures and 2) should any of these events occur, the consequences could be catastrophic.

Franklin County has historically devoted considerable resources to addressing natural disasters. However, since the World Trade Center attacks on 9/11, the overall federal direction has been to place an increased emphasis on domestic and international acts of terrorism. Additionally, more recent events such as the Boston Marathon Bombing and many mass shootings including those in

Chattanooga, Charleston, and Aurora have highlighted the rising trend of lone wolf terrorism wherein a terrorist act is perpetrated by one or two individuals acting outside the realm of an organized terrorist group. Cyber-attacks are also increasing with many different companies and governmental agencies targeted by terrorists and hackers in recent years. Thus, based on the need to provide added emphasis on acts of terrorism which would otherwise be overshadowed by frequently occurring natural hazards, FCEM&HS chose a risk scoring methodology whereby 1) the likelihood factors outnumber the number of consequence factors and 2) the

Figure 1: Franklin County Ranked Threats and Hazards



consequence factors are associated with slightly higher weighted factors. Figure 1 provides the risk ranking for the 19 threats and hazards evaluated by the Workgroup. The higher the numerical order for a threat or hazard, the greater the relative risk based on the total weighted score. The hazards in order of greatest risk are as follows:

No. 1: Tornadoes are nature's most violent windstorms – even weak ones can cause significant damage and fatalities. A tornado is defined as a rotating column of air, in contact with the surface, pendant from a cumuliform cloud, and often visible as a funnel cloud and/or circulating debris/dust at the ground. According to the National Climactic Data Center, 31 tornadic events were reported in Franklin County from January 1950 through January 2015, all of which were rated F3 (or EF3) and under.

No. 2: Cyber-Threat is the possibility of a malicious attempt to damage or disrupt a computer network or system. A sharp increase in the number of cyber incidents involving government and corporate computer networks has caused the United States and Franklin County to launch initiatives to combat cyber threats. Many of the initiatives have focused on protecting critical infrastructure command and control systems, preventing access to sensitive government information, and thwarting acts of fraud and theft targeting business financial systems.

No. 3: Infectious Diseases are illnesses caused by the entrance into the body of harmful microbial organisms which grow and multiply. The diseases of most concern to the health and welfare of communities are those that are communicable. Communicable diseases are caused by microorganisms such as bacteria, viruses and parasites and are transmitted from an infected person/animal and/or contaminated food or water source to another person or animal. Franklin County is susceptible to many common infectious diseases, such as seasonal flu, as well as diseases that are newly emerged or re-emerging, such as H5N1 Influenza (avian flu).

No. 4: Flooding occurs in many forms, from naturally occurring to human-induced. Common to all flooding is the accumulation of too much water in too little time in too small a place. From 1950 to January 2015, 91 flood and flash flood events were reported in Franklin County according to the NOAA National Climactic Data Center Storm Events Database. From 1999 to 2015 Franklin County was subject to many different types of flooding and received as many as 10 flood warnings in a single year. Flash flooding is the deadliest form of flooding in the United States.

No. 5: Lone-Wolf Terrorist Incident is defined by DHS as an individual motivated by extremist ideology to commit acts of criminal violence independent of any larger terrorist organization. In recent years, the United States has certainly seen an emerging threat from lone wolf terrorists. The Holocaust museum shooter, the Little Rock recruiting station, the Ft. Hood shooting, the attack on Representative Giffords in Tucson, the Boston Marathon bombing, the Emanuel African Methodist Episcopal Church in Charleston, the South Carolina Shooting as well as the shooting of 5 Marine Recruiters in Chattanooga, Tennessee clearly demonstrate the lone wolf phenomenon is gaining popularity amongst would be terrorists. Lone wolf

attacks such as these are easy to execute, cost very little, and make headlines. This lone wolf threat is a great challenge to our first responders and therefore has been included in the Risk Assessment as a potential hazard to Franklin County.

No. 6: Dam Failure is defined as an uncontrolled release of impounded water. A dam is defined as an artificial barrier that has the ability to impound water, wastewater, or any liquid-borne material, for the purpose of storage or control of water. The causes of dam failures include overtopping caused by floods that exceed the capacity of the dam, deliberate acts of sabotage, structural failure of materials used in dam construction, movement and/or failure of the foundation supporting the dam, settlement and cracking of concrete or embankment dams, piping and internal erosion of soil in embankment dams, and inadequate maintenance and upkeep. Despite efforts to provide sufficient structural integrity and to perform inspection and maintenance, problems can develop that can lead to failure. While most dams have storage volumes small enough that failures would have little or no consequences, dams with large storage amounts could cause significant flooding downstream. The O'Shaughnessy Dam and the Hoover Dam are the two dams impacting Franklin County that are found on the Ohio EMA's list of the ten most potentially hazardous dams in the state, based on the possible catastrophic consequences should they fail.

No. 7: Utility/Energy Interruptions or Failures may involve electrical power, natural gas, public water and communications systems. These systems are vulnerable to natural hazards as well as intentional disruptions. Franklin County has experienced interruptions and failures of various kinds. Remnant winds of Hurricane Ike in 2008 caused over one-third of the county to lose power. The derecho on June 29, 2012 knocked out power to 720,000 Ohioans and was the most destructive and expensive storm in AEP Ohio history.

No. 8: Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) Terrorist Incident is defined as a violent act or an act dangerous to human life, in violation of the criminal laws of the U.S. or any segment, to intimidate or coerce a government, the population or any segment thereof, in furtherance of political or social objectives. Specifically, a CBRNE event is one caused by the introduction of a Chemical, Biological, Radiological, Nuclear or Explosive utilized as a weapon. Franklin County has never been the victim of a direct terrorist attack, yet has a history of terrorist activity. This, along with the difficulties in predicting which U.S. cities are future targets and the potential impact of a terrorist attack on the county's population, property and economy, makes terrorism more of a "wild card" than other hazards and therefore more difficult to prioritize.

No. 9: Severe Winter Weather is classified as snow, ice and extremely cold conditions. Winter storms are events in which the dominant forms of precipitation occur only at cold temperatures. According to the NOAA National Climactic Data Center's Storm Events Database, there were reports of 73 winter weather events for Franklin County from January 1996 to January 2015.

No. 10: Hazardous Material Incident is the release of a hazardous material from its container or package in a sufficient concentration to pose a threat. Hazardous materials may be explosive, flammable, combustible, corrosive, reactive, poisonous, biological, or radioactive, as well as solid, liquid or gaseous. As of May 2015, Franklin County has 764 facilities required to report their hazardous materials. Out of the 764 sites, 373 are Extremely Hazardous Substance (EHS) sites. The most common chemical for the EHS sites is sulfuric acid primarily found in batteries. In 2014 there were 279 spills in Franklin County reported to the Ohio EPA.

No. 11: Civil Disturbance is a planned or random uproar or disturbance of ordinary community life by persons choosing to ignore laws, often to bring attention to a cause, concern, or agenda. Franklin County has seen many types of civil disturbances through the years, from prison riots to university campus disturbances to political rallies.

No. 12: Severe Summer Weather is classified as thunderstorms, hail, lightning, and damaging wind. Each of these hazards has its own severity measure and often all four occur in one storm system, causing much more damage than each would have alone. According to the NOAA National Climactic Data Center's Storm Events Database, there were over 500 hail, strong/high/thunderstorm wind, and lightning events for Franklin County from January 1950 to January 2015.

No. 13: Transportation Accident – Aircraft is defined as an occurrence associated with the operation of an aircraft which takes place between the times any person boards with the intent to fly and all persons have disembarked, in which a person is fatally or seriously injured, the aircraft sustains damage or structural failure, and/or the aircraft is missing or is completely inaccessible. Franklin County has four operational airports, all located in densely populated areas. According to the National Transportation Safety Board, since 1982 there have been 92 aviation accidents in the Columbus, Ohio area.

No. 14: Space Weather includes major disturbances of Earth's magnetosphere that occur when there is a very efficient exchange of energy from the solar wind into the space environment surrounding Earth. These storms result from variations in the solar wind that produce major changes in the currents, plasmas, and fields in Earth's magnetosphere. Space Weather

can disrupt navigation systems such as the Global Navigation Satellite System (GNSS) and create harmful geomagnetic induced currents (GICs) in the power grid and pipelines. Generally, power outages due to space weather are very rare events, but evidence suggests that significant effects could occur.

No. 15: Extreme Heat events, or heat waves, are prolonged periods of excessively hot weather, which may be accompanied by high humidity. In 2012, three people died as a result of extreme heat in Ohio. From 2004-2013, the average number of heat related deaths per year exceeded all other weather related fatalities.

No. 16: Earthquakes are caused by the movement of the earth's crustal plates along faults. Franklin County is not located on a fault line, nor have any epicenters been located in Franklin County. Earthquakes occurring in other areas have been felt in Franklin County; however, no damage has been reported.

No. 17: Invasive Species are defined as any species that is not native to an ecosystem and whose introduction causes or is likely to cause harm to the economy, environment, or human health. An increasing threat of exotic diseases, such as the dangerous West Nile virus, exists because of increased transportation and encroachment of humans into previously remote ecosystems. Two events that have caused substantial economic and environmental damage in Ohio are the introduction of zebra mussels into waterways and the infestation of the emerald ash borer, responsible for killing ash trees.

No. 18: Air and Water Pollution/Contamination refers to the contamination of water, land or the air by substances that can adversely impact the environment and human health. Franklin County is subject to point and nonpoint water pollution of streams, as well as ground level ozone.

No. 19: Drought is defined as a prolonged period of abnormally dry weather, where the lack of sufficient precipitation causes a serious hydrologic imbalance with economic and/or social consequences. Franklin County is primarily impacted by drought relating to shortages in the water supply as well as a decrease in overall water quality. Drought also greatly impacts land throughout the county that is utilized as cropland or pasture.