



5.2 IDENTIFICATION OF HAZARDS OF CONCERN

To provide a strong foundation for mitigation actions considered in Sections 6 (Mitigation Strategy) and 9 (Jurisdictional Annexes), Livingston County focused on considering a full range of hazards that could impact the area and then identified and ranked those hazards that presented the greatest concern. The hazards of concern identification process incorporated input from the county and participating jurisdictions; review of the New York State Hazard Mitigation Plan (NYS HMP 2019); review of the 2015 Livingston County All-Hazard Mitigation Plan (2015 HMP); research and local, state, and federal information on the frequency, magnitude, and costs associated with the various hazards that have previously, or could feasibly, impact the region; and qualitative or anecdotal information regarding hazards and the perceived vulnerability of the study area’s assets to them. Table 5.2-1 documents the process of identifying the natural hazards of concern for further profiling and evaluation. Specific hazards not identified as a hazard of concern for Livingston County will not be further discussed in detail.

Hazards of Concern are those hazards that are considered most likely to impact a community. These are identified using available data and local knowledge.

Natural Hazards are those hazards that are a source of harm or difficulty created by a meteorological, environmental, or geological event.

5.2.1 Changes from 2015 Hazard Mitigation Plan

The 2015 HMP assessed impacts of the following hazards of concern: flood, drought, earthquake, flood, hazardous materials, invasive species, landslide, severe storms, severe winter storms, terrorism, utility failure, and wildfire. The 2022 update profiles all of the hazards above, plus the mine subsidence and pandemic hazards.

The 2022 Livingston County Hazard Mitigation Plan Update includes best available data throughout the plan to present an updated understanding of Livingston County’s risk.

5.2.2 Hazard Groupings

As per the 2015 Livingston County HMP, the Steering Committee and Planning Partnership maintained the grouping of hazards based on the similarity of hazard events, typical concurrence or impacts, consideration of how hazards have been grouped in Federal Emergency Management Agency (FEMA) guidance documents (*FEMA 386-2 Understanding Your Risks, Identifying Hazards and Estimating Losses; Multi-Hazard Identification and Risk Assessment – The Cornerstone of the National Mitigation Strategy; Local Mitigation Planning Handbook*), and consideration of hazard grouping in the NYS HMP. This HMP update specifically addresses the following natural hazards:

- A *Drought* is a period of unusually constant dry weather that persists long enough to cause deficiencies in water supply (surface or underground) that can last a short period or for many years. Droughts are slow-onset hazards, but they can severely affect crops, municipal water supplies, recreational resources, and wildlife over time. If drought conditions extend over a number of years, the direct and indirect economic impacts can be significant.
- The *Earthquake* hazard is the sudden movement of the earth’s surface caused by the release of stress accumulated within or along the edge of the earth’s tectonic plates, a volcanic eruption, or by a man-made explosion.
- The *Flood* hazard includes riverine flooding, flash flooding, shallow flooding, ice jam flooding, and dam failure flooding. Inclusion of the various forms of flooding under a general *Flood* hazard is consistent with that used in FEMA’s *Multi-Hazard Identification and Risk Assessment* guidance and the NYS HMP.



- The *Invasive Species* hazard includes invasive species that affect Livingston County and the surrounding region.
- The *Landslide* hazard occurs when natural rock, soil, artificial fill, or a combination move along a downward slope rapidly, striking at avalanche speeds that can travel several miles and growing in size as the landslide picks up trees, boulders, cars, and other materials.
- A *Pandemic* occurs when there are more cases of a particular disease than expected in a given area or among a specific group of people over a particular period of time. In an outbreak or epidemic, it is presumed that the cases are related to one another or that they have a common cause.
- The *Severe Storm* hazard includes windstorms that often entail a variety of other influencing weather conditions, including thunderstorms, hail, lightning, and tornadoes. Tropical disturbances (hurricanes, tropical storms, and tropical depressions) are often identified as a type of severe storm. For this HMP update, *Severe Storm* includes thunderstorms, hail, lightning, tornadoes, hurricanes, tropical storms, and Nor'easters.
- The *Severe Winter Storm* hazard includes heavy snowfall, blizzards, freezing rain/sleet, and ice storms. This grouping is consistent with the NYS HMP.
- The *Wildfire* hazard profile specifically addresses wildfires that occur in Livingston County or have a considerable impact on the county.

Technological and man-made hazards are also addressed in this 2022 HMP planning process. This plan specifically addresses the following technological and man-made hazards:

- The *Hazardous Materials* hazard includes materials and wastes considered severely harmful to human health and the environment, as defined by the United States Environmental Protection Agency (EPA). Many hazardous materials are commonly used substances, which are harmless in their normal uses but are quite dangerous if released.
- The *Mine Subsidence* hazard includes sinking and settling of the ground over the Retsof Salt Mine.
- *Utility Failure* is defined as any interruption or loss of electrical service caused by disruption of power transmission due to accident, sabotage, natural hazards, or equipment failure (also referred to as a loss of power or power outage). A significant power failure is defined as any incident of a long duration that would require involvement of local and/or state emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter.



Table 5.2-1. Identification of Hazards of Concern for Livingston County

Hazard	Is this a hazard that may occur in Livingston County?	If yes, does this hazard pose a significant threat to Livingston County?	Why was this determination made?	Source(s)
Avalanche	No	No	<ul style="list-style-type: none"> The NYS HMP identifies avalanche as a hazard of concern. Avalanches can occur in any situation where snow, slope, and weather conditions combine to create proper conditions. About 90 percent of all avalanches start on slopes of 30 to 45 degrees, and about 98 percent of all avalanches occur on slopes of 25 to 50 degrees. The topography of Livingston County does not support the occurrence of an avalanche. New York State, in general, has a very low occurrence of avalanche events based on statistics provided by the National Avalanche Center – American Avalanche Association (NAC-AAA) between 1998 and 2021. There have been no avalanche occurrences in Livingston County. The Steering Committee and Planning Partnership do not consider the hazard to be a significant concern. 	<ul style="list-style-type: none"> NYS DHSES NAC-AAA
Coastal Erosion	No	No	<ul style="list-style-type: none"> The NYS HMP identifies coastal erosion as a hazard of concern for New York State. Erosion can impact all of the state’s coastal counties along: Lake Erie and the Niagara River, Lake Ontario and the St. Lawrence River, Atlantic Ocean and Long Island Sound, Hudson River south of the federal dam in Troy, the East River, the Harlem River, the Kill van Kull and Arthur Kill, and all connecting waterbodies, bays, harbors, shallows, and wetlands. As stated above, Coastal Erosion is limited to the state’s coastal counties. Livingston County is not a coastal county; therefore, the Steering Committee and Planning Partnership do not consider the hazard to be a significant concern. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership
Dam Failure	Yes	Yes	<ul style="list-style-type: none"> The 2019 NYS HMP does not identify dam failure as a hazard of concern for New York State, though it is included in the Flood hazard profile. According to the NYS DEC, there are 77 dams within Livingston County, as shown in Section 4. Of these, two are high hazard (NYS DEC 2021). Dam failure is included within the flood profile. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership NYS DEC NYS GIS
Drought	Yes	Yes	<ul style="list-style-type: none"> The NYS HMP identifies drought as a hazard of concern for the state. Livingston County has been impacted by several drought events that have occurred. Drought conditions can cause shortages in water for human consumption, impact agricultural production, and lead to reduced local firefighting capabilities. A majority of Livingston County relies on groundwater for their potable water, and droughts can impact groundwater resources significantly, limiting the availability of drinking water to county residents. New York State was included in one FEMA drought-related disaster declaration, which did not include Livingston County. 	<ul style="list-style-type: none"> NYS DHSES FEMA USDA Input from Steering Committee and Planning Partnership



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			<ul style="list-style-type: none"> Livingston County was included in four recent drought-related USDA disaster declarations: <ul style="list-style-type: none"> S3427 – Drought, excessive heat - 2012 S3441 – Drought - 2012 S4023 - Drought – 2016 S4031 - Drought - 2016 According to the NRCC, Livingston County is in the Central Lakes Climate Division. This division has been impacted by periods of severe and extreme drought. The Steering Committee and Planning Partnership identified drought as a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> NOAA-NCEI NRCC
Earthquake	Yes	Yes	<ul style="list-style-type: none"> The NYS HMP identified earthquake as a hazard of concern for the state. The 500-year MRP earthquake corresponds to a % PGA value between 1.4 and 9.2 throughout the county. According to the FEMA document “Understanding Your Risks: Identifying Hazards and Estimating Losses,” areas with 3% PGA should conduct a risk assessment for earthquakes. New York State was included in one FEMA earthquake-related disaster declaration (DR-1415); Livingston County was not included in this declaration. Four earthquakes have had an epicenter in Livingston County since 1950. Based on input from the Steering Committee and Planning Partnership, earthquake is identified as a hazard of concern for Livingston County due to the Clarendon-Linden fault system that runs through the southwest corner of the county. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership USGS – Earthquake Hazards Program, Review of USGS Seismic Maps
Expansive Soils	No	No	<ul style="list-style-type: none"> The NYS HMP identified expansive soils as a hazard of concern for New York State. However, a majority of Livingston County is underlain by soils with little to no swelling potential and less than 50% of the area is underlain by soils with abundant clays of slight to moderate swelling potential. The Steering Committee and Planning Partnership did not identify expansive soils as a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership Review of USGS 1989 Swelling Clays Map of the Conterminous United States
Extreme Temperature	Yes	No	<ul style="list-style-type: none"> The NYS HMP identified extreme temperatures as a hazard of concern for New York State. Livingston County was included in nine recent USDA disaster declarations related to extreme temperature events: 	<ul style="list-style-type: none"> NYS DHSES Input from Steering



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			<ul style="list-style-type: none"> ○ S4031 – July 2016 – Heat, Excessive Heat (also included Drought) ○ S4023 – August 2016 – Heat, Excessive Heat ● The Steering Committee and Planning Partnership did not identify extreme temperature as a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> ● Committee and Planning Partnership ● NOAA-NCEI ● USDA
Flood (riverine, ice jam, dam failure, and flash)	Yes	Yes	<ul style="list-style-type: none"> ● The NYS HMP identified flooding as a hazard of concern for New York State. ● Between 1956 and 2020, Livingston County was included in two FEMA flood-related declarations. <ul style="list-style-type: none"> ○ FEMA-DR-1993 – June 2011 ○ FEMA-DR-4180 – July 2014 ● Between 1950 and 2021, there have been no ice jams in the county. However, the possibility exists, and ice jams could cause significant impacts in the county. ● Based on the history of flooding and its impacts on Livingston County and input from the Steering Committee and Planning Partnership, flooding has been identified as a hazard of concern for the county. 	<ul style="list-style-type: none"> ● NYS DHSES ● Input from Steering Committee and Planning Partnership ● FEMA ● NOAA-NCEI ● USACE CRREL Ice Jam Database
Hailstorm	Yes	Yes	Please see Severe Storm.	
Hazardous Materials	Yes	Yes	<ul style="list-style-type: none"> ● Livingston County has many roadways, railways, and pipelines that may carry hazardous materials through the county. ● The county has experienced many small releases of hazardous materials. 	<ul style="list-style-type: none"> ● Input from Steering Committee and Planning Partnership
Hurricane	Yes	Yes	Please see Severe Storm.	
Ice Jams	Yes	Yes	Please see Flood.	
Ice Storm	Yes	Yes	Please see Severe Winter Storm.	
Infestation	Yes	Yes	Please see Invasive Species.	
Invasive Species	Yes	Yes	<ul style="list-style-type: none"> ● The 2019 NYS HMP does not identify invasive species as a hazard of concern for New York State. ● New York State has been affected by many different types of invasive insects and plants. ● The NYS DEC identified Livingston County to be located within the emerald ash borer quarantine zone and the emerald ash borer has been found within the county. The quarantine zone has since been eliminated as it is no longer effective. 	<ul style="list-style-type: none"> ● NYS DEC ● Input from Steering Committee and Planning Partnership



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			<ul style="list-style-type: none"> The Livingston County Steering Committee and Planning Partnership identified invasive species as a hazard of concern within Livingston County. 	
Landslide	Yes	Yes	<ul style="list-style-type: none"> Based on previous occurrences and input from the Steering Committee and Planning Partnership, the landslide hazard is identified as a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership FEMA
Mine Subsidence	Yes	Yes	<ul style="list-style-type: none"> NYS HMP indicates New York State is vulnerable to land subsidence; however, this hazard is “extremely localized” and poses a “very low risk to population and property,” according to the 2019 NYS HMP. Though this hazard was not included in the 2015 Livingston County HMP, the Steering Committee and Planning Partnership included it as a hazard of concern for the 2022 HMP due to the subsidence that has occurred over the Retsof Salt Mine. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership USGS
Nor’easters	Yes	Yes	Please see Severe Storm.	
Pandemic	Yes	Yes	<ul style="list-style-type: none"> The 2019 NYS HMP does not identify disease outbreak as a hazard of concern for New York. Diseases that impact Livingston County include foodborne illness, vaccine-preventable disease, and vector-borne diseases (tick-borne and mosquito-borne). For the disease outbreak/pandemic profile, the county identified influenza, the Ebola virus, and COVID-19 as the diseases that may lead to an epidemic. The Steering Committee and Planning Partnership identified pandemic as a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> NYS DHSES NYS DEC Input from Steering Committee and Planning Partnership
Severe Storm (windstorms, thunderstorms, hurricanes/tropical storms, Nor’easters, hail, and tornadoes)	Yes	Yes	<ul style="list-style-type: none"> The NYS HMP identified severe storm as a hazard of concern for New York State; however, for the state HMP, the hazards were profiled in individual sections thunderstorms, lightning, hail, tornadoes, high winds, and hurricanes/tropical storms. For the Livingston County HMP, the hazards were combined into one profile. Between 1954 and 2021, Livingston County was included in 12 FEMA severe storm-related declarations. <ul style="list-style-type: none"> DR-338 - Flood - June 1972 DR-494 - Severe Ice Storm - March 1976 DR-898 - Snow - March 1991 DR-1095 - Flood - January 1996 	<ul style="list-style-type: none"> NYS DHSES FEMA NOAA-NCEI SPC Input from Steering Committee and Planning Partnership





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			<ul style="list-style-type: none"> ○ DR-1233 - Severe Storm(s) - July 1998 ○ DR-1335 - Severe Storm(s) - July 2000 ○ DR-1486 - Severe Storm(s) - August 2003 ○ DR-1534 - Severe Storm(s) - August 2004 ○ EM-3262 - Hurricane - September 2005 ○ DR-1993 - Flood - June 2011 ○ EM-3351 - Hurricane - October 2013 ○ DR-4180 - Severe Storm(s) - July 2014 <ul style="list-style-type: none"> ● There have been two tornadoes in Livingston County from 1950 to 2021. ● Based on previous occurrences and input from the Steering Committee and Planning Partnership, severe storms are identified as a hazard of concern for Livingston County. 	
Severe Winter Storm (heavy snow, blizzards, ice storms)	Yes	Yes	<ul style="list-style-type: none"> ● The NYS HMP identified severe winter storm as a hazard of concern for New York State. According to the 2019 NYS HMP, Livingston County’s average annual snowstorm losses is \$23,876. ● FEMA included Livingston County in five winter storm-related disaster declarations: <ul style="list-style-type: none"> ○ DR-494-NY - Severe Ice Storm – March 1976 ○ DR-898-NY - Snow – March 1991 ○ EM-3107-NY - Snow – March 1993 ○ EM-3138-NY - Snow – March 1999 ○ DR-1467-NY - Severe Ice Storm – May 2003 ● Based on previous occurrences and input from the Steering Committee and Planning Partnership, severe winter storms are identified as a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> ● NYS DHSES ● FEMA ● NOAA-NCEI ● Input from Steering Committee and Planning Partnership
Terrorism	Yes	Yes	<ul style="list-style-type: none"> ● The Steering Committee and Planning Partnership consider terrorism to be a hazard of concern for Livingston County due to having numerous government facilities and the widespread threat of cyber attack and cyberterrorism that can affect all people, systems, and facilities in the county. 	<ul style="list-style-type: none"> ● Input from Steering Committee and Planning Partnership
Tornado	Yes	Yes	Please see Severe Storm.	
Tsunami	No	No	<ul style="list-style-type: none"> ● Tsunami is not identified as a hazard of concern in the NYS HMP. ● The Steering Committee and Planning Partnership do not consider tsunami to be a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> ● NYS DHSES ● Input from Steering Committee and



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				Planning Partnership
Utility Failure	Yes	Yes	<ul style="list-style-type: none"> Livingston County experiences utility failures (generally power outages) several times each year. These failures are usually due to severe storms or severe winter storms that affect the county. 	<ul style="list-style-type: none"> Input from Steering Committee and Planning Partnership NOAA-NCEI
Volcano	No	No	<ul style="list-style-type: none"> The NYS HMP did not identify volcano as a hazard of concern for New York State and, therefore, the Steering Committee and Planning Partnership does not consider volcano to be a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership
Wildfire	Yes	Yes	<ul style="list-style-type: none"> The NYS HMP identified wildfire as a hazard of concern for New York State. Livingston County was not included in any FEMA wildfire-related disaster declarations. The age of many residential structures within the region, combined with changes in building construction and materials, creates a threat of fire loss to any structure within the county. Livingston County is not among New York’s most susceptible counties to wildfire damage. Based on available data, the Steering Committee and Planning Partnership identified wildfire as a hazard of concern for Livingston County. 	<ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership FEMA
Windstorm	Yes	Yes	Please see Severe Storm.	

CRREL Cold Regions Research and Engineering Laboratory
DR Presidential Disaster Declaration Number
EM Presidential Disaster Emergency Number
FEMA Federal Emergency Management Agency
MRP Mean Return Period
NAC-AAA National Avalanche Center – American Avalanche Association
NOAA-NCEI National Oceanic and Atmospheric Administration-National Centers for Environmental Information
NRCC Northeast Regional Climate Center
NYS DEC New York State Department of Environmental Conservation

NYS DHSES New York State Division of Homeland Security and Emergency Services
NYS HMP New York State Hazard Mitigation Plan
PGA Peak ground acceleration
SPC Storm Prediction Center
USACE U.S. Army Corps of Engineers
USDA U.S. Department of Agriculture
USGS United States Geological Survey





5.2.3 Summary of Hazards of Concern

In summary, a total of 13 hazards of concern were identified as significant hazards affecting the entire county, to be addressed at the county level in this plan (shown here in alphabetical order):

- Drought
- Earthquake
- Flood
- Hazardous Materials
- Invasive Species
- Landslide
- Mine Subsidence
- Pandemic
- Severe Storm
- Severe Winter Storm
- Terrorism
- Utility Failure
- Wildfire

Other hazards of concern that might have occurred in Livingston County but have a low potential to occur or result in significant impacts can be considered in future updates to this plan.