



5.2 IDENTIFICATION OF HAZARDS OF CONCERN

To provide a strong foundation for mitigation actions considered in Section 6 (Mitigation Strategy) and Section 9 (Jurisdictional Annexes), Monroe 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 hazard 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 2017 Monroe County HMP (2017 Monroe County Hazard Mitigation Plan); 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 natural (not man-made) 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 Monroe 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 2017 Hazard Mitigation Plan

The 2017 Monroe County Hazard Mitigation Plan did not identify Pandemic as a hazard of concern. Members of the Steering Committee and Planning Partnership identified this hazard as hazards of concern for the 2023 Hazard Mitigation Plan Update.

The Steering Committee re-evaluated the inclusion of Civil Unrest and Terrorism as stand-alone hazards as per the 2017 plan. However, based on the inherent random aspect civil unrest and terrorism, the alignment with preparedness rather than mitigation planning, and the inclusion of these hazards in preparedness plans, it was determined to not include these hazards in the 2023 plan. The Steering Committee also reevaluated Utility Failure as a stand-alone hazard. The Steering Committee determined that utility failure is a cascading hazard associated with severe weather and therefore, has been included by reference in the Extreme Temperature, Flood, Severe Storm, and Severe Winter Storm hazards.

The 2023 Monroe County Hazard Mitigation Plan includes best available data throughout the plan to present an updated understanding of Monroe County's risk.

5.2.2 Hazard Groupings

The Steering Committee approved use of the following hazard event groupings which are the same as those provided by the 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 with consideration of hazard grouping in the NYS HMP.

A *Drought* is a period characterized by long durations of below normal precipitation. Drought is a temporary irregularity that can affect agriculture, water supply, aquatic ecology, wildlife, and plant life.

An *Earthquake* 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 a man-made explosion.



The *Extreme Temperature* hazard includes both heat and cold events, which can have a significant impact to human health, commercial/agricultural businesses, and primary and secondary effects on infrastructure (e.g., burst pipes and power failure). What constitutes “extreme cold” or “extreme heat” can vary across different areas of the country based on what the population is accustomed to. The 2022 HMP considers the heat island effect that occurs within developed areas.

The *Flood* hazard includes riverine flooding, lakeshore, flash flooding, shallow flooding, ice jam flooding, urban drainage 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 *Hazardous Materials* profile includes materials and wastes that are considered severely harmful to human health and the environment, as defined by the U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (also known as Superfund). Many hazardous materials are commonly used substances, which are harmless in their normal uses but are quite dangerous if released.

The *Infestation and Invasive Species* profile includes infestations of native species and invasive species. An infestation is the presence of pest organisms within an area or field, on the surface of a host, or in soil at numbers or quantities large enough to harm, threaten, or otherwise negatively affect native plants, animals, and humans. Invasive species are non-native species that can harm the environment, the economy, or human health.

The *Landslide* hazard includes rock falls, rock topples, rotational slump, transitional slide, earth flows, creep, block slides, debris avalanche, and debris flows.

The *Pandemic* hazard exists 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. An aggregation of cases in a given area over a particular period, regardless of the number of cases, is called a cluster. 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, and tropical storms.

The *Severe Winter Storm* hazard includes blizzards, ice storms, snowstorms, sleet, and freezing rain.

The *Wildfire* hazard can be defined as any non-structural fire that occurs in the wildland. Three distinct types of wildland fires have been defined and include naturally occurring wildfire, human-caused wildfire, and prescribed fire. They may be highly destructive and become difficult to control. Wildfires result in the disturbance of forest and brush and destruction of real estate and personal property and have secondary impacts on other hazards, such as flooding, by removing vegetation and disturbing watersheds.



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| Hazard | Is this a hazard that may occur in Monroe County? | If yes, does this hazard pose a significant threat to Monroe County? | Why was this determination made? | Source(s) |
|-----------------|---|--|---|---|
| Avalanche | No | No | <ul style="list-style-type: none"> The 2019 New York State Hazard Mitigation Plan (NYS HMP) identifies avalanche as a hazard of concern. The topography and climate of Monroe 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 National Avalanche Center – American Avalanche Association (NAC-AAA) between 1998 and 2018. Avalanche was identified as a hazard in the NYS HMP, and there have been occurrences in the state; however, there were no occurrences in Monroe 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 |
| Civil Unrest | Yes | No | <ul style="list-style-type: none"> The 2019 NYS HMP does not identify civil unrest as a hazard of concern for New York State. Monroe County has a history of civil unrest. The Steering Committee and Planning Partnership do not consider terrorism to be a hazard of concern for Monroe County as is addressed in other preparedness plans. | <ul style="list-style-type: none"> Input from Steering Committee and Planning Partnership Monroe County OEM |
| Coastal Erosion | Yes | Yes | <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. Although Monroe County has a coastline along Lake Ontario, coastal erosion was not identified as a significant concern by the Planning Committee. Coastal erosion is briefly discussed in the “Flood” profile. 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 | No | <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 81 dams within Monroe County, as shown in Section 4. Of these 81 dams in Monroe County: 43 low hazard, 6 intermediate hazard, 9 high hazard, and 23 negligible or no hazard classification code (NYSDEC 2022). | <ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and |



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| | | | <ul style="list-style-type: none"> • Dam failure is included in the flood profile. | Planning Partnership <ul style="list-style-type: none"> • NYSDEC • NYS GIS |
| Pandemic | Yes | Yes | <ul style="list-style-type: none"> • The 2019 NYS HMP does not identify pandemic as a hazard of concern for New York State. • The County has been impacted by various diseases (influenza, COVID-19). • The Steering Committee and Planning Partnership has identified pandemic as a hazard of concern for Monroe County. | <ul style="list-style-type: none"> • NYS DHSES • NYS DEC • Input from Steering Committee and Planning Partnership |
| Drought | Yes | Yes | <ul style="list-style-type: none"> • The NYS HMP identifies drought as a hazard of concern for the state. Monroe County has been impacted by several drought events that have occurred in New York State. • Agriculture is a substantial industry in Monroe County. Drought conditions would severely impact the county’s economy. • New York State was included in one FEMA drought-related disaster declaration, which did not include Monroe County. • Monroe County was included in 3 recent drought-related U.S. Department of Agriculture (USDA) disaster declarations: <ul style="list-style-type: none"> ○ S4023 - 2016 Drought ○ S4031 - 2016 Drought ○ S4037 - 2016 Drought • The Steering Committee and Planning Partnership has identified drought as a hazard of concern for Monroe County. | <ul style="list-style-type: none"> • NYS DHSES • FEMA • USDA • Input from Steering Committee and Planning Partnership • NOAA-NCEI • NRCC |



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|---------------------|---|--|---|--|
| Earthquake | Yes | Yes | <ul style="list-style-type: none"> The NYS HMP identified earthquake as a hazard of concern for the state. A 500-year earthquake event could result in a moderate level peak ground acceleration (PGA) of 3.9-5.2%g New York State was included in one FEMA earthquake-related disaster declaration (DR-1415); Monroe County was not included in this declaration. From 2015 to 2022, there have been no significant earthquakes epicentered in Monroe County. Based on input from the Steering Committee and Planning Partnership, earthquake has been identified as a hazard of concern for Monroe County. | <ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership U.S. Geological Survey (USGS) – Earthquake Hazards Program, Review of USGS Seismic Maps |
| Expansive Soils | Yes | Yes | <ul style="list-style-type: none"> The NYS HMP does not identify expansive soils as a hazard of concern for New York State. USGS indicated that Monroe County does not have the type of soils (swelling clay) that would result in expansive or swelling soils; therefore, Monroe County has little to no swelling potential. 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 Review of USGS 1989 Swelling Clays Map of the Conterminous United States |
| Extreme Temperature | Yes | Yes | <ul style="list-style-type: none"> The NYS HMP identifies Coldwaves and Heatwaves as hazards of concern for New York State. Monroe County was included in six recent USDA disaster declarations related to extreme temperature events: <ul style="list-style-type: none"> S4023 - 2015 Heat, Excessive Heat S4031 - 2015 Heat Excessive Heat S4037 - 2015 Heat, Excessive Heat S4052 - 2015 Frost, Freeze | <ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership NOAA-NCEI USDA |





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|--|---|--|---|--|
| | | | <ul style="list-style-type: none"> ○ S4903 - 2020 Frost, Freeze ○ S4904 - 2020 Frost, Freeze • The Steering Committee and Planning Partnership identified extreme temperature as a hazard of concern for Monroe County. | |
| Flood (riverine, lakeshore, ice jam, dam failure, urban flooding, and flash flooding) | Yes | Yes | <ul style="list-style-type: none"> • The NYS HMP identifies flooding as a hazard of concern for New York State. • Between 1956 and 2022, Monroe County was included in 4 FEMA flood-related declarations. <ul style="list-style-type: none"> ○ FEMA DR-338; June 23, 1972; New York Tropical Storm Agnes ○ FEMA DR-367; March 21, 1973; New York High Winds, Wave Action, Flooding ○ FEMA EM-3004; November 2, 1974; New York Flooding ○ FEMA DR-4348; May 2, 2017 - August 6, 2017; New York Flooding • Based on the history of flooding and its impacts on Monroe 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 Profile | |
| Hurricane (tropical cyclones, including tropical storms and tropical depressions) | Yes | Yes | Please see Severe Storm Profile | |
| Ice Jams | Yes | Yes | Please see Flood Profile | |
| Ice Storm | Yes | Yes | Please see Severe Winter Storm Profile | |
| Invasive Species/Infestation | 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. • The Planning Committee considers infestation and invasive species to be a potential hazard to agriculture and recreation in the County. • New York State has been affected by various instances of invasive species. • The stinkbug infestation of 2010 destroyed over \$46,000 worth of the crops in the County. • The county has also experienced infestations from West Nile virus, Armyworm, Emerald ash borers, and Dutch elm disease. • Based on input from the Steering Committee and Planning Partnership, invasive species/infestation has been identified as a hazard of concern for Monroe County. | <ul style="list-style-type: none"> • NYS DEC • Input from Steering Committee and Planning Partnership |



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|--|---|--|--|---|
| Land Subsidence | No | No | <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. NYS HMP does not identify Monroe County as a community that has experienced land subsidence in the past. In general, moderate to low land subsidence susceptibility exists for New York State; however, the NYS HMP states that this hazard has a very low risk to population or property. The Steering Committee and Planning Partnership did not identify land subsidence as a hazard of concern for Monroe County. | <ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership USGS |
| Landslide | Yes | Yes | <ul style="list-style-type: none"> The 2019 NYS HMP includes landslide as a hazard of concern for New York State. Between 1954 and 2022, New York State has included in one landslide-related disaster declaration, which did not include Monroe County. USGS indicates within the National Atlas Map Maker program that Monroe County is identified as having low landslide incidence, with pockets of moderate incidence. Based on previous occurrences and input from the Steering Committee and Planning Partnership, the landslide hazard was identified as a hazard of concern for Monroe County. | <ul style="list-style-type: none"> NYS DHSES Input from Steering Committee and Planning Partnership FEMA |
| Nor’Easters (extra-tropical cyclones, including severe winter low-pressure systems) | No | No | <ul style="list-style-type: none"> Monroe County is located in the western part of New York State and is therefore not highly susceptible to Nor’Easter systems that come up the eastern seaboard. This hazard is briefly mentioned in the “Severe Storms” profile. | <ul style="list-style-type: none"> NYS DHSES FEMA NOAA-NCEI |
| Severe Storm (windstorms, thunderstorms, hail, and tornadoes) | Yes | Yes | <ul style="list-style-type: none"> The NYS HMP identifies severe storm as a hazard of concern for New York State; however, for the state HMP, the hazards were profiled in individual sections lightning, hail, tornadoes, high winds, and hurricanes/tropical storms. For the Monroe County HMP, the hazards were combined into one profile. Between 1954 and 2022, Monroe County was included in four FEMA severe storm-related declarations. <ul style="list-style-type: none"> FEMA DR-1244; September 7, 1998; New York Severe Weather FEMA DR-1233; June 25 – July 10, 1998; New York Severe Storms and Flooding FEMA DR-1534; May 13 – June 17, 2004; New York Severe Storms and Flooding FEMA DR-1564; August 13 – September 16, 2004; New York Severe Storms and Flooding Monroe County was included in two recent severe storm-related U.S. Department of Agriculture (USDA) disaster declarations: <ul style="list-style-type: none"> S3885 - 2015 Excessive Rain, High Winds, Hail, Lightning, and Tornado | <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"> o S4595 - 2019 Hail • Based on previous occurrences and input from the Steering Committee and Planning Partnership, severe storms are identified as a hazard of concern for Monroe County. | |
| Severe Winter Storm (heavy snow, blizzards, ice storms) | Yes | Yes | <ul style="list-style-type: none"> • The NYS HMP identifies ice storms and snowstorms as hazards of concern for New York State. According to the 2019 NYS HMP, Monroe County has an annualized count of 2 snowstorm events and annualized snowstorm losses of \$212 thousand. According to the 2019 NYS HMP, Monroe County has an annualized count of 4 ice storm events and annualized ice storm losses of \$563 thousand. • FEMA included Monroe County in 4 snowstorm and 2 ice storm-related disaster declarations: <ul style="list-style-type: none"> o FEMA DR-494; March 19, 1976; New York Ice Storm, Severe Storms; Flooding o FEMA DR-898; March 3-4, 1990; New York Severe Storm, Winter Storm o FEMA EM-3107; March 13-17; New York Severe Blizzard o FEMA DR-1196; January 5-17, 1998; New York Severe Winter Storms o FEMA EM-3138; March 3-6, 1999; New York Winter Storm o FEMA DR-1467; April 3-5, 2003; New York Ice Storm • Based on previous occurrences and input from the Steering Committee and Planning Partnership, severe winter storms are identified as a hazard of concern for Monroe County. | <ul style="list-style-type: none"> • NYS DHSES • FEMA • NOAA-NCEI • Input from Steering Committee and Planning Partnership |
| Terrorism | Yes | No | <ul style="list-style-type: none"> • Monroe County has a history of terrorism and has proximity to an international border. • The Steering Committee and Planning Partnership do not consider terrorism to be a hazard of concern for Monroe County as is addressed in other preparedness plans. | <ul style="list-style-type: none"> • Input from Planning Committee • Monroe County OEM |
| Tornado | Yes | Yes | Please see Severe Storm | |
| Tsunami | No | No | <ul style="list-style-type: none"> • Tsunami is 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 Monroe County. | <ul style="list-style-type: none"> • NYS DHSES • Input from Steering Committee and Planning Partnership |
| Utility Failure | Yes | Yes | <ul style="list-style-type: none"> • Monroe 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"> • NYS DHSES • NOAA NCEI |



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|-----------|---|--|---|---|
| | | | <ul style="list-style-type: none"> The Steering Committee and Planning Partnership consider utility failure a cascading impact of severe storm, severe winter storm, and flooding events and included discussion of utility failure in those hazard profiles. | <ul style="list-style-type: none"> Input from Steering Committee and Planning Partnership |
| Volcano | No | No | <ul style="list-style-type: none"> The NYS HMP identifies volcano as a hazard of concern for New York State. However, the Steering Committee and Planning Partnership do not consider volcano to be a hazard of concern for Monroe 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 identifies wildfire as a hazard of concern for New York State. Monroe County was not included in any FEMA wildfire-related disaster declarations. Wildfires have occurred within Monroe County. The county's agriculture industry could be severely impacted by a large wildfire. Based on available data and the nature of the county, the Steering Committee and Planning Partnership identified Wildfire as a hazard of concern. | <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*
- NCEI *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*
- USDA *U.S. Department of Agriculture*
- USGS *United States Geologic Survey*





5.2.3 Summary of Hazards of Concern

In summary, a total of 11 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
- Extreme Temperature
- Flood
- Hazardous Materials
- Infestation and Invasive Species
- Landslide
- Pandemic
- Severe Storm
- Severe Winter Storm
- Wildfire

Other natural and technological hazards of concern have occurred within Monroe County, but have a low potential to occur, are addressed by other planning mechanisms, and/or do not result in significant impacts within the County. Therefore, these hazards will not be further addressed within this version of the Plan. However, if deemed necessary by the County, these hazards may be considered in future versions of the Plan.