



## 5.2 IDENTIFICATION OF HAZARDS OF CONCERN

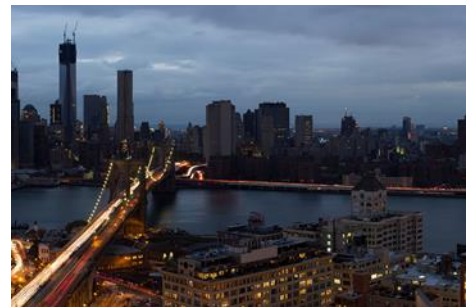
To provide a strong foundation for mitigation actions considered in Section 6 (Mitigation Strategy) and Section 9 (Jurisdictional Annexes), Cattaraugus County focused on considering a full range of hazards that could impact the area and then identified and ranked those hazards that presented the greatest 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 2014 Cattaraugus County HMP (2014 Cattaraugus County Multi-Jurisdictional 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 Cattaraugus 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 2014 Hazard Mitigation Plan

The 2013 Cattaraugus County Hazard Mitigation Plan did not identify Utility Failure as a hazard of concern. Members of the Steering Committee and Planning Partnership identified Utility Failure as a hazard of concern for the 2020 Hazard Mitigation Plan Update. The Utility Failure hazard addresses and identifies any incident of a long duration, which would require the involvement of the local and/or State emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter.



Source: NYIS (2019)

The 2020 Cattaraugus County Hazard Mitigation Plan Update includes best available data throughout the plan to present an updated understanding Cattaraugus County’s risk.

### 5.2.2 Hazard Groupings

As per the 2014 Cattaraugus 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.



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



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 heavy snowfall, blizzards, freezing rain/sleet, and ice storms. This grouping is consistent with the NYS HMP.



The *Utility Failure* hazard includes any incident of a long duration, which would require the involvement of the local and/or State emergency management organizations to coordinate provision of food, water, heating, cooling, and shelter.



The *Wildfire* hazard profile specifically addresses wildfires that occurred in Cattaraugus County or had a considerable impact on the county.

Other than the Utility Failure hazard profile, technological (e.g., hazardous material incidents) and man-made hazards (e.g., terrorism, man-made dam breaches/failures) are not being addressed in this planning process. The DMA 2000 regulations do not require consideration of such hazards, and due to limited funding, these were not chosen for inclusion in this plan by Cattaraugus County and planning participants. The county can expand the scope of this HMP to include other less frequent natural, technological, and man-made hazards as resources permit.



Table 5.2-1. Identification of Natural Hazards of Concern for Cattaraugus County

Hazard	Is this a hazard that may occur in Cattaraugus County?	If yes, does this hazard pose a significant threat to Cattaraugus County?	Why was this determination made?	Source(s)
Avalanche	No	No	<ul style="list-style-type: none"> <li>The New York State Hazard Mitigation Plan (NYS HMP) identifies avalanche as a hazard of concern.</li> <li>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 Cattaraugus County does not support the occurrence of an avalanche.</li> <li>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.</li> <li>Avalanche was identified as a hazard in the NYS HMP and there have been occurrences in the state; however, there were no occurrences in Cattaraugus County. The Steering Committee and Planning Partnership do not consider the hazard to be a significant concern.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>NAC-AAA</li> </ul>
Coastal Erosion	No	No	<ul style="list-style-type: none"> <li>The NYSHMP 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.</li> <li>As stated above, Coastal Erosion is limited to the state’s coastal counties. Cattaraugus County is not a coastal county; therefore, the Steering Committee and Planning Partnership do not consider the hazard to be a significant concern.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Dam Failure	Yes	Yes	<ul style="list-style-type: none"> <li>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.</li> <li>According to the NYS DEC there are 164 dams within Cattaraugus County, as shown in Section 4. Of these 164 dams in Cattaraugus County: 85 low hazard, 14 intermediate hazard, 12 high hazard, 52 negligible or no hazard classification, and 1 with no classification code (NYSDEC, 2020).</li> <li>Dam failure is included in the flood profile.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> <li>NYSDEC</li> <li>NYS GIS</li> </ul>
Disease Outbreak	Yes	No	<ul style="list-style-type: none"> <li>The 2019 NYS HMP does not identify disease outbreak as a hazard of concern for New York State.</li> <li>The Steering Committee and Planning Partnership had determined the hazards of concern before the beginning of the COVID-19 pandemic. COVID-19 will be addressed in future updates of this plan.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>NYS DEC</li> <li>Input from Steering Committee and</li> </ul>



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Hazard	Is this a hazard that may occur in Cattaraugus County?	If yes, does this hazard pose a significant threat to Cattaraugus County?	Why was this determination made?	Source(s)
			<ul style="list-style-type: none"> <li>While the county has been impacted by various other diseases (influenza, Lyme disease), the Steering Committee and Planning Partnership did not identify disease outbreak as a hazard of concern for Cattaraugus County.</li> </ul>	Planning Partnership
Drought	Yes	No	<ul style="list-style-type: none"> <li>The NYS HMP identifies drought as a hazard of concern for the state. Cattaraugus County has been impacted by several drought events that have occurred in New York State.</li> <li>Drought conditions can cause shortages in water for human consumption, impact agricultural production, and lead to reduced local firefighting capabilities. A majority of Cattaraugus County relies on groundwater for their potable water, and droughts can impact groundwater resources significantly, limiting the availability of drinking water to county residents.</li> <li>New York State was included in one FEMA drought-related disaster declaration, which did not include Cattaraugus County.</li> <li>Cattaraugus County was included in five recent drought-related U.S. Department of Agriculture (USDA) disaster declarations:               <ul style="list-style-type: none"> <li>S3441 – Drought - 2012</li> <li>S3427 – Drought / Excessive Heat – 2012</li> <li>S4023 – Drought / Excessive Heat – 2016</li> <li>S4031 – Drought / Excessive Heat – 2016</li> <li>S4037 – Drought / Excessive Heat – 2016</li> </ul> </li> <li>According to the Northeast Regional Climate Center (NRCC), Cattaraugus County is in the Western Plateau Climate Division. This division has been impacted by periods of severe and extreme drought, including the following events:               <ul style="list-style-type: none"> <li>October – November 1985</li> <li>November 1908 – January 1909</li> <li>October 1930 – June 1931</li> <li>June 1934 – March 1935</li> <li>September – October 1936</li> <li>November 1941 – January 1942</li> <li>November – December 1949</li> <li>June – July 1955</li> <li>November – December 1957</li> <li>November 1960 – January 1961</li> <li>October 1964 – March 1965</li> <li>May – October 1965</li> <li>August 1991 – March 1992</li> <li>August – September 1995</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>FEMA</li> <li>USDA</li> <li>Input from Steering Committee and Planning Partnership</li> <li>NOAA-NCEI</li> <li>NRCC</li> </ul>



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			<ul style="list-style-type: none"> <li>○ November – December 2001</li> <li>● The Steering Committee and Planning Partnership did not identify drought as a hazard of concern for Cattaraugus County.</li> </ul>	
Earthquake	Yes	No	<ul style="list-style-type: none"> <li>● The NYS HMP identified earthquake as a hazard of concern for the state.</li> <li>● Cattaraugus County has a peak ground acceleration (PGA) below 3%g. According to the FEMA document “Understanding Your Risks: Identifying Hazards and Estimating Losses”, areas with 3%g should conduct a risk assessment for earthquakes.</li> <li>● New York State was included in one FEMA earthquake-related disaster declaration (DR-1415); Cattaraugus County was not included in this declaration.</li> <li>● According to the NYS HMP, between 1737 and 2016, there were 550 earthquakes epicentered in the state and numerous earthquakes outside of the state that were felt within the state. From 1996 to 2017, there have been no significant earthquakes epicentered in Cattaraugus County.</li> <li>● Based on input from the Steering Committee and Planning Partnership, earthquake has not been identified as a hazard of concern for Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>● NYS DHSES</li> <li>● Input from Steering Committee and Planning Partnership</li> <li>● U.S. Geological Survey (USGS) – Earthquake Hazards Program, Review of USGS Seismic Maps</li> </ul>
Expansive Soils	Yes	No	<ul style="list-style-type: none"> <li>● The NYS HMP identified expansive soils as a hazard of concern for New York State. However, a majority of Cattaraugus 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.</li> <li>● The Steering Committee and Planning Partnership did not identify expansive soils as a hazard of concern for Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>● NYS DHSES</li> <li>● Input from Steering Committee and Planning Partnership</li> <li>● Review of USGS 1989 Swelling Clays Map of the Conterminous United States</li> </ul>
Extreme Temperature	Yes	No	<ul style="list-style-type: none"> <li>● The NYS HMP identified extreme temperatures as a hazard of concern for New York State.</li> <li>● Cattaraugus County was included in 9 recent USDA disaster declarations related to extreme temperature events:               <ul style="list-style-type: none"> <li>○ S3249 – March 2012 – Frosts and Freezes</li> <li>○ S3250 – March 2012 – Frosts and Freezes, Unseasonably Warm Temperatures, and Excessive Heat</li> <li>○ S3427 – June 2012 – Excessive Heat (also included Drought)</li> <li>○ S3666 – December 2014 – Frosts and Freezes</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● NYS DHSES</li> <li>● Input from Steering Committee and Planning Partnership</li> <li>● NOAA-NCEI</li> <li>● USDA</li> </ul>



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			<ul style="list-style-type: none"> <li>○ S3672 – December 2014 – Frosts and Freezes</li> <li>○ S3886 – January 2015 – Frosts and Freezes</li> <li>○ S4031 – July 2016 – Heat, Excessive Heat (also included Drought)</li> <li>○ S4037 – July 2016 – Heat, Excessive Heat (also included Drought)</li> <li>○ S4023 – August 2016 – Heat, Excessive Heat</li> <li>● The Steering Committee and Planning Partnership did not identify extreme temperature as a hazard of concern for Cattaraugus County.</li> </ul>	
Flood (riverine, ice jam, dam failure and flash)	Yes	Yes	<ul style="list-style-type: none"> <li>● The NYS HMP identified flooding as a hazard of concern for New York State.</li> <li>● Between 1956 and 2020, Cattaraugus County was included in 3 FEMA flood-related declarations.               <ul style="list-style-type: none"> <li>○ FEMA-DR-233 (Severe Storms and Flooding) – October 1967</li> <li>○ FEMA-DR-338 (Tropical Storm Agnes) – June 1972</li> <li>○ FEMA-DR-1095 (Severe Storms and Flooding) – January 1996</li> </ul> </li> <li>● Between 1934 and 2020, there have been 18 ice jams in the county, occurring along the Alleghany River and Cattaraugus Creek.</li> <li>● Based on the history of flooding and its impacts on Cattaraugus County and input from the Steering Committee and Planning Partnership, flooding has been identified as a hazard of concern for the county.</li> </ul>	<ul style="list-style-type: none"> <li>● NYS DHSES</li> <li>● Input from Steering Committee and Planning Partnership</li> <li>● FEMA</li> <li>● NOAA-NCEI</li> <li>● USACE CRREL Ice Jam Database</li> </ul>
Hailstorm	Yes	Yes	Please see Severe Storm	
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	No	Please see invasive species	
Invasive Species	Yes	No	<ul style="list-style-type: none"> <li>● The 2019 NYS HMP does not identify invasive species as a hazard of concern for New York State.</li> <li>● New York State has been affected by various instances of invasive ticks and mosquitos.</li> <li>● The NYS DEC has identified Cattaraugus County to be located within the emerald ash borer restricted zone and identified several known locations of the emerald ash borer within the county.</li> <li>● The Cattaraugus County Steering Committee and Planning Partnership did not identify invasive species as a hazard of concern within Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>● NYS DEC</li> <li>● Input from Steering Committee and Planning Partnership</li> </ul>



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Land Subsidence	Yes	No	<ul style="list-style-type: none"> <li>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.</li> <li>The Steering Committee and Planning Partnership did not identify land subsidence as a hazard of concern for Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> <li>USGS</li> </ul>
Landslide	Yes	No	<ul style="list-style-type: none"> <li>The 2019 NYS HMP includes landslide as a hazard of concern for New York State.</li> <li>Between 1954 and 2020 New York State has included in one landslide-related disaster declaration, which included Cattaraugus County.</li> <li>Based on previous occurrences and input from the Steering Committee and Planning Partnership, the landslide hazard was identified as a hazard of concern for Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> <li>FEMA</li> </ul>
Nor’Easters	No	N/A	<ul style="list-style-type: none"> <li>The Steering Committee and Planning Partnership do not consider Nor’Easters to be a hazard of concern for Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>FEMA</li> <li>NOAA-NCEI</li> </ul>
Severe Storm (windstorms, thunderstorms, hurricanes / tropical storms, hail, and tornadoes)	Yes	Yes	<ul style="list-style-type: none"> <li>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 Cattaraugus County HMP, the hazards were combined into one profile.</li> <li>Between 1954 and 2020, Cattaraugus County was included in 12 FEMA severe storm-related declarations.               <ul style="list-style-type: none"> <li>FEMA-DR-233 (Severe Storms and Flooding) – October 1967</li> <li>FEMA-DR-338 (Tropical Storm Agnes) – June 1972</li> <li>FEMA-DR-1095 (Severe Storms and Flooding) – January 1996</li> <li>FEMA-DR-1233 (Severe Storms and Flooding) – January 1998</li> <li>FEMA-DR-1335 (Severe Storms and Flooding) – May-August 2000</li> <li>FEMA-DR-1486 (Severe Storms, Flooding, and Tornadoes) – July-August 2003</li> <li>FEMA-DR-1564 (Severe Storms and Flooding) – August-September 2004</li> <li>FEMA-DR-1534 (Severe Storms and Flooding) – May-June 2004</li> <li>FEMA-EM-3262 (Hurricane Katrina Evacuation) – August-October 2005</li> <li>FEMA-DR-1857 (Severe Storms and Flooding) – August 2009</li> <li>FEMA-EM-3351 (Hurricane Sandy) – October-November 2012</li> <li>FEMA-DR-4180 (Severe Storms and Flooding) – May 2014</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>FEMA</li> <li>NOAA-NCEI</li> <li>SPC</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>





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			<ul style="list-style-type: none"> <li>According to the SPC, 18 tornadoes impacted Cattaraugus County between 1950 and 2019.</li> <li>Based on previous occurrences and input from the Steering Committee and Planning Partnership, severe storms are identified as a hazard of concern for Cattaraugus County.</li> </ul>	
Severe Winter Storm (heavy snow, blizzards, ice storms)	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP identified severe winter storm as a hazard of concern for New York State. According to the 2019 NYS HMP, Cattaraugus County’s annual average snowfall is between 60 and 95 inches and their average annual winter storm losses is \$49,000.</li> <li>FEMA included Cattaraugus County in eight winter storm-related disaster declarations:               <ul style="list-style-type: none"> <li>FEMA-DR-494 (Ice Storm, Severe Storms and Flooding) – March 1976</li> <li>FEMA-EM-3027 (Snowstorms) – January 1977</li> <li>FEMA-DR-527 (Snowstorms) – February 1977</li> <li>FEMA-EM-3107 (Severe Blizzard) – March 1993</li> <li>FEMA-EM-3136 (Snow) – January 1999</li> <li>FEMA-EM-3157 (Snow) – November 2000</li> <li>FEMA-EM-3170 (Snow) – December 2001</li> <li>FEMA-DR-4204 (Severe Winter Storm and Snowstorm) – November 2014</li> </ul> </li> <li>Based on previous occurrences and input from the Steering Committee and Planning Partnership, severe winter storms are identified as a hazard of concern for Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>FEMA</li> <li>NOAA-NCEI</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Tornado	Yes	Yes	Please see Severe Storm	
Tsunami	No	No	<ul style="list-style-type: none"> <li>Tsunami is not identified as a hazard of concern in the NYS HMP.</li> <li>The Steering Committee and Planning Partnership do not consider tsunami to be a hazard of concern for Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Volcano	No	No	<ul style="list-style-type: none"> <li>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 Cattaraugus County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Wildfire	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP identified wildfire as a hazard of concern for New York State.</li> <li>Cattaraugus County was not included in any FEMA wildfire-related disaster declarations.</li> <li>NYS DEC records indicate the possibility that there have been hundreds of wildfires or brush fires in Cattaraugus County between 2003-2017.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and</li> </ul>





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Windstorm	Yes	Yes	<ul style="list-style-type: none"> <li>Based on available data and the nature of the county, the Steering Committee and Planning Partnership identified wildfire as a hazard of concern for Cattaraugus County.</li> </ul>	Planning Partnership <ul style="list-style-type: none"> <li>FEMA</li> </ul>

- 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**

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

- Flood (riverine, dam failure, flash, and ice jam)
- Landslide
- Severe Storm (thunderstorm, hail, wind, tornado, and hurricane/tropical storm)
- Severe Winter Storm
- Utility Failure
- Wildfire

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