

## 5.3 HAZARD RANKING

After the hazards of concern were identified for Delaware County, the hazards were ranked to describe their probability of occurrence and their impact on population, property (general building stock including critical facilities) and the economy. Each participating City, Town, Village or City may have differing degrees of risk exposure and vulnerability compared to the County as a whole; therefore each City, Town and Village ranked the degree of risk to each hazard as it pertains to their community using the same methodology as applied to the County-wide ranking. This assures consistency in the overall ranking of risk process. The hazard ranking for each participating City, Town and Village can be found in their jurisdictional annex in Volume II of this Plan.

### HAZARD RANKING METHODOLOGY

The methodology used to rank the hazards of concern for Delaware County is described below. Estimates of risk for the County were developed using methodologies promoted by FEMA's hazard mitigation planning guidance and generated by FEMA's HAZUS-MH risk assessment tool.

#### Probability of Occurrence

The probability of occurrence is an estimate of how often a hazard event occurs. A review of historic events assists with this determination. Each hazard of concern is rated in accordance with the numerical ratings and definitions in Table 5.3-1.

Table 5.3-1. Probability of Occurrence Ranking Factors

Rating	Probability	Definition
0	None	Hazard event is not likely to occur
1	Rare	Hazard event is not likely to occur within 100 years
2	Occasional	Hazard event is likely to occur within 100 years
3	Frequent	Hazard event is likely to occur within 25 years

#### Impact

The impact of each hazard is considered in three categories: impact on population, impact on property (general building stock including critical facilities), and impact on the economy. Based on documented historic losses and a subjective assessment by the Steering Committee, an impact rating of high, medium, or low is assigned with a corresponding numeric value for each hazard of concern. In addition, a weighting factor is assigned to each impact category: three (3) for population, two (2) for property, and one (1) for economy. This gives the impact on population the greatest weight in evaluating the impact of a hazard.

Table 5.3-2 presents the numerical rating, weighted factor and description for each impact category. The impact rating definitions for population and property are consistent with the New York State Hazard Mitigation Plan (NYS HMP) ranking methodology with minor modifications. Impact to the economy is also being evaluated.

Table 5.3-2. Numerical Values and Definitions for Impacts on Population, Property and Economy

Category	Weighting Factor	Low Impact (1)	Medium Impact (2)	High Impact (3)
Population*	3	14% or less of your developed land area is exposed to a hazard due to its extent and location	15% to 29% of your developed land area is exposed to a hazard due to its extent and location	30% or more of your developed land area is exposed to a hazard due to its extent and location
Property*	2	Property exposure is 14% or less of the total replacement cost for your community	Property exposure is 15% to 29% of the total replacement for your community	Property exposure is 30% or more of the total replacement cost for your community
Economy	1	Loss estimate is 9% or less of the total replacement cost for your community	Loss estimate is 10% to 19% of the total replacement cost for your community	Loss estimate is 20% or more of the total replacement cost for your community

Note: A numerical value of zero is assigned if there is no impact.

\*For the purposes of this exercise, “impacted” means exposed for population and property and loss for economy.

### Risk Ranking Value

The risk ranking for each hazard is then calculated by multiplying the numerical value for probability of occurrence by the sum of the numerical values for impact. The equation is as follows: Impact Value (1, 2, or 3) X Impact Value (6 to 18) = Hazard Ranking Value. Based on the total for each hazard, a priority ranking is assigned to each hazard of concern (high, medium, or low).

### HAZARD RANKING RESULTS

Using the process described above, the risk ranking for the identified hazards of concern was determined for Delaware County. Based on the combined risk values for probability of occurrence and impact to Delaware County, a priority ranking of “high”, “medium” or “low” risk was assigned. The hazard ranking for Delaware County, from high to low risk, is summarized below:

#### High Risk Hazards:

- Severe Storm
- Severe Winter Storm
- Flood
- Landslide

#### Medium Risk Hazards:

- Wildfire
- Drought

#### Low Risk Hazards:

- Earthquake
- Infestation

The following tables present the step-wise process for the ranking. Table 5.3-3 shows the probability ranking assigned for likelihood of occurrence for each hazard.

Table 5.3-3. Probability of Occurrence Ranking for Hazards of Concern for Delaware County

Hazard of Concern	Probability	Numeric Value
Drought	Frequent	3
Earthquake	Occasional	2
Flood	Frequent	3
Infestation	Frequent	3
Landslide	Frequent	3
Severe Storm	Frequent	3
Severe Winter Storm	Frequent	3
Wildfire	Frequent	3

Table 5.3-4 shows the impact evaluation results for each hazard of concern, including impact on property, structures, and the economy. The weighting factor results and a total impact for each hazard also are summarized.

Table 5.3-4. Impact Ranking for Hazards of Concern for Delaware County

Hazard of Concern	Population			Property			Economy			Total Impact Rating (Population + Property + Economy)
	Impact	Numeric Value	Multiplied by Weighting Factor (3)	Impact	Numeric Value	Multiplied by Weighting Factor (2)	Impact	Numeric Value	Multiplied by Weighting Factor (1)	
Drought	Low	1	$1 \times 3 = 3$	Low	1	$1 \times 2 = 2$	Medium	2	$2 \times 1 = 2$	7
Earthquake	Low	1	$1 \times 3 = 3$	High	3	$3 \times 2 = 6$	Low	1	$1 \times 1 = 1$	10
Flood	Medium	2	$2 \times 3 = 6$	Medium	2	$2 \times 2 = 4$	Medium	2	$2 \times 1 = 2$	12
Infestation	Low	1	$1 \times 3 = 3$	Low	1	$1 \times 2 = 2$	Low	1	$1 \times 1 = 1$	6
Landslide	Low	1	$1 \times 3 = 3$	Medium	2	$2 \times 2 = 4$	High	3	$3 \times 1 = 3$	10
Severe Storm	Medium	2	$2 \times 3 = 6$	High	3	$3 \times 2 = 6$	Low	1	$1 \times 1 = 1$	13
Severe Winter Storm	Medium	2	$2 \times 3 = 6$	High	3	$3 \times 2 = 6$	Low	1	$1 \times 1 = 1$	13
Wildfire	Low	1	$1 \times 3 = 3$	Medium	2	$2 \times 2 = 4$	Medium	2	$2 \times 1 = 2$	9

Table 5.3-5 presents the total ranking value for each hazard.

Table 5.3-5. Total Risk Ranking Value for Hazards of Concern for Delaware County

Hazard of Concern	Probability	Impact	Total = (Probability x Impact)
Drought	3	7	21
Earthquake	2	10	20
Flood	3	12	36
Infestation	3	6	18
Landslide	3	10	30
Severe Storm	3	13	39
Severe Winter Storm	3	13	39
Wildfire	3	9	27

Table 5.3-6 presents the hazard ranking category assigned for each hazard of concern. The ranking categories are determined by an evaluation of the total risk ranking score into three categories, low, medium, and high whereby a total score of below 20 is categorized as low, 21 to 38 is medium, and 39 and over is considered a high risk category.

Table 5.3-6. Hazard Ranking Results for Hazards of Concern for Delaware County

Hazard Ranking	Hazard of Concern	Category
39	Severe Storm	High
39	Severe Winter Storm	High
36	Flood	High
30	Landslide	High
27	Wildfire	High
21	Drought	Medium
20	Earthquake	Low
18	Infestation	Low

On the following page a table is provided to summarize the hazards ranking by jurisdiction. These rankings have been used as one of the bases for identifying the jurisdictional hazard mitigation strategies included in Section 9 of this plan.

Table 5.3-7. Summary of Overall Ranking of Natural Hazards by Jurisdiction

Hazard	Delaware County	Town of Andes	Town of Bovina	Town of Colchester	Town of Davenport	Town of Delhi	Village of Delhi	Town of Deposit	Village of Deposit	Village of Fleischmanns	Town of Franklin	Village of Franklin	Town of Hamden	Town of Hancock	Village of Hancock	Town of Harpersfield	Village of Hobart	Town of Kortright	Village of Margaretville	Town of Masonville	Town of Meredith	Town of Middletown	Town of Roxbury	Town of Sidney	Village of Sidney	Town of Stamford	Village of Stamford	Town of Tompkins	Town of Walton	Village of Walton
Drought	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Earthquake	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2
Flood	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Infestation	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Landslide	3	3	3	1	2	2	2	2	2	2	2	2	1	2	3	2	1	2	2	2	2	2	2	2	1	2	3	2	2	2
Severe Storm	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Severe Winter Storm	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Wildfire	3	3	3	1	2	2	2	3	2	3	1	1	2	2	3	2	3	1	3	1	1	3	3	3	3	3	3	2	2	2

Note(s): H = High; M = Medium; L = Low