

**New York State Emergency Management Office – Region II  
Hazard Identification and Risk Assessment New York**

**Sullivan County, 2010**

**Background**

On March 9<sup>th</sup>, 2010, Sullivan County conducted a hazard analysis using the automated program, *HIRA-NY* (Hazard Identification and Risk Assessment New York) developed by the American Red Cross and the New York State Emergency Management Office (NYSEMO). This Hazard Analysis document is a key component in the process of creating a multi-hazard plan and will constitute a major section of your Multi-Hazard Mitigation Plan document; it forms the basis for our risk and vulnerability assessment. The results of this hazard analysis are presented in this report.

HIRA-NY evaluates five factors that are the cornerstones in the hazard analysis process. In considering these factors, it is also expected that the risk assessment components of the all-hazard mitigation planning process as outlined in 44 CFR Part 201, under which the hazard mitigation plan is being developed, will also be developed. The risk assessment process is required to identify all hazards that can impact a community and the profiling of the most prevalent hazards. Profiling hazard involves consideration of a) location, or geographic areas affected; b) extent or magnitude/severity; c) previous occurrences; and, d) probability of future occurrences. These five factors are:

1. Scope - This factor looks at two aspects: (1) What area or areas in your jurisdiction could be impacted by the hazard location and (2) What are the chances of the hazard triggering another hazard causing a cascade effect?
2. Onset - How much time is there between the initial recognition of an approaching hazard and when the hazard begins to impact the community? This is a very important factor because for some hazards (e.g., drought) ample warning time is available so that if plans and procedures have not been developed, there is still time to accomplish such. On the other hand, an earth quake could occur at any time without a warning and cause severe damage.
3. Impact - This factor involves the analysis of a hazard's impact extent to the community's infrastructure, private property, and people.
4. Duration (also an indicator of extent) - This factor is concerned with three durations: (1) How long does the hazard remain active? (2) How long do emergency operations continue after the hazard event? (3) How long does the recovery process take?
5. Frequency (past occurrences) - This factor indicates how often a hazard has resulted in an emergency or disaster; historical frequency can also be a prediction of how often a hazard will occur in the future (probability of future occurrences). Frequency is established by recording historical events and determining time intervals between each occurrence.

## ***HIRA-NY and Sullivan County***

*HIRA-NY* is an automated interactive spreadsheet that asks specific questions on potential hazards in a community and records and evaluates the responses to these questions. The selections made in *HIRA-NY* are based on information entered into preformatted Microsoft Excel worksheets recommended by FEMA and NYSEMO. *HIRA-NY* also includes historical and expert data on selected hazards. *HIRA-NY* is designed specifically for groups, rather than individual use. Sullivan County assembled a group of local officials to consider and discuss the questions and issues raised by the *HIRA-NY* program. Representatives from NYSEMO Region II facilitated the meeting and recorded the results.

### **The Results**

The Group analyzed all hazards potentially affecting Sullivan County. *HIRA-NY* rated each hazard based on the Group's assessment and assigned a numerical value.

These values are categorized as follows:

**321 to 400 HIGH HAZARD**  
**241 to 320 MODERATELY HIGH HAZARD**  
**161 to 240 MODERATELY LOW HAZARD**  
**44 to 160 LOW HAZARD**

The Group rated the 8 hazards as follows:

<b><i>Hazard</i></b>	<b><i>Rating</i></b>
<b><i>FLOOD</i></b>	317
<b><i>FIRE</i></b>	262
<b><i>SEVERE STORM</i></b>	255
<b><i>WINTER STORM (SEVERE)</i></b>	253
<b><i>EARTHQUAKE</i></b>	251
<b><i>ICE STORM</i></b>	234
<b><i>HURRICANE</i></b>	201
<b><i>TERRORISM</i></b>	180

**Note: To meet the hazard mitigation planning requirements include under the discussion section for each hazard the following:**

**- A description of the hazard that affects the jurisdiction. Profile those hazards that are considered prevalent and pose the greatest risk to the jurisdiction. It is not necessary to profile less prevalent hazards; however, the risk assessment process should indicate why these hazards are not being profiled. As indicated above, the**

prevalent hazards must be profiled, which means they should be discussed under the following headings:

- The location(s) must be identified (geographic area affected) of each natural hazard addressed in the plan
- A detailed description of previous occurrences of each hazard addressed; that is, the specific dates of occurrences must be identified.
- The extent (magnitude or severity) of each hazard must be addressed by dates of occurrence.
- Must include the probability of future events (chance of occurrences) for each hazard addressed.
- Must include an overall summary description of the jurisdiction's vulnerability to each hazard.
- Must address the impact of each hazard on the jurisdiction.
- Describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard area.
- Describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard area.

Natural vs. Manmade Hazards: : The Disaster Mitigation Act of 2000 (DMA 2000) that mandates the mitigation planning requirements requires that only natural hazards must be included in mitigation plans to meet DMA requirements and are apart of the State and FEMA reviews. However, it is recommended that municipalities engaged in the mitigation planning process address technological and human-caused hazards. **It should be noted that the plan will be rated only on how well it addresses natural hazards; the non-natural hazards addressed will not be rated.** In addition, current funding eligibility for HMGP and PDM-C grant programs is for natural hazards, not manmade ones.

**Hazard(s) rated as moderately high: FLOOD, FIRE, SEVERE STORM, WINTER STORM (SEVERE), EARTHQUAKE**

**FLOOD:** 317, Moderately High Hazard

- Potential Impact:** Throughout a Large Region (Locations identified on map)  
**Cascade Effects:** Highly Likely (Cascading hazards identified and mapped)  
Blight; Civil Unrest; Dam Failure; Epidemic; Explosion; Fire; Food Shortage; Fuel Shortage; Hazmat (Fixed Site); Ice Jam; Infestation; Landslide; Oil Spill; Radiological (Fixed Site); Structural Collapse; Trans Accident; Utility Failure; Water Supply Contamination;  
**Frequency:** A Frequent Event (Frequency identified)  
**Onset:** Several Hours Warning  
**Hazard Duration:** Two to Three Days  
**Recovery Time:** One to Two Days  
**Impact(Detailed information indicated below):**
- Serious Injury or Death is Likely, but not in Large Numbers
  - Severe Damage to Private Property
  - Severe Structural Damage to Public Facilities

**Risk Assessment Discussion**

**Hazard Description:**

**Geographic Location/Area(s) Affected:**

**Extent (magnitude or severity) of Hazard:**

**Historical Description of Previous Occurrences:**

**Probability of Future Events:**

**Cascading Effects:**

**Vulnerability Assessment Discussion**

**Overall Summary Description of Jurisdiction's Vulnerability:**

**Impacts of Hazards on the Jurisdiction/Community**

**Types and Numbers of Existing Structures in Hazard Area (Estimate):**

**Type and Number of Future Structures in Hazard Area (Estimate):**

**Estimated Potential Dollar Losses to Vulnerable Structures:**

**Method Used to Prepare Estimate:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

**FIRE:** 262, Moderately High Hazard

- Potential Impact:** Single Location (Locations identified on Map)  
**Cascade Effects:** Highly Likely (Cascading hazards identified and mapped)  
Explosion; Structural Collapse; Utility Failure;  
**Frequency:** A Frequent Event (Frequency identified)  
**Onset:** No Warning  
**Hazard Duration:** Less Than One Day  
**Recovery Time:** Less Than One Day

**Impact(Detailed information indicated below):**

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Little or No Structural Damage to Public Facilities

**Risk Assessment Discussion**

**Hazard Description:**

**Geographic Location/Area(s) Affected:**

**Extent (magnitude or severity) of Hazard:**

**Historical Description of Previous Occurrences:**

**Probability of Future Events:**

**Cascading Effects:**

**Vulnerability Assessment Discussion**

**Overall Summary Description of Jurisdiction's Vulnerability:**

**Impacts of Hazards on the Jurisdiction/Community**

**Types and Numbers of Existing Structures in Hazard Area (Estimate):**

**Type and Number of Future Structures in Hazard Area (Estimate):**

## **Estimated Potential Dollar Losses to Vulnerable Structures:**

### **Method Used to Prepare Estimate:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

**SEVERE STORM:** 255, Moderately High Hazard

- Potential Impact:** Throughout a Large Region (Locations identified on map)  
**Cascade Effects:** Highly Likely (Cascading hazards identified and mapped)  
Dam Failure; Explosion; Fire; Flood; Food Shortage; Fuel Shortage; Hazmat (Fixed Site); Hazmat (In Transit); Landslide; Oil Spill; Radiological (In Transit); Structural Collapse; Trans Accident; Utility Failure; Water Supply Contamination; Wildfire;  
**Frequency:** A Frequent Event (Frequency identified)  
**Onset:** Several Days Warning  
**Hazard Duration:** One Day  
**Recovery Time:** One to Two Days  
**Impact(Detailed information indicated below):**
- Serious Injury or Death Unlikely
  - Severe Damage to Private Property
  - Moderate Structural Damage to Public Facilities

### **Risk Assessment Discussion**

#### **Hazard Description:**

#### **Geographic Location/Area(s) Affected:**

#### **Extent (magnitude or severity) of Hazard:**

#### **Historical Description of Previous Occurrences:**

#### **Probability of Future Events:**

#### **Cascading Effects:**

#### **Vulnerability Assessment Discussion**

#### **Overall Summary Description of Jurisdiction's Vulnerability:**

#### **Impacts of Hazards on the Jurisdiction/Community**

#### **Types and Numbers of Existing Structures in Hazard Area (Estimate):**

**Type and Number of Future Structures in Hazard Area (Estimate):**

**Estimated Potential Dollar Losses to Vulnerable Structures:**

**Method Used to Prepare Estimate:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

**WINTER STORM (SEVERE):** 253, Moderately High Hazard

- Potential Impact:** Throughout a Large Region (Locations identified on map)  
**Cascade Effects:** Highly Likely (Cascading hazards identified and mapped)  
Explosion; Fire; Flood; Food Shortage; Fuel Shortage; Hazmat (In Transit); Ice Jam; Landslide; Radiological (In Transit); Structural Collapse; Trans Accident; Utility Failure;  
**Frequency:** A Frequent Event (Frequency identified)  
**Onset:** Several Days Warning  
**Hazard Duration:** Two to Three Days  
**Recovery Time:** Three Days to One Week  
**Impact(Detailed information indicated below):**
- Serious Injury or Death is Likely, but not in Large Numbers
  - Moderate Damage to Private Property
  - Little or No Structural Damage to Public Facilities

**Risk Assessment Discussion**

**Hazard Description:**

**Geographic Location/Area(s) Affected:**

**Extent (magnitude or severity) of Hazard:**

**Historical Description of Previous Occurrences:**

**Probability of Future Events:**

**Cascading Effects:**

**Vulnerability Assessment Discussion**

**Overall Summary Description of Jurisdiction's Vulnerability:**

**Impacts of Hazards on the Jurisdiction/Community**

**Types and Numbers of Existing Structures in Hazard Area (Estimate):**

**Type and Number of Future Structures in Hazard Area (Estimate):**

**Estimated Potential Dollar Losses to Vulnerable Structures:**

**Method Used to Prepare Estimate:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

**EARTHQUAKE:** 251, Moderately High Hazard

**Potential Impact:** Throughout a Large Region (Locations identified on map)

**Cascade Effects:** Highly Likely (Cascading hazards identified and mapped)  
Civil Unrest; Dam Failure; Epidemic; Explosion; Fire; Flood; Food Shortage; Fuel Shortage; Hazmat (Fixed Site); Infestation; Landslide; Mine Collapse; Oil Spill; Radiological (Fixed Site); Structural Collapse; Trans Accident; Utility Failure; Water Supply Contamination; Wildfire;

**Frequency:** A Rare Event (Frequency identified)

**Onset:** No Warning

**Hazard Duration:** Two to Three Days

**Recovery Time:** More Than Two Weeks

**Impact(Detailed information indicated below):**

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

**Risk Assessment Discussion**

**Hazard Description:**

**Geographic Location/Area(s) Affected:**

**Extent (magnitude or severity) of Hazard:**

**Historical Description of Previous Occurrences:**

**Probability of Future Events:**

**Cascading Effects:**

**Vulnerability Assessment Discussion**



**Overall Summary Description of Jurisdiction's Vulnerability:**

**Impacts of Hazards on the Jurisdiction/Community**

**Types and Numbers of Existing Structures in Hazard Area (Estimate):**

**Type and Number of Future Structures in Hazard Area (Estimate):**

**Estimated Potential Dollar Losses to Vulnerable Structures:**

**Method Used to Prepare Estimate:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

**Hazard(s) rated as moderately low: ICE STORM, HURRICANE, TERRORISM**

**ICE STORM:** 234, Moderately Low Hazard

- Potential Impact:** Throughout a Large Region (Locations identified on map)  
**Cascade Effects:** Highly Likely (Cascading hazards identified and mapped)  
Explosion; Fire; Food Shortage; Fuel Shortage; Hazmat (In Transit); Radiological (In Transit); Structural Collapse; Trans Accident; Utility Failure;  
**Frequency:** A Regular Event (Frequency identified)  
**Onset:** One Day Warning  
**Hazard Duration:** Two to Three Days  
**Recovery Time:** One to Two Days  
**Impact(Detailed information indicated below):**
- Serious Injury or Death is Likely, but not in Large Numbers
  - Moderate Damage to Private Property
  - Moderate Structural Damage to Public Facilities

**Risk Assessment Discussion**

**Hazard Description:**

**Geographic Location/Area(s) Affected:**

**Extent (magnitude or severity) of Hazard:**

**Historical Description of Previous Occurrences:**

**Probability of Future Events:**

**Cascading Effects:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

**HURRICANE:** 201, Moderately Low Hazard

- Potential Impact:** Throughout a Large Region (Locations identified on map)  
**Cascade Effects:** Highly Likely (Cascading hazards identified and mapped)  
Civil Unrest; Dam Failure; Epidemic; Explosion; Fire; Flood; Food Shortage; Fuel Shortage; Hazmat (Fixed Site); Hazmat (In Transit); Infestation; Landslide; Oil Spill; Radiological (Fixed Site); Radiological (In Transit); Structural Collapse; Trans Accident; Utility Failure; Water Supply Contamination;  
**Frequency:** A Rare Event (Frequency identified)  
**Onset:** One Day Warning  
**Hazard Duration:** Less Than One Day  
**Recovery Time:** More Than Two Weeks  
**Impact(Detailed information indicated below):**
- Serious Injury or Death is Likely, but not in Large Numbers
  - Severe Damage to Private Property
  - Severe Structural Damage to Public Facilities

**Risk Assessment Discussion**

**Hazard Description:**

**Geographic Location/Area(s) Affected:**

**Extent (magnitude or severity) of Hazard:**

**Historical Description of Previous Occurrences:**

**Probability of Future Events:**

**Cascading Effects:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

**TERRORISM:** 180, Moderately Low Hazard

**Potential Impact:** Several Locations (Locations identified on Map)

**Cascade Effects:** Some Potential (Cascading hazards identified and mapped)  
Civil Unrest; Dam Failure; Epidemic; Explosion; Fire; Hazmat (Fixed Site); Hazmat (In Transit); Oil Spill; Radiological (Fixed Site); Radiological (In Transit); Structural Collapse; Trans Accident; Utility Failure; Water Supply Contamination; Wildfire;

**Frequency:** A Rare Event (Frequency identified)

**Onset:** No Warning

**Hazard Duration:** Less Than One Day

**Recovery Time:** One to Two Days

**Impact(Detailed information indicated below):**

- Serious Injury or Death to Large Numbers
- Little or No Damage to Private Property
- Severe Structural Damage to Public Facilities

### **Risk Assessment Discussion**

#### **Hazard Description:**

#### **Geographic Location/Area(s) Affected:**

#### **Extent (magnitude or severity) of Hazard:**

#### **Historical Description of Previous Occurrences:**

#### **Probability of Future Events:**

#### **Cascading Effects:**

Utilize information collected in worksheets to create tables and text for the Section above. Provide as much detail as possible. Reference all maps and include copies of maps in the appendixes and/or insert map images into this document.

#### **HAZARDS THAT OCCUR WITH NO WARNING\***

**FIRE**  
**EARTHQUAKE**  
**TERRORISM**

\* No warning was selected from the Onset Tab.

#### **HAZARDS THAT OCCUR MOST OFTEN\***

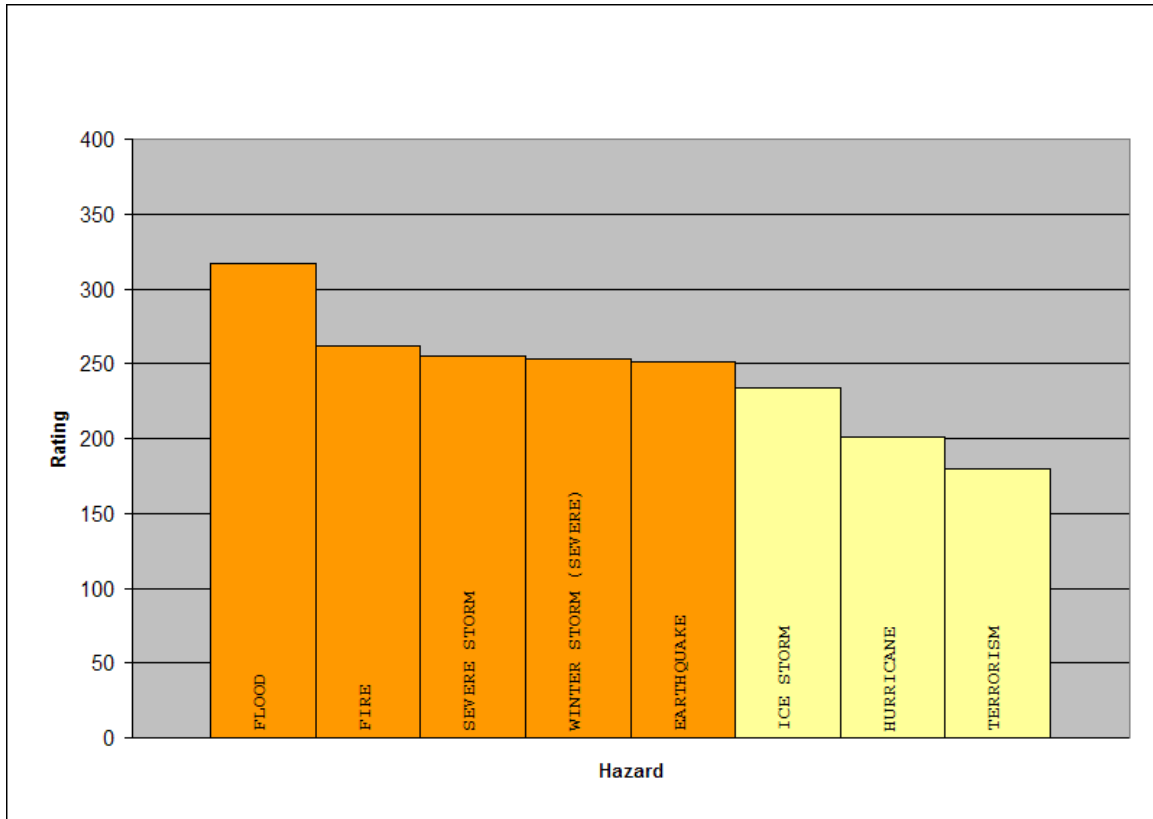
**FLOOD**  
**FIRE**  
**SEVERE STORM**  
**WINTER STORM (SEVERE)**

\*A frequent event was selected on frequency Tab.

**HAZARDS THAT PRESENT THE GREATEST THREAT TO LIFE\***  
**TERRORISM**

\*Serious injury and death in large or extremely large numbers was selected from the Impact Tab.

Figure 1. Chart of Hazards vs. Ratings



**Reminder: The report must include an overall summary description of the jurisdiction's vulnerability to each hazard.**