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## Section 4 – Hazard Vulnerability Analysis

A hazard can be defined as a condition that has the potential to result in equipment or system failure that can result in human injury or death or damage to the environment. Hazards are divided into two categories: natural or technological. Natural hazards include earthquakes, wild fires, and floods; while technological hazards include transportation accidents, illegal disposal, and equipment failures during manufacturing, storage, transportation, and use of hazardous materials.

A risk assessment is the process of evaluating the degree of harm a hazard presents. Risk assessments are utilized in developing emergency response plans and procedures, designing and modifying safety systems, identifying needed resources, conducting training and exercises, and minimizing damage and liability.

### Definitions for Hazard Prioritization

#### ***Magnitude***

Physical and Economic Greatness of the event

Factors to consider

- Size of Event
- Threat to life
- Threat to Property
  1. Individual
  2. Public Sector
  3. Business and Manufacturing
  4. Tourism

#### ***Duration***

The length of time the disaster and the effects of the disaster last

Factors to consider

- Length physical duration during emergency phase
- Length of threat to life and property
- Length of physical duration during recovery phase
- Length of effects on individual citizen and community recovery
- Length of effects on economic recovery, tax base, business and manufacturing recovery, tourism, threat to tax base and threat to employment

#### ***Distribution***

The depth of the effects among all sectors of the community and State

Factors to consider:

- How wide spread across the state is the effects of the disaster.
- Are all sectors of the community affected equally or disproportionately

### ***Area Affected***

How large an area is physically threatened and potentially impaired or by a disaster risk

Factors to Consider:

- Geographic Area affected by primary event
- Geographic, physical, economic areas affected by primary risk and the potential secondary effects.

### ***Frequency***

The historic and predicted rate of recurrence of a risk-caused event (generally expressed in years such as the 100 year flood)

Factors to consider:

- Historic events and recurrences of events in a measured time frame
- Scientifically based predictions of an occurrence of an event in a given period of time.

### ***Degree of Vulnerability***

How susceptible is the population, community infrastructure and state resources to the effects of the risk.

Factors to Consider:

- History of the impact of similar events
- Mitigation steps taken to lessen impact
- Community and State preparedness to respond to and recover from the event

### ***Community Priorities***

The importance placed on a particular risk by the citizens and their elected officials

- Willingness to prepare for and respond to a particular risk
- More widespread concerns over a particular risk than other risks
- Cultural significance of the threat associated a risk.

## **Hazard Ratings**

### ***Hazard Rating Definitions***

#### **Instructions Used for Hazard Rating**

Give each hazard priority risk category listed as a rating from 0 to 3;  
0 = no risk, 3 meaning a high risk.

0 = No hazard risk in accordance with the definitions for hazard prioritization.

1 = Low Risk in accordance with the definitions for hazard prioritization.

2 = Moderate Risk in accordance with the definitions for hazard prioritization.

3 = High Risk in accordance with the definitions for hazard risk prioritization.

Total the numbers horizontally for each hazard category. The highest possible score for a hazard is 24 the lowest potential score is 0.

Examples:

A score of	15 - 24	could be considered HIGH priority risk
	9 - 14	could be considered MODERATE priority risk
	0 - 8	could be considered LOW priority risk

### ***Prioritization of Hazard Matrix Results***

Stakeholder Prioritization

The following list is hazards identified and prioritized based on stake-holder input, both public and government:

#### **High Risk Priority Hazards**

Telecommunication/Data loss	Human Caused
Flooding	Natural
Hazardous Materials	Human Caused
Transportation – Services and Highway	Human Caused
Utility Loss/Disruption/Substations	Human-caused
Water/Wastewater Disruption	Human Caused
Wild land/Urban Fire	Natural
Biological/Health/Pandemic Flu	Natural & Human-caused
Economic Disruption	Natural & Human-caused

#### **Moderate Risk Priority Hazards**

Wild land/Urban Fire	Natural
Earthquake	Natural
Explosions	Human Caused
Severe Weather	Natural

#### **Low Risk Priority Hazards**

Aviation Disaster	Human-caused
Civil Unrest/Disorder	Human-caused
Dam Failure	Human-caused
Drought	Natural
Explosions	Human-caused
Sinkholes	Human-caused
Tsunami	Natural
Volcanic Activity	Natural

The team discussed the impact of Utility Loss, Water/Wastewater Disruption, Data Telecommunication Loss, and WMD/Terrorism as hazards which affect the City. It was agreed that the City does not directly provide these services and can only develop mitigation strategies to reduce the impact of the risks.

The team rated drought as a low risk. A drought occurred in the 2007 – 2009, and Tehama County was included in the Emergency Declaration.

The committee rated Volcanic Activity as a low risk. The closest potentially active volcano is Clear Lake, 120 miles away, the last activity occurred 10,000 years ago. (<http://www.nationalatlas.gov>)

Corning is located 100 miles inland of the Pacific Ocean. A tsunami is not a direct hazard to the City of Corning.

The team rated Aviation Disaster, Civil Unrest/Disorder, Dam Failure, Drought, Explosions, Sinkholes, Tsunami, and Volcanic Activity as low priority hazards in the City of Corning. The team will reevaluate each hazard and its vulnerability to the City of Corning as needed.

The team will develop mitigation strategies for their high and moderate hazards.