



## HAZUS, the Standard in Estimating Earthquake Losses

### Full Mitigation Best Practice Story

#### *State-wide, District of Columbia*

**Washington, DC** - One of the most successful risk assessment tools is HAZUS, or Hazards U.S., a cutting edge software program developed by FEMA with the National Institute of Building Sciences. HAZUS uses an engineering-based approach to estimate physical damage, economic losses, casualties, and other societal impacts from earthquakes.



Although originally conceived as a standardized methodology, HAZUS quickly evolved into an easily transportable software program that could be used by earthquake engineers, universities, private industry, and the public for numerous applications. For example, HAZUS estimates provide decision-makers with evidence of the nature and extent of the earthquake risk in a format useful for garnering public support for public policies and actions to reduce future earthquake damage and losses. State and local governments, the private sector, and communities use HAZUS to estimate physical damage and economic loss to their building stock, critical facilities, and lifelines and utility systems, and to determine how potential losses can be avoided or reduced by preventive actions. HAZUS also estimates debris generated, long- and short-term shelter and alternative housing requirements, and indirect economic losses such as unemployment, losses in tax revenue and production, and reduction in the demand for products and spending. HAZUS also can determine the impact of other hazards that may be triggered by the main event, such as ground failure, fire, and inundation from dam failure.

Today, there are a number of HAZUS user groups across the United States that are supported by FEMA. The user groups provide the disaster management community, industry, government, and the public with the resources and knowledge to effectively use HAZUS. FEMA also supports HAZUS through projects at the community and state level to demonstrate the use of HAZUS in supporting state and local government implementation of the planning requirements of the Disaster Mitigation Act of 2000 and through pilot projects with the Department of Defense to assess the vulnerability of facilities and infrastructure.

Significant enhancements have been made to HAZUS since its release in 1997. FEMA is adding the capability to estimate losses from flood and hurricane wind hazards. This multi-hazard version, which includes revisions to the earthquake loss estimation model, is scheduled for release in 2003.

#### Activity/Project Location

Geographical Area: **State-wide**  
FEMA Region: **Region III**  
State: **District of Columbia**

#### Key Activity/Project Information

Sector: **Public**  
Hazard Type: **Earthquake**  
Activity/Project Type: **HAZUS-MH**  
Activity/Project Start Date: **01/1997**  
Activity/Project End Date: **Ongoing**  
Funding Source: **National Earthquake Hazards Reduction Program (NEHRP)**

## Key Activity/Project Information

## Activity/Project Economic Analysis

Cost: **Amount Not Available**

Non FEMA Cost: **0**

## Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **Unknown**

Value Tested By Disaster? **Unknown**

Repetitive Loss Property? **Unknown**

## Reference URLs

Reference URL 1: [http://www.fema.gov/plan/prevent/earthquake/sty\\_hazus.shtm](http://www.fema.gov/plan/prevent/earthquake/sty_hazus.shtm)

Reference URL 2: [http://www.fema.gov/plan/prevent/bestpractices/NEHRP\\_BP\\_page.shtm](http://www.fema.gov/plan/prevent/bestpractices/NEHRP_BP_page.shtm)

## Main Points

- HAZUS estimates provide decision-makers with evidence of the nature and extent of the earthquake risk
- HAZUS estimates are in a format useful for garnering public support for public policies and actions to reduce future earthquake damage and losses.
- HAZUS can determine the impact of other hazards that may be triggered by the main event, such as ground failure, fire, and inundation from dam failure.
- FEMA is adding the capability to estimate losses from flood and hurricane wind hazards, this version is set to be released in 2003.