# California Uses Hazus Multi-Hazard (Hazus-MH) to Reassess Safety of Hospitals

Hazus-MH is playing a central role in the vulnerability analysis of over 1,300 hospitals that were built in California before 1973. The findings of this analysis have significant cost implications for the state.

Following the 1994 Northridge California earthquake that damaged several hospitals, the state passed Senate Bill 1953 that requires all existing hospitals be seismically evaluated and retrofitted, if needed. Hospitals most likely to collapse in an earthquake, which fall under Structural Performance Category (SPC) 1, are required to be seismically retrofitted, replaced or removed from acute care service by January 1, 2008 or 2013, if granted an extension. Other hospitals that are less likely to collapse (SPC 3-5) have until 2030 to be seismically upgraded.

A significant percentage of hospitals surveyed in California are SPC-1 facilities, constructed between 1950 and 1975. The methodology used for the seismic evaluations is NEHRP Handbook for the Seismic Evaluation of Existing Buildings (FEMA 178). Since the publication of FEMA 178 in 1992, significant progress has been made in understanding the seismic performance of buildings, especially in performance based design. Hazus-MH has contributed in a major way to our ability to assess performance of buildings in earthquakes.

In November, 2007, the California Building Standards Commission approved the use of the Hazus-MH Advanced Engineering Building Module (AEBM) to re-evaluate hospitals in California. The Commission's action amends the rule for implementing SB 1953.

The use of Hazus-MH instead of the FEMA 178 methodology will offer significant cost savings for California's hospitals. As Chris Poland, former President of the Earthquake Engineering Research Institute explained, "This new method is not only more accurate in assessing a hospital's risk of failure in a 500-year earthquake, but it also saves the state billions of dollars in repairs that do not need to be completed until 2030. Many of the buildings that are safe from collapse have been inaccurately labeled as unsafe by previous rudimentary measurements."

The application of Hazus-MH for hospital risk assessment in California has paid immediate and potentially far reaching dividends. In January 2007, the California Health Care Foundation issued a RAND report entitled, Seismic Safety: Will California's Hospitals be Ready for the Next Big Quake? The report indicates that SB 1953 could have cost $110 billion and that nearly half of the hospitals needing retrofitting would not be able to meet the 2013 deadline.

The ability to adapt the AEBM methodology to the evaluation of hospitals in California provides the state with a much more accurate assessment of the seismic safety of these essential facilities and in the process is saving the state billions of dollars.

Hazus: http://www.fema.gov/HAZUS