Abstract

Los Angeles County (LAC) is the most populous county in the United States and is simultaneously vulnerable to numerous natural disasters, particularly earthquakes. LAC is situated on ~68 active seismic zones and studies suggest that LAC is expected to experience a 7.8 magnitude earthquake on the southern section of the San Andreas Fault sometime in the next 30 years. Consequently, it is critical to understand the extent of damage LAC could face from a large earthquake. This study analyzed potential damage to non-ductile concrete buildings in LA City Districts 1, 9, 10, 13, and 14 should a repeat 1933 Long Beach earthquake occur on the Newport-Inglewood fault. The Hazards United States Multi-Hazard (HAZUS-MH) program was used to analyze the impact of a M_w 6.4 earthquake, assess the amount of damage, identify areas of vulnerability, and examine economic impacts of a repeat event. The M_w 6.4 event was run three times to show how HAZUS-MH results improve when the model includes updated datasets. The first analysis used built-in HAZUS-MH data, the second incorporated independent datasets, and the third deployed the Advanced Engineering Building Model (AEBM). Pre-1976 non-ductile concrete building data was added to the AEBM to evaluate the damage to individual structures. This study furthered the work done by Comerio and Anagnos (2012) by utilizing the AEBM to evaluate which of the concrete buildings are the most vulnerable.