

# Current performance based seismic design in North America and powerful tool for loss calculation

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## Abstract

Performance-based earthquake engineering (PBEE) aims to quantify performance of facilities using metrics that are of immediate use to both engineers and stakeholders. A rigorous yet practical implementation of the performance-based earthquake engineering methodology is developed and demonstrated. The methodology considers seismic hazard, structural response, resulting damage, and repair costs associated with restoring the building to its original condition. The proposed procedure is consistent with common building design, construction, and analysis practices such that it can be readily adopted in earthquake engineering practice today. The methodology is applied to evaluate the seismic performance of multiple high-rise buildings in North America. The relative performance of these high-rise buildings are quantified using the proposed PBEE assessment procedure.