



# EERI Policy Position Statement

Earthquake Engineering Research Institute

499 14th Street, Suite 220 • Oakland, CA 94612-1934 • 510-451-0905 • eeri@eeri.org

---

## Promote Safe and Resilient Housing in the United States

*Adoption date by the EERI Board of Directors: December 10, 2019*

### EERI Policy Position

Actions are needed to increase the safety and habitability of housing after earthquakes, recognizing that housing is architecturally diverse and serves a variety of household sizes and incomes. Residents should be able to “shelter-in-place,” which is the ability of a resident to shelter in their home after an earthquake. This objective would be achieved if the housing is safe and habitable after the event during the repair phase to restore normal functionality.

### Background

In a large earthquake, many homes become uninhabitable. In fact, research shows that over half of the financial loss in earthquakes occurs in housing. But earthquake damage to housing has implications beyond cost. Residents are the foundation of any vibrant community and a key to social, environmental and economic recovery following a natural hazard event. The loss of a home can lead to job loss, resulting from forced relocation, moving from one place to another, or searching for a new or temporary home. Serious damage to one's home harms the entire neighborhood, while a damaged but usable home can benefit the resilience of a neighborhood. These housing losses in turn cause a sharp decrease in the available workforce. Housing loss can also lead to poor medical and mental health. Finally, rebuilt housing is likely to be more expensive, leading to gentrification, changes in neighborhood character, and loss of affordable housing, particularly since multi-family housing can take many years to replace. Housing for low-income and vulnerable populations deserves particular attention as these groups have fewer resources to apply to housing and community recovery.

Many older homes and multi-family complexes could experience significant or catastrophic damage in future earthquakes. Building codes change and improve over time, incorporating new knowledge about how to resist earthquake shaking. New construction is thus considered less vulnerable. However, while alterations and repairs often trigger fire safety improvements, building codes rarely require seismic retrofit outside of a targeted mandatory program.

This policy addresses specific actions that can be taken to improve the safety of housing after earthquakes in the United States. However, many of EERI's members and collaborating partners are international and recognize that safe housing is a challenge for all earthquake-prone countries. The World Housing Encyclopedia (WHE), a project of EERI and the International Association for Earthquake Engineering, is focused on improving housing in earthquake-prone countries, particularly developing countries, and is developing a separate policy recommendation on improving the earthquake-safety of non-engineered, traditional housing construction.

### Needed Actions

*Existing Housing:* EERI advocates four approaches of increasing effectiveness to reduce the earthquake risk of existing housing that are progressively more aggressive and work toward the overall goal of enabling all residents to “shelter-in-place.” Determining the appropriate level of advocacy involves balancing the costs of mitigation with the hazard in the state, region, and community. The four approaches involve activities at all government levels.

1. Enact policies to define under what conditions residents will be able to shelter-in-place and inform residential building owners and tenants of their risks including the level of expected damage and usability of their home post-earthquake. Buyers and renters should have a right to reliable information, and developers, lenders, insurers and sellers should have an obligation to provide it.
2. Promote and implement codes, standards and guidelines to increase the number and quality of seismic retrofits, including standardized retrofit plans and training for contractors for retrofit of single-family homes, as well as improvements in existing building codes for single-family and multi-family housing.
3. Provide financial and other incentives for owners to upgrade housing, ensuring that these incentives are tied to consensus retrofit standards.
4. Require structural upgrades of seismically at-risk buildings when substantially altered or damaged, upon sale, or by a specific date.

*New Construction:* Adoption of modern codes is not universal and should be a priority. In addition, building codes for new construction are intended to provide safety, not necessarily to enable “shelter-in-place.” Code developers and organizations should encourage faster incorporation of existing cost-benefit research into regulation and then use stronger codes where needed.