



## Reducing Earthquake Risks

Earthquakes cannot be prevented, but their impacts on life, property, and the economy can be managed. Congress first authorized the National Earthquake Hazards Reduction Program (NEHRP) in 1977 (Public Law 95-124) to “reduce the risks of life and property from future earthquakes in the United States.” The most recent reauthorization was Public Law 108-360.

The role of NEHRP is to provide the public and private sectors with the scientific and engineering information, knowledge, and technologies needed to prepare for earthquakes and reduce the costs of losses and recovery. To fulfill this role, NEHRP works in partnership with the community of earthquake professionals in academia and in business, government, technical, professional, and codes-and-standards organizations involved in the earthquake risk reduction process.

## A Federal Partnership

Focusing on building code standards, technical guidance, and education, NEHRP is a collaborative effort among the Federal Emergency Management Agency (FEMA); the National Institute of Standards and Technology (NIST), the NEHRP lead agency; the National Science Foundation (NSF); and the United States Geological Survey (USGS). These agencies work in close coordination to improve the understanding of earthquake hazards and to reduce the Nation’s vulnerability to earthquakes. The agencies research the causes and effects of earthquakes to produce technical guidance; develop earthquake-resistant design, construction standards, and techniques; and educate the public about earthquake hazards and mitigation (visit [NEHRP Agencies](#) for more information).

## Federal Emergency Management Agency

Under NEHRP, FEMA is responsible for developing effective earthquake risk reduction tools and promoting their implementation, as well as supporting the development of disaster-resistant building codes and standards. FEMA’s

NEHRP activities are led by FEMA Headquarters, Federal Insurance and Mitigation Administration (FIMA), Risk Reduction Division, Building Science Branch, in strong partnership with other FEMA HQ Directorates, and in coordination with the FEMA Regions, the States, the earthquake consortia, and other public and private partners.

## National Institute of Standards and Technology

NIST, in addition to serving as the lead NEHRP agency, develops, evaluates, and tests earthquake resistant design and construction practices for implementation in the building codes and engineering practice. NEHRP Directorate, Secretariat, and applied research activities are conducted under the NIST Engineering Laboratory (EL) Materials and Structures Division.

## National Science Foundation

NSF supports basic research and research facilities in earth sciences, engineering, and social, behavioral, and economic sciences relevant to understanding the causes and impacts of earthquakes. NSF’s NEHRP-related support is carried out primarily through research grants to individual universities, university consortia, and other organizations. These grants are awarded primarily through the agency’s Directorate for Engineering and Directorate for Geosciences.

## NEHRP Mission

*The mission of NEHRP is to develop, disseminate, and promote knowledge, tools, and practices for earthquake risk reduction—through coordinated, multidisciplinary, interagency partnerships among the NEHRP agencies and their stakeholders—that improve the Nation’s earthquake resilience in public safety, economic strength, and national security.*



### *United States Geological Survey*

USGS operates and supports earthquake monitoring, data analysis, and notification facilities; provides earthquake hazard assessments; and conducts and supports targeted research on earthquake causes and effects. The Earthquake Hazards Program Office and USGS Headquarters lead the agency's NEHRP work. USGS research and monitoring activities are conducted by USGS scientists at offices in Albuquerque, New Mexico; Anchorage, Alaska; Golden, Colorado; Memphis, Tennessee; Menlo Park and Pasadena, California; and Seattle, Washington, as well as through grants and cooperative agreements with universities, State geological surveys, and other organizations.

### **Cooperating Organizations**

The NEHRP agencies support and work with many cooperating organizations. These organizations include the Applied Technology Council, the Earthquake Engineering Research Institute, the National Institute of Building Sciences, the Southern California Earthquake Center, The Federal Alliance for Safe Homes, Outreach Process Partners, and the four regional earthquake consortia: the Cascadia Region Earthquake Workgroup, the Central United States Earthquake Consortium, the Northeast States Emergency Consortium, and the Western States Seismic Policy Council. These organizations and many others are essential in furthering the work of NEHRP.

## **NEHRP Goals**

- Goal A** *Improve understanding of earthquake processes and impacts*
- Goal B** *Develop cost-effective measures to reduce earthquake impacts on individuals, the built environment, and society-at-large*
- Goal C** *Improve the earthquake resilience of communities nationwide*

### **Technical Guidance**

Based on research conducted by the NEHRP agencies, FEMA develops technical guidance manuals, handbooks, and training materials on seismic safety and construction. State and local governments, building code officials, architects, engineers, and building industry professionals use these materials for designing and building homes, businesses, and infrastructure; retrofitting existing buildings; and developing building codes in at-risk areas.

FEMA provides the following types of information:

- Guidance and best practices on seismic design, construction, and upgrade techniques
- Procedures for identifying, documenting, and ranking earthquake hazards and the resultant risks to buildings and infrastructure
- Techniques for evaluating structures damaged by earthquakes, such as steel frame buildings and concrete and masonry buildings
- Methods for estimating seismic upgrade costs and benefit-cost models for upgrading government buildings
- Recommended improvements to design and construction standards for structures in earthquake-prone areas
- Performance-based design and construction guidance for building owners, managers, and regulators to best determine how a building will perform in an earthquake of specific parameters

### **Public Education Materials**

The NEHRP agencies, with their partners, produce the following types of earthquake safety materials:

- Brochures and web-based materials for homeowners and businesses
- Techniques for upgrading homes and reducing hazards in homes and businesses
- Earthquake curricula for grades K-6 and 7-12
- Tools to assist disaster educators, incident managers, and others to organize earthquake safety programs

For more information on FEMA's NEHRP activities and its resources, and to subscribe to FEMA NEHRP email updates, visit [FEMA Earthquake](#).