



FEMA

MITIGATION DIRECTORATE

National Earthquake Hazards Reduction Program

REDUCING EARTHQUAKE RISKS

Established by Congress in 1977, the National Earthquake Hazard Reduction Program (NEHRP) works to reduce risks to life and property resulting from earthquakes. 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 National Science Foundation (NSF), and the United States Geological Survey (USGS).

A FEDERAL PARTNERSHIP

The NEHRP agencies work together 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.

Federal Emergency Management Agency

FEMA manages initiatives that increase the chances that people will survive earthquakes, including the following activities:

- Translates results of research and technology development into effective earthquake loss reduction measures at State and local levels of government
- Prepares technical guidance aimed at improving the seismic safety of new and existing buildings and lifelines, and preparing and disseminating information about building codes and practices
- Supports public-private partnerships to develop disaster-resilient communities, helping State and local government decision-makers by providing estimates of potential losses due to earthquake hazards
- Develops earthquake risk-reduction tools and measures

- Develops and supports public education to increase awareness of earthquake loss reduction measures

National Institute of Standards and Technology

NIST manages the overall NEHRP effort, including these activities:

- Researches building codes, standards, and practices
- Promotes earthquake-resistant building practices, and works with national organizations to improve seismic standards for new and existing infrastructure
- Chairs the Interagency Committee on Seismic Safety in Construction (ICSSC), which recommends practices and policies for reducing earthquake hazards in Federal facilities

National Science Foundation

NSF conducts and supports earth science research that increases knowledge about the origins and effects of earthquakes, including these activities:

- Supports research on plate tectonics, and the social and economic aspects of earthquake hazard mitigation

EARTHQUAKES: 45 STATES AND TERRITORIES ARE AT RISK

Earthquakes threaten large regions of the country, including central and eastern States, and Alaska. The Northridge, California, earthquake in 1994 killed at least 60 people, injured 5,000, and left more than 25,000 people homeless. Direct economic losses were estimated at \$20 to \$30 billion.



FEMA

- Funds engineering research on geotechnical, structural, architectural, and lifeline systems
- Supports educational initiatives targeting scientists and engineers

United States Geological Survey

USGS conducts and supports earth science research that increases knowledge about the origins and effects of earthquakes, including these activities:

- Monitors and maintains data analysis and earthquake notification facilities
- Conducts and supports basic and applied earth science investigations that increase knowledge about the origins and effects of earthquakes.
- Produces national and regional assessments of seismic hazards
- Conducts post-earthquake NEHRP investigations

TECHNICAL GUIDANCE FOR STRONGER AND SAFER BUILDINGS

Based on research conducted by 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 different types of structures damaged by earthquakes, such as steel frame buildings, and concrete and masonry buildings
- Methods for estimating seismic upgrade costs (based on data from more than 2,000 projects), 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 to allow building owners, managers, and regulators to more reliably 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 electronic materials on earthquake safety for homeowners and businesses
- Techniques for upgrading homes and reducing hazards within homes and businesses
- Earthquake curriculum for grades K-6 and 7-12, and a website for kids (<https://www.fema.gov/kids/quake>)
- Tools to assist disaster educators and incident managers to organize earthquake safety programs

NEHRP GOALS

- Develop effective practices and policies for earthquake loss-reduction and accelerate their implementation.
- Improve techniques to reduce seismic vulnerability of facilities and systems.
- Improve design and implementation of seismic hazards identification and risk-assessment methods.
- Improve understanding of earthquakes and their effects.

FOR MORE INFORMATION

Please visit: <http://fema.gov/plan/prevent/earthquake/nehrrp>