The Role of FEMA
In the NEHRP

Mike Mahoney
Mitigation Directorate
Risk Reduction Division
Building Science Branch
NEHRP Program Management

- NEHRP authorized by Congress in 1978.

- Overall Purpose: “...to reduce the risks of life and property from future earthquakes in the United States...”

- NEHRP has been re-authorized by Congress on 2 – 5 year cycles following hearings in House and Senate with input from agencies, experts, and stakeholders.

- Re-authorization currently in process.
Statutory NEHRP Activities

- Conduct interdisciplinary research on earthquakes and their effects on communities, structures, buildings, and lifelines.
- Monitor earthquake activity and characterize hazard.
- Develop earthquake resistant design and construction practices.
- Develop and promote adoption of effective model building codes and practices for earthquake resilience.
- Public education on earthquake risks and mitigation.
FEMA’s Role in NEHRP

- Promote the implementation of research results in building practices for earthquake safety and resilience.
- Assist in the development of performance-based design technology and methods.
- Support implementation of improved earthquake-resistant building codes and standards for new and existing buildings, structures, and lifelines.
- Support state, regional, and local efforts to develop mitigation activities and response and recovery plans.
- Support the application of a earthquake loss estimation methods and public awareness and education.
FEMA’s Role

- Support for state and regional earthquake mitigation activities
- Technology Transfer (translating NEHRP research results into practice)
- Support of Multi-State Consortia and other Earthquake Partner Organizations
- Outreach and Training
- Support for State Efforts
  - State Assistance support re-established in FY 2009
FEMA’s Building Science Mission

Make sure we don’t add to existing risk by continuing to build in hazardous areas or constructing new development to inadequate/unenforced codes.” - FEMA Administrator Craig
FEMA Building Science Guidance

FEMA responsibilities under NEHRP include translating research results into practice:

- Develop and disseminate technical and non-technical guidance documents, used on a voluntary basis
- Continue to develop and maintain seismic design guidance, such as the NEHRP Recommended Provisions
- Provide input to recognized consensus standards (ASCE 7, ASCE 31, ASCE 41)
- Support inclusion of FEMA design guidance and loss reduction concepts in the nation’s model building codes
Model Building Codes

- State/local building codes are one of the most effective mitigation strategies to reduce earthquake losses.
- FEMA’s design guidance products are key inputs into national consensus design standards.
- Model Building Codes adopt these consensus standards for their design provisions.
  - International Building Code (IBC)
  - International Existing Building Code (IEBC)
  - International Residential Code (IRC)
- FEMA supports an expert team to monitor the model building code process to ensure that the codes continue to provide an adequate level of seismic protection.
2009 NEHRP Recommended Seismic Provisions for New Buildings and Other Structures

- Primary resource for ASCE/SEI 7-10 and the national model building codes IBC and IRC 2012.
- Includes a series of supporting publications:
  - FEMA P-749 Nontechnical Introduction
  - FEMA P-751 Design Examples
  - FEMA P-752 Training Materials
Existing Buildings Guidance

- Progression of guidance documents:
  - Rapid Visual Screening (FEMA-154)
  - ASCE Standard for Seismic Evaluation (ASCE-31)
  - Pre-Standard for Seismic Rehabilitation (FEMA-356 -> ASCE-41)
  - Rehabilitation Techniques (FEMA 547)
  - Incremental Seismic Rehabilitation series (FEMA 395-400)
  - Typical Costs (FEMA-156)
Incremental Seismic Rehab Series

- Incremental Series includes:
  - FEMA 395 – Schools
  - FEMA 396 – Hospitals
  - FEMA 397 – Offices
  - FEMA 398 – Apartments
  - FEMA 399 – Retail
  - FEMA 400 – Hotels

- FEMA P-420 *Engineering Guideline for Incremental Seismic Rehabilitation* provides engineering support guidance for the series.
Performance Based Design

- Goal of the project is to develop design and construction criteria that will allow an owner to determine performance of their building based on criteria they can understand:
  - Dollars  Casualties  Downtime

- Will allow for validation of code level prescriptive design.

- The first phase is to develop a Performance Assessment Methodology, which will include a software tool, PACT.

- Second phase to use the Methodology to develop Performance Based Seismic Design Guidelines.

- Project based on FEMA 445 Project Work Plan.
Residential Publications

Homebuilders’ Guide to Earthquake Resistant Design and Construction
FEMA 232 - June 2006

Earthquake Safety Guide for Homeowners
FEMA 530 / September 2005
Policy Publications

Promoting the Adoption and Enforcement of Seismic Building Codes:
A Guidebook for State Earthquake and Mitigation Managers

Promoting Seismic Safety
Guidance for Advocates
FEMA 474 / September 2005
Earthquake Home Hazard Hunt

Recommendations for reducing earthquake hazards in your home are presented on the other side of this poster.

Earthquake Safety Checklist
FEMA 526 / August 2005
FEMA Drop, Cover, and Hold Posters

When earthquake shaking begins...

**Drop, Cover, and Hold**

Take cover under a sturdy desk or table, hold on to the desk or table leg so that the desk or table stays on top of you, and keep your head down until the shaking stops.

[Image of a classroom with students under desks]

[Image of a classroom with students under desks in Japanese]
FEMA Tsunami Guidance

- Engineering design guide:
  - Tsunami behavior and characteristics
  - Tsunami hazard assessment
  - Vertical evacuation options
  - Siting, spacing, sizing, and elevation considerations
  - Load determination and structural design criteria
  - Structural design concepts and additional considerations

- Voluntary design guide for Refuge Structures; **not** a mandate for all structures in tsunami hazard areas