# National Earthquake Hazards Reduction Program

*… a research and implementation partnership*

# NIST Research Program

## Advisory Committee on Earthquake Hazards Reduction

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FEMA

NIST National Institute of Standards and Technology

USGS science for a changing world

nehrp

national earthquake hazards reduction program

# Presentation Outline

- Reiteration of NIST role in NEHRP
- Background – ATC workshop
- ATC-57 “Roadmap”
- NIST program approach
- FY 2007 NIST program
- Conclusion

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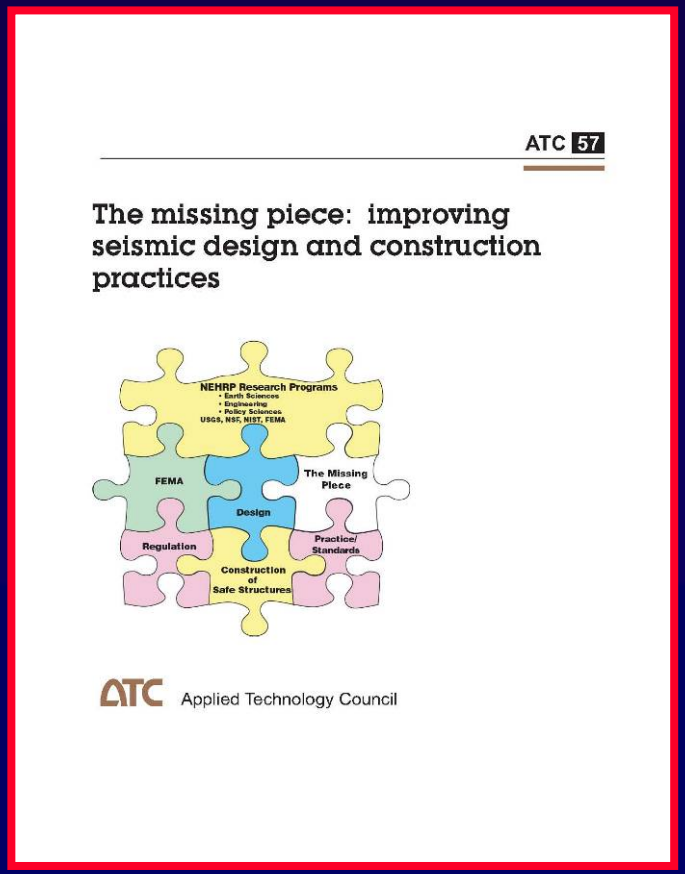
# NEHRP Agency Roles

## NIST: *Perform problem-focused research!*




President's *American Competitiveness Initiative* re-energizes NIST earthquake research program!

- FY 2007 budget started process (+$800K from FY 2006).
- Requested FY 2008 budget strengthens commitment (+$5.5M from FY 2006).

# Background

## 2002 NIST-sponsored ATC Workshop

- Consensus: "…the gap between engineering and scientific knowledge and its practical application has grown…"
- Workshop Conclusion: The informational link between theory, research results, and practice is weaker than it should be.
- Workshop Conclusion: A technology transfer gap has emerged that limits the adaptation of basic research knowledge into practice, with gap widening expected as NEHRP moves into Performance-Based Seismic Design (PBSD) provisions and guidelines.

# ATC-Proposed "Roadmap" or "Missing Link" Program

1. Systematic support of seismic code development process.
   a. Provide technical support for seismic practice and code development process.
   b. Develop technical basis for Performance-Based Seismic Engineering by supporting problem-focused, user-directed R&D.
2. Improve seismic design and construction productivity.
   a. Support development of technical resources (e.g. guidelines and manuals) to improved seismic engineering practice.
   b. Make evaluated technology available to practicing professionals in design and construction communities.
   c. Develop tools to enhance productivity, economy, and effectiveness of earthquake-resistant design and construction process.

# ATC-Proposed "Roadmap" or "Missing Link" Program

- Recommended approach:
  - Establish formal external review mechanism
  - Project plans should be in place and reviewed regularly.
  - Effort should be balanced among government, academic, and practitioner sectors.
  - Implement independent benefit-cost assessments.
- Estimated sustaining annual budget requirement: $6.25M (2003), or ~$7.0M (2007)

# NIST Program Approach

- Implement “roadmap” approach.
- FY 2007: $800K dedicated to research (enacted).
- FY 2008: $5.5M dedicated to research (requested).
- About 60% of research to be performed extramurally.
- Seeking 1 senior research engineer and ~2 junior research engineers for NIST staff (current staff not performing earthquake research).
- Experimental research to be performed at NEES sites.
- Establishing 2 indefinite delivery/indefinite quantity (IDIQ) contracts
  - Research planning and evaluation.
  - Research performance.

# NIST FY 2007 Program

1. Systematic support of seismic code development process.
   - Develop rational response modification coefficients for Special Reinforced Concrete Walls, Reinforced Masonry Walls, and Steel Braced Frames using ATC-63 methodology (2-yr project).
2. Improve seismic design and construction productivity.
   - Develop searchable database of NSF-sponsored research results (3-yr project).
   - Develop program plan for test & evaluation of innovative structural and foundation systems.
   - Develop design guidelines for port and harbor facilities - collaborative with GA Tech-led NEES Grand Challenge project (3-yr project).
   - Develop 2 tech briefs – Special Steel Moment Frames (collaborate with AISC), and Special Reinforced Concrete Moment Frames (collaborate with UC Berkeley).

# Conclusion

- Remain faithful to ATC-57 approach.
- Budget growth tied to *American Competitiveness Initiative.*
- Work will be collaborative via new in-house work force and contractor expertise from research and practitioner sectors.