

FINAL DRAFT for ACEHR review on March 25, 2009

(Date)

Patrick D. Gallagher
Deputy Director
Office of the Director
National Institute of Standards and Technology
Building 101, Room A1134
100 Bureau Drive
Gaithersburg, MD 20899-1000

Reference: Reauthorization of the National Earthquake Hazards Reduction Program

Dear Dr. Gallagher:

The National Earthquake Hazards Reduction Program (NEHRP), originally authorized by the Congress in 1977, was most recently reauthorized and expanded in 2004. NEHRP has been a productive program for over 30 years, and has provided a remarkable series of accomplishments that have allowed the Nation to be better prepared for major earthquakes. The NEHRP is scheduled to be reauthorized by the 111th Congress, and we understand that the first hearing will be held in June.

As your Advisory Committee on Earthquake Hazards Reduction (ACEHR), we meet regularly to advise you and the program's Interagency Coordinating Committee (ICC) on the effectiveness of the program, new trends and developments in the science and engineering of earthquake hazards reduction, and refinements that are needed. In that spirit, we have several recommendations for aspects of the program that should be addressed during the reauthorization process.

We understand that the reauthorization process is a function of the Legislative Branch and our responsibility to you is within the Executive Branch. We do feel strongly, however, that these changes are needed and hope that the ICC will work toward addressing and implementing these recommendations. We appreciate that many of these changes can be made within the legislation now in place, and certainly leave it to your judgment to decide how best to accomplish each task. These recommendations are consistent with our most recent annual report to you, dated May 2008.

1. Change the agency responsible for leading post-earthquake investigations to NIST.

Consistent with the change in the leadership of NEHRP, ACEHR recommends that the leadership for post-earthquake investigation be transferred from the USGS to NIST. Through its work as the lead NEHRP agency, NIST is

developing unique expertise in coordinating among the NEHRP agencies and the scientific and engineering disciplines involved in earthquake risk reduction. This expertise should be exploited in coordinating post-earthquake investigations. NIST's role should include organization and coordination of reconnaissance teams that document critical effects of major earthquakes and sponsoring the publication of results in discipline-oriented interactive media that archive collected data and distribute lessons learned.

This change is not intended to reduce the reconnaissance activities of other agencies. Rather, it is to bring a high level of coordination to the various specialized activities and knit them together into a common and consistent series of reports. This change in lead agency responsibility must be accompanied by the funds required for NIST to lead and to exercise this critical component of NEHRP.

There is a need to better gather and integrate discipline-specific findings—from earth science, seismology, engineering geology, geotechnical engineering, structural engineering covering nonstructural performance, lifelines, social science, behavioral science, economics, and emergency response—into lessons learned. As the lead agency for NEHRP, NIST is already responsible for coordinating the program-related activities of the member agencies; thus, it is appropriate for NIST to also coordinate post-earthquake investigations. Moreover, NIST has experience in post-event investigations through roles such as the national disaster investigator following the September 11, 2001 terrorist attacks. Through its strategic planning and program coordination, NIST is developing the expertise required to deploy a multidisciplinary reconnaissance team that can work with discipline-specific teams to gather and to report on the critical lessons revealed by a major event in a manner consistent with the NEHRP Strategic Plan.

It appears that the USGS never sought the responsibility for leading post-earthquake investigations, has never received funding for the role, and is in support of the change. Giving up this role is not expected to adversely impact the agency's other major post-earthquake responsibilities.

2. Add an Interagency Working Group

The NEHRP program is currently comprised of the coordinated activities of four agencies: NIST, FEMA, NSF, and USGS. It is overseen by the ICC with the support of a Program Coordination Working Group (PCWG) comprised of representatives of the four agencies. As the program has matured since 1977, other federal agencies have developed programs that parallel NEHRP activities and in numerous cases overlap.

The NEHRP vision is for a Nation that is earthquake-resilient in public safety, economic strength, and national security. The related mission is to develop,

disseminate, and promote knowledge, tools, and practices through coordinated, multidisciplinary, interagency partnerships. While NEHRP's four lead agencies are making significant progress, there are other departments, agencies, and commissions that sponsor significant earthquake research in support of their individual missions that overlap with NEHRP. These areas of overlap are often lost opportunities for integration and implementation into NEHRP.

To utilize fully the federal resources invested in earthquake hazards reduction, we suggest that an Interagency Working Group (IWG) be formed consisting of other agencies that would work with the PCWG to assure maximum possible coordination and collaboration. The following agencies should be considered for membership along with others that can contribute to NEHRP.

Department of Homeland Security, Office of Science and Technology and the
United States Coast Guard
Department of Transportation, Research and Innovative Technology
Administration
Department of Energy
National Oceanic and Atmospheric Administration
Nuclear Regulatory Commission
Environmental Protection Agency
Army Corps of Engineers
Department of Housing and Urban Development

3. Enhance collaboration and advancements in lifeline engineering.

Lifeline systems (power, water, wastewater, communication, transportation, etc) are designed and constructed by their owners based on the local needs and financial constraints with little consideration given to the need for national disaster resilience. There has not been sufficient attention given to the interdependencies among the systems or the national impact that a single outage can have. Several local lifeline outages have each cost the national economy billions of dollars. Adding disaster resilience will not happen automatically; a new kind of national oversight is needed.

All NEHRP agencies need to expand their activities related to lifeline systems and central oversight is needed to ensure that the resulting programs and products advance the Nation's disaster resilience. Improving the reliability to lifeline services for both new and existing systems is needed. The expert resources of the natural hazards professional community should be tapped to identify performance goals, best practices and standards, define appropriate peer review procedures, and develop specific mitigation practices that can be applied across the Nation. Regulatory oversight is needed to decrease lifeline infrastructure vulnerability to earthquake hazards. The current expectation that each state will take care of this need within their current standards is unrealistic.

4. Charge NEHRP agencies to support interdisciplinary research activities.

ACEHR has previously recommended that the applied research needed to advance the state-of-the-art of earthquake engineering and improve practices should be highly interdisciplinary with more involvement from the social sciences. ACEHR believes that the Earthquake Engineering Research Centers (EERCs) are best suited to provide the multidisciplinary, applied research that is needed. Noting that interdisciplinary research and social science research are strengths of NSF, and given the newly launched “missing link” research at NIST, there is a need for consistent and joint support from at least both NSF and NIST for the newly graduated EERCs.

The NEHRP Strategic Plan calls for a variety of research activities related to improving practices and improving the Nation’s earthquake resilience. Advancements are needed in all areas of earthquake science and engineering. NSF’s Directorate for Social, Behavioral and Economic Sciences is a prominent funder of interdisciplinary research involving the social and physical sciences with a portion of that funding available for applied research. NIST’s niche in problem-focused research in support of standards, practices, and codes puts them in a leadership position for defining and coordinating the work that needs to be done.

5. Charge the Office of Science and Technology Policy, Executive Office of the President, with soliciting support from other agencies for the George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES).

The George E. Brown, Jr. Network for Earthquake Engineering Simulation represents a significant national resource needed to advance the practice of earthquake engineering. At present, it is an underutilized resource because of funding limitations within NSF and the private sector users. There is an opportunity to solicit additional research work for NEES from other federal agencies to utilize effectively and further leverage the Nation’s investment in NEES.

ACEHR understands that such interagency solicitation is generally the responsibility of the President’s Office of Science and Technology Policy (OSTP) and its National Science and Technology Council (NSTC). Their recently published initiative, *Grand Challenges for Disaster Reduction*, illustrates the need and opportunity for taking advantage of the NEES Equipment Sites and the associated cyberinfrastructure.

6. Task USGS to continue the development and sponsorship of multi-hazard demonstration projects.

In 2008, USGS sponsored a very successful multi-hazard demonstration project in southern California that was initially funded by Congress in Fiscal Year (FY)

2007. The demonstration project effectively integrated the earthquake hazards faced by that region with the other natural hazards in a manner that encouraged preparedness and mitigation activities with multiple benefits. USGS should be tasked to expand their scope to include the development of multi-hazard assessments with other high-risk areas.

We appreciate the ICC's support of the NEHRP and trust that these suggestions will be judged to be reasonable and represent constructive changes to the program aimed at covering various unaddressed problems and gaps. We believe they are consistent with the overarching goals of the NEHRP, and will further stimulate more effective and efficient use of the available funds.

Please contact us if you have any questions or wish to further discuss our suggestions.

Sincerely,

Chris D. Poland, Chair
Advisory Committee on Earthquake Hazards Reduction
National Earthquake Hazards Reduction Program