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**TESTIMONY  
BEFORE THE**

**HOUSE SCIENCE AND TECHNOLOGY SUBCOMMITTEE ON TECHNOLOGY  
AND INNOVATION**

**ON**

**“THE REAUTHORIZATION OF THE NATIONAL EARTHQUAKE HAZARDS  
REDUCTION PROGRAM: R&D FOR DISASTER RESILIENT COMMUNITIES”**

**THE U.S. HOUSE OF REPRESENTATIVES**

**JUNE 11, 2009**

**Introduction**

Thank you Chairmen Wu and Ranking Member Smith, and distinguished members of the Subcommittee for allowing me the opportunity to provide you with a statement for the record. I am Ken Murphy, the Immediate Past-President of the National Emergency Management Association (NEMA) and the Director of the Oregon Office of Emergency Management. In my statement today, I am representing NEMA, whose members are the state emergency management directors in the states, the U.S. territories, and the District of Columbia. NEMA's members are responsible to their Governors for emergency preparedness, homeland security, mitigation, response, and recovery activities for natural, man-made and terrorist caused disasters. In my state, the emergency management office is responsible for earthquake preparedness, response, recovery, and mitigation and we are actively engaged with the National Earthquake Hazards Mitigation Program (NEHRP).

As the Committee considers reauthorization of the NEHRP program, NEMA supports the program's reauthorization as a vital program that helps states prepare for earthquake specific hazards. The NEHRP program works in concert with critical preparedness functions at FEMA, such as the newer Regional Catastrophic Grant Program and the Emergency Management Performance Grant Program, the only all-hazards preparedness program. Better integration of

NEHRP in key activities like mitigation, all-hazards gap analysis, and all-hazards preparedness activities would benefit state preparedness activities and building the capabilities nationally and at the state and local level for catastrophic preparedness.

There are four key areas that I want to highlight today:

1. Challenges faced by emergency managers in preparing communities for earthquakes and other natural hazards;
2. Support for reauthorization of the National Earthquake Hazards Reduction Program;
3. Difference in preparing for the hazards; and
4. Tools and technology for emergency managers.

### **CHALLENGES FACED BY EMERGENCY MANAGERS**

Emergency managers are faced with numerous challenges at each level of government and the private sector. I would be remiss if I did not state for the record that financial assistance to address earthquake hazards has been and always will be a challenge. Each state, city, county, tribal nation, and territory must deal with either consistent disasters, such as hurricanes or wildfires, which usually provide greater emphasis and support to be prepared for these type events or they have to deal with very infrequent disasters which lead to a lack of preparedness, which usually directs emphasis to other issues that are relevant and must be dealt with. Earthquakes are high consequence infrequent events and are often difficult to gain attention. I want to highlight some of the larger events so you get a picture of how earthquakes measure up to other disasters.

- During the Nisqually Earthquake of 2001, one of the largest recorded earthquakes in Washington state history, one casualty and 407 injuries were reported along with the disruption of business, transportation, and government functions for a number of days for extensive inspection, repair, and clean-up efforts. The earthquake was Washington's most expensive and widespread disaster, according to state and federal coordinating officers for the disaster recovery program, totaling over \$322 million in federal disaster recovery costs and not including damages to bridges or roadways covered by the Federal Highway Administration System;
- The Northridge Earthquake in California in 1994 was responsible for 72 deaths and over 9,000 injuries and left 25,000 people homeless. The earthquake caused an estimated \$25 billion in damage, making it one of the costliest natural disasters in U.S. history. An outbreak of Valley Fever

also hit the affected area directly following the earthquake due to the large amount of dust and land movement during the quake and was responsible for three deaths;

- The Loma Prieta Earthquake of 1989 killed 63 people, injured 4,000, and left over 8,000 people homeless. The earthquake caused between \$8 billion and \$12 billion in damages to critical infrastructure, businesses, and homes;
- The 1906 San Francisco earthquake was estimated as a magnitude 8.3 event, lasting 45 seconds. The casualties as a result of the earthquake and resulting fire are estimated to be above 3,000 and to this day is the greatest loss of life from a natural disaster in California's history; and
- The 1812 New Madrid Earthquake and aftershocks, though not officially recorded is often believed to be the largest seismic activity in U.S. history, and induced shaking strong enough to alarm the general population over an area of 2.5 million square kilometers, affecting territory that is now occupied by over 10 states.

#### **NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM (NEHRP)**

NEHRP provides funding allowing for effective practices and policies for earthquake loss-reduction and accelerates their implementation. The program is currently authorized at \$191 million for FY 2009 and authorization expires on September 30, 2009. However, according to the Central United States Earthquake Consortium, NEHRP funding has remained level since 1992, so we have lost considerable value over time for the investments made to build preparedness capabilities and research tools. NEHRP improves techniques to reduce seismic vulnerability of facilities and systems. NEHRP improves seismic hazards identification and risk-assessment methods and their use and improves the understanding of earthquakes and their effects.

The program must remain singularly focused on earthquakes. FEMA also should maintain the NEHRP program's uses for all four phases of emergency management – preparedness, response, recovery, and mitigation. FEMA should also ensure the program maintains both a state focus and a multi-state focus, since earthquakes could hit multi-state regions and as we have learned from recent hurricanes that our nation relies on mutual aid assistance in response to disasters. NEMA supports the creation of the Advisory Committee for NEHRP that was created in the reauthorization in 2005 and appreciate that emergency management is represented on the Committee. We hope that the Committee and emergency management representation will continue.

In addition to NEHRP's scientific and research driven efforts, the program provides coordination with FEMA's Emergency Management Performance Grant (EMPG) that enables States to develop preparedness and response plans as

well as increase earthquake awareness. A primary objective of NEHRP is to provide outreach and public education and NEMA strongly supports these efforts at a national, state, and local level. Some of the key NEHRP objectives include development of cost-effective measures to reduce earthquake impacts on individuals, the built environment, and society-at-large; providing guidance and recommendations on codes and ordinances to enhance seismic safety; and improving earthquake resilience of communities nationwide through effective policies.

Some of the key accomplishments by states through NEHRP and FEMA, include preparedness, mitigation, training, and public education.

#### Training:

- With support from FEMA/NEHRP Washington State EMD trains 250+ personnel annually on mitigation techniques, such as *Rapid Visual Screening of Buildings for Potential Seismic Hazards* as well as response and recovery techniques that include *Post Earthquake Safety Evaluation of Buildings*.

#### Exercises:

- Major functional exercises have been conducted with the support of FEMA/NEHRP funds. Based on the Seattle Fault Earthquake Scenario, the *Sound Shake 2008* exercise examined serious impacts to the region's transportation and communications systems. This exercise also allowed the state, counties, and cities in the greater Puget Sound region to test their emergency plans and systems. The exercise also provided an opportunity for the region as a whole to continually improve its readiness.

#### Public Education and Outreach:

- Emergency management continues to promote public awareness of the state earthquake hazards through the annual preparedness month campaigns. Statewide "Drop, Cover and Hold" drills are conducted during both months in an effort to educate citizens on how to respond during an earthquake.
- Awareness and educational videos, including *Earthquake... Preparing Your Classroom - How Safe is Your Classroom?* and *Preparing Your Office for an Earthquake*, have been developed and are utilized statewide to inform educators and business owners of non-structural mitigation techniques that can be employed with little or no cost. These instructional videos have been posted online for greater dissemination.

The NEHRP plan and activities do align with local governments. As NEHRP has evolved, during this reauthorization thought should be given to focus on specific geographic areas, which would be of great benefit to the locals needs and preparedness activities.

While NEHRP is a valuable program for emergency managers, it is difficult to track the program's funding from year to year, since the program is shared by

four separate agencies and often buried in operational accounts for these agencies. Having a clear line item for NEHRP would assist in tracking the funds for the program and gaining more visibility before Congress, the Administration and stakeholders at the state and local level who are charged with preparing for earthquakes or providing technological expertise for the program.

### **EARTHQUAKES VERSE OTHER HAZARDS**

The most significant issue concerning earthquakes is that earthquakes are no notice disasters. Many other disasters do provide some types of advanced warning, not all. Similar to other disasters, emergency managers really do not know how severe or how long an earthquake will last. Earthquakes must be planned for in the worst case scenario, as emergency responders will not know who is alive, injured, how large an area is affected, and how much damage you have suffered. Emergency managers also have to be prepared for aftershocks and on the coastal areas we have to plan for tsunamis. All of these factors make planning for earthquakes unique and specific for different geographical areas.

### **TOOLS AND TECHNOLOGIES**

In preparing for earthquakes it is important to have the tools such as HAZUS, which is a modeling tool from FEMA, but I believe that this tool needs more refinement to be specific to earthquakes and tsunamis allowing more specific modeling for each jurisdiction allowing governments to make and implement better preparedness actions. Geologist and seismologist need more research into the prediction of earthquakes and more sensor systems in the grounds to give us some warning and scientific data on the earths movement during earthquakes.

Additionally, even though I stated that earthquakes are no notice events it is still important to have technologies that allow jurisdiction to warn their citizens and visitors. NEMA has supported authorization for FEMA's Integrated Public Alert and Warning System (IPAWS) as a component of the warning systems for the emergency management tool-kit. IPAWS is an important technology which is designed to warn individuals through various systems such as text messaging and reverse 911 warnings for an impending event. As emergency managers, we have to be able to tell people what to prepare for, how to react, and what is important when disasters are eminent or have occurred. Having warning systems in place is not enough, if we don't tell them what to do with that information.

Applied research that is sponsored in part by NEHRP and its agencies may eventually lead to advancements in exciting new technologies, such as early earthquake warning, which are vitally important to protecting human life and critical infrastructure as well as guiding response efforts.

**CONCLUSION**

NEMA supports NEHRP reauthorization and looks forward to working with the Committee to enhance the program. Thank you for the opportunity to testify and we appreciate your support for our nation's emergency management system.