

**2009 National Earthquake Program Managers Meeting
November 5-6, 2009**

**Hotel Marlowe
Cambridge, Massachusetts**

Draft Minutes

Presenters & Participants:

Regional Consortia

John Schelling	CREW/Washington
Jim Wilkinson	CUSEC
Brian Blake	CUSEC
Peggy Young	CUSEC
Edward S. Fratto	NESEC
Steve Patriarco	NESEC
Patricia Sutch	WSSPC

State and Territorial Representatives

Charlisa Ussery	Alabama
Veronica Villalobos-Pogue	Arkansas
Scott Ausbrooks	Arkansas
James Sheehan	Arkansas
Kathryn Long	California
Edeine Camacho	Guam
Dave Jackson	Idaho
Jana Fairrow	Illinois
Steven Oglesby	Kentucky
Elizabeth Barton	Maine
Don Boyce	Massachusetts Emergency Management Agency
Suzanne Lewis	Mississippi
Kent Buckley	Mississippi
Brenda Rembert	Mississippi
Billy Patrick	Mississippi
Lea Stokes	Mississippi
Tom McAllister	Mississippi
David Wunsch	New Hampshire
Dan O'Brien	New York
Althea Turner	Oregon
James Baker	Rhode Island
Tammie Dreher	South Carolina
Bob Carey	Utah
Laurence Becker	Vermont

NEHRP Agencies

John Aucott	FEMA HQ
Cathleen Carlisle	FEMA HQ
Robert Franzen	FEMA HQ
Larry Hultengren	FEMA HQ
Mike Mahoney	FEMA HQ
Mai Tong	FEMA HQ
Paul Ford	FEMA Region I
Paul Morey	FEMA Region I
Magda De La Matta	FEMA Region II
Marshall Mabry	FEMA Region II
Gene Longenecker	FEMA Region IV
William Moore	FEMA Region IV Coordinating Officer
Mike Hanke	FEMA Region V
Wendy Phillips	FEMA Region VI
Steve Dumovich	FEMA Region VI
Sue Evers	FEMA Region VII
Michael Parker	FEMA Region VII
Doug Bausch	FEMA Region VIII
Pete Bakersky	FEMA Region VIII
Johanna Fenton	FEMA Region IX
Tamra Biasco	FEMA Region X
John Filson	NEHRP Secretariat
Jill McCarthy	USGS
David Wald	USGS

NEHRP Partners

Jamie Caplan	Jamie Caplan Consulting
Michael Hagerty	Weston Observatory, Boston College
David Hawkins	CMPO
Bettina Stopford	SAIC

Summary of Discussion

I. Welcome and Opening Remarks

Edward S. Fratto, Executive Director of the Northeast States Emergency Consortium (NESEC) and host and moderator of the 2009 National Earthquake Program Managers Meeting, welcomed the participants and introduced Don Boyce, Director of the Massachusetts Emergency Management Agency, and Paul Ford, Administrator of Region I of the Federal Emergency Management Agency (FEMA).

Mr. Boyle welcomed everyone to Boston and thanked the participants for their dedication to earthquake mitigation and awareness and emergency management. Mr. Ford also welcomed the participants, and reviewed some of the changes in the National Earthquake Hazards Reduction Program (NEHRP) since he joined FEMA in 1992. He discussed the potential damage that could

result from an earthquake in the Boston area and the importance of the New Madrid Seismic Zone (NMSZ) catastrophic planning to Region I.

Mr. Fratto then asked all of the participants to introduce themselves. After the introductions, he recognized Brian Blake, Peggy Young, Bob Carey, and Steve Patriarco for their work in support of the meeting.

II. NEHRP Welcome and Update, John Filson

John Filson, who retired from the U.S. Geological Survey (USGS) and now supports the NEHRP Secretariat on a part-time basis, provided an overview of NEHRP. He discussed NEHRP statutory activities (research, monitoring, design and construction practices, buildings codes, and public awareness and education); the NEHRP organization, which includes the Interagency Coordinating Committee (ICC), the Program Coordination Working Group (PCWG), and the Advisory Committee on Earthquake Hazards Reduction (ACEHR); and NEHRP management documents (Strategic Plan, Annual Reports). He emphasized that the importance of local level mitigation is understood at the national level and drives many NEHRP activities.

Dr. Filson discussed the roles of the four NEHRP agencies, funding for the agencies (\$191 million authorized versus \$120 million appropriated in Fiscal Year (FY) 2009), and challenges faced by NEHRP. The challenges include the four separate NEHRP agencies; a lack of national authority to improve mitigation measures; the need to develop trust and credibility with state and local entities; and the premise that what does not happen is critical to the success of NEHRP.

Dr. Filson also described recent NEHRP products and activities. The George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) is a major initiative of the National Science Foundation (NSF). The Advanced National Seismic System (ANSS) and the Global Seismographic Network (GSN) are major USGS programs. The National Institute of Standards and Technology (NIST), the lead NEHRP agency, is implementing the Applied Technology Council (ATC) Roadmap and publishing a series of Technical Briefs and articles on its applied research and the research of others. FEMA supports state and local mitigation, HAZUS, the translation of national hazard maps into building codes, and Performance-Based Seismic Design (PBSD) work with NIST. He also mentioned the October ShakeOut in California and the development of a scenario by USGS for the San Francisco East Bay region. The scenario was used in the recent Principal Level Exercise (PLE) involving Cabinet members on October 21.

A participant asked if NEHRP is headed in the right direction. Dr. Filson responded that NEHRP has made significant advances since its establishment more than 30 years ago. The NEHRP agencies and their partners are energized and now much better at communicating. The science also made tremendous advances since the 1970s. In terms of improvements to be made, there is a need for better coordination at the highest levels of government. For example, funds should not be cut from one NEHRP agency and added to another agency. Another improvement is the need to strengthen credibility and visibility with states and local communities.

Dr. Filson also responded to a question on ACEHR, an independent advisory committee supported by NIST. The charge of ACEHR, which first met in 2007, is to assess trends and developments in science and engineering; program effectiveness; the need for program revision;

and program management, coordination, and implementation activities. ACEHR will meet again on November 23-24 at NSF.

III. State Earthquake Program Best Practices

Bob Carey asked the State Earthquake Program Managers (SEPM), at their option, to describe best practices in the context of the following questions:

- What programs and activities will be undertaken with FY 2009 earthquake grant funds from FEMA?
- How does your program interact with other program areas in fulfilling NEHRP goals?
- Where does the program fall within the management structure?

Alabama, Charlisa Ussery

In 2009, FEMA earthquake assistance funds will be used for public awareness campaigns, public service announcements for earthquake awareness events, ATC-20 training, updating a web-based earthquake brochure to emphasize preparedness, and the development of an Earthquake 101 pilot course by the Central United States Earthquake Consortium (CUSEC). Alabama has been approved for a tabletop exercise as part of the NMSZ catastrophic planning. State earthquake staff works closely with the Alabama Geological Survey on fault maps.

Arkansas, Veronica Villalobos-Pogue

Arkansas is focusing on continuity of operations planning and catastrophic planning and will hold several exercises, including an exercise in May 2010 which will lead up to the National Level Exercise (NLE) in 2011. Education and outreach activities include an Earthquake 101 course developed in partnership with the Arkansas Geological Survey, town hall meetings, and ATC-20 workshops, which can now be offered free of charge with FEMA earthquake assistance funds. The focus this year is preparedness. Next year, mitigation will be the focus.

Partnerships with experts at the state and regional level are a best practice. These partnerships, for example, helped to secure funds for seismic monitoring stations. Arkansas will break ground in about 2 weeks with permanent stations from its state-owned and operated network. There also are plans to develop a liquefaction potential map next year.

California, Kathryn Long

In 2009, California received a total of \$3.8 million for earthquakes. Of the \$3.8 million, the state provided more than \$2 million. The California earthquake program has three staff, including one person funded by the National Oceanic and Atmospheric Administration. Three more staff will be added this year.

California activities include support of the seismic network, public education focused on the Earthquake Country Alliance (www.earthquakecountry.org), the Great California ShakeOut and Golden Guardian exercise in November 2008, which involved about 5.4 million citizens, and tsunami workshops and exercises. The California earthquake program maintains ongoing partnerships with many groups.

FY 2009 state earthquake assistance funds will be used primarily for preparedness, including training materials and flyers distributed through 300 ShakeOut associates and the American Red Cross. ShakeOut events will now be held each year on the third Thursday of November, with the next ShakeOut scheduled for November 21, 2010. California also will hold a series of workshops to lead the education charge and will review its outreach materials to ensure a consistent message. Next year, California will initiate a vulnerability assessment of state buildings and will work with the California Earthquake Authority (CEA) on homeowner awareness.

Idaho, Dave Jackson

The Idaho Geological Survey, the Idaho earthquake program's strongest partner, recently collaborated on the Borah Peak earthquake anniversary. With the assistance of the Western States Seismic Policy Council (WSSPC), Idaho also developed a gap analysis and now has a strategic direction for its earthquake program. This has provided unexpected synergy, including the adaptation of the *Putting Down Roots in Earthquake Country* document, *Putting Down Roots in Earthquake Country: Your Handbook for Earthquakes in Idaho*. The publication was completed in time for Idaho's Earthquake Awareness Month.

Idaho will use its FY 2009 earthquake assistance funds for travel, building off of the gap analysis and HAZUS study, and soil classification mapping (a section of the state will be used as a case study). Idaho also will assess its building inventory and critical infrastructure and will address issues related to the Benefit Cost Analysis (BCA) model for Idaho. Mr. Jackson noted that Idaho acquired an ANSS station for Boise with EMPG funding. Despite the acquisition, Idaho still has a fragmented seismic monitoring network.

Illinois, Jana Fairow

The Bureau of Disaster Assistance and Preparedness directs the earthquake program in Illinois. State public education and awareness activities include events to highlight the anniversary of the Mt. Carmel earthquake. A videogame is being developed on earthquake hazards with the University of Illinois. Illinois is also working on mitigation activities with Southern Illinois University Carbondale and regional catastrophic planning. Upcoming activities include a survey of critical infrastructure and ATC-20 training.

Mississippi, Suzanne Lewis

Mississippi will use FY 2009 earthquake assistance funds for education and outreach, including a Shake Cottage, Earthquake Awareness Week, and earthquake drills in schools. One of the goals of the Mississippi earthquake program is to replicate the success of the consistent messages developed for kids via schools on smoke detectors and batteries.

New Hampshire, David Wunsch

An ongoing activity in New Hampshire is the addition of seismic sensors. Mr. Wunsch also reported that 40 states, including New Hampshire, have received Department of Energy (DOE) funds for geothermal database project work.

New York, Dan O'Brien

New York has a low to moderate earthquake hazard but is high risk; the state is ranked #4 on the FEMA study of Annualized Earthquake Losses (AEL). The Vigilant Guard exercise, hosted by

Erie County, is being conducted this week. An earthquake exercise (5.9 magnitude) is part of the Vigilant Guard events (HAZUS was used to develop the exercise scenario). Mr. O'Brien discussed the Earthquake Engineering Research Institute (EERI) Guidelines for Developing an Earthquake Scenario.

Oregon, Althea Turner

The Oregon legislature has approved loan funds for schools and emergency responder facilities. Oregon is developing tools for local communities to facilitate the loan process. In addition, Oregon is leveraging its Emergency Management Performance Grants (EMPG) funds for tsunami preparedness and is developing a train-the-trainer series based on the Washington model. The proceedings from a recent tsunami evacuation workshop will be published soon. Oregon also works closely with the Cascadia Region Earthquake Working Group (CREW). Ms. Turner thanked FEMA for re-establishing state earthquake assistance funds.

South Carolina, Tammie Dreher

South Carolina has identified a number of goals for its program, including the identification of risk; updating earthquake maps; assessing infrastructure; and increasing education and awareness. Earthquake Awareness Week, which takes place this week, involves more and more people each year. This year, South Carolina distributed an updated South Carolina Earthquake Guide to communities along the coast and as an insert in the Sunday newspaper. Feedback from the media and users on the Guide has been very positive. State earthquake assistance funds were used to publish additional copies of the Guide this year. South Carolina also held an earthquake poster contest and used state assistance funds to buy educational saving bonds for winners.

Representatives from North Carolina, Tennessee, Alabama, Georgia, and South Carolina will be invited to participate in a meeting to discuss the establishment of additional seismic stations in the Southeast. The goal of the initiative, which is based on a similar effort in Arkansas, is for each state to have a white paper to present to its legislature on the need for more seismic stations.

Utah, Bob Carey

Activities include Earthquake Preparedness Month in April, the work of the Utah Seismic Safety Commission (USSC), six ATC-20 training sessions across the state, HAZUS project work, and *Putting Down Roots in Earthquake Country: Your Handbook for Earthquakes in Utah*. This very successful publication, which was developed by the USSC, Utah Geological Survey, and others in cooperation with USGS and FEMA, was released during Earthquake Preparedness Month. The Handbook had an initial printing of 50,000 and a second printing 50,000. There also was a newspaper insert for 320,000. Other activities during Earthquake Preparedness Month included a poster session, proclamation signing, and a news conference. Although a lot of effort was put into the events, media coverage was limited.

The USSC adopted a joint resolution to inventory Unreinforced Masonry (URM) buildings and to conduct a school inventory and is developing a brochure on options for earthquake insurance. Mr. Carey also discussed the publication of the Salt Lake City earthquake scenario, one in a series of scenarios developed by the University of Utah.

Vermont, Laurence Becker

Vermont has worked on a formula for EMPG funding and is developing amplification maps for Burlington, Vermont. The emergency management community will be brought in once the maps are completed. Vermont also is addressing strategic concerns related to the Yankee Nuclear Power Plant. Mr. Becker added that the Vermont Geological Survey won an award at the 2004 National Earthquake Conference for its mitigation work and work on HAZUS.

Washington, John Schelling

Initiatives undertaken include (1) a gap analysis; (2) schools and site assessments and a pilot outreach program to demonstrate at-risk schools to the legislature; and (3) San Francisco Planning and Urban Research Association (SPUR) “The Resilient City” effort, which looks at URM, existing buildings, lifelines, and performance expectations. A goal is for Washington to become a Resilient State with Resilient Cities. Mr. Shelling added that state employees coordinate closely with Tamra Biasco in FEMA Region X, the science and research communities, and CREW.

IV. FEMA Headquarters and State Assistance Program Updates

Mike Mahoney introduced FEMA HQ staff and described their roles in the earthquake program. FEMA HQ will soon have a new staff person assigned to the state assistance program.

Technical and Non-Technical Guidance, Mike Mahoney

Mr. Mahoney discussed FEMA’s role in NEHRP, including its work on program outreach, education and training, and initiatives such as QuakeSmart. He described some of the proposed changes in the House version of the NEHRP reauthorization. These include a multi-hazard focus, a reduction from nine to three responsibilities for FEMA, although the level of effort would remain essentially unchanged, and a cut in annual authorized funding levels for FEMA to \$9 million. The Senate will write its own bill, which may not agree with the House version.

Mr. Mahoney discussed FEMA Building Science technical and non-technical publications and its work to promote the adoption of model building codes. Activities include support to the Building Seismic Safety Council (BSSC) Code Resource Support Committee (CRSC) in completing the 2009 edition of the *NEHRP Recommended Provisions*, which will include new USGS maps and should be released by the end of the year. The 2009 Provisions are being published as FEMA P-750 and will serve as the primary resource for ASCE/SEI 7-10 and the national model building codes (International Building Code (IBC) and International Residential Code (IRC) 2012). Supporting publications include FEMA P-751, Nontechnical Introduction; FEMA P-752, Design Examples; and FEMA P-753, Training Materials. FEMA also supported South Carolina in its review of a modified IRC seismic design map and provided oral testimony at Arkansas and Tennessee code adoption hearings. Mr. Mahoney encouraged all state earthquake program managers to establish communication with their state building code personnel.

Mr. Mahoney also discussed PBSO documents being developed: FEMA P- 445, *Next-Generation Performance-Based Seismic Design Guidelines: Program Plan for New and Existing Buildings*, and the PBSO Performance Assessment Calculation Tool (PACT). He commented that the PBSO work is one of the largest and most exciting projects undertaken by FEMA.

Training, Tools, and Technical Assistance, Cathleen Carlisle

Ms. Carlisle reviewed projects funded under the National Earthquake Technical Assistance Program (NETAP). These include state and local on-demand training; ATC-20 and Rapid Visual Screening (RVS) training; non-structural earthquake mitigation training for hospital and health facility personnel; seismic rehabilitation of one- to two-family wood frame dwellings; and the URM Guide for local governments which will be available soon in print and online. Ms. Carlisle also discussed the Rapid Observation of Vulnerability and Estimation of Risk (ROVER), a software program designed for use on handheld devices and compatible with HAZUS and ShakeCast, and FEMA E-74, the electronic version of *Reducing the Risks of Nonstructural Earthquake Damage: A Practical Guide*. FEMA E-74, a hyperlinked, high level electronic version of FEMA 74, will soon be available online. If demand exists, a limited printing also may be done. FEMA is exploring new ways to develop and deliver training, including the use of webinars as a delivery strategy and GovDelivery for announcing new FEMA publications and initiatives in earthquake mitigation.

Implementation and Partnerships, Larry Hultengren

Mr. Hultengren reported on the NEHRP Earthquake Coordinators web site (www.training.fema.gov/emiweb/earthquake/welcome.htm). The web site offers an Earthquake 101 course for new and experienced earthquake coordinators. He also discussed FEMA 474, *Promoting Seismic Safety: Guidance for Advocates*, 2004; FEMA's partnership with the four regional earthquake consortia; the work of EERI in technology transfer; and the hazard mitigation demonstration project to develop real time linkages between HAZUS and the USGS ShakeMap. The project will allow for real time loss estimations based on actual ground motions produced automatically following an event. Pilot sites include Seattle, Salt Lake City, and Reno/Carson City, Nevada.

Earthquake State Assistance, Robert Franzen

Mr. Franzen thanked everyone for making the re-established earthquake state assistance program a success this year. He provided an overview of the program and eligible activities for state assistance funds: developing seismic mitigation plans; conducting inventories and inspections; updating building codes, zoning codes, and ordinances to enhance seismic safety; increasing awareness and education; and encouraging the development of multi-state groups.

Mr. Franzen also reported on the Non-Disaster (ND) Grant System operated by the DHS Grant Programs Directorate (GPD). This system will be used for the application process, award of funds, and reporting procedures for earthquake state assistance in FY 2010. Training is being offered on the ND grants (www.ndgrants.gov). FEMA's intent is to release the grant package to the states as soon as possible, possibly by the second quarter. The submission and review and approval process should take 40 to 60 days.

In response to a question on the EMPG guidance, Mr. Mahoney stated that FEMA HQ has been working for more than 2 years to include earthquake language in the EMPG guidance; so far, FEMA HQ has been successful only in having "mitigation" included. Several state participants encouraged continuing efforts on the part of FEMA HQ to incorporate earthquake language into the guidance. Mr. Mahoney also noted that FEMA requested \$15 million for state assistance in FY 2009 but received \$2.3 million.

Qualification Criteria, Mai Tong

Dr. Tong discussed the use of the Seismic Design Category (SDC) as the qualification criteria for state assistance. The SDC has five categories (A through E). In FY 2009, state eligibility was based on Category D and up. In FY 2010, eligibility will be based on the new 2010 IRC map and Category C and up. This change will result in the addition of three new states (Colorado, Oklahoma, and Texas) and American Samoa to the program. All 29 states participating in the program in FY 2009 will be eligible to participate again in FY 2010. In terms of FY 2010 funding, each participating state will receive base funding (amount to be determined). Remaining funds will be allocated based on the state's weighted exposure to risk, as determined by FEMA P-366, *HAZUS-MH Estimated Annualized Earthquake Losses for the United States*, 2008.

V. FEMA Regional Updates

Ms. Biasco introduced the FEMA Regional Earthquake Program Managers and asked them to provide a brief update on activities in their Regions.

Region I, Paul Morey

Mr. Morey, who recently joined Region I as the Earthquake Program Manager, reported on the Vermont and Maine assistance grants. He noted that Region I staff coordinate closely with NESEC and the Weston Observatory at Boston College.

Region II, Marshall Mabry and Magda De La Matta

Mr. Mabry provided a brief overview of soil and geological studies conducted in New Jersey and the Vigilant Guard exercise being conducted this week in New York. Ms. De La Matta reported on RVS and ATC-training offered this summer in Puerto and the Virgin Islands (68 people were trained). Puerto Rico and the Virgin Islands also received earthquake assistance funds this year.

Region IV, Gene Longenecker

Mr. Longenecker, who also recently joined Region IV as the Earthquake Program Manager, introduced himself and described his background. He thanked everyone for the opportunity to participate in the meeting.

Region V, Mike Hanke

Mr. Hanke stated that he is looking forward to working with Illinois and Indiana staff on earthquake activities.

Region VI, Steve Dumovich and Wendy Phillips

Mr. Dumovich and Ms. Phillips both recently joined Region VI. Region VI work includes planning meetings for the NLE 2011 exercise, the completion of the Region VI Earthquake Response Plan, and work with New Mexico on outreach and education activities.

Region VII, Sue Evers

Ms. Evers reported on activities in Missouri on behalf of Steve Besemer, who is presenting at a workshop for school administrators. Activities include meetings of the Missouri Seismic Safety Commission, which is now almost at full membership, the Missouri Strategic Plan for Earthquake Safety, Missouri Earthquake Awareness Month, and QuakeSmart events. In addition,

Missouri has developed a video with teachers on how to plan a drill and has reintroduced “Duck, Cover, and Hold On” in multiple locations.

Region VIII, Doug Bausch

Mr. Bausch reported on the 50th anniversary this summer of the Hegben Lake earthquake, the National Response Coordination Center (NRCC) Recommended Alert Levels, the HAZUS/ShakeMap integration pilots and automation, and Wasatch Fault Catastrophic Planning. Wyoming is using its assistance funds for scenarios and Utah is using its funds for scenarios and a building inventory.

Region IX, Johanna Fenton

Ms. Fenton discussed the Great California ShakeOut, the Loma Prieta Earthquake Commemorative Symposium at which scientists discussed a number of changes that have occurred over the last 20 years, the Nevada HAZUS project, and the Region IX response to the recent earthquake and tsunami in American Samoa.

Region X, Tamra Biasco

Ms. Biasco reported that Alaska held its Seismic Safety Week the last week in September. Local emergency managers from across the state attended seminars in Anchorage on how to prepare for an earthquake. Other discussion topics included tsunamis and volcanoes. Alaska received an award from WSSPC for a Kodiak school retrofit project scheduled to be completed in 2010.

VI. Seismic Hazard in the Northeast, Michael Hagerty

Michael Hagerty, New England Seismic Network Operations Manager, Weston Observatory of Boston College, presented on the earthquake hazard in New England, the history of regional earthquakes, and the New England Seismic Network. The first recorded felt earthquake in the Northeast occurred in 1638. Other significant earthquakes occurred in 1727 in the Newport, Rhode Island area, in 1755 in Cape Ann, Massachusetts, a 6.2 magnitude event, and a 2002 5.0 magnitude event in Buffalo, New York. About six earthquakes are felt each year in New England, most of which are less than 3.5 magnitude. The largest earthquake since 1975 was 5.8 magnitude. He noted that Bar Harbor, Maine had a 4.2 magnitude event on September 22, 2006. The closest seismic station was about 70 miles away. There are now 14 regional seismic stations throughout New England. Data collected via the stations is shared with Canada. All 14 stations are operated by the Weston Observatory (<http://quake.bc.edu:8000/>).

Dr. Hagerty also discussed earthquake probabilities in New England and potential impact, noting that a 7.0 magnitude event, which is not known to have occurred in New England, could occur every 4,500 years. A large earthquake in the Boston area could be devastating in terms of its impact. A 1997 study showed that a 5.5 magnitude event near Boston could result in approximately \$4 billion in damages.

VII. Consortia Updates

Cascadia Region Earthquake Workgroup, John Schelling

Mr. Shelling, a Board member of the CREW, described the mission and goals of CREW, established in the mid-1990s and the youngest of regional earthquake consortia. CREW products

include reports, guides, videos, papers, and the Disaster Resilient toolkit. CREW activities include conferences, workshops, and field and site visits. CREW is a working Board composed of members with diverse backgrounds. Mr. Shelling noted that CREW Board members dedicate a significant amount of free time to advancing the cause of earthquake mitigation in the region.

Central United States Earthquake Consortium, Jim Wilkinson

Mr. Wilkinson, Executive Director of CUSEC, described the role and mission of CUSEC, which was established in 1983 and includes 8 member states and 10 associate states represented in FEMA Regions IV, V, VI, and VII. The CUSEC Board of Directors includes the heads of the emergency management agencies of the eight member states: Alabama, Arkansas, Illinois, Indiana, Kentucky, Missouri, Mississippi, and Tennessee.

The goals of CUSEC are modeled on the NEHRP goals, with public awareness as the highest priority goal. In alignment with its goals, the approach of CUSEC is to help address gaps identified by its member states. CUSEC is sponsoring projects in awareness and education, mitigation, research applications, and response and recovery. Mr. Wilkinson mentioned that earthquake awareness weeks for CUSEC states typically are held in February. He also reported on planning activities for the bicentennial of the 1811 New Madrid earthquake, which will be a huge event for CUSEC and its member states.

Northeast States Emergency Consortium, Edward Fratto

Mr. Fratto, Executive Director of NESEC, discussed current projects and initiatives of NESEC, which includes the member states of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. Activities include the production of maps for small events in the Northeast (NESEC is seeking \$10,000-15,000 to develop the maps); improvement of HAZUS-MH default soil classification in the Northeast; and building code awareness. In partnership with regional state geologists, NESEC has a pending grant application with USGS to plot the Wald and Allen methodology in the Northeast. In its building code awareness work, NESEC is developing an online tool that will allow the public to view building codes in their zip code area (this is now possible only on a statewide basis).

Western States Seismic Policy Council, Patricia Sutch

Ms. Sutch, Executive Director of WSSPC, provided an overview of WSSPC, which was established in 1979. Members of WSSPC include the directors of the geological surveys and emergency management agencies from 13 states in the western region, British Columbia, the Yukon Territory, American Samoa, Guam, and the Northern Mariana Islands. Affiliate members include private corporations, local governments, non-profit organizations, universities, and individuals who share the common goal of reducing losses from earthquakes. Management of WSSPC is via a seven-member Board of Directors and WSSPC staff (the Executor Director and a Program Manager).

WSSPC programs include the Awards in Excellence; conferences and workshops, including an annual WSSPC conference and a national earthquake conference every 4 years; and numerous outreach activities via the WSSPC quarterly newsletter, web site, publications, including an annual report and state reports, and the WSSPC forum. WSSPC also has three standing Committees. The Basin and Range Province Committee, the most active Committee, is involved

in projects with USGS, workshops, summits, and clearinghouses, including a virtual clearinghouse. The Tsunami Hazard Mitigation Committee has hosted several symposia and has issued policy recommendations. The third Committee is the Committee for Engineering, Construction, and Building Codes.

The WSSPC membership also approves Policy Recommendations which are reviewed for currency every 3 years (a primary focus of the review is whether the states have adopted the Policy Recommendation). Current Policy Recommendations address tsunami education and awareness, mitigation strategies, and earthquake planning scenarios. Draft Policy Recommendations, including Policy Recommendations for new and existing schools, are now being considered for renewal, initial adoption, or deletion and will be voted upon by WSSPC members at the 2010 WSSPC Annual Business Meeting in July 2010. Partners of WSSPC include EERI, the Natural Hazards Center (NHC), ATC, CUSEC, the Earthquake Country Alliance, and the International Code Council (ICC), among others.

Questions and Answers

In response to a question on earthquake mitigation and the insurance industry, Mr. Wilkinson reported that State Farm has become engaged and the Institute for Building and Home Safety (IBHS) is a CUSEC partner on a number of different projects. Mr. Fratto remarked that NESEC has reached out to the insurance industry, with limited success. Ms. Sutch reported that WSSPC also has initiated a dialogue with the insurance industry, and may hold a workshop. She noted that there has been some resistance. Mr. Wilkinson added that the insurance industry is a group with which more common ground is needed. Dr. Filson commented that insurance industry issues stem in part from a lack of actuarial data on earthquake losses. Another issue is the potential severity of earthquake losses in one area, which has the potential to bankrupt an insurance company. Mr. Mahoney added that fear of exposure by insurance companies was the reason for the establishment of the CEA.

VIII. Future Efforts of the NEPM: Challenges and Opportunities

Mr. Fratto asked about establishing a clearinghouse repository for earthquake materials and products. Mr. Franzen mentioned web sites that may have applicability to a clearinghouse, including the DHS Lessons Learned Information Sharing web site (www.llis.dhs.gov). Dr. Filson reported on the clearinghouse being established by NIST of NEHRP-funded earthquake research publications dating back to 1977. NIST reviewed the National Technical Information Service (NTIS) database and identified 1,656 documents (about 300,000 pages) of NEHRP publications. There are now more than 1,000 searchable publications (PDF files) in the NIST NEHRP clearinghouse. Another 1,000 publications will be added in FY 2010. Metadata is available for all of the publications. A review on usability and content of the clearinghouse will be completed by the end of January 2010. A participant also reported that the National Tsunami Program is spending significant funds on establishing a clearinghouse. Jill McCarthy recommended a comprehensive assessment of what will be housed in the clearinghouse before work is initiated. Some types of products, such as maps, would be housed in a different type of repository.

Ms. Villalobos-Pogue stated that a challenge is encouraging communities to apply for seismic mitigation projects. The BCA tool is an issue. The flip side of the challenge is getting communities to use the tools and understand their risk and vulnerabilities. A corollary question is

whether enough is being done to improve databases for risk assessment. Mr. Wunsch encouraged cooperative efforts to implement Light Detection and Ranging (LiDAR) for the entire United States. This would help to create a baseline. Mr. Mahoney commented that there is an interagency committee that oversees these issues. He is not sure if there is support for one agency to take the lead.

The participants also discussed the continuing “Drop, Cover, and Hold On” versus “Triangle of Life” controversy. Mr. Mahoney stated that care must be taken not to give the “Triangle of Life” proponents additional visibility and publicity. Other participants commented that the problem should be tackled head on because the controversy persists.

The participants discussed other challenges related to the recovery phase and those who should be brought in to address the challenges. They agreed that lessons learned are very important, and that a routine and systematic way to link centers of excellence should be implemented.

Mr. Franzen asked if thought has been given by the states to scheduling seismic safety and earthquake awareness weeks at the same time each year. He noted the success of other programs that do this on a national schedule. The participants discussed the advantages and disadvantages of holding the events at the same time. The primary advantage is that the week would take on a national identity. The primary disadvantage would be conflicts with unique events and activities in different states.

Mr. Wilkinson commented that the re-established state assistance program is a step forward. Steven Oglesby remarked that it would be of value for the federal agencies to create a unified voice and role for the states in earthquake mitigation. Ms. Evers stated that building off of local history has its advantages. The NMSZ catastrophic planning events, which are based on a local earthquake, are now joined with ShakeOut events, which have their history in California.

IX. American Samoa Earthquake and Tsunami

Jill McCarthy, USGS

Dr. McCarthy provided an overview of the role and responsibility of USGS in NEHRP. She then discussed the American Samoa earthquake and tsunami, which killed almost 200 people. The tsunami warning was given 16 minutes after the event. USGS released the first Prompt Assessment of Global Earthquakes for Response (PAGER) estimates 24 minutes after the event. There were no close-in seismic stations and only light to moderate ground shaking because of the distance from the source. Most aftershocks were located west of the main event. Dr. McCarthy described the PAGER system and the seismicity in the American Samoa region, also known as the Pacific Ring of Fire. This region has been very active in the last decade. There have been seven 8.0 or higher magnitude events in the last 10 years, including the 9.0 magnitude Sumatra earthquake in December 2004.

Dr. McCarthy showed dramatic photos of the tsunami, which reached heights of 12 meters, and its aftermath. The USGS sent six scientists to the region as part of a tsunami survey team and a two-person deployment to the region to record aftershocks.

Dr. McCarthy discussed the goals for a hazard assessment study of the United States and its Trust Territories. The goals are to improve the understanding of the attenuation relationship and to complete maps for Guam and American Samoa. As part of the study, a list of possible post-earthquake field-based efforts has been developed. The efforts include aerial reconnaissance for situational awareness; seismograph deployments to provide an early alert for research and rescue operations; mapping of surface faulting to determine the potential for continued seismicity; and spot checking to calibrate predicted areas of ground failure and structural damage.

Dr. McCarthy commented that USGS will continue its earth science response work under NEHRP. She added that USGS might be expected to establish a central clearinghouse if an earthquake crosses state lines and separate state clearinghouses are established. The USGS also may develop a new post-earthquake response plan. A plan could be completed for the Central United States, but it would be significantly more difficult to develop a national plan. The current plan is dated but not necessarily incorrect.

Jamie Caplan, Jamie Caplan Consulting LLC

Ms. Caplan discussed the mitigation plan prepared for American Samoa by the Pacific Disaster Center in 2008. The recent tsunami illustrated the value of the plan. Mitigation strategies included labeling evacuation routes; implementing warning and evacuation plans; and considering land use zoning and new flood design standards. With the approved plan, all categories of assistance were made available to American Samoa. Without the plan, American Samoa would have been eligible only for the top two categories of assistance. In terms of risk and probability, a destructive tsunami causing significant damage is predicted two or three times every 50 years. An exercise was conducted in 2006.

Ms. Caplan discussed some of the benefits of mitigation planning. She noted that the mitigation planning process benefits recovery in a number of ways: community-driven; identification of vulnerable structures; understanding priorities; and the ability to use FEMA funds immediately and to rebuild better and stronger.

Ms. Caplan informed the participants that a report on alert and warning should be released in a couple of weeks. The main power plant on American Samoa was damaged by the tsunami. It is not known if the plant will be repaired or replaced.

X. Lessons Learned from the Sichuan and Taiwan Earthquakes, Doug Bausch

Mr. Bausch reported on lessons learned from the Sichuan and Taiwan (Chi Chi) earthquakes and highlights of the Asian-Pacific Economic Cooperation (APEC) Workshop and field trip to Chinese Taipei and Sichuan, China. In 2004, the APEC created a Task Force on Disaster Recovery. The Task Force assisted in recovery operations after the Sichuan earthquake. Four countries sent search and rescue teams to China, although none of the teams arrived within 72 hours of the earthquake. As a result, no one was saved by any of the teams.

Mr. Bausch discussed differences between the Chi Chi and Sichuan earthquakes. In Sichuan, there were 10 million displaced people, about 90,000 fatalities, and close to 375,000 injured. Twenty-four of the most damaged cities have been paired up with sister cities for assistance. As part of his trip, Mr. Bausch visited a factory and spoke with a number of local officials.

Community outreach was implemented post-earthquake for the tremendous number of resettlement areas. There were a large number of internal rescue forces and temporary schools reopened on September 1. He noted that the recovery in China was centrally planned rather than community-based. Mr. Bausch completed his presentation with a video from the Chinese media on the effects and aftermath of the Sichuan earthquake.

XI. Issues of Importance

Mr. Wilkinson and Mr. Carey led the discussion on issues of importance to the SEPM that could be addressed by work groups and the development of white papers. The participants identified possible work groups in the areas of the Pre-Disaster Mitigation (PDM) Program; HAZUS; and Legislation (following the National Emergency Management Association (NEMA) model).

The participants also discussed setting up work groups to address each of the four phases of emergency management. Mr. Mabry commented that FEMA's mainstay is response so the value of mitigation is what it brings to response. He added that customers must be identified in the response arena to determine their expectations for mitigation. Ms. Evers remarked on the need to identify opportunities to reduce losses and implement those opportunities at stages throughout the catastrophic planning process. She cited school administrator training as an example.

Ms. Long asked about specific issues to address. She noted that this approach may be more effective than establishing four large work groups. Mr. Wilkinson stated that CUSEC will host an earthquake conference in 2012. He would like to set up a committee to provide input for the conference agenda. This could fall under a Preparedness work group. Mr. Bausch mentioned that FEMA HQ and the Regions recently established six new work groups in the areas of Risk Mapping, Assessment, and Planning (MAP), Planning, BCA, Post-Earthquake Operations, FEMA/NEHRP Goals, and State Assistance.

Mr. Carey stated that the consensus favors creating work groups to address subject matters of interest. He volunteered to lead a work group on BCA and asked participants to e-mail him regarding their interest in serving on the work group. Membership will not be restricted to SEPM. A second work group was established to develop an agenda for the 2012 Earthquake Conference. Mr. Besemer will serve as chair. Volunteers interested in serving on this work group should e-mail Mr. Besemer. Other possible issues to be addressed by work groups include the NEHRP reauthorization; NEHRP programmatic direction and funding; and coordination for the next SEPM meeting, tentatively scheduled for the spring 2011. Ms. Turner offered to chair the NEHRP programmatic work group.

Mr. Carey asked if the new work groups would be able to use the FEMA conferencing system for meetings. Mr. Mahoney stated that this is possible as long as a FEMA representative serves on each work group and is a point of contact with the FEMA operator. Mr. Carey advised the SEPM to inform their state directors of the initiatives being undertaken. Ms. Sutch noted that the WSSPC Board of Directors would like a white paper on the importance of the SEPM and what is needed to support the Program.

The participants also discussed lobbying activities. Ms. Sutch stated that the WSSPC can speak to representatives but cannot lobby on behalf of specific legislation. Mr. Mahoney pointed out

that a very effective organization already exists in NEMA. The NEHRP Coalition is another advocacy group.

XII. New Madrid Catastrophic Earthquake Exercise

John Aucott, FEMA HQ

John Aucott, the Deputy Exercise Director, FEMA National Exercise Program (NEP), National Preparedness Directorate, described his work at FEMA and gave an overview on NMSZ Catastrophic Planning and the NLE scheduled for May 16-20, 2011. In his position with the NEP, Mr. Aucott assists the states and regions in developing exercises. The NEP has four exercise tiers (I through IV). Under Tier I, one NLE and four PLEs are held each year. Tier II consists of three (or less) federal strategy and policy-focused exercises each year. Tier III consists of other federal exercises and Tier IV are non-federal exercises. A Steering Committee establishes the National Exercise Schedule, or NEXS, each year. About 1 year ago, he volunteered to lead planning efforts for the NLE 2011.

Mr. Aucott reviewed the vision, mission, and values for the NLE 2011, and gave an overview of the earthquake scenario that will cover FEMA Regions IV, V, VI, and VII. Activities will include a seminar, a PLE, tabletop (Regional) exercise, a senior official exercise (Regional), and long-term recovery exercises. There are unique aspects to the NLE 2011: it is the first natural hazard NLE, the catastrophic nature of an NMSZ earthquake, and the large scale of the exercise. The NLE 2011 will probably be the largest exercise conducted by DHS/FEMA. In addition, the exercise will be the first exercise of a specific plan (the FEMA Catastrophic Response Plan).

The NLE 2011 focus areas include communications; critical resource logistics and distribution; mass care (sheltering, feeding, and related services); and citizen evacuation and shelter-in place. A Regional Initial Planning Conference (IPC) will be held soon via web cast. Mr. Aucott also reviewed the 2011 National Planning Organization. For the first time, a Citizen and Community Preparedness Working Group has been included. Also to be established is a Long-Term Recovery Working Group. Private sector participation will be expanded. The NLE will be very high profile. Mr. Mahoney commented that involving schools in the NLE will be very important.

Pete Bakersly, FEMA Region VIII

Pete Bakersly presented an overview of catastrophic planning in FEMA Region VIII and upcoming events and exercises. He discussed the planning process and implementation schedule for the earthquake exercise to be held in Utah the week of March 26, 2012. He noted that some of the drivers for the 2012 exercise are based on lessons learned from preparations for the 2002 Olympic Winter Games in Salt Lake City. For the 2012 exercise, FEMA will use a number of pre-scripted mission assignments (FEMA currently has 129 pre-scripted mission assignments). It is anticipated that the 2012 exercise will affect approximately 1.3 million people.

XIII. New Earthquake Alert System

Doug Bausch, FEMA Region VIII

Mr. Bausch reported that FEMA is considering moving beyond its reliance on magnitude and location-based triggers to automatic response activation based on PAGER near real-time

estimates of intensity and population exposure. Mr. Bausch discussed the Post-Katrina Emergency Reform Act of 2006, which requires developing and activating detailed pre-scripted mission assignments and earthquake response actions based on the initial activation levels. FEMA uses three levels: Level I (catastrophic impacts); Level II (significant impacts); and Level III (considerable damage) for rapidly activating resources. FEMA is working with the USGS to link PAGER Alert Levels to FEMA Activation Levels.

David Wald, USGS

Dr. Wald discussed recent and ongoing developments in earthquake information products linking to alert systems, including ShakeMap, PAGER, and the ROVER software program. He referred the participants to an article in the CUSEC newsletter, Vol. 13, No. 5, *Research: New Research Tools Lead to Improved Earthquake Alerting Systems*.

For ShakeMap, primary uses are situational awareness; enhanced post-earthquake loss estimation with HAZUS, PAGER, and ShakeCast; and mitigation through earthquake scenarios. ShakeCast, which builds off ShakeMap, is a fully automated system which allows users at critical facilities to retrieve specific ShakeMap products to trigger established post-earthquake response protocols. The PAGER system uses ShakeMap, along with a comprehensive population database, to compute the population exposed to shaking intensity.

Dr. Wald also discussed the USGS Earthquake Scenario Project (ESP). The purposes of the ESP, which will be on the agenda for the December meeting of the American Geophysical Union, are to organize the process of scenario generation in the United States; to automatically generate ShakeMap scenarios from USGS natural seismic hazard maps; to develop a collaborative and comprehensive list of events for each Region; and to generate related products.

Mr. Fratto complimented both Dr. Wald and Mr. Bausch on their work. He commented that the products are the best developed by the U.S. Government in the last 25 years.

XIV. Closing Comments and Adjournment

Mr. Fratto thanked everyone for their participation and valuable contributions. He adjourned the meeting at 3:00 p.m.