The FEMA National Earthquake Hazards Reduction Program

Accomplishments in Fiscal Year 2012

April 2013

FEMA

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I. Overview

The National Earthquake Hazards Reduction Program (NEHRP), which was first authorized by Congress in 1977, coordinates the earthquake-related activities of the Federal Government. The goal of NEHRP is to mitigate earthquake losses in the United States through basic and directed research and implementation activities in the fields of earthquake science and engineering.

The four NEHRP federal agencies are the Federal Emergency Management Agency (FEMA), the National Institute of Standards and Technology (NIST), which is the lead agency, the National Science Foundation (NSF), and the United States Geological Survey (USGS). Under NEHRP, FEMA is responsible for developing effective earthquake risk reduction tools and promoting their implementation, as well as supporting the development of disaster-resistant building codes and standards. FEMA's NEHRP activities are led by the FEMA Headquarters (HQ), Federal Insurance and Mitigation Administration, Risk Reduction Division, Building Science Branch, in strong partnership with other FEMA HQ Directorates, and in coordination with the FEMA Regions, the States, the earthquake consortia, and other public and private partners.

This report describes selected FEMA NEHRP accomplishments (HQ and Regional), followed by highlights from the States and U.S. territories and organizations which received FEMA support for NEHRP activities in Fiscal Year (FY) 2012. Each year, FEMA provides cooperative agreement funds to eligible States and U.S. territories with moderate to high seismic risk to mitigate those risks and reduce future losses from earthquakes. In FY 2012, FEMA awarded more than $1.7 million to 25 States and territories to support the effective implementation of earthquake risk reduction activities: earthquake training and awareness, seismic mitigation plans, property inventory, seismic safety inspections, building codes adoption, and the development of multi-state groups. Organizations receiving FEMA support included the four regional earthquake consortia - Cascadia Region Earthquake Workgroup (CREW), Central United States Earthquake Consortium (CUSEC); Northeast States Emergency Consortium (NESEC); and the Western States Seismic Policy Council (WSSPC); the Earthquake Engineering Research Institute (EERI); and the Federal Alliance for Safe Homes, Inc. (FLASH).

The accomplishments showcase how FEMA and its partners, working in collaboration, are continuing to make progress toward earthquake loss-reduction nationwide. Work completed in FY 2012 will help in the near term to reduce earthquake risk, and also will help to create the foundation for realizing effective outcomes in future years.

II. FEMA Headquarters and the FEMA Regions

Reducing the Risks of Nonstructural Earthquake Damage

During the earthquakes in Chile, New Zealand, Japan, and Virginia, and earlier earthquakes in California, Washington, and other parts of the United States, nonstructural failures accounted for the majority of damage and injuries. Businesses, schools, hospitals, and other organizations had to spend significant time and dollars for the clean-up and repair caused by nonstructural failures. The failure of nonstructural components, which include architectural, mechanical, electrical, and plumbing systems, as well as furniture, fixtures, equipment, and other contents, also can impede safe evacuation, delay rescue, and cause additional hazards resulting in serious life safety issues.

FEMA E-74, *Reducing the Risks of Nonstructural Earthquake Damage*, is an electronic publication posted on the FEMA website which describes the sources and types of nonstructural earthquake damage and effective methods and guidance that individuals and organizations can take before the next earthquake to minimize injuries and property losses from nonstructural risks. In FY 2012, FEMA incorporated data into FEMA E-74 on nonstructural damage in Chile (the failure of more than 70 percent of elevators); Christchurch (the collapse of precast emergency exit stairways in 12 buildings); and Japan (the failure of suspended ceiling systems). The updates to FEMA E-74 have been finalized and are being loaded onto the FEMA website. FEMA is currently working on updating the training materials. Once complete, FEMA E-74 and the training materials will be distributed on CD-ROM.

Webinar training for thousands on FEMA E-74 also was held across the United States in FY 2012. In September 2012, the Structural Engineers Association of California (SEAOC) recognized the developers of FEMA E-74 (FEMA, the Applied Technology Council (ATC), and Estructure) with its 2012 Structural Engineering Award of Excellence at its annual conference.

New Publications on the Seismic Evaluation of Wood-Frame Structures

In FY 2012, FEMA published FEMA P-50, *Simplified Seismic Assessment of Detached, Single Family, Wood-Frame Dwellings,* and FEMA P-50-1, *Seismic Retrofit Guidelines for Detached, Single-Family, Wood-Frame Dwellings*. These publications are based on ATC-50, which was developed after the Northridge earthquake for the City of Los Angeles, but have been nationalized for use in high seismic areas. The FEMA P-50 system assigns a rating score based on a number of factors, including foundation, framing and configuration, and general condition assessment, and identifies items that can be retrofitted to improve scoring. FEMA P-50-1 is a guide to provide assistance in retrofitting the building to obtain a higher score.

FEMA also completed FEMA P-807, *Seismic Evaluation and Retrofit of Multi-Unit Wood-Frame Buildings with Weak First Stories.* This publication, which was developed in coordination with the San Francisco Community Action Plan for Seismic Safety (CAPSS) project, targets “Marina District” and Northridge style soft story multi-unit wood-frame residential structures and

presents a new technique to more effectively retrofit these structures. FEMA P-807 includes a calculation tool to account for the strength of all walls in the building, including nonstructural. The publication is now available on the NEHRP, ATC, and George E. Brown, Jr. Network for Earthquake Engineering Simulation (NEES) websites, and is available in combined paper and CD-ROM from the FEMA Publications Warehouse.

Vertical Evacuation from Tsunamis

In May 2012, FEMA and ATC updated FEMA P-646, *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis*. The second edition of this publication incorporates observations and lessons learned from the March 2011 Tohoku earthquake, revision of the debris impact expression to remove over-conservatism deemed to be present in the first edition, and additional explanation of the definition of the tsunami elevation as it relates to run-up elevation used in tsunami force equations.

In time for Tsunami Preparedness Week (March 25-31, 2012), FEMA Region X funded the development of a video by the FEMA Strategic Alliance for Risk Reduction (STARR) team to better communicate to the public the guidelines documented in FEMA P-646. FEMA Region X staff also worked on a tsunami model for HAZUS. This project has included significant collaboration with the National Oceanic and Atmospheric Administration (NOAA).

Inventory of Buildings in Salt Lake City

In late FY 2011, FEMA Region VIII, the Utah Seismic Safety Commission, and other partners completed the inventory and assessment of approximately 3,000 unreinforced masonry (URM) buildings in Salt Lake City. The project used the ATC-13 inventory, an inventory of buildings from the 2002 Olympics, and Salt Lake City assessment data. Approximately 90 percent of severe injuries are driven by this type of building. The survey has helped to identify mitigation priorities. Materials on the project results were made available for the Great Utah ShakeOut in Salt Lake City on April 17, 2012. The update to FEMA 454, *Designing for Earthquakes: A Manual for Architects*, will take into account the results from the Utah URM project.

NEHRP Recommended Seismic Provisions

One of the objectives of NEHRP is to support the development of seismic standards and building codes and to advocate for their adoption and enforcement. FEMA developed the 2009 edition of the *NEHRP Recommended Seismic Provisions for New Buildings and Other Structures* (FEMA P-750 or *Provisions)* in support of this objective. The 2009 edition was the seventh update of this key resource document published since 1985. In FY 2012, FEMA completed the supporting document, FEMA P-751CD, *2009 NEHRP Recommended Seismic Provisions: Design Examples*. This publication will be available online in the FEMA Library and through the FEMA Publications Warehouse in FY 2013. FEMA also will complete FEMA P-752CD, *2009 NEHRP Recommended Seismic Provisions: Training Materials,* in FY 2013.

FEMA Risk Mapping, Assessment and Planning in Region X

The FEMA Risk Mapping, Assessment and Planning (MAP) program is very important in Region X and is now incorporating earthquake projects. Risk MAP funds were used for an earthquake assessment in Kodiak, Alaska and in June 2012, an Evergreen Quake 2012 exercise was conducted by FEMA and the USGS. USGS developed aftershock ShakeMaps for the entire 11-county area covered by the exercise, conducted an online webinar, developed a 100-page scenario document, and helped to develop descriptions of the faults. The collaboration on the Evergreen Quake exercise has been very well received, and is an example of the great coordination between FEMA and the USGS in Region X.

Updates to ROVER, an End-to-End Software for Managing Seismic Risk

Available online and on CD-ROM, the *Rapid Observation of Vulnerability and Estimation of Risk (ROVER*) software automates two international standard paper-based methodologies: FEMA P-154, *Rapid Visual Screening (RVS) of Buildings for Potential Seismic Hazards*, and ATC-20, *Post-earthquake Safety Evaluation of Buildings*. With the automation provided by ROVER, inspectors no longer need to juggle papers, clipboard, and camera, and managers no longer need to transcribe paper forms. ROVER also shares data with two other tools to manage seismic risk: FEMA's HAZUS-MH and ShakeCast, software from the USGS.

The ROVER Server now operates as an online service for the ROVER smartphone client and as a website for direct access by any web browser. The website service also has been optimized for the small screens found on a smartphone or on any Internet-connected tablet. The ROVER Development Partners support and enhance ROVER and maintain a user-support web page. In FY 2012, internal testing was conducted on the ROVER web server. An updated service pack will be available soon from FEMA and ATC.

FEMA NEHRP Technical Assistance after the Mineral, Virginia Earthquake

On August 23, 2011, an earthquake of magnitude 5.8 struck Louisa County, Virginia in FEMA Region III. The earthquake, which was the largest to occur east of the Rocky Mountains since 1944, caused significant structural damage in Region III, including damage to buildings near the epicenter in Mineral, Virginia and to iconic structures in our Nation's Capital.

The Mineral, Virginia earthquake served as a teachable moment for Region III, and has resulted in cooperative initiatives with FEMA HQ to promote awareness of the earthquake risk in the Region. In January 2012, FEMA HQ staff presented on the earthquake hazard to state, local, and Joint Field Office (JFO) leaders in Region III. Discussions following the presentation focused on the vulnerability of residential homes and critical structures, including government buildings, hospitals, and educational institutions, to earthquakes; the use of seismic hazard maps; a comparison of the Mineral, Virginia earthquake to the earthquakes in Haiti, Japan, and Chile; the ability to mitigate damages and reduce loss of life through the adoption of enhanced building codes, as occurred in Chile; and the history of seismic activity on the East Coast and resulting damages and losses from those earthquakes. To support best practices for preparing

for and mitigating against the earthquake risk, Region III staff also teamed with FEMA HQ staff to promote the ROVER software tool for both the Individual and Public Assistance Programs.

Building Code Adoption Tracking

One of the most effective ways to reduce the seismic risk for local communities is to adopt and implement appropriate seismic-resistant building codes. To track code adoption by local communities, FEMA, with contractor support, maintains the Building Code Adoption Tracking system. This system uses the Building Code Effectiveness Grading Schedule from the Insurance Service Organization (ISO) as the primary source to monitor building code adoption and implementation by high seismic jurisdictions. In Phase II of this multi-year effort, tax assessor records and HAZUS will be used to run a before and after code/no code study. This will produce actual Annualized Estimated Losses and a national picture of communities that are adopting and enforcing building codes.

Performance-Based Seismic Design Project

FEMA, through a contract with ATC, completed development of FEMA P-58, *Guidelines for Seismic Performance Assessment Methodology for Individual Buildings*, and the accompanying Performance Assessment Calculation Tool (PACT). When published in FY 2013, this performance assessment methodology will allow a designer to assess seismic performance of proposed or existing individual buildings in future earthquakes. These products are the first phase of the development of Performance-Based Seismic Design Guidelines for New and Existing Buildings. The goal of this project is to be able to evaluate how a building is likely to perform in a given earthquake, considering uncertainties inherent in both the potential hazard and the actual building response. The project will permit design of new buildings or upgrade of existing buildings with a realistic understanding of the risk of casualties, occupancy interruption, and economic loss that may occur as a result of future earthquakes.

Learning from the Past to Protect the Future: 2012 National Earthquake Conference

On April 10-13, 2012, FEMA staff gathered in Memphis with more than 600 partners in the earthquake and emergency management communities for the 2012 National Earthquake Conference. This important event, held every 4 years, is largely a result of the commitment of the NEHRP. The New Madrid Earthquakes of 1811-1812 served as the backdrop for this year's Conference venue and theme, Learning from the Past to Protect the Future. The EERI was the host of the Conference and held its 64th Annual Meeting as part of the events. The Conference was jointly organized and supported by FEMA, the USGS, and the four regional earthquake consortia.

Before the official start of the Conference, FEMA HQ and Regional staff met with state earthquake program managers for their annual National Earthquake Program Managers (NEPM) meeting. As in previous years, the National Earthquake Conference provided an excellent venue for sharing knowledge, expertise, and best practices.

QuakeSmart

FEMA created the *QuakeSmart* program to help local businesses mitigate earthquake losses and get back up and running as quickly as possible after a disaster. A cornerstone of the program is FEMA's recognition that partnerships are key to raising awareness, and to making sure that businesses take action to become "QuakeSmart." In September 2011, FEMA released the *QuakeSmart Toolkit,* a CD package of guidance and user-friendly, interactive tools to help businesses reduce the potential for injuries, damage, and financial losses from earthquakes.

FEMA, in partnership with FLASH (the Federal Alliance for Safe Homes, Inc.), launched a nationwide campaign to put FEMA P-811DVD, *QuakeSmart Toolkit,* into the hands of as many small businesses as possible. In planning the campaign, FEMA and FLASH determined that the most cost effective way to reach the largest number of small businesses would be through targeted outreach to umbrella-type associations such as state societies of association executives and associations serving grocers, restaurants, the lodging industry, chambers of commerce, child care providers, small private schools, and museums, among others. A folder of products accompanies the *QuakeSmart Toolkit* and assists the associations in reaching out to their members. With the help of FEMA and FLASH, associations have started to market the *QuakeSmart Toolkit* to their small business members. FLASH also will kick off a pilot program with state Fire Marshals to distribute the *QuakeSmart Toolkit* to small businesses during their annual fire inspection.

ShakeOut!

In October 2011, more than 10 million people participated in ShakeOut activities, due in part to the direct support and involvement from FEMA NEHRP staff at HQ and the very active participation of FEMA Regional staff. ShakeOut, which was created by the Earthquake Country Alliance for California in 2008, is now the largest earthquake drill in U.S. history. A goal of ShakeOut is to provide the best motivators for preparedness actions, such as seeing and hearing consistent and frequent information about what to do, in many forms, and from many sources. ShakeOut also provides participants with the opportunity to see others like themselves getting prepared, and to talk about preparedness with their family, friends, and co-workers.

The goals for ShakeOut include participation by millions of people; shifting the culture about earthquakes; a significant increase in readiness; and ultimately to also engage people in the mitigation actions that can lessen their risks to earthquake hazards. On October 21, 2010, 7.9 million people participated in the Great California ShakeOut. More than 2 million people participated in the Great Central U.S. ShakeOut in 2011.

Directory of FEMA EQ Partners

Developing and strengthening partnerships for building safer communities underlies all of the initiatives and activities carried out by FEMA in support of NEHRP. In 2012, FEMA once again updated and published its *Directory of FEMA Earthquake Partners*, an online resource available through the FEMA Library that supports those partnerships by providing contact information for more than 300 organizations and individuals involved in earthquake mitigation.

New Earthquake Training Courses

FEMA completed two courses: *Earthquake Basics – Science, Risk, and Mitigation,* IS-325, and a train-the-trainer course, *Home and Business Earthquake Safety and Mitigation,* FEMA P-909*. Earthquake Basics* is a 30-minute independent study course available online via the Emergency Management Institute (EMI) that presents information on earthquake science, risk, and mitigation. The course is targeted to homeowners, business owners, the private sector, government workforce, first responders, non-profit organizations, volunteers, and community-based organizations. The *Home and Business Earthquake Safety and Mitigation* course provides training on structural and nonstructural earthquake mitigation. The course is designed to create a cadre of trainers with the ability to provide basic knowledge on earthquakes and the steps that can be taken to mitigate seismic risk in homes and businesses. FEMA P-909 was rolled out in February 2012 at the Earthquake Means Business events in Kansas City, Missouri. The Earthquake Basics course was rolled out on EMI's website in March 2012.

FEMA NEHRP staff also contributed to the development of *Fundamentals of Building Science, Multi-Hazard Mitigation Design Concepts*, E-312. This classroom course, which is offered through EMI, presents information on the impacts of earthquakes, wind, flood, and wild land/urban interface fire on the constructed environment, and explains key performance and construction issues related to those disasters. In FY 2012, this very popular course was offered in numerous venues and via webinars.

Webinars on School Safety

Many school buildings located across the Nation and the U.S. territories are vulnerable to earthquake losses and damage, including potential death and injury of students, teachers, and staff, damage to or collapse of buildings, damage and loss of furnishings, equipment, and building contents, and disruption of educational programs and school operations.

Through a series of FEMA-sponsored webinars based on FEMA 395, *Incremental Seismic Rehabilitation of School Buildings (K-12): Providing Protection to People and Buildings,* thousands of participants in FY 2012 learned how to (1) assess earthquake risks; (2) develop a plan to reduce and manage earthquake risks; (3) secure "non-structural" elements of the school facility; and (4) apply "incremental seismic rehabilitation" to protect buildings and ensure occupant safety.

National Earthquake Technical Assistance Program

Through the National Earthquake Technical Assistance Program (NETAP), FEMA HQ and all of the FEMA Regions support the development of training curricula on earthquake mitigation topics and provide courses for state and local officials and businesses throughout the United States.

In FY 2012, there continued to be a very high demand for NETAP training, including *Procedures for Post-earthquake Safety Evaluation of Buildings*, ATC-20; *RVS of Buildings for Potential Seismic Hazards*, FEMA 154; *Earthquake Hazard Mitigation for Hospitals*, FEMA P-767; and

Reducing the Risks of Nonstructural Earthquake Damage, FEMA E-74. Through these and other courses, FEMA has been able to increase state and local knowledge of earthquake mitigation, which in turn supports the effective implementation of local NEHRP-funded projects.

Scenario Work in New England

FEMA Region I staff have been working with FEMA Region VIII, the USGS, FEMA HQ, the Weston Observatory, the Northeast States Emergency Consortium (NESEC), the Vermont State Geologist, and the states to complete the "HAZUS Analysis of Eleven Scenario Earthquakes in New England" report. Region I staff presented the report at the most recent NESEC directors meeting and distributed it to state and local stakeholders. Maine has contacted Region I about using one of the scenarios for an exercise in the summer 2013, and is using information from the report for the update to the Maine hazard mitigation plan. FEMA Region I is using the information for its catastrophic plan update.

III. FEMA Earthquake Assistance to the States and U.S. Territories

Region I

Maine

Maine used its state assistance funds to develop earthquake safety curricula and brochures for schools K-12. These publications were sent to more than 500 schools. Maine also conducted a FEMA-154 building inventory of critical facilities and public buildings in eight counties. The data was entered into the state GIS and into HAZUS for Level II earthquake analysis. To accomplish this, Maine used funds to train college interns on FEMA-154 and HAZUS. Funds were also used to send the state earthquake program manager (SEPM) to the National Earthquake Conference in Memphis.

Vermont

Vermont has continued seismic hazards mapping and mitigation outreach for Burlington and Colchester. The mapping is at a scale that is useful for state and local facility owners and emergency managers and hazard mitigation planners, among others. The maps have been presented to the Northeast States Emergency Consortium (NESEC) state geologist as a regional model and also to critical facility owners for mitigation and preparedness planning. Vermont has combined the mapping outreach meetings with FEMA E-74 training.

Region II

Puerto Rico

National Earthquake Technical Assistance Program (NETAP) training, tailored to the Region, was held in Puerto Rico on February 6-7, 2012. There were about 175 attendees, including more than 100 engineers.

The Puerto Rico Seismic Network has taken a lead role in planning and coordinating ShakeOut events. FEMA Region II staff from the Caribbean Area Division (CAD) helped with the translation of documents for the Puerto Rico ShakeOut web page and met with the Puerto Rico Emergency Management Agency (PREMA) to discuss a press release and press conference for ShakeOut. Puerto Rico also participated in the March 28 CARIBE WAVE/LANTEX exercise. As part of the exercise, some schools performed evacuation drills and some communities certified as tsunami-ready. FEMA Region II CAD staff also presented at a vertical evacuation workshop hosted by the Puerto Rico Seismic Network on May 18-20, 2012.

Virgin Islands

Earthquake funds were used to create TV PSA announcements on earthquakes and tsunamis to get the word out to larger and diverse portions of population. Based on audience feedback, the

PSAs were a success. Earthquake and tsunami presentations also were conducted at public and private schools, non-governmental organizations, churches, community centers, and homeowner associations. NETAP training for about 30 participants was held in the Virgin Islands on February 9-10, 2012.

Region III

The District of Columbia and States in Region III (Delaware, Maryland, Pennsylvania, Virginia, and West Virginia) did not receive earthquake assistance funds from FEMA in FY 2012. However, a number of planning, outreach, and educational activities were undertaken in the Region following the Mineral, Virginia earthquake of August 23, 2011. These efforts are described in Section II of this report, FEMA Headquarters and the FEMA Regions.

Region IV

Alabama

Projects undertaken include a series of slide presentations focused on outreach and awareness; planning for ShakeOut activities; updating an earthquake science curriculum for the 8th grade; updates to the Emergency Operations Plan; training in FEMA 154/ATC-20; web page updates; and collaborative work on CAPSTONE-14, a multistate exercise to test corrective actions taken from the National Level Exercise (NLE) 2011. Another project is the 17-foot by 17-foot simulator being developed by the University of Alabama-Tuscaloosa. The simulator is scheduled to be installed by May 1, 2013. Alabama also plans to establish a seismic safety council.

South Carolina

South Carolina sponsored an earthquake display at the South Carolina State Museum; conducted annual HAZUS training for county officials; and updated state seismic maps to show the history of earthquakes by region. As a result of the updates, the maps have transitioned into a guide format. Upcoming projects include a workshop with the University of South Carolina for K-12 educators on how to bridge the science divide and reactivation of the South Carolina Seismic Safety Commission. The Commission was a very positive partner in South Carolina when it was active.

Tennessee

Tennessee has partnered with the Central United States Earthquake Consortium (CUSEC), the Center for Earthquake Information (CERI) at the University of Memphis, and the USGS in Memphis to produce a 22-minute documentary on the historical significance and effects on the built-community in West Tennessee along the New Madrid Fault Zone. This documentary explains the geologic explanation of the New Madrid Fault and how it differs from other faults in the U.S. It also discusses the preparedness and mitigation issues involved in “living” in the Fault Zone. The documentary has been shown in all major TV markets in Tennessee and has been approved by the National Public Television to be shown on a regular basis on all the

network affiliates throughout the U.S. The documentary has appeared more than 300 times and has been viewed by nearly 16 million people. The Tennessee Emergency Management Agency field officers have also used the documentary to make 120 public appearances throughout Tennessee at schools, universities, churches, public-service organizations, and public meetings.

Region V

Illinois

February is Earthquake Preparedness Month in Illinois. Preparedness and awareness activities were conducted during the month and throughout the year, including news releases and publication updates and distribution. In the months before ShakeOut, Illinois encouraged participation through mailings, personal contacts, speaking engagements, websites, and social media, print and radio ads, and media events. ShakeOut registrations in Illinois numbered more than 490,000.

Two ATC-20 courses were held in southern Illinois, with a total of 118 attendees. Under contract with the Illinois Emergency Management Agency (IEMA), Southern Illinois University conducted 26 earthquake and awareness presentations for school children and civic organizations. FEMA E-74, *Reducing the Risks of Nonstructural Earthquake Damage*, was offered during the IEMA Annual Conference. In addition, 13 staff members attended the CAPSTONE-14 Private Sector Workshop in Chicago and 2 staff members attended the NEPM Meeting and National Earthquake Conference in Memphis. Illinois continued to develop a framework for training, equipping, and deploying earthquake inspectors.

Region VI

Arkansas

Over the past year, Arkansas staff has been working with colleges and universities to build better relationships. To that end, the Arkansas earthquake program manager spoke at the Arkansas State University Science, Technology, Engineering, and Math teacher development seminar on the history of earthquakes, local threat, and the importance of preparedness and mitigation measures. Brochures and posters were provided to the teachers for their classrooms. The program manager also presented to the Arkansas State Emergency Preparedness Liaison Officer for Defense Element 6 Team.

Arkansas is promoting public education and outreach through at-risk county teachers and is enhancing public awareness and encouraging individual preparedness. In addition, staff is working with the University of Arkansas for Medical Sciences to further non-structural mitigation efforts for two buildings on campus and is conducting a site assessment of Walnut Ridge Airport for medical evacuation/staging in case of an earthquake or other natural disaster. Arkansas also hosted FEMA E-74 training during earthquake preparedness week.

New Mexico

An important project funded in part with the FEMA state assistance award is the seismic vulnerability assessment of eight counties in New Mexico. A second project is the adaptation of the FEMA Tremor Troops and Seismic Sleuths educational programs for New Mexico.

Oklahoma

In response to two back-to-back earthquakes (M3.4 and M4.1), Preliminary Damage Assessments were conducted on more than 200 homes in 2 counties. Six homes were destroyed, 21 homes had major damage, and 37 homes had minor damage. A declaration from the Small Business Administration (SBA) was requested to enable SBA loans. Of the 97 SBA loans applied for, 57 applications were approved for more than $2 million. Earthquake outreach work coincided with the earthquakes and was very timely.

Oklahoma also participated in the Great Central U.S. ShakeOut. There were about 65,000 participants from Oklahoma, a significant increase from the previous year (10,000 participated).

Region VII

Kentucky

Kentucky conducted a new video contest for elementary and high school students in 2012. The winning high school video shows the simple steps homeowners can take to protect their families and homes from an earthquake. Because of the success of the video contest, there are plans to set up a writing contest for middle school students. Kentucky also is working on the CAPSTONE-14 exercise.

Missouri

In February, Missouri held the “Earthquakes: Mean Business” Seminar for Business at St. Louis University. Missouri and FEMA sponsored and exhibited at the events. Also in February, the New Madrid Earthquake Meeting was held at the Missouri University Student Center in Columbia.

In FY 2012, Missouri completed nonstructural seismic mitigation projects on Sikeston School and the Bloomfield School (a flyer was produced and the work was publicized). A flyer also was developed for the Seismic Mitigation Project of South Pemiscot County R-V School District School, an effort that was completed in the 1990s. This fiscal year, seismic mitigation work was initiated on the Kennett Middle School and Notre Dame High School in Cape Girardeau. The nonstructural mitigation for these school projects included the anchoring of soda machines, library shelves, bookcases, white boards, monitors and TVs, projectors, light fixtures, and fish tanks. Protective film was installed on some windows and plain window glass was replaced with reinforced or protective glass in some installations. Some exterior installations were strengthened or replaced, such as window air conditioners, compressors, and generators. An

old gas line installation (including piping and meter) was replaced with current technology containing a vibration shutoff valve.

State assistance funds also were used to support the Missouri Structural Assessment and Visual Evaluation (SAVE) Coalition; for the training of pre-earthquake and post-earthquake inspectors; for the purchase of supplies; and for the exercise of inspectors at disaster sites.

Outreach activities in Missouri included earthquake-related displays in museums and support for the Great Central U.S ShakeOut, with activities at five schools, news releases, and appearances. Missouri also produced and distributed a new poster on earthquakes; supported the Safety Outreach Program, "Map Your Neighborhood," with training and presentations in six communities; and held another earthquake poster contest for third, fourth, and fifth graders.

Region VIII

Colorado

The Colorado Earthquake Hazard Mitigation Council (CEHMC) continues to meet bi-monthly at the Colorado School of Mines. The CEHMC policy recommendation on seismic design of public schools was submitted to the Colorado Geological Survey in 2008 and to the Colorado Division of Fire Safety in 2011. The CEHMC also collaborated with FEMA Region VIII, the Structural Engineers Association of Colorado, the Colorado Geological Survey, and the Colorado Office of Emergency Management to provide training on ATC-20, FEMA 154, and ROVER. More than 50 participants attended the free training at the University of Colorado-Denver.

Montana

Montana is working to make its 1982-2012 earthquake catalog available as a data layer to provide visual, easy, and versatile access to Montana's extensive historical earthquake record. Improved access to these data—including current seismicity—greatly enhances Montana's earthquake/seismic hazard education and outreach efforts. The improved online access to seismic event data will support continued state and local seismic hazard mitigation planning.

For more than 10 years, FEMA assistance has supported development of Montana's state and local mitigation plans. The plans have included earthquake and landslide risk assessments, credible earthquake scenario development for local and state emergency managers, and statewide earthquake hazards maps that provide greater detail than national hazards maps. FEMA support also has helped Montana's Dam Safety Program address seismic risk. The seismic monitoring effort of the Montana Bureau of Mines and Geology and its earthquake catalog provide critical data for creating and maintaining USGS national hazard maps that support Montana's building code development, adoption, and implementation. This project will result in improved transparency to the inputs into the USGS hazard maps, which should support seismic building code adoption and enforcement in Montana.

Utah

The Utah Earthquake Program is a collaborative effort of the Utah Geological Survey, the Utah Seismic Safety Commission (USSC), University of Utah Seismograph Stations, the Structural Engineers Association of Utah (SEAU), and the Utah Division of Emergency Management. Recent projects have included a school building inventory, updating an unreinforced masonry (URM) residential rehabilitation guide, developing and printing earthquake educational materials, a hospital inventory along the Wasatch Front (building type, year built, number of beds, and retrofit information) to improve Utah risk assessment, updating and printing of the "Putting Down Roots" booklet, design and installation of an Earthquake Center in the new state Emergency Operations Center, and supporting a joint meeting of the USSC and the Nevada Earthquake Safety Council.

A joint USSC-SEAU committee completed its sample seismic hazard inventory of Utah schools. The sampling used ROVER to gather the data. After reviewing the results of the field data, the joint committee prepared a report for the State Legislature, *Utah Students at Risk, The Earthquake Hazards of School Buildings*, in support of pending legislation.

More than 940,000 people participated in the Great Utah ShakeOut in April 2012. Events included a 3-day full-scale functional local-state-federal earthquake exercise. More than one-third of Utah residents participated, making it the highest participation rate of any statewide earthquake drill in history. Outreach activities included many hours of media coverage, the production and dissemination of a new video "Utah: Preparedness Now," and the publishing of a suite of scenario earthquakes online to help communicate earthquake risk across Utah: http://www.shakeout.org/utah/

Wyoming

The Wyoming Office of Homeland Security is building capacity through ATC 20, FEMA 154, and ROVER training and the development of a database of critical infrastructure and lifelines with elevated seismic risk. The database will also provide direction for effective seismic mitigation activity. A ROVER-based inventory of critical building assets will be completed by students trained in 2013 and will provide for the development of Wyoming's inventory database of infrastructure and lifelines at elevated seismic risk.

Region IX

American Samoa

American Samoa organized a successful ShakeOut with the participation of six schools and one government department. Since then, American Samoa has received an influx of requests from schools and government departments that want to participate in the next ShakeOut. To support public outreach and education, posters, drill manuals, and earthquake preparedness presentations were conducted and distributed during pre-ShakeOut events. In the last year, it has become apparent that students, faculty, parents, and the private and public sectors have taken more of an interest in learning how to prepare for seismic hazards.

The delivery of visual reminders via signs, posters, and advertisements for earthquake mitigation and education has been a prominent tactic in public earthquake messaging on the island. American Samoa posted "Drop, Cover, Hold On" signs throughout the island as a visual reminder to the public of what to do in case an earthquake occurs. There also have been many local newspaper advertisements on earthquake safety tips, general seismic hazard terms, and the "Drop, Cover, Hold On" mantra.

Arizona

More than 65,000 people participated in the first Great Arizona ShakeOut. The Arizona Geological Survey and the Arizona Department of Emergency Management worked together to organize multiple ShakeOut events and presentations. Targeted participants included county and municipal emergency managers, counties, communities, the Red Cross, and school districts in areas with earthquake risks.

Additional outreach products and activities included the development and distribution of earthquake preparedness brochures for Yuma, Yavapai, and Coconino Counties; publishing of videos on the nature of seismicity and earthquake hazards and risks in Arizona; the "Arizona is Earthquake County" publication; publishing articles on the Groundswell Earthquake Outreach Blog; and maintaining and updating Twitter and Facebook accounts with seismicity and earthquake mitigation information.

California

Highlights of California's program included continued development of the California Integrated Seismic Network monitoring system; participation with USGS, the University of California, Berkeley, and Caltech in Earthquake Early Warning research and Operational Earthquake Forecasting development; support for the California's Earthquake Country Alliance (ECA) "whole community" collaboration among earthquake education stakeholders, and support of ECA's flagship product, the Great California ShakeOut.

ShakeOut included a record number of Californians and featured commuter preparedness as a subtheme, with 50,000 NEHRP-funded public transit "tip cards" distributed by transit company partners. ECA's statewide committees also produced materials providing ShakeOut tips for businesses, and self-protective guidance for limited mobility communities.

California continues its mitigation project to assess vulnerability of state-owned buildings through its California Vital Infrastructure Vulnerability Assessment (Cal VIVA) project. For the 2012 cycle, California continued to work closely with these partners on California's priority projects: EERI to support the Concrete Coalition's continued assessment and mitigation guidance for non-ductile buildings; EERI for continued support of Cal VIVA; and the Southern California Earthquake Center (SCEC) for continued support of ECA and ShakeOut.

Guam

In collaboration with the Guam Homeland Security and the Guam Earthquake Advisory Committee, Guam improved its emergency response force; increased earthquake awareness, outreach, and education; conducted training and exercises; established and participated in multi-jurisdiction groups; produced and distributed seismic mitigation materials; and updated local seismic codes to enhance safety for residents and visitors.

Guam also orchestrated a robust ShakeOut media campaign that involved recruitment; product design, development, printing, and dissemination; and public education and localized outreach materials to schools. ShakeOut materials included brochures, cards, teaching aids, and posters. There were more than 65,000 participants in the Guam ShakeOut.

Hawaii

Hawaii supported two main project areas: the activities of the Hawaii State Earthquake Advisory Committee (HSEAC) and the earthquake public outreach program. Hawaii's projects collaborate with partners from state, county, and federal agencies, including experts from the Hawaii State Civil Defense, National Weather Service, and the Pacific Tsunami Warning Center.

The HSEAC is composed of seismic experts integral to the success of state earthquake mitigation efforts. The activities addressed by this committee include: review and update of the seismic portions of the state and county mitigation plans; seismic safety inspections and inventory of critical structures and lifelines; review of building codes, zoning codes, and ordinances for the purpose of enhancing seismic safety; increase earthquake awareness and education; seismic project development and program proposals; and recommendations through the State Hazard Mitigation Forum on projects and project priorities.

The earthquake public outreach program educates the public of seismic risks by developing and disseminating outreach tools, publications, and presentations. One project provides hazard awareness training to Hawaii's school teachers in the context of enhancement of their natural sciences curriculum. The earthquake module includes training on the causes of the hazard, associated hazards, how earthquakes cause damage, aftermath risks, and what actions individuals can take to mitigate and minimize the extent of the damage to themselves, their family members, and their homes. This is followed by a structured training program for teachers which provides them with more in-depth scientific and technical information, as well as guidance and assistance in developing lesson plans that address the natural science of earthquakes, their social and economic impacts, and strategies for reducing damage to the community.

Nevada

Highlights of the Nevada program included a significant increase in participation in this year's Great Nevada ShakeOut, with more than 516,000 participants, including all counties and public school districts. The increased participation reflects greater involvement by schools, agencies, and local governments in Clark County, Henderson, and Las Vegas. Activities included a press

conference by the Las Vegas Mayor 3 days before the ShakeOut, followed by a similar event in Washoe County. Future goals for ShakeOut include buy-in from more hospitals and casinos.

Another important activity was greater automation of HAZUS software to provide reliability in producing vital output during a damaging earthquake in the greater Reno area and elsewhere. Ideally, all activities ranging from earthquake monitoring, to ShakeMap production, and required HAZUS output should be placed within the Nevada Seismological Laboratory (NSL) data center that has back-up power and air conditioning. Automation for ShakeMap products is underway to provide access to several servers at the Nevada Bureau of Mines and Geology and NSL and should expedite any real time response.

Region X

Alaska

Alaska supported an active earthquake mitigation program in close partnership with the Alaska Seismic Hazard Safety Commission (ASHSC) and other groups. The ASHSC Scenario Committee provided FEMA Region X planners and the Alaska Shield 2014 Planning Team with three viable earthquake scenarios for Alaska. The Alaska Earthquake Information Center developed ShakeMaps and the University of Alaska-Geophysical Institute Tsunami Modeling Group and Alaska and West Coast Tsunami Warning Center provided tsunami wave height data to support the planning scenarios. Alaska Shield 2014 is an important exercise in the 50th anniversary year of the 1964 Good Friday earthquake. It will involve state, federal, and local partners, testing their response to a major earthquake and resulting tsunamis in terms of casualties, rescue, and sheltering. State officials also partnered with the ASHSC in December 2011 to sponsor a training course on post-earthquake safety inspections on buildings, using FEMA ATC-20 materials. Forty-three engineers, architects, and facility and construction managers from multiple Alaska jurisdictions and the private sector completed the course.

State staff, in coordination with FEMA Region X, launched the Great Alaska Shakeout website, registering more than 50,000 participants for the event. Staff also took the “Quake Cabin,” an earthquake motion simulator used to teach nonstructural seismic hazard mitigation and preparedness, to more than a dozen health, safety, and preparedness fairs. In July 2012, a statewide planning effort was begun to commemorate the 50th anniversary of the Good Friday earthquake, led by the Anchorage Museum. The Chugach Electric Corporation completed a seismic stabilization of electrical generation transformers in the major South-central Alaska power generation facility. Other activities included the assessment of the seismic structural safety of two K-12 schools in the Anchorage School District (ASD), providing a benchmark for 117 ASD schools; the completion of seismic retrofit projects in the Kodiak Island Borough and Anchorage, enhancing the resiliency of local public schools and 22 fires stations; and an ASD project for seismic retrofit of 68 ASD facilities.

Idaho

The Idaho ShakeOut was considered a big victory by the state and local earthquake community. Next winter, there will be an earthquake scenario in eastern Idaho that will include the failure of Palisades Dam. There have been many more cases of landslides in Idaho. As a result, canal and levee safety has become an important issue. Another issue continues to be unmapped faults. Idaho does not have monitoring equipment for earthquakes (equipment in Wyoming is used) and is attempting to identify funding for its own seismic monitoring equipment. Other activities include revisions to the state mitigation plan, a school seismic needs assessment pilot project with the State of Washington, and a revised Earthquake Preparedness Guide for Idaho.

Oregon

This year, the Oregon Earthquake Hazard Reduction Program completed several exciting projects in partnership with the Oregon Seismic Safety Policy Advisory Commission (OSSPAC), the Oregon Department of Geology and Mineral Industries (DOGAMI), and FEMA.

Oregon Emergency Management (OEM) spent 3 weeks in March visiting all of the coastal counties in a Tsunami Road Show. More than two dozen events were held to promote earthquake and tsunami preparedness. Other partners joined in the Road Show, including the American Red Cross, DOGAMI, Oregon State University, and many local responders and emergency management agencies. This year also was the second Great Oregon ShakeOut, and the first time it was promoted statewide. More than 160,000 people registered to participate in the Drop, Cover, and Hold On earthquake drill.

OEM updated the Seismic Hazards Media Guidebook and made it available in print and electronically. The Guidebook covers earthquakes, tsunamis, and volcanoes, and helps the media to better understand the hazards.

The Oregon legislature recognized the scale of the Cascadia Subduction Zone problem when it passed House Resolution 3 in 2011, noting the likely impact of a Cascadia earthquake and the need for a plan to move Oregon toward resilience. The OSSPAC was charged with developing a resilience plan. The plan is included in a report that summarizes the science of Cascadia subduction zone earthquakes, estimates their impacts, and provides a detailed analysis of the current vulnerability of buildings, the business community, and of transportation, energy, communication, and water/wastewater systems. The report defines performance targets for each sector to achieve resilience, and provides recommendations for actions to meet those targets over the next 50 years. More than 150 volunteers donated their time and expertise to this project. The report will be presented to the Legislature in 2013 and made available on the OEM website.

The South Beach Tsunami Interpretive and Evacuation Trail is a cooperative effort involving the City of Newport, the Hatfield Marine Science Center, Lincoln County, DOGAMI, and OEM. This project was to create and install a series of tsunami interpretive signs along a route in the South Beach area of Newport in Lincoln County. The number and location of the signs was decided by

the South Beach Tsunami Trail workgroup, with a total of 10 signs installed this year. In future years, the interpretive trail will be expanded into the Port facility and will connect to the Japanese Tsunami Memorial at the Hatfield Science Marine Center.

Washington

Washington continues to make seismic hazard reduction a high emergency management priority. The Washington State Seismic Safety Committee (SSC) initiated a multi-year planning effort by engaging more than 70 stakeholders to assist the SSC in assessing current vulnerabilities to seismic hazards, examine critical interdependencies between and across infrastructure sectors (utilities, housing and economic development, critical services, and transportation), establish performance metrics for restoration of services and infrastructure, and provide a blueprint for long-term risk reduction policy implementation to improve Washington's resilience to earthquakes and other disasters. The final report will provide guidance on how to facilitate long-term implementation of seismic risk reduction policies, with the goal of making Washington resilient in 50 years. Preliminary lessons from resilience planning in Washington have been shared through the Cascadia Region Earthquake Workgroup (CREW) and have served as a model for Oregon, which recently initiated a similar effort.

Several Washington agencies and SSC developed an approach to systematically evaluate all public school buildings and critical facilities in Washington to establish the seismic risk for each and piloted this approach in two school districts. Enhanced screening and preliminary seismic retrofitting options were developed for four critically deficient school buildings identified in the 2009 project. The results of this study are being used by the school districts to strongly justify applications for FEMA grant funds to seismically retrofit deficient structures.

Washington joined the ShakeOut movement and had more than 710,000 participants from schools, private industry, and others join in this inaugural drill. Leveraging NEHRP resources, Washington also used funding provided under the Tsunami Warning and Education Act to incorporate a coastal tsunami siren test and evacuation drill into the campaign. This enables all Washington residents to become familiar with these hazards and increase their personal preparedness so they can take the appropriate life-safety actions when necessary.

IV. Regional Earthquake Consortia and FEMA Earthquake Partners

Cascadia Region Earthquake Workgroup

The Cascadia Region Earthquake Workgroup (CREW) is a coalition of private and public representatives working together to improve the ability of communities thought the Cascadia Region (Northern California, Oregon, Washington, and British Columbia) to reduce the effects of earthquakes and related hazards, such as tsunami. Since the mid-1990s, CREW has created several publications, including scenarios, post-disaster recovery guides, and other educational materials accessible on CREW's website. CREW is composed of mostly volunteer representatives that help foster linkages between scientists, businesses, and government agencies on earthquake resiliency. CREW, the youngest of the regional earthquake consortia, is now halfway through its 5-year strategic plan.

CREW held a series of business roundtables in 2012 in Portland, Seattle, and Vancouver, B.C. The objectives of the roundtables were to: further develop interaction between CREW and the business community; provide a setting in which business people could discuss their concerns and current level of preparedness; and allow CREW to learn from the participants about the types of tools and information CREW can supply that would be of greatest use to businesses. CREW published the results of this document in September 2012. CREW intends to use the results of the roundtables to develop and improve the focus of the information and other resources it offers to the business community. The more prepared businesses are to withstand and recover quickly from the next big earthquake, the greater will be the resilience of the regional economy and of every community that depends on it.

CREW organized and hosted three public forums about current research and events related to the earthquake hazard. The topics were: What Tohoku Teaches Us About Cascadia (Portland); Advancements in Pacific Northwest Earthquake Hazard Understanding (Seattle); and School Seismic Safety (Vancouver, B.C.).

CREW completed six webcasts over the past year, and many are located on CREW's YouTube site. These webcasts will be used in the upcoming year to develop mitigation and resilience video clips that will be published on the website and geared to businesses and the public. CREW's website is the main source of distributing information on earthquake preparedness, planning, and mitigation. This year, the website was updated to ensure CREW was reaching its target audiences. Updates are continuing as CREW develops new material

CREW also began updating the 2005 Cascadia Subduction Zone Scenario document. Recently, FEMA began a catastrophic planning effort for Pacific Northwest's communities, focused on a Cascadia Subduction Zone earthquake. This effort includes updated ground motion and tsunami models, infrastructure inventories, and HAZUS modeling. The results of this effort will be used as a basis for the update to the CREW scenario.

Other projects planned for the upcoming year include video shorts on earthquake preparedness and mitigation and resiliency planning; additional public forums; developing a messaging plan, including audience specific factsheets; and the continued fostering of partnerships.

Central United States Earthquake Consortium

The Central United States Earthquake Consortium (CUSEC) 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. CUSEC projects in FY 2012 include public awareness and education, mitigation, response and recovery, and application of research.

In the awareness arena, CUSEC has hosted three Town Hall meetings; created and distributed brochures and newsletters; continued its GeoCache initiative (500 visitors); conducted and supported Earthquake Awareness Month with CUSEC states; briefed the Congressional Natural Hazards Caucus; and coordinated key events, including the 1811-1812 Bicentennial, the Great Central U.S. ShakeOut (2.4 million participants), and the National Earthquake Conference. CUSEC also was the recipient of the 2011 White House Champions of Change award (Brian Blake) and received a 2011 FEMA Individual and Community Preparedness award.

In mitigation, CUSEC conducted three FEMA 154/ATC-20 courses, a Get Your Home Ready for Earthquake seminar, two hospital mitigation workshops, and created a non-structural mitigation for homeowners display. Response and recovery activities include work with the USGS and state geologists to develop better response and recovery plans and work on NLE 2011. CUSEC also is supporting CAPSTONE-14 and hosted a workshop for the private sector and emergency management community on August 14-16, 2012, in the Chicago area on how the two sectors can better work together. Research application projects focus on integration of new hazards information into the earthquake program and work with state geological surveys and the USGS to support national response planning.

In partnership with Virginia, Maryland, the District of Columbia, FEMA, the National Park Service, and the USGS, CUSEC had a leadership role in a press conference held on August 23, 2012 at the Washington Monument to mark the one-year anniversary of the earthquake that shook much of the East Coast. The quake also caused at least $75 million dollars in damages in Virginia, and millions more in surrounding states. The press conference served as the kick-off for National Preparedness Month and the Great SouthEast ShakeOut initiatives. Speaking at the press conference were senior federal officials and officials from Maryland and the District of Columbia. Topics included ongoing challenges to the recovery following the earthquake, current knowledge of the earthquake threat, and public preparedness programs to protect lives and save property. The press conference was covered by USA Today, CNN, NBC Nightly News, CBS Evening News, the Associated Press, and more than a dozen other media outlets.

Northeast States Emergency Consortium

The Northeast States Emergency Consortium (NESEC) was established in 1991 and is located in Wakefield, Massachusetts. NESEC develops, promotes, and coordinates comprehensive "all-hazards" emergency management activities throughout the Northeast. This includes all phases of emergency management: preparedness, response, recovery, and mitigation. NESEC's work is a vital component to planning and response for the safety and welfare of the more than 40 million people living in the Northeast. NESEC includes the member states of Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

An important project completed by the Northeast is the URM Building Inventory and Mitigation Strategy, a new mapping technology to raise awareness of the number, location, and types of URM buildings and the mitigation strategies available. Many URM buildings in the Northeast are in urban areas, from Boston down to New York City. Final results indicate that there are 1,637,517 URM buildings in the Northeast (16,240 in Boston based on HAZUS data and 18,919 in Boston based on data from parcel maps, resulting in an 86 percent agreement between HAZUS and the parcel maps). Final results demonstrate that the HAZUS-MH data is reasonable; parcel maps support the HAZUS data; and Google maps can serve as validation tools

Western States Seismic Policy Council

The Western States Seismic Policy Council (WSSPC) was established in 1979. Thirty-nine agency members of WSSPC include the directors of the geological surveys and emergency management agencies from 13 states in the western region, as well as British Columbia, the Yukon Territory, American Samoa, Guam, and the Northern Mariana Islands, and representatives from 7 seismic councils and commissions. Affiliate members include private corporations, local governments, non-profit organizations, universities, and individuals who share the common goal of reducing losses from earthquakes. Approximately 84 percent of the seismic risk in the United States is located in the WSSPC region.

The primary work of WSSPC is developing policy recommendations via three standing Committees: the Basin and Range Province Committee; the Tsunami Hazard Mitigation Committee; and the Committee for Engineering, Construction, and Building Codes. Today, 15 policy recommendations have been developed by WSSPC, all of which are posted on the WSSPC website, and updated versions of 9 policies will be discussed and adopted by members in 2013. The nine policies focus on new and existing schools, tsunami, post-earthquake clearinghouses and information management systems, building codes, hazard assessments, and earthquake early warning.

The WSSPC Awards in Excellence program has been in effect since 1996 to recognize exemplary programs, projects, or products that have contributed to earthquake risk reduction through demonstrated achievements. The Oregon Seismic Rehabilitation Grant Program won the 2013 Overall Award in Excellence. Other 2013 awarded programs, projects, and products are Oregon DOGAMI Special Publication 43, PEER’s Tall Buildings Initiative, Washington School Seismic Safety Assessment Pilot Project, and the Resilient Washington State Initiative. These awards

are highlighted on the WSSPC website (www.wsspc.org) where others are encouraged to transfer, adapt, and adopt these programs. Quarterly newsletters, membership roster, press releases, status of building code adoption, and links to state hazard mitigation plans are other features of the WSSPC website.

Earthquake Engineering Research Institute

The Earthquake Engineering Research Institute (EERI) is the Nation's leading technical society dedicated to the reduction of risk from earthquakes and is recognized as an authoritative voice for earthquake risk reduction information in the United States. EERI is a national, nonprofit, multidisciplinary technical society of engineers, geoscientists, architects, planners, public officials, and social scientists. EERI is a member organization that currently has chapters throughout the U.S., including many student chapters at universities. The EERI mission is to reduce earthquake risk by (1) advancing the science and practice of earthquake engineering, (2) improving understanding of the impact of earthquakes on the physical, social, economic, political, and cultural environment, and (3) advocating comprehensive and realistic measures for reducing the harmful effects of earthquakes.

EERI engages in many activities to help federal agencies implement their NEHRP responsibilities. These include producing technical publications and seminars, conducting multi-disciplinary post-earthquake investigations, and providing support and hands-on learning experiences to students, among others. More information on EERI is available at www.eeri.org.

Federal Alliance for Safe Homes

The Federal Alliance for Safe Homes (FLASH) entered into a cooperative agreement to assist FEMA NEHRP and the Building Science Branch achieve its strategic goals and delivered five projects.

First, FLASH promoted the FEMA *QuakeSmart* Business Toolkit, FEMA P-811DVD, to more than 150 associations in 18 states, educating more than 14,000 small business owners on structural and nonstructural mitigation. Second, FLASH developed four new consumer resources, including three FLASH Cards: *Prepare Your Family, Protect Your Home,* and *Protect Your Contents,* and one nonstructural "how-to" animation to help businesses prepare employees, families, and communities for seismic events. The resources, along with the *QuakeSmart* Business Toolkit, were translated into Spanish. Third, in partnership with the Los Angeles County Fire Department, FLASH piloted a nonstructural assessment program to imbed mitigation into annual small business fire inspections. The results of more than 30 pilot inspections will help FLASH design a statewide program in 2013. Fourth, FLASH researched how building code courses are currently taught in universities and colleges across the Nation. The survey and interviews resulted in FLASH creating two model university courses that will be released in 2013. Finally, FLASH developed MitigationMovement.org to share education campaigns, academic research, technical resources, and long-term recovery information with mitigation stakeholders. The "open source" site will be live in March 2013 and will include more than 900 organizations.

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