

2017 National Earthquake Program Managers Meeting
Oklahoma City, OK – April 25-27, 2017
Meeting Notes

Meeting Participants:

Reginald Marshall, Alabama	Mike Russeell, South Carolina
Art Faulkner, Alabama	Cecil Whaley, Tennessee
Dan Belanger, Alaska	Bob Carey, Utah
Lealofisa Moliga, American Samoa	John Crofts, Utah
Mike Conway, Arizona	Matthew Wall, Virginia
Danna Weaver, Arkansas	Maximilian Dixon, Washington
Charles Horton, Arkansas	Robert Ezelle, Washington, Director
Robert White, British Columbia	Seth Wittke, Wyoming
Kate Long, California	Jim Wilkinson, CUSEC
Ryan Arba, California	Brian Blake, CUSEC
Karen Berry, Colorado	Mike Calvert, CUSEC
Matt Morgan, Colorado	Alisa Nave, CUSEC
Rob Jackson, Colorado	Ed Fratto, NESEC
Woody Radcliffe, Georgia	Sula Watermulder, NESEC
Leo Rustum J. Espia, Guam	Erin Mommsen, WSSPC
Kevin Richards, Hawaii	Patti Sutch, WSSPC
Jason Williams, Illinois	Pascal Schuback, CREW
Susan Cleverly, Idaho	Veronica Cedillos, ATC
Janice Lee, Indiana	Jason Ballmann, SCEC
Jeremy Blansett, Kentucky	Mark Benthien, SCEC
Jeff Briggs, Missouri	Barbara Harrison, FLASH
Susan Walker, New Mexico	Heidi Tremayne, EERI
George Cabrera, Northern Mariana Islands	Beki McElvain, EERI
Albert Ashwood, Oklahoma, Director OEM	Rob Williams, USGS
Bonnie McKelvey, Oklahoma	Glenn Moore, US DHS
Keli Cain, Oklahoma	Nick Shufro, FEMA HQ, Asst. Admin. FIMA
Michael Bradford, Oklahoma	Bill Blanton, FEMA HQ
Layfette Fletcher, Oklahoma	Ed Laatsch, FEMA HQ
Kim Jenson, Oklahoma	David Javier, FEMA HQ
James Mullen, Oklahoma	Wendy Phillips, FEMA HQ
Matthew Rollins, Oklahoma	Mike Tong, FEMA HQ
Michelann Ooten, Oklahoma	Mike Mahoney, FEMA HQ
Steve Palladino, Oklahoma	Tony Robinson, FEMA Region VI, RA
Harold Stokes, Oklahoma	John Grace, FEMA Region I
Jake Walter, Oklahoma	Jose LeBron, FEMA Region II
Alex Greer, Oklahoma State Univ.	Maria Rivera, FEMA Region II-CAD
Buddy Combs, OK Insurance Dept.	Noriko Boston, FEMA Region IV
Steven Spears, City of Cushing, OK	Scott Bailey, FEMA Region V
Althea Rizzo, Oregon	John Bourdeau, FEMA Region VI
David Perry, South Carolina	Oscar Martinez, FEMA Region VI

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Cheickh Koma, FEMA Region VII
Sean McGowan, FEMA Region VIII
Gala Gulacsik, FEMA Region X
David Rattle, FEMA Region X
Ian Kirksey, OPP
Lee Mueller, OPP
Jim Taylor, ABS Consulting
Kelly Cobeen, Wiss Janey Elstner Assoc.

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Meeting Summary:

Tuesday, April 25, 2017

I. Welcome and Introductions - Matthew Wall, VA Eq. Program Manager/NEPM Chairman; Bonnie McKelvey, OK EPM; Albert Ashwood, Director, OEM; Tony Robinson, FEMA Region VI Administrator; Nick Shufro, Risk Management Asst. Administrator, FIMA, FEMA

Matthew Wall opened the meeting and thanked Oklahoma for hosting. He provided brief remarks and welcomed the morning's speakers.

Bonnie McKelvey, Oklahoma Earthquake PM, thanked everyone for gathering in Oklahoma and welcomed Oklahoma's Emergency Management Director, Albert Ashwood. Albert Ashwood discussed Oklahoma's current issues with earthquakes and the state's earthquake emergency response plan. He explained how he brought state agencies together to find out what each agency would be able to do during an event, and learned that effective response would require a continuous conversation with local, state, and federal officials.

FEMA Region VI Administrator Tony Robinson provided opening remarks and discussed the need to focus on the threat earthquakes pose. He reviewed the collaborative projects that he has ongoing in three states in Region VI to prepare for and respond to earthquakes. Region VI is working on an update to the New Madrid seismic plan so that it looks past the first ten days after a disaster. As part of this update, they are looking to add state and federal staging areas to assist with transportation of supplies and personnel in the event of an emergency.

FEMA's Risk Management Assistant Administrator, Nick Shufro, spoke on the role of FIMA, which is to provide data to better inform communities of their hazard risk. He emphasized that it is important to focus on sharing information and making it easily consumable for all audiences. Shufro discussed efforts underway for NEHRP reauthorization, and noted that a consistent, five-year reauthorization cycle, with a robust communication strategy and a method for turning the vast amounts of research done into workable risk management plans, would benefit all. FIMA has set up a group to facilitate communication for more guidance on where investments should be made for the best strategic effect. He asked for input from attendees when the NEMIS comes out in June, with the intention to use this information in 2018 to plan for 2019. Shufro also noted FIMA's moonshot initiatives which include doubling flood insurance policies by 2023 and increasing the investment rate to four times the current level. They hope to use state, local, and even private investment to supplement money put in by the federal government. Nick Shufro closed his remarks by requesting that the group share their lessons learned and send them to FIMA for the Mitigation Best Practices Portfolio, as well as to share that information with fellow earthquakes PMs at the meeting.

II. USGS Earthquake Hazard Brief - Rob Williams, USGS

Rob Williams from USGS presented on ongoing seismic research taking place at the USGS. A few highlights from his presentation include the following items. Shake Alert is entering a new

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phase in April and pilot users are testing the software. Currently, 158 new seismic monitoring stations have been set up in the eastern U.S., and there is a push to adopt all the stations into the IRS NSF program.

On the Wabash Fault, 10 segments have been found, and there has been a process to establish the earthquake history of the fault to better understand future earthquakes. In California, the step over zone has shown that smaller earthquakes can cause larger earthquakes. The greatest hazard to the infrastructure in the Bay Area comes from larger earthquake from faults further away. Plans to advance subduction zone science are moving forward to better prioritize USGS research activities. USGS is also running simulations for a magnitude 9 earthquake in the Cascadia region. They are collaborating with the University of Washington on the research project. There is also ongoing paleo tsunami research near Puerto Rico. The goal is to find evidence of large past earthquakes by looking for evidence of tsunamis that would have followed them.

In Oklahoma, there has been an increased rate of earthquakes. Research shows that most earthquakes in Oklahoma, Texas, and Kentucky are due to waste water injection. Most earthquakes occurring in the central U.S. are in Oklahoma; however, the rate is now declining, perhaps due to a decline in the production of oil, along with new regulations that affect waste water injection. To help with the need for more up-to-date information and relation to the increase in seismic activity, the USGS is going to put out one-year hazard maps for 2016 and 2017 showing the hazard risk in the Oklahoma area.

III. FEMA NEHRP Update - Ed Laatsch and Bill Blanton, FEMA

Ed Laatsch opened the discussion and provided a FEMA update on NEHRP. From FEMA's perspective, earthquake mitigation is a group effort between all levels of government. He emphasized that NEHRP was created in the spirit of collaboration, involves four federal agencies (NIST, NSF, USGS, FEMA), and achieves its goals through committees, including a private sector committee. Laatsch noted that Jack Hayes, program director for NIST, has retired and a replacement will be announced soon.

Laatsch reviewed new information regarding NEHRP reauthorization efforts. A bill may be introduced within days and there is word it has majority and minority party support in Congress. Overall, Laatsch thinks the state of NEHRP is good and that the program will be able to continue supporting the states and communities effected by earthquakes.

Bill Blanton continued the FEMA NEHRP update and discussed the NEHRP responsibilities of FEMA HQ staff, which includes five members. Blanton emphasized that state officials and FEMA Regions should take this opportunity to communicate and build better relationships. Blanton ended the presentation by promoting two new FEMA publications: *FEMA P749: Earthquake Resistant Design Concepts* and *P100: School Safety Guide for Natural Hazards*.

IV. FEMA HQ Program Briefs - Wendy Phillips, David Javier, Mike Mahoney, and Mike Tong, FEMA

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The FEMA HQ team provided an overview of several FEMA efforts related to NEHRP. Mike Mahoney presented on *P100: School Safety Guide for Natural Hazards*, a new FEMA publication, that focuses on addressing natural hazards information for schools. The objective of the publication is to develop a school safety guide that provides guidance that is applicable to multiple natural hazards. It focuses on K-12 schools and provides operational guidance for the school administrative staff. In creating the publication, a review of existing literature was conducted. It used the Comprehensive School Safety Framework by the UN and builds off the School Emergency Operations Guide from 2013. Writers and researchers highlighted the Napa earthquake as an example of why the guidance is needed.

Mike Tong presented on *P-366: HAZUS Estimated Annualized Earthquake Losses for the U.S.*, which aims to help customers understand seismic risk and provide a baseline for loss estimates. P-366 provides two risk management types: Annualized Earthquake Loss (AEL) and Annualized Earthquake Loss Ratio (AELR). The 3rd edition of P-366 is scheduled to be published in July 2017 and the new baseline results are expected to be used in by the Consortia in 2018. A GovDelivery will be distributed when the publication clears the review process and is available to the public.

David Javier presented on the NEHRP Direct State Assistance program and provided an overview of the process and communication with the states to date. Additional information on the NOFO and application details will be provided in the near future. Regions and State Earthquake PMs are encouraged to take the opportunity to begin a dialogue with one another to support executing Direct State Assistance.

Wendy Phillips presented on the First Responder Outreach Tool, which is designed as a “Train the Trainer” tool that States and others can use to encourage support and funding for mitigation measures for first responder facilities. The outreach tool is centered around the First Responder Earthquake Video that was produced last year, and has several supporting documents and resources that are available for download.

v. NEMA EQ Subcommittee Update / NEHRP Reauthorization - Robert Ezelle, NEMA

Robert Ezelle presented on the NEMA Earthquake Subcommittee’s activities and priorities voted on by the committee. He proposed that the emergency management perspective may be missing from the national dialogue on earthquake hazards and how the country deals with the threat of inevitable earthquakes. This issue was a driver for why NEMA formed the Earthquake Subcommittee. The Subcommittee has four priorities: maintaining NEHRP and Direct State Assistance; advocating for a robust FEMA earthquake program; urging Congress to reauthorize NEHRP with a focus on turning research into implementation; and encouraging ACEHR to increase the representation of emergency management subject matter experts on the committee.

The NEMA Earthquake Subcommittee will have its first face-to-face meeting on Thursday after the NEPM has concluded.

vi. State Updates

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Several states provided updates on their earthquake-related activities.

- **Illinois**

Illinois developed an earthquake informational kiosk with a contractor and it was installed outside a science center in a mall in southern Illinois. It gets a lot of traffic and Illinois is looking to move it around the state for events or making a smaller version for the same purpose. The kiosk was created with state support from CUSEC, NEHRP, and a Motorola grant.

- **Alaska**

In Alaska, there was a 7.1 magnitude earthquake outside of Anchorage the week of April 17, 2017. The state has started the Quake Cabin program – a portable cabin that can simulate up to an 8.0 magnitude earthquake. It has toured southeast Alaska and held demonstrations in 12 communities in 30 days. They also held their annual Tsunami Operations Workshop – a regional workshop involving states and territories that face tsunami risks on the Pacific coast. Currently, they are preparing a flip book for earthquake preparedness and they have also gotten approval from the state for earthquake playing cards. Finally, they are pursuing trainings on FEMA P 807, FEMA 395, and ATC 20/FEMA P154.

- **Missouri**

In Missouri, the Building Assessment Group - Save Collation has ~1,000 trained volunteer building inspectors. With new changes to state legislation, Missouri can now send volunteers out of state to assist with building inspection efforts. They also now have 100 trained volunteers in their RVS program. The state representative noted that Missouri has a large need for inspections in schools and they are working to grow the RVS program. They have received earthquake preparedness playing cards through a state assistance project and they are getting a good response from them.

- **American Samoa**

American Samoa administers the local tsunami and earthquake program. They are looking to pursue both programs separately. American Samoa is also working to update their local building code. They would like to include activities for the private sector as they are crucial to their response and recovery efforts.

- **Oklahoma**

Oklahoma has trained over 400 people in the last four years for building inspection and have been approved for more FEMA training this fall. The goal is to be able to do better assessments in future events. Oklahoma gained approval to move forward with a QuakeSmart summit. The state has been doing ShakeOut Earthquake Drills since 2011. The PM mentioned that it had been a challenge to get people interested in the past, though in 2016 they had 62,000 participants, which was more participants than 2015.

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They are working on a social media campaign to get the word out about the ShakeOut program and are targeting schools heavily, especially elementary and middle schools. Since the earthquake risk in northeast Oklahoma has increased interest in information, they also want to target the northeast area of Oklahoma for a ShakeOut drill.

- **Arkansas**

Currently, Arkansas is working on ShakeOut billboards to put up in the New Madrid area to raise awareness of the program. They are also working on a Catastrophic Disaster Plan rewrite and in June they will hold a Post Disaster Building Assessment training.

- **Oregon**

Oregon's program covers earthquake, tsunami, and volcano through their OEM Geohazards program. They are working on updates to several publications and are promoting new public awareness messaging that focuses on personal preparedness for at least two weeks after an event. Oregon has ongoing hospitality industry outreach to educate tourists and the hospitality industry about earthquake and tsunami hazards, and their Wayfinding program continues.

- **California**

California continues to work heavily with other states and FEMA in all their programs. A good example of this collaboration is the "Protect Yourself During Earthquakes" poster, which won a Davey Award. California highlighted the California Clearinghouse which came about after the San Fernando earthquake. The Clearinghouse organized researchers that came to collect data and made it possible to have succinct data to give to emergency managers. California is also participating in the Cascadia Rising exercise and is looking into ways to share information and geological survey research.

- **South Carolina**

South Carolina has had a series of significant natural hazards recently. In October 2015, the state had a 1000-year flood event (a spin-off from Tropical Storm Joaquin) and then impacts from Hurricane Matthew in October 2016, followed by wildfires. SCEEP is the state's earthquake education program and the goal is to advance statewide earthquake education activities and improve public understanding of earthquake risks. South Carolina has five lines of effort for their earthquake program: continue statewide SCEEP presence; host the Shakeout Drill; conduct the seismic event response project; conduct the earthquake preparedness project; and continue the earthquake education and outreach project.

- **Guam**

Guam focuses on preparedness since it is geographically isolated. Mass care is a major focus, and the supply chain and maintaining the integrity of the port is crucial because the territory is so distant from the U.S. Guam has developed outreach materials like

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earthquake preparedness cards and brochures, as well as an earthquake preparedness media campaign. Schools have preparedness clubs. Guam has conducted 80 earthquake/tsunami puppet shows as educational outreach. They are working on training through NETAP, and teaching courses and hosting free webinars. Future projects included updating Guam's seismic hazard vulnerability assessment, developing curriculum for middle and high school earthquake preparedness, and hosting the earthquake preparedness week on Aug. 6-12, 2017, and the Great Guam ShakeOut in Oct.

- **Utah**

The state of Utah is experiencing major growth in the Wabash Fault area, an area of high seismic risk in the state. They have ongoing collaborations with the University of Utah geological survey. Projects include "Fix the Brick" which is a NEHRP program that inspects people's homes for risk related to masonry. Approximately 35-50 homes are going through seismic evaluations now and 300 are on the waiting list. The state has conducted ATC 20 training over the last six years. They are working to get good communication between all bodies involved in earthquake preparedness. 90% of the schools in Utah have been reviewed through RVS, and they are looking to finish that this year.

- **Idaho**

The State performed several RVSs last year and the report was released to pertinent counties in Nov. The state will be providing FEMA P-154 ROVER training. Idaho also participated in Cascadia Rising and they learned that infrastructure damage in other states would affect how well they could provide support. They are also working with technical groups in the state to research landslides and their impacts.

- **Virginia**

Virginia currently does not have any funding for its earthquake program, and it is not formally a state within NEHRP so it does not receive federal funding. Virginia had over 1.2 million participants in the 2016 Shakeout, second only to California in total numbers.

- **Washington**

This year, Washington had 1.1 million people participate in ShakeOut. They are converting all of their materials to Spanish. Outreach is being increased in coastal communities and in eastern portions of the state. They are focusing heavily on multimedia and social media, and held a Reddit AMA where they set aside several hours for questions and it got an 89% favorable reviews. The state is working on Earthquake Early Warning outreach, education, and training strategy for Washington and Oregon, which is focused on the public and first responders. The Washington Schools Earthquake Performance Assessment Tool (EPAT) was designed to help school districts better understand the seismic vulnerability of their school. They are creating an easy-to-

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use guide and training manual for EPAT.

VII. Consortia and Partners Updates

The Consortia and Partners provided brief presentations that focused on completed and ongoing state support projects and other NEHRP projects, and highlighted the capabilities of their organizations. Additional details are available in each Consortia and Partners' presentation.

CREW discussed ongoing outreach efforts focused on the hospitality industry and schools. ATC highlighted the National Earthquake Technical Assistance Program and how to apply for specific courses. CUSEC discussed multi-state planning efforts to increase public awareness of earthquake risk in the central U.S. and support response and recovery. EERI highlighted state assistance projects focused on doing inventories and seismic inspection so states can better understand their risk. NESEC highlighted the HAZUS, GIS, and risk assessment work they have been doing in the northeast. FLASH discussed their new initiative DisasterSmart, which focuses on building code education for leadership, and highlighted upcoming QuakeSmart workshops. WSSPC highlighted the expertise of their members and discussed the variety of outreach and public awareness state support projects they are undertaking, such as the Hazards Wheel. OPP discussed their approach to outreach and communications, and highlighted state support and FEMA BSB NEHRP projects. SSEC highlighted their work with the Earthquake Country Alliance, noting that earthquakecountry.org has a lot resources on hazard and risk reduction for earthquakes, and touched on ongoing efforts to expand ShakeOut.

VIII. FEMA Regions Updates

FEMA Regional Earthquake Program Managers from Region IV, V, VIII, and X participated in a session highlighting ongoing NEHRP efforts at the Regional level.

- **Region VIII, Sean McGowan**

Sean McGowan discussed the four states within Region VIII that are part of NEHRP and the structure of the response and mitigation divisions. McGowan highlighted the Region's hazard modeling efforts and discussed swarms and aftershocks. USGS is now making a one page report to show the potential of aftershocks. The Star Valley, WY, exercise was used to see how far building code adoption has gotten in the area. McGowan is also working on web-based loss estimation delivery and a Response and Recovery work plan.

- **Region V, Scott Bailey**

Scott Bailey focused on discussing GIS tools being used at the Regional level. FEMA GeoPlatform is a tool that can save time in emergency response situations. HAZUS is a regional loss estimation tool which can look at earthquakes, riverine flooding, and tsunamis. Bailey reviewed Region V's earthquake risk in the New Madrid and Wabash Valley zones. The Wabash Valley region is getting more attention after the discovery of prehistoric earthquake evidence. Region V has HAZUS trainings coming up in May, Aug., and Sept. for data management, risk assessment, and disaster operations.

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- **Region IV, Noriko Boston**

Noriko Boston discussed the New Madrid emergency response plan rewrite that Region IV is engaged in. The previous plan only included the first 120 hours of response after the event. Also, it did not include core capabilities and the plans between the four Regions with states within the New Madrid seismic zone were not synced. Planning integration will include Northcom, CUSEC, USGS, NEHRP, and NGB. They are developing a Transportation Feasibility Study, Resource Phasing Plan, and Force Deployment Data.

- **Region X, Gala Gulacsik**

Gala Gulacsik highlighted Region X's earthquake program integration with Exercise Planning, specifically for the Cascadia Rising multi-state exercise where they practiced their response to a magnitude 9 earthquake on the West Coast. Gulacsik also discussed the Regional Earthquake Program integration with Risk MAP to make better risk assessments. Other current regional projects for Region X include working on brochures to showcase earthquake and tsunami mitigation projects; documenting stories of effective and creative mitigation projects to use as an outreach tool; and working on the application of risk assessment by creating regional guides to integrate risk assessments into program areas.

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Meeting Summary:

Wednesday, April 26, 2017

I. Welcome and Overview of the Day - Matthew Wall

Matthew Wall provided an overview of the day's agenda items and welcomed the next session's speakers.

II. Yes, Earthquakes Occur in Oklahoma, Panel Session - Keli Cain, Stephen Spears, Dr. Jacob Walter, Buddy Combs, Albert Ashwood

Keli Cain from Oklahoma Emergency Management served as the Moderator for the panel discussion with Stephen Spears, City Manager for the City of Cushing; Dr. Jacob Walter, Geophysicist with the Oklahoma Geological Survey; Buddy Combs, Deputy Insurance Commissioner for the Oklahoma Insurance Commission; and Albert Ashwood, Director of Oklahoma Emergency Management.

Stephen Spears of the City of Cushing presented first on the local challenges after the City of Cushing experienced a M5.0 earthquake last year. Cushing is a rural town with less than 8,000 citizens. It is an oil community and, since the economy is so focused on oil, there have been political sensitivities in the community over manmade/induced seismicity. Impacts from the recent earthquakes are exacerbating the economic decline that is following the general decline of oil. The costs to repair earthquake damage can't be met, which effects how desirable the area is to businesses both from a safety and monetary/insurance perspective. Spears noted that very few people in the community have earthquake insurance. For those that do, the deductibles are very high and damages are not great enough to trigger insurance pay outs. As a result, private businesses and residents are unable to repair buildings and the town is declining.

Dr. Jacob Walter, Geophysicist with the Oklahoma Geological Survey, presented next and discussed the uptick in earthquake activity in Oklahoma and the research that shows a correlation with waste water injection. The Oklahoma Geological Survey has been installing monitoring stations across the state to capture data and better understand earthquake activity in the state. Recently, the seismicity rate in the state is declining, though Oklahoma still has a significant earthquake risk. The decline seems to be related to increased regulation on waste water injection and economic shifts away from production. USGS is now updating the seismic hazard maps yearly as the risk in the central U.S. increases. One question is, with enough data from seismic activity, can larger earthquakes be forecasted? Walter displayed several graphs and data visualizations to show relationships between waste water injection, smaller earthquakes, and larger earthquakes.

Buddy Combs, Deputy Insurance Commissioner from the Oklahoma Insurance Commission, presented on the development of and regulations on earthquake insurance in Oklahoma. He discussed the challenges related to damages from smaller earthquakes and the lack of payouts from insurance to cover repairs, since earthquake insurance is designed as catastrophic coverage. Oklahoma is pushing for insurance companies to inspect properties to identify what

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is/is not preexisting damage. In addition, they are pushing for better training for insurance agents offering earthquake insurance so members of the public can make informed decisions when securing earthquake insurance. Oklahoma has also worked to have the state's earthquake insurance market declared as non-competitive so the Insurance Commission can help prevent extremely high rates for earthquake insurance.

Albert Ashwood, Director of Oklahoma Emergency Management, wrapped up the panel presentations and discussed the state's efforts to focus on earthquake risk, determine if they are equipped to respond to an event, and develop programs and processes to streamline efforts. Ashwood discussed the lack of earthquake insurance carried by residents of the state and highlighted the need for consumers to be educated on what their options are for earthquake coverage. Ashwood is focused on education and outreach to push the importance of preparedness, and combined efforts by public and private entities to improve preparedness and response efforts. He also discussed options to incentivize builders to use building codes effectively. The cost of construction has to be matched with the cost of damages. There is a need to integrate the limited resources at the state level to increase efficiency and risk mitigation. Agreements and cooperation between states on disaster relief lessens the burden faced by state agencies. It would also provide support to areas that may not be top priority for federal agencies.

The panel participants joined in discussion with the meeting attendees regarding seismic risk, earthquake insurance, and preparedness. Questions touched on ways to increase the ability of science to support state response and mitigation. Ashford noted that there needs to be greater communication between mitigation officials and the researchers. Oklahoma has developed the Governor's Coordinating Council on Earthquake Seismicity (earthquakes.ok.gov). Questions also touched on how the earthquake insurance model may need to be changed to reflect the damages being experienced in Oklahoma, especially when considering the amount collected and the amount being paid out.

III. Learning from Earthquakes, EERI Response to Cushing - Heidi Tremayne, EERI; Jim Taylor P.E. S.E., ABS Consulting Oklahoma Earthquake; Alex Greer, PhD, Oklahoma State University

Heidi Tremayne of EERI facilitated this session which focused on EERI's Earthquake Reconnaissance Program, the engineering observations and lessons learned from the Cushing, OK earthquake, and the business impacts of the earthquake in Cushing. Jim Taylor presented on the post-event data collection efforts, and the observations and data collected on structural performance of a variety of structure types impacted by the Cushing earthquake. This included photo documentation and lessons learned. Alex Greer presented on the business recovery challenges related to the earthquake in Cushing and the conditions that influence business recovery. The presenters fielded questions from meeting participants with a focus on lessons learned from the event and recovery.

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IV. Fundamentals of a Solid Earthquake Program - Jim Wilkinson, CUSEC; Cecil Whaley, Tennessee; Bob Carey, Utah

Jim Wilkinson from CUSEC moderated a discussion with Cecil Whaley and Bob Carey on the fundamentals of a successful state earthquake program. Whaley and Carey are long-standing state earthquake program managers. Carey presented on the importance of work plans and long-term planning to ensure funding agencies know why they should be giving money to the program and how the program is providing the correct assistance to the state. Plans should focus on areas of high risk. Collaboration between state facilities and agencies is key to creating a plan that leads to an effective program. Maintaining support and momentum in the program, again through collaboration, is key. Whaley noted that it is important to be passionate about your program and to fight for your program. Being an advocate, especially with elected officials/representatives, is important for building support. Also, explore opportunities for less conventional support, such as law enforcement or private sector industries.

The presenters fielded questions from meeting participants with a focus on recommendations for how to get in front of elected officials/representatives to make the case for the earthquake program. Carey and Whaley noted the importance of bringing attention to the risk before asking for funding.

V. Building Safety Assessment MRP Pilot Project - Jim Wilkinson and Brian Blake, CUSEC

Jim Wilkinson and Brian Blake of CUSEC presented on the Building Safety Assessment MRP Pilot Project. The association of state geologists in CUSEC got together and determined a project was needed that focused on field inspection, EOC support, and Clearinghouse management. The project was launched in 2016 to further the development of building safety assessments and geological survey MRPs. The training course was laid out in two phases – the first six participating states participated in phase one and an additional six states are scheduled for late spring and summer 2017.

Wilkinson and Blake engaged in discussion with the participants on the importance of building damage assessment programs to support data collection and recovery. State of Washington building officials have created a volunteer organization called WAsafe to do damage assessments at the local level and are working to get them at the state level. Participants also noted the importance of educating citizens that there is a building assessment process that goes on after an earthquake occurs.

VI. Awards/Program Recognition – Matthew Wall, Patti Sutch, Ed Laatsch

Awards were presented to the NEPM Planning Committee to recognize their work in planning the 2017 NEPM. A new award was presented to Kate Long of California to recognize her dedication and outstanding work as the state's earthquake PM.

VII. Break Out Sessions and Reports/Discussion

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The State Earthquake Program Managers and FEMA, Consortia, and Partners broke out into two groups, respectively, and engaged in discussions on topics relevant to their operations. Each group identified a spokesperson who provided a report out to the full meeting participants. Matthew Wall provided a report out on the State Earthquake Program Managers discussion and Ed Laatsch provided a report out on the FEMA, Consortia, and Partners discussion.

Matthew Wall noted several discussion points from the State Earthquake Program Managers break out session. The group discussed how to make NEHRP more effective with a focus on turning research into action and the current cash match structure. Even states with minimal earthquake risk should be able to have access to federal earthquake funds. The National Tsunami Program could be a good model to consider, especially for turning research into action. Discussion included how to increase the visibility of NEHRP and build a better business case. Laatsch noted that this tied into a discussion point from the FEMA, Consortia, and Partners break out that focused on how to better tell the NEHRP story. Participants all agreed that improving communication between FEMA HQ, FEMA Regions, States, and others is an important part of strengthening the program.

Ed Laatsch noted several discussion points from the FEMA break out, most of which focused on improving and streamlining communication between FEMA HQ, FEMA Regions, Consortia, Partners, and States. The group discussed communication tools available to streamline communication between FEMA HQ, FEMA Regions, Consortia, and Partners. As noted earlier, the group discussed how to better tell the story of NEHRP and what it is doing for the Nation to make it stick more for Congress and other decision makers. The team highlighted the importance of telling the story and identifying overarching goals that link all the pieces of NEHRP. A subcommittee will be developed with FEMA HQ and Regions, Consortia, Partners, and States representatives to determine what this national-level story is. They will discuss over a set period of time with the goal of creating an effective storyline and strategic approach to communicating NEHRP to create visibility and impact for program and its goals. This is a strategic objective for the group.

The group also discussed process and status for Consortia and Partner State Support Projects. Requests have been received and a working group will be stood up to review project requests and identify projects in the mid-June timeframe. This process will look the same as years prior. In addition, the group discussed Direct State Assistance and how to support states on developing successful grant programs/applications, and discussed existing venues to provide training/guidance. ND Grants offers training and there is a package explaining the grants process available.

VIII. 2018 NEPM Meeting - Matthew Wall

Matthew Wall facilitated a discussion to identify the Planning Committee and location for next year's NEPM. To develop a succession plan, Matthew Wall will remain as the NEPM Chair for 2018 and Bob Carey has been elected as the NEPM Vice Chair for 2018. In 2019, Wall will step down and Carey will become Chair. This process will be followed in future years to ensure

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COOP.

The 2018 NEPM Planning Committee/Workgroup Members were identified. Members are: Matthew Wall, VA; Bob Carey, UT; Jim Wilkinson, CUSEC; Ed Fratto, NESEC; Wendy Phillips, FEMA HQ; Pascal Schuback, CREW; Patti Sutch, WSSPC; Barbara Harrison, FLASH; Mike Conway, AZ; Kevin Richards, HI; Jose Lebron, FEMA Region II; Lealofisa Moliga, American Samoa.

Meeting participants also discussed possible locations for next year's NEPM. Several recommendations were provided (Salt Lake City, Puerto Rico, St. Louis). Brian Blake and Matthew Wall will put together a short list of conference locations and include in a SurveyMonkey.

Brian Blake discussed possibility of Earthquake PM training and requested feedback from participants. Participants showed interest.

An Awards Committee was also established – members include Bob Carey, Cecil Whaley, Cheickh Koma, and Patti Sutch.

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Meeting Summary:
Thursday, April 27, 2017

I. Improving Seismic Performance of Manufactured Housing - Kelly Cobeen, S.E.

Kelly Cobeen presented on earthquake risks related to manufactured housing, specifically foundations, attached structures, and utility attachments, and pulled data from several California earthquakes to demonstrate the hazards to manufactured housing. This presentation was a training on manufactured housing and how to appropriately mitigate for earthquake risks. Cobeen highlighted typical mobile home construction, current regulations for manufactured housing, their specific earthquake risks, and what needs to be done to mitigate for these risks. Many of the mitigation tactics focused on the anchoring systems used as foundations for manufactured housing.

Meeting participants engaged in discussions regarding the performance of certain anchoring systems; the lack of regulations for effectively mitigating against earthquake risk to manufactured housing; and possible suggestions for improved performance in the event of an earthquake. A tool that showed what the average cost of a technique implementation would be could help encourage the adoption of those techniques by the states. Participants expressed interest in a condensed slide deck to present this issue to elected leaders and state program staff. In addition, an ATC class on this topic will be coming out and Oregon has offered to be a pilot program.

II. Earthquake Mitigation for Manufactured Housing Outreach - Barbara Harrison, FLASH

Barbara Harrison of FLASH provided an overview of efforts underway to conduct outreach on earthquake risks related to manufactured homes. Research shows there is a correlation between the states with higher earthquake risk having high numbers of manufactured housing. Harrison highlighted a specific outreach project in her presentation – the Yuma, AZ, manufactured housing outreach project. Outreach included adapting the Mobile Homes in Earthquakes flier from FEMA for Arizona and engaging in direct outreach with the manufactured housing park staff to ensure communication and distribution of flyers, as well as engaging in outreach with local county certification teams and emergency management officials.

Harrison engaged the participants in discussion on recommendations for future outreach. Recommendations included development of an outreach video, partnerships with local public health departments, and working with local code enforcement officials and government officials in areas with high numbers of manufactured housing.

III. Closing Comments

Brian Blake facilitated the meeting's closing comments and discussions. All presentations from the NEPM will be posted on eqprogram.net. All presenters are requested to send any edits that they may have to their presentations within the next ten business days or so to Brian.

Bonnie McKelvey of Oklahoma closed out the meeting and thanked everyone for traveling to Oklahoma. She noted that state staff may sit in various offices and be tasked with the

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earthquake program responsibility. She requested a count on where state earthquake programs reside within the state government structure – several were in Mitigation and Planning, at least one was in Operations, and Oklahoma resides in Grants. This is important to remember when communicating with the states.

IV. Meeting Adjourned

Matthew Wall adjourned the 2017 NEPM.

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2017 NEPM Action Items

- FIMA-Nick Shufro request for input from attendees when the NEMIS comes out in June.
- FIMA-Nick Shufro request for States to share lessons learned with FIMA for the Mitigation Best Practices Portfolio, as well as to share that information with fellow earthquakes PMs at the meeting.
- Identify the NEHRP story to build support for the program. Develop subcommittee of FEMA HQ and Regions, Consortia, Partners, and State representatives to determine what this national-level story is.
- Streamline communications between FEMA, States, Consortia, and Partners to support telling the NEHRP story.
- States and FEMA Regions to engage with one another to support successful execution of Direct State Assistance, and to share materials to support response to NOFO.
- Survey Monkey to determine next year's NEPM location.
- Develop condensed slide deck on Earthquake Risks for Manufactured Housing so states can present to leadership and bring awareness to risks.