



2021 National Earthquake Program Managers (NEPM) Meeting Day 1

Day 1: Tuesday, June 15, 2021 (12-4 pm CDT)

Welcome

Jeff Briggs, Missouri

James Remillard, Director, Missouri State Emergency Management Agency

Jeff Briggs welcomed everyone to the meeting and thanked them for joining. Next, he introduced his boss, James Remillard.

James Remillard thanked everyone and looked forward to learning from all the participants. He wished they could be in person, and he shared the opportunities they have been given through virtual meetings. He noted earthquakes are a significant threat, not because they have earthquakes often, but instead because they don't prepare as well; it is not a priority for Missouri residents.

The focus needs to remain on all disaster responses, not only the Pandemic.

Jeff thanked James and echoed what he mentioned and how everyone's job and life changed because of COVID-19. He thanked everyone for their help and flexibility.

Jeff ran through housekeeping items and the Code of Conduct for the meetings.

Smaller Earthquakes "With Ambition"

Dr. Sarah Minson, United States Geological Survey (USGS)

Dr. Sarah Minson stated sometimes smaller quakes can generate much more shaking than expected. Larger magnitude earthquakes occur so infrequently that most seismic hazard is from small and medium magnitude quakes with anomalously strong shaking.

Dr. Minson asked everyone to open their chats while she is presenting. Then, she proposed the question, "Which is more likely to cause strong shaking, the infrequent large earthquake, or the frequent small earthquakes?" She noted that it's the smaller, more frequent ones.

Based on the chart shared, Dr. Minson argued that earthquakes with a magnitude of 5.5 will produce shaking exceeding 10% G would be 8. Whereas an earthquake with a magnitude of 7 will only be 4. She anticipated seeing strong shaking from plenty of the smaller earthquakes while waiting for the big earthquake.

The total hazard has not changed. Implications for earthquake early warning are not significant. If the hazard is mostly coming from the little earthquakes and is highly localized, they don't have the time to prepare, unlike the big ones that can notify the people in the area affected.

While it was important, Dr. Minson recommended emergency managers stop fixating on only talking about the big one. That isn't where the seismic hazard is coming from and deters people and

communities away from preparing from the more minor, potentially more damaging threats. Seven out of 10 costliest earthquakes have been less than a magnitude 7.

Jeff thanked her for her presentation. He admitted he was guilty of planning for the big quake. This presentation was a reminder to him to draw awareness and prepare for some of the smaller earthquakes.

Questions:

Would you mind if these slides were shared on social media?

- That's fine with Dr. Minson; she wanted to confirm it was okay with the USGS internal review board. She noted she would follow up with him via email.

Attenuation is also a factor, how far away from the earthquake epicenter does the strong shaking continue?

- Earthquake shaking amplitude decays exponentially with distance. On average, the expected shaking goes up with magnitude and decays with distance. Ground motion is variable and a magnitude 6 could produce shaking expected from a magnitude 8. That variability can be split into two parts. One variability can vary from earthquake to earthquake as well as intra event variability. This depends on the dynamics of the rupture and specifics of the location that may allow there to be more or less shaking in specific locations of the same earthquake.

How did you start working on this type of research? Was there a particular event that motivated you?

- Dr. Minson had been working on an Earthquake Early Warning (EEW) project and looking into how much warning time is theoretically possible if the system were perfect and being tracked in real time. She then began looking into how accurate the ground motion shaking would be if they knew the location of magnitude perfectly but had to deal with ground motion variability. She discovered that even a perfect EEW system would mostly miss sending necessary alerts when a smaller magnitude earthquake produced more shaking than expected. What does that mean for total earthquake hazard overall? Does that mean most of the hazard is coming from little earthquakes with greater than expected shaking? This research led her to this project.

With respect to funding for studying these moderate magnitude earthquakes, are there any recommendations for funding opportunities? Thus far it appears almost all funding is going to larger magnitude risk areas?"

- In terms of USGS funding for the National Earthquake Hazards Reduction Program (NEHRP), she didn't believe there was any magnitude bias. When it comes to hazard, they take a ground motion approach, regardless of magnitude. She didn't think USGS's funding priorities would fund activities having to do with larger magnitude over small. Instead, they are more interested in stopping seismic hazard as a whole.

Can you state the range she is including in "smaller earthquakes"? (vs. big ones); "Big One" can be subjective (some near epicenter of a Northridge-level event may have felt like it was a big one).

- There are two points to this question. The whole point is if someone is near a Northridge-type earthquake; they will be shaking as every bit as strong as if it were the ShakeOut scenario on the



San Andres Fault. The big one is bigger in terms of area, not necessarily stronger shaking. More significant magnitude does not necessarily equate to stronger shaking.

State Presentations:

Alabama, Natasha Jackson

Alaska, James Benzschawel

Arizona, Mike Conway

Arkansas, Hilda Booth

Questions:

Could Hilda Booth elaborate further on her earthquake drill legislation? He asked anyone who has state mandated earthquake drills to say so in the chat.

- Her team worked with their board of education. Her director took it to her governor who signed a legislator to work on it. It took about six months. She believed it would be predominantly northeast Arkansas that will be doing the drills, but she hoped for statewide participation.

Jeff noted his state has two mandatory earthquake drills annually. They have trouble with enforcement because their state department of education doesn't police it well. He has had difficulty tracking it and hoped she would have better luck. He noted a few other states including, Tennessee, Oregon, Nevada, and Washington have these drills but not many.

Could Natasha Jackson elaborate on the distribution of the weather radios and if she's seen success with that promotional campaign/how it works.

- During National Preparedness Month, External Affairs (EA) Public Information Officer (PIO) campaign is hosted on different days with different questions about natural hazards, tornados, and hurricanes. It is periodically distributed throughout the month, not every day. The campaign increased followers and would send them. She noted that with COVID going on, they had a huge spike in their social media following. Natasha would like to think that the free weather radios that they were giving out helped with that. They had done this before the Pandemic and, it could be picked up locally.

James Benzschawel was asked to describe the go kits they are distributing in Alaska.

- He came on board toward the end of that project so he would need to go back and look into that. It was an outreach campaign at the different apartment units. Due to COVID, there were smaller events where people came by to pick up their kits.

Could Mike Conway elaborate on his Building Resilient Infrastructure and Communities (BRIC) proposal and how that process is going.

- They have a couple of different things going on in the state currently, they are going to use some NEHRP funds to initiate an Unreinforced Masonry (URM) pilot program in two communities; Yuma and Flagstaff. Both of which have been rocked by magnitude 6.0 or larger events in the past, both of which have large URM building stock. They are trying to build out a

clearing house which is where the BRIC funds will come in so they can record, document, and maintain an archive of earthquake data in the event of a moderate magnitude or large magnitude earthquake in Arizona. He didn't think there were any matching funds, if there were it would have been a maximum of 25% and it'd have been in kind. They went after a small batch of funding for \$75 thousand within the \$600 thousand batch of state funding.

State Presentations

British Columbia, Robert White

California, Yvette LaDuke

Colorado, Kyren Bogolub

Questions:

Can anyone in the NEPM community point to a program promoting earthquake insurance?

- Kyra Nourse responded that Cascadia Region Earthquake Workshop (CREW) is working on this and can share what they've learned.

Brian Blake shared a good [resource](#) from Missouri. He noted his team is working on similar messaging for the region, including working with MO and RVII to participate in an earthquake insurance summit later this year.

Jeff asked Yvette La Duke how she planned to expand earthquake outreach further.

- She partners with California Earthquake Authority and attains all of their brochures for different home types. They take that information with them to outreach events with plans to increase that by taking this information to larger events. They do this in the hopes of expanding statewide and educating communities and individuals on different policies and the importance of the resources through presentations.

Jeff asked if she could elaborate on how that funding works and where it comes from.

- Most of the funding is through hazard mitigation funding through FEMA. Each year the California Earthquake Authority (CEA) selects a number of zip codes, set amounts of money, and qualified applicants must be eligible within the approved zip codes and buildings. Currently, there is nothing to support mobile homes and condominiums with parking underneath. They were discussing different ideas to include additional types of structures.

Brian asked Jeff to mention the earthquake insurance summit in Missouri and the region.

- It's a NEHRP activity. California and Missouri are trying to make inroads. Southeast Missouri is the heart of the seismic zone in that state, and only 12% have earthquake insurance because it is so expensive. They offer innovative programs to make it accessible and affordable. The earthquake summit will be in September to discuss solutions with the Department of Insurance, FEMA and private insurances. Parametric insurances might be a potential solution.
- Kyra noted she has been surveying what everyone has been doing in the western region. There are options available for earthquake insurance that identify problems, including tracking of insurance outtake.

- Jeff noted they have reached out to the other Central United States Earthquake Consortium (CUSEC) partner states and he wasn't aware of any other states that do data calls. He noted they have established a working group of insurance commissioners and heads of state departments of insurance from all of the states in that seismic zone. He stressed the need for the partnership of the insurance agency and state government insurance officials to try to figure this out.

FEMA NEHRP Update

Mike Grimm, FEMA HQ

Mike was pleased to be here this year and appreciated the invitation and opportunity to speak with everyone. He noted resilience efforts were compounded by COVID-19. They have been working to align with actions with Federal Insurance and Mitigation Administration (FIMA) efforts.

Mike noted recent publication rollouts through partnering with state local tribal expertise/diverse perspectives. Since the last meeting, they have collaborated with both governmental and non-governmental partners to develop publications. The publications include the NEHRP Recommended Seismic Provisions, Building Codes Saves Study, and Recommended options for improved environment with reoccupancy. Mike noted he's looking forward to learning more from the BRIC team.

State assistance grants, similar to last year, Notice of Funding Opportunities (NOFOs) will continue to include performance measures. The overarching goal remains unchanged: enhanced seismic safety in the states.

Bill Blanton, FEMA HQ

Bill Blanton thanked Mike for the update and his support of the national program and all the people who manage it. He introduced himself as the Earthquake and Wind Programs Branch (EWPB) Chief of FEMA's Risk Management Directorate, and the Agency's representative for NEHRP.

Bill welcomed the opportunity to have a larger audience with more diverse skill sets due to the meeting being virtual and hoped to keep the momentum for the next NEPM in Nashville, Tennessee in March of 2022.

Bill thanked Jeff and the rest of the NEPM Planning Committee for organizing this year's meeting. He introduced Christina Aronson from HQ and John Luff from Region 3 as two new members of the team. Both are new to the earthquake program since the last NEPM in San Diego.

Bill ran through some of the significant accomplishments by the FEMA NEHRP program, including attendees representing the local, state, and federal government, private sector, Non-Government Organization (NGO)/Non-profit, and Earthquake Consortia, and state participation from areas across the country that are not just in High to Very High-risk areas. Bill noted they had great guest speakers this year including James Remillard, Director, Missouri State Emergency Management Agency; Dr. Sarah Minson, USGS, and Mike Grimm, Assistance Administrator of FEMA's Risk Management Directorate. New Publications and Technical Manuals that were released in the last year or so include:

- The NEHRP Recommended Seismic Provisions for New Buildings and Other Structures
- A report on Recommended Options for Improving the Built Environment for Post-Earthquake Reoccupancy and Functional Recover Time



- The Wasatch Front Unreinforced Masonry Risk Reduction Strategy

Additionally, significant strides in National, Regional and Individual State Assistance have been made including:

- Supporting ShakeOut during a global pandemic (October 15, 2020)
- Providing \$2 million to 23 states that are in a High or Very High risk of earthquakes. That is over \$500 thousand more than last year.
- Conducting individual technical training sessions for individual states and territories through the National Technical Assistance Program (NETAP). This was done virtually for the first time ever.
- Continue to support the National business community through the FEMA "QuakeSmart" program.
- Support for Model Building Code Adoption and Enforcement
 - Continue to monitor the International Code Council (ICC) model building code update process through the Seismic Code Support Committee (SCSC).
 - Recently participated in the 2024 ICC Code update at the virtual Group A Committee Action Hearings (CAH) April 11-May 5, 2021. They had seven successful code change proposals and four unsuccessful, but they still achieved their desired outcome on over 80% of the proposals testified on, either for or against, including their own proposals.

The last thing Bill mentioned was the FEMA NEHRP Rethink. The Branch is currently working on an initiative to reevaluate how they are meeting FEMA's requirements on NEHRP and whether any changes are needed in how they approach the program. This effort will run the calendar year and will result in a report card presented to FEMA's leadership on the work of the program along with a detailed list of recommended improvements. He asked for feedback on what needs to evolve in the program while following the statutory requirements that are written in the current legislation. He asked they use the chat box or send an email to his team with feedback.

Jon Foster, FEMA HQ

Jon Foster introduced himself as a FEMA Earthquake Program Manager from HQ, noting he assists in the management of the FEMA NEHRP State Assistance Grant Program.

He thanked the State Earthquake Program Managers, Regional Earthquake Consortia, and Partners for the remarkable efforts made to sustain the national program throughout the past year.

Jon noted this year was the first time they conducted a call with participating states and territories before and after the NOFO and he wanted to hear feedback in order to make improvements for next year.

He then walked through the timeline for the grants that will fund activities in FY 2022 (using FY 2021 dollars):

- The submission deadline is 5:00 pm Eastern today (Tuesday, June 15).

- The National Panel Review of Multi-State and National Earthquake Assistance grant applications will be next week.
- FEMA should be able to make awards for both the Individual State Earthquake Assistance grants and Multi-State and National Earthquake Assistance competitive grants by the middle of July.
- Period of Performance start date is August 1, 2021, just like previous years.

Questions:

Amy Lepper appreciated the before and after calling for the grant this year. It allowed applicants to be aware of changes (such as the logic model) before the application was released. It is a lot better than having the NOFO released and being blindsided by changes.

Yvette thought the calls this year were very helpful. She asked if they could implement a preapplication phase and submit and look at proposals to give back direct feedback.

- Jon noted the longer application phase should have been helpful. He encouraged collaboration with regional earthquake folks and would try to have those calls before the NOFOs went out.

Jeff asked who they should send feedback to and what the timeline on that was.

- Bill noted they could send it to any of the EWPB team members, as for timeline, it will depend on what will be changed. They want to have a constant state of improvement and want to be more deliberate and focused.

Michael Conway asked if they could elaborate on exactly what the NEHRP rethink is.

- Bill noted they were trying to share what the program is and how they can improve on it. They will be tagging in partners and researching what different opportunities there are for improvement. Taking a step back and looking at the current process of delivery and determining if there are other opportunities is another part of the initiative.

NIST/FEMA Functional Recovery Report

Mike Mahoney, FEMA HQ

Mike thanked everyone for the opportunity to share the new report. The NEHRP Reauthorization authorized the program and made changes to the responsibilities of the agencies. Congress also added a section to create a committee and assess improving the built environment and critical infrastructure to reflect performance goals stated in terms of post-earthquake re-occupancy and functional recovery time and recommend options to improve built infrastructure from earthquakes.

He shared the final report outline and how they leveled performance. Post-earthquake reoccupancy is described as the ability to safely reenter and occupy the building while repairs are being made. Building services don't necessarily have to be functional except those required for occupancy and needed for safety. Post-earthquake functional recovery is a step beyond reoccupancy and includes restoration of building components and services to support a significant measure of preearthquake functionality. Full recovery is the restoration to a building's pre-earthquake safety and functionality. He noted the two performance levels for lifelines were operability or the ability of an infrastructure system to provide

near-normal services to a customer, sufficient for supporting a significant measure of pre-earthquake functionality. As well as functionality, or the ability of an infrastructure system working normally to provide its regular and reliable pre-earthquake services. Full functionality is when the entire system is functioning at this level.

Mike noted the seven report recommendations:

1. Develop a Framework for Post-Earthquake Reoccupancy and Functional Recovery Objectives.
2. Design New Buildings to Meet Recovery-Based Objectives.
3. Retrofit Existing Buildings to Meet Recovery-Based Objectives.
4. Design, Upgrade, and Maintain Lifeline Infrastructure Systems to Meet Recovery-Based Objectives.
5. Develop and Implement Pre-Disaster Recovery Planning Focused on Recovery-Based Objectives.
6. Provide Education and Outreach to Enhance Awareness and Understanding of Earthquake Risk and Recovery-Based Objectives.
7. Facilitate Access to Financial Resources Needed to Achieve Recovery-Based Objectives.

The various recommended actions for congress included:

- **Support Technical Development.** Support the development of policies and methods for design and retrofit of buildings and lifeline infrastructure systems in Recommendations 1, 2, 3, & 4.
- **Incentivize Action.** Encourage state and local jurisdictions to adopt recovery-based codes and standards and engage in recovery-based enabling activities under Recommendation 5.
- **Encourage Federal Leadership by Example.** Encourage the Executive Branch to develop recovery-based seismic design and retrofit requirements for federally owned and leased buildings, similar to actions that have been taken in the past.
- **Mount an Education Campaign.** Develop and implement an education campaign as discussed under Recommendation 6.

Mike noted that when a federal agency report is submitted to congress it must first go through the Office of Management and Budget (OMB). The report was submitted to OMB in January and sent to congress shortly after. No response has been heard of from congress at this time nor have they received funding to continue this effort. The report was jointly published by FEMA and NIST.

Going forward, FEMA and NIST are continuing on with the work recommended in the report. There are two existing task orders with the Applied Technology council (ATC). The first being, support of Performance Based Seismic Design of Buildings (ATC-138), which is developing performance metrics from FEMA P-58 that could be used to determine reoccupancy and functional recovery performance levels in the framework recommendation. The other being, improving the Nation's Lifelines Infrastructure to Achieve Seismic Resilience (ATC-150), which is beginning to assess the lifelines infrastructure recommendation to determine how FEMA can begin to develop material to address the recommended actions.

Mike noted that currently, new construction and changes to existing buildings are regulated by the building codes. Building codes provide life safety, except better for critical facilities and high-risk buildings. Lifelines follow industry standards and there is very little coordination between the two. The ultimate end goal of functional recovery is community resilience. Resilience plans call for goals for building clusters. The role of building codes in enforcing resilience goals is unknown and not addressed in current plans. The goals for lifeline systems is to provide resilient service without explaining what it is or how to get there. Ultimately, the enforcement of these goals is at the community level and represent a major challenge on how to make those happen. The bridge between the two is seen as functional recovery. It uses the existing code process to regulate Federal Regulations (FR) for individual buildings, improves lifeline systems to provide functional recovery, and coordinates between them in the process.

Questions:

Matthew Wall asked about the economic impact, and the definition of what is referred to as distressed community because in other areas they are mentioned but don't have a firm tie into earthquake risk. However, there is an opportunity within the policy structure to protect from or against which would tie in with what Mike had mentioned.

- That has been brought up in the committee. They are not mentioned in the report though, because they are owned by other federal agencies and didn't want to be seen as tasking another federal agency. There is supplemental material in the report appendices. He hoped the BRIC program would address some of that down the road and might have resources available.
- Matthew agreed and noted that Community Development Block Grant (CDBG) can be used as part of the match under other federal grants because it loses its identity when it goes to the community.

Connecting the Dots: NEHRP-Plans-Projects-Resilience

Amanda Siok, FEMA Region 10

Amanda noted today's presentation was to help connect the dots between resilience, actual mitigation projects, and the plans that happen at the local level.

She noted Mike had just discussed performance levels and functional recovery. Current building codes build for life safety standards. Codes are meant to protect safety. Congress wanted FEMA and NIST to design for buildings to be functional following an earthquake. Building for resiliency has less damage, less recovery time and less money lost.

In order to achieve resilience, there needs to be a retrofit of existing infrastructure to protect life safety and build for performance for functionality after an earthquake while preventing human loss. Additionally, they need to design new, resilient infrastructure by using stronger codes and standards and look at performance-based designs.

How do they pay for these projects? NEHRP gives about \$100 thousand and allows for inventory development/planning, retrofit programs, and education. BRIC, local, and Hazard Mitigation Grant Program (HMGP) offer more money to use for vulnerability assessments, community engagement, and mitigation project development. The BRIC grant has a pool of \$1 billion which can be used for capability and capacity building as well as mitigation costs.

Amanda noted that climate change is a popular buzz word at the moment and can be linked to seismic projects with energy retrofits that lead to better benefit cost analyses (BCA). She noted the FEMA national risk index show's social vulnerabilities and encouraged everyone to look at the equity report.

Questions:

Can you describe the problems with the Oregon URM project further?

- Retrofits are challenging, settled on placarding process, upset building owners, majority of URM's owned by black community, National Association for the Advancement of Colored People (NAACP) got involved because they thought they wanted to reduce the property value. This led to the need to communicate and work with community members.

Mike Mahoney noted that in terms of resilience, he considers building clusters, because they tend to look at the cluster of one class of buildings help determine which are in need of retrofiting, while also looking at types of buildings and determining the necessity to retrofit. Not retrofiting all immediately can determine which need immediate recovery for a functional community. Volume 4 of FEMA P-58 assessed the carbon impact tool.

Mandating retrofits on historical buildings will lead to more loss of historical building inventories.

- Yes, this is a challenge, but not one they can't deal with. In Washington, they have developed Memorandums of Understanding (MOUs) with the department of architecture and historic preservation. They essentially said they can do any retrofits on the inside of the buildings, just keep the façade of the building.
- Sean McGowan noted there are historic preservation grants and they have been helpful in Utah.

Someone noted they would love to hear more on why retrofiting wasn't a viable option. Was this due to- legal, policy, financial, technical, or social barriers? What led to the placarding choice?

Bob Carey noted that states establish how old the building is to be considered historic and is something to be aware of.

There is integration with nature in BRIC that was one of the scoring criteria. How does that impact a project?

- Nature based projects are more on the flood mitigation side. They use natural solutions as opposed to man-made. It's not transferrable to earthquakes.

BRIC Program Details

Ryan Janda, FEMA HQ

Ryan Janda provided an overview of BRIC, and how it become a nationwide movement. He shared the guiding principles of the program and how they are in line with FEMA's Strategic Plan. Ryan noted it was the largest engagement process of FEMA and walked through the stakeholder engagement page on the website. He shared how funding works under BRIC. In FY20, they offered \$500 million and \$1 billion for FY21. They received 900 applications for the first year. Every state was eligible in the last year and will be for the next seven years. This year, eligible activities expanded to include project scoping.

There are two buckets under BRIC: Technical evaluation and Qualitative Review. This is when three reviewers under each subapplication are sent to panels. Each subapplication is reviewed by three panelists. They are graded and sectioned by highest composite score with lowest composite score.

Ryan shared the different scores of the technical review and the qualitative criteria. He went through capability and capacity building activities, including building codes, partnerships, project scoping and planning.

Questions:

Are plans and planning activities being reclassified under the Chemistry and Chemical Biology (C&CB) category? If so, can the entire state/tribal/territory set aside be utilized for plans? Or for C&CB, for that matter?

- For community and capacity building, they limited it to mitigation planning activities not greater than half what's set aside. They intend to continue that into the 2021 cycle of BRIC. Things are fluid and they have to wait and see how that pans out. This C&CB category is only for BRIC.

Will there be more available this year for planning per state for BRIC?

- They are looking at the \$600 thousand that was made to each state in the first offering of BRIC to see if there would be an opportunity to increase it. If they do, he expects half of the dollars would be available for mitigation planning. They are also looking at the tribal set aside to see if they can increase it.

Is there any plan to increase the amount of funding for project scoping?

- Ryan couldn't remember the limit for scoping last year. He didn't think they were but some communities know what they want to do but haven't done the fundamental work to develop the project. BRIC does allow phased projects similar to the hazard mitigation program. If they know what they want to do, they just don't have the data. He encouraged them to look into project phasing.

It appears a state agency application will be severely affected under the technical evaluation if the state doesn't have statewide enforceable building codes. In some states, only metro areas have building requirements.

- Yes, building codes are an important part of the BRIC program and they are trying to highly incentivize states to look at their building code. If BRIC has the ability to influence a state to adopt a higher code in that state, they want to incentivize some of the activities in that state with the BRIC grant dollars. He suspected if a state lacks a statewide code, they wouldn't compete nearly as well as a state that does.

If the city is applying and they do have a strong building code, is the state's lack of adopted code going to affect their score?

- Absolutely. They look at the application first at the state level, then the local level. It's 20 points if they have the statewide mandatory code and 15 points if the local level has a rating of 1-5.

When will the year of building codes change for BRIC?

- For the first cycle of BRIC, the '15 and '18 building codes were the point getters. They were the two most recent additions of the building code. For this iteration its '21, '18 and '15 building codes. Some states have had challenges in working through '21 building codes. There will be a difference in how they look at the building codes.

How was the \$1 billion number reached for BRIC this year? Do they know the percent of the money that went into the kiddy equaled the \$1 billion? The Disaster Recovery Reform Act of 2018 (DRRA) allows up to 6%.

- There are billions in BRIC piggy bank, but they don't want to throw them out all at once. They could end up with huge reductions in the next year. BRIC wants to make sure it's sustained for many years to come.

Was there any thought to going back to limited number of applications to be submitted by each state? This seems to unfairly affect rural states compared to more populated states.

- They have not contemplated limiting the number of applications submitted by any state. There are pros and cons to both. They knew the pot of funding was so limited, they were trying to help applicants by not limiting only to BRIC. As of now, they are not contemplating limiting.

Is the percentage of applications last year that are available somewhere to see?

- Not at the moment, but they will be making them more publicly available down the road.

How much money went into the fund based upon the pandemic and other declarations?

- Over \$3.7 billion at one point and it may have grown since then.

Day 2: Wednesday, June 16, 2021 (12-4 CDT)

Welcome, Recap of Day 1

Jeff Briggs, Missouri

Jeff spoke a lot about FEMA funding options including BRIC, earthquakes with ambition, and state presentations with good input and opportunities to share best practices.

He reviewed and ran through housekeeping items and urged participants to utilize the chat box.

Know Yo SHMO

Janell Woodward – Nevada

Chelsea Morganti – New Mexico

Janell Woodward and Chelsea Morganti described the importance of getting to know your state's State Hazard Mitigation Officer (SHMO) and developing relationships with partners from other disciplines. Discussion included understanding the SHMO's responsibilities, opportunities to spread messages and develop partnerships, grant opportunities, and creative earthquake projects.

Janell noted SHMOs manage the mitigation program. Some states may have a team of people or be only one person. They manage grants, planning, and technical assistance, education, and outreach. They encouraged everyone to find and reach out to their SHMOs.

Chelsea shared the structure of her team and their responsibilities. She noted that each mitigation plan expires after five years, with the purpose of soliciting and engaging public action. The Hazard Identification Risk Assessment (HIRA) collects data on hazards in the area and what the impacts of a storm are in the area. Understanding the data collected should be shared and utilized.

Chelsea continued, sharing the various reasons this group should care to work with their SHMOs. She explained that by discussing vulnerabilities and capabilities to share the understanding of the data, they would have resources to provide information to those in power. Mitigation planning team members have the ability to propose actions to mitigate risk and share ideas for implementation to the people with the power to make decisions. She noted there are great networking opportunities that come with working with SHMOs, plus the ability to share ideas/concerns, needs, and information where people making decisions have the data to move forward.

They shared the various grant opportunities, including BRIC and HMGP post disaster funding depending on presidential declaration. HMGP-Post Fire provides mitigation funding after the Fire Management Assistance Grant (FMAG) and Federal Management Assistance Grant leftover funding can be transferred to other places.

Questions:

Do SHMOs work directly with tribal authority for mitigation on tribal lands?

- The tribes can work through the SHMO or they can go directly to their FEMA Region. Some tribes are separate and have their own plans, but the states work to include them in the plans

and conversations for their states. This depends on the tribes needs and relationship with the state.

Sean McGowan noted the NEHRP grants won't fund a lot of retrofitting, but it will fund an inventory to hire people out to determine the most dangerous stools in the city. They can leverage a large grant later on.

Does the Community Development Block Grant (CDBG) apply to any of this?

- Janell wasn't super familiar but knew it could be used as matching funds for a different grant. This usually goes to rural communities. In Nevada, there is only one community that fits into the small and impoverished 10% that covers it.
- Chelsea wanted to look into that form of funding a bit more as she was also not very familiar. She thought the answer would depend on which ever state you are in and SHMO you're talking to.
- Jose Lebron noted CDBG funds will depend on what projects are approved as part of the implementation plan submitted by the state and approved to Department of Housing and Urban Development (HUD). The projects have to be eligible under both programs (HMA and CDBG).

Mitigation Planning

Jenny Burmester, FEMA HQ

Jenny Burmester shared information about the Hazard Mitigation Planning Program, the full scope of history, and where they are going with resilience and growth.

She shared a map focused on local level mitigation planning. She noted every state has a FEMA approved mitigation plan. Over 24,000 local governments with mitigation plans and 228 tribal governments out of 575 recognized tribes have FEMA approved plans. As states build out mitigation plans and work with local and tribal governments to help guide investments as resources, they lay the framework to bring actions together to create resilience in the long term.

Jenny shared resources for folks to utilize for mitigation including trainings and plan statuses for opportunities for engagement and policies/regulations pertaining to mitigation plans.

Amanda Siok, FEMA Region 10

Amanda noted the intent of today's presentation was meant to show how mitigation plans and the NEHRP program can help access BRIC/HMGP funding. The intent of plan is meant to identify what is vulnerable and help understand what to do for those vulnerabilities. She noted enhanced plan status gives a better rate for grants. Mitigation plans include an inclusive planning process (public outreach), risk assessment (data), and mitigation strategy (best way to mitigate).

Risk assessment looks at natural hazards and community assets which overlap to see the risk. They identify the community assets that would be affected by hazards and how one can mitigate potential impacts. They also are leveraged outside of NEHRP funding to look at building inventories, building codes and performance levels. She transitioned and shared various HMA eligible planning related activities including risk assessments, strengthening mitigation strategies, and plan integration.

She stressed the need to have a mitigation plan or use BRIC program to create a mitigation plan. She urged earthquake program managers to reach out to SHMOs, look at building inventories to be analyzed in mitigation plans, add retrofit and code improvements as mitigation strategies, and finally, utilize BRIC/HMGP funding to analyze mitigation strategies.

She offered examples of how they could utilize NEHRP funding and mitigation plans to get BRIC funding and encouraged those familiar with the planning process and funding opportunities to use NEHRP funding as seed money to feed into other funding projects.

State Presentations

Idaho, Susan Cleverley

Illinois, Scott Gauvin

Indiana, Allison Curry

Kentucky, Steve Brukwicki

Questions:

Susan was asked to elaborate on the dashboard she created for mitigation projects.

- Someone came out and surveyed the mitigation action inventory. Usually, they have to hire a special Geographic Information System (GIS) person every year to update it based on approved mitigation plans. Her team asked if they could add it to the dashboard. Now tribes can go in and update/add in new plans. It has been well received.
- Brian Blake noted as a result of a template developed for Idaho's mitigation action tracking, his team refined it with the Department of Homeland Security (DHS) so that other states could take it and use it. It does require ArcGIS. Almost all states have access to it. It is free and easy to use and will be demonstrated next year at Cascadia Rising.

NEPM Cecil Whaley Award

Brian Blake, CUSEC

Brian Blake presented the first annual NEPM Cecil H. Whaley, Jr. Award. The award will be given in honor of Tennessee's longstanding Earthquake Program Manager, Cecil Whaley, who passed away in 2020. It will be presented to State Earthquake Program Managers who meet certain criteria and have made significant contributions to the program.

Patrick Sheehan, Tennessee Emergency Management Agency's (TEMA) director, shared his thoughts on Cecil's memory.

Cecil's family thanked him and everyone else for this honor.

Jim Wilkinson shared his thoughts and memories about Cecil as well.

Cecil helped with the Emergency Management Assistance Compact (EMAC), was a leader in the emergency program management world and mitigation planning. Additionally, he helped start the post disaster Tennessee save coalition.



Memorial Award- David Jackson

Jeff Briggs shared that the award was presented to a SHMO in Texas who championed local mitigation strategies and was a former earthquake program manager. While earthquakes are not Texas's greatest hazard, he still worked it in to the hazard mitigation plans. This award was presented to Josh Davies and Jenny Dupree.

Josh Davies shared his memories with Dave.

NEPM Cecil Whaley Award

Jeff presented the award to Althea Rizzo. She is a long-time contributor in earthquake program management. Althea is always an innovator and leader and specializes in outreach. She is also a comic book author and uses her work as an outreach and educational tool.

Matthew shared kind words and his reasoning for her deserving of the award.

Pascal Schuback shared his kind words about Alethea as well. He also thanked Cecil's family for attending and being there to present the award.

Althea Rizzo thanked everyone for their kind words. She noted how important Cecil was to this group and an honor to be the first winner of this award. She shared a little bit about the work she has done and wanted to make sure she continues to be worthy of this program.

NEPM Teams Platform

Brian Blake, CUSEC

Brian gave a brief overview of the Microsoft Teams platform that is being launched as an information sharing and collaboration portal for the NEPM work group.

He noted they've been working on EQProgram.net as a repository for meeting archives and program context. In the last year, they have begun developing a Microsoft Teams platform for earthquake program managers to use as an information sharing and collaborative environment to allow for sharing, meetings, and chatting.

This is all under development at the moment. It will allow for storage of valuable information to share, borrow, and steal from. Users can access plans and products, source files, and customizable content for the states. They will have a place to share EMA past geo events, annual meeting archive to find minutes from individual years, videos, and presentations. They will integrate external sites such as ShakeOut resources, Earthquake Engineering Research Institute (EERI) Clearinghouse, FEMA NEHRP Pubs, USGS Earthquake feeds, and V-BEOC/COP integration. Brian was hoping to have it wrapped up by August and they intend to make accessible for everyone. Its completion will be made a priority.

Partner Presentations

Applied Technology Council (ATC), Chiara McKenney

Cascadia Region Earthquake Workgroup (CREW), Pascal Schuback

Central U.S. Earthquake Consortium (CUSEC), Jim Wilkinson



Earthquake Engineering Research Institute (EERI), Maggie Ortiz

Questions:

Jeff noted ATC offers great free webinars. Everyone will receive an email including a guide and form to sign up.

State Presentations

Mississippi, Jasmine Johnson

Missouri, Jeff Briggs

Montana, Mike Stickney

Oregon, Althea Rizzo

Questions:

Jeff noted someone had asked him about providing a structure for a virtual earthquake summit.

- He couldn't because he hadn't saved it, but he explained that it was a bunch of webinars throughout the month. It was a marketing, packaging trick lumped under a banner of earthquake summit to make it a bigger event. This increased participation because of how it was branded.

Colin Campbell asked if Mike Stickney could expand on the monitoring system, as it is a goal to expand Natural Resources Conservation Service (NRCS) current network. Could he reach out and pass along an Offshore Transmission Network Review (OTNR) contact with Mike?

- Matthew Wall noted he could link them up.



Day 3: Thursday, June 17, 2021 (12-4 CDT)

Welcome, Recap of Day 2

Jeff Briggs, Missouri

Jeff shared his thoughts on yesterday's meeting and shared some of the topics covered as well as the upcoming topics and presentations today.

Southeast Shakes: Looking Back at the 2011 Virginia and 2020 North Carolina Earthquakes

Kevin Kalbaugh, North Carolina

Debbie Messmer, Virginia

Damaging earthquakes from eastern states with moderate risks.

Debbie noted this year was the ten-year anniversary of the Virginia earthquake in Louisa County. It followed hurricane Irene and Tropical Storm Lee. It was a M5.9 earthquake in the middle of Virginia. It was the strongest recorded east of Rockies since 1944 and was the most wide felt in US History. She shared a map of where the earthquake was felt up and down the east coast. It was four miles below surface.

Damage was immediate in Louisa and surrounding areas but, damage was not impactful. FEMA was called in immediately to set up a community resource center. Two schools were severely damaged along with private and residential housing. The damage extent was a \$69 million request. \$52.5 million was spent from federal and state funds. Most of the money was spent on the damaged schools. They received \$8.5 million from the hazard mitigation grant which funded 16 projects that were successfully completed. These included some large elevation projects. Most HMGP funding was used for flood mitigation.

Kevin Kalbaugh shared background on North Carolina. It is made up of 100 counties with a population of 10.5 million people, making it the 9th most populated state in the country. It is made up of three emergency management branches in the state. Earthquakes are not the most common threat in the state. Before the Sparta earthquake, there had only been 22 earthquakes recorded in North Carolina. The last damaging earthquake was in 1981. The most damaging was in Wilkesboro, NC which took place in 1861.

East coast earthquakes have been occurring during hurricane season. Hurricane Isaias hit on August 3rd and 4th, and the earthquake hit on August 9th. It was a M5.1 with strong shaking, light damage but no fatalities or serious injuries. There were five foreshocks, several hundred aftershocks, and over 550 reports of damages to homes and commercial buildings. He noted the difficulties with planning for a no notice earthquake and how people can be impacted by the other hazards they are preparing for.

The first documented surface structure in the southeast US with damage was cracked foundation. It was not noticed right away, additionally there were water main breaks, service line irruptions, buckled roads, and the Department of Transportation (DOT) reported seven sites of damage.

As a response, they sent two area coordinators to the county, conducted damage assessments, Small Business Administration (SBA) and a state assistance declaration approved on August 28th. The Red Cross assisted with non-congregate housing (about 10).

Brian discussed the lessons learned in an unfamiliar situation, and how resources might be limited in because of other events in the area. He noted that most damage shows up later, and the damage assessment tool is working to be more comprehensive of all hazards. They plan to meet with their state geologist/seismologist and have them help continue to educate and do trainings.

He thanked Adam from Tennessee and Brian from CUSEC for their outreach and support.

Questions:

Jeff brought up funding challenges and themes that tie into Bill Blanton's discussion about the NEHRP Rethink. He encouraged all that have thought to reach out to regional FEMA person about funding concerns.

Matthew expanded on BCA issues. He noted that when they had started, there were many buildings with significant damage. They spoke with them in town of Culpeper, VA and the county of Louisa. The discussion ended up that they could do the retrofit with rough prices. Once they sat down with FEMA, the cost estimates were too high to make a positive BCA because of the probability of magnitude of this size in this seismic zone. They could do wind, but at the time they did not have enough wind zones to be able to get benefit-cost even combined with earthquake risk up to 1.0 or better.

As mentioned, there are lots of damages to homes that are not reported. Of the homes reported, the number impacted officially by FEMA prior to the FEMA disaster declaration was 504, after declaration there was another 700-800. There was coordinated funding from FEMA including a video outreach on how to earthquake and wind proof homes which had some success. The Federal Alliance for Safe Homes (FLASH) contracted to help with this. The residences insured was around 2% while the low-income residents were 28-29%, elderly were under 25%, and the total IA costs were \$5.5 million.

Brian added that schools were insured in Virginia which helped them begin rebuilding right away. Half of the buildings were considered condemned and were torn down which cost about \$42 million to rebuild.

State Presentations

Nevada, Janell Woodward
North Carolina, Kevin Kalbaugh
Puerto Rico, Sarimar Hiraldo
South Carolina, David Thachik
Tennessee, Adam Stewart

Break

Partner Presentations

Federal Alliance For Safe Homes (FLASH), Leslie Henderson
Southern California Earthquake Center (SCEC), Mark Benthien, Jason Ballmann
Western States Seismic Policy Council (WSSPC), Matthew Wall

Questions:

Jeff asked Mark Benthien about the Rocket books. Is that something anyone can request through SCEC?

- They weren't through SCEC. Books are free downloads through 1 It's led by a small non-profit created by a former schoolteacher and her husband who created a wide variety of safety

information booklets for young children. Together, she and Mark began creating earthquake materials. The site scec.org/article/640 has earthquake story books, activity books, activity sheets, early warning information, and videos. The rest of the site has materials for other hazards, including active shooter materials that were developed with the Los Angeles Police Department. You can purchase a printed version or download them.

Jeff said that he was excited to hear about the Secure your Space initiative. ShakeOut, for many, is the largest earthquake outreach event every year. However, COVID-19 was a real setback for that, causing a decline in numbers. Jeff mentioned the need to be extra aggressive in trying to build back the momentum that was lost due to COVID.

Mark mentioned that, as people go in and renew their participation each year, because the numbers were much lower last year, some went from 20,000 people to just 500 people at their district headquarters. Now, the past three years of Shake Out participation numbers are being listed in the place where they go to renew to show a history of participation.

Jeff added that, between the new Secure your Space and the refreshed website, they will need all the help that they can get to drive those numbers back up and keep the program growing. He also mentioned that, although Leslie Chapman-Henderson couldn't attend in person, Erin Vaughn with FLASH was able to join.

Mark and Jason Ballmann were asked about the nonstructural project for individuals that they're working on with the Earthquake Country Alliance Mini Awards Program.

- Mark replied that, for a number of years through the state support with California, there has been a program where people can apply for purchases that are provided to them for either non-structure and mitigation activities or education activities or materials. These can be used in their organization or communities to accomplish what they put in their project plan. They have been leaning in on non-structural mitigation support and buying and providing the resources. Then, other organizations like Community Emergency Response Teams (CERT) support the instillation of those materials, then follow up with a report and a presentation at one of the Earthquake Country Alliance quarterly public workshops. They also submit photos and videos of their work, which has been a great way to emphasize that message and get that work done. This coming year, they're expanding that for new types of packages and materials for additional groups to include healthcare, community groups and other organizations along with the schools and businesses. The awards are normally about \$500, which can generally support about 10 to 20 starter kits for homes.

Jeff mentioned that he was excited to hear about the updates that Eric Vaughn was making with version 3.0 of QuakeSmart, and how it's not available virtually. Jeff asked how interested people who want to bring one of those versions to their state should go about that.

- Eric Vaughn responded that QuakeSmart 3.0 is being launched by the end of next month. It can be accessed at readybusiness.gov or flash.org/readybusiness. Once the updated toolkit is available, it will be located on those sites. In the interim, contact Leslie Chapman-Henderson or Eric to get QuakeSmart set up. They will also be doing a couple webinars working with different associations to make industry specific QuakeSmart webinars.

Using and Contributing to FEMA's Protective Actions Research

Christi Collins, FEMA HQ

Moira Corcoran, FEMA HQ

Christi Collins and Moira Corcoran began their presentation on Using and Contributing to FEMA's Protective Actions Research. They mentioned the need for Individual and Community Preparedness Division (ICPD) subject matter experts to help clarify and add some more information to the protective actions guidance that they have. This presentation is a review of how Christi and Moira have turned an antiquated paper document into a new, robust website that attendees can contribute to.

Christi emphasized that awareness for an individual almost always equates into action of some type. Having people be aware of what they should do in a disaster makes them more inclined to help in a disaster. She clarified that the 47% on her slide reading "47% of households had taken three or more preparedness actions" should now be 68%. This information comes from the National Household Survey. She mentioned that it will be interesting to see how the pandemic may or may not have impacted that when the yearly results come out in September.

The focus of the session is protective actions, which are anything individuals do to protect themselves in the case of a risk. However, this doesn't necessarily mean this action is effective, accurate or the best thing to do. The site is dedicated to outlining protective actions and clarifying whether they are right or not, when the actions should be taken, and identifying where the risk lies. They used to have an antiquated, robust word document that is now a research style site that is easy to navigate. She urged everyone to check it out and provide feedback.

Moira pulled up the site and thought this was a great group with subject matter expertise to share this with. She wanted to highlight how they can be both contributors and users of the site. The page is located in FEMA's community pages, and it can be found by hovering over "learn more" and selecting "protective action". The page is a literature review collection that has compiled information to develop messaging. Currently, they have 12 hazards with specific information. She shared the earthquake hazard page and highlighted various resources and guidance that can be shared with communities and individual. She added that the hazard information sheets are available in the FEMA warehouse for both individual and group orders.

The page also features protective actions and more information about research with scope, limitations, impacts, effective timeframes, and messaging focuses. Each page also identifies opportunities for additional research and contribution. For each hazard, the site lists a what, when, where and impact. A list of protective actions can be sorted by phase, validity and if there is recommended research to support the messaging. By clicking the "Contact ICPD" button, a prepopulated email will appear and allow participants to share contributions that will go directly to the correct email address. The site wants to address what the public should do, but also what they should not do.

If interested in using the protective actions icons, there is a page for easy icon download. There is also a topics catalog research side bar that Moira encouraged participants to look at.

Questions:

Jeff mentioned that this tool was going to be incorporated into ShakeOut pages. He asked where to find this info, beyond the fact sheet?

- Here is the link for the Protective Actions Research Site:
<https://community.fema.gov/ProtectiveActions/s/v>

State Presentations

Utah, John Crofts

Vermont, Julia Boyles

Virgin Islands, Regina Brown

Washington, Maximilian Dixon

Wyoming, Seth Wittke

Oklahoma, Bonnie McKelvey

Questions:

Does Oklahoma get special consideration due to induced seismicity which is outside of the normal earthquake hazard?

- Bonnie replied yes. There have been some changes made and there are new regulations in place to limit some of the fracking in the most hard-hit areas. However, they are still experiencing earthquakes daily, though many are small. In the areas that they are occurring in, the people are feeling the shaking. They have concerns, and the state has been having a difficult time encouraging people to purchase earthquake insurance, even with the shaking.

Jeff mentioned that, during the presentations, there was a 3.8 earthquake in Indiana. Allison noted she didn't feel the earthquake in downtown Indianapolis.

Break**Responding to an Earthquake During a Pandemic - Magna M5.7, March 18, 2020**

Bob Carey, Utah

Bob Carey gave an overview of the Utah earthquake that occurred in March 2020, the response, and recovery to this point. He shared a historic seismic map from 1950-2015 in Utah. The larger events tend to not be on the Wasatch corridor. The Hansel Valley 6.6 earthquake fell on the fault in 1934. He showed a map of historical earthquakes that had rupturing events including the Wasatch Fault Zone and the various earthquakes over thousands of years. He shared a generalized map of northern Salt Lake Valley to show normal faults.

Bob shared a map of seismicity near Magna, Utah from the day of the earthquake to six months after. The M5.7 earthquake is showing a new, flatter fault zone. Immediate shocks after the mainshock are to be expected. Bob also shared a collection of all damages reported up to July 27, 2020.

Bob showed photos from the March 18th earthquake. He added that they had just gone into lockdown, so people were not going into work or school. He added that there could have been a lot of bad outcomes, but they were lucky to have people not out, and avoiding the failures.

Bob discussed the challenges after the March 18 Earthquake. Immediately after the event, the seismographic stations set up a webcast. A fair amount of misinformation had been shared and said that the earthquake was a precursor to an M8 or M9 quake. The webcast shared that there's around a 95% probability the earthquake was the main event. It was a well-received webcast and a worthwhile venture. The other misinformation that was spread was that all oil refineries were on fire, causing a run-on of gasoline for no reason.

In the middle of the Pandemic, there was a major hazardous material release in the epicenter of the earthquake, but the winds blew it away from the populated areas. Building safety evaluations became a challenge, but FEMA gave an additional 30 days due to the pandemic. A lot of the evaluations were taken care of by local building departments. For data collection, websites were set up for people to contribute their information because they didn't want to leave their homes during the Pandemic. However, there were lots of variables in this data collection, such as understanding eligible costs. Another was trying to put in a declaration if you had insurance, you couldn't apply, but there was a lot of damage. There were lots of costs that were not covered but were eligible. The scope of the earthquake has nothing to do with eligibility, just pure damage. This earthquake had \$60 million of PA/IA, but that's the public part, The private cost is a lot more than that.

Questions:

Jeff asked Bob what percentage of people had earthquake insurance and how did they deal with homeowner insurance issues after the earthquake.

- Bob responded that there's a conscious effort at the state level to have earthquake insurance, which caused some eligibility issues. Right now, the market is really getting out of hand, so the levels are still around five to eight percent that have insurance. There were a lot of settlement issues that were more cosmetic than structural. However, it's always a problem that's hard to resolve.

Bob was asked how the block building fared.

- They fared the same way as brick buildings do. Anything that's made out of masonry, at least in Utah, that was built prior to 1975 is considered unreinforced masonry. Whether it's brick, or block or cinder block, all of them tend to perform in a similar fashion. Those types of structure have similar problems.

Was there any liquefaction or damage caused by liquefaction?

- They did see liquefaction, however, that was really close to water sources. There was nothing significant. However, Utah is in a severe drought. The possibility of seeing it is lessened because of that. The primary thing is settlement issues.

Selection of 2021-22 NEPM chair-elect and planning committee, meeting wrap-up

Jeff Briggs, Missouri

Jon Foster thanked everyone, along with Jeff and Janell for their hard work and for such a great, collaborative event that was well adapted to a virtual setting. He said that he looked forward to seeing everyone in person soon.

Jeff noted there is another annual meeting at the end of March. They will need volunteers for the planning committee and to pick a new chair elect or vice chair to work with Janell. Althea Rizzo was nominated to work on the planning committee and agreed to serve. The next meeting is March 29-31, 2022, in Memphis, Tennessee.

Volunteers:

- John Crofts
- Bob Carey
- Hilda Booth
- Jon Foster
- Mark Benthien



- Jim Wilkinson
- Allison Curry
- Jeff Briggs

Jeff thanked Brian Blake for running this event virtually. He also recognized Pascal Schuback for helping with the presentations. He passed the gavel off to Janelle as the next official chair.

Janelle closed the meeting.