

2022 National Earthquake Program Managers Meeting  
Memphis, TN | March 29 – March 31, 2022  
Meeting Notes

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NEPM Day 1 – Tuesday, March 28<sup>th</sup>, 2022

**2022 NEPM Organizing Committee**

Mark Benthien, SCEC  
Brian Blake, CUSEC  
Hilda Booth, AR  
Jeff Briggs, MO  
Bob Carey, UT  
John Croft, UT

Jon Foster, FEMA  
Noriko Kibble, FEMA RIV  
Pascal Schuback, CREW  
Adam Stewart, TN  
Jim Wilkinson, CUSEC

**I. Welcome and Introduction – Janelle Woodward, Nevada**

Janell Woodward from Nevada welcomed everyone to the meeting and introduced herself as the Chair for the 2022 National Earthquake Program Managers Meeting. She is a Nevada State Hazard Mitigation Officer and Earthquake Program Manager. She stated that there will be a virtual presence from attendees and representers that were unable to make it to Memphis. She wanted to remind everyone that when speaking, please take the microphone. She explained protocol for Q&A. After every presentation there would be time for questions. For everyone on the Zoom call, participants were encouraged to ask questions through the chat. In the event of an emergency, everyone attending the conference in person must exit the conference room, then the building, and meet on Main Street and gather in the parking lot of the Arcade restaurant. It was encouraged for all participants to have an open mind and respect one another's viewpoints.

Janell introduced host Jim Wilkinson.

Jim Wilkinson (CUSEC) introduced himself to all attendees and welcomed everyone to NEPM. Jim gave a brief overview of the events for the next three days. He expressed his excitement for seeing everyone face-to-face after 2 years.

Jim introduced Matthew Heckard.

Matthew introduced himself as the Assistant Director of Preparedness from Tennessee. He stressed the importance of earthquake preparedness and keeping citizens safe during a natural disaster.

Matthew passed the microphone back to Janelle so she could introduce the first presenter of the day.

Janelle introduced Althea Rizzo. Althea could not attend NEPM in person and presented virtually.

**Messaging and Diversity, Equity and Inclusion (DEI)**

**First Presentation: Panel #1**  
**Althea Rizzo, Oregon**  
**Geologic Hazards Program Coordinator**

## Discussion

### 2-Weeks Ready Program

Althea introduced herself to the audience and began to introduce the 2-Weeks Ready Program which was developed back in 2014. The program aims to provide preparedness education to society for natural and manmade disasters. She explained that in a natural disaster situation, help may not arrive immediately. One of the goals for the 2-Weeks Ready Program is for individuals to be self-sufficient for at least two weeks as they wait for help to arrive. She thanked FEMA for the funding as that helped make this program possible. Being 2 Weeks Ready means having a plan and enough supplies for you and your household to survive on your own for two full weeks should a disaster occur.

Althea described goals of the program which included:

- Provide solutions for populations that have previously been invisible in the emergency preparedness space.
- Encourage individuals with no prior interaction with emergency management to actively champion resilience.
- Encourage intersectionality between social networks.
- Encourage non-English speakers to be program host.
  - The program is also happy to provide languages that are specific to your area.

The program is broken down into modules. Each module has an activity that goes with it. Currently, the program is training “meta-trainers.” The modules will be available to the states beginning July 2022. The full 2 –Weeks Ready launch will take place in January 2023 and at that time be made available to the public. A website will be available for all the resources needed. The website will provide downloadable PDF’s, teachable courses, and a registration system to capture completion of the program. States will be allowed to use their own logos on the course materials but will not be able to sell any training materials.

Althea concluded her presentation and asked for questions from the audience.

Someone in the audience asked about other strategies Althea’s department uses to connect with people.

Althea responded that her department has a number of people on the board that work with various populations. i.e., non-English speakers’ outreach, disability advocates.

### Second Presentation: Panel #1

**Derrec Becker, South Carolina**

**Chief of Public Information & External Affairs At South Carolina Emergency Management**

## Discussion

### Messaging: How Audiences are Changing

Janelle introduced Derrec Becker who is also speaking virtually from South Carolina. Derrec greeted the NEPM audience and began with talking about the small earthquake in Elgin, South Carolina. Derrec stated that one of the reasons he was invited to speak at NEPM is to discuss communication and how media consumption habits are changing with audiences. How

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do people consume media, particularly emergency information? He wanted to discuss how audiences are changing their reactions to negative news and how that may negatively impact the next response to an earthquake.

Some events that have transpired over the past 24 months and affect people's reaction to negative news are: natural disasters, political turmoil, loss of jobs, racial tensions, the continuing pandemic, changes to remote learning, travel restrictions, and limited social gatherings. People are more anxious, and more people report feeling depressed. People are experiencing increasing issues with mental health. Due to continuous negative messaging that people hear and see, the following was discovered:

**Audiences:**

- Are unable to realize large numbers.
  - Responses decline substantially when the group is 2+ more. As victims increase, so does the emotional response to the event.
- Dismiss overwhelming topics.
  - Due to stress and anxiety, people tend to tune out doomsday images.
- Disregard all negative messaging collectively.
  - People tend to tune out messages that may negatively affect them emotionally.

Derrec played a clip from the movie "Don't Look Up" to demonstrate the "keep bad news light" scenario. Feelings need to be involved to reach humans on a personal basis.

He explained ways to connect with people and get a better response when a disaster occurs. He explained how small messages can get people moving. Some suggestions Derrec made to engage people are:

- Tell stories of real people
- Make the story personal
- Focus on one message at a time rather than overwhelming people with information
- Focus on a key point of the message you want to get across

When it comes to safety, think about different ways you can discuss a natural disaster. People become desensitized to information that causes their neurotransmitters to constantly fire.

In closing, Derrec once again emphasized don't focus on "do this or die." Combat the negative with positive reinforcements such as:

- Telling people, the sooner "they do this particular thing," the better prepared they will be.
- If you prepare now, and the event doesn't happen, then you're well prepared for the next event.
- Telling people to take necessary steps early to avoid being overwhelmed in a disaster.

Think of ways you can empower your audience. Find some humor in the message that you want to get across. Keep the message simple so it is easier to translate.

Derrec provided his email address for additional resources or questions –

[dbecker@emd.sc.gov](mailto:dbecker@emd.sc.gov)

## **Public-Private Panel on Diversity, Equity, and Inclusion (DEI)**

### **First Presentation: Panel #2**

**Paul Huang, FEMA**

**Assistant Administrator of Federal Insurance for the National Flood Insurance Program (NFIP)**

Janelle gave a brief overview of Paul Huang's agency and background. She stated, the NFIP has more than five million policy holders across the nation. Mr. Huang also serves as the Executive Sponsor for FEMA's Asian American and Pacific Islander Employee Resource Group. Most recently, Mr. Huang served as the Acting Associate Administrator for Resilience and helped stand up the Climate Adaptation and Equity Enterprise Steering Committees for the Agency. Additionally, he helped bring improved program management, collaboration, and integration across the Resilience portfolio.

Mr. Huang previously served as the Director of the Risk Analysis Division within FEMA where he helped modernize the Nation's flood map inventory and stand-up the successful \$200 million-plus Risk Mapping, Assessment and Planning (Risk MAP) program which integrates the hazard mitigation planning program and the dam safety program with a goal of providing quality data that increases risk awareness that ultimately drives mitigation actions in communities resulting in long term resiliency.

Paul greeted the NEPM audience and began with a story about meeting Warren Buffet. Paul noted that Warren Buffet has publicly said that he will be giving away 99.9% of his wealth to charity. Paul brought up this point because he believes that part of FEMA's mission is to create a more equitable society. He asked how Earthquake Program Managers can do their part to make a more equitable society in the event of a natural disaster.

Paul said that disasters disproportionately affect vulnerable communities. Insurance availability, building codes, and other factors can affect communities in a natural disaster.

Paul said that FEMA's attempt to build a more equitable society began with a strategic plan. Paul continued with discussing the FEMA strategic plan.

### **2022 - 2026 Strategic Plan:**

#### **Goal 1: Instill Equity as a Foundation of Emergency Management.**

- Cultivate a FEMA that prioritizes and harnesses a diverse workforce.
  - Representation matters. FEMA wants to bring cultural representation to workforce. FEMA has developed partnerships that provide opportunities to create a more diverse workforce. FEMA has partnered with HBCU's (Historically Black Colleges and Universities).
- Implemented a workplace cultural improvement action plan.
- Partnering with Hispanic/Latino insurance associations as well as other minority insurance associations.
- FEMA wants to have an impact in other ways and not with just disaster preparedness.

An example Paul Huang gave to the benefits of cultural diversity and outreach is understanding

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how different cultures face different problems. His example was immigrants from East Africa and their use of charcoal. Using charcoal indoors not only raises the risk of CO<sub>2</sub> poisoning, but it also is a fire hazard. Listening to your community is important and impactful especially when talking about safety measures. Use the expertise of a diverse workforce for community outreach.

Continuing with Goal 1...

- Remove Barriers to FEMA programs through a people first approach  
Paul Huang shared another personal story about him and his brother trying to get scholarships out of high school. They did not get the scholarships as young teenagers due to lack of resources available to him and his brother. Paul Huang went on to compare how lack of resources can prevent a community from being awarded dollars for projects. In the past, communities that could afford grant writers and other resources got awarded the available federal dollars. Now, FEMA has the initiative to help these impoverished communities:
  - FEMA has grant programs available. BRIC (Building Resilient Infrastructure and Communities) programs are available to do large scale mitigation projects. One initiative of BRIC is to give money to low and impoverished communities.
  - FEMA will look into and assist communities with BRIC applications.
  - The first year of the BRIC program 10 communities were awarded to low-income communities. The second year 73 communities asked for application assistance and resources. 14 Tribes were awarded grants.
- Achieve equitable outcomes for those we serve.
  - Remove language barriers
  - Help those struggling with basic needs

Paul Huang mentioned Hurricane Katrina and the poverty that persisted from that natural disaster. He gave an example of man whose home had flooded. This man could not prove homeownership because the home was under a deceased relative. The home was passed over to family, but they did not switch the ownership on paper. This man was denied assistance because of his circumstance. What could have been done differently? How can we revise policies to help impoverished communities? Socially vulnerable communities are impacted by disaster.

- FEMA has now revised that homeownership policy. Residents can prove their residency through other means such as employment documents, reports cards, etc. People can also self-certify.

Paul concluded his session with a story about a child named Daniel, that grew up in poverty and was not afforded the luxuries of others. Hurricane Katrina hit, and Daniel and his family fell deeper into poverty. The cycle of poverty has persisted into his adult life. Natural disasters can create further problems for families. Paul also mentioned looking at revising policies on mobile homes and helping families with replacing the full cost of the mobile home.

Paul mentioned that we should always ask “What is the purpose of this grant?” Finding another angle other than emergency preparedness management can make all the difference.

Janell now introduces Albert Dennis.

Albert has more than 20 years working, learning, and developing diversity in the workplace. Albert began his career with FedEx in 2019. Prior to working at FedEx, Albert worked as a People's Operation Lead at Wal-Mart where he coached and developed future store leaders to ensure execution of store initiatives. He also served as Senior Manager at Wal-Mart where he was responsible for training over 150,000 associates to address specific training needs. Albert has an MBA in organizational leadership and a BA in Human Resources Management.

### **Public-Private Panel on Diversity, Equity, and Inclusion (DEI)**

#### **Second Presentation: Panel #2**

#### **Albert Dennis, Manager Human Resources FedEx Services.**

#### **Discussion**

Albert greeted the audience and expressed his excitement for sharing all that FedEx is doing to create a diverse work environment.

Albert shared that since FedEx has started, diversity has been woven into the fabric of the company. The company focuses on ways that they can connect people to possibilities. FedEx wants to create opportunities for their customers.

Albert expressed how FedEx diversifies their workforce through attracting a diverse work environment. FedEx looks to enrich the world and advance minority communities. Recently, FedEx announced a \$5 million dollar commitment to HBCU's. The company continues to expand their efforts. He shared a story about how in previous months, FedEx took the presidents of those HBCU's and took them and some of their students to the New York Stock Exchange to ring the opening bell.

FedEx has three strategies that they focus on to help them drive diversity and inclusion:

1. Their People.
  - Give opportunities to attract, develop, and maintain talent.
2. Education and Engagement.
  - FedEx has tools they deploy to team members to help them talk about diversity and inclusion.
3. FedEx not only looks internally, but they look at the community.
  - Community engagement is also a key component to help create diversity in the workforce. FedEx tries to make investments equitable. They also have a diversified supplier network.

For more information on FedEx Community outreach visit:

**<https://fedexcares.com>**

Diversity, Equity, & Inclusion at FedEx connects people and possibilities to deliver a better future for team members, customers, suppliers, and communities.

FedEx prides themselves on being an employer of choice that attracts top talent and develops talent.

- 25% of FedEx global management is female.
- 38% of employees in the U.S. are minorities.

- 25% of the Board of Directors is diverse.

FedEx has DEI delegates to help departments within the company. DEI education and goals is vital to help keep diversity within the company. FedEx also has team member volunteer opportunities for employees to get involved with their community.

Albert ended with how FedEx is looking to change lives and encourage people for who they are.

Janell thanked all the speakers who spoke in the first sessions.

## **National Earthquake and Hazards Reduction Program (NEHRP) State of the Union and Program Updates**

### **Presenter #1**

#### **Jay Harris, National Institute of Standards and Technology (NIST)**

Jay Harris greeted the NEPM audience and introduced himself. He is part of one of the four agencies of NEHRP. All four agencies do work together. Since 2018, the following strategic plan has been the Policy, Vision, and Mission for preparedness response. Strategic plans are mandatory by NEHRP and required to be updated periodically. We ask ourselves where we want to take this program in the next 7-8 years.

### **Policy, Vision, and Mission**

- **National Policy**

- Strengthen the security and resilience of the nation against earthquakes, to promote public safety, economic strength, and national security
- *Executive Order 13717*

The executive order was created by former President Barack Obama in 2016.

Jay explained that the programs sit down as a collective to discuss goals. The agency asked themselves, “What do we want to be known for?” Jay said he told the group to envision what it would mean for NEHRP to no longer be needed? How would we get to that point, and how many years would it take?

He added they would need NEHRP to get to the point where people can respond to an earthquake and deal with all the consequences of an earthquake.

Jay referred back to the slide and policy statement – he said each word in that policy statement was strategically chosen. He did not elaborate on the wording details, instead he asked that all questions regarding the wording be asked outside of the presentation. Jay finished with reading the rest of the Policy, Vision, and Mission.

- **Program Vision**

- A nation that is ready and capable to withstand, respond to, and recover from earthquakes and their consequences

- **Program Mission**

- Develop, advance, and disseminate knowledge, tools, and practices, and policies to enhance the nation's capabilities to withstand, respond to, and

recover from earthquakes and their consequences.

Jay began to talk about the strategic goals of his agency. He wants people to identify NEHRP and know what it is, and what the agency does. Since 1977, there have been questions regarding what to do about the hazard because the hazard is always going to be there. Instead of asking what we can do to prevent the hazard, what about increasing the resilience against the hazard? How can the agency promote positive awareness?

Jay explained that in his experience, people are not interested in the science of building codes – all people want to know is if they are safe.

Jay presented the timeline of essential actions for an earthquake and began to break it down.

The graph was split in two areas: Pre-Event Actions and Post-Event Actions.

Vertical Axis is Actions, Horizontal Axis is Time.

### The Pre-Event Actions

#### Hazards and Risk

- **Seismic Monitoring**  
Finding new faults.
- **Hazards**  
What are the additional hazards?
- **Consequences**

#### Solutions

- **Mitigation:**  
Do we need to retrofit or do we need new construction?
- **Preparedness**

### The Post-Event Actions

#### Response

- Emergency
- Assessment
- Communication

#### Recovery

- Repair
- Post Event

Jay explained the updated strategic goals as detailed:

### Updated Strategic Goals

- Goal 1 - Pre-Event hazard and consequence characterization
  - Advance the understanding of earthquake processes and their consequences.
- Goal 2 - Pre-Event - Risk assessment and mitigation
  - Enhance existing and develop new information tools and practices for protecting the nation from earthquake consequences.
- Goal 3 - Pre-Event Preparedness Post-Event Communication
  - Promote the dissemination of knowledge and implementation of tools practices and policies that enhance strategies to withstand, respond to, and recover from earthquakes.

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- Goal 4 - Post Event - Assessment Analysis  
Jays explained that this is where the feedback loop goes back to the beginning and improvements can be made.
  - Learn from the post-earthquake investigations to enhance the effectiveness of available information, tool, practices, and polices to improve earthquake resilience.

Other focus areas:

### **Program- Identified Focus Areas**

1. Advance earthquake science for subduction zone regions
2. Develop enhanced performance-based seismic design procedures and metrics for the function recovery of buildings and lifeline infrastructure
3. Advance the performance-based seismic design and assessment methods to implement multi system coordination
4. Further expand earthquake and early warning capabilities
5. Develop consistent performance guidance for lifeline infrastructure
6. Enhance guidance to ensure that the information and tools effectively support the needs of those who implement mitigation, preparedness, and recovery measures
7. Advance the science of earthquakes and sequence characterization
8. Enhance the risk reduction strategies for federal agencies

Every goal has its own feedback loop and cycle. Jay said there are a lot of mechanisms now in place to get the communication out. ShakeOut, Pager Alerts, and more advance early warning systems are to name a few. The feedback loop for all these mechanisms goes back to the beginning of the cycle. The strategic goals should always be improving. We need to look at previous strategic plans and improve upon them.

An example he gave was the Haiti Earthquake. FEMA gave a rapid grant to a university to send a team out to do ocean floor mapping of the fault near Haiti. This example would be applicable to Goal 4 which is learning and gathering post-earthquake. The information that comes out of that study can also provide feedback for Goal 1 where a possible new fault can be discovered.

Jay concluded with the agencies that they need to focus on goals for the next 7-8 years. Jay was happy to review the slide and answer any questions if needed. His contact information can be obtained from the conference coordinators and directly from FEMA.

### **Presenter #2**

**Jacqueline Meszaros – National Science Foundation (NSF)  
Science and Technology Advisor for the NSF.**

### **Discussion**

Jacqueline joined the conference via Zoom. She introduced herself and began with a very brief overview of the NSF. She said the NSF is the only agency whose initiative is to promote the progress of science. She said science can be used to drive important outcomes and science can be used to advance national public welfare. She asked a question: Where does the NSF fit with NEHRP? Her response is that the NSF makes opportunities available to anyone that has an earthquake concern. The NSF provides funding across fields of science and provide strategic opportunities for studies involving earthquakes. No matter what field of science, the NSF wants to assist in making a fundamental difference. Every proposal that comes through NSF is reviewed for two criteria:

- Intellectual Merit
- Broader Impacts

Earthquake resilience that has many broader impacts becomes a project that NSF is willing to fund. The NSF funds relevant research. Engineering and computer science have become the main studies funded at the NSF. The NSF has funded many NEHRP research projects.

Jacqueline described the types of research that are funded.

### **Types of NEHRP-relevant investments**

<b>Funded Activities</b>	<b>NEHRP Relevance</b>
<ul style="list-style-type: none"><li>• Unsolicited Proposals</li><li>• Special Solicitations</li></ul>	<ul style="list-style-type: none"><li>• All Directories</li><li>• NSF-NIST Research resilience grants</li></ul>
<ul style="list-style-type: none"><li>• Infrastructure</li></ul>	<ul style="list-style-type: none"><li>• Smart and Connected Communities Competitions</li><li>• Natural Hazards Engineering research infrastructure, shake tablets, Tsunami tanks, SimCenter, DesignSafe</li></ul>
<ul style="list-style-type: none"><li>• Extreme Event Response Networks</li></ul>	<ul style="list-style-type: none"><li>• StEER and GEER particularly. Also, SSEER</li></ul>

The larger pool of the NSF funding goes to unsolicited proposals. The special solicitations apply to projects NSF has active interest in or science goals that the NSF is interested in fulfilling. NSF will also fund scientific problems that need to be solved. Smart and Connected Communities ask other communities to reach out to scientists with problems they may face. Many of the Smart and Connected projects that have been funded directly apply to disaster relief. The infrastructure activities are ones that scientists across universities can share to do their research. These resources/devices/materials are available to researchers across the country to use for their studies. The last type of funding applies to when a disaster happens. The NSF will fund scientists to go out and gather vital data after a disaster. The NSF does not conduct the research, only funds the research.

In closing her presentation, Jacqueline wanted to remind the audience “That tool was once a science project.” 1912 Continental Drift Theory, 1964 Great Alaskan EQ and Tsunami, Risk Maps, Anomalies in 2010's all were once science projects, and we need to support science projects.

### **Ed Laatsch - Director of Safety Planning FEMA NEHRP Rethink**

#### **Discussion**

Ed Laatsch thanked all the other presenters and the NEPM audience for all their hard work. Ed began to introduce the FEMA NEHRP Rethink purpose. The FEMA team is always looking for ways to improve upon earthquake hazard reduction.

#### **Purpose of the NEHRP Rethink**

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- Evaluate what is working and what is not
- Showcase the effectiveness of the Program
- Increase the Program's impact by prioritizing current/future needs/gaps/opportunities
- Enable EWPB to better plan for the future while being good stewards of the taxpayers' dollars and achieving the mission and goals of NEHRP.

Ed emphasized that the goal is always to improve and make the program better. We identify gaps, needs, and opportunities to advance the program.

A slide was shown with a recap of milestones and a timeline of the milestones of the Rethink Program. Ed provided a brief overview. He said his department has accomplished a lot in the last 10 months. In May of 2021, they had their first Rethink review meeting/brainstorming – they took the information for that meeting and by September of 2021, sent out questionnaires. The questionnaire was filled out, and they got a lot of feedback from it. A few months ago, in December, a final score card was completed. The evaluation and analysis of that scorecard was broken up into two groups: development and implementation.

The development side focused on technical components, and the implementation side was education, outreach, training, external partnerships, and public awareness.

Development/Support of the implementation of seismic code resources for model building codes, and associated consensus-based design standards (new and existing building and lifeline infrastructure).

#### **Development**

- Development and implementation of publications/guidance/tools/training that facilitate implementation of earthquakes risk-reduction measures (new and existing buildings and lifeline infrastructure).
- Post-earthquake observations and development of recommendations for improving future performance.
- Assist the FEMA NIST functional recovery report.

#### **Implementation:**

- FEMA NEHRP State Assistance Grant programs (Individual State Assistance and Multi-State National Assistance)
- Agency Earthquake Education, Outreach, and Public Awareness
- Training (including National Earthquake Technical Program Assistance Program (NETAP))
- External Partner Coordination - Assist private-sector groups to reduce future earthquake losses
- Interagency/Intra-agency (including NEHRP)
- Cooperative Agreement for Demonstration Process

Ed put a Word Cloud on display with keywords that were discovered at the end of the

evaluation. The words that were most dominant in the cloud were support, implementation, and guidance.

The results from the scorecard helped Ed and his team develop new ideas. A number of conclusions were identified, and suggestions were offered. Many of the questions presented were related to funding. NEHRP funding continues to remain a challenge. People felt that the guidelines were not clear. Ed also understands that there are problems with the state assistance programs. In addition to some annual calls, we are looking to implement quarterly calls and newsletters education. The agency is also looking to expand resources on the FEMA website.

**Additional key points included:**

- The program will continue to submit PDOs in an attempt to receive additional funding.
- The NEHRP Reauthorization is also a possible source for additional funding.

**NEHRP State Assistance Program Guidance**

- As a means of addressing concerns identified via the questionnaire and interviews, in addition to two semi-annual calls, FEMA headquarters will now be hosting quarterly calls and/or sending quarterly newsletters to cover various topics for education and awareness purposes.
- Will continue to expand the grant/NOFO related information on FEMA.gov.
- Will develop and better promote additional/existing programmatic resources (ex. logic model checklist, quarterly reporting template, quarterly newsletters, etc.)

Ed says the score did reflect a good score for earthquake guidance documents.

**What are the next steps?**

The agency can't focus on everything, but we can work on issues that were lead items and candidates. These items will become the focus for the coming year.

**Presenter #4**

**Thomas Pratt – Research Geophysicist U.S. Geological Survey  
Central and Eastern Region Coordinator, Earthquake Hazards**

Thomas Pratt began with an overview of the USGS Earthquake Information System and what his main talking points will cover.

- National Hazard Seismic Model
- Earthquake Early Warning
- Circular 1242.

It began with Pre-Earthquake -> Earthquake -> post-Earthquake

**National Seismic Hazard Model (NSHM)**

- The USGS contributes to earthquake risk mitigation strategies by developing seismic

hazard maps and other products that describe the likelihood and potential effects of earthquakes nationwide, especially in the urban areas of highest risk.

- The USGS National Seismic Hazard Model and maps provide the basis for seismic provisions in the Nation's building codes, which affect one trillion dollars' worth of new construction annually in the United States.

### **2023 NSHM Update (50- State Update)**

- Central and Eastern U.S. workshop – May 18, 2022
- Seismological Society of America Meeting – April 19-23 -presentations and Special Interest Group
- NGA Subduction workshop – time TBD (April or May 2022?)
- Likely to be a series of workshops in the next year, but times and topics are not yet determined.

A series of workshops with user feedback will be held during the year.

### **Presenter #5**

**Tennessee- Adam Stewart**  
**TEMA Tennessee**

### **Discussion**

Adam Stewart began his talk by discussing the ShakeOut campaign.

### **ShakeOut**

382k participants (17%) increases but still much lower than pre-Covid.

Adam gave an update for their last ShakeOut campaign. Participation was low, and he hopes the campaign can gain its momentum back. He says the 17% rise in participants was good, but he would like to see that number higher.

### **On October 2021 ad campaign supported by CUSEC**

- YouTube, Facebook, Spotify, Instagram
- Video, Audio, and graphic ads
- 287k views/accounts reached
- 71k engagements

Adam was happy with the engagement the campaign saw with social media.

### **TNSAVE**

Participated in August 2021. Vigilant Guard Exercise, testing call- down procedures.

The TNSAVE group received training in call-down procedures, working through internal procedures such as activation and summoning.

Participated in regional safety evaluation program meeting, training, and exercise in St. Louis September/October 2021 – event hosted by Missouri and CUSEC at Jefferson Barracks.

### **Two training classes since last NEPM**

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- July 2021: Virtual with 25 participants
- February 2022 – Hybrid in-person & virtual w/ 33 participants

Working on a recertification training video for membership.

Adam mentioned for those who can't attend in-person, they can attend training online.

Volunteers and other participants continue to meet monthly and have in-person training and quarterly board meetings.

### **Fayette Count Inventory**

Adam said the state worked with Fayette County last through CUSEC about inventorying their critical facilities. He said this inventory was not just for earthquakes but for all critical infrastructure. The study could be applied to cyber, severe weather hazards, and other hazards that may exist. The counties see value in the critical infrastructure data to justify potential funding and spending that may be needed the future.

Adam showed a snapshot of the Fayette County inventory that was obtained. The P-154 building has exportable data that senior leadership can see. The data is in a readable format that most people can understand.

### **EQ Mitigation Kits**

The agency created a handful of these kits that were distributed across the west region. They will eventually get these kits to the eastern part of the Tennessee region. These kits are for non-structural items such as water heaters and television. The kit includes straps to help secure items in the event of an earthquake.

- Working with CUSEC and West TN Region, created EQ Mitigation Kits for individuals and distributed through county EMAs as part of Shakeout/National preparedness month.
- Kits included items to secure furniture, nonstructural elements against earthquake shaking.
- Amazon gift card drawings was held for recipients who provided proof of installation.

There was a proof of issue concept. If people could show they installed the straps, they were entered into a gift card drawing.

### **EQ Comic Books**

Adam believed these comic books were an excellent engagement project. He

- Reprinted 25,000 comic books
- CUSEC distributed to 6th graders at 90+ schools during Earthquake Awareness Month (February 2022)

The last item that Adam touched on was the EQ hazards and Infrastructure Dashboard.

CUSEC developed a GIS dashboard for earthquake hazards and infrastructure for mitigation and resilience planning.

The dashboard will show critical facilities and infrastructure. The dashboard will provide reports for county and state planners about potential risk/vulnerable infrastructure. Adam said this dashboard can be used for awareness outside of earthquakes. Funding might come from earthquake initiatives, and just like an earlier FEMA presentation, the technology can be applied to multiple disasters. All this technology can be shared and spread beyond earthquake planning.

### **ShakeAlert Earthquake Early Warning System. California, Oregon, Washington**

#### **Discussion**

Tom wanted to emphasize that ShakeAlert is not earthquake prediction. ShakeAlert will send out a notification for seismic waves that have occurred, alerting people that there's a possibility they'll experience shaking.

Vision: to reduce the impact of earthquakes and save lives and property in the United States by developing and operating a public earthquake early warning capability for high-risk regions.

- ShakeAlert is built on top of and as part of the existing ANSS capabilities used to monitor earthquakes across the Nation.
- ShakeAlert Earthquake Early Warning capabilities are identified as a responsibility of USGS in the 2018 reauthorization of NEHRP.

#### **Advanced National Seismic System**

- The Advanced National Seismic System (ANSS) is a cooperative effort to collect and analyze data on earthquakes; issue timely, reliable notifications of their occurrence and impacts; and provide data for earthquake research, hazard, and risk assessment as a foundation for building an.

Tom pointed out the density of the seismic stations on the West Coast. These were built in response to ShakeAlert. A key goal ANSS is to “densifying” the network of seismic monitors.

- ANSS includes a national ANSS Backbone network, the National Earthquake Information Center (NEIC), a collection of regional seismic networks that are operated by or in cooperation with partners, the N4 regional network (distributed across the Central and Eastern U.S.), and the National Strong Motion Project.

#### **ShakeAlert Status**

Currently providing alerts in CA, parts of WA, OR.

- Builds on the Advanced National Seismic System (ANSS).
- Network build-out (~1675 total instruments) is about 75% complete in CA, about 50% complete in WA and OR. Full completion estimated in 2025.
- Early planning for Anchorage, Reno, and Las Vegas.
- Algorithm development is ongoing.

Tom added that there has been a lot of develop with algorithm development.

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- Incorporation of GNSS (GPS) components under development.
  - Scientist would like to look at the actual motion of the Earthquake and not just the shaking.

#### **USGS Circular 1242**

- USGS Circular 1242 is a plan for coordinating NEHRP-supported post-earthquake investigations.
- The document has provided general guidance for investigations since 2003.
- Concepts were developed in a 2001 USGS-sponsored workshop led by ATC and EERI.
- It outlines procedures for how NEHRP agencies and their partners should interact when investigating earthquakes.
- It identifies responsibilities but does not specify what will be done.

Tom recapped that there needs to be an update USGS Circular 1242. He went on to say that since the plan was published, some conditions assumed in the plan have changed, technology has advanced significantly, and coordination among the NEHRP agencies has evolved through other initiatives.

#### **Issues that should be considered included:**

- Scope and format of the plan
- Participants in updating
- Role of Coordinating Agency (USGS)
- Role of the NEHRP Investigations Coordinator Triggering Coordinated Investigations Engaging Regional, State, and Local Agencies Engaging Non-Governmental Organizations Secondary and other earthquake effects Coordinating with Response & Recovery Ops Access to disaster area
- Archiving of data
- Funding for investigations
- International earthquake response

#### **Questions from the audience:**

Question 1: What future studies is USGS planning to do with induced seismicity?

Tom's response: A group of scientists are looking into induced seismic activity. Induced seismic activity has been reported in Texas, Oklahoma, Kansas, and Arkansas.

Question 2: Is there or should there be a multi-state approach to develop data on where removable or unreinforced structures are?

Jay's responded: A plan will be available for public comment once the heads of all the agencies approve for this to occur. A national risk assessment is a multi-agency project and will cost a lot of money. Congress will need to provide the funds for it.

#### **Presenter #5**

**Hilda Booth – Arkansas Earthquake Program Manager**  
**Arkansas Updates**

#### **Discussion**

Hilda Booth introduced herself to the audience. She started with talking about the portable Shake Kiosk. The Kiosk has allowed her to bring different parts of her Earthquake Program around Arkansas.

The Shake table kiosk is a great tool for learning. Hilda is still giving away the comic books, which have information about earthquakes. She gives t-shirts, and emergency to-go kits to students in hopes that these items strike up a conversation at home regarding earthquake preparedness.

For her NEHRP grant this year, Hilda is spending money on updating the earthquake page on the mobile app. She is adding videos in hopes of getting people to spend a little more time on content provided on the app.

She has not been allowed to go into schools at the same frequency as before Covid, so she is relying on other sources for outreach. She has been utilizing her local radio station to air ads. She frequently gets comments from people about hearing her preparedness and awareness ads on the radio.

Inspect Arkansas is a large part of Hilda's job. They have the second largest building inspection team. It's a volunteer organization. The organization does 4-5 classes per year. They have a great response. They do the ATC-20. They added CalOES trainings.

Quake Smart flash meeting forum will be held on July 14, 2022. She wants to get small business out to Quake Smart. She hopes that businesses will stick around for the Governor's Counsel Advisory Meeting which will take place the following day.

If anyone is interested in a Shake Table, they are available through VLF Designs.

#### **Presentation #6**

**John Croft – UTAH Floodplain Manager  
Utah Division of Emergency Management**

#### **Discussion**

John Croft wanted to talk about the K-12 URM inventory. Information on the URM inventory was released on February 10<sup>th</sup>, 2022. A press release was planned to report on the release.

Many people in the State of Utah live close to or are around The Washatch Fault, which makes the URM report very important.

John touched on the Unreinforced Masonry Summit. There were 120+ participants. The summit was led by DEM and was supported by FEMA (R8, R10 & HQ) and ATC. John pointed to key points from the URM report.

#### **Utah K-12 Public Schools Unreinforced Masonry Inventory**

130 school campuses with 161 URM buildings or additions.

- 76,000 children, or 13% of total K-12 public school enrollment
- Value of buildings at risk: ~\$2 billion
- Recommendations for reducing risk
- Led by DEM
- Support from FEMA (R8 & HQ) and ATC

While funding is limited, John says there are ways to leverage the NEHRP grant for millions in earthquake mitigation.

### **NEHRP Eligible Activities**

1. Develop seismic mitigation plans
2. Develop inventories
3. Update building codes, zoning codes, and ordinances
4. Increase earthquake awareness and education
5. Emergency management exercises with mitigation component
6. Assistance to Multi-State Groups to do any of the above

### **URM Strategy: Overarching Goals**

1. Establish a statewide URM risk reduction program.
2. Protect schools: retrofit, repurpose, or demolish vulnerable schools.
3. Mitigate critical government facilities to implement recovery.
4. Tighten existing building code loopholes at the state level.
5. Empower local communities to enforce existing retrofit

### **URM Strategy**

- Protect schools
- Shelters & community hubs.
- Set aggressive dates to repurpose, retrofit, or demolish URM schools.
- Technical & funding support.

John acknowledges that the NEHRP Grant is not large. Some approaches to the big problems can be faced with the following:

- Build year-to-year
- Use smaller project (inventory) to highlight need, attention and funding may follow
- Ongoing need for coordination across States, Regions, and sectors

**Scott C. Gauvin**  
**Manager, Strategic Operations and Preparedness**  
**Illinois Emergency Management Agency**

### **Discussion**

Scott Gauvin has been around sectors for earthquake hazard for 20 years.

### **Illinois Updates - Steady State**

The earthquake program and plan reside in Illinois in the Illinois Inter-Agency Strategic Planning Cell (ISPC). The ISPC manages:

The ISPC plan brought together planners from their agency, National Guard Liaisons, liaisons front the State police and Department of Public Transportation, and Red Cross. Having all the agencies under one roof helps the agency do catastrophic planning.

### **The promotion of earthquakes awareness with our IEMA PIO**

- Promotion of the Shakeout
- Coordination with CUSEC and state partners
- Development of state capability for post disaster inspections
- Planning product develop
- And earthquake strategic and operational planning templates for local jurisdictions

One problem that Scott pointed out was the fact that the state of Illinois had six different earthquake plans from different agencies. One goal that Scott has is to look at all six different earthquake plans and determine where each plan is collectively. He would like to know where the issues in each plan are and where are the connecting points in each plan. He believes the process of evaluating and consolidating earthquake plans will take 18-24 months.

### **Moving Forward**

Recently established a new working group of state and federal stakeholders to:

- Review existing state and federal plans.
- Devise a coordinated timeline to develop a new comprehensive operations earthquake response plan.
- Incorporate lessons learned and concepts derived from other CUSEC States via the upcoming CUSEC Regional Resiliency Planning Workshop in May 2022.

The new working group with in-state Federal Partners will work together on a consolidated earthquake plan. There are 15 hazards in the state of Illinois. Scott plans to work on the earthquake plan to operationalize its procedures. Scott's goal is to create a singular earthquake plan on the federal, state, and local level.

### **Upcoming Events**

- CUSEC Regional Resiliency Planning workshop will be held May 10-11, 2022, in Springfield, Illinois. Scott used agency funds to host the workshop.

Key objective or for the CUSEC Regional Resiliency Planning workshop will be:

- Review current status of all state plans
- Establish coordination channels between states and disciplines for planning and operations
- Re-engage CUSEC working groups
- Facilitating effort on CUSEC Multi-State Coordination Annex Concepts

Scott also talked about creating a guidance document for local jurisdictions on how to do the top 10-15 "unfun" things in a crisis situation. It will include items such as fatality management.

### **Questions from the Audience:**

**Question 1:** The state and every jurisdiction also have a hazard mitigation plan where they identify vulnerabilities and that they're going to do to reduce those risk. How are you using that to inform your response planning process?

**Scott's Response:** He will not be using the mitigation plan. A lot of counties are still behind on getting up to speed [mitigation plans] This grant cycle Scott hopes that all 102 counties will have their hazard mitigation plans.

**Question 2:** Are you working with local communities? How many local communities are you working with vs. State?

**Scott's Response:** As of now, he is not working local communities. As of now, the agency is re-engaging the collaborative planning concept with state and federal partners to get the plans. Once the plan is done, they will go out and work with local jurisdictions delegate zone of response. Informing, training, and excising [local jurisdictions] is one part of the plan. Asking local jurisdictions what they can do in response to a disaster is also a tough question that they will need to ask. Knowing what local jurisdictions will need will take time to figure out.

**Steve "Bru" Brukwicki**  
**Kentucky Emergency Management**

### **Discussion**

Steve Brukwicki began with telling the audience that earthquakes are not a high priority for Kentucky because the state floods 13 months out of the year. The last earthquake the state experienced was 1811 or 1812. The state is trying to evaluate their 8 western URM schools and the hospitals for the rapid visual screening assessments.

He adds Kentucky has two shake tables. He offered to lend the shake tables to any program that is willing to meet him halfway in the state. The shake tables are too expensive to ship.

Steve talked about plans for the New Madrid Seismic Zone. It is Kentucky's most catastrophic plan, and it had never been implemented until the state got hit with a tornado. Kentucky does not have a tornado plan, so the state followed the New Madrid plan.

Steve talked about the Mayfield disaster in which the state lost 74 lives in the Candle Stick Factory with that collapsed rubble pile. It was the most catastrophic disaster in the history of Kentucky. The New Madrid plan was also used in that disaster. The state utilized the search and rescue piece. They followed the ESF-9 annex of how to run a search and rescue team.

Steve said there's a lot of things in the New Madrid that are not talked about - one being what is going to be done with all the debris that comes with a disaster. The disaster happened in December, and the state is still working with the USACE to remove debris. Steve said the second thing the plan doesn't talk about are the decisions the director FEMA FCL make on who is going to fund it. Who is going to cover the \$50 million debris removal contract with USACE?

The counties wanted to do it themselves, but they do not know FEMA reimbursement requirements. Steve believes the counties should use FEMA contractors, which he adds are expensive, but these contractors deal with debris all the time. The contractors understand the program and the policies and procedures through the FEMA requirements.

Steve goes on to add that local counties need to figure out how they are going to deal with sheltering affected individuals. That state had 52 individual county shelters up and running. Steve said there is no way he could manage and provide supplies and commodities to 52 county shelters. His agency started going to a regional shelter. They took over 5 state resort parks and 52 hotels for their sheltering mission. The New Madrid plan says that the sheltering mission is going to be the counties responsibility. He tells the audience that when looking at disaster plans, everyone must think about how they plan to manage these types of situations.

He adds that the state still has people in two state resort parks and 12 hotels. He said there were still 300 in a sheltering mode. He also said the plan will not tell you how to address homeless people in hotels. One problem with homeless people is that they do not a permanent address. How do you tell them [homeless] they need to leave the hotel?

The last issue Steve addressed was the ongoing housing mission. The state is running a sheltering mission using travel trailers, while FEMA is also running a housing mission using travel trailers. Issues happen when the state and FEMA put two RV trailers side-by-side at the same RV park. The FEMA housing trailer program says you can stay in the travel trailer for 18 months. FEMA will provide a 100-gallon propane tank that is refilled under a FEMA contract. It will also come with a bed down kit, where they have cooking kits, eating supplies, and linens for that trailer. Meanwhile, the Kentucky sheltering trailer mission provides a 40-gallon propane tank refill, and residents are responsible for their own utilities. People are also responsible for their own rental. The trailer does not come with cooking, eating, and linen kits. The plans do not address these situations.

The state continues to struggle with these situations. Steve closes with saying to the audience that states need to review their mitigation plans and look beyond those initial plans to have an effective disaster response.

**Jeff Briggs**  
**Earthquake Program Manager**  
**Missouri State Emergency Management Agency**

### **Discussion**

Jeff Briggs begins with his role in Missouri as an Earthquake Program Manager. There is a seismic safety commission that Jeff manages. There is a large safety commission group called the Save Coalition with more than 1000 volunteers that he and SEMA agency manages. Jeff works on planning, but he is not a planner. Jeff works with the hazard mitigation office to help with funding.

Jeff bought a quote " During a disaster is the worst time to be passing out business cards."

Jeff has put a lot of focus on building up partnerships.

### **SAVE Coalition Deployment Exercise** **Simulated Memphis TN**

- 100 volunteers - Next to California, the SAVE coalition is the largest group of volunteers for disaster preparedness. He mentioned a large exercise that was done in October which focused on deployment strategies and communication strategies. Developing relationships and improving relationships with The National Guard was also a central focus. He mentioned that developing a relationship with the National Guard is very important because of the resources and the number of trained individuals the Guard has.
- The exercise was held in St. Louis, but the exercise was built around a hypothetical earthquake that happens in Memphis, TN. For the exercise, about 100 people showed up, some of which were SAVE volunteers and National Guard Staff. Many of the National Guard Staff were trained in advanced in knowing the basics about building assessment. The entire day was spent on an old civil war barrack. This barrack was a great place to simulate the exercise because it comes fully loaded with ancient crumbling's and unreinforced masonry. These buildings served as a great way to get

ideas about inspections. A lot was learned on how to deploy, how to train, and how to use resources when working with the National Guard. Jeff and his agency also invited the Civil Air Patrol and the drones they use. The drones were used as learning tools for understanding how to deploy drones, how drones work, and what can be seen and not seen using drones.

- 400 structures were used in the exercise. A GIS technique, that was developed by CUSEC, is a tool where input from buildings will generate a red, yellow, or green tag. The data can be generated from a phone.
  - Red - Unsafe
  - Yellow - Restricted Use
  - Green - Inspected

The information is not only generated on the phone, but it also populates in the operation center. Jeff says that this a great tool because it allows federal, state, and local officials to see conditions at the damaged site. The app is heavily used in deployments.

### **Annual Earthquake Summit**

- Hundreds of local officials attend each year
- National and Regional Speakers
- Planning committee, sponsoring organizations
- Networking, comparing resources

Jeff said that Missouri recently had their 4th Earthquake Summit. There was about 300 people in attendance. Many attendees have used the summit as an opportunity for networking. Networking is very important when preparing for disasters.

Jeff adds that the summit is also very beneficial to local authorities because in the case of a natural disaster, local authorities have an idea on who to call for help and what help is available to them. The intention is to hold the summit every year.

### **Earthquake Insurance Symposium**

- **Dire situation in MO - only 12% of homeowners have earthquake insurance**
  - The uptake rates are too low, and the cost is too high. Rates for earthquake insurance have gone up over 700% in the past 20 years. Other homeowners assume that earthquakes are covered in their standard homeowner's policy.
- **Bringing together FEMA, SEMA, Department of Insurance, private sector**
  - In May, an annual series of earthquake insurance summits to tackle the earthquake insurance problem.
  - Looking for innovative solutions - no current mechanism will solve this.

**FEMA NEHRP Update**  
**Jon Foster, CFM**  
**FEMA/NEHRP Program Specialist**

**Discussion**

Jon Foster started by thanking everyone that was able to attend in-person and virtually. He touched on timelines for grant activities that will begin in 2023 using FY2022 dollars.

**NOFO Timeline**

- NOFOs were submitted for internal review on March 2nd.
- Goal is to publish NOFOs in early May. Please note the exact date of the publication of the NOFO could change the dates below if it's not in early May.
- In April, they plan on distributing messages via Gov Delivery about the upcoming release of our NOFO before they are posted to grants.gov and listed in the Federal Register.
- Similar to last year, they would like to hold a call with participating states/territories before the release of the NOFO and a Q&A call after the release of the NOFO. Look for a "Save the date" meeting request coming soon.
- Submission deadline for applications will be in early June.
- The National Panel Review of Multi-State and National Earthquake Assistance grant applications will be in mid-June.
- They should be able to make awards for both the Individual State Earthquake Assistance grants and Multi-State and National Earthquake Assistance competitive grants by July.
- Projected Period of Performance start date is August 1, 2022, just like previous years.
- Post-award meeting with Non-Profits and IOHE will be in August/September.

**Highlights of NOFO**

Jon mentioned as previously stated during one of the national calls, the Period of Performance (POP) will be 18 months.

- By increasing the POP, everyone's workload will have a period where it's doubled because of the additional quarterly performance progress reports.
- There will also be some overlap with managing multiple grants at the same time.
- Logic Models were introduced in the FY21 NOFO, and they will continue to be a requirement for states to complete during the FY22 cycle.
- The audience will hear more about this on Thursday during the training session on Performance Measures and Logic Models.

Lastly, just like this year, participating states/territories who want to travel to NEPM next year will want to include this in their work plan. Jon mentioned this last year, but he wants to do a better job of mentioning it this year.

**Puerto Rico**  
**Jose A. Lebron**  
**Region Earthquake Program Manager**  
**FEMA, Region 2.**

**Discussion**

Jose Lebron wanted to provide an update about the 2020 earthquake in Puerto Rico. The earthquake struck at 4:24am local time and was a 6.4 magnitude earthquake.

The earthquake was during the early morning hours and Puerto Rico avoided what may have

been many casualties in school.

### **Public Assistance: C-G Projects**

Projects processed through HM queue during the operational period: 8

- Projects with HMPs: 5 (57%)
- A&Es: 1
- No mitigation: 2
- Projects pending to be processed: 17
- Seismic retrofits for this week: 1
  - (School Elvira Vicente, Yauco)
- HMP Costs for this week: \$1.12M
  - (265 % of the Best Available Cost)

At FEMA, The Puerto Rico Joint Recovery Office has been working different Seismic Retrofit projects under the in Public Assistance, or PA, Mitigation for the permanent category which are C-G.

At that time, when the report was provided to him, there were eight projects in the queue. Two of them didn't have mitigation and they have 17 projects [pending] to be processed. One of the projects in the queue was a seismic retrofit for a school in Yauco. Yauco is also on the south part of the island. There has been a lot of effort on FEMA's behalf to promote under The System Mitigation Seismic Retrofit.

### **C-G Projects processed by HM (Sent to Insurance)**

Two pie charts had figures with the left pie chart containing information with DR-4473PR Processed Projects.

**The total processed projects were 536. Of the 536, 133 were process with HMPs and 403 were processed without HMPs.**

The pie chart to the right had information for DR-4473PR Best Available Cost vs. 406HMP Cost.

- PA cost = \$110,777,690.92
- 406 HMP Cost = \$267,098,662.09

For those projects, for 403 or 71%, 403 has been processed with a Hazard Mitigation Proposal under Public Assistance. On the right side is the best available cost that has been processed including mitigation is \$267 million, which is 71% of the project, meaning that they can identify a lot of mitigation opportunities.

### **C-G Projects processed by HM: Municipality**

The pie chart had information for the DR-4473PR Municipality Projects Reviewed.

- Projects processed with HMPs = 59
- Projects processed without HMPs = 137

For municipalities, 196 projects were processed already. Of those, 137 or 70% have a mitigation

proposal for \$5.9 million. They have been pushing a lot of the opportunities for the municipalities. It has been an excellent opportunity to promote mitigation activities under the Public Assistance.

### **C-G Projects processed by HM: Education**

The pie chart had information for DR-4473PR Education Projects.

- Projects processed with HMPs = 19
- Projects processed without HMPs = 161

For the Department of Education, the number of projects processed are 180. Of that, 161 or 89% have already had a mitigation proposal for a total cost available of \$254 million. There's been a lot of money that they have pushed out there in mitigation opportunities. That also includes three PNPs that are private schools and a college.

### **Project Obligated**

Last set of pie charts had the C-G Projects Costs for Projects Obligated.

Pie chart to the left  
DR-4473PR Obligated Projects

- Projects obligated with HMPs = 356
- Projects obligated without HMPs = 56

For projects obligated already, there has been \$257 million obligated for mitigation. With PA, it was only \$77 million, and in addition to that, there was \$257 million. The earthquake in Puerto Rico was an excellent opportunity to use FEMA money to promote mitigation seismic retrofits at different facilities.

### **Hazard Mitigation Challenges**

- Meeting with PRDE for seismic retrofits.
- Meetings with other applicants to evaluate possible seismic retrofits.
- Preparation of mitigation alternatives for Historic Buildings.
- Meeting EHP regarding seismic retrofit.

Jose says additional challenges included:

- Schools that are located in a special Flood Hazard Area or any other facility that were declared substantially damaged.
  - Again - if they are located special Flood Hazard Area, they have also to comply with the NFIP requirements of the Flood Plane Management Regulation.

### **Hazard Mitigation Grant Program**

- Installation of Four Seismicity Monitoring Station, PRSN
  - Providing the Puerto Rico Seismic Network (PRSN) the capability of locating and disseminating earthquake information in less than 5 minutes after an earthquake.
- The scope of work consisted of the installation of four stations in areas where azimuthally coverage was lacking, installed 4 accelerometers co-located at the seismic

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stations, installed and monumented 3 Geodesic Positioning System Stations eastward and westward of the seismo-active zone, installed a data concentrator linked to the PRSN via station for satellite data transmission and incorporated the seismic and ground motion instruments into PRSN real-time monitoring system.

- Project Cost
- Federal Share: \$237,677
- Local Share: \$79,268
- Total Cost: \$316,945

Lastly, Jose mentioned that right now in Puerto Rico, The Joint Recovery Office is working on a project with 50 schools for \$135 million.

#### **Seismic Retrofit of 96 Seismic Schools, PRDE**

- Project Cost
- Federal Share: \$10,852,829
- Local Share: \$3,617,610
- Total Cost: \$14,470,439

#### **Sean McGowan Program Manager FEMA Region VIII**

#### **Discussion**

Sean McGowan presented virtually from Golden, CO. Sean introduced himself to the NEPM audience.

Sean was asked to discuss leveraging NEHRP grants for up to millions of dollars in earthquake mitigation and buildings. He was trying to provide a case study of how John Croft got done what he got done. He was presenting today as a collaborative effort with John.

Sean reiterated that unreinforced mason is a big deal in Utah.

Utah has approximately 147,000 of URM buildings across the 12 counties.

The Wasatch fault is where most of the Utah population is. He said that it's estimated 440,000 people in those buildings.

Sean added that Congress tells where funds for grant projects can be used. Examples listed below.

- Mitigation planning: Specifically, towards seismic inventory
- Developing inventories
- Update building codes, zoning codes, and ordinances
- Increase earthquake awareness and education
- Emergency management exercises with mitigation components
- Promotion of earthquake insurance
- Assistance to multi-state groups to do any of the above

#### **Outreach and education:**

Example: In 2019, John mentioned an unreinforced masonry summit. The summit was held at the State Capitol building. Earthquake awareness education was presented to local leaders, nonprofits, engineers, architects, academics, U.S. senators, and staffers. The local media was

also in attendance. He referred to the summit as a “concentrated version of education.”

The outreach effort was also commanded by Region 8, Region 10, as well help from other departments like ATC.

News outlets generated different stories with headlines highlighting the importance of addressing unreinforced masonry.

ATC published proceedings on next steps with what to keep in mind when having a “design earthquake” Sean said the goal of the outreach is to get attention towards earthquakes in a state that people don't always think about as having the highest earthquake risk.

In March 2020, Magna got hit with an earthquake. It was a presidentially declared disaster. It had a magnitude of about 5.7. This earthquake highlighted the risk of unreinforced masonry. Sean added that the estimated damage was around \$100 million. The damage was mostly in densely populated areas of Utah and recovery is still ongoing. Over 100 schools were likely damaged as well. Many of the Utah schools damaged were considered earthquake shelters. Sean goes on to say that mitigation funding is often a challenge for structural damage assignments.

### **Mitigation planning, Building Codes, and Multi-State Support**

The Risk Reduction Process Front of Unreinforced Masonry Risk Reduction Strategy was released in 2021. It was a pilot study from a much larger national mitigation investment strategy. They were looking at trying to find a pilot study to see how you can do a lot of really good mitigation work in one area. Goals of the study included looking at protecting schools, and looking at protecting critical facilities such as firehouses, police stations, and hospitals.

Sean also detailed more of John's efforts which included listening to the engineering community. Engineers said more can be done by tightening loopholes in the building codes

Sean did acknowledge that funding is always an issue when implementing projects of this size, but FEMA can help you work out your mitigation plan. They can help guide you towards different funding sources, help you understand what we might be out there, and how they can help coach you along.

The next step is inventory, education, and pulling multi-state support. John mentioned before, there are 161 schools on this list. The nice thing about the inventory was it was done by local structural engineers, and it leveraged some new data as well as things that Bob and his team funded 15 years ago. This study had been chipped away at for years. Getting the study took more effort, but the study was done.

Another topic that Sean wanted to revisit was the media attention and response. The agency did not want traditional education in the form of media buys, bumper stickers, billboards, etc. Instead of traditional media methods, Sean said the agency was interested in doing something more meaningful. Once the plan was thought out, the agency would write the press releases and help with community outreach. Sean said John credits his Public Information Officer, Wade Matthews, in making sure the media knows exactly what they are talking about when the data from the study is released.

Sean says FEMA knows the words unreinforced masonry. We can all point to Utah. He knows the NEHRP grant is not large. He knows this is the grant available for earthquake mitigation, but

as John has done in the past, you can use the grant to “chip away” at progress plans year by year. It also takes groups, and even invisible partners, to make earthquake mitigation plans happen.

**FEMA Region 9**  
**Anne Rosinski, C.E.G**  
**Earthquake Program Manager**

**Discussion**

- National Earthquake Hazards Reduction Program (NEHRP)
  - FEMA Region 9 Mitigation Division NEHRP grant task requirements in addition to NEHRP NOFO and Terms and Conditions
  - There are now two CFR 200
    - Additional update: There is a new director at Guidance. There is still not a lot of information available for this program.
- \*NEW\* Region 9 Planning and Implementation Branch (PIB)
  - Region 9 mitigation division is implementing additional reviews.
  - Feedback from other regions would be appreciated on how they submit document reviews. Please send all feedback to Bob Fenton.
- Seismic BCA update
  - Proposed pilot: pre-calculated benefits for soft story structures
- 2nd Inventory workshop - Date TBD (late 2022 or early 2023)
- Earthquake Insurance project - Phase II
- Earthquake Mitigation 101 and Planning guide

**Region-9 has a new Branch.**

- **The Planning and Implementation Branch:**  
Up until now, the Earthquake program has been part of their Risk Analysis branch. Now with the new branch, non-disaster grants (dam safety, earthquake, regional technical experts, Architects, and Engineers) will be part of this specific branch. This branch is where the BRIC program will also be.

Anne said she will have more visibility over these projects and be able to voice support and provide clarification on applications and different projects as they come in.

Anne said that the whole point of this is so they can advocate, communicate, and collaborate more effectively. Another item Anne wanted to highlight is the planning team is now part of the new branch.

- Western integration seismic group, Regions 8,9,10 are also part of the new branch.
- Anne says they have formed this “super wig.” The seismic wig and the planning branches are working together, and they are trying to coordinate on messaging and leveraging the planning process more effectively.

**NEHRP NOFO**

- There will now be an 18-month period of performance. It will give all the stakeholders a little more breathing room. There is a new Division Director for Region 9. Region 9 is adding additional reporting requirements for the NEHRP grant. There is not a lot of information just yet.
- There are two CFR 200.
  - Overall grant program directorate guidance is for all federal grants.

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- Program and agency guidance, which is the NEHRP program and the NEHRP NOFO in terms and conditions.
- Regions will be allowed to be more restrictive than those guidelines. The Region 9 mitigation division is implementing some additional reviews.

Anne says there is still not a lot of information on this entire process, but she wanted to let everyone know that this is currently in progress. She is trying to get clarification. This is just for Region 9. Anne would appreciate feedback from other regions on what the NEHRP and grant reporting requirements are. She encouraged the audience to provide feedback to her Regional Administrator Bob Sentin, as well as Katie Lopecky, who is the division director.

**These requirements are not part of the NOFO. These requirements are an addition and are also outside of ND grants, which is the official systems of records.**

Anne said she realizes these are big changes and hopefully clarification comes soon.

Anne's goal is to come up with an Earthquake Mitigation 101 planning guide. The planning guide is to help clarify how you can take a large project, break it down into component parts, and work on getting those pieces funded and later added to a larger package for something under BRIC. The NEHRP grant itself is small, but there is a lot of money still available from other resources.

Anne mentioned a talk with the California Seismic Safety Commission who is also interested in talking about BCA updates with regards to critical infrastructure projects.

**Other topic discussion: Earthquake insurance project.**

- Anne wants to make the project more interactive and action oriented. They want the audience to think about how they can afford to mitigate, what are their interests in mitigation, what is important, and what's so important that you really want to insure it?

**Last topic discussion: Second phase of the inventory workshop.**

- The inventory workshop was very broad.
- The second round is going to be more focused.
  - Still multi-hazard
  - Will include earthquake examples

Utah's URM inventory and their participation, along with Clark County Nevada building inventory has been great information for them to have. They also have the Hawaii State Hazard Mitigation officer who chatted with them about their ability to take larger projects and break them into smaller projects.

**FEMA Region 10  
Amanda Siok  
Earthquake Program Manager**

Amanda Siok introduced herself to the NEPM audience and began with a slide that had a cartoon from Steven Weissman, The Stranger. The cartoon was published in a Seattle public newspaper and featured an article where someone was venting about how talks need to stop around earthquakes preparedness.

Amanda said when creating earthquake awareness, we talk about how bad these scenarios are. She adds if not talking simultaneously about solutions, we start to get into fatalism. Amanda mentioned another article from The New York Times titled “OK Doomer” and the climate advocates who say it's not too late to act on climate change.

**Amanda’s Key Points:**

- Amanda says earthquakes have a lot in common with climate change. Using the word “doomsday” puts the focus on only the terrible news instead of focusing on action.
- We have time to plan, and it’s not too late to start planning for an earthquake. An earthquake can happen now, or it can happen 200 years from now.

**Red does not need to mean destruction.**

Amanda presented a map of seismic performance levels. Amanda points out that for response planning, red on the shake maps doesn't have to mean death and destruction. It can just mean higher intensity shaking. Amanda says fixing the problem involves two main components:

**Retrofit older buildings**

- Pre-2000s structures
- Aliments with energy efficiency upgrades. (To also address climate change)

**Require new buildings to meet higher standards**

- Consider performance objectives

**NIST Six-Step Process to planning for community resilience.**

**1. Form a collaborative planning Team**

- Identify leader
- Identify team members
- Identify key stakeholders

**2. Understand the situation**

**Social Dimensions**

- Characterize social function and dependencies
- Identify support by built environments
- Identify Key contacts

**Built Environment**

- Identify and characterize built environment
- Identify key contacts
- Identify existing community plans

**Link Social Functions and Built Environments**

- Define Clusters

**3. Determine Goals and Objectives**

- Establish long-term community goals
- Establish performance goals
- Define community hazards
- Summarize results

**Plan and Develop**

- Evaluate gaps

- Identify solutions
- Develop implementation strategy

### **Concept for this NIST plan**

Rather than designing to a specific code, have a meeting to cover the following points:

1. Talk to key stakeholders about “What they want this building to do?”
2. What should the building look like after an event?
3. Design around the first two questions.

### **CSZ Exercise**

#### **October RISC “Takeover”**

- NETAP Trainings
- USGS Products
- Clearinghouse processes
- Post-Quake Inspections

### **Next Steps:**

- Exercise and Mitigation Planning Linkages
  - Goals:
    1. Coordination across silos (Response, Preparedness, Mitigation)
    2. Messaging support for exercises to advocate mitigation solutions

Amanda talked about the Cascadia Subduction Zone exercise coming in few months. Many of the activities have been reduced to tabletop exercises.

For those engaged with FEMA regions risk feedings RISC (Regional Integration Steering Committee), they talk about planning and exercises you should know. RISC has quarterly meetings. The last one in the fall was specific to the Cascadia exercise. They focused on an earthquake NEHRP takeover. They talked about NETAP trainings that are available to help with post-earthquake evaluations.

Amanda’s agency brought in some experts to talk about real life post-earthquake evaluations and how complicated it is. Education on the products that USGS provides post-event was also discussed and how those can be used to inform both response as well as mitigation planning.

### **Next Steps:**

Exercises are coming up. They’re going try and do an alignment of HS guidance for exercises and leverage mitigation planning which is required to get FEMA funding.

### **How to use your mitigation plan to inform your exercises?**

- Scenarios based off if you do nothing from your mitigation plan – what will happen?

Amanda revisited Sean’s talk about Utah’s success with mitigation planning. She mentioned Oregon passed some legislation for critical infrastructure owners and fuel-tank owners to do a seismic risk assessment and plan. The state of Oregon is also creating a fund for retrofits.

Similar to Utah, Washington has done a building inventory for school URM’s and got \$100 million legislation passed to do school retrofits. Amanda emphasized that making the \$100 million dollars go further must involve a hazard mitigation plan.

She explains that a hazard mitigation plan has three main parts.

**1. Planning process. States can get FEMA funds to develop these plans.**

- Engineering Groups, EERI, Tenants Rights, Historic Preservation, School Districts, Universities, Developers, etc.

**2. Hazard Identification and Risk Assessment.**

- Building Inventories, RVS, Insurance coverage, Building Code Analysis, Hazus Runs, Demographic & Equity Analysis

**3. Mitigation Strategy**

- Land Use, Zoning, Building Codes, Partnerships, Retrofit Program; Prioritization Methodology

Amanda added that Hazus has a good methodology for how to collect URM data. They identify soft stories, concrete tilt up structures, etc.

She added FEMA can provide funds to help through a hazard mitigation plan. Once the mitigation plan is in place, FEMA publications have recommended provisions on how to do retrofits. Recently out of Region 9, a natural hazard retrofit program toolkit was created. NEHRP money can also be used to support mitigation planning and to support building inventories. NEHRP funds can also be used facilitate meetings and conversations about changing zoning and ordinances.

Amanda continues to explain the importance of mitigation planning. An example is the 2018 Alaska earthquake.

- FEMA developed a mitigation strategy for the event. They pulled up information from the mitigation plan. HUD came in CDBG (Community Development Block Grants) once FEMA was done. The CDBG community developed block grants and used the information from FEMA's mitigation plan. Directly from the Alaska page, people found home repair programs. Alaska is using HUD dollars to set up a program to help retrofit homes. Alaska is also trying to develop a program with their vocational school educating students on how to build for seismic. Once the students graduate, they're on the list of approved contractors for that CDBG money.

In addition, Amanda wants to talk about the BCA tools. She is not an expert, but she mentioned some of the BCA Cost analysis.

**Seismic Benefit Cost Analysis (BCA)**

- Exploring:
- Improvements to tool
- Quantifying benefits
- Seismic BCA Educational Materials
- Pursing Pre-Calculated Benefits
  - Soft-Story Structures
  - URM Schools

In closing, Amanda wanted to recap that she knows the NEHRP grant is a small amount of money, but there are more funds available in the BRIC program. She adds "Use your NEHRP money to get BRIC ready"

**NEHRP Technical Team**  
**Mike Tong, NEHRP, FEMA HQ**

**Discussion**

Mike Tong began with an overview of the FEMA NEHRP requirements. He wanted to discuss in more detail section three which is the Seismic Code Support & Technical Guidance Development.

**FEMA NEHRP Statutory Requirements**

National Earthquake Hazards Reduction Act of 1977 (PL 94-125) as amended and most recently authorized by the National Earthquake Hazards Reduction Act of 2018 (P.L. 115-307)

**PROGRAM RESPONSIBILITIES**

The Administrator of the Federal Emergency Management Agency:

(i) shall operate a program of grants and assistance to enable States to develop mitigation, preparedness, and response plans, ... (excluded,) prepare inventories and conduct seismic safety inspections of critical structures and lifeline infrastructure, update building, land use planning, and zoning codes and ordinances to enhance seismic safety, increase earthquake awareness and education, and provide assistance to multi-state groups for such purposes.

(ii) shall support the implementation of a comprehensive earthquake education, outreach, and public awareness program, including development of materials and their wide dissemination to all appropriate audiences and support public access to locality-specific information that may assist the public in preparing for, mitigating against, responding to and recovering from earthquakes and related disasters.

(iii) shall, in conjunction with the Director of the NIST, other Federal agencies, and private sector groups, use research results to support the preparation, maintenance, and wide dissemination of seismic resistant design guidance and related information on building codes, standards, and practices for new and existing buildings, structures, and lifeline infrastructure, aid in the development of performance-based design guidelines and methodologies, and support model codes that are cost effective and affordable in order to promote better practices within the design and construction industry and reduce losses from earthquakes;

(iv) shall enter into cooperative agreements or contracts with States and local jurisdictions and other Federal agencies to establish demonstration projects on earthquake hazard mitigation, to link earthquake research and mitigation efforts with emergency management programs, or to prepare educational materials for national distribution.

(v) shall support the Director of the NIST in the completion of programmatic goals.

FEMA set aside these requirements in four areas. One is the new building seismic design, second is the building code and standard support activities, three is existing building evaluation and retrofitting, and four is problem studies and the guidance development.

In the first area of building seismic design, Mike said they focused on developing the recommended seismic operations. This is the key resource document that he would develop on behalf of other nearby agencies to translate the research results for the building codes and standards. These research results are then forwarded to ASCE 7 then ASCE 7 gets adopted into IPC. That will then become the model building code. States and local communities can

adopt them. Currently, the agency formed the 2026 NEHRP Provisions Data Committee.

### **Projects for New Building Design**

#### **NEHRP Recommended Seismic Provisions for New Buildings – The 2026 NEHRP Recommended Seismic Provisions**

- Formed the 2026 NEHRP Provisions Update Committee (PUC) with 28 voting members and NEHRP agency representatives from FEMA, NIST and USGS.
- Updates the consensus process to include broad stakeholders and more diversified participants.
- Evaluates and adopts ASCE/SEI 7-22 as the baseline document for the 2026 NEHRP Provisions.
- Prioritizes and forms Issue Teams based on the report: Future Topics and Research Needs Identified by the 2020 NEHRP Provisions Update Committee and other inputs from code and standard organizations, earthquake engineering research community and design practitioners.

#### **Committee on Functional Recovery for New Buildings**

- A consensus committee to support the PUC and NEHRP agencies for developing design practice guidance and feasible code and standard requirements for increased functional recovery in new buildings.

Some resources related to new buildings.

### **Recent Technical Resources for New Building Design**

#### **FEMA P-2191: A Step Forward: Recommendations for Improving Seismic Code Development Process, Contents, and Education**

- Surveyed and interviewed with code users, stakeholders, and code development experts.
- Provides recommendations for improving seismic code development process, contents, and education.

#### **FEMA P-2192: 2020 NEHRP Provisions: Design Examples, Training Materials and Design Flow Charts**

- Technical and training resources for the 2020 NEHRP Provisions and ASCE 7-22.
- Helps design practitioners and building officials to understand major seismic code changes in ASCE 7-22.
- A series of free webinars are offered monthly to the public by BSSC in 2022.

### **New Seismic Design Maps for 2020 NEHRP Provisions, ASCE 7-22, 2024 IBC and IRC**

- Translates 2018 USGS seismic hazard maps into building code and standard design maps.
- Provides an interface to USGS web-based data service for design ground motion parameters and spectra.
- Web interface tool for the 2020 NEHRP Provisions is available at [www.wbdg.org/additional-resources/tools/bssc-2020-nehrrp](http://www.wbdg.org/additional-resources/tools/bssc-2020-nehrrp).

### **FEMA P-366 HAZUS Estimated Annualized Earthquake Losses for the United States**

- Updates to the AEL based on 2020 census data, nationwide building footprints, 2022 replacement costs, and nationwide parcel data attribution.
- Applies improved ground motions using the 2020 NEHRP Provisions/ASCE 7-22 including the 2018 USGS hazard maps and 2022 update for Hawaii.

### **Seismic Building Code-Related Activities**

These are projects in the last year of a 5-year contract – no changes/expansions to scope are available. Next 5-year overall contract in the works.

Mike said the second group is the building code support. Several people will be participating in the building codes hearing in Rochester, NY. All submitted code change proposals are then heard at the Committee Action Hearings. This hearing will be held March 27 to April 7 in Rochester. Committee recommends approval, disapproval or approval as modified.

#### **1. Seismic Code Support Committee (SCSC) Activities**

- In 1/22, the SCSC developed and submitted to the ICC a total of 51 Group B code change proposals.
- 14 for the IBC, 24 for the IEBC, 12 for the IRC and 2 for the ICC Performance Code.
- Major change includes new ICC policy to place all code provisions on existing residential buildings to the IRC (currently in both IRC and IEBC and uncoordinated).

### **Recommended committee actions open for public comment in July.**

Public Comment Hearings are held in September for ICC membership vote on resolution of public comments. Updated ICC codes are published as the 2024 edition.

Mike moved onto the third group. The third group is the existing buildings, evaluation and retrofit. Here he says there are a couple of projects. The first is to develop the code resources for the existing building standards.

### **Projects for Existing Building Evaluation & Retrofit**

These are projects in the last year of a 5-year contract – no changes/expansions to scope are available. Next 5-year overall contract in the works.

#### **1. Improving Seismic Retrofitting Guidance Project (ATC-140)**

- Investigates technical issues and develops guidance for the seismic evaluation and retrofit of existing buildings.
- These are then submitted as proposed revisions to the ASCE/SEI 41 consensus standard.
- This year focuses on finalizing and documenting previous three years of technical development and the recommended change proposals for updating ASCE/SEI 41-17.

#### **2. Update of Weak Story Design Guidelines Supplement (ATC-137)**

- Ongoing development of a supplement publication to existing Seismic Evaluation and Retrofit of Multi-Unit Wood Frame Buildings with Weak First Stories (FEMA P-807) to address the tuck under parking issue commonly found in southern California.

This update is primarily looking at dealing tuck under parking issues for the old 70's and 80's buildings with open ground floors for parking. These buildings typically have weak stores on the first floor.

### **3. Guide for Repair of Damaged Buildings to Achieve Future Resilience (ATC- 145)**

- Updates and improves FEMA 306, 307, & 308 guidance for post-earthquake assessment, repair and retrofit procedures of concrete buildings.
- This final year of the initial project compiles the studies and assessment framework for reinforced concrete structures into a draft report on assessing damage.

Mike's last section is the Projects Providing Other Technical Design Guidance Publications. These are projects in the last year of a 5-year contract – no changes/expansions to scope are available. Next 5-year overall contract in the works. Mike provides all the guidance documents FEMA will be looking at. He touched base on a few, not all documents.

### **1. Performance Based Seismic Design Guidelines/Functional Recovery (ATC-138) (Mahoney)**

- The FEMA Funded ATC-138 project is using Performance Based Seismic Design to Estimate Functional Recovery Time (ATC-138). This will be published as a new Volume 8 of the FEMA P-58 Performance Based Seismic Design series and will provide guidance on how to use FEMA P-58 to accurately estimate functional recovery time.

### **2. Building Occupancy Resumption Guidance (ATC-137)**

- Document and develop national level guidance based on local programs on using outside resources to perform building safety inspections to resume occupancy more quickly.
- The intent of this project is to develop supplemental guidance for Post-Disaster Building Safety Evaluation Guidance (FEMA P-2055).

### **3. Earthquake Resistant Design Concepts (ATC-137)**

- Update P-749 to include recent changes to the seismic provisions of the building codes.

### **4. Homebuilders' Guide to Earthquake Resistant Design and Construction (ATC-137)**

- Update of FEMA 232 has been kicked off. This design guide is for one- and two-family light frame structures and the intended audience is homebuilders and other non-engineers.

### **5. USGS Circular 1242 (ATC 137)**

- Updates for NEHRP post-earthquake event coordination document.
- USGS has invited FEMA EWPB and a FCO to be part of the update committee to provide input.

### **6. Improving the Nation's Lifelines to Achieve Resilience (ATC-150)**

- Begins development of coordinated seismic guidance for the nation's lifelines infrastructure.

## **7. Improving Building Performance in Very High Seismic Regions (ATC-154)**

- Conducts problem-focused study on high collapse risk for buildings in very high seismic regions and develops solutions and recommendations for use by building code and standard.

These are examples of some of the projects Mai and his team are working on. Mai tells the audience that if they are interested in following up on any of his mentioned projects, they can follow FEMA POC's.

### **NETAP**

**Gigi Rojahn**

**Applied Technology Council**

**Assistant Project Manager at the Applied Technology Council.**

### **Discussion**

Gigi Rojahn provided a quick overview and update on NETAP the National Earthquake Technical Assistance Program that delivers relevant trainings to States and territories. ATC has been managing NETAP app for over a decade. For those who don't know about ATC, ATC is non-profit in the San Francisco Bay area.

### **What is NETAP?**

#### **Delivery of free trainings on earthquake risk reduction topics**

- The options to PM managers, and they pick the topics.
- States/territories require specific sources
- Trainers and trained material by NETAP
- Participants receive PDH certificates.

Courses offered by NETAP

#### **NETAP offers 16 courses over 4 topics.**

##### **Reducing Earthquake Risk**

- Hospitals
- School
- Residences

##### **Spotting Seismic Hazards**

- Structural
- Non-Structural

##### **Understanding how buildings perform in EQs**

- How earthquakes affect buildings
- Designing new buildings

##### **Conduct post-EQ safety assessments**

- How to assess
- Planning, managing, and implementing programs

##### **2021 Training Season**

- Statistics
- 20 states/territories
- 36 trainings delivered; all web based

- Average of 80 participants/training

### **States/territories were grouped into Course Sharing Zones**

- Nearly all requests granted

Gigi went on to say 20 states participated with an average of 80 participants per training. Course sharing zones were used again for this year's web-based trainings. Nearly all participants reported they had an increase in understanding of a mitigation action and earthquake risk.

The new training plan was just finished, and the agency is about to send out the information. Also, Gigi was happy to announce that this year they're going back to in-person training. They will be offering options to select either in person or web based. Three states so far have requested in-person training, 19 states have participated and 33 trainings will be web based.

Gigi wanted to emphasize the accessibility policy for the trainings. Close captioning for web-based trainings and five-way compliant training supplies will be available.

Courses are split up into seven regions based on course interest, similar seismic hazard characteristic characteristics, and time zones.

### **How it works**

- State requests their top three trainings – if there are repeats within the same region, they try to combine those to be more efficient.
- Another example: if Kentucky is hosting a training, any of the other states can attend.

### **Top Courses Requested for 2022**

#### **9 Request**

- FEMA P-154, Rapid Visual Screening
- FEMA 395, Mitigation for Schools

#### **8 Requests**

- ATC-20, Post earthquake Safety Evaluation

#### **5 Request**

- FEMA E-74 Reducing the Risk of Nonstructural Damage.

### **New Courses this year will include:**

#### **Older Concrete Buildings: Understanding the Seismic Risk and Developing a Mitigation Program.**

- Non-ductile concrete buildings
- What they are and how they have performed in past earthquakes
- Why addressing risk is important to a community's overall seismic resilience
- Guidance for developing a mitigation program
- Role of FEMA P-218 within the overall process (Technical engineering details are not discussed)
- This training will be geared more towards emergency manager, responders, and policymakers rather than being technical

To close, Gigi mentioned the release of On-Demand recorded training on FEMA P-154.

- Will be posted on FEMA's website
- Relevant to jurisdictions across the country

End NEPM Day 1.

NEPM Day 2 – Field Trips

### **Earthquake Mitigation Field Trip**

- Center for Earthquake Research & Information
- I-40 Bridge Retrofit / Mud Island
- Bass Pro Shop / Memphis Pyramid (working lunch)
- University of Memphis Law School
- AutoZone World Headquarters
- Historic Downtown Memphis

NEPM Day 3 – Tuesday, March 30<sup>th</sup>, 2022

### **Mississippi**

**Jasmine Johnson**

**Earthquake Program Manager**

#### **Discussion**

Jasmine Johnson began by talking about a recent earthquake. Mississippi had an earthquake on January 20, 2021. In Collins, Mississippi, the earthquake was a 2.1 magnitude at around 1:33 AM. The earthquake surprised everyone. Mississippi does not get a lot of attention for earthquakes unless it is around Shake Out.

#### **Mississippi Shake Out**

- 2020 – 229,399 participants statewide
- 2021 – 343,658 participants statewide

Jasmine was able to reach these numbers by developing a relationship with their business sector. She went out to businesses such as Walmart and Costco. She says her department dropped off goodie bags to the children. They visited about four schools last year. Students got goodie bags that had lots of information about earthquakes. They did the skit in person on how to drop, cover, and hold on.

Jasmine says through outreach they were able to achieve 115,000 in a short amount of time. She says it was hard trying to be creative during COVID, especially when trying to do outreach to high-risk areas.

#### **What is next for Mississippi?**

**Mississippi will host three courses this year. All NETAP funded training.**

#### **FEMA P-767 Earthquake Mitigation for Hospitals**

- This training will introduce participants to earthquake hazards in healthcare settings and methods that can be used to analyze and reduce risk of damage in hospitals and other medical buildings.

### **FEMA 395 Earthquake Safety and Mitigation for Schools**

- How to assess and analyze seismic risk typical to school buildings; develop an action plan for reducing and managing these risk; secure nonstructural components in school facilities; and implement incremental seismic rehabilitation as an affordable approach for protecting existing school buildings and ensuring occupant safety.

### **FEMA E-74 Reducing the Risk of Nonstructural Earthquake Damage**

- Describes the sources and types of nonstructural earthquake damage and the effective methods and guidance individuals and organizations can use to take action now before the next earthquake.

### **Mississippi NMSZ (Earthquake) Revision Plan.**

She reached out to MAECENTER and got the okay to work on revising their plan with the MAECENTER to make it more specific to Mississippi. They're adding new buildings. A few things also added to the plan include new scenarios, new at-risk populations, new analysis, new models, new maps, new facilities, damaged buildings, energy buildings, communications that can possibly be at risk, and economic loss.

One thing that they did not have in their old plan will be the Mississippi liquefaction susceptibility. She showed a map of Mississippi and with over 30 counties in red. Counties in red are at high risk for liquefaction.

Prior to the mapping for liquefaction, Jasmine said she did not know how to answer questions from residents trying to assess their risk from liquefaction.

The MAECENTER developed the model with the liquefaction risk. From near DeSoto county, South Haven, and all the way down to Wilkinson County, they could see the high risk for liquefaction. All along the Mississippi river, the risk for liquefaction is high.

Jasmine talked about more plans for the state which included the following:

### **The Great Shake Out 2022 Preparing for the BIG ONE**

- Visit schools in the highly impacted areas and spread EQ awareness.
- Display billboards in the northern counties to promote the Shake Out drill
  - Jasmine said they had a lot of great feedback from the billboards, so they will continue with them in the coming years.
- FY2022 Promote earthquake insurance.
- Plan for the 2023 earthquake seminar.

Jasmine is also continuing training courses. She has done an earthquake training course for

schools. She did not get many people from the schools but did have EMA directors and local government officials. She hopes to get more participation from people that work with schools. Jasmine also hopes to get a subject matter expert with earthquake insurance and transportation planning tools. In closing, she would like to have a seminar in Mississippi specifically for earthquakes.

## **Arizona**

**Michael Conway – Sr. Research Scientist**

### **Discussion**

Michael Conway started with the discussion of the start of their pilot study. They started with flagstaff and Yuma. It was done with URM buildings. He stated that they are also creating earthquake information packages. These are for the counties and tribes.

He said they are also looking at active fault studies. He said Lake Mary was an important study because the northern tip of the lake ends at the southern part of Flagstaff. Flagstaff is a major concern. The objectives of these fault studies are to characterize fault activity – timing, length, orientation. These are also for estimating recurrence and maximum event.

He said one thing they will be working on this year is the applied technology council training. This will be in Spring-Summer of 2022. They will have training in:

- FEMA P-154
- ATC-20
- Classroom and beyond

This training is in conjunction with Nevada and Utah.

The Great Arizona ShakeOut does not get support within the state. Because of this, the education field and governors will not promote this.

He ended the meeting discussing the faults and earthquake epicenters on the natural hazards in Arizona page and stated this is available to everyone.

## **California**

**Jose Lara, Seismic Hazards Branch Manager**

**Yvette LaDuke, Earthquake Program Manager**

**Sherri Blankenheim, Earthquake Program Specialist**

### **Discussion**

The meeting started with partnerships in California. Their partnerships include:

- FEMA
- California Geological Survey
- University of Southern California, Southern California Earthquake Center
- California Earthquake Authority
- Disaster Resistant Business

The current projects for California were then discussed. The current projects are:

- Individual and community preparedness through earthquake country alliance
- Support statewide preparedness
- Non-structural mitigation efforts
- ShakeOut planning and coordination
- Seismic – physical inventory project
- Disaster resistant business toolkit:

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- Champion business resiliency to faster and community recovery following an earthquake event
- Conducting two webinars with small and medium business and non-profit organizations
- Website
- Mini Tool
- Food bank project
- EQ clearinghouse
- Redwood coast tsunami work group
- Myshake

The proposed FY22 NEHRP Projects are:

- Increased accessibility
- Increase focus on mitigation
- Continue to expand outreach and ShakeOut participation
- Expanding foodbank project
- EQ clearinghouse tabletop exercise

## **Indiana**

**Allison Curry**

**Natural Hazards Planning Manager**

**Raspberry Shake Program**

### **Discussion**

Allison Curry is Indiana's Natural Hazards Planning Manager. Allison gave a briefing on the Raspberry Shake Project that they've been working on the past few years.

The Raspberry Shake Program was not a NEHRP grant; it was actually a collaborative project with State Hazard Mitigation Officers. Indiana's Recovery Mitigation Division approached Allison and told her that they had a mitigation grant they wanted to use for earthquake mitigation funds.

They completed the State Hazard Mitigation plan in 2018. Up until then, they had done a lot of updates to our earthquake section.

She gave some background on the Raspberry Shake device. It is a small professional grade seismograph. The model her department chose was one with the most sensors in hopes that in real time, the data will transmit. She anticipates being able to have the devices strategically placed across the state.

If the schools are utilizing these, if there is an earthquake, they will be able to track and pull data from across the state.

The model chosen by Allison and her team was the RS3D | Turnkey. The Raspberry Shake company does provide a discount if the devices are utilized for classroom activities.

They got working with every single entity within IDHS and also additional state partners.

They also worked with their State Hazard Mitigation Officer to allow for additional grant funding.

A proposal was submitted with a three-year grant cycle. (The proposal was submitted back in the end of 2018 they are in the process of filing and extension due to Covid.)The proposal was

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approved by FEMA.

They then needed to explain all the projects with our grants division – there was legal, fiscal involved. These raspberry shakes were going to be lend out to the schools but would not become school property.

There were difficulties - Allison learned they were able to get these Raspberry Pies through a sole source vendor justification.

There was a lot of back and forth with all of these different divisions, the purchase needed to get approved through their State Administration Office because Raspberry Shakes is in Panama.

One of the bigger hurdles was getting the seismograph through Miami customs. Additional fees needed to be paid to bring the Raspberry Shakes through custom. One Raspberry Shake was broken, and they had to ship it back.

Next, they partnered with the Department of Education and the public information office to publish a website where they could spread awareness.

Schools that wanted to apply for the Raspberry were asked to submit an earthquake preparedness video to this contest website. They picked the top ten videos and rated them.

- The first-place winner was awarded their Indiana Geological and Water Survey Earthquake Simulator. There will also be a day where Allison and her team go out and present on earthquake preparedness.
- District liaisons came to pick up the appropriate seismographs for the schools. Allison prepared information packet guides for the teachers. Raspberry Shake has free educational material for teachers to use as lesson plans in different modules.

### **Ways Forward**

- Purchase remaining 20 Raspberry Shake Devices
  - Aiming for annual project
  - Statuses/Checking with schools - quarterly reports

Allison said they had funding for 30 Raspberry devices, but they wanted to see engagement from schools before purchasing the additional 20. They also wanted to purchase updated models.

### **Future**

- Strategically place across all 10 IDHS Districts

### **Building Codes**

**Mariam Yousef, Civil Engineer**  
**FEMA HQ Building Science**

### **Discussion**

Mariam Yousuf has been working with FEMA headquarters for about a year. Prior to working at FEMA HQ, she worked with FEMA Region 4 as a civil engineer on the CTP program. She wanted to discuss the steps that were taken to get to the point they are at now.

### **Why Building Codes?**

- Building Codes Save Lives and Property:

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- Hazard-resistant building codes are projected to prevent \$132 billion in losses over 30 years
- Building codes have \$11: \$1 return on investment
- Hazard-resistant building codes reduce the impact of climate change
- Protect vulnerable and underserved communities
- Advance equity by making resources, policies and best practices serve all communities

She says one of the biggest risks that we face is buildings. What the Building Science Branch team really focuses on are how the building is being affected by different hazards and how they can create best practices for those buildings. One really important study that they conducted in 2020 was the building code SAVE study. She encouraged the audience that if they haven't seen it, she would definitely recommend they go to the FEMA website. By the numbers, there's an 11 to 1 return on investment from proper building codes. She said that is 132 billion, with a 'b' (not just million), in savings. The report focuses on three hazards – flood, wind, seismic.

She added that another focus within FEMA is being equitable and making sure that the whole country moves towards that direction - not just specific jurisdictions or local areas. She thinks that one of the biggest goals in the branch is to create a country with hazard resistant building codes that are close to 100%. Right now, the U.S. is at a third.

#### **FEMA has a long history with building codes.**

- Over 30 years of codes and standards advocacy has advanced earthquake, hurricane, flood and other hazards resilience (exceeds NFIP requirements and compliance with NEHRP-recommended provisions).
- Thousands of buildings and structures have been repaired, retrofitted and rebuilt using disaster resistant codes, FEMA hazard mitigation guidance and federal assistance.
- Countless lives have been saved, billions of dollars in damages have been prevented, and losses have been avoided through pre- and post-disaster mitigation and recovery.
- FEMA issued its first policy on building codes in 2016 (FP: 204-078-2 Risk Reduction Minimum Codes and Standards Policy).

#### **Evolution of Building Codes at FEMA**

##### **What Has Changed:**

- The DRRA was passed in 2018 with significant building codes requirements.
- FY21 OMB supported part of FEMA's PDO request for the Building Codes Strategy (8 new positions).
- Nationwide hazard-resistant code adoption is trending upward at 25 percent, but there is still a long way to go.
- In recent years, there has been a growing resistance to timely building code adoption.
- FEMA has built a foundation demonstrating the value of building codes (NIBS Mitigation Saves studies, Building Codes Save study, NFIP-related studies and reports, National Mitigation Investment Strategy, ATC-117 Report, etc.).

Mariam added that additional field staff will be added at her agency to support building codes and building science.

### **Disaster Recovery Reform Act of 2018**

The Disaster Recovery Reform Act of 2018 represents one of the most comprehensive emergency management reforms since the creation of the Stafford Act. Its provisions reflect a historic investment in pre-disaster mitigation and community capacity building. By aiding the Nation in reducing risk, these reforms also support the reduction of disaster costs.

Learn more about the implementation of over 50 new authorities throughout the agency here:

<https://www.fema.gov/disaster/disaster-recovery-reform-act-2018>

FEMA has increased its funding over the years. Programs that saw big increases were for dam safety and flood mitigation.

### **Historic Funding Opportunities for Resilient Building Codes**

- FY2021 Resilience Funding
- BRIC State/Territory/Tribal set-aside (includes eligible building code activities) increased to \$1M
- Continues incentivizing adoption of building codes based on latest published editions of building codes
- Includes new priorities to enhance climate resilience and adaptation, prioritizes benefits to disadvantaged communities, and partially implements Federal Flood Risk Management Standard (FFRMS)
- FMA total funding increased to \$160M (\$10M for project scoping; \$70M for community flood mitigation projects; \$80M for technical assistance, flood hazard mitigation planning, and individual flood mitigation projects)
- HMGP funding received \$3.4B from covid relief.

### **The Need for a FEMA Building Codes Strategy**

#### **Existing Gaps:**

- Lack of consistent building codes policies and guidance across the agency.
- Need for consistent HQ and regional messaging and outreach to SLTTs.
- Insufficient training, implementation and guidance for FEMA and its stakeholders.
- Need to leverage existing and new partnerships to increase building codes adoption and enforcement.

Mariam said that improving uniformity and making sure that we have the proper tools for people to be able to implement building codes is important. There are three FEMA-Wide Memberships:

- Enterprise Steering Group
- Secretariat
- Work Group

The working group are the "boots on the ground" helping develop all the different things that we're going to have within the strategy. The enterprise steering groups steers the strategy in the direction they feel it should be going based on input that they get from the workgroup and secretariat.

### **Building Codes Strategy: Vision and Mission**

**Vision** - A resilient nation with superior building performance in disasters.

**Mission** - Coordinate and prioritize FEMA's activities to advance the adoption and enforcement of disaster resistant building codes and standards for FEMA programs and for communities nationwide.

This is the vision and mission that FEMA is using. They are trying to create a resilient nation with superior building performance.

### **Building Codes Strategy: Goals and Objectives**

#### **Goal 1:**

- Instill Equity as a Foundation of Emergency Management
- Expand support to underserved individuals and vulnerable communities to increase resilience
- Understand stakeholder needs to identify opportunities that advance building code adoption and enforcement

#### **Goal 2:**

- Lead whole community in climate resilience
- Amplify climate science messaging to increase public demand for building codes and standards
- Advance building code research, including the impacts of climate change

#### **Goal 3:**

- Promote and Sustain a Ready FEMA and Prepared Nation
- Improve HQ and Regional coordination before and after disasters
- Reduce future losses by implementing current building codes across FEMA policies and programs

In addition to alignment with the FEMA Strategic Plan, the Building Codes Strategy was created to line up with other supporting documents, including an Implementation Plan, Directive, and Instruction.

**Implementation Plan - Defines the operational processes necessary to achieve the goals and objectives of the Strategy.**

- 18 performance measures aligned to each objective.

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- Structured by component activities – action-oriented tasks to be carried out by individual FEMA components.
- 23 components engaged in working sessions to review and validate activities.
- A performance scorecard is in development to track the success of component activities; will undergo regular monitoring and updating.
- In Final Draft, 10+ HQ components and regions actively involved in development.

Where the Strategy outlines the “what” and “why” of FEMA’s approach to building codes, the accompanying Implementation Plan lays out how the agency will achieve its goals and objectives.

The Implementation Plan is a result of an extensive landscape analysis and contains specific component activities designated to and agreed upon by components involved in the analysis. Agency activities further provide additional high-level guidance, allowing components not directly involved in the analysis to align their activities to the Strategy and join the effort to increase agency adoption and enforcement of hazard-resistant building codes.

### **FEMA Directive (Hazard-Resistant Building Codes, Specifications and Standards for Risk Reduction) and Instruction**

- Updates FEMA Policy 204-078-2, which was due for review and update in 2020.
- Supports the Building Codes Strategy.
- Achieves the Strategy’s Goals by setting requirements that uniformly integrate building codes and standards across FEMA.
- Establishes requirements for FEMA programs and FEMA real property.
- Provides direction and guidance to FEMA staff.
- Encourages incentives for SLTT governments to adopt codes.

She spoke about the 2016 policy that listed all the consensus codes and standards. This directive supersedes that directive and updates it because all FEMA directives need to be updated.

Mariam wanted to put emphasis on these next few points. She felt they were the most important part of her presentation. These are the requirements that FEMA is trying to implement over the next several years.

### **Building Codes Directive: Requirements**

#### **A. Integrate Building Codes and Standards Across FEMA**

**Outcome:** FEMA will integrate, and where legally permissible, consistently require, at a minimum, the current or next most recent published editions of building codes into its programs, policies and guidance.

#### **B. Strengthen Nationwide Capability for Superior Building Performance**

**Outcome:** FIMA, with input from the Planning, Safety and Building Science Division and other FEMA components, will inform the update of and provide technical assistance regarding the understanding, development, application, adoption, and enforcement of building codes across the agency, other federal agencies and the nation, especially among vulnerable communities.

### **C. Drive Public Action on Building Codes**

With expanded support for vulnerable communities and communities at greatest risk to climate change impacts, FEMA components will advance partnerships to drive SLTT application, adoption and enforcement of building codes integrated with inclusive mitigation and community planning processes, without weakening the natural hazard and fire-related provisions and will promote a consistent understanding of building codes.

### **How do we implement all these new directives and requirements?**

Mariam said implementation needs to start within all the agencies. The next step would be to implement on the federal scale. FEMA will serve as the lead amongst all the federal agencies. The last step would be implementation at the national level.

### **Building Codes Strategy: Next Steps**

**FEMA Strategy** - Coordinate and prioritize FEMA's activities to advance the adoption and enforcement of disaster-resistant building codes and standards for FEMA programs and for communities nationwide

**Federal Alignment** - Through the MitFLG, increase collaboration and coordination on disaster-resistant codes across the federal government, SLTTs and ensure federal programs and policies reflect building codes to offset the rising cost of climate and weather disasters

**National Implementation** - Develop National Implementation in coordination with the public and private sectors.

FEMA administrator, Deanne Criswell, will be speaking at the National Hurricane conference about the building code strategy.

### **FEMA Building Code Adoption Tracking**

Since 2007, FEMA has been tracking building code adoption. The building code adoption tracker is updated quarterly for five different hazards.

Jurisdictions are evaluated for whether they are at high risk to flood, damaging wind, hurricane wind, tornado, or seismic hazards.

Jurisdictions are then evaluated for whether they are resistant to those hazards.

The website has tools to track code adoption throughout the nation. The website also has fact sheets that can be downloaded.

**Mariam provided a list of helpful websites:**

**Building Codes Save** - <https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes-save-study>

**Building Code Adoption Tracking Portal** - <https://www.fema.gov/emergency-managers/risk-management/building-science/bcat>

**Building Codes Strategy** - [fema-building-codes-strategy@fema.dhs.gov](mailto:fema-building-codes-strategy@fema.dhs.gov)

**FEMA Building Science** - <https://www.fema.gov/emergency-managers/risk-management/building-science>

**FEMA Building Science Helpline**  
**FEMA-BuildingScienceHelp@fema.dhs.gov**

**Eric Vaughn – Executive Vice President at FLASH**

**I. Welcome and Quake Smart Explanation – Eric Vaughn**

**Discussion**

Eric Vaughn welcomed everyone. He began to discuss FLASH and what their purpose is. He then started to discuss Quake Smart. He stated that Quake Smart is a FEMA project. This program has many different elements. He stated the core of Quake Smart is the Quake Smart tool kit. He stated last year they did a complete update of the tool kit.

The six areas of the tool kit are:

- Staff
- Space
- Systems
- Structure
- Surroundings
- Service

These six areas help organizations to improve earthquake readiness.

He stated that you can find the tool kit online. There are more than 2,300 participants. He discussed how they have workshops to display how the tool kit works. He said in 2022 they plan to have workshops in Arkansas, California, Oregon, and Washington.

Eric then discussed that another part of the QuakeSmart program is QSnap. He said this is a program they complete with fire departments. He said they go in and offer training for fire departments. They then leave an inspection form with the company of potential dangers for an earthquake. He said they want to take the program out of California and would like to give recruitment materials to those interested.

Eric then discussed the QuakeSmart Designation Program. He said this focuses on communities and elected leaders. They help get states to the application criteria that will be needed for this program.

Eric then discussed the “No code. No Confidence.” He said they did a lot of research and focus

groups in both states that had building codes and states that did not have building codes. He said they designed “No code. No Confidence. Inspect to protect” slogan based off of research results. He said one case study they did was that they went into a community that they knew did not have building codes. They then did a survey. Eight out of the ten people in that community thought their community had building codes. When these people found out they did not, they were angry. He said one of the key points of building codes is public support.

The components of No Code No Confidence are:

- Code status
  - Red – no code adopted
  - Green – current code adopted
  - Yellow – code is adopted but out of date
  - Black – data is not available
- Suggested upgrades
- Code history
- Disaster history
- What you can do

He stated that the slogan “No Code No Confidence” means if you do not have building codes, then you cannot have confidence in the performance of your house without building codes especially in times of disaster. He said they wanted to get more people to visit the website which is [InspectToProtect.org](https://www.inspecttoprotect.org). He said they have a new campaign they are working on called #EarthquakeStrong. The collaboration opportunities include:

- API
- Social Media Collaboration
- Co-Branded Materials
- Joint Media Pitching

## **Charleston Earthquake Plan**

**Jessica Gibson**

**Region 4**

### **Discussion**

On August 31, 1886, at approximately 9:50pm, a major earthquake occurred. It resulted in extensive damage to the city of Charleston. The earthquake was felt as far as Canada. Over 2,000 buildings were destroyed, accounting for 1/4 of the assets of the city.

### **Charleston Earthquake Planning Scenario**

#### **Created from two Scenarios**

- 7.1 earthquake near Summerville
- 7.3 earthquake from Charleston

These were a daytime event at 2:00pm during the summer months at the height of tourism season. They wanted to see where they would have the greatest impact on people.

#### **Area of Impact - Study Region**

- Study Region (SC, parts of GA, and NC)

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3.5 million households were in the study region. Damage was concentrated in the South Carolina Coastal Zone with lesser shaking throughout the outer coastal plain. In this area, 1.6 million individuals would be impacted.

The most severe shaking and damage would be focused around three county regions consisting of Charleston County, Dorchester County, and Berkeley County. These counties are also high risk for damage from liquefaction.

### **Assumptions**

- Large-scale evacuation both organized and self-directed will occur.
- Undamaged roads will become congested with evacuees, impeding with egress and ingress
- Roadways, bridges, and ports are likely to be at higher risk due to liquefaction
- Charleston International Airport runways will not be functional

### **Challenges that the state will face include:**

**Evacuations** - how will people evacuate if bridges and roadways are damaged.

**Sheltering** - a significant number of people will be displaced from the initial earthquake.

Summer weather will still leave the threats of thunderstorms and high heat.

**Inspections** - Damaged infrastructure will require inspections following the initial shake. There will be a limited number of inspectors available.

### **Closing**

In closing, Janelle announced the plans for the 2022-2023 NEPM Meeting

### **2022-2023 Althea Rizzo - Oregon**

- Althea Rizzo was appointed the new chair elect and will be running the 2023 NEPM.
- Scott Gauvin volunteered as the vice-chair for the 2023 NEPM Meeting.

### **Location of 2023 NEPM Meeting**

- Althea would like to have the next NEPM in Portland. She will need to get figures on the cost of hosting in Portland before deciding. Her ideal location in Portland would be the Portland State Building.

There was no objection to holding the next NEPM meeting in Portland.

Althea then proceeded with asking for volunteers for the organizing committee.

Pascal Schuback, John Cross, Brian Black, Janelle Woodard, Jeff Briggs, Amanda Siok, Jon Foster, and Hilda Booth will be part of the next committee.

The proposed date would be in March or April of 2023.

### **Meeting Adjourned**