



## Meeting Minutes Nevada Earthquake Safety Council (NESC) Joint Meeting with Utah Seismic Safety Commission (USSC)

<b>Attendance</b>	<b>DATE</b>	Wednesday, November 8, 2017	
	<b>TIME</b>	8:30 A.M.	
	<b>LOCATION</b>	University of Nevada, Reno Harry Reid Engineering Laboratory, Rooms 109/110 1664 N. Virginia	
	<b>METHOD</b>	In-Person	
	<b>RECORDER</b>	Shea Schultz	
<b>Council Members</b>			
	<b>Present</b>		<b>Present</b>
Michael Blakely	X	Connie Morton	
Ian Buckle	X	Jim O'Donnell	
Wayne Carlson		Rob Palmer	
Craig dePolo	X	Woody Savage	
Jim Faulds		Wanda Taylor	X
Tim Ghan	X	Jim Werle	X
Jeff Hahn	X	Kyle West	X
Graham Kent	X	Michael Wilson	
Chris Lake		Werner Hellmer	X
Ron Lynn	X		
<b>Staff and Others</b>			
	<b>Present</b>		<b>Present</b>
Janell Woodward (DEM)	X	Gennady Stolyrav II	X
Shealyne Schultz (DEM)	X	Danny Dockter	X
Annie Kell	X	Joshua Woodbury (DAG)	X
Rich Koehler	X		
<b>Utah Seismic Safety Commission Members and Others</b>			
Rick Allis	X	Leon Barrett	X
Steve Bowman	X	Steve Bruemmer	X
Bob Carey	X	John Crofts	X
Evan Curtis	X	Adam Hiscock	X
Craig Kerkman	X	Meldee Love	X
Pete McDonough	X	Patrick Tomasino	X
Barry Weliver	X		

**1. CALL TO ORDER, ROLL CALL, WELCOME, AND INTRODUCTIONS**

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Chair, Ron Lynn called the meeting to order. Shea Schultz called roll and a quorum was established for Nevada. The Utah Seismic Safety Commission called roll as well.

**2. PUBLIC COMMENT**

Chair, Ron Lynn, opened the meeting for public comment. Janell Woodward reminded Nevada members to submit travel information for the meeting. John Crofts advised Utah members that he would be handling travel claims.

**3. APPROVAL OF THE MEETING MINUTES**

Chair, Ron Lynn, asked for a motion to approve the minutes from the May 3, 2017, NESC meeting. Craig dePolo made a motion to approve the minutes as submitted and Kyle West seconded. There was no discussion. All were in favor and the motion passed unanimously.

USSC Chair, Leon Berrett, asked for a motion to approve the minutes from the July 13, 2017, USSC meeting. USSC minutes were voted on by the members present and approved as submitted.

**4. REPORT FROM THE USSC**

Chair, Leon Berrett, provided a brief overview of what the USSC has done over the last few years. Bob Carey spoke to some of the accomplishments they have had in regard to gaining funding to inventory some of the schools within Utah. He noted some of the hurdles they ran into with this as well. They have already begun to survey some of the schools throughout the state and will continue to move through the process. They advised they will begin compiling this data to create a report to go to legislature to highlight the problems they face throughout the state.

Leon spoke briefly of a workshop that was sponsored and assisted in moving forward with a statewide emergency plan. Additionally, he advised they have an updated Unreinforced Masonry (URM) manual that provides recommendations on various ways to upgrade or strengthen URMs.

There was discussion on infrastructure needs during a disaster and current disasters throughout the state were referenced. Specifically, to the difficulty areas face to gain resources. Chair, Ron Lynn, spoke briefly to some of the testimony they received from individuals in California. Graham Kent added that they need to rethink how we go into different types of situations and respond to disasters.

**5. REPORT FROM THE NESC**

Chair, Ron Lynn, provided a brief update on what NESC has done over the last few years. He advised that he has attended various meetings in California with other members. Some of these meetings were in support of an initiative for a fault study and for URMs in Nevada.

Craig dePolo commented on Nevada's URM Committee. He provided some updates on their current tasks; developing messaging and communications, URM inventory, developing a roadmap for reducing the URM risk, setting up a website, and holding a URM Summit. Speaking to the Summit he advised they would like to invite Utah and have them be a co-sponsor. He noted that one of the biggest issues they are facing is that many are unaware of the problem. He stressed the need to educate the community in any way possible.

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Ron spoke briefly to some of the outreach they were able to accomplish through billboards, posters, and exercises.

**6. FIX THE BRICKS IN UTAH**

Bob Carey gave a presentation on Utah's Fix the Bricks program. Copies of this presentation are available upon request.

Some of the topics discussed include:

- Utah Earthquake Probabilities – 57% probability in the Wasatch Front region of a Magnitude (M) 6.0 or greater and a 43% probability of a M6.75 or greater in the next 50 years.
- Effects of a catastrophic earthquake – Casualties, shelter needs, and utility system performance.
- Building Damage Estimates in Salt Lake City – Identification of buildings that will be affected by a catastrophic earthquake and the percentage damaged. Bob noted that if a URM building is 50% damaged or more it is a complete loss. Of the identified buildings, there was a probability of 16,094 of them sustaining 30-70% destruction. He added that in Salt Lake City there are 47,000 single family dwellings and that 32,000 of those are URMs. He spoke to a study that has been done and some of the problems they believe they may have in certain areas.
- Salt Lake City Building Permits – They issue 1500 remodel/re-roof permits annually which equates to 30,000 buildings over a 20 year span.
- Pre-Disaster Mitigation Funding/Grant Phases – Spoke briefly to how money is funneled to fund the program.
- Fix the Bricks Program Process
- Overview of the Program
  - 2016 Pre-Disaster Mitigation – 44 Homes
  - The process would be 1 home ready for construction, 1 home under construction, and 1 home in the reimbursement process.
  - 2017 Pre-Disaster Mitigation – 100 homes, plus 50 alternates
  - Construction costs \$15k to \$25k
  - Partnership with Utah Home Builders Association for Contractor Training

Bob advised that through this program they will be able to save lives rather than buildings.

Annie Kell had a question regarding the year that they began enforcing seismic code in their building and planning office. Bob advised that the state adopted it in 1989 as a state code, but that many of the larger cities had been using it for a long time. He provided some additional history on the reasoning for this.

Annie questioned if there are engineers trained in the retrofit guidelines and if this is required when submitting a plan. She was advised that a licensed engineer is involved in the process and that an evaluation has to be presented to the city.

Annie had a final question regarding funding and if the money provided by FEMA pays for every component of the project. Bob advised that it does include everything.

Ron Lynn questioned if there had been any consideration in trying to get some of the monies to utilities or having utilities apply for money due to the infrastructure needs. Bob advised that since they are private sector with shareholders there has been no consideration. However, he added that they will be branching from homeowners to small businesses.

## **7. SEISMIC REHABILITATION OF LINCOLN HALL AT THE UNIVERSITY OF NEVADA, RENO**

Dany Dockter with Gilbane Construction provided an overview of the recent rehabilitation of Lincoln Hall at UNR that was built in 1896. The project took about 10 months to complete and was done 2 years ago. Mr. Dockter went through the entire process and spoke to some of the construction components that went in. He noted some of the hurdles they had to overcome to complete the project and that there were so many unforeseen issues that the structural engineer was called in a lot. In his explanation of the process he advised that they went through every floor and that each has been completely blocked. He noted that though much of the retrofit has been covered, they will still be able to see the parapet walls and chimneys that have braces during their tour. Mr. Dockter stated that anytime there are older buildings, tearing them down removes a part of history and that he was happy to be able to work on this project.

Craig dePolo asked about the cost of the project. Mr. Dockter advised that the retrofit cost \$4 million and putting the building back together was \$3 million.

Ron Lynn asked if there were any pictures of the process. Mr. Dockter advised that during the process they do take pictures daily, but he would need to get clearance from his supervisor to share these. However, Craig does have pictures that can be provided for use.

Mike Blakely had a question regarding the soft mortar that they found and if anything was done about it. Mr. Dockter advised that nothing had been done as during the retrofit they were able to secure everything. This led into extensive discussion among members on the various types of mortar and the history of its use.

## **8. SEISMIC RISK OF NON-DUCTILE CONCRETE STRUCTURE**

Barry Weliver gave a presentation on the Seismic Risk of Non-Ductile Concrete Buildings. Copies of this presentation are available upon request.

Some of the topics discussed include:

- Background Questions – Provided definitions on ductility, non-ductile concrete buildings, and the risk associated with these buildings.
- Building Type Examples – Provided examples of the different concrete building types as defined by FEMA documentation and briefly went through the characteristics. He provided additional examples of the different types of buildings seen throughout Utah.
- Examples of Building Damage – Provided images of different damaged buildings throughout the country during earthquakes.
- Mitigation Efforts – Provided an overview of the different mitigation efforts that are being done for non-ductile concrete buildings. Spoke briefly to the 5-year FEMA effort called ATC-78 and the purpose of this report.
- Ordinances and Policies – Provided a list of various ordinances that have been put in place. Some of these include ordinances for the City of Los Angeles, City of Long Beach, and City of Santa Monica. These would be good resources for those interested in working toward ordinances in their area.
- Concluding Remarks and Suggestions – Stressed the importance of not ignoring or minimizing the risk, moving toward ordinances to assist in mitigating the danger of non-ductile concrete buildings, and educating the public of the risk.

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Craig dePolo asked about the cost associated with retrofitting these buildings. Barry advised the cost is less well-defined, but the cost varies due to the varying building types. These do tend to be more costly when compared to URMs. However, it is important to consider lives lost due to these structures.

There was some conversation among members regarding different types of buildings found across Nevada.

**9. RESILIENCY DISCUSSION**

Chair, Ron Lynn, started the discussion regarding resiliency. He stressed the importance of identifying the risk and developing identification techniques for these. He noted that no steps can be taken until the structures at risk are clearly identified, and that this is the start. He spoke to a bill that was being worked on in the past that would require jurisdictions to identify their at-risk buildings over a span of 20 years. Unfortunately, this did not move forward due to the rural community's opposition due to the cost associated. He stressed that going forward they will need to look at this strategically as well as tactically. Ron continued and spoke about the US Resiliency Council. He explained that they have a thorough identification process that includes identifying the structures and the risk of life with those. He added that if communities cannot develop resiliency for any risk then there will continue to be negative impacts in the future. He stressed that as leadership, they owe it to the communities to continue pushing these needs to the forefront.

Chair, Leon Berrett, spoke to how Utah has viewed and prioritized their resiliency efforts. He explained that as a Commission they felt uncomfortable doing an earthquake resiliency plan due to their limitations and deferred to Emergency Management to take on this task. He discussed the importance of having an all-hazard, statewide, resiliency plan to cover all disasters and stressed the need to look at all aspects within a disaster. He referenced prior disasters throughout the country and how communities were impacted in different ways, and reinforced the need to look past infrastructure and taking into all potential factors. He explained that when developing these resiliency plans they need to look at the efforts from every side and bring the whole community together. This will avoid duplication of efforts among jurisdictions and agencies, and would make identifying weaknesses easier. He explained this is what Utah is pushing for to gain support from the state in addition to an earthquake recovery plan as a component.

Ron commented that one of the problems they've had is that this is such a large issue that it is difficult to move forward. He noted the first step to this is outlining survivability. Increasing the standards of communities through awareness by telling people the earthquake will happen causes them to make better judgements. People will take this extra effort if it is shown to them in an effective and easy to understand manner.

Craig dePolo commented on how daunting the problem they face is. He speculated that within 100-200 years that multiple communities and states will be impacted. He questioned if any good progress is being made and noted the still present life safety issues due to a large inventory of buildings. He questioned if they are doomed due to the lack of money and the ability to fix all of the structures.

Ron spoke briefly to the political components when money is involved and that moving forward with this does take some pushing.

Wanda Taylor added that even though it does seem daunting, one thing they are aware of is that money spent ahead of time will save more in resiliency. She noted that progress is



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being made, but they need to reach higher political figures. Ron noted that one of the challenges Nevada faces is term limitations when trying to make an impact in the legislature.

Barry Weliver went back to Craig's questions and suggested gaining momentum through redefining the communities. He explained that the work of the advocates is to build community awareness as this connection has been lost. He stressed the need to strengthen this and turn the conversation into one that suggests that their building remaining safe is vital to the community's recovery. He continued with the various concepts that need to be brought to the conversation. They need to simplify, focus on community building, and keep going at it.

Ron noted that improvement has been made, but it is difficult to step back and see how much they will affect communities. It's difficult to get a handle on total community resilience.

Wanda commented that one thing they need to remember is that what they contribute to younger people in outreach will make their jobs easier in the future. She spoke to her experience with teaching and the need to prepare the younger people for support in years to come.

Graham Kent spoke to the all-hazards component and his experience. He explained that no one believes an earthquake is going to happen, however the attitude in regard to fires is completely different. He continued that coordinating all-hazards would be the way to get in the door with earthquakes. There was extensive discussion among members regarding the fires.

Annie Kell commented on the outreach aspect as well. She noted the need to convince and sell people on the risk of earthquake in Nevada and show them the steps that can be taken to mitigate.

Bob Carey spoke to Dr. Lucy Jones' visit to Utah and a story she relayed to them regarding the water services in California and a project they were able to complete. He explained that this project showed that buildings would be more viable should an event occur and opened the door for additional work and buy-in. He continued that it's all about economic loss as opposed to loss of life. Getting legislature to understand how bad things will be economically should an earthquake happen is effective in convincing people to act.

Leon continued discussion on Dr. Lucy's recommendation on how to obtain buy-in from politicians. The best thing they can do is provide the information to politicians and the politicians should be championing in making those laws. They need to convince them that it is in everyone's best interest. He stressed that they need to be careful in not telling politicians how to do their jobs, but instead educated them on the risk.

There was extensive discussion among members on the different programs and models in California. There was additional discussion on Dr. Lucy's recommendations, especially in regard to focusing with the municipalities versus the entire state as a whole as this is easier to work through.

Discussion was directed toward exploring a possible NESC URM website. Gennady Stolyarov II provided a brief overview of what the NESC URM Committee had discussed in their prior meeting to the Council. He provided a high level overview of what the website would contain, explained that it would cost approximately \$134/year, and added that this website would need to be done outside of the State's current system. He continued with potential funding scenarios for the website, suggesting that URM Committee members could

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donate toward the cost. Anything regarding the website and its content could be decided among the Council.

Craig dePolo made a motion to create a website to host URM information and potentially other items for NESC. Tim Ghan seconded. Chair, Ron Lynn, opened the meeting for discussion.

Wanda Taylor had a question regarding current and outdated websites that are out there for the Council and if they would be able to link any new websites under these. It was determined this could be done and a new website link could be provided under existing pages.

Werner Hellmer questioned if they are allowed to go outside of the State's website and create their own. Joshua Woodbury from the Attorney General's office advised there are other commissions with websites like this and he does not believe there are any regulations from preventing this.

Craig dePolo suggested discussing content and who would manage the website in depth at the February meeting.

There was no further discussion on the motion on the floor. All were in favor and the motion passed unanimously.

**10. POSSIBLE JOINT COUNCIL/COMMISSION STATEMENT**

Chair, Leon Berrett, read the possible joint council/commission statement, "Unreinforced Masonry Buildings remain the most prominent life-threatening buildings from earthquakes in Nevada and Utah, and the reduction of risk from these buildings is under-addressed commensurate with the threat they pose to society. We need to systematically reduce the seismic risk of unreinforced masonry buildings."

There was a short discussion on the wording used among members.

It was decided that the joint statement should read as follows, "Unreinforced Masonry Buildings remain the most prominent life-threatening buildings from earthquakes in Nevada and Utah, and the reduction of risk from these buildings is under-addressed commensurate with the threat they pose to society. The communities need to systematically reduce the seismic risk of unreinforced masonry buildings."

USSC Chair, Leon Berrett, asked for a motion to approve the joint council/commission statement as modified. Patrick Tomasino made a motion and Pete McDonough seconded. All were in favor and the motion passed unanimously.

NESC Chair, Ron Lynn, asked for a motion to approve the joint council/commission statement as modified. Jeff Hahn made a motion and Graham Kent seconded. All were in favor and the motion passed unanimously.

**11. LUNCH BREAK**

Members were dismissed for lunch.

**12. LINCOLN HALL RETROFIT WALK**

Members that were interested were invited to take a tour of the Lincoln Hall retrofit with Danny Dockter.

### **13. NATIONAL EARTHQUAKE HAZARD REDUCTION PROGRAM (NEHRP) PROGRAM**

Chair, Ron Lynn, provided some quick highlights on the program to members. He spoke at length to a report that NEHRP developed and presented to congress. Some of the highlights of this report included the lack of adoption of codes throughout the country and the risks associated with this, the needs that the program needs going forward, and the recommendations that were made.

### **14. UTAH EARTHQUAKES AND QUATERNARY FAULTS MAP**

Steve Bowman provided members with a brief overview of different maps that were developed in Utah. He noted that the map that was provided to members contains the latest data regarding earthquakes and that this process took approximately two years. He spoke to the survey that has been compiling map faults over the years and has resulted in the quaternary faults database. He explained that the map provided has served as an outreach piece throughout the state and is available as a PDF online.

He spoke to some of the other mapping that will be done throughout the different areas of the state. He explained that the data collected is used to develop these maps and outline special study zones. Next year they plan to obtain 8,000 square miles of LIDAR data throughout the state. This data will be available to the public as well.

Craig dePolo questioned how they define special study zones. Steve advised that it is dependent on how well they are mapped. Adam Hiscock provided additional information on how this is done.

### **15. PROGRESS ON EARTHQUAKE EARLY WARNING AND EARLY FIRE DETECTION NETWORK**

Dr. Graham Kent provided a presentation to members on what has happened over the last two years with earthquake early warning and early fire detection. He started with an overview of recent earthquake activity in the area, noting a significant area along the Nevada/California border by 9-Mile Ranch. There were three earthquakes around a 5.5 in that area. He advised that in a given year they average 12,000-20,000 earthquakes, and in the last year there have been nearly 18,500 earthquakes.

Dr. Kent spoke to some of the fires that have happened throughout the area and how this has played out over the network. He stressed the need to expand past earthquakes. He discussed a large fire in California that he explained was equivalent to a M7-7.5 earthquake with everything happening at once. A more detailed report on this fire will come out later, but he provided some figures regarding the damage that it caused. There were 8,400 home that were destroyed, with \$8+ billion in damage, and creating a \$70-85 billion economic footprint. He noted that this is similar to how a large earthquake would affect communities.

Dr. Kent discussed some of the networks that are being developed for early fire detection and some of the issues they face. One of these is social media and relying on infrastructure that isn't hardened. He explained that they need to have infrastructure that is going to work in emergencies. Another problem is the lack of understanding of infrastructure as a country, and that they don't understand the interdependencies of these systems. He explained that to get around this they are developing their own private network, similar to a cellular network. These networks need to be able to take a hit in an event and continue to relay information. So, all of the nodes in their network are connected with multiple ways out so it can be rerouted if necessary. He advised they are expanding the network and building infrastructure into other states. They are currently funded to extend 6 cameras into Southern Utah and 4-6 cameras in Idaho.



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There was a question on if the fire cameras included seismic stations. Dr. Kent advised that they don't currently, but do have that capability. The problem they have is obtaining sensors for them.

Dr. Kent continued and advised that over the last two years they have been involved in over 300 fires and provided early warning and situational awareness. He noted some of these fires that they assisted with. He explained that people are making life and death decisions based on the images obtained through the fire cameras. He advised that his group is engaged in fires and that through this they learn to work in emergency situations. He stressed that peoples' lives are dependent on these systems and they need to ensure that they work. He commented on how the earthquake community has the idea that once an earthquake happens and all the particulars are determined, they walk away. He questioned if they are really doing or preventing anything with this mindset.

He further explained how the program allows them to calculate fire movement and provided a scenario to members. He explained that half of the damage expected from an earthquake is fire related and that through these programs they can assist.

Dr. Kent stressed the importance of strengthening these networks and joining the fire and earthquake components. He explained that this is a good opportunity as they move forward to strengthen these networks.

There was a question on if fire management officers review the automated fire monitoring runs prior to them being put out. Dr. Kent advised that there is interagency collaboration when developing these.

Rich Koehler asked who would be making the fire decisions should a large earthquake happen. Dr. Kent explained this is dependent on the area, but will likely be a forest service individual.

**16. POSSIBLE JOINT COUNCIL/COMMISSION STATEMENT**

Chair, Ron Lynn, read the potential joint council/commission statement, "The NEHRP program is critical to the continued identification and quantification of earthquake risks and to developing resilient societies in Utah, Nevada, and the rest of the United States."

Chair, Leon Berrett, suggested including wording to increase awareness to the public. There was extensive discussion on how the statement should read among members.

It was decided that the joint statement should read as follows, "Nevada and Utah support NEHRP in the continued identification and mitigation of earthquake risks. Furthermore, Nevada and Utah support NEHRP in developing earthquake aware and resilient communities."

USSC Chair, Leon Berrett, asked for a motion to approve the joint statement as modified. Pete McDonough made a motion and Craig Kerkman seconded. All were in favor and the motion passed unanimously.

NESC Chair, Ron Lynn asked for a motion to approve the joint statement as modified. Werner Hellmer made a motion and Mike Blakely seconded. All were in favor and the motion passed unanimously.

**17. CLOSING COMMENTS**

Chair, Leon Berrett, commented on his appreciation for the hospitality from the Nevada partners. He welcomed Nevada members to Utah. He noted how these meetings are

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beneficial and stressed the importance of continue to further their cause and increase earthquake safety and awareness.

Chair, Ron Lynn, thanked everyone for their attendance. He noted the deliverables from the meeting and how they can move forward to make a difference. He commented on the benefits of having disagreements during the meeting and how they can be used to move forward and develop things that are affective.

**18. PUBLIC COMMENT**

Chair, Ron Lynn, opened the meeting for public comment.

Rich Koehler advised members that the Nevada Bureau of Mines and Geology and the Nevada Seismological Laboratory are co-sponsoring a workshop on seismological hazards. This will take place on February 5-6, 2018, and anyone is welcome to attend. If anyone would like additional information they are invited to contact him or visit the homepage of the NV Bureau of Mines and Geology website.

Craig dePolo complimented the two councils on their work. He added that he would love to see a press release regarding the two councils and the deliverables that were developed at the meeting.

**19. ADJOURN**

Chair, Ron Lynn, adjourned the meeting.