



## Meeting Minutes Nevada Earthquake Safety Council

Attendance	DATE	Wednesday, November 2, 2016	
	TIME	10:00 A.M.	
	LOCATION	Clark County Department of Building and Fire Prevention Presentation Room 4701 W. Russell Road Las Vegas, NV 89118	
	METHOD		
	RECORDER	Janell Woodward	
Council Members	Present	Staff and Others	Present
Alan Bennett	X	Janell Woodward (DEM)	X
Michael Blakely		Rick Martin (DEM)	X
Ian Buckle		Henna Rasul (DAG)	
Wayne Carlson		Paul Burke (DEM)	X
Oscar Delgado		George Taylor (DAG)	
Craig dePolo			
Jim Faulds			
Tim Ghan	X		
Jeff Hahn	X		
Graham Kent	X		
Chris Lake	X		
Ron Lynn	X		
Connie Morton			
Jim O'Donnell			
Rob Palmer			
Vance Payne	X		
Jim Reagan			
Woody Savage	X		
Stephen Silberkraus			
Wanda Taylor	X		
Jim Werle	X		
Michael Wilson	X		

### 1. CALL TO ORDER AND ROLL CALL

Chair, Ron Lynn called the meeting to order. Janell Woodward called roll and a quorum was established.

## **2. PUBLIC COMMENT**

Chair, Ron Lynn opened discussion for public commentary for this meeting. There were no comments.

## **3. APPROVAL OF THE MEETING MINUTES**

Chair Lynn asked for a motion to accept the meeting minutes from the August 3, 2016 meeting. \_\_\_\_ made a motion to approve the minutes. Wanda Taylor seconded the motion. The motion passed unanimously.

## **4. THREAT AND HAZARD IDENTIFICATION AND RISK ASSESSMENT (THIRA) PRESENTATION**

Paul Burke provided a thorough overview of the THIRA process and how the THIRA is used within the state. He explained that the assessment is used to determine where the state is in regard to threat and hazard capabilities. He also noted that the process is a requirement for grant funding.

Paul commented that the THIRA only measures capabilities within Nevada. Graham Kent questioned why the state does not measure themselves against California. Paul explained that while the problems between the two states will be similar, a lot of them will be contextually different. It was brought up that should a disaster happen, out of state resources are typically brought in. Paul noted that the THIRA is used to measure Nevada resources against a Nevada problem. He added that there is a component in the THIRA that measures a capability against mutual aid.

Paul advised that there is a survey out that is being used to collect the necessary data for the THIRA. He encouraged everyone to complete it and stressed the importance of completing the survey by the November 7, 2016 deadline.

## **5. PRESENTATION**

Doug Given with the USGS provided an update on the current status of the ShakeAlert Earthquake Early Warning System project. He opened with some background on the project.

He explained the basics of Earthquake Early Warning is that if you can detect earthquake rapidly and determine that it is going to cause damage then you can send out alerts in advance of seismic waves.

Doug showed a display of a desktop application that is given to data users. He explained that the display shows the earthquake graphically for the user. The application provides the estimated arrival of the S-wave in an area as well as the expected intensity at that location.

Doug advised that many do not understand two things about earthquakes: a.) That earthquakes do not happen at a point once they are fairly large. He explained that when they are large they happen at a fault, and an entire fault line must be taken into account. b.) They are not an instantaneous event, but that they take time to develop. Both have an influence on what one can do with Earthquake Early Warning.

He explained that earthquake alerts themselves are not a simple on/off in the way other natural disasters are. Earthquakes happen rapidly with only seconds to respond. This makes early it challenging for alert notification, training and education, and response.

He went on to advise what can be done with only a few seconds of warning. He explained that the most obvious would be personnel protection like the advice of "drop, cover, and hold on". An important component for this would be to provide people with pre-advise and pre-training on what to do during an event. In addition, there is alerting things and having automatic responses (ex. Slow and stop of trains). He explained that the sky is the limit here and that all industries must decide for themselves on what should be done. Finally, it would allow a head start to situational awareness.

Doug provided an update on the performance of the system to date. He advised they have caught every magnitude 4 or larger earthquake. He pointed out the lapse of time in which an earthquake hits and the system sends an alert is a matter of seconds. He explained that the alerts aren't always perfect as the information can change as data is received and the earthquake develops.

He went through the historical timeline of the system starting in 2006 with the funding for the project to the present. He noted the important transition in February 2016 from the demonstration system to the production/prototype system. They are now starting pilot projects and are reaching out to private companies to assist in the development of technologies. The next milestone they are hoping to reach is limited public roll out by 2018.

In regard to funding Doug provided the following figures:

- Buildout -- \$38 billion
- Operational cost -- \$16 million
- USGS Budget -- \$8.2 million

He noted that California has offered \$10 million toward the early warning project for three years. They are hoping by that time that stakeholders will be contributing toward the funding of the system since the federal government has advised they will not be paying for it entirely.

Doug advised there are five major components to doing early earthquake warning:

1. Sensors in the field.
2. Reliable sensor data in real-time to processing centers.
3. Processing centers to include computer hardware, networking equipment, and software that does algorithmic work on the earthquake.
4. Issuing of alerts.
5. Fast and reliable alerts distributed to users.

Currently, there are 760 stations on the west coast contributing to the system with others that don't have the capability to contribute or ones that still need to be built out. In the end, there will be 1675 seismic stations in the system. He added that there are also GPS stations that are used to help better characterize large earthquakes. He also noted that there is talk of crowdsourcing and using low cost sensors (cellphones) to augment the system.

In regard to alerts to people and things Doug advised that for people the plan is for the system to send mass notifications via every available outlet (internet, cable, wireless technologies, satellites etc.). He did advise that there is a need for development of a pre-programmed business decision on how to handle a large earthquake within a location. This is a technology that companies and technology partners need to develop.

Aaron Kenneston asked if the US has tested the alerts to stop elevators or assembly lines like other countries have. Doug advised that there has been testing and they currently have technology agreements with two companies that are developing that type of technology.

There was further discussion on the use of cellphones to receive alerts. Currently, the cellular technology will not support mass notification and they are working on solving this problem. The FCC has issued reports on what it will take to make the Wireless Emergency Alert (WEA) system capable of this. The USGS is also doing business with industry partners to write a report for recommendations of a 5G network and they are writing standards to make 5G fast enough for Earthquake Early Warnings.

Graham Kent expressed his concern on using the cellular system at all as it isn't stable enough and already has a history of system crashes. Doug advised though there is the possibility of failure with cellphones, it is still extremely effective and they shouldn't abandon it. This is why their strategy is to use all technologies. It was also mentioned that developing a cellular system that can handle this is very difficult and expensive, but will be useful on the alert side.

Doug advised that there is a significant training and education component of the plan. There is an active training and education committee that is developing standards for what an alert will sound like, and they are using social science to develop this.

Doug explained that to expand ShakeAlert to Nevada it will take local support and additional funding. They have found you have to start building local support through elected officials at all levels to start advocating for the funding and effort it will take. For technical users stakeholder awareness needs to be built so they will see the value in the system. There will also need to upgrade the seismic network to the density to support the system.

A question was asked how this system compares to Japan's early warning system and if the USGS has borrowed or looked into that system. Doug advised that they have visited and looked at their system. There has also been information sharing between countries about the science used to develop Earthquake Early Warnings.

Chris Lake questioned if there has been any outreach with industry partners to commercial authority individuals to use smoke or fire detectors as another alternative to alerts. Doug advised that trying to layer Earthquake Early Warning on top of fire alarm systems has been nearly impossible due to regulations involved in those systems. However, part of the outreach is to gain ideas and contacts. He also explained that it was similar with the elevator safety switches, and that to add an earthquake switch would increase issues and cost.

Ron Lynn stated part of that is to get back on the codes themselves. By putting it into the codes it is integrated into the comprehensive system. If you cannot make it something that can be attached to new construction it will be a constant uphill attempt to integrate it into a building system.

Ron inquired on the prognosis of moving this into Nevada. There's concern of not only the faults within the state, but the faults in California that will impact Nevada due to the number of people that come in or out of Nevada. He commented that it would be helpful to be tied into the network. Doug advised that the best way is to make these needs known and to show support at the local level.

Jim Faulds asked what portion of the money already expended has been from local vs. federal. Doug stated it has been primarily from federal and that local funds have been relatively new.

Jim additionally asked what kind of local support will be needed. Graham Kent advised that it would take a large infusion of money to support this project. Doug suggested gaining enough political support to gain the necessary support and funding from stakeholders. There

was further discussion on what it would take to fund the project and the various options to achieve this.

A question was asked whether DOE is involved and there is no special interest or involvement by DOE.

Wanda Taylor questioned what the council can do to make this happen. Doug suggested doing a feasibility study of early warning within Nevada. The study can be done internally or they can send a formal request to the director of the USGS to have it done.

## **6. PRESENTATION**

Richard Koehler provided the council with an option to bring Earthquake Early Warning to Nevada. He gave an overview of the report Alaska developed with insight as to what the council can do for Nevada.

He explained that in Alaska it began with a governor's request to provide a summary of the benefits of improved earthquake monitoring within the state. They distributed an open letter of request to all stakeholders within the earthquake community. Those responses were compiled into a two page statement on how increased monitoring would benefit the area. He advised Alaska's document is available online.

He went on to highlight the benefits of increased monitoring specific to the state. He noted that it was found that many of the beneficiaries were new to Earthquake Early Warning. As a result, a dedicated education and outreach program was a requirement.

He continued to provide an overview of the benefits of increased monitoring. He suggested establishing a working group to assist in development of the report, and that it is the first step in moving forward with Earthquake Early Warning.

Wanda Taylor asked what was done to get the governor to request the study that Alaska did. Richard advised that he is not entirely aware, but it had to do with transportable array and the university was talking to the governor already. Doug Given provided more insight into this.

Graham Kent commented that the universities played a pivotal role in lobbying in other states and encouraged local universities to do the same.

Chris Lake recommended using the Vigilant Guard 17 exercise as a way to get the message out to politicians. Possibly by looking at that scenario and predict how early earthquake warning could have changed the outcome. Graham commented on how they can use real life events to show how early earthquake warning could have changed the outcome of a disaster.

There was discussion on setting up an alert station and the network capabilities between states.

It was suggested approaching Switch to form a partnership as the early earthquake warning would increase their resiliency. Graham commented that they are hoping to engage with Switch. There was concern with some of the politics involved between the university and Switch suggested having the council make the direct contact with. Werner Hellmer suggested pitching it to Switch to try to get them involved.

## **7. PRESENTATION**

Jeff Hahn provided an overview of Boyd Gaming's experience being a beta tester for the USGS software and what the process entailed. He commented on the simple challenges that they faced with the software and the solutions they found. He also went over the process of using the software and the daily use of the application.

Jeff noted the benefits that the system would provide for casinos. Like allowing extra time to put plans in place should an earthquake occur. He suggested placing the system in the hands of every dispatch center as they could utilize it best. He also expressed a need for proper training on appropriate use of the system.

Aaron Kenneston asked if Boyd Gaming had properties that are located in these areas or if the information is for the patrons in Nevada. Jeff advised that it is only for here.

Jeff went over the need to exercise what the system has to offer. Exercise effectively getting on the radio to get the message out and have people prepare before the shaking starts. He noted the importance of tying this system into automatic responses (flashing lights) so people react. He also noted that he does not recommend this system for buildings that do not stress the importance of The Big Shakeout. He explained that it would lose effectiveness when you have to explain what that is. The only way to effectively do this is when the personal preparedness angle is covered.

Jeff briefly went over the progress with American Gambling Association (AGA). He explained that Graham Kent had developed a white paper that was used as an educational tool that was very effective with the AGA. Their strategy for next year is to shift lobbying focus to safety security.

There was some discussion on the funding opportunities and the cost component of the system.

Angela Palombaro asked Doug if the beta testing was something MGM Grand could explore with their properties. Doug will get with her after the meeting. He added that something the USGS is trying to do is identify other organizations with common capabilities and protocols to be part of it.

There was further discussion on using the beta testing with various businesses and the protocol of using the system. There were also comments on having the correct properties using the system.

Annie Kell asked how the early warning system handles multiple earthquakes. It was advised that the system would do its best to alert to both quakes. However, in the case of the user display it will only display the largest shaking. There was additional discussion on how the application and display work.

## **8. PRESENTATION**

Graham Kent provided an overview of the earthquake activity throughout the area. He did note that compared to other years this year has been slow. He went over the sensors that are or will be placed throughout the state. He advised they are hoping to incorporate some of the Nevada stations into the USGS system. A question was asked as to what each station costs. Graham advised it is around \$30-50,000 depending on the type of equipment used.

Progress is continuing to be made. He did note that on one project a final explosion was completed at the test site for nuclear verification. He provided an example of what is done for these types of experiments.

Graham provided an update on what was done over the summer. He did note that in regard to the BLM and fire camera program they almost completed what they wanted. Next summer they plan to add additional stations, and they are working on doing upgrades throughout the area.

He went over the use of fire cameras throughout the area and how they have assisted in the discovery or monitoring of fires. They have responded to or been involved with 107 fires. He went through some of the issues the cameras have had in response to fires at. He went through the importance of the fire cameras and how they can assist in saving money.

He explained that with the additional stations they are planning to place they are trying to set themselves up to have the microwave network fully established in certain areas. He briefly went over the plan for Earthquake Early Warning and how California's system can be integrated into Nevada's. However, the issue seems to be funding for providing the level of service that is needed in the region. He explained the importance of monetizing the multi-hazard network and that placing the fire cameras assists with this.

Firstnet was mentioned and whether there is any liability with the networks should FirstNet ever come to fruition. Graham answered that he is unsure if there is liability associated. There was additional discussion of FirstNet and the multi-hazard network.

Graham stressed the importance of the money that can be saved with early warning and detection systems across all hazards.

It was asked if in regard to the smaller footprints, like Reno or Vegas, if the network in its current state is dense enough to be included, and if not, how many more stations are needed. Graham explained that Reno is a lot denser than Vegas and they are trying to rehabilitate the older stations in those areas. There was discussion about the distance between stations and how that determines how dense the area needs to be. Doug Given noted that anything past a 17 kilometer distance does not add additional benefit to making it denser than that except to allow a backup should one system fail.

## **9. COUNCIL MEMBER COMMENTS**

Ron Lynn mentioned that the subcommittee will hopefully be meeting by the next meeting. He requested that a report from the subcommittee be added to the next meeting agenda. He reminded everyone to complete the THIRA survey. He extended his thanks to Janell for her work and everyone for their attendance.

Ron commented on the successes with the council. He suggested starting a legislative subcommittee or a public outreach subcommittee to include legislature. If anyone is interested they need to contact Janell Woodward.

He added that he wants to see the early warning system become a defendable program so it can be instituted into the building code.

Vance Payne announced that he will be resigning from the council. He extended his gratitude for the opportunity to be part of the Nevada Earthquake Safety Council.

## **10. PUBLIC COMMENT**

Chair, Ron Lynn, opened discussion for public commentary for this meeting.

Janell Woodward provided an update on NEHRP projects:

- Clark County has completed their billboard projects. The billboards were up the entire month of October and part of November.
- The window cling project was approved, but denied due to funding. However, additional funding was found and the project will move forward. There is no estimated time this will be completed.
- NETAP Training – School earthquake safety training was offered and she is attempting to facilitate this.

She added that she and Rick Martin are looking to obtain a list of currently licensed engineers. Rick Martin stated they are trying to find ways to increase capability in recovery within the Nevada Division of Emergency Management (NDEM). Ron Lynn suggested using Nevada Office of Building Officials as a venue for gaining information.

Rick Martin announced that he will be leaving NDEM. He extended his gratitude to the council for the opportunity to work with them and the knowledge he has gained.

Vance Payne advised there was recent success with a demo of three different kinds of drones in various departments within Nye County. It was determined that some capabilities of the equipment can be coordinated and worked into GIS systems. He discussed the potential benefits this system could provide to the council.

## **11. ADJOURN**

Chair, Ron Lynn, adjourned the meeting.