

Summary Minutes

Nevada Earthquake Safety Council

10 May 2006

The Nevada Earthquake Safety Council (NESC) met from 9:37 a.m. to 3:00 p.m. at the Sierra Pacific Power Company offices in Reno. These and previous minutes are posted on the NESC Web site (www.nbmng.unr.edu/nesc).

Jim Reagan chaired the meeting. Individuals attending the meeting are members of the Council:

Bernie Anderson*, Nevada Assembly
 John Anderson*, Nevada Seismological Laboratory
 Alan Bennett*, Plans Examiner with the City of Reno
 Mike Blakely*, Blakely, Johnson, and Ghus, who also held the proxy for Marge Gunn Nutman*, Nevada Association of Counties & Lincoln County Office of Emergency Management
 Ian Buckle*, University of Nevada, Reno – Center for Earthquake Engineering Research
 Wayne Carlson*, Nevada Public Agency Insurance Pool
 Gaye Coté, UNLV Department of Civil & Environmental Engineering and Geoscience
 Bob Cullins, University of Nevada, Reno
 Craig dePolo, Nevada Bureau of Mines and Geology, who held the proxy for Burt Slemmons*
 Diane dePolo, Nevada Seismological Laboratory
 David Durkee, who held the proxy for Ron Lynn*, Clark County Department of Development Services, Building Division
 Sam Earman, Desert Research Institute (representing Bruce Hurley, U.S. Department of Energy)
 Greg Flanigan*, Farmers Insurance
 Mark Harris*, Nevada Public Utilities Commission
 Jenelle Hopkins*, Clark County School District, Las Vegas
 Steve Koenig*, Bellagio Resorts
 Rick Martin, Nevada Division of Emergency Management
 Greg Moss*, The Moss Group
 Glade Myler, Office of the Attorney General
 Jim O'Donnell*, UNLV
 Dan O'Brien, State Public Works Board
 Rebecca Ossa, Nevada Historic Preservation Office
 Sarah Owen, Federal Emergency Management Agency
 Russell Pedersen, Washoe County Sheriff's Office, Search and Rescue
 Jon Price*, Nevada Bureau of Mines and Geology
 Jim Reagan*, Sierra Pacific Power Company
 Monique Smith, Nevada Bureau of Mines and Geology
 Catherine Snelson*, UNLV Geoscience Department
 Jim Walker, Nevada Department of Transportation
 Jim Werle*, Converse Consultants
 Ann Wiswell, Nevada Public Agency Insurance Pool

* indicates member of the Board of Directors.

A quorum of directors (the necessary 11) was present.

Board Members unable to attend or send a proxy included:

Warren Hardy*, Nevada State Senator
 Ed Ruttan*, American Red Cross

The minutes of the 8 February 2006 meeting were unanimously approved.

Education Committee

Diane dePolo reported that a Governor's proclamation for Earthquake Awareness Week was made and put on the Web site. The pamphlet on *Earthquakes in Nevada and How to Survive Them* has been updated, but there were no special efforts this year in northern Nevada. Gaye Coté conducted several activities for Earthquake Awareness Week in southern Nevada. A public service announcement was created, and there were a number of press articles. Gaye took an earthquake booth to the three-day Cashman Home Improvement fair. She also is working with the Clark County Parks and Recreation Department on activities for children at their summer camps.

Research Committee

Craig dePolo reported on the April workshop on seismic hazards in the Basin and Range Province, which was held in Salt Lake City; several recommendations from that workshop will be presented to the U.S. Geological Survey (USGS) as part of its updating of probabilistic seismic hazard maps. A meeting to discuss new information on seismic hazards in the Intermountain West (western states not on the coast) with the USGS is planned in Reno on May 31 and June 1.

Craig mentioned some interesting aspects of the 1906 San Francisco Earthquake 100th Anniversary Meeting, including a book that were highlighted (*Bracing for Disaster, Earthquake-Resistant Architecture and Engineering in San Francisco, 1838-1933*, by Stephen Tobriner). A recent poll indicated that about 70% of Californians think they will experience an earthquake, but only 20% say they are prepared.

The Western States Seismic Policy Council (WSSPC), which had its 2006 annual meeting during the 100th Anniversary meeting, will hold its 2007 annual meeting in conjunction with the annual meeting of the International Code Council (ICC), Sunday, September 30, through Thursday, October 4, 2007 in the Reno area. The WSSPC annual meeting, including adoption of policy recommendations, will probably be during the latter days of the ICC meeting.

Several proposals to the USGS's external grants solicitation for the National Earthquake Hazards Reduction Program (NEHRP) have been submitted for studies in Nevada.

Craig noted that a Nevada Quaternary Fault Working Group is being formed to come to consensus on parameters for faults that could cause earthquakes and to make recommendations to the USGS on which faults need further study.

Jim Werle discussed the Committee's ideas for another seismic hazard workshop in Las Vegas. The last one was in 1996. The plan is to review new information that has come to light since then and to focus on what to do about the hazards (particularly from an engineering standpoint). The annual meeting of the Association of Environmental and Engineering Geologists (AEG) in September 2005 highlighted some of the new findings, but there were no published proceedings. Discussions are now underway for a new workshop perhaps in the spring of 2007. AEG in Las Vegas, UNLV, NSL, and NBMG would likely co-host the meeting.

Glade Myler offered to put a talk or session together about the role of attorneys in earthquakes ("Mitigation to Litigation" as suggested by Jim Reagan), either for the Las Vegas workshop or the WSSPC annual meeting.

Alan Bennett reported that the Applied Technology Council (ATC) 20 workshop on *Post-Earthquake Safety Evaluation of Buildings* was held at the Sierra Pacific offices in Reno on April 20, with approximately 90 attendees, many from the local building departments. These are the inspectors who would participate after an earthquake. The northern Nevada ICC chapter helped to attract attendance. Hospitals, UNR, the State Public Works Board, and other agencies also participated. Alan provided a copy of the 303-slide, 40-megabyte

PowerPoint presentation used in the ATC-20 course. Anyone who would like a copy of this presentation should contact Terri Garside (tgarside@unr.edu) to arrange for a copy to be transmitted electronically or on a CD.

David Durkee noted that there recently were two ATC-20 workshops in southern Nevada. The two ATC-20 workshops in southern Nevada were attended by 145 and 130 persons respectively. The southern Nevada chapter of ICC co-sponsored those workshops.

Policy Recommendations Committee

Wayne Carlson reported on recent discussions within the insurance industry. He described the term “critical catastrophe” for certain earthquakes and wind storms. Nevada is categorized as just under the highest level of risk. Walmart is concerned that their company is having a hard time getting earthquake and hurricane insurance because they have so much exposure globally.

Wayne explained that the insurance market generally shrinks its capacity and raises its prices after major events. Current predictions are that the upcoming hurricane season will have more events of each level of severity. Coastal areas at risk to hurricanes are likely to see rises of insurance rates of 100%.

Bernie Anderson noted that the Legislative Counsel Bureau doesn’t release pending bills until July 1. There will be bills regarding housing and highway infrastructure. The Legislature anticipates that the State will be about \$600 million ahead on its budget. Bernie stated that he welcomes ideas for legislation from the Council. In response to Wayne Carlson’s question whether there may be one-shot funding for non-structural earthquake mitigation efforts, Bernie replied that such efforts might best be accomplished under an all-hazard umbrella.

Cathy Snelson stated that she and Wanda Taylor met with Assemblyman Harry Mortenson regarding southern Nevada earthquake hazards. Licensing of geologists and geophysicists is one issue that they have discussed, prompted by questionable practice by a professional in the Las Vegas area.

Jon Price mentioned the WSSPC Policy Recommendation 06-1 (available in full text at http://www.wsspc.org/PublicPolicy/PolicyRecs/2006/WSSPC%20PR%2006-1_adopted.pdf), in which “WSSPC strongly encourages the development of long-term, comprehensive statewide and community-level earthquake risk-reduction strategies as part of an all-hazards plan to reduce injury, loss of life, property damage and economic disruption from earthquakes. WSSPC believes comprehensive statewide and local plans and strategies should include the following elements:

- Assessment of all seismic hazards to quantify and define the risks to communities;
- Implementation of land-use and development policies to reduce exposure to earthquake hazards;
- Adoption and enforcement of the International Building Code for the seismic design, inspection, and construction of new buildings and structures;
- Adoption of the International Existing Building Code for the maintenance and retrofit of seismically “at risk” structures;
- Development and implementation of retrofit, redevelopment, grant, and abatement programs to help strengthen existing structures, where necessary;
- Support of [ongoing] public-education efforts and public/private partnerships to raise awareness of seismically induced threats and build constituent support for earthquake hazard reduction programs.”

Strategic Planning Committee

ACTION ITEM: Jim Reagan will append a draft of the 2005 annual report to the minutes of this meeting. A vote on adoption of the report by the Council will be placed on the agenda for the meeting on 2 August 2006.

Nominating Committee

The Council unanimously approved the nomination of Steve Koenig as a member of the Council.

Division of Emergency Management (DEM) Report

Rick Martin reported that the State Comprehensive Emergency Management Plan has been completed. Please contact Rick (rmartin@dps.state.nv.us) if you would like a copy of this plan.

DEM set up a joint office with FEMA after the Presidential Declaration of Disaster for the December 31, 2005 flood in northern Nevada. FEMA is awarding approximately \$10 million in funding for public projects. This should yield at least \$700,000 in funding for mitigation projects. In addition, the State Legislature allocated \$5 million for assistance to private individuals (up to \$16,000 per home). Bernie Anderson asked that DEM provide the legislature with statistics on how the assistance to private individuals worked.

ACTION ITEM: Rick Martin will respond to Bernie Anderson's request for statistics on use of the funding provided by the Legislature for assistance to private individuals after the recent floods.

DEM is developing a plan and will conduct a statewide exercise on mass evacuation and shelter.

DEM will try to find some year-end funding for projects suggested as worthy by the Council, but they are not sure about availability of funds this year.

State Public Works Board

Dan O'Brien reported on the Kinkead Building in Carson City (see minutes of the 3 August 2005 Council meeting, <http://www.nbmng.unr.edu/nesc/aug05.pdf>), which eventually will be demolished, if approved by the Legislature. In the meantime, the employees in the building will be moved to other locations, hopefully by the middle of the summer. Demolition of the Kinkead Building will be the State's first implosion (which is cheaper than standard demolition). A new building is planned on Roop Street in Carson City.

Dan noted that the seismic retrofit of the Capital Annex has been completed. It is an attractive building with an attractive dome and columns. The second floor is being used as a conference room by the Governor.

The State Public Works Board probably expects to adopt the 2006 International Building Code in July of 2007, when new budgets are approved.

Invitation to join WSSPC as a voting member.

The Council unanimously approved a motion for the Nevada Earthquake Safety Council to join the Western States Seismic Policy Council as a voting member. The NESC Council chair, or his/her designee, will be the representative to WSSPC.

ACTION ITEM: Jon Price will report to WSSPC that the Nevada Earthquake Safety Council has accepted WSSPC's invitation to join WSSPC as a voting member.

Nevada Hazard Mitigation Planning Committee (NHMPC)

Jim Reagan reported on activities of the NHMPC. The next meeting is tentatively scheduled for June 28 in Reno. Funds for mitigation have been available from the presidential disaster declaration for the Waterfall Fire and southern Nevada flooding in 2005. Minutes of the last meeting (22 February 2006) are posted on the Web (<http://www.nbmng.unr.edu/nhmpc/nhmpc.htm>). Jon Price reported on presentations that he made in April to the town board of Pahump and to Humboldt County Commission and the City of Winnemucca

regarding the Nevada Bureau of Mines and Geology open-file report on earthquake loss-estimation modeling (OF06-2). He will also make a presentation at the Nevada Association of Counties (NACO) meeting in November in Las Vegas.

Update on Recent Earthquakes in Nevada

John Anderson reported on an updated version of the earthquake epicenter map produced by the Nevada Seismological Laboratory. They have plotted historical earthquake epicenters on a background that includes a digital shaded relief map that illustrates topography, colors that indicate probable ground shaking from the USGS's probabilistic seismic hazard analysis, and faults from the USGS's Quaternary fault and fold database.

John also spoke about the rank of Nevada in terms of frequency of earthquakes. Rank depends on the magnitude threshold, whose catalog is used, and duration of the catalog. The USGS reports Hawaii as #3 and Nevada as #4 in terms of earthquakes of magnitude 3.5 and greater (for the time period from 1974-2003), but publications of the Nevada Seismological Laboratory and the Nevada Bureau of Mines and Geology have stated that Nevada is #3 in terms of frequency of large earthquakes. Alaska is #1, and California is #2. Researchers at the Nevada Seismological Laboratory used the USGS database for the Advanced National Seismic System (ANSS) to investigate this apparent discrepancy. The ANSS database has earthquakes reported from 1898 to 2006. In that database, for earthquakes of magnitudes greater than 7.0, 6.0, and 5.0, Nevada is #3 and Hawaii is #4. One of the problems in this sort of analysis is the density of seismic instruments, which varies considerably from state to state. A paper by Klein and others in the Bulletin of Seismological Society of America discussed seismic hazards in Hawaii more thoroughly than the ANSS catalog, and from that study, one would conclude that Hawaii would be #3 for earthquakes of magnitude 6.0 or greater, but Nevada is still #3 in terms of magnitude 7.0 or greater earthquakes.

John speculated that the fundamental reason why Hawaii has more small earthquakes than Nevada is because many of those small earthquakes are volcanic in origin, not tectonic, as are most of the small earthquakes in Nevada. In 1700, a very large earthquake (approximately magnitude 9.0) occurred along the coast of Washington and Oregon. This was an event on the order of the size of the great Sumatra earthquake in 2004. Large aftershocks from such an event could elevate Washington and Oregon ahead of Nevada in terms of the frequency of large earthquakes.

Cathy Snelson and John Anderson have been contacted by reporters about a sequel to the 10.5 earthquake TV movie, which would involve Las Vegas. The movie airs May 21 and 23, 2006. John stated that a 10.5 earthquake is impossible. The original 10.5 movie was scientifically ridiculous.

John noted that one of the major earthquake concerns for Las Vegas is a large earthquake (magnitude approaching 8.0) in Death Valley, because of focusing of seismic waves in Las Vegas Valley. Cathy Snelson noted that the Garlock fault, also in southern California, is positioned such that a large earthquake there could result in significant ground shaking in Las Vegas Valley.

100th Anniversary Conference of the 1906 San Francisco Earthquake

John Anderson described and displayed posters of several of the presentations that scientists from the Nevada Seismological Laboratory made at the 100th Anniversary Earthquake Conference Commemorating the San Francisco Earthquake. The Laboratory has done much cutting-edge research on the forces needed to topple objects during earthquakes (such as precariously balanced boulders on the side of a cliff or tombstones in graveyards). This research could be applied to studies of how likely slot machines are to fall over during an earthquake.

John also discussed a list of "Earthquake Professionals' Top Ten Actions for Northern California," which was presented at the 100th Anniversary conference. These include:

Develop a Culture of Preparedness

1. Every household, government agency, and business must know the seismic risks of the buildings they occupy, the transportation systems they use, and the utilities that serve them, as well as the actions they can take to protect themselves.
2. Every household, government agency, and business needs to be prepared to be self-sufficient for at least three days (72 hours) following a disaster.
3. Citizens and governments need to take steps to ensure adequate response care for special needs and vulnerable populations.
4. Government agencies, the region's major industries, and earthquake professionals have to work together to prepare the region to respond to and recover from major earthquakes. This can be done through region-wide, multi-organizational plans, training, exercises and coordination assessments, as well as continuing improvements in our collective understanding of seismic risks.

Invest in Reducing Losses

5. Building owners, governments, and the earth science and engineering professionals must target potential collapse-hazard buildings for seismic mitigation, through retrofit, reduced occupancy, or reconstruction.
6. Governments and other relevant agencies must retrofit or replace all facilities essential for emergency response to ensure that they function following earthquakes. These facilities include fire and police stations, emergency communications centers, medical facilities, schools, shelters, and other community-serving facilities.
7. Governments and other relevant agencies must set priorities and retrofit or replace vulnerable response- and community-serving infrastructure, including cellular communications, airports, ports, roads and bridges, transportation, water, dams and levees, sewage and energy supplies, to ensure that functions can be resumed rapidly after earthquakes.

Ensure Resiliency in Recovery

8. Government agencies, the region's major industries, and earthquake professionals have to plan collaboratively for the housing, both short- and long-term, of residents displaced by potential fires, large numbers of uninhabitable buildings, and widespread economic and infrastructure disruption following a major earthquake.
9. Every household, government agency, and business has to assess and plan for financing the likely repair and recovery costs following a major earthquake.
10. Federal, state and local governments, the insurance industry, and the region's major industries have to collaborate to ensure adequate post-event funding to provide economic relief to individuals and communities after a major earthquake, when resources are most scarce yet crucial for recovery and reconstruction.

John showed a video that was used to open the 100th Anniversary conference. He led a discussion about Nevada's preparedness. Bernie Anderson noted that, because of term limits, there will be essentially a whole new Legislature for the session in 2011; therefore, the Nevada Earthquake Safety Council needs to keep the Legislature informed about earthquake hazards. He stated that the best time to approach potential legislators is during the election cycle, and that earthquake preparedness is best sold under the overall emergency-preparedness umbrella.

Discussion of Proposals for Possible Year-End Funding

The Council considered three proposals for use of possible year-end funding available from FEMA or the Department of Homeland Security through the Division of Emergency Management. These proposals had been submitted to and reviewed by either the Education Committee or the Research Committee. The Council voted by secret ballot on priorities for funding as follows (with 1 being the highest priority):

1. Earthquakes in Nevada Public Awareness Program (\$13,186 in FEMA/DEM funds), from UNLV (Gaye Cote)

2. Quaternary Fault Map of Nevada (\$11,350 in FEMA/DEM funds), from UNR/NBMG (Craig dePolo)

3. Three-Dimensional Ground-Motion Modeling for Nevada Urban Areas (\$20,000 in FEMA/DEM funds), from UNR/NSL (John Louie)

ACTION ITEM: Jon Price will communicate the priorities for year-end funding, along with copies of the individual one-page proposals, to Frank Siracusa, Chief of the Division of Emergency Management.

Federal Emergency Management Agency Update

Sarah Owen, Natural Hazards Program Specialist (Floodplain Manager) for FEMA-Region IX (office in Oakland and serving the states of Arizona, California, and Nevada), represented Jeff Lusk, Earthquake - Program Manager for FEMA-Region IX, who was in Washington, DC, receiving an award for his efforts during Hurricane Katrina. She spent 2.5 months in Mississippi after Katrina and 2.5 months in Nevada after the New Year's Eve flood on December 31, 2005. Sarah has a B.S. degree in geology from Sonoma State University and has been with FEMA for about one year. She has experience with the Peace Corps in Kazakhstan and environmental geology consulting. She will be working with the new Nevada State National Flood Insurance Program coordinator, Christie James. Sarah stated that FEMA is trying to increase its funding for pre-disaster mitigation. Sarah noted that the Pre-Disaster Mitigation Grant funding program was cut this year and that it will hopefully be increased in the following years.

Old Business

Jim Reagan reviewed action items from the February 8, 2006 meeting, all of which have been undertaken.

Craig dePolo reported that Jeff Lusk at FEMA Region IX arranged for the purchase of a number of copies of "Living with Earthquakes in Nevada" for distribution after the recent floods. This should allow for funds to help print a revised version sometime in the future.

New Business

Jon Price suggested that the Council discuss and endorse a version of the "Earthquake Professionals' Top Ten Actions for Northern California." Bernie Anderson suggested that this could be prepared as a resolution for adoption by the Legislature and commissions and boards of local governments.

ACTION ITEM: Terri Garside will place on the agenda for the next NESC meeting a discussion of the Council's possible endorsement of a Nevada version of "Earthquake Professionals' Top Ten Actions for Northern California." Craig dePolo and chairs of the NESC committees will develop an approach for adoption by the Council, including discussion of specific follow-up actions to be taken by individual committees and others.

Announcements

Future quarterly meetings of the Council include:

Wednesday, August 2, 2006 (Las Vegas, probably beginning at 9:30 a.m. at the Clark County Building Department)

Wednesday, November 8, 2006 (Reno, beginning at 9:30 a.m. at the Sierra Pacific Power Company office)

Public Comment Period

No additional comments were made from the public, and the meeting was adjourned at 3:00 p.m..

REVIEW OF ACTION ITEMS

Jim Reagan will append a draft of the 2005 annual report to the minutes of this meeting. A vote on adoption of the report by the Council will be placed on the agenda for the meeting on 2 August 2006.

Rick Martin will respond to Bernie Anderson's request for statistics on use of the funding provided by the Legislature for assistance to private individuals after the recent floods.

Jon Price will report to WSSPC that the Nevada Earthquake Safety Council has accepted WSSPC's invitation to join WSSPC as a voting member.

Jon Price will communicate the priorities for year-end funding, along with copies of the individual one-page proposals, to Frank Siracusa, Chief of the Division of Emergency Management.

Terri Garside will place on the agenda for the next NESC meeting a discussion of the Council's possible endorsement of a Nevada version of "Earthquake Professionals' Top Ten Actions for Northern California." Craig dePolo and chairs of the NESC committees will develop an approach for adoption by the Council, including discussion of specific follow-up actions to be taken by individual committees and others.

respectfully submitted by Jon Price, 2 June 2006

Nevada Earthquake Safety Council
 c/o Nevada Bureau of Mines and Geology
 University of Nevada/MS 178
 Reno, Nevada 89557
 775/784-6691 ext. 126

NEVADA EARTHQUAKE SAFETY COUNCIL
Members of the Board of Directors and Officers
(as of 10 May 2006)

Business and Industry, Southern Nevada	Steve Koenig, Bellagio Resorts
Business and Industry, Northern Nevada	vacant
Insurance Industry (statewide)	Greg Flanigan Farmers Insurance (Las Vegas)
State Government (statewide)	Mark Harris Public Utilities Commission (Carson City)
Local Government, City	Wayne Carlson Nevada Public Agency Insurance Pool (Carson City)
Local Government, County	Marge Gunn Nutman Nevada Assoc. of Counties & Lincoln Co. Office of EM
Seismology (statewide)	John Anderson Nevada Seismological Laboratory (UNR)
Geosciences, Southern Nevada	Burt Slemmons Las Vegas consultant, UNR (retired)
Geosciences, Northern Nevada	Jonathan G. Price Nevada Bureau of Mines and Geology
Engineering, Southern Nevada	Jim Werle Converse Consultants
Engineering, Northern Nevada	Mike Blakely Structural Engineers Association of NV
Education (statewide)	Jenelle Hopkins Clark County School District, Las Vegas
Community Organizations, Southern Nevada	Ed Ruttan American Red Cross
Community Organizations, Northern Nevada	Jim Reagan Sierra Pacific Power Company
University, Southern Nevada	Catherine Snelson UNLV Geoscience Department
University, Northern Nevada	Ian Buckle UNR Center for Civil Engineering Earthquake Research
Building Official, Southern Nevada	Ronald L. Lynn Clark County Building Department
Building Official, Northern Nevada	Alan Bennett City of Reno
State Senate	Warren Hardy Nevada State Senator (Las Vegas)
State Assembly	Bernie Anderson Nevada State Assemblyman (Sparks)
Member at Large, Southern Nevada	Jim O'Donnell UNLV
Member at Large, Northern Nevada	Greg Moss The Moss Group

Members of the Executive Committee

Chair

First Vice Chair-South

First Vice Chair-North

Second Vice Chair-South

Second Vice Chair-North

Secretary

Past Chair

Division of Emergency Management Representatives

Ronald L. Lynn

Burt Slemmons

Jim Reagan

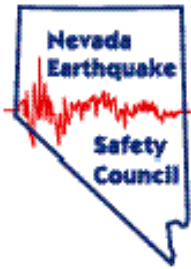
Jim Werle

Greg Moss

Jonathan G. Price

John Anderson

Rick Martin



NEVADA EARTHQUAKE SAFETY COUNCIL

c/o Nevada Bureau of Mines and Geology
University of Nevada, Reno
Mail Stop 178
Reno, Nevada 89557-0088

(775) 784-6691 Ext 126
(775) 784-1709 Fax
e-mail: jprice@unr.edu
Web site: www.nbmgs.unr.edu/nesc

Jon Price, Secretary
Terri Garside, NBMG Executive Secretary

May 26, 2006

TO: Mr. Ron Lynn, Chairman, Nevada Earthquake Safety Council
Board of Directors, Nevada Earthquake Safety Council

FROM: Jim Reagan, Chairman, Strategic Planning Committee

RE: Annual Report of Activities for Plan Year 2005

I am pleased to provide a summary of activities and efforts achieved by the Standing Committees and members of the Nevada Earthquake Safety Council for the calendar year 2005. As with previous years, the committee members and members of the council have made great progress toward the mission and goals of the council and earthquake safety in Nevada. This year's accomplishments include:

EDUCATION COMMITTEE

- "Drop, Cover, and Hold On" was the theme for Earthquake Awareness Week, February 28 to March 5, 2005.
- Packets were sent to approximately 650 Nevada schools containing poster contest rules, classroom hazard hunt, home hazard hunt activity, earthquake drill, evacuation checklist, and "Beat the Quake" flyer.
- The University of Nevada, Reno held an earthquake exercise on 1 February 2005.
- New monitors for earthquakes were installed in the hallways of the Nevada Seismological Laboratory thanks to the efforts of John Louie.
- Students from the Reno-area are learning how to use the K-12 seismic network.
- Committee members identified opportunities for education through the National Science Foundation's EarthScope Program.
- The Nevada Seismological Laboratory, the Nevada Bureau of Mines and Geology, and the geoscience departments at UNLV and UNR are engaged in the scientific aspects of EarthScope. Which has three major components: (1) deep drilling across the San Andreas, (2) deployment of seismic instruments in 48 states and Alaska, and (3) deployment of global positioning system (GPS) and better understand earthquakes and volcanoes.
- Committee members provided volunteers for a workshop and earthquake training for teachers, at the Association of Engineering Geologists (AEG) annual meeting in Las Vegas on September 24.

RESEARCH & INFORMATION COMMITTEE

- A project to estimate the damage and economic cost of historical earthquakes in Nevada has been completed. 19 earthquakes analyzed (from 1868 to 1994) resulted in only \$17 million in damage (in 2003 dollars). The figure is low primarily because so few people lived in the affected areas. Using FEMA's HAZUS model, these same earthquakes today would cause \$1.57 billion in damage and economic loss.
- Committee members are reviewing the fault database in the latest version of HAZUS, and making recommendations to improve this database, which currently only lists the 130 most active faults in the state and excludes some faults that are important for earthquake planning scenarios.
- The editor of the Nevada Bureau of Mines and Geology, is adding a set of standard maps for county seats throughout Nevada to the NESC Web site. The maps will be incorporated into a Nevada Bureau of Mines and Geology report on loss estimation from future earthquakes using the Federal Emergency Management Agency's HAZUS program.

- U.S. Geological Survey has produced a new set of earthquake probability maps.
- These can be accessed on the Web through the NESC Web site. The maps show the probability of an earthquake of a given magnitude (e.g., 5, 6, 6.5, or 7) occurring over a given period of time (e.g., 50 years) within 50 kilometers of a particular location (entered either as a zip code or longitude and latitude). These maps are particularly useful in demonstrating earthquake hazard to the lay public.
- The California Seismic Safety Commission, in cooperation with the California Geological Survey, the Nevada Earthquake Safety Council, the Nevada Bureau of Mines and Geology, and the Seismological Laboratory, has produced a new "Earthquake Shaking Potential Map for Portions of Eastern California and Western Nevada."
- Craig dePolo attended the August 2005 national earthquake program managers' meeting, which was sponsored by the Central United States Earthquake Consortium (CUSEC) and FEMA. NESC was praised at this meeting as one of the most successful State seismic safety councils or commissions in the country.
- The Association of Engineering Geologists (AEG) held a good symposium on earthquake hazards in the Southwest during its annual meeting in September in Las Vegas. The Las Vegas Valley fault system is being accepted as being an active faults system in the Holocene (the last 10,000 years).

POLICY COMMITTEE

- No bills regarding earthquake issues have been introduced in the current session of the Legislature. Such bills will be developed and introduced in the 2006 year.
- The Nevada Public Agency Insurance Pool is working on a document on non-structural mitigation. They are using materials from the NESC non-structural mitigation workshop in the spring of 2004.
- Members provided a presentation on Rural Water System Earthquake Preparedness and earthquake effects on water system disruptions affecting more than 50% of the system and/or requiring more than one week for recovery of service, structural damage to treatment facilities, and potential water contamination and the need for boil-water orders. The American Lifelines Alliance has developed guidelines for designing water systems for seismic safety, and the Nevada Public Agency Insurance Pool has made two presentations, and plan to make presentations in Mesquite and at the Nevada Rural Water Association.

SCIENTIFIC AND INFORMATIONAL PRESENTATIONS:

Ad Hoc Committee on Rockery Walls

- Members presented a draft copy of guidelines for construction of rockery walls (dated 14 February 2005). The guidelines were developed by the Structural Committee of the Southern Nevada Building Officials. There was considerable input from interested parties in Northern Nevada on the draft guidelines. It was determined that further investigation was necessary to develop guidelines for the construction of rockery walls that could be adopted as part of the building code. A subcommittee was assigned to reevaluate the role of the Council in this process.

Making Your School Earthquake Safe

- Gloria Leggio, Jim O'Donnell, Alex Balint, and Spencer Swan talked about a grant for renovations at the old Las Vegas High School (built in the 1930s, now the Las Vegas Academy). During the 2003-2004 school year about 100 students were involved in earthquake mitigation at the school. They initially focused on nonstructural mitigation, but they have also included some structural changes in a final phase.

Presentations of Awards for Excellence

Awards for Excellence to:

- Gloria Leggio and Jim O'Donnell for their mitigation efforts at the Las Vegas Academy.
- Dan O'Brien for work by the State of Nevada Public Works Board for remodeling the former Carson City Courthouse, including earthquake retrofit features.
- Ron Lynn and the Clark County Department of Development Services for the nonstructural mitigation of the Clark County Operations Center West Building.
- Assemblyman Bernie Anderson and the Nevada Legislature for sponsorship and passage of Assembly Bill 57 in the 2003 legislative session.

Discussion Of The Kinkead Building's Performance During An Earthquake

- Dan O'Brien described the Kinkead building in Carson City, which was built in 1974-75 which has a sloping floor, 6 inches of deflection within a 20-foot distance.
- State Public Works Board investigated the costs of fixing the building and commissioned a study by Blakely, Johnson, and Ghusn. The bottom-line cost would be about \$9 million to \$12 million to fix the problems and bring the building up to modern code.
- Members provided a detailed discussion of the technical aspects of the investigation and structural report.

The New FEMA - HAZUS Planning Grant

- Gary Johnson discussed the project that is being funded by FEMA and NBMG to update the basic information that feeds into HAZUS. He and Christine Arritt are the principal investigators on this project. This will include better locations and information on critical facilities (schools, hospitals, etc.) than is currently in the HAZUS default files. They expect to complete the project within a year.

Earthquakes in Southern Nevada - Outreach Efforts

- Gaye Coté, Director and Project Administrator for the UNLV Earthquakes in Southern Nevada Project, spoke about their efforts in public outreach. They have developed a series of educational PowerPoint presentations to increase basic knowledge of the science, geotechnical aspects, and structural engineering techniques and considerations of earthquakes. Borrowing freely from published sources, they have specific information on earthquake risk in Las Vegas Valley and how to mitigate risk and be prepared.

Structural Analysis of the New Washoe Medical Center Tower

- Kirk Ellis and Dan Riebli, with Kirk Ellis and Associates, reported on their company's structural analysis of the new 12-story tower (and basement) that Washoe Medical Center is adding at their facility in Reno. Their company was asked to check the plans presented by the structural engineering firm that designed the building. The computer model predicts 9 inches of displacement on the top floor during the maximum considered earthquake for this site. The design exceeds the criteria in the International Building Code 2005, and the building should be able to be occupied immediately after the expected earthquake.

PROJECTS: The Council discussed and set priorities for funding of 4 project proposals totaling \$66,366.00 for possible FEMA federal fiscal 2005 year-end funding. (\$30,296 requested with \$36,070 matching funds)

- Seismic Risk Assessment of the Las Vegas Infrastructure (proposed by UNLV – Ronald Sack, Department of Civil & Environmental Engineering); cost to DEM = \$19,796; matching funds = \$24,570; total cost = \$44,366.
- Earthquake Safety Classes for Local Government Employees (proposed by Washoe County Emergency Management); cost to DEM = \$2,500; matching funds = \$2,500; total cost = \$5,000. (This is contingent on Washoe County's agreeing to cover the matching funds.)
- ATC-20 Post-Earthquake Safety Evaluation of Buildings – Training Seminar (proposed by ASCE-Truckee Meadows Branch); cost to DEM = \$3,500; matching funds = \$3,500; total cost = \$7,000.
- How to Build and Use a Seismometer: An Education Module (proposed by UNR – Sherif Elfes, Gary Norris, and Ellen Jacobson); cost to DEM = \$4,500; matching funds = \$5,500; total cost = \$10,000.

In summary, the Nevada Earthquake Safety Council has provided a successful venue for science, research, and information on Nevada's Earthquake Hazards to be promulgated in legislature, provided to business and industry, and delivered to the citizens of Nevada. Additional information and details of these accomplishments are noted in the minutes of the quarterly meetings. The many contributors to this outstanding effort are recognized in the minutes, and it is important to note that it does indeed take many contributors, individually and in concert with one or more committees, to achieve the goal of Earthquake Safety in Nevada.