Summary Minutes

Nevada Earthquake Safety Council

7 February 2007

The Nevada Earthquake Safety Council (NESC) met from 9:30 a.m. to 3:00 p.m. in the conference room at the offices of Sierra Pacific in Reno. These and previous minutes are posted on the Web site for the committee (http://www.nbmg.unr.edu/nesc.htm).

Ron Lynn chaired the meeting. Individuals attending the meeting are members of the Council:
John Anderson*, Nevada Seismological Laboratory
Alan Bennett*, City of Reno
Mike Blakely*, Blakely, Johnson, and Ghusn,
Wayne Carlson*, Nevada Public Agency Insurance Pool
Gaye Coté
Bob Cullins, University of Nevada, Reno
Craig dePolo, Nevada Bureau of Mines and Geology, who held the proxy for Ian Buckle*, University of Nevada, Reno – Center for Civil Engineering Earthquake Research
Diane dePolo, Nevada Seismological Laboratory, who held the proxy for Greg Flanigan*, Farmers Insurance
Sam Earman, Desert Research Institute, representing Bruce Hurley, National Nuclear Security Agency, U.S. Department of Energy
Terri Garside, Nevada Bureau of Mines and Geology, who held the proxy for Steve Koenig*, Bellagio Resorts
Werner Hellmer, Clark County Department of Development Services, Building Department
Debbie Hinman, ATT
Jenelle Hopkins*, Clark County School District, Las Vegas
Eric Hubbard, Kleinfelder
Mara T. Jones, State Historic Preservation Office
Jeff Lusk, Federal Emergency Management Agency
Ron Lynn*, Clark County Department of Development Services, Building Department
Rick Martin, Nevada Division of Emergency Management, who held the proxy for Marge Gunn Nutman*, Nevada Association of Counties & Lincoln County Office of Emergency Management
Greg Moss*, The Moss Group
Jim O'Donnell*, Geophysical Contractor, Las Vegas
Rebecca Ossa, Nevada State Historic Preservation Office
Jon Price*, Nevada Bureau of Mines and Geology
Jim Reagan*, Sierra Pacific Power Company
Burt Slemmons,* University of Nevada, Reno (retired), consultant in Las Vegas
Cathy Snelson*, UNLV
Erin Summers, Nevada Division of Insurance
Jim Walker, Nevada Department of Transportation
Jim Werle*, Converse Consultants

* 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:
Bernie Anderson*, Nevada Assembly
Warren Hardy*, Nevada State Senator

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

Education and Awareness Committee

Diane dePolo reported that the committee is designing a Web site for education and awareness activities. This will include items on science, preparedness, school earthquake preparedness, the Nevada K-12 school seismic network, and Earthquake Awareness Week. Discussion followed with many ideas on what should be included and what strategies should be used in the design.

There should be links to the Incorporated Research Institutions for Seismology (IRIS), the Nevada Seismological Laboratory, UNLV's earthquake awareness (earthquakes.unlv.edu), the Nevada Bureau of Mines and Geology, the American Red Cross, FEMA, and Nevada Division of Emergency Management Web sites, but there should also be content permanently on the NESC Web site. Items in Spanish will be particularly helpful, given Nevada demographics.

Governor Gibbons has signed a proclamation setting Earthquake Awareness Week as February 25 to March 3, 2007.

Ron asked for volunteers for a special subcommittee on Web design.

Diane reported that about two weeks ago, calls from West Wendover came into UNR, asking whether an earthquake was recorded. With new data coming in from the NSF-supported EarthScope transportable array, the Nevada Seismological Laboratory was able to determine that whatever the event was, it wasn't an earthquake. The Laboratory is seeing a lot of previously unrecorded activity with these new instruments; many of these are mine blasts; others may be military activities.

Research Committee

Jim Werle reported that the southern Nevada seismic hazards conference will likely be delayed for one year and not be held this spring. Jim recommends planning for the conference in 2008. The last such conference was in 1996, although some updates were made during the 2005 annual meeting of the Association of Environmental and Engineering Geologists in Las Vegas. Barbara Luke at UNLV is working on an Engineering Geology and Geotechnical Engineering Symposium, which could be linked to the seismic hazards conference. Kathy Snelson noted that the annual meeting of the Cordilleran Section of the Geological Society of America will be held in the new student union at UNLV in the spring of 2008, during UNLV's spring break (usually over St. Patrick's Day). Craig dePolo volunteered to help others organize the symposium. John Anderson offered to propose to the USGS to help financially support travel and a proceedings volume.

ACTION ITEM: The Research Committee (Craig dePolo and Jim Werle, Co-Chairs) is charged to present a plan and date for a southern Nevada seismic hazards conference in 2008 at the next NESC meeting (May 10).

Policy Recommendation Committee

The Council unanimously approved a motion to adopt the DRAFT Policy Recommendation Proposal Procedure presented by Wayne Carlson, with an amendment, to change the requirement that a request from policy recommendation review "must" be submitted to the chair of the Policy Recommendation Committee to "should" be submitted. The adopted procedure is appended below as NESC Policy Recommendation 2007-1.

ACTION ITEM: Terri Garside will review past NESC minutes and number policy recommendations according to the adopted procedures. These should be posted on the NESC website.

The Council unanimously approved a motion to adopt the Proposed Protocol for Response to Legislation presented by Wayne Carlson. The adopted protocol is appended below as NESC Policy Recommendation 2007-2.

Ron Lynn stated that Assemblyman Harry Mortenson requested that he put together some concepts for legislation regarding unreinforced masonry (URM) construction. Jon Price noted that NESC's policy recommendation adopted on 4 August 2004 is relevant to this possible bill. At that time, NESC unanimously passed a motion to endorse a recommendation to the Nevada Division of Emergency Management for a policy statement on unreinforced masonry buildings: It is the policy of the State of Nevada that unreinforced masonry buildings should be identified and prioritized for earthquake hazard mitigation. A statewide survey that identifies URM structures and categorizes the degree of earthquake damage vulnerability should be completed by State, local, and school officials.

Strategic Planning Committee

Jim Reagan noted that the committee did not meet during the last quarter.

At the last NESC meeting, the Council formed a Bylaws Committee to examine the NESC Bylaws. (Jim Reagan, Chair; other members: Wayne Carlson, Jon Price, Jenelle Hopkins, John Anderson; Glade Myler as counsel). The committee has not met but has had some input. The committee will report at the next NESC meeting. Issues include the quorum, new directors, proxies, the open-meeting law, and empowerment of the executive committee to take certain actions.

Nominating Committee

Jon Price noted that Mark Harris, Nevada Public Utilities Commission, is no longer able to serve on the board. This creates a vacancy for the position for a board member who represents state agencies (statewide). The Nominating Committee (Jon Price, Rick Martin, and John Anderson) recommend Jim Walker, Nevada Department of Transportation to fill this position.

The Council unanimously approved forwarding the nomination of Jim Walker to Frank Siracusa for appointment.

ACTION ITEM: Jon Price will contact Frank Siracusa with the Council's recommendation to appoint Jim Walker as a NESC board member.

There are also two other vacancies, one for the board member who represents community organizations (southern Nevada), and one for the board member who represents business and industry (northern Nevada). Nominations and volunteers are welcome. Linda Noel, with Community Organizations Active in Disasters, may be a good person for the former position.

ACTION ITEM: The Nominating Subcommittee will seek representatives to fill the two vacancies on the board.

Top Earthquake Actions for Nevada

Craig dePolo and John Anderson led a discussion about a list of items that they prepared for NESC's consideration - items that are most important for the State of Nevada, Nevada citizens, public officials, and the NESC. They included actions that are achievable within a five-year timeframe and have the

highest priority benefit for the State. There are no constraints on the number of recommendations; they came up with the following five.

1. Know your earthquake risk. We need a revitalization and dramatic enhancement in the number of Nevadans who know about earthquakes and how to be prepared for them. Awareness is needed for belief of reality. This should include preparation of disaster/emergency safety kits. The goal is to have emergency kits accessible to at least 50% of the Nevada population and tourists within 5 years.

2. Prepare for effective emergency response to an earthquake disaster. The goal should be to experience no deaths or extreme injuries due to poor emergency response to a disaster; the public expects this. Shore up shortcomings in emergency response now or make plans to make it right.

3. Make Nevada's buildings have a life-safety resistance during an earthquake. We need to inventory the most seismically dangerous buildings in Nevada. Develop a plan to retrofit or re-designate occupancy.

4. Plan to recover from an earthquake disaster. The state should come together to gather top experts at a well attended workshop to use this as a basis to prepare a plan to recover quickly from an earthquake disaster at a state, multiple county, county, major city, and rural level.

5. Plan for efficient tourist management and wellbeing during and following a disaster. There should be a Nevada Visitor's Disaster Response Plan. Make first contact with all hotel owners and the like and give them a one-page emergency-response flyer.

Considerable discussion ensued about needs for rewording of these items.

ACTION ITEM: The NESC Strategic Planning Committee (Jim Reagan, Chair) should develop the list of top earthquake actions for Nevada, starting with the work of Craig dePolo and John Anderson. The Committee should present the list, with short justifications, for adoption by the Council at its August meeting, after discussion at the May meeting with the Utah Seismic Safety Commission.

To help the Strategic Planning Committee with this effort, comments should be sent to Jim Reagan, Craig dePolo, and John Anderson by e-mail (jreagan@sppc.com; cdepolo@unr.edu; jga@seismo.unr.edu) within the next two months.

Update from the Nevada Division of Emergency Management (DEM)

Rick Martin reported that DEM is now in their new offices. The NESC will meet there at its August 1 meeting.

DEM is now using Web Emergency Operations Center (EOC) software. Rick offered to have DEM's webmaster make a presentation about the software.

ACTION ITEM: Terri Garside will work with Rick Martin to schedule a presentation about DEM's use of Web EOC software at either the August 1 (Carson City) or November 14 (Las Vegas) NESC meeting.

Training exercise workshops are coming up; NESC members are welcome to attend. The training calendar is posted on the DEM website.

There is a new State-funded individual assistance program that is administered by DEM. The have $5,000,000 that can be used for any disaster declaration (not just a federal declaration).

In October, there will be a Governor's school safety conference, at which all hazards, including non-structural earthquake hazards, can be included.

Rick reported that there is no extra funding available through normal FEMA emergency-management assistance for NESC projects that were discussed at the May 2006 NESC meeting. Nonetheless, there may be opportunities with the Department of Homeland Security (see later item in these minutes).

FEMA Update

Jeff Lusk reported that Nevada has submitted two project applications and three or four planning-grant applications to FEMA's pre-disaster mitigation grant program. Jon Price noted that details about these are available in the minutes of the 1 February 2007 meeting of the Nevada Hazard Mitigation Planning Committee (http://www.nbmg.unr.edu/nhmpc/nhmpc.htm).

Jeff reported on lessons learned from the 16 October 2006 Kiholo Bay, Hawaii earthquake. Post-and-pier construction is fairly unique to Hawaii, and Jeff has been working with officials there to improve seismic safety of those structures. Telephone lines were damaged by failures of rockery walls or dry walls (rock-without-mortar) during this earthquake. There was considerable non-structural damage that caused loss of function for businesses and one hospital; many ceilings were damaged. HAZUS didn't function as well as would have been thought, probably because the Hawaii earthquake was deep (39 km), relative to typical earthquakes on the mainland. The tourist/transient population was fairly large with the Hawaii earthquake.

The Earthquake Engineering Research Institute (EERI) nominated a lead investigator for the event, but the role of that person wasn't clear, and there was some confusion between local engineers and volunteers who came from outside. There was no scientific and technical clearinghouse for the event; there was nobody to fund it, nor was there a clear commitment from a university to host it.

The ATC-20 process (rapid evaluation of earthquake damage to buildings and tagging the buildings as either red, yellow, or green) was delayed by two weeks. The process should be initiated early after the event, and the public should be alerted with regard to what the tags mean (e.g., some people in Hawaii were confused that a red tag meant that the building was condemned, but it really means that the building is unsafe to enter, and that a detailed inspection is required). Only about 20% of the people trained in ATC-20 were available to help evaluate buildings; the two-week delay may be a contributing factor to this low percentage.

Mike Blakely noted that there is no list of who is trained in northern Nevada to be capable of doing the ATC-20 evaluations as volunteers. Many structural engineers in the private sector are obligated to first inspect the buildings that they designed. Alan Bennett noted that the City of Reno has a list of individuals who have taken recent ATC-20 classes.

Jeff noted that FEMA is getting higher visibility and will likely regain control of the Hazard Mitigation Program

April 23-27 is the scheduled time for the next FEMA-State earthquake program directors' meeting. He encouraged Nevada to send a representative.

Jeff lauded NESC participants in the Weather Channel's program that featured earthquakes.

ACTION ITEM: The Policy Recommendation Committee (Wayne Carlson, Chair) should investigate developing a NESC policy recommendation regarding how to best activate the ATC-20 process after an

earthquake in Nevada. This should include such issues as who will conduct the inspections and how to physically get the people there. It may also include mutual aid agreements.

Award for Excellence

Ron Lynn presented the Nevada Earthquake Safety Council Award for Excellence to Gaye Coté in recognition for her efforts in earthquake awareness and preparedness for the Las Vegas Valley.

Update on the Joint Meeting with the Utah Seismic Safety Commission (USSC) and the NESC

Jon Price previewed the agenda for the 10 May 2007 meeting of NESC, which will be a joint meeting of NESC and the Utah Seismic Safety Commission in St. George, Utah. The draft agenda includes the following items:

8:00 a.m. – Welcome, introductions, and discussion of the purpose and overview of the meeting.
8:15 a.m. – Summary of organizational structure, activities, funding, priorities, and major successes and failures of the NESC and USSC
10:15 a.m. – Discussion of "How Prepared Are We? How Prepared Should We Be?" This will involve discussion of mutual aid agreements, roles of NESC/USSC in post-earthquake clearinghouses and recovery; preparation for the "window of opportunity" (for legislation, ordinances, grants, etc.) that will open following the next large Basin and Range earthquake.
Noon – Keynote address by Dean Cox, Washington County, Utah Emergency Manager – "Anatomy of a Disaster – the 2005 St. George Floods"
1:30 p.m. – FEMA-State Activities on the Kiholo Bay Earthquake, 15 October 2006
2:00 p.m. – Continued discussion of "How Prepared Are We? How Prepared Should We Be? This session will focus on needs in rapidly developing areas (such as the Las Vegas and St. George metropolitan areas) and on developing a proposal for a workshop on rural earthquake issues, perhaps in 2008, to be sponsored by the Western States Seismic Safety Commission.
3:15 p.m. – Planning for the Future – Top Three Actions. This discussion will focus on actions that should be taken now, so that we aren't saying, after the next large earthquake, "what should we have done?"
4:45 p.m. – 5:00 p.m. – Final discussion of "Where Do We Go From Here?" – action items for future cooperative efforts, workshops, etc.

Update on the Western States Seismic Policy Council in Reno

Craig dePolo described the draft agenda for the September 30 to October 2 joint annual meeting of the Western States Seismic Policy Council and the International Code Council in Reno. He has assembled an impressive set of speakers, most of whom are known nationally as experts in their disciplines.

Sunday, September 30
WSSPC Committee meetings
WSSPC Field Trip – Earthquakes and Earthquake Research in Western Nevada, including a visit to the Washoe County Emergency Operations Center.

Monday, October 1
Earthquake Hazards and Codes, including changes to the National Seismic Hazard Maps
David Applegate – Earthquake hazards in the United States
Mark Petersen – General aspects of the new national seismic hazard maps
John Henry – New seismic provisions in building codes
Ron Lynn – realities of building code application; and a discussion of what happens without codes.

Tuesday, October 2

Effectively Communicating Earthquake Risk Mitigation (with the top speakers in the Nation)
Richard McCarthy. CA Seismic Safety Commission – where we stand today in communicating earthquake preparedness and risk mitigation
Robert Meyer, Why we underprepare for hazards
Connie Shefner-Rogers, How to communicate risk, safety, and mitigation messages effectively
Kathleen Tierney, Effective opportunities to communicate earthquake safety, preparedness, and mitigation
Craig dePolo, Content of the earthquake safety, preparedness, and mitigation response

Earthquake Scenarios and Performance-Based Codes
Richard Eisner, A modern 1906 Bay Area earthquake scenario
Bob Carey, Salt Lake City earthquake scenario and URMs
George Crawfod, Cascadia earthquake scenario and business recovery
Chris Poland (tentative?), Performance-based engineering
Jeff Lusk, Misconceptions about FEMA's response to disaster

There will also be a formal meeting of earthquake safety councils during the meeting.

ACTION ITEM: Craig dePolo will prepare a flier to promote the WSSPC annual meeting and see that it is distributed to the NESC. Ron Lynn will help promote the meeting with building officials. Rick Martin will help promote the meeting with western state emergency managers. Terri Garside will assist in sending the flier to other organizations that may be interested.

Cathy Snelson suggested advertising the meeting through IRIS. John Anderson suggested that the SSA would be interested as well.

Potential U.S. Department of Homeland Security Funding Through the Nevada Division of Emergency Management

Rick Martin discussed an "Investment Justification Summary" concerning funding opportunities from the Department of Homeland Security (DHS). He has contacted DHS officials and received positive response. Rick asked for ideas on how to meld needs for earthquake preparedness, response, and mitigation with DHS priorities. Rick would like to see concepts and preliminary proposals for projects by the middle of March. A copy of the "Investment Justification Summary" document from DHS is appended to these minutes.

Initiatives

Jon Price and John Anderson discussed two UNR initiatives, one at the State level on "Reducing Risks from Natural Hazards" and a complementary one at the federal level on "Reducing Risks from Earthquakes in Nevada."

The first initiative has been incorporated by the Board of Regents in their request to the Legislature. Specifically, the Regents' request includes six new positions that will help to reduce the risks from natural disasters: three positions in the Nevada Seismological Laboratory (NSL) to improve our capabilities to detect and understand earthquakes and their effects on buildings and to begin to develop an early warning system; two positions in the Nevada Bureau of Mines and Geology (NBMG) to locate active faults, to evaluate earthquake hazards using geologic and geodetic (particularly new, ultra-precise global positioning system) techniques, and to support earthquake, flood, and other risk-reduction efforts of the Nevada Earthquake Safety Council and the Nevada Hazard Mitigation Planning Committee; and one position in the Nevada State Climate Office (NSCO) to upgrade statewide monitoring of weather and

climate and to help reduce risks from floods, drought, and wildfires. Flooding and wildfire are annual events in Nevada, and the NSCO budget enhancements are targeted at building capability in forecasting and warning for these catastrophic events. The NSL, NBMG, and NSCO are Statewide Programs managed by the University of Nevada, Reno but with responsibilities throughout the State.

The cost of these additional positions, including fringe benefits, is estimated to be approximately $575,000 per year. In comparison, recent estimates using the Federal Emergency Management Agency's sophisticated loss-estimation computer model (HAZUS) placed the economic losses from earthquakes in the Las Vegas and Reno urban areas at up to $17.7 billion and $7.6 billion (for magnitude 6.6 and 6.9 earthquakes, respectively). The hazards are high (about a 50% chance of a magnitude 6.5 earthquake hitting the Reno-Carson City urban area in the next 50 years), but we can reduce the risks by identifying the hazardous locations, by building earthquake-resistant structures, and, ultimately, by providing useful warnings. Although warnings of a few days, as is the case with hurricanes and some floods, are not yet scientifically reliable, there is great promise for early warning that takes advantage of the fact that earthquakes propagate at the speed of sound, but signals to back up computers and open doors at firehouses can be sent ahead of the earthquake at the speed of light.

These new positions, along with instruments that are being purchased with federal funds, will allow Nevada to detect and accurately locate small earthquakes (including foreshocks of larger earthquakes) throughout the State; measure strain building up for the inevitable large earthquakes; locate active faults that threaten homes, businesses, and public buildings and infrastructure; and begin to link weather stations to our telemetry system, thereby providing capabilities for real-time monitoring and warning of extreme weather. The track records of the NSL, NBMG, and NSCO have been superb in attracting federal grants to partially support applied research in Nevada; these State funds will lead to equal or greater amounts of additional federal funds coming to Nevada to further reduce risks from natural hazards. The University has assembled a world-class team of experts in the related fields of seismology, geology, geodesy, and geography; this additional State support for positions will further strengthen the team by providing the leverage needed to attract additional resources to tackle issues of reducing risks from natural hazards in Nevada.

Assemblyman Bernie Anderson has submitted a request for a bill draft (S-943) that "creates positions within the Nevada System of Higher Education dedicated to reducing risks from natural hazards." This bill would be consistent with the Board of Regents' request. Jon encouraged individuals who support this initiative to contact their State Senators and Assemblywomen and Assemblymen and the Governor. A copy of a white paper on the initiative will be appended to these minutes.

The second initiative at the federal level includes five phases:

1. Southern Nevada: Characterize the seismic hazard in southern Nevada by installing a seismic and geodetic monitoring network.
2. Northern and Eastern Nevada: Characterize the seismic hazard and geothermal energy potentials in northern and eastern Nevada by converting (complete the statement)
3. Advanced National Seismic System (ANSS): Monitor strong shaking in urbanized Nevada by completing the Congressionally-authorized ANSS monitoring network.
4. Portable Seismic and Geodetic Stations: Develop prompt post-earthquake response capabilities by acquiring a network of portable seismic and geodetic stations.
5. Create an Intermountain West Earthquake Center to apply new data to risk reduction.

Costs include substantial expenses for equipment in the first two years. Collectively these phases would require $9 million in federal fiscal year 2008, $7 million in fiscal year 2009, and $4.7 million in fiscal year 2010 and beyond for ongoing operating costs.

A one-page summary of this initiative, followed by detailed explanations, is appended to these minutes.

Cathy Snelson explained the procedure for Congressional earmarks at UNLV. Ideas are ranked by the Deans, and some are forwarded to the Congressional delegation through the UNLV Vice President of Research. There are two earthquake-related items that should be on the UNLV priority list of federal initiatives. These include:

1. "Keeping Us Safe – Earthquake Hazards and Risks for Southern Nevada." This is a request for additional funding for the Earthquakes in Southern Nevada project, which was funded in fiscal year 2006 and whose current funding expires near the end of 2008.
2. "Science Education for Nevada's Future: Statewide Technologies for K-12 Education and Research." This is a request for funding of the K-12 Seismic Network (in collaboration with Ken Smith at the Nevada Seismological Laboratory), which will place more seismic instruments in schools, and link those instruments to the Laboratory's network, and related teacher training.

Summaries of both of these initiatives are appended to these minutes.

Jon Price encouraged that support for these federal initiatives to be expressed to the Nevada Congressional delegation.

Update on Earthquake Activity in Nevada

John Anderson reported that John Louie is now the Associate Director of the Nevada Seismological Laboratory, and Ken Smith is now the Seismic Network Director.

Ken Smith is visiting high schools throughout the state to discuss the use and impact of the USArray stations that are being deployed by NSF's EarthScope program. Earthquakes with much smaller magnitudes than could have been detected before the new stations were installed are now being recorded. The Nevada Seismological Laboratory is seeking support for converting as many of these stations as possible into the network operated by the Laboratory.

Old Business

Ron Lynn reviewed action items from the November 8th meeting.

New Business

John Anderson noted that Mike Blakely has retired as of 1 January 2007, although the company has retained him as chairman of their board of directors. The Council congratulated Mike on his career as an outstanding structural engineer. We look forward to Mike's continued membership on the Board of Directors and to his further contributions to the success of the Council.

Future NESC meetings and locations include:

Thursday, 10 May 2007 (St. George, Utah)
Wednesday, 1 August 2007 (Carson City, at the Division of Emergency Management)
Wednesday, 14 November 2007 (Las Vegas).

The Nevada Hazard Mitigation Planning Committee plans to meet immediately after the August 1st and November 14th NESC meetings.

Public Comment

None.

REVIEW OF ACTION ITEMS

The Research Committee (Craig dePolo and Jim Werle, Co-Chairs) is charged to present a plan and date for a southern Nevada seismic hazards conference in 2008 at the next NESC meeting (May 10).

Terri Garside will review past NESC minutes and number policy recommendations according to the adopted procedures. These should be posted on the NESC website.

Jon Price will contact Frank Siracusa with the Council's recommendation to appoint Jim Walker as a NESC board member.

The Nominating Subcommittee will seek representatives to fill the two vacancies on the board.

The NESC Strategic Planning Committee (Jim Reagan, Chair) should develop the list of top earthquake actions for Nevada, starting with the work of Craig dePolo and John Anderson. The Committee should present the list, with short justifications, for adoption by the Council at its August meeting, after discussion at the May meeting with the Utah Seismic Safety Commission.

Terri Garside will work with Rick Martin to schedule a presentation about DEM's use of Web EOC software at either the August 1 (Carson City) or November 14 (Las Vegas) NESC meeting.

The Policy Recommendation Committee (Wayne Carlson, Chair) should investigate developing a NESC policy recommendation regarding how to best activate the ATC-20 process after an earthquake in Nevada. This should include such issues as who will conduct the inspections and how to physically get the people there. It may also include mutual aid agreements.

Craig dePolo will prepare a flier to promote the WSSPC annual meeting and see that it is distributed to the NESC. Ron Lynn will help promote the meeting with building officials. Rick Martin will help promote the meeting with western state emergency managers. Terri Garside will assist in sending the flier to other organizations that may be interested.

respectfully submitted by Jon Price, 15 February 2007

Nevada Earthquake Safety Council
c/o Nevada Bureau of Mines and Geology
University of Nevada/MS 178
Reno, Nevada 89557
775/784-6691 ext. 5

Documents Appended to these Minutes:

- Policy Recommendation Proposal Procedure, Nevada Earthquake Safety Council Policy Recommendation 2007-1
- Protocol for Response to Legislation, Nevada Earthquake Safety Council Policy Recommendation 2007-2
- Investment Justification Summary (from the Department of Homeland Security)
- Reducing Risks from Natural Hazards (UNR initiative for State funding)
- Probability of a Magnitude 6.5 or Greater Earthquake in the Next 50 Years (table)
- Reducing Risks from Earthquakes in Nevada (UNR initiative for federal funding)

Keeping Us Safe – Earthquake Hazards and Risks for Southern Nevada (UNLV initiative for federal funding)

Science Education for Nevada's Future: Statewide Technologies for K-12 Education and Research (UNLV-UNR initiative for federal funding)

NEVADA EARTHQUAKE SAFETY COUNCIL
Members of the Board of Directors and Officers
(as of 7 February 2007)

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)	vacant
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	vacant
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	Ronald L. Lynn
First Vice Chair-South	Burt Slemmons
First Vice Chair-North	Jim Reagan
Second Vice Chair-South	Jim Werle
Second Vice Chair-North	Greg Moss
Secretary	Jonathan G. Price
Past Chair	John Anderson
Division of Emergency Management Representatives	Rick Martin

Policy Recommendation Proposal Procedure, Nevada Earthquake Safety Council Policy Recommendation 2007-1

1. Purpose:

According to its Bylaws, the purpose of the Nevada Earthquake Safety Council (NESC), hereinafter, "Council," is to be the advisor to the Governors Office and the Department of Public Safety, Division of Emergency Management (DEM). The Council facilitates public input, develops consensus about seismic issues within the public and private sectors, and is the public advisory body for State seismic policy. This purpose is accomplished three ways:

- The Council is a statewide body representing a partnership of the public and private sectors.
- The Council members use their professional expertise and community knowledge to reach a consensus about earthquake safety recommendations.
- The Council forwards recommendations to the Chief of DEM for use in developing and coordinating the seismic policy for the State of Nevada.

In fulfilling this purpose, the Council utilizes a process that enables thoughtful and practical consideration of policy issues. This procedure establishes a formal review process for consideration, recommendation and subsequent adoption of proposed recommendations by the Council board for transmittal to DEM for its acceptance as the public policy for the State of Nevada.

2. Governing Committee: Policy Recommendations Committee

The Council established its Policy Recommendations Committee as a standing committee whose purpose is to identify, review and develop policy recommendations for consideration by the Council including possible legislative proposals. Any member of the Council or other interested parties may contribute to the policy review and development process by participation in committee activities.

3. Procedures

Step 1: A request for policy recommendation review should be submitted to the chair of the Policy Recommendations Committee (PRC) and should contain the following elements:

a) A draft of the policy statement being recommended
b) A background section explaining the need for the recommendation and the public policy issues it addresses

c) The identification of potential Legislators who may have an interest in sponsoring a bill with any proposed legislation
d) A fiscal impact estimate on the citizens or organizations affected by the policy recommendation
e) An explanation of the potential benefits and detriments of implementation of the policy recommendation
f) A facilitation and communications section that outlines the steps necessary to ensure the recommendation reaches and influences the intended audience
g) An assessment section that describes how the effectiveness of the policy might be measured and how often this measurement will take place

If the party requesting the policy review does not have sufficient information for each of the elements, the Chair may forward the proposal to other Council committees for assistance.

Step 2: Following initial review by the PRC, the PRC may forward the proposal to other Council committees for their review and recommendation to the PRC of any policy considerations or revisions to be considered.

Step 3: The PRC will review the information received regarding the proposal and invite the proposing party to provide additional comments.

Step 4: The PRC will consider, amend and approve or disapprove the proposal and transmit the results to the Council.

Step 5: The Council Chair will place the PRC recommendation on the Board's agenda for consideration whether to support, amend, re-refer or reject the recommendation.

Step 6: The Council will consider the PRC recommendation in accordance with Council Bylaw on Resolutions and Recommendations.

Step 7: Upon action by the Council, the action will be transmitted to DEM for consideration and action. The final action by DEM will constitute the policy of the Council.

Step 8: Upon final action by DEM, the policy will be numbered for identification purposes with the year of adoption by the Council followed by a numerical sequence beginning with 01 for policies adopted in the same year; for example, 2007-01. Policies previously adopted by the Council prior to 2007 will be so numbered for future reference.

Protocol for Response to Legislation, Nevada Earthquake Safety Council Policy Recommendation 2007-2

Action Regarding Legislation Proposed by Nevada Earthquake Safety Council ("Council")

Where legislative initiatives have been adopted by the Council, the Officers of the Council and the Chair of the Policy Recommendations Committee ("PRC") may testify on behalf of the Council before the Legislature and advocate for passage of the bill.

Where substantial modifications of the bill are proposed and negotiations for compromise are necessary, the Officers of the Council and Chair of the PRC may negotiate as necessary to enable passage of the bill. The Executive Committee will be notified of any proposed changes to the bill as negotiations proceed.

If negotiations substantially deviate from the intent of the legislative initiative of the Council, the Chair of the Council is authorized to determine whether to accept or to reject the proposed changes in consultation with the Executive Committee of the Council if time permits; otherwise, the Chair is authorized to make the determination on behalf of the Council.

Responding to Introduced Legislation

When legislation, other than legislative initiatives of the Council, is introduced, the Officers of the Council and the Chair of the Policy Recommendations Committee ("PRC") may testify on behalf of the Council before the Legislature and advocate against passage or for passage or of the bill consistent with the Council's mission and policies.
The Executive Committee will be notified of any proposed bill about which testimony may be given.

Where substantial modifications of the bill are proposed and negotiations for compromise are necessary, the Officers of the Council and Chair of the PRC may negotiate as necessary to enable passage of the bill. The Executive Committee will be notified of any proposed changes to the bill as negotiations proceed.

If negotiations substantially deviate from the mission and policies of the Council, the Chair of the Council is authorized to determine whether to accept or to reject the proposed changes in consultation with the Executive Committee of the Council if time permits; otherwise, the Chair is authorized to make the determination on behalf of the Council.

Restrictions on Testimony Presentations

In light of the Council's advisory role to the Division of Emergency Management (DEM), any testimony on proposed bills, other than legislative initiatives of the Council, will be in consultation with DEM. The Officers of the Council and the Chair of the Policy Recommendations Committee ("PRC") should provide appropriate scientific and public policy information that is accurate, relevant and important to the bill under consideration consistent with the Council's mission and policies. If additional technical testimony is requested or deemed necessary, the Chair of the Council will request assistance from the appropriate committees or board members of the Council.

Reducing Risks from Natural Hazards

Statewide Programs in the Mackay School of Earth Sciences and Engineering
College of Science
University of Nevada, Reno

- **The risks are huge.**
- **Our research and related work will reduce those risks, enhance economic development, and save lives and property.**

We ask for your support of the request by the Regents of the Nevada System of Higher Education to include enhancements to Statewide Programs in the proposed budget for the 2007-2009 biennium.

Specifically, the Regents' request includes six new positions that will help to reduce the risks from natural disasters: three positions in the Nevada Seismological Laboratory (NSL) to improve our capabilities to detect and understand **earthquakes** and their effects on buildings and to begin to develop an early warning system; two positions in the Nevada Bureau of Mines and Geology (NBMG) to locate active faults, to evaluate earthquake hazards using geologic and geodetic (particularly new, ultra-precise global positioning system) techniques, and to support earthquake, **flood**, and other risk-reduction efforts of the Nevada Earthquake Safety Council and the Nevada Hazard Mitigation Planning Committee; and one position in the Nevada State Climate Office (NSCO) to upgrade statewide monitoring of weather and climate and to help reduce risks from floods, **drought**, and **wildfires**. Flooding and wildfire are annual events in Nevada, and the NSCO budget enhancements are targeted at building capability in forecasting and warning for these catastrophic events. The NSL, NBMG, and NSCO are Statewide Programs managed by the University of Nevada, Reno but with responsibilities throughout the State.

The cost of these additional positions, including fringe benefits, is estimated to be approximately $575,000 per year. In comparison, recent estimates using the Federal Emergency Management Agency's sophisticated loss-estimation computer model placed the economic losses from earthquakes in the Las Vegas and Reno urban areas at up to $17.7 billion and $7.6 billion (for magnitude 6.6 and 6.9 earthquakes, respectively). The hazards are high (about a 50% chance of a magnitude 6.5 earthquake hitting the Reno-Carson City urban area in the next 50 years), but we can reduce the risks by identifying the hazardous locations, by building earthquake-resistant structures, and, ultimately, by providing useful warnings. Although warnings of a few days, as is the case with hurricanes and some floods, are not yet scientifically reliable, there is great promise for early warning that takes advantage of the fact that earthquakes propagate at the speed of sound, but signals to back up computers and open doors at firehouses can be sent ahead of the earthquake at the speed of light.

These new positions, along with instruments that are being purchased with federal funds, will allow us to detect and accurately locate small earthquakes (including foreshocks of larger earthquakes) throughout the State; measure strain building up for the inevitable large earthquakes; locate active faults that threaten homes, businesses,

and public buildings and infrastructure; and begin to link weather stations to our telemetry system, thereby providing capabilities for real-time monitoring and warning of extreme weather. We believe that the track records of the NSL, NBMG, and NSCO have been superb in attracting federal grants to partially support applied research in Nevada, and we anticipate that these State funds will lead to equal or greater amounts of additional federal funds coming to Nevada to further reduce risks from natural hazards. The University has assembled a world-class team of experts in the related fields of seismology, geology, geodesy, and geography; this additional State support for positions will further strengthen the team by providing the leverage needed to attract additional resources to tackle issues of reducing risks from natural hazards in Nevada.

Assemblyman Bernie Anderson has a Bill Draft Request (S-943) that "creates positions within the Nevada System of Higher Education dedicated to reducing risks from natural hazards." This is essentially the same as the Regents' request.

Thank you for your support.

For more information about Reducing Risks from Natural Hazards, please contact:

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Probability of a Magnitude 6.5 or Greater Earthquake in the Next 50 Years
FROM: http://earthquake.usgs.gov/

Denver, CO ~0.1%	
Phoenix and Tucson, AZ <1%	
Spokane, WA = 1.0 to 1.5%	**Ely, NV = 1.5 to 2%**
Flagstaff, AZ ~2%	
Boise, ID ~2%	**Pioche, NV = 2 to 3%**
El Paso, TX ~2%	
Albuquerque, NM = 4 to 5%	**Eureka, NV = 4 to 6%**
Fresno, CA <5%	**Las Vegas & Pahrump, NV <5%**
Portland, OR ~5%	**Goldfield & Winnemucca, NV = 5 to 10%**
Yuma, AZ = 5 to 10%	**Elko, NV = 6 to 8%**
Bozeman, MT ~10%	**Battle Mountain & Lovelock, NV ~10%**
Cedar City, UT ~9%	**Austin, NV = 10 to 15%**
Sacramento, CA ~15%	
Jackson, WY = 15 to 20%	**Fallon, NV = 20 to 25%**
Salt Lake City, UT = 20 to 25%	**Beatty, NV = 20 to 30%**
San Diego, CA ~25%	
Seattle, WA ~30%	**Hawthorne, NV = 30 to 40%**
Monterey, CA ~40%	**Yerington, NV = 40 to 45%**
Eureka, CA ~50%	**South Lake Tahoe, CA + Stateline, NV ~45%**
Santa Barbara, CA = ~60%	**Reno–Carson City–Minden-VA City = 50 to 60%**
San Francisco Bay Area = 70 to 90%	
Los Angeles Metropolitan Area = 60 to >90%	

University of Nevada, Las Vegas

Appropriation Request Fiscal Year 2008

Project Information:

Project Name: Science Education for Nevada's Future: Statewide Technologies for K-12 Education and Research

Address of Organization Requesting Funding:
Vice President for Research and Graduate Studies
University of Nevada, Las Vegas
4505 Maryland Parkway
P.O. Box 451092
Las Vegas, NV 89154-1092

College, Department and Name of primary requestor:
Sciences, Geoscience, Catherine M. Snelson

Project Description:

The Great Basin Earth Science Education (GBESE) Academy is concept developed by UNLV and UNR earth scientists and education specialists to promote the use in earth science in basic K-12 science education. UNR is currently conducting summer field courses in tectonics and earthquake hazard with supplemental classroom activities in pedagogy and curriculum developments. To date, 37 Nevada K-12 science teachers have participated in the program, with a number from the Las Vegas school districts. The project has been formulated as a progressive collaborative effort between faculty from the Colleges of Science and Colleges of Education at the University of Nevada, Las Vegas (UNLV) and the University of Nevada, Reno (UNR).

We seek these funds to build the technology infrastructure to contribute to overall math, physics, and general K-12 science throughout Nevada. A component of the request is the addition of 40 broadband seismographs at Nevada schools (supplementing an existing network of 15 low-end seismographs) creating one of the most comprehensive K-12 seismic networks in the world; this will be a model for all states and national organizations. Data from these instruments will be used to connect secondary classrooms with the universities for earthquake and active tectonics research in Nevada. The data will be integrated in 'real-time' with the Nevada Seismological Laboratory under the ANSS (USGS Advanced National Seismic System) and the IRIS (Integrated Research Institutions for Seismology) Data Management Center in Seattle, WA, and will be available to Nevada and global researchers, in addition to all Nevada schools. The research grade instrumentation will bring real-time technologies to the classroom to integrate Nevada's earth science and earthquake research community with the K-12 science community; a unique national concept. The instrumentation supports ongoing summer programs in tectonics and seismology (~20 teachers per summer session) that have been conducted in summer 2004, 2005, and funded for summer 2006. Teachers learn the fundamentals of seismology, how to use the technologies, Nevada tectonics, and regional earthquake hazards. The 2005 trip took Nevada science teachers to Mt. St. Helens and Mammoth Lakes, California, active tectonic areas, with research scientists and educational researchers with the 2006 program including Lake Tahoe, central Nevada and again Mammoth Lakes, California.

The GBESE Academy concept, or TEAC (The Earth As a Classroom, as the summer programs are called) is a unique blend of geologic content, pedagogy, technology and research facilitated by a talented team of educators and content specialists from UNLV and UNR dedicated to the improvement of earth science teaching and instruction adaptable to state, regional, and national levels. Set within the matrix of a research-based professional development model, teachers acquire

rigorous earth science content and pedagogy and become skilled in applying teaching-as-research in their own classrooms with their own students. The program has been well received by Nevada teachers; all school want to operate their own seismographs.

Specific Use for Requested Funds:

Costs cover 2 years of a technician to install the instrumentation and for vaults for seismographs. Also, costs include one PC per school to handle the data collection from the seismograph systems, to display live data from around the world, and to be used for any other project in the school classroom. Other costs are for cabling and miscellaneous equipment for instrument installation. Also included is 3 months of a professional seismologist to ensure proper operation of the instrumentation and integration with the regional Nevada network. Funds requested to support the software application to manage the real-time data and to supplement the K-12 Seismology web sites for teacher use. The data collection software does not impact the use of the PC for other purposes in the science classroom. High quality seismographs will be distributed throughout the state whereas our lower cost instruments are aimed to provide more dense coverage and supplement the high quality instrumentation deployment.

Current Status of Project Described in this Application:

This project has set out an initial set of 19 seismographs instruments that have been funded for schools in Nevada. These instruments are much lower end seismograph systems and they are currently being upgraded by the Nevada Seismological Laboratory. A summer workshop for teachers has been conducted in summer 2005, 2006 and the summer 2007 program is in the planning stage.

Funding Information:

Funding Amount Requested from Senator Reid: 1,000,000

Amounts Requested from other Nevada Delegation Offices: None

Estimated Total Cost of Program: $1,200,000

Non-Federal Matching Fund Amount and Source: None

Has competitive funding been sought for this project? Several proposals have been submitted to NSF, but we have not been successful. UNLV has received funding from the Nevada Earthquake Safety Council and DOE to establish several stations in the Las Vegas Valley. UNR has received funding from the Nevada No Child Left behind since 2005 for three years to run the summer workshops.

Funding History (Indicate source and include Funding Amount from other Nevada Delegation Members)**:**

FY07:	**FY05: Nevada No Child Left Behind, $100,000 (3 year project)**
FY06:	**FY04: Nevada Earthquake Safety Council, $23,000 (1 year project)**