NATIONAL EARTHQUAKE CONFERENCE

Award Category (check all that apply)

- ☐ **Mitigation**
- ☐ Response & Recovery
- ☐ Plans/Materials
- ☐ Use of New Technology
- ☐ **Innovations (i.e. Private/Public Partnership)**
- ☐ **Research**
- ☐ Non-Profit Agency Efforts
- ☐ Multi-Jurisdictional Planning
- ☐ **Outreach**

Nominated Program, Project, or Product

Nominated Program, Project or Product: Utah Earthquake Working Groups

Nominated Administering Organization: Utah Geological Survey

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Nomination Made By *(must be nominated by someone outside the nominated organization)*

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1. **2012 NATIONAL AWARDS IN EXCELLENCE NOMINATION FORM**
UTAH EARTHQUAKE WORKING GROUPS

The Utah Geological Survey (UGS), in cooperation with the Utah Seismic Safety Commission (USSC), and the U.S. Geological Survey (USGS) convenes annual Utah Earthquake Working Group meetings each February in Salt Lake City, Utah. The Utah Quaternary Fault Parameters Working Group, Liquefaction Advisory Group, and Ground Shaking Working Group each meet to review research activities, re-evaluate long-term plans for producing maps, and develop partnerships for investigations and topics for future National Earthquake Hazard Reduction Program (NEHRP) proposals. The results of the three working group meetings are reported in annual meeting summaries posted on the UGS web site (http://geology.utah.gov/ghp/workgroups/index.htm).

Each working group has achieved consensus regarding the types of earthquake-hazard maps needed, new data required, and preferred data collection and mapping techniques. The working groups have developed partnerships and identified projects for which to pursue funding. These results have been used by the USGS to develop Utah priorities for the annual USGS NEHRP external research support grant opportunity announcement. Because the meetings are held in February, just prior to the annual grant opportunity release, discussions and momentum gained at the meetings are translated into proposals by researchers to the USGS.

Working group members include geologists, engineers, seismologists, and geophysicists from the USGS, UGS, University of Utah, Utah State University, Brigham Young University, and consulting companies and state agencies. Additionally, representatives from the USSC, and other state agencies and professional organizations are invited to attend the meetings.

The main goal of the Utah Quaternary Fault Parameters Working Group is to characterize active fault sources in Utah. The working group began by developing consensus slip-rate and recurrence interval data for all Utah trenched faults in 2005. The working group also developed an initial priority list of faults requiring additional study and, based on each year's paleoseismic investigations, has updated the list annually. As new paleoseismic data became available, the working group modifies its consensus slip-rate and recurrence-interval values as necessary. Other working group issues include the Wasatch Front time dependent earthquake probability model, refining the surface trace of the Salt Lake City segment of the Wasatch fault on the National Seismic Hazard Maps (NSHM), the relation of the West Valley fault zone to the Wasatch fault., and making periodic recommendations to the USGS regarding which Utah faults should be included in future USGS NSHM updates.

The Liquefaction Advisory Group's goal is to produce maps showing annual probabilities of liquefaction and liquefaction-induced ground displacement, and extending their pilot-project investigations in Salt Lake Valley to Utah and Davis Counties, particularly regarding compilation of a comprehensive regional geotechnical database. The working group has dealt with issues related to under-sampling of geologic units, uncertainty analysis, compilation of newly available geotechnical data, and conducting additional cone penetrometer investigations in downtown Salt Lake City. Work is underway to complete current projects and publish liquefaction maps for use by local government planners and other users.

The Ground Shaking Working Group is developing a Community Velocity Model (CVM) in order to develop large-scale spectral acceleration maps for the Wasatch Front that incorporate site and basin-shape effects. A team from San Diego State University recently updated the prior model with newly available data that included both shallow-shear-wave velocity and deep-basin-structure effects on ground motion. The UGS has distributed the updated CVM on its web site. Current efforts involve validating the CVM, expanding the CVM to include Tooele and Rush Valleys and the Wasatch back valleys, updating the CVM with intermediate-depth data, and continuing to work toward producing Wasatch Front Urban Seismic Hazard Maps.

2. How long has the program been operational? Since: Month February Year 2003
(Note: In order to be considered for a 2012 National Award in Excellence the program must have been operational since at least December 2010.)

3. What are the major purposes of the program? See attached program summary.

4. Describe the specific activities and operations of the program. See attached program summary.

5. Does it take a new and creative approach or method? If yes, please describe. Yes, to our knowledge this is the only program like it in the U.S. The Earthquake Working Groups have been highly successful at advancing earthquake-hazard research in Utah by bringing together researchers and professionals from varied organizations to advance earthquake-related knowledge. The UGS has been asked by the USGS to make presentations on this program to other states in the hope of generating similar programs elsewhere.

6. What were the start-up costs and source(s) of funding?

   Budget: $98,492 Source: U.S. Geological Survey and Utah Geological Survey

   What are the annual operational costs and source(s) of funding?

   Budget: $76,537 (2011) Source: U.S. Geological Survey and Utah Geological Survey

7. How many employees (full-time equivalent) work(ed) with the program? 0.5 (2011)

8. To the best of your knowledge, did the program originate with you? __X__ Yes ____ No

   Are you aware of similar programs elsewhere? ____ Yes __X_ No

9. Has the program been fully implemented? ____ Yes __X_ No
If no, what actions remain to be taken? This is a long-term program that will continue to operate as long as relevant earthquake-hazard research remains to be identified, prioritized, and undertaken in Utah. The program is approaching a decade old and will continue into the foreseeable future.

10. Is there evidence that the program has been effective in achieving its stated purpose(s)?
Briefly summarize evaluations (pro and con) of how well it has addressed the defined problem(s) or issue(s). This program has spurred earthquake hazard research in Utah that includes multiple paleoseismic investigations of active faults in Utah (http://geology.utah.gov/ghp/consultants/paleoseismic series.htm), it spurred formation of the Working Group on Utah Earthquake Probabilities (http://geology.utah.gov/ghp/workgroups/wguep.htm), has resulted in the creation of a Community Velocity Model for the Wasatch Front (http://geology.utah.gov/ghp/consultants/geophysical_data/cvm.htm), and development of liquefaction-hazard maps for Salt Lake Valley (http://www.civil.utah.edu/~bartlett/ULAG/).

11. How has the program changed since its inception? What limitations or obstacles might others expect to encounter if they attempt to adopt it? Yes, an additional short-term (2 years) working group to prepare time-dependent earthquake probabilities for the Wasatch Front has been added to the program. This program requires the volunteered efforts of a broad spectrum of technical experts to

be successful. Generating their support can be difficult, but once they are on board, the success begins almost immediately.

12. Additional comments:
Utah Earthquake Working Groups List of Contributors (2003 – 2011)

Principal Investigator
Steve Bowman, Utah Geological Survey (2008 – 2011)
Gary Christenson, Utah Geological Survey (2003 – 2007)

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Ground Shaking Working Group
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Liquefaction Advisory Group

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Deadline: All nominations and supporting materials must be completed and received by WSSPC by **Friday, December 30, 2011**, to be considered for the *2012 National Awards in Excellence*.

Email completed application and supporting materials to Amy Lewis: alewis@wsspc.org.

2012 National Awards in Excellence
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