WSSPC
WESTERN STATES SEISMIC POLICY COUNCIL

We develop seismic policies and share information to promote programs intended to reduce earthquake related losses.

A non-profit earthquake consortium for the western states

Summer 2021 e-Newsletter

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WSSPC NEWS

The WSSPC Spring Board and Annual Business Meetings have been held.
The Spring Board Meeting was held on 11 May 2021 and the Annual Business Meeting was held on 10 June 2021.
Key action items:

- All 2021 Proposed Policies were approved by unanimous voice vote by the membership. They are posted and can be found at: Adopted Recommendations - Western States Seismic Policy Council (wsspc.org) . Included in this year's policies was a new recommendation for Functional Recovery for Buildings. In addition, at the request of the Engineering, Construction and Building Codes Committee, the Policy Recommendation Resilience of Lifeline Infrastructure and Services was reviewed and updated a year earlier than scheduled.
- 2022 Policies to be reviewed have been assigned to the WSSPC Subcommittees. In addition to the Policy Recommendations scheduled to be reviewed, the WSSPC Board has approved the drafting of two new recommendations. These drafts are to address "fault setbacks" and "hazard equity." These policies can be found at: 2022 WSSPC Draft Policy Recommendations - Western States Seismic Policy Council

WSSPC Members Recent Earthquakes (4.0 or higher)

- **Lennox California 4-5-2021**
- **Cantwell Alaska 4-8-2021**
- **Anchorage Alaska 4-27-2021**
- **Truckee California 5-7-2021**
- **Dollar Point California 5-28-2021**
- **Chickaloon Alaska 5-31-2021**
- **Gold Beach Oregon 6-4-2021**
- **Calipatria California 6-5-2021**

WSSPC News (continued)

- Financial statements for WSSPC were reviewed at both the Spring Board and Annual Business meetings. The independent accountant's financial management report was reviewed. Both the financial records and the accountant's review showed that WSSPC was properly being operated in accordance with IRS 501(c)(3) regulations. There were no questions.
- The WSSPC workplan for FY 2021 was reviewed. It represents a greater commitment towards supporting membership with training opportunities, coordination with partners, continued support of Seismic Safety Commissions and Councils, and assisting members with the implementation of Policy Recommendations where needed and as requested. Among specific actions, the workplan proposed supporting WSSPC members in the development of seismic inventories and earthquake insurance outreach.

Thank You 2021 WSSPC Affiliate Members

WSSPC welcomes all professional community members who share the common goal of reducing losses from earthquakes.

Government

City of Las Vegas Building and Safety
Clark County Building and Fire Prevention

Non-Profit

Applied Technology Council
California Earthquake Authority

Corporate

Optimum Seismic

It's Never Too Late to Join WSSPC as an Affiliate Member!

Your benefits will include:

- Recognition of your support with a link on the WSSPC website to your organization
- The opportunity to participate on WSSPC Committees and provide input to policy recommendations
- Quarterly E-Newsletters and Monthly Bulletins

There are so many ways to stay connected!

Online- www.wsspc.org
Twitter- @WSSPC
Facebook- www.facebook.com/WSSPC

NEWS

FEMA BRIC Funding Update

On 30 June, 2021, FEMA updated their Hazard Mitigation Assistance (HMA) Annual Grant Cycle Submissions Summary information with the selection information for the FY 2020 **Flood Mitigation Assistance (FMA)** and **Building Resilient Infrastructure and Communities (BRIC)** programs. Per FEMA, there was $700 million total available in both grants.

For the BRIC Program FEMA reports:

- 53 states and territories applied for a Building Resilient Infrastructure and Communities grant. Of these, 25 states submitted projects with $50 million or more federal share.
- Five states submitted projects with over $200 million federal share: California, New Jersey, New York, Texas and Virginia.
- Tribes submitted 62 subapplications requesting an estimated $20.2 million in funding.

Top Five Project Types by Federal Share Requested:

- Flood Control = $1.3 billion
- Utility/Infrastructure Protection = $771 million
- Saferoom/shelters = $184 million
- Retrofits = $176 million
- Mitigation Reconstruction = $164 million

continued

Ridgecrest Earthquake Study

In June of 2021, the Geophysical Journal International published an article titled, ***Detailed traveltime tomography and seismic catalogue around the 2019 M_w7.1 Ridgecrest, California, earthquake using dense rapid-response seismic data***

In this article, the authors generated an earthquake catalogue and V_p, V_s and V_p/V_s models for the region around the 2019 M_w 6.4 and M_w7.1 Ridgecrest, California, earthquake sequence. They created the catalogue using the rapid-response sensors and existing network information. The catalog spans a 4-moth time period and captures approximately 95,000 events.

Per the article, their findings suggest:

- A compliant low-velocity zone near the Garlock Fault arrested the M_w 7.1 rupture at the southeast end,
- A stiff high-velocity zone beneath the Coso Mountains acted as a strong barrier that arrested the rupture at the northwest end and,
- Isolated seismicity on the Garlock Fault accommodated transtensional-stepover strain triggered by the main events.

(Malcolm, et. al., 2021, p 204)

The authors hope that the data gathered and analyzed may "guide future research looking for earthquake cessation patterns that may eventually yield such predictive capacity."

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Study in Developing a Seismic Safety Structural Element with a Building

In the May 2021 issue of journal Engineering Structures, an article proposed a structural element be constructed and put into buildings in case of seismic events. The article is titled, ***SHELTER – Structural Hyper-resisting Element for Life Threatening Earthquake Risk. An innovative approach for seismic protection.***

The authors proposal is based on the premise that **on-site** Early Earthquake Warning systems may provide enough time for building occupants to seek shelter within the structure. They argue that the cost of placing a centrally located element within a building is less expensive than retrofit or rebuild. The element they propose is reinforced with ribs and has shock absorbing seats.

Per the article, "The structural configuration was defined to ensure necessary strength and stiffness (low deformations) for worst case scenarios in building collapse, namely: i) installation in the uppermost floor, suffering maximum accelerations (shock) in case of building collapse; ii) installation in the ground floor, withstanding the impact of all upper floors." The authors estimate that a seven-ribbed element would have an overall shelter strength of "about 8400 kN" (conversion of that value is 1,888,395 pounds).

Creating Urban Seismic Resilience through Culture

A proceedings paper from the "3rd International Seminar on Livable Space" held virtually in 202 has been published. The paper is titled, ***Urban resilience based on local seismic culture in earthquake prone region.*** The premise of the paper is that local seismic culture is integral in building community seismic resilience.

The paper is a case study of the people and culture of Bima Regency, located on Sumbawa Island in Indonesia. The data is gather through direct observation and secondary sources. The paper discusses the community coordination in both preparedness and recovery from earthquakes and highlights the indigenous, wooden stilt home construction styles.

Per the article, the use of the native woods in construction of homes instead of masonry allows for a greater degree of deformation without catastrophic effects. Per the article, "There was evidence from the past earthquake events; buildings with wooden construction proved to be abler to survive than houses used brick walls. So, the existence of wooden houses on stilts in Bima is proof that this house has the adaptability of Bima's condition, which is prone to earthquake disasters. Its sustainability is proof that local seismic culture still lives in residential buildings for local communities ."

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WSSPC 2021 Awards in Excellence!

WSSPC is proud to announce the winners of this year's awards! There are two award winners. One award is in the area of practical application and the other in the area of science.

The fist of the two award winners is:

Oregon ShakeAlert

Oregon ShakeAlert is a product that is sponsored by the US Geological Survey and others and is part of the West Coast ShakeAlert project. Oregon ShakeAlert addresses the problem of earthquake safety for people and for infrastructure. It is an earthquake early warning system that will provide seconds to many tens of seconds of warning before shaking occurs at your location (unless you are so close to the hypocenter where there is not time for any warning). For Cascadia earthquakes and tsunamis, this warning will potentially save many thousands of lives as several million people will have warning time to take protective actions. The warning system can also be integrated into systems to take automatic action, such as shutting down pumps to protect equipment and water reserves. This will allow for less damage, improved emergency response and recovery.

It was developed in part by the Pacific NW Seismic Network under the leadership of Professor Doug Toomey from the University of Oregon. Like the West Coast ShakeAlert project, the Oregon ShakeAlert system uses sensors to detect P waves, compressional primary waves created by earthquakes and traveling faster than the damaging S waves. The West Coast ShakeAlert project has been sending real-time alerts to selected beta users since January 2012.

Oregon ShakeAlert has been in a demonstration phase and working with pilot technical users for the past few years. Improvements have been made over these years as the technology has advanced. On March 11, 2021, which is the 10-year anniversary of the Tohoku disaster, Oregon ShakeAlert activated the public warning system. **No sign up is required to receive Oregon ShakeAlert notifications, and no action needs to be taken other than enabling emergency alerts on your cell phone (or not disabling the alerts). Alerts are transmitted over** Wireless Emergency Alerts (WEA); more at: Wireless Emergency Alert system | ShakeAlert®

The Oregon ShakeAlert project administering organization is the University of Oregon. It represents the best of a strong public-private partnership.
Congratulations to Professor Doug Toomey and his team!

WSSPC 2021 Awards in Excellence!

The second of the two awards winners is:

Liquefaction Mitigation of Silts Research Project

This research project's goal is to develop a new, unobtrusive, cost-effective method for reducing liquefaction hazards of silty soils. Current industry methods are rarely employed due to their limited, disruptive and costly nature. When a new better method is developed, liquefaction-prone silty soils can be mitigated for a wide range of new and existing infrastructure. **Applying a new viable liquefaction mitigation method will allow for less earthquake damage, improved emergency response and recovery after earthquakes.**

The research activities associated with this project included building a new partnership among PSU, University of Texas (UT) and Arizona State University (ASU) and securing funds from the National Science Foundation (NSF), building local industry partners and developing two field test sites, which are the only two in existence in the U.S. Khosravifar and Moug worked with UT to bring their T-REX shaker truck to simulate earthquakes and ASU to collaborate on the bio-remediation approach called Microbially Induced Desaturation (MID). Arrays of wells were installed to inject and withdraw a chemical solution to feed in-situ microbes to desaturate the soils. The T-REX shaker truck was used to measure the soil characteristics before and after the treatment.

The PSU Liquefaction Mitigation of Silts research project is the first to test Microbially Induced Desaturation (MID) in field conditions in the United States. It required new technical partnerships to be built to bring in the needed multi-disciplinary experts. Professor Ed Kavazanjian, renown geotechnical engineer, offered professional expertise of his team members from the Center for Bio-mediated and Bio-inspired Geotechnics based at ASU. Similarly, renown geotechnical engineer Professor Ken Stokoe, offered professional expertise of his team members from NHERI@UTexas, which is based out of UT at Austin.

There is evidence this mitigation method is effective. This project was to explore this possible mitigation method in actual field conditions, which are much more complex with many more variables than in a controlled laboratory setting. Portland is the first and only location in the United States to conduct field scale tests. This field scale testing has opened up many new complex questions that also need to be researched and answered. And while further field tests and analyses are required, this method appears to hold great promise.

Congratulations to PSU Asst. Professors Arash Khosravifar, Diane Moug, and their team!

Building Alliances for Equitable Resilience

FEMA has released an published a new document, **Building Alliances for Equitable Resilience Advancing Equitable Resilience through Partnerships and Diverse Perspectives.**

(From the introduction)
"In 2015, the Resilient Nation Partnership Network was formed to cultivate diverse relationships and bring new voices to the table to advance the resilience conversation. This continues to be at the core of the Network's efforts. We seek to enable greater collaboration to increase collective impact nationwide. Powered by partnership, this Building Alliances for Equitable Resilience resource was developed to deliver insights and perspectives as we work to achieve a more resilient nation."

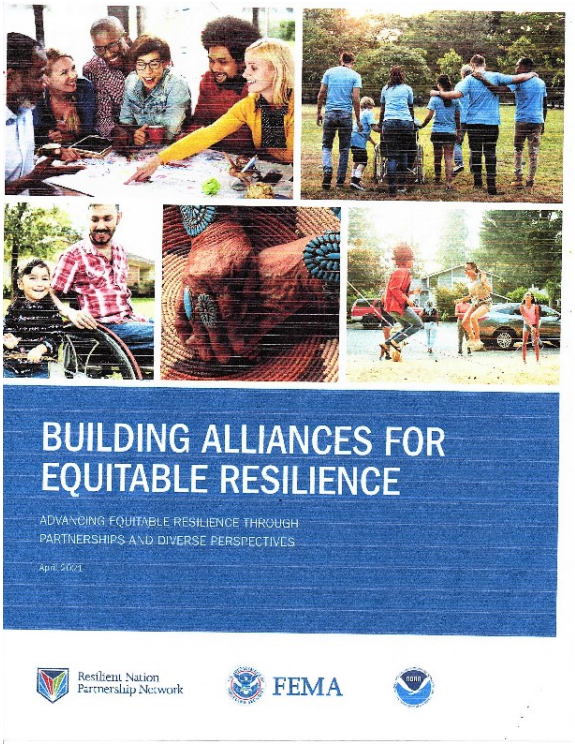
The document works to help the reader understand the difference between equality and equity. It recognizes that equity is an ongoing process rooted in understanding the diversity of people and their needs. This document acknowledges that there are existing inequities and that adequate representation—people "at the table" - is missing.

It reinforces the knowledge that people are impacted differently by events. And, that in disasters, the most vulnerable are impacted the most. It emphasizes the "Whole Community" is everyone.

The document focuses its discussion in five key insight areas. They are:

- Federal Perspectives on Equitable Resilience
- Resilient and Affordable Housing
- Inclusive Planning
- Investing in Equitable Resilience
- State and Territorial Perspectives

Each of these topics include "Partner Voices" and resources. The resources include policy documents, research, planning tools, learning hubs, historical projects information, action plans, and practical information for emergency managers.



Upcoming Training and Workshop Opportunities

USGS NGA-Subduction Ground Motion Models (GMMs) in the 2023 National Seismic Hazard Model (NSHM) to be held on 9 July 2021. Details:
Microsoft Teams meeting
Join on your computer or mobile app
Click here to join the meeting
Or call in (audio only)
+1 719-733-3211,,282201745# United States, Pueblo
Phone Conference ID: 282 201 745#

Earthquake Country Alliance "Secure Your Workspace" online Workshop to be held on 19 July 2021. For more information see:
Earthquake Country Alliance: Welcome to Earthquake Country!

US Resiliency Council Webinar on Policy Options for Before Disaster Strikes to be held on July 21, 2021. For more information and to register see:
Policy Options for Before Disaster Strikes Tickets, Wed, Jul 21, 2021 at 11:00 AM | Eventbrite

Safer Buildings, Stronger Communities: A Road Map to Action for Earthquake Country to be held on July 21, 2021. This is a 90-minute webinar presenting the Wasatch Front Unreinforced Masonry Risk Reduction Strategy. For more information and to register see: Webinar Registration - Zoom

WSSPC Earthquake Clearinghouse Workshop to be held virtually on November 9-10, 2021. For more and Clearinghouse Resources information see:
Clearinghouse - Western States Seismic Policy Council (wsspc.org)

If you have upcoming training or workshop opportunities and wish them to be publicized, please send them to mwall@wsspc.org. Thank you!

Site of Employment Opportunities Page

At the request of WSSPC members, we will be including a listing of job opportunities related to the geologic and emergency management fields.

Posting requirements:

- Opportunities must be provided to mwall@wsspc.org NLT the 15th of the month preceding the monthly bulletin or newsletter going out.
- As specified, the positions must be related to either geologic or emergency management fields
- There is no charge for posting, However, **only WSSPC members, which includes WSSPC affiliate** members, positions will be posted.