



WSSPC 2010 Policy Recommendation Survey

The WSSPC 2010 Policy Recommendation Survey is based on the communication and facilitation section of the WSSPC policy recommendations, and illustrates how the WSSPC states are implementing those Policy Recommendations. The survey questions are applicable to the adopted Policy Recommendations spanning 2008-2010. Survey respondents include Alaska, Arizona, California, Colorado, Montana, New Mexico, Oregon, Utah and Washington. Hawaii did submit a draft survey; however, their answers were not included because the draft has not yet been approved by the Hawaii State Civil Defense Director.

Policy Recommendation 10-1 & 10-2

Rapid Tsunami Identification and Evacuation Notification

Policy Recommendation 10-1

WSSPC recommends that each coastal state, province, and territory emergency management agency promote the development of tsunami evacuation and re-entry notification systems, supplemented with an education campaign, that ensures all populated coastal areas in the WSSPC coastal states, territories and provinces are guided by at least one type of system, appropriate to local conditions.

Policy Recommendation 10-2

WSSPC recommends the implementation of modern technological systems that rapidly identify the tsunami potential generated from a local earthquake and that immediately alert locally responsible emergency operations personnel about coastal areas likely to be affected by a tsunami. Information provided by these systems would augment public education programs regarding local tsunamis, including instructions to evacuate based on ground shaking.

If this policy recommendation does not apply, mark it “NA” and skip to questions on Policy Recommendation 10-3.

1. What efforts have your agency accomplished to communicate this policy recommendation to your legislative delegations?

AK	<p>The Alaska State Division of Homeland Security and Emergency Management (DHS&EM) has communicated this policy recommendation to legislative authorities in the following ways:</p> <ul style="list-style-type: none"> • DHS&EM contributed to the report commissioned by Congress produced by the National Research Council called: Tsunami Warning and Preparedness: An Assessment of the U.S. Tsunami Program and the Nation's Preparedness Efforts Committee on the Review of the Tsunami Warning and Forecast System and Overview of the Nation's Tsunami Preparedness • DHS&EM participated as a member of the Coordinating Committee on the National Tsunami Hazard Mitigation Program (NTHMP) including national budget development, policy reviews and five-year strategy development. NTHMP reports to Congress through NOAA and contributed to a General Accounting Office review of the nation's tsunami program. • DHS&EM publicized through written documents to the State Legislature work to enhance tsunami warning and preparedness in the State. • DHS&EM cooperated with the Alaska State Seismic Hazard Safety Commission (ASHSC) which reports annually to the State Legislature and have included consideration of these issues in these annual reports
AS	
AZ	N/A
BC	
CA	NA. Direct communication with state and federal legislature is not permitted unless requested from legislative delegates.
CO	N/A
GU	
HI	
ID	
MT	N/A
NV	
NM	N/A
CNMI	
OR	<ol style="list-style-type: none"> All WSSPC policies have been shared with the Oregon Seismic Safety Policy Advisory Commission (OSSPAC). Two legislators are OSSPAC commissioners. Oregon does not have a centralized distant tsunami warning system, nor are there plans to create one. Each community is responsible for notifying residents during and after tsunami events.
UT	N/A
WA	<p>The mission of the Washington State's Seismic Safety Committee is to review existing seismic risk reduction polices and provide advice to the Emergency Management Council (EMC) on statewide strategies, policies, and recommendations that address the seismic threat through mitigation, preparedness, response and recovery activities. This review and analysis includes guidance developed through the Western States Seismic Policy Council (WSSPC). The Committee contributes to an annual report that is provided to the Office of the Governor and other elected and appointed officials.</p>
WY	
YK	

2. What tsunami education, warning and evacuation planning has occurred in your agency?

AK	<ul style="list-style-type: none"> • Tsunami Inundation and Evacuation Mapping and Modeling: DHS&EM coordinated tsunami inundation mapping projects for the City of Seward, Sitka Whittier, and Valdez this year. The map for Seward is complete. Scheduled for 2011 are maps for Cordova, Akutan, and Yakutat. The mapping process includes data collection, computation, community input, peer review, and final publication. These maps provide the tsunami hazard mapping that communities need to develop evacuation maps, emergency response plans and mitigation objectives. The maps are a cooperative effort between State and Federal partners. • Tsunami Warning Systems: DHS&EM coordinated the installation of tsunami/all-hazard warning systems in the communities of Nikolski, Adak, Atka, King Cove, St. Paul, Karluk, Savoonga, Akhiok, Larsen Bay and Ouzinkie. Each of these systems gives the community the ability to warn their citizens of an impending tsunami or other community emergency. • Tsunami Education and Outreach: DHS&EM in a cooperative State, local and Federal effort provided tsunami education and outreach to several communities in Southeast Alaska. In November this same partnership conducted a three-day tsunami operations workshop in Unalaska which brought together local officials from tsunami hazard communities in the Aleutian Islands, Kodiak Islands and Bering Sea Islands. The workshop provided specific training on tsunami science, alert and warning, evacuation, sheltering, response and recovery. The workshop included community specific exercises and training field trips. • Tsunami Ready: DSH&EM continued to support the TsunamiReady program in Alaska, seeing the addition of one community and the renewal of another. The program supports and funds installation of tsunami warning and evacuation signs and alerting systems for communities that can certify a twenty-four hour tsunami warning capability, evacuation route planning and designated shelter locations. • Statewide Tsunami Awareness and Systems Test: DHS&EM worked with the Governor's office to declare the last week of March as tsunami awareness week. This coincided with the historic date of the 1964 Alaska earthquake. DSH&EM and our partners participated this year in outreach events and a statewide "real code" test of the tsunami warning system during this week. Some communities used the statewide test to activate their local warning systems and to practice actually moving to tsunami shelters along preplanned evacuation routes. The awareness week, done annually, provides communities, schools, and other organizations in the State a yearly opportunity to review their seismic preparedness, conduct emergency drills and to educate on seismic hazards and mitigation. DHS&EM also tested the emergency notification call down procedure with the ASHSC during this test to verify the Commission's alerting procedures. In 2010 NOAA declared this same week national tsunami awareness week and WC/ATWC conducted a coincident exercise for their areas of operation. • Statewide Exercise - Alaska Shield / Northern Edge: In the spring of 2010, the State conducted a weeklong multi-agency emergency response exercise, involving State, Federal and local partners to test statewide disaster readiness. The scenario for this exercise was a major earthquake with tsunamis. The exercise not only exercised the State's response to casualties, rescue, and sheltering but also provided an opportunity to raise public awareness of seismic risk and preparedness statewide. During the exercise, ASHSC called an emergency Commission meeting to
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	provide the State's emergency response leadership with their counsel on seismic policy.
AS	
AZ	N/A
BC	BC has implemented the Provincial Emergency Notification System (PENS) which includes fax, phone and email notifications to all three levels of government (including First Nations), key stakeholders (i.e.: critical infrastructure) and media. The system makes ~ 1200 calls in 20 minutes.
CA	The California tsunami program, comprised of CalEMA and CGS, has worked on a comprehensive tsunami hazard mitigation, awareness, and preparedness plan which focuses on providing the best information for evacuation planning for local jurisdictions. The program conducted a live-code test in March 2010 that included participation from Del Norte, Humboldt, and Mendocino counties. After the tsunami Advisory on February 27, 2010, the California tsunami program conducted over a dozen workshops with coastal jurisdictions and committed new resources to address tsunami evacuation and education within coastal parks and the maritime community. The California tsunami program is continuing to work with all coastal communities to not only update their evacuation plans for distant Warning-level events, but also make sure their plans adequately address distant Advisory-level tsunamis as well as evacuation from a local source tsunami. CGS and CalEMA have completed and distributed "Guidance for Local Jurisdictions to Develop or Review Tsunami Evacuation Plans for a Post-Earthquake, Local-Source Tsunami." This guidance was utilized in Ventura County to develop a plan for evacuation from a local source tsunami that coincided with their updated tsunami evacuation plan and tsunami sign placement plan.
CO	N/A
GU	
HI	
ID	
MT	N/A
NV	
NM	N/A
CNMI	
OR	<ul style="list-style-type: none"> a. There is a very active and dynamic tsunami education program on the Oregon coast. This is funded by the NTHMP. (addressed more fully below) b. Oregon Emergency Management (OEM) has started a Distant Tsunami Workgroup that will address response to a distant tsunami. While still in the nascent stage, the goal of this group is to bring uniformity to community response to a distant tsunami. The role of this group will be to establish best practices to suggest for adoption by local communities.
UT	N/A

<p>WA</p>	<ul style="list-style-type: none"> • Washington State Emergency Management, the University of Washington’s Institute for Hazards Mitigation Planning and Research, and Pacific County, WA have begun a project to implement FEMA P646 “Guidelines for Design of Structures for Vertical Evacuation” in at-risk Pacific County communities, including the Cities of Long Beach and Ilwaco. This initial project focused on identifying the potential number of vertical evacuation sites that are necessary within Pacific County, having community residents propose locations that will provide safe haven for the population during a tsunami event, and worked with project engineers in order to provide preliminary design and construction costs. The outcome of this assessment project will enable the State and County to move forward with a more firm understanding of the scale and potential cost to implement this mitigation strategy within Pacific and other outer coastal counties. • In conjunction with the statewide earthquake drill on September 15, 2010 at 10:15 a.m., the Washington Military Department, Emergency Management Division participated in the annual NOAA/NWS Tsunami Warning Communication’s Test. This test originated with a call from the West Coast & Alaska Tsunami Warning Center and was designed to exercise the entire U.S. Tsunami Warning System to ensure people on the coast received the message via the Emergency Alert System, NOAA Weather Radio, and Washington’s All-Hazard Alert Broadcast (AHAB) sirens. Fifty (50) sirens are located along Washington State’s outer coast and are tested every month by sounding the Westminster chimes and test message. To ensure that during a real emergency the verbal message and emergency wailing tone worked correctly coastal counties requested the use the actual warning tone, which had not been used in previous tests. The test has been declared an overwhelming success by media and no significant issues have been reported. In fact, no calls were placed to 9-1-1 centers in any of the outer coastal counties with questions, which is amazing considering the fact that the actual tsunami warning tone across four (4) counties that have more than 42,972 residents, 24,934 employees as well as 17,029 daily visitors to Washington State Parks in the tsunami hazard zone. This is a credit to the tremendous outreach effort by many, many individuals and highlights the strong state & local partnership that exists in Washington State. • During 2008, Washington State EMD in coordination with the Pacific County Emergency Management Director and the Director of Emergency Management for the Shoalwater Bay Tribe completed three open-houses/workshops in Ocean Park, WA, Tokeland, WA, and Grayland, WA, for distribution of NOAA Weather Radios to low-income and special needs populations. Over 120 participants completed a basic course on tsunami preparedness and received a NOAA Weather Radio as part of this program. Based on the success of this pilot program in Pacific County, workshops were conducted in Clallam County during the month of April 2009 at Sekiu, La Push, Port Angeles, as well as on the Quileute and Lower Elwah Klallam Tribal Reservations. This resulted in an additional 104 residents becoming trained on tsunami preparedness and the use of NOAA Weather Radio. • An analysis of liquefaction areas, landslide hazard areas and tsunami evacuation routes has been completed by the Washington State Department of Natural Resources for Aberdeen, Washington. The information derived from this analysis and subsequent mapping has provided the city with valuable information on potential issues related to existing evacuation routes and assembly areas. • Washington State has continued its longstanding partnership with GNS Science of New
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	<p>Zealand by contracting for social science survey research and data analysis related to tsunami preparedness in outer coastal counties. Researchers have conducted field surveys of tsunami warning siren tests that are conducted on a monthly basis as well as observed a full-scale activation of All Hazards Alert Broadcast (AHAB) sirens during the September Tsunami Warning Communications Test in order to assess resident and visitor response. This feedback will enable state and local emergency management officials to provide a more robust education campaign on tsunami warnings and the dangers these hazards present.</p> <ul style="list-style-type: none"> • The Tsunami Program Assistant from Washington Emergency Management Division continues to coordinate with local emergency managers and lodging establishments to conduct tsunami preparedness training sessions for hospitality professionals. The Disaster Preparedness Program for Hotels and Motels on the WA Coast has been completed in the following locations in 2010: Quinault Resort, Long Beach, and Ocean Shores. Each lodging establishment was provided a NOAA weather radio and a disaster preparedness guidebook. • Washington State Emergency Management’s Earthquake Program Coordinator has been coordinating with local outer coastal tribes in order to develop a common list of supplies that could be stored at assembly areas in the event of a tsunami as well as disbursement and supply rotation procedures. Recently, EMD conducted a series of meetings with the Northwest Tribal Emergency Management Council and the Shoalwater Bay, Hoh, Quileute, Quinault, Makah, and Lower Elwah tribes regarding this project which is slated for implementation in 2011. • The Washington Department of Natural Resources recently released an online evacuation mapping tool using ArcGIS that enables coastal residents to plot an address, such as a residence, place of business, or other area of interest in order to determine its relation to the tsunami hazard zone. This valuable new resource enables residents, tourists, and other interested parties an opportunity to review evacuation routes and determine the nearest assembly area. The application can be accessed directly at http://www.dnr.wa.gov/ResearchScience/Topics/GeosciencesData/Pages/geology_port al.aspx
WY	
YK	

3. To which agencies has your agency forwarded this policy recommendation?

AK	NOAA, NTHMP, ASHSC, FEMA
AS	
AZ	N/A
BC	N/A
CA	The California tsunami program has implemented all aspects of WSSPC Policy Recommendations 10-1 and 10-2 within their FY2009/10 work plan. This work plan has been shared with the members of the California Tsunami Steering Committee which is represented by each coastal county and multiple state and federal agencies who have jurisdiction over coastal lands and facilities. The Steering Committee held two meetings this past year.
CO	N/A
GU	
HI	

ID	
MT	N/A
NV	
NM	N/A
CNMI	
OR	<p>a. All WSSPC policies have been shared with the OSSPAC. Six state agencies have OSSPAC commissioners.</p> <p>b. The Distant Tsunami Workgroup information has not been widely shared.</p>
UT	N/A
WA	Western States Seismic Policy Council (WSSPC) recommendations related to tsunami preparedness, mitigation, and warning systems are discussed by the Washington State-Local Tsunami Workgroup. This group consists of Federal Agencies (NOAA-NWS, NOAA-PMEL, FEMA, USGS) Washington State Agencies (EMD, DNR, State Patrol, WSDOT) and all Local/Tribal Emergency Managers. The primary functions of this working group are to coordinate education and outreach efforts, establish program priorities, and ensure seamless warning coordination and message dissemination.
WY	
YK	

4. How many new communities in your state have been designated as TsunamiReady™ communities in the past year?

AK	1
AS	
AZ	N/A
BC	N/A
CA	In 2010, Redwood National and State Parks in northern California became TsunamiReady. In addition, the California tsunami program has made significant progress helping a number of counties (3), cities (6), State Park regions (3), and other entities (Newport Elementary School) start the process to become TsunamiReady. To help in the TsunamiReady process, the California program has provided tsunami brochures, tsunami signs, and assistance in sign placement to many of these communities.
CO	N/A
GU	
HI	
ID	
MT	N/A
NV	
NM	N/A
CNMI	
OR	One – Florence. There are several more that are very close to being recognized.
UT	N/A

WA	Washington State had the communities of Raymond, South Bend, Ilwaco and the Native American Nation of the Shoalwater Bay Tribe recognized as TsunamiReady by Washington State Emergency Management and NOAA's National Weather Service. In 2008, Washington State became the first state in the Continental United States to have all of its outer coastal counties designated as TsunamiReady. Carrying on the momentum, in 2009 Pacific County in Washington State became the first in the Nation and all of its incorporated cities and Native American Tribes recognized as TsunamiReady.
WY	
YK	

Policy Recommendation 10-3

Post-Earthquake Technical Clearinghouses

Policy Recommendation 10-3

WSSPC recommends that each member state, province, and territory establish a plan for a post-earthquake technical clearinghouse to be activated if possible within 24 hours after each major earthquake within its jurisdiction. WSSPC also recommends that multijurisdictional agreements between and among WSSPC members and Federal agencies be in place that would allow for the establishment of a single comprehensive technical clearinghouse in the event of a large earthquake.

5. Has your state established a plan for a post-earthquake technical clearinghouse? If not, what are the impediments to establishing such a plan?

AK	This has been discussed at the ASHSC but there is insufficient staff time and funding to implement this at this time.
AS	
AZ	No. Not a high enough priority for our state agencies given current budget constraints
BC	The BC government works closely with federal counterparts at Public Safety Canada and Natural Resources Canada to discern required technical information. BC is working on the development of a Seismic Safety Council to address such issues.
CA	California has a post-event earthscience technical clearinghouse for all natural hazards, including earthquakes. The Clearinghouse is under the operational direction of the California Geological Survey and the State Geologist, and authorized in Statute.
CO	No. From around 2002 into 2004 the CEHMC and the state actively worked to develop a document. The document was completed and reviewed but the commitment to participation by the organizations anticipated to be cooperating entities could not be finalized.
GU	
HI	
ID	
MT	No. Lack of personnel/funding.
NV	

NM	<p>The New Mexico Department of Homeland Security & Emergency Management is a charter member of DisasterCharter.org. This is directly from their website: "The International Charter aims at providing a unified system of space data acquisition and delivery to those affected by natural or man-made disasters through authorized users. Each member agency has committed resources to support the provisions of the Charter and thus is helping to mitigate the effects of disasters on human life and property"</p> <p>LINK: http://www.disastercharter.org/home</p> <p>Dave Love's (DL) answer: New Mexico really does not have anything like the clearinghouses in Utah and Nevada. We could work toward having a group that would quickly get information out to the public through New Mexico Tech's seismology group--Rick Aster, Sue Bilek, Jana Stankova-Pursley. They currently do a good job of getting press releases out after some of our minor quakes. A clearinghouse would require a lot more effort (and money).</p>
CNMI	
OR	No. Lack of staff resources.
UT	Yes
WA	<p>The Washington Department of Natural Resources-Division of Geology and Earth Resources (DGER) has established the ability to implement a post-earthquake clearinghouse. DGER will be able to implement an effective clearinghouse within 24 hours after an earthquake and will be able to coordinate between agencies as a result.</p> <p>In addition, DGER has submitted a proposal for grant funding to conduct workshops with the engineering, building, and emergency management communities on proper use of the clearinghouse after an event as well as to test the functionality though the use of the clearinghouse in an exercise.</p>
WY	
YK	

6. Have Memoranda of Agreements for a post-earthquake technical clearinghouse been established? With which states?

AK	No
AS	
AZ	No
BC	BC and Natural Resources Canada will be working toward a MOU in 2011.
CA	N/A
CO	No
GU	
HI	
ID	
MT	<p>The Montana Bureau of Mines and Geology is functional member in the Geologic Hazards Response Plans and Protocols for the Yellowstone Volcano Observatory (http://pubs.usgs.gov/circ/1351), which includes clearinghouse-like functions for geologic events in Yellowstone National Park. The State of Montana has an all-hazards plan to address recovery from an earthquake. We are capable of coordinating resources and assisting affected jurisdictions. Unfortunately, it does not specifically address clearinghouse responsibilities to the degree of WSSCP recommendations.</p>
NV	

NM	NA DL's response: New Mexico and surrounding states used to have mutual-aid compacts. I think the disaster managers came up with a different set of compacts, but I've never seen them and I don't know whether mutual aid is passe'. Clearinghouses would be different. I think New Mexico should work out an aid response with Utah because they have already helped other states (Nevada, Louisiana). Later, New Mexico could set up its own clearinghouse.
CNMI	
OR	No
UT	Yes. Nevada.
WA	Washington State has not established official Memorandums of Understanding with other states but we have reached informal agreements with ASCE, AEG, USGS, UW, EERI.
WY	
YK	

Policy Recommendation 10-4

Seismic Provisions in the 2009 International Building Code

Policy Recommendation 10-4

WSSPC endorses the prompt adoption and enforcement of the seismic provisions of the 2009 *International Existing Building Code*, the 2009 *International Building Code*, and the 2009 *International Residential Code* as minimum standards by states, territories, provinces and/or local jurisdictions. Further, WSSPC discourages modifications or amendments that would weaken the Code or its required inspections. WSSPC also encourages Code organizations to continue the development and refinement of building codes and consensus standards to remain substantially equivalent to the National Earthquake Hazards Reduction Program (NEHRP) Recommended Seismic Provisions for New Buildings and Other Structures (FEMA 750) with a specific focus on purpose, education, incentives, lifelines and the business/industry and homeowner sectors.

7. What version of the International Building Code, the International Existing Building Code, and the International Residential Code has your state adopted?

AK	Statewide IBC 2006 for Fire and Life Safety. Local Communities can adopt more stringent / current codes.
AS	
AZ	2006
BC	In Canada we use the National Building Code of Canada which needs to be adopted by the authority having jurisdiction. In BC the current version is the 2006 version of BC Building Code. There are some exceptions, for example, codes aren't necessarily followed in unincorporated areas. The City of Vancouver, by virtue of its charter has to have its own code, which is based on the BC Building Code. The Seismic Safety Council will be reviewing these issues.
CA	2009
CO	There is no state-wide building code but the following code adoptions have been made at the

	state level: a. 2009 IBC for state-owned buildings and physical facilities b. 2006 IBC for public schools and junior colleges and c. 2006 IBC for factory-built nonresidential structures.
GU	
HI	
ID	
MT	The department has adopted the 2009 editions of the International Building Code (IBC) and the 2009 edition of the International Existing Building code (IEBC) without any modifications to seismic provisions. These two adoptions became effective July 2010.
NV	
NM	New Mexico has adopted the 2006 International Residential Building Code and the 2006 International Building Code.
CNMI	
OR	The current versions have been adopted by the State's building code division.
UT	2009 IBC including Appendix J, 2009 IEBC (referenced as useable), 2009 IRC
WA	The State of Washington has adopted the 2009 edition of <i>International Building Code</i> , including Appendix E, as stated in Washington Administrative Code (WAC) 51-50-003.
WY	
YK	

8. Has your state adopted the seismic provisions in these codes?

AK	Statewide IBC 2006 for Fire and Life Safety only
AS	
AZ	Don't know
BC	N/A
CA	Yes
CO	Yes
GU	
HI	
ID	
MT	The department is currently still on the 2006 edition of the International Residential Code (IRC) and working towards the adoption of the 2009 edition without modification to seismic provisions.
NV	
NM	DL: I cannot find the formal adoption of the seismic provisions and when I asked they sent me to a webpage that does not reference it either. I will get clarification on this point.
CNMI	
OR	Yes
UT	Yes
WA	Yes, the seismic provisions have been adopted.

WY	
YK	

If the following policy recommendation does not apply, mark it “NA” and skip to questions on Policy Recommendation 10-6.

Policy Recommendation 10-5

Basin and Range Province Earthquake Working Group(s)

Policy Recommendation 10-5

WSSPC recommends convening a technical Basin and Range Province Earthquake Working Group(s) (BRPEWG) to meet with experts from Basin and Range Province (BRP) states to arrive at consensus average recurrence intervals (RI) and slip rates (SR) and other seismic hazard parameters with related uncertainties for active faults. Best available RI and SR values with appropriate uncertainties are critical to U.S. Geological Survey (USGS) seismic-hazard evaluations and for determining which faults should be included on the National Seismic Hazard Maps (NSHMs). The BRPEWG(s) should be convened under the auspices of the USGS NSHM project.

9. Will your state participate in a Basin & Range Province Earthquake Working Group if it is convened in 2011 to provide input to the USGS National Seismic Hazard Map?

AK	N/A
AS	
AZ	Yes
BC	Unknown
CA	Perhaps – depends on the topics and if they impact California’s B&R area
CO	Yes
GU	
HI	
ID	
MT	Yes
NV	
NM	Refer to Dave Love, who responds—no word as to whether the Bureau has money to send anyone to such a conference—I’m probably on my own.
CNMI	
OR	Probably not at this time, Depends on available staffing.
UT	Yes. Meeting will likely happen in early 2012 and the UGS will be the host/organizer.
WA	No
WY	
YK	

Policy Recommendation 10-6
Post-Earthquake Information Management System

Policy Recommendation 10-6

WSSPC supports the development of a national Post-Earthquake Information Management System. The Management System would provide permanent archiving of essential data related to natural and socio-economic earthquake effects and the performance of the built environment from earthquakes within the United States, and could be combined with similar data systems that assemble and archive data from other natural hazards events, or geosciences data repositories that archive physical and electronic data.

10. Has your state’s support for this policy recommendation been communicated to any federal agency, organization, or group?

AK	No
AS	
AZ	No
BC	Not yet. Will be a part of the Seismic Safety Council’s responsibilities.
CA	The concept is supported by the California Geological Survey and has been expressed to USGS
CO	No
GU	
HI	
ID	
MT	No
NV	
NM	No Dave Love’s boss, Dr. Peter Scholle, has probably communicated with federal agencies about his support for such a system.
CNMI	
OR	All WSSPC policies have been shared with the OSSPAC.
UT	Yes. It has been discussed with FEMA Region 8 and within the Utah Earthquake Program.
WA	Please see response to Question 6.
WY	
YK	

11. Have any local or regional partnerships or agreements been established to assure collection of post-earthquake performance and damage information?

AK	No
AS	
AZ	No
BC	Yes. Carlos Ventura, University of BC Engineering, is working with many key stakeholders on this issue.
CA	This type of information is gathered by the California Seismic Safety Commission, and other

	entities such as EERI.
CO	No. However, the previous efforts on the Post-Earthquake Technical Clearinghouse included uniform data collection and management in the Plan.
GU	
HI	
ID	
MT	Yes, with YVO as explained in item 6 above however the State disaster recovery plan does not specifically include the collection of post-earthquake performance and damage information.
NV	
NM	<i>No</i> DL: Rick Aster and the seismology group have probably agreed to collect seismic information, but probably not other types of information.
CNMI	
OR	No
UT	One of the main purposes of the Clearinghouse is the acquisition and archiving of geological, building-performance, and emergency response data. Groups participating in this effort include the University of Utah Seismograph Stations, the Utah Seismic Safety Commission, the Structural Engineers Association of Utah, the Utah Geological Survey, and the Utah Division of Homeland Security.
WA	Please see response to Question 6.
WY	
YK	

Policy Recommendation 10-7
Seismic Design of New Schools

Policy Recommendation 10-7

WSSPC recommends that each member state, province, and territory establish and fund an active program to improve the seismic safety of new schools and ensure that seismic building code provisions for new schools are followed. WSSPC also recommends that FEMA provide dedicated financial support for the establishment of a program that improves the seismic safety of new schools.

12. Does your state have an active program to ensure adoption of elevated seismic design standards that will improve the seismic safety of new schools?

AK	The ASHSC supported a new provision in the State school funding procedures that provides for independent seismic design review and on-site seismic inspection of new school construction. DHS&EM continues to pursue funding and support for a seismic vulnerability assessment of the State's public schools.
AS	
AZ	No
BC	Yes
CA	Yes; The Division of the State Architect has led national seismic building standards for many

	decades. They have done this by setting high standards for seismic design and rigorous quality control through design and construction of public schools in California.
CO	No
GU	
HI	
ID	
MT	No. This responsibility lies with local planning and state permitting/planning. No programs outside that process exist in Montana.
NV	
NM	No
CNMI	
OR	Yes. Geotechnical seismic studies are required by licensed professionals.
UT	Yes
WA	New schools in the State of Washington are constructed to meet the strict seismic standards adopted in the latest edition of the International Building Code. Additionally, Washington State EMD trains more than 200 professionals, including building inspectors, on seismic mitigation techniques such as <i>Rapid Visual Screening of Buildings for Potential Seismic Hazards</i> as well as response and recovery techniques that include <i>Post Earthquake Safety Evaluation of Buildings</i> using the ATC20/21 courses. The knowledge gained through these courses is also beneficial during standard building inspections and the development review process.
WY	
YK	

13. If your state does not have an active program, are there plans to develop and/or adopt such a program in the next year?

AK	See above answer to question #12. Timeline is ongoing.
AS	
AZ	No
BC	N/A
CA	<u>NA</u>
CO	The Colorado Earthquake Hazard Mitigation Council prepared a policy recommendation for use by the State of Colorado when reviewing geologic and soils reports for public schools. The policy was sent to the state in October of 2008. Since that time the State of Colorado has reorganized and now administers a more comprehensive plan for school permitting and inspections. On January 3, 2011, the CEHMC sent the recommendation to the Division of Fire Safety. The Division of Fire Safety is now responsible for the permitting and inspection of school construction. The CEHMC has not received a response from the state as yet.
GU	
HI	
ID	
MT	Not that we are aware.
NV	
NM	No
CNMI	

OR	N/A
UT	N/A
WA	N/A
WY	
YK	

14. Has FEMA provided financial support for the establishment of such a program in your state?

AK	No
AS	
AZ	No
BC	N/A
CA	No
CO	N/A
GU	
HI	
ID	
MT	No
NV	
NM	No
CNMI	
OR	No
UT	Yes
WA	No dedicated funding from FEMA has been provided for this effort. Washington State Emergency Management funds the courses through existing resources.
WY	
YK	

Policy Recommendation 10-8

Identification and Potential Mitigation of Seismically Vulnerable School Buildings

Policy Recommendation 10-8

Children have the right to be safe in school buildings during earthquakes. WSSPC recommends each state, province, territory, and community adopt a program that would identify and rank the potential seismic vulnerability of schools in their communities in a timely manner. Furthermore, programs to reduce the seismic vulnerability of those schools at greatest risk should be developed. WSSPC also recommends that FEMA provide dedicated financial support for the establishment of a program that improves the safety of seismically vulnerable schools.

15. Please identify the type of program your state has to address unsafe school buildings, its stage of development and length of time it has been in existence, and any legislative initiatives that exist to support this policy.

AK	DHS&EM continues to pursue funding and support for a seismic vulnerability assessment of the State's public schools. At this time it is being done based on local initiative, on a district by district basis only.
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AS	
AZ	None that we are aware of.
BC	BC Seismic Mitigation program is a 15 year program that started in 2004 where all the schools were assessed. To date 121 upgrade projects are completed. Current progress report in link http://www.bced.gov.bc.ca/capitalplanning/seismic/progress_report.html .
CA	California has addressed existing unsafe schools several times in the past. I am aware of only one current effort – Proposition 1D, passed in 2006, that provides state bond money for seismic retrofit of the most vulnerable schools. School districts must identify those vulnerable structures and apply for bond funding. There may be additional programs of which I am not aware. I would recommend contacting Masha Lutsuk at Division of the State Architect if additional information is needed: masha.lutsuk@dgs.ca.gov
CO	None
GU	
HI	
ID	
MT	Nothing exists. Something has to occur to an existing structure for anything to be addressed (such as visible structure damage, etc.) The state, however, has been working to identify buildings for retrofit.
NV	
NM	Through funding received from the FY2010 Earthquake Hazards Reduction State Assistance Program and using resources from New Mexico School of Mining & Technology (“NMT”) we have developed a program where upper classmen in Civil Engineering and GIS will work together to develop the NM Earthquake model. Using information from Dr. Dave Love & Dr. William Chavez, we determined the area at highest risk was from Taos, south to Belen, due to the high amount of unreinforced masonry buildings. Currently, the number of adobe (URM) buildings is unknown. Currently, the number of adobe buildings that house essential facilities are unknown. The model will determine the GPS locations of essential facilities pre-determined by County, Town, City, Village and Tribal emergency managers. This is a fully collaborative project that will produce a product in both digital and thematic formats for the use of local emergency managers. The end product will be a probabilistic map project that will determine the probability of damage to essential facilities in (8) counties in NM.
CNMI	
OR	There have been several successful earthquake safety legislation on schools since 2001. In 2001, laws were established that require that high occupancy public schools be seismically life safe by 2032. In 2007, DOGAMI and the Dept of Education made public a report with seismic scores for high occupancy public school buildings built before 1994. In 2009, the state started a seismic grant program to help fund strengthening work for seismically dangerous school buildings. A timeline is provided on page 5 of http://www.oregongeology.org/sub/quarpub/CascadiaWinter2010.pdf
UT	The Utah Seismic Safety Commission, the Structural Engineers of Utah, and the Division of Homeland Security conducted a FEMA-funded pilot study for rapid visual screening (RVS) of 130 schools. The study was completed in September 2010 with a report to be available in early 2011. This work will support of an anticipated bill before the 2011 Utah Legislature to request that all Utah schools have an RVS perform on them.
WA	<ul style="list-style-type: none"> • A goal that has been on the horizon for several Washington State agencies, including but not limited to the Military Department’s Emergency Management Division (EMD),

	<p>Department of Natural Resources- Division of Geology and Earth Resources (DNR), the Office of Superintendent of Public Instruction (OSPI), and Washington State’s Seismic Safety Committee is to systematically evaluate all public school buildings and critical facilities within the Washington in order to establish the seismic risk for each. This will allow for the prioritization of structures in need of seismic retrofitting across the state and permit a strategic, targeted approach for alleviating the risk of potentially dangerous structures.</p> <p>The aforementioned agencies, with funding support from FEMA’s State Earthquake Assistance Program, began a pilot project starting in April 2010 to evaluate school buildings in two school districts, Aberdeen School District and Walla Walla Public Schools. The assessments are conducted using a nationally accepted methodology known as <i>ASCE 31: Seismic Evaluation of Existing Buildings</i> and will be completed by volunteer structural engineers.</p> <p>To get a true picture of risk for a particular site, geologists from the Washington Department of Natural Resources have assessed the physical site characteristics by conducting site class assessments for each location by measuring shear wave velocities. Overall, this comprehensive method will provide in-depth information as to how a site and a specific school structure would perform during an earthquake.</p> <p>Upon completion of this pilot project, participating districts will be provided with a study report that details the findings for each school facility as well as provides an ordered list of structures that should be targeted for retrofitting or replacement. In addition, the results of this study can be used by the school district to strongly justify an application for FEMA grant funding through the Pre-Disaster Mitigation Grant Program (PDM) and the Hazard Mitigation Grant Program (HMGP) to seismically retrofit deficient structures. A final project report will detail the findings of this pilot effort and recommendations for future efforts throughout the State.</p>
WY	
YK	



Policy Recommendation 10-9
 Earthquake Early Warning Systems

Policy Recommendation 10-9
 WSSPC supports the development of earthquake early warning systems in those states or regions with high seismic risk and a seismic network that can, or can be enhanced to, support an early warning capability.

16. Describe progress made on developing an earthquake early warning capacity through the formation of working groups, developing warning systems, or other means.

AK	None. Not practical for Alaska at this time.
AS	
AZ	No activity.
BC	As per above, BC has implemented PENS. Further work / linkages with NRCan are being developed.
CA	Refer to CalEMA
CO	None
GU	
HI	
ID	
MT	None. The Montana Regional Seismograph Network reports automatically determined earthquake locations and magnitudes within 2-3 minutes of their occurrence, however these are not reliable, high-quality solutions. Considerable new instrumentation and effort would be needed to provide automatic solutions reliable enough for early warning systems.
NV	
NM	NA Dave Love asked the seismology group at New Mexico Tech, but did not receive a response.
CNMI	
OR	None at this time as the underlying seismic warning systems are not in place. Much basic work in upgrading seismic networks needs to be done at the federal level before Oregon can pursue an early warning system. Currently, there is no funding available to the state that would enable us to do this. DOGAMI and the OPUC is in the early stages of working with utilities on providing research funds towards studying the feasibility of EEW for the Pacific NW.
UT	No specific implementation of earthquake early warning has yet been attempted in Utah. However, it is envisioned that the seismic infrastructure being emplaced in Utah may eventually be used for earthquake early warning, once software and the other related policies and utilities have been developed and tested in California.
WA	The Washington State Seismic Safety Committee has received a briefing from the Pacific Northwest Seismic Network on the earthquake early warning system currently under development by the USGS and others in California. The Committee and PNSN will be following the development and implementation in order to determine the applicability/feasibility for Pacific Northwest.
WY	
YK	

Policy Recommendation 09-1
Earthquake Planning Scenarios

Policy Recommendation 09-1

WSSPC recommends that each member state, province, and territory establish an active program to produce Earthquake Planning Scenarios for areas with high risk of earthquake losses. WSSPC also recommends that FEMA support the production of these Earthquake Planning Scenarios through its funding resources.

17. Is your state actively developing or producing earthquake planning scenarios? Briefly describe current efforts.

AK	DHS&EM and ASHSC have created an active scenario proposal but have so far been unsuccessful in finding funding for the project. In addition, the limited number of qualified volunteers in Alaska will makes a project more challenging.
AS	
AZ	No activity.
BC	Emergency Management BC is in the process of developing 7 earthquake scenarios. These scenarios cover highly populated areas as well as remote and isolated communities.
CA	No
CO	CDEM is not actively developing or producing an earthquake planning scenario at this present time. Some CDEM staff are participating in the development process for the State of Utah NLE-3 Senior Officials Earthquake TTX with FEMA R-VIII and Utah staff and a scenario will be developed for the currently scheduled September 2011 Earthquake Long-Term Recovery Workshop.
GU	
HI	
ID	
MT	The state just completed an exercise addressing earthquakes and the impact to communities and resources. It involved nearly 2000 participants and all levels of government, volunteer agencies, private industry, and National Guard (multiple response and special teams). This effort took over two years to plan and execute and there are no immediate plans for the state to conduct a similar exercise in the near future.
NV	
NM	<i>No</i> DL: Actually yes, Ivan Wong of URS Corporation produced an earthquake scenario for the greater Albuquerque area and published it in 2004. See http://geoinfo.nmt.edu/publications/periodicals/nmg/downloads/26/n1/nmg_v26_n1_p3.pdf
CNMI	
OR	Yes, there are several scenario studies underway, including local scenarios and a statewide scenario focused on critical infrastructure.
UT	Since the release of HAZUS in the mid 1990's, Utah's Earthquake Program and FEMA have actively been producing county and regional earthquake scenarios for planning and exercise activities.
WA	In 2005, Washington State Emergency Management Division and the Earthquake Engineering Research Institute developed the immensely valuable M6.7 Seattle Fault Scenario. Following on this widely popular document, Washington State Emergency Management, in coordination with DNR, USGS, FEMA Regions VIII & X, and URS Corporation continued development of an Earthquake Scenario Catalog for Washington State. The purpose of this project is to provide the state and local jurisdictions with additional resources for use in hazard mitigation and response planning for earthquake events as well as to facilitate better exercise design. When complete, this catalog will initially consist of 20 USGS ShakeMaps developed by Dr. Art Frankel, USGS National Seismic Hazard Map Program, for the various scenarios, HAZUS reports for the state and most heavily impacted counties, maps that spatially illustrate injuries and impaired hospitals, bridge functionality, estimated displaced households and shelter needs,

	potential search and rescue needs, liquefaction potential and lifeline functionality, and include indices of community vulnerability and exposure for each scenario event developed by USGS Research Geographer, Dr. Nate Wood.
WY	
YK	

18. Have policies been developed as a result of a published earthquake scenario?

AK	No
AS	
AZ	
BC	Not yet.
CA	Unknown – perhaps locally
CO	N/A
GU	
HI	
ID	
MT	In progress.
NV	
NM	No
CNMI	
OR	No
UT	An earthquake scenario has been employed for the development of the 2012 Utah ShakeOut and the development of the Catastrophic Earthquake Plan for FEMA Region 8 and the State of Utah. The scenario has been widely published in FEMA planning documents. Federal, state, and local agencies are using the scenario to craft new policies and procedures related to responding to the earthquake described in the scenario.
WA	As a result of the Seattle Fault Scenario, many recommendations have been implemented and several others have been used to raise awareness.
WY	
YK	

19. Has FEMA funded part or all of an earthquake scenario that was developed?

AK	No
AS	
AZ	
BC	No
CA	No
CO	N/A
GU	
HI	
ID	
MT	Partially funded.
NV	
NM	Yes, see 17 above.

CNMI	
OR	Yes
UT	FEMA has partial funded the development of the 2012 earthquake scenario.
WA	Washington State Emergency Management Division reprioritized resources from FEMA's Emergency Management Performance Grant (EMPG) program to complete the earthquake scenario catalog project and received a grant from the USGS to procure a proprietary data set used to assess economic and population distribution. No dedicated funding has been provided specifically for earthquake scenario development.
WY	
YK	

Policy Recommendation 09-2

Developing Earthquake Risk-Reduction Strategies

Policy Recommendation 09-2

WSSPC strongly encourages states and local governments to develop and continually update 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.

20. Describe the status and year of the most recent State Hazard Mitigation Plan adopted or that will be adopted in 2011. If the Plan has already been adopted, please provide us with the web link to it.

AK	Plan was updated in November, 2010 to include a substantially updated seismic hazard and goals section. The plan is on the web at: http://ready.alaska.gov/plans/documents/SHMP_2010_UPDATE_ENTIRE_FINAL_COMPLETE.pdf
AS	
AZ	Revision of the SHMP is underway, coordinated by the AZ Division of Emergency Management.
BC	Will be a component of the BC Seismic Safety Council.
CA	2010 Plan Completed. Can be viewed at www.calema.ca.gov .
CO	The State of Colorado's strategy for reducing risk to Colorado communities focuses efforts on increasing the number of counties that have a federally approved hazard mitigation plan and on managing known community high hazard risks. http://www.coemergency.com/p/mitigation.html
GU	
HI	
ID	
MT	Montana has a FEMA-approved PDM plan that was adopted in 2010. http://dma.mt.gov/des/Library/2007_PDM_Plan_Update/Index.htm
NV	
NM	Adopted on September 24, 2010 – no link - NM DHSEM is currently upgrading the website.
CNMI	
OR	Adopted by Governor Kulongoski on March 6, 2009 and FEMA approved on the same day,

	though their letter to the Governor was dated March 19, 2009. The Oregon NHMP must be completely updated at least once every three years. The weblink to the table of contents for the Oregon NHMP is http://www.oregonshowcase.org/stateplan
UT	The Utah State Hazard Mitigation Plan is currently under review at FEMA Region 8 and will be adopted upon completion of the review process.
WA	In 2010, Washington State completed the development of an Enhanced Mitigation Plan that has subsequently been approved by FEMA. The Enhanced Mitigation and other plans can be accessed directly at http://www.emd.wa.gov/plans/plans_index.shtml .
WY	
YK	

21. What mitigation successes (defined in the policy recommendation as “occasions when mitigation actions or requirements are incorporated into public policies and decisions and subsequently integrated into important public or private projects”) can you cite for your state?

AK	<p>Kodiak Island Public Schools: All the Schools in the District were assessed for seismic risk and then a multi-year plan to retrofit them against that risk was undertaken in a cooperative local and State effort.</p> <p>In the Municipality of Anchorage seismic safety gas shut-off valves were installed in critical facilities and shelter schools. Also, in the Municipality of Anchorage, structural and non-structural seismic retrofits were done on key shelter facilities. These projects resulted in increased seismic risk awareness and a reduction in insurance costs.</p>
AS	
AZ	
BC	
CA	Refer to Cal EMA
CO	The Colorado Geological Survey in collaboration with the University of Colorado, Colorado State University, Colorado College, and the Colorado Division of Emergency Management has purchased four of the EarthScope TA stations in Colorado. Landowner agreements are complete with stations T25A-1 near Trinidad, S-22A-2 near Creede, Q24A-1 near Divide, and N23A-2 near Red Feather Lakes. IRIS will be contracted for ongoing maintenance. These four stations coupled with the four backbone stations, and the two stations in Moffat and Kit Carson Counties that IRIS is leaving in place should greatly enhance NEIC’s ability to detect, locate and analyze earthquakes in Colorado. This acquisition was strongly supported by the Colorado Earthquake Mitigation Council (CEHMC).
GU	
HI	
ID	
MT	For the first time this year and last year other state agencies besides Montana Disaster & Emergency Services; namely the State Department of Transportation and Department of Administration/Architecture and Engineering Division/Design and Construction Bureau in conjunction with the Montana State University Planners have submitted substantial mitigation project grant applications to conduct mitigation on a large scale using FEMA mitigation grants. The movement into State Agency participation in State-wide mitigation projects and strategies

	has been a goal sought by the State Hazard Mitigation Officer for more than five years. The State of Montana is aggressively conducting geo-referencing as well as Tier One studies of its inventory of state owned facilities and intends to pursue mitigation projects for the most vulnerable and most cost effective seismic structures. A FEMA Pre-Disaster Mitigation (PDMC-2011) Seismic Retrofit project has been submitted for the Creative Arts Complex on the Montana State University campus in Bozeman, MT and it is hoped this is the first of many seismic retrofit projects to be lined up and submitted for Mitigation Projects with FEMA.
NV	
NM	NA DL: I would hope that our small earthquake train-the-trainer outreach program would do a little to raise awareness and educate at least a few of our teachers and students. It's not much, but it's something.
CNMI	
OR	<ul style="list-style-type: none"> a. NTHMP-funded coastal tsunami education and outreach b. General obligation bond-funded seismic rehabilitation grant program for emergency facilities and schools. c. Administrative rules for a uniform tsunami warning signal. d. Regarding mitigation successes, there are at least three sources of information. <p>The first is the fact that each and every one of the 13 hazard chapters in Part 3 of the Oregon NHMP contains two or more success stories: http://opdr.uoregon.edu/stateplan/part3</p> <p>Second, the Oregon NHMP contains a table that tracks the status of each action in the plan, including completed actions and successes: http://opdr.uoregon.edu/sites/opdr.uoregon.edu/files/OR-SNHMP_appendix-11_2009.pdf</p> <p>Third, the Oregon NHMP contains an archive of success stories: http://opdr.uoregon.edu/sites/opdr.uoregon.edu/files/OR-SNHMP_appendix-01_2009.pdf</p>
UT	Iron County, Utah adopted (December, 2010) a geologic conditions (hazards) ordinance that specifically addresses surfaced-fault rupture (using UGS mapping) and ground-shaking hazard (by implementing the IBC).
WA	Washington State's Seismic Safety Committee enlisted support for adoption of the International Building Code and associated codes instead of a competing code which was favored by fire departments but had less stringent seismic provisions.
WY	
YK	

Note that the Policy Recommendations 08-1, 08-2, 08-3, and 08-4 are being re-evaluated in 2011.

If the following policy recommendation does not apply, mark it "NA" and skip to questions on Policy Recommendation 08-2.

Policy Recommendation 08-1

Improving Tsunami Public Education, Mitigation, and Warning Procedures for Distant and Local Sources

Policy Recommendation 08-1


WSSPC supports strong, immediate and positive action from federal and state agencies to reduce the potential loss of life caused by tsunamis.

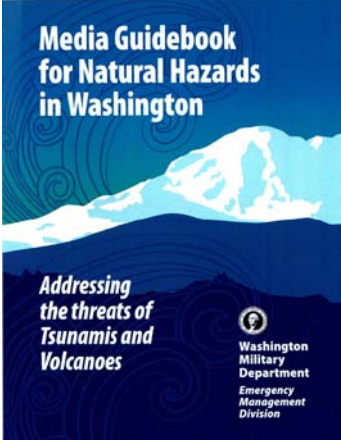
Specifically, WSSPC recommends robust, effective, and fully maintained implementation of the deep-sea tsunami detection system by NOAA, and expanding the efforts by NOAA and the USGS and WSSPC members to enhance public education programs about the potential for local tsunami impacts and the need to evacuate threatened areas immediately after strong or sustained ground shaking.

WSSPC recommends full and timely appropriation of specified funds to the National Tsunami Hazard Mitigation Program (NTHMP) as described in the Tsunami Warning and Education Act of 2006.

22. Describe the actions taken by your state to support Policy Recommendation 08-1, including letters of support and funding received.

AK	See response under question # 1 above. The State of Alaska receives funding through the NTHMP for tsunami mapping and modeling, outreach, education, signage and warning systems. DHS&EM also participates as a member of the Coordinating Committee on the National Tsunami Hazard Mitigation Program (NTHMP) which includes participation on the warning coordination sub-committee. This sub-committee continues to review warning messages and procedures for effectiveness.
AS	
AZ	N/A
BC	N/A
CA	The California tsunami program, comprised of CalEMA and CGS, implemented a comprehensive tsunami hazard mitigation, awareness, and preparedness plan which included strong evacuation planning and public education elements. This plan, which was funded by the NTHMP at \$1.1M in FY2009/10, addressed all aspects of WSSPC Policy Recommendation 08-1 including support for additional resources for the NOAA tsunami warning system, enhancement of public education programs, and guidance for evacuation after a local earthquake source event. The California program provided assistance to the National Geophysical Data Center in development of three new high-resolution, digital elevation models used for forecasting tsunami events by the tsunami warning center. The California program completed multiple tsunami education activities, including: 1) producing and distributing thousands of tsunami education videos, brochures, and posters for Tsunami Awareness and Preparedness Week; 2) completion of a tsunami education campaign on the north coast developed by the Redwood Coast Tsunami Work Group, and 3) development of two new education worksheets for school age children from grades 2 through 12. To address evacuation after a large, local earthquake, CGS and CalEMA have completed and distributed "Guidance for Local Jurisdictions to Develop or Review Tsunami Evacuation Plans for a Post-Earthquake, Local-Source Tsunami," which has so far been utilized in Ventura County. The

	overall California tsunami program received high marks from the NTHMP for its accomplishments over the past year, and its detailed mitigation and education work plan in years to come.
CO	N/A
GU	
HI	
ID	
MT	N/A
NV	
NM	N/A
CNMI	
OR	<p>a. NTHMP is currently funding a robust and active tsunami education program on the Oregon coast. So far, at least six community clusters have received funding and hired a local tsunami coordinator. Many successful outreach activities have taken place. In just the last few weeks, over 700 coastal residents have participated in outreach activities.</p> <p>b. FEMA is currently funding a study to advance the knowledge on tsunami vertical evacuation options in Oregon. FEMA is supporting the technical efforts behind the proposed Cannon Beach city hall, which would be a tsunami refuge.</p>
UT	N/A
WA	<ul style="list-style-type: none"> In addition to the efforts described in response to policy recommendation's 10-1 and 10-2, Washington State has been an active and engaged participant in the National Tsunami Hazard Mitigation Program. The State Tsunami Program Manager presently serves as the State Co-Chair of the NTHMP Mitigation and Education Subcommittee. During 2010, the EMD Earthquake/Tsunami Program and NOAA's Pacific Marine Environmental Laboratory (PMEL) completed two Tsunami Public Education Instructor Train-the-Trainer (T3) Workshops, with participants attending from various coastal Washington jurisdictions. The T3 Program provides participants with a basic understanding of fundamental principles and concepts in: Tsunami Science, Tsunami Warning, Tsunami Risk Reduction, and Conducting Community-level Tsunami Public Education.  <p>A total of 33 participants took part in the workshops, which are designed to train a cadre of professionals that are qualified to serve as Tsunami Public Education Instructors at the community level. Attendees included personnel from county and community organizations, as well such as Tribal Council, Emergency Management, Fire Departments, Community Emergency Response Team (CERT), Chamber of Commerce, and volunteer community members. A total of 64 local community volunteer educators have been through the T-3 program and are actively conducting workshops in their local jurisdictions.</p> <ul style="list-style-type: none"> The new National Disaster Preparedness Training Center at the University of Hawaii conducted the second pilot of the new FEMA Tsunami Awareness Course at EMD on July 30, 2010. This introductory level course included more than 40 participants from Washington, Oregon, and Hawaii.

	<ul style="list-style-type: none"> Washington Emergency Management updated two of its premier products, “The Disaster Response Guidebook for Hotels and Motels on Washington’s Coast” and the “Broadcasters Tsunami Emergency Media Guidebook.” The Disaster Response Guidebook was revised to incorporate new information, tsunami evacuation maps for multiple communities were reprinted, and tent cards for placement in hotel/motel rooms were ordered and distributed to local emergency managers and hoteliers located in the tsunami hazard zone. <p>The Broadcaster’s Guidebook update and renamed to the “<i>Media Guidebook for Natural Hazards in Washington.</i>” This updated version includes a volcano chapter featuring subject matter expert contacts, updated volcano hazard maps, and revised Tsunami Warning Center products and definitions and additional tsunami evacuation maps. Training for the local media on the revisions will be conducted by NWS Seattle, Washington EMD Public Information Officers, USGS, and the EMD Earthquake Program.</p> 
WY	
YK	

23. Were the in-place tsunami programs and policies effective in identifying and monitoring the tsunamis that occurred in 2010?

AK	Yes. After each event there is a review, critique, and considerations for improvement.
AS	
AZ	N/A
BC	Yes. The linkages between EMBC/Province of BC and the federal scientists at Natural Resources Canada are strong and we work well together in major events.
CA	During and after the February 27 th , 2010 tsunami Advisory, the California tsunami program was very active in responding to not only the event, but also to the needs of coastal constituency that the tsunami affected. Prior to and during the event, CalEMA’s emergency response plan was implemented, and both CalEMA and CGS engaged all coastal jurisdictions to provide updated information about the tsunami and assistance on actions that should be taken during a tsunami Advisory. Though post-event surveys of coastal jurisdictions indicated that some confusion remained regarding the interpretations of a tsunami “Advisory,” no significant problems occurred. After the event, the program collected information statewide which confirmed that \$2M to \$3M worth of damage had occurred to the state’s maritime communities. To help better protect the maritime community during future events, the California tsunami program is working with FEMA to obtain funding to develop tsunami hazard products for harbors and bays in California. CGS has also received \$120k in funding (over three years) from the NTHMP to initiate a plan for developing teams of scientists and engineers to send into the field prior to the arrival of a future distant tsunami. This network of field personnel will report the effects of the tsunami to a centralized clearinghouse and collect perishable tsunami data during and following the event. In addition, CalEMA and CGS facilitated over a dozen workshops and exercises in 2010 to assist coastal communities in their tsunami awareness and preparedness efforts.
CO	N/A

GU	
HI	
ID	
MT	N/A
NV	
NM	N/A
CNMI	
OR	Yes
UT	N/A
WA	Yes, based on post-event review of the events that occurred in late 2009 and over the course of 2010, feedback and survey responses from state, local, and tribal emergency managers indicated that monitoring systems and warning/notification dissemination systems used to assess the situation and coordinate response efforts functioned properly .
WY	
YK	

24. Do the results of the public awareness polling funded through the NTHMP support the effectiveness of the education and awareness campaigns?

AK	Formal polling is not done in Alaska. Informal surveys and personal communications find the tsunami program in Alaska to be effective. One of the challenges in Alaska is that some of the communities at the greatest risk are very remote, have limited communication capabilities and are not accessible by road.
AS	
AZ	N/A
BC	N/A
CA	N/A
CO	
GU	
HI	
ID	
MT	N/A
NV	
NM	N/A
CNMI	
OR	a. Yes. The polling has taken place as part of the current campaign with pre/post surveys being administered by the local tsunami coordinator.
UT	N/A
WA	Yes. Washington State Emergency Management has continued to utilize social science survey research and analysis conducted by GNS Science to assess the effectiveness of educational program objectives and identify areas for improvement. In addition, Washington State has benefited from survey research on community preparedness in Ocean Shores and other west coast communities conducted by Dr. Bruce Houghten from the University of Hawaii and others through support from a National Science Foundation grant.
WY	
YK	

If the following policy recommendation does not apply, mark it “NA” and skip to questions on Policy Recommendation 08-3.

Policy Recommendation 08-2
 Definitions of Fault Activity for the Basin and Range Province

Policy Recommendation 08-2
 WSSPC recommends that the following definitions of fault activity be used to categorize potentially hazardous faults in the Basin and Range physiographic province:
 Holocene fault – a fault whose movement in the past 10,000 years (11,500 cal yr B.P.) has been large enough to break the ground surface.
 Late Quaternary fault – a fault whose movement in the past 130,000 years has been large enough to break the ground surface.
 Quaternary fault – a fault whose movement in the past 1,800,000 years has been large enough to break the ground surface.

It should be emphasized that some historical magnitude 6.5 or greater earthquakes that produced surface faulting in the Basin and Range Province occurred on faults that have not been active in the Holocene; furthermore, earthquakes in the Province may occur on faults in all three categories. It is the responsibility of the user to decide what level of earthquake hazard (surface fault rupture and ground shaking) is acceptable for a specific structure or application.

25. Has your state adopted these definitions of fault activity?

AK	N/A
AS	
AZ	Arizona has not adopted official definitions of fault activity; the AZ Geological Survey supports the definition adopted by WSSPC
BC	No
CA	N/A
CO	The fault activity definitions listed in this policy recommendation are similar to but not exactly coincident with the narrative descriptions of faults as written in the CEHMC “Colorado Earthquake Hazards” publication.
GU	
HI	
ID	
MT	No
NV	
NM	DL: There's no procedure for formally adopting these definitions--it's more a matter of agreement by practitioners of geological investigations in the state--the definitions are useful and make sense. The review of this policy recommendation is due to the fact that the international community of geoscientists has moved the Quaternary boundary back to 2.6 million years (from 1.8 Ma) The USGS may have adopted this new time span; I don't know.
CNMI	
OR	N/A

UT	Adopted by some divisions of state and local government – no state-wide standard.
WA	No, and we will not. In Washington, we use deformation of the latest Wisconsinan glacial deposits (~13,500 B.P. at top) as an indicator of Holocene activity, so that stratigraphic relations can be used in the absence of radiometric dating. Late Quaternary (or upper Quaternary in the International Stratigraphic Chart) is at ~126,000, but that has no significance that I am aware of for classifying fault activity.
WY	
YK	

26. To the best of your knowledge, what federal, state, and local entities are using these guidelines and regulations?

AK	N/A
AS	
AZ	
BC	None
CA	N/A
CO	
GU	
HI	
ID	
MT	Nobody that I know of. These definitions may not be widely used until adopted into the USGS Quaternary fault and fold database, which is part of the basis for the National Seismic Hazard maps. Because of the link between current building codes and the hazard maps, changing these definitions may not be practical without USGS buy-in.
NV	
NM	I think the USGS and Bureau of Geology State Map program are using these definitions or slightly modified versions of these.
CNMI	
OR	DOGAMI uses these definitions as a guideline for regulatory related work, such as for new siting of energy facilities.
UT	Utah Geological Survey, Iron County, others?
WA	None. The USGS Quaternary fold and fault database uses 15,000, 130,000, 750,000, and 1,600,000 for classification of fault age.
WY	
YK	

Policy Recommendation 08-3
Earthquake Monitoring Networks

Policy Recommendation 08-3

WSSPC advocates the continuation and expansion of earthquake monitoring networks as envisioned and supported by the Advanced National Seismic System (ANSS). ANSS emphasizes strong-motion instrumentation of urban ground-motion monitoring sites and selected engineered structures as well as increased broadband seismograph instrumentation. The resulting data provide better understanding of future ground shaking potential, provides rapid information for emergency response, and insights for the design of more earthquake-resistant new and retrofitted construction.

WSSPC calls upon all parties committed to earthquake loss reduction to advocate greater support of the U.S. Geological Survey's efforts to expand ANSS monitoring and to standardize data collection, processing, and storage. WSSPC encourages the USGS to strengthen partnerships to further these efforts with emergency managers, engineers, and corporate response and business interruption planners, as well as State and local agencies.

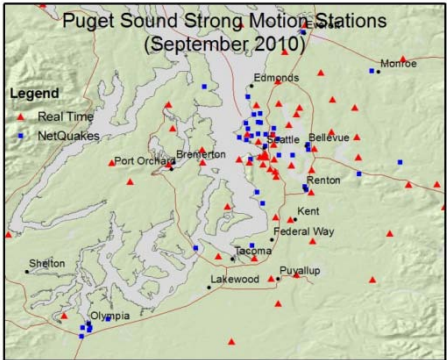
27. What activities has your state undertaken to support ANSS (letters, advocacy, partnerships, etc.)?

AK	Work with USGS, Alaska Volcano Observatory (AVO) and other agencies with seismic stations in Alaska to coordinate real-time data through the Alaska Earthquake Information Center (AEIC) at the University of Alaska Fairbanks, Geophysical Institute. Upgrade of strong motion instruments to digital and real-time.
AS	
AZ	The AZGS is currently partnering with the 3 state universities to operate a small regional network of broadband instruments purchased from the USArray, with funding from FEMA.
BC	Unknown at this time.
CA	The California Geological Survey is a partner in the operation of the California Integrated Seismic Network, which is funded by Federal and State agencies, including CGS. This is the largest strong-motion seismic network in the Western Hemisphere, and is a part of the ANSS
CO	The CEHMC has supported ANSS and has written a letter to support the acquisition of EarthScope instruments for Colorado.
GU	
HI	
ID	
MT	The Montana Regional Seismic Network (MRSN) is an ANSS member. As such, we participate in ANSS National Implementation Conference meetings and other activities.
NV	
NM	I've been corresponding with ANSS people, voted in a recent election, and pass on information to Rick Aster. I think he is also corresponding with ANSS. <i>Dave</i>
CNMI	
OR	DOGAMI has supported ANSS through NEHRP's advisory committee, and through DOGAMI's instrument fund program.

UT	The University of Utah Seismograph Stations (UUSS) is an ANSS network and works closely with the National Implementation Committee and other regional seismic networks.
WA	<ul style="list-style-type: none"> In 2007 the PNSN arranged for USGS funding and managed the acquisition of 15 computer workstations and programmed them with a variety of software packages including the CISN Display linked to ShakeMap and the tsunami watch and warning information. System distribution and user training for 14 Tribal and coastal communities occurred in two workshops organized and supported by WSEMD. The PNSN continues to administer the CISN Display accounts and lend support for these communities. The EMD Earthquake Program Manager represented the National Emergency Management Association (NEMA) at two (2) Advanced National Seismic System (ANSS) Steering Committee meetings. The committee reviewed regional efforts in the United States to enhance seismic monitoring of infrastructure in urban areas as well as latest technologic advances to support the USGS and regional seismic network capabilities to provide emergency managers with products that support rapid response and decision making. The committee also made recommendations on funding, distribution of seismic equipment, and research projects needed to support ANSS program goals and objectives. Department of Natural Resources- Division of Geology and Earth Resources (DNR) has characterized the shear wave velocity profile at 44 ANSS sites under a NEHRP grant from the USGS and will complete an additional 20 sites this year.
WY	
YK	

28. What is your estimate of the number of strong-motion instruments in your state?

AK	Approximately 100 including real-time and data recorder / dial-up retrieval.
AS	
AZ	Less than 5.
BC	The Province of BC has 104 Internet Accelerometers in SW BC, with not much change since 2006. This number includes instruments owned and operated by Ministry of Transportation and Infrastructure-BC (MoTI) and Miller Capilano Corp., the company maintaining the Sea to Sky highway. We expect about 20 new MoTI instruments to be deployed in 2011.
CA	CGS has approximately 1,200 sites with over 5,000 individual instruments deployed
CO	There is no organized Strong Motion program in Colorado. Any instruments that have been installed were done independently. For example, the Trinidad dam has strong motion instruments. There are probably more but the older ones have not been maintained or if they have, the CEHMC has not been involved with the work. Acquisition of Strong Motion instruments for Colorado has been desired by the CEHMC. The annualized earthquake damage numbers for Colorado have been too low to obtain approval for federal funds for them.
GU	
HI	
ID	
MT	The MRSN has obtained ARRA funds to upgrade 3 analog seismograph stations to digital instruments that include strong motion sensors. Two of these upgraded stations are operational and the third is scheduled for upgrade next field season. We installed one NetQuakes strong motion instrument last August; four more will be installed as time and effort permits. The MRSN is taking over operation of seven USGS National Strong Motion Program free field/reference site

	strong motion instruments as part of our current ANSS operational contract. We will be adding a fourth weak motion channel to each 3-component strong motion instrument and streaming the data to the Earthquake Studies Office in Butte in real-time for analysis. All strong motion data are archived at a public data center.
NV	
NM	It's my understanding that some of the dams, such as Cochiti Dam, have strong-motion instruments on them. I think there may be some sensors on buildings in Albuquerque too. Our seismology group did not know about such instruments.
CNMI	
OR	Oregon has 87 ANSS stations with USGS strong motion instruments.
UT	UOUS – 135 accelerographs NSMP- 24
WA	<ul style="list-style-type: none"> The PNSN has received \$600k in ARRA stimulus funding through the USGS Earthquake program to replace and upgrade aging seismograph stations. These upgraded stations include 15 broadband/strong-motion installations. Fourteen weak-motion seismographs stations are also slated for upgrades including the addition of strong-motion accelerometers at these sites and establishment of digital telemetry. Twelve urban strong-motion stations will receive equipment upgrades from ARRA funding. Twenty new “NetQuakes” strong-motion were also purchased with ARRA dollars and are being deployed to create new stations. All ARRA funded upgrades will be completed by September 30, 2011. “NetQuakes” accelerometers have arrived in the Pacific Northwest. Puget Sound area papers printed a request for volunteers to host these instruments and over 1300 Washington residents responded. Using guidance provided by the PNW ANSS Advisory Committee, 75 “high priority” target sites have been selected from the volunteer database. Forty new NetQuakes stations, instruments operating in “triggered” mode, are now in operation (since 9/30/2010). The USGS provided 20 instruments from ARRA funds, 22 with ANSS dollars and an additional 27 from its Multi-Hazard Demonstration Project. The State of Washington will have 65 (or more) new strong motion stations in operation by the end of 2010. The PNSN has also received \$225K in ARRA stimulus funding through the USGS Volcano Hazards Program to improve data transmission infrastructure in Washington and Oregon from Cascade Volcanoes. These dollars will also be used to improve Cascades monitoring and analytical capabilities at the University of Washington.  <p>The map, titled "Puget Sound Strong Motion Stations (September 2010)", shows the distribution of seismic stations in the Puget Sound area. A legend indicates that blue squares represent "Real Time" stations and red triangles represent "NetQuakes". Major cities labeled on the map include Seattle, Bellevue, Renton, Kent, Federal Way, Tacoma, Puyallup, Lakewood, Olympia, Shelton, Port Orchard, Bremerton, Edmonds, and Monroe. The stations are densely clustered around the Seattle metropolitan area and more sparsely distributed in other parts of the sound.</p>
WY	
YK	

29. Has the number of instruments increased in 2010?

AK	Approximately 5, more scheduled for 2011
AS	
AZ	No
BC	No
CA	Yes – perhaps by 100 instruments
CO	No
GU	
HI	
ID	
MT	Yes, by three.
NV	
NM	Don't know.
CNMI	
OR	Yes, by 2.
UT	Yes
WA	Yes
WY	
YK	

Policy Recommendation 08-4

Identification and Mitigation of Unreinforced Masonry Structures

Policy Recommendation 08-4

Unreinforced masonry bearing wall structures represent one of the greatest life safety hazards and economic burdens to the public during a seismic event. WSSPC recommends each state, province or territory adopt a program to identify the extent of risk that unreinforced masonry structures represent in their communities and develop recommendations which will effectively address the reduction of this hazard.

30. Has your state, or communities in your state, adopted a plan to identify URM structures? List all known entities that have a URM risk reduction plan.

AK	Not a real issue given the age and type of most construction in Alaska.
AS	
AZ	No specific programs.
BC	This will be worked on via the BC Seismic Safety Council.
CA	N/A
CO	No. There is no URM risk reduction program in place for this. Evaluation of these structures could be a pertinent exercise for school buildings.
GU	
HI	
ID	
MT	We have done some URM training in the past but nothing has been put into a plan or adopted into an existing plan.

NV	
NM	NM DHSEM should have this information this time next year.
CNMI	
OR	List all known entities that have a URM risk reduction plan. DOGAMI has identified selected URMs in the state, including high occupancy public school buildings and emergency facilities. The City of Portland has a partial listing of URMs.
UT	A 2008 initiative titled House Joint Resolution 7, Recognizing Unreinforced Masonry Buildings, instigated a survey to be performed for all public buildings in the state of Utah. This would include schools.
WA	<p>The PNSN and USGS Earthquake Program partners at the University of Washington have provided input into the City of Seattle Unreinforced Masonry Building policy development plan. In 2008, the City contracted with the engineering firm of Reid Middleton to collate information from earlier studies and to fill in knowledge gaps by conducting sidewalk surveys of suspect URMs in parts of the city where data was missing or incomplete. Based upon the results of the survey, the City has organized stakeholder representatives to study potential incentives and regulations that would reduce the risk of losses from these dangerous structures and provide the City Council and Mayor with policy recommendations to be acted upon in 2009. The City has also convened a committee of technical experts to recommend possible retrofit performance standards and provide the City with other technical advice.</p> <p>"... [the city] estimates there are up to 1000 URMs in the city, most of which have not been seismically retrofitted.... This is a public safety issue," said Mayor Nickels. "No one's rushing into this decision, and we will deliberate over the coming months before reaching any conclusions. But Seattle is in earthquake country and URM's are our most vulnerable structures. We need to address the issue of safety in these structures in a major quake."</p>
WY	
YK	

31. If a URM mitigation plan exists, describe the type of program and its effectiveness to date.

AK	N/A
AS	
AZ	
BC	N/A
CA	N/A
CO	
GU	
HI	
ID	
MT	
NV	
NM	
CNMI	
OR	The City of Portland has some regulations on strengthening URMs that are undergoing major renovation work. The limited applications appear to be effective.
UT	A state plan is proposed to create a State Risk Reduction Program for Unreinforced Masonry

	Buildings as part of the HJR 7 efforts and final reporting.
WA	N/A
WY	
YK	

32. If a URM plan does not exist, what are the obstacles to its adoption?

AK	N/A
AS	
AZ	
BC	N/A
CA	N/A
CO	The seismic risk generally is perceived as low in Colorado even in areas of higher seismicity and hazard. This is primarily an awareness issue.
GU	
HI	
ID	
MT	Personnel, funding, and focus. Natural hazards have taken a lower priority both in state and nationally. Work is being done but more resources need to be available to do it right and be effective. Implementing anything at this point is a huge undertaking for our state office. Without leadership, local jurisdictions will really struggle to accomplish much.
NV	
NM	Actual location of known URM buildings.
CNMI	
OR	A statewide URM plan does not exist due to it being a low priority and a lack of resources.
UT	N/A
WA	Currently, it appears that the continued economic recession has posed an obstacle to further plan development and implementation.
WY	
YK	