

**WESTERN STATES SEISMIC POLICY COUNCIL  
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.

**Background**

Tsunamis can be the most destructive and deadly hazard that results from an earthquake, not only to nearby coastal areas, but occasionally to regions thousands of miles from the source. The 1946 and 1964 Alaskan earthquakes produced tsunamis that caused damage and/or loss of life in Hawaii, American Samoa and along the coasts of British Columbia, Washington, Oregon and California. The Pacific Tsunami Warning Center at Ewa Beach, Hawaii, and the West Coast and Alaska Tsunami Warning Center at Palmer, Alaska, were established as a result of these destructive tsunamis and because of the need to warn coastal populations of tsunamis from distant sources.

Alarms triggered by earthquakes that failed to produce tsunamis have been a major concern associated with past warning systems and continue to be a concern even as warning systems improve. Unnecessary evacuations not only create financial burdens on coastal communities, but may cause people to ignore a real threat in the future. Additionally, unnecessary evacuations are risky to public safety. Programs to reduce unnecessary evacuations have been developed and implemented through the NTHMP. These programs are designed to ensure that the messages

from the tsunami warning centers are accurate and timely, and that they significantly reduce the number of unnecessary evacuations.

Nevertheless, Pacific States, Provinces and Territories still must plan for local coastal earthquakes that provide little or no time to issue a general public warning of a destructive tsunami. Subduction zone earthquakes, like the December 2004 Sumatra Earthquake (M 9.1) and subsequent tsunami, can cause the largest loss of life in tsunami-at-risk coastal communities, particularly those close to the source. The recently released 2008 Uniform California Earthquake Rupture Forecast (UCERF) estimates a ten percent probability of a M 8.0 or greater earthquake somewhere along the Cascadia Subduction Zone (Cascadia Megathrust) in the next 30 years. During the past century, the Alaska-Aleutian subduction zone had a M 8.0 or greater earthquake on the average of every 16 years, four of which produced destructive tsunamis.

Therefore, it is vitally important to educate coastal residents, businesses, and visitors about the importance of immediate evacuation to high ground upon cessation of strong or sustained ground shaking. In areas where no high ground is nearby, vertical evacuation in approved engineered structures may be the only option to survive a tsunami impact. Through the use of scientifically researched and developed tsunami inundation models and maps, community evacuation plans must be developed showing evacuation routing and safe zones.

### **Tsunami Outreach**

WSSPC supports the vital efforts to reduce loss of life caused by tsunamis through concentrated public education. Public education must be institutionalized and consist of continuous instructional programs that are reinforced by exercises and training, and subsequently measured using social science surveys to determine programmatic effectiveness. In the case of many locally sourced tsunamis, the time before impact is so brief that the most effective means for protecting the public is not through warning systems, but through community outreach and education. Buoys, sirens, and loudspeakers, etc., are meaningless if the general public does not know what to do in the critical few minutes following an earthquake that generates a damaging tsunami.

### **Distant Source Tsunamis**

WSSPC supports the efforts of the U.S. Geological Survey (USGS) and National Oceanic and Atmospheric Administration (NOAA) to expand the deployment, maintenance, and improvement of the nation's seismic monitoring system and the deep-ocean tsunami detection system for the

purposes of rapidly and accurately detecting distant-source tsunamis, and reducing false warnings and watches that result in unnecessary evacuations. WSSPC further supports NOAA's effort to develop tsunami forecasting tools for coastal communities.

### **Local Source Tsunamis**

WSSPC supports expanding the efforts of NOAA, the USGS, and the coastal members of WSSPC through the National Tsunami Hazard Mitigation Program (NTHMP) for: (1) research and identifying all forms of local tsunami sources (such as submarine landslides); (2) mapping and modeling of the tsunami inundation zone; (3) developing tsunami evacuation maps and routes; (4) implementing a public rapid warning system; and, (5) maintaining a continuous public education program about the potential for local tsunamis and the need to evacuate immediately after strong or sustained ground shaking stops.

### **Facilitation and Communication**

WSSPC will write letters to NOAA, the USGS, and FEMA offering continued support for increased deployment of deep-ocean tsunami detection systems, the development of a tsunami forecasting model, continued improvement of seismic monitoring to better detect tsunami-generating earthquakes, public education, and other long-term risk reduction efforts. While WSSPC supports these Federal activities, the activities should not be funded at the expense of continued and required support of State and local tsunami mitigation and education activities.

WSSPC will write letters to key Congressional representatives and to NOAA urging their support and funding for the Tsunami Warning and Education Act (2006), and for the full and timely appropriation of specified funds to the state programs as described in the Act.

### **Assessment**

The effectiveness of the support letters will be measured in part by the continued financial support for the seismic monitoring system, the open ocean tsunami detection system, inundation mapping and mitigation by the NTHMP, and the full funding of the Tsunami Warning and Education Act.

In turn, the effectiveness of the seismic monitoring and tsunami detection systems will be measured by the successful and timely identification of destructive tsunamis from local and distant sources and the continued reduction of unnecessary evacuations.

The effectiveness of the evacuation route maps and educational campaigns can be measured in the short term by public awareness polling funded through the National Tsunami Hazard Mitigation Program, and in the long term by the minimal loss of life from a local tsunami, because people responded appropriately.

## **History**

WSSPC Policy Recommendation 08-1 was first adopted in 1999 as WSSPC Policy Recommendation 99-1. It was reviewed, revised and re-adopted as WSSPC Policy Recommendation 02-1 by unanimous vote of the WSSPC membership at the WSSPC Annual Business Meeting September 18, 2002. It was reviewed, revised and re-adopted as WSSPC Policy Recommendation 05-1 by unanimous vote of the WSSPC membership at the WSSPC Annual Business Meeting September 14, 2005. It was reviewed, revised and re-adopted as WSSPC Policy Recommendation 08-1 by unanimous vote of the WSSPC membership at the WSSPC Annual Business Meeting April 22, 2008.