

Western States Seismic Policy Council
2012 National Awards in Excellence
Award in Excellence for Mitigation

Administering Agency:	Washington State Emergency Management Division (EMD), University of Washington (UW) and Washington Department of Natural Resources (DNR)
Program Name:	Project Safe Haven
Contact:	John D. Schelling, Earthquake Program Manager, EMD
Address:	Building 20, Camp Murray, WA 98430
Telephone:	253-512-7084
Email:	j.schelling@emd.wa.gov

Program Summary

Recent catastrophic tsunamis (i.e., 2004 Indian Ocean, 2009 Samoa, 2010 Chile, and 2011 Japan) have raised awareness of tsunami hazards around the world. Coastal communities in many parts of the United States have identified local tsunami hazards, like the Cascadia Subduction Zone off the West Coast, that could inundate a nearby community only minutes after the occurrence of substantially damaging earthquake. Traditional tsunami evacuation methods for locally generated tsunamis encourage at-risk populations to move on foot to areas of refuge, such as naturally occurring high ground, upon feeling the ground shake or witnessing any of 'nature's warnings' like ground shaking, water receding from the shoreline, or a loud ocean roar.

Successful pedestrian evacuations are possible in many areas of Washington State given the short distances that at-risk populations would need to travel in order to reach high ground. However, in several densely populated areas, there are significant horizontal distances that at-risk populations must cover in the minutes they have between initial earthquake and subsequent tsunami inundation. For example, in several areas of the outer coast of Washington State, residents and tourists would need to travel over 6.8 miles in 30 to 40 minutes to reach areas outside of predicted tsunami-hazard zones associated with a Cascadia Subduction Zone earthquake. In these situations, alternatives to traditional horizontal evacuation approaches are required to protect lives.

To address this shortfall in existing evacuation capacity, Project Safe Haven, a grassroots process to develop community supported ideas and strategies for integration of vertical evacuation safe havens within the natural and built environments, was established in 2009-10. The development of this community-based planning approach for tsunami vertical evacuation is the first of its kind in the United States; several other states and territories, like Oregon, New York and Puerto Rico, are examining the process that was used and the local results. Project Safe Haven is led by Washington State Emergency Management, University of Washington's College of Built Environments, and Washington State Department of Natural Resources, along with a steering committee of federal and local officials.

Project Safe Haven is based upon planning guidance that was authored by the Applied Technology Council and jointly published in June 2008 by the Federal Emergency Management Agency and the National

Oceanic and Atmospheric Administration as *Guidelines for Design of Structures for Vertical Evacuation from Tsunamis* (FEMA P646). The Safe Haven project uses a nine-phased methodology to assess the vertical evacuation needs in each of the at-risk communities that have been identified as having limited natural high ground readily available given the previously identified constraints. Generally, the concept is to use a 'top-down' project approach to vertical evacuation planning where the community members participating in the project are at the top providing direction and input to a group of relevant subject matter experts in land use planning, architecture and urban design, emergency management, structural engineering, and geology /hazard assessment. The subject matter experts in turn provide facilitated discussion and seek to capture the input from community members to develop a community based plan.

The nine phases included selection of steering committee and communities, site survey and development of approach, identification of alternatives and preferred strategies, community mulling and acceptance of preferred strategy, reassessment of preferred strategy, and community design charrettes, cost estimation, and plan development/presentation.