ShakeAlert: Using early warnings for earthquakes along the US West Coast

*Hellweg Margaret[1], Richard Allen[1], Jennifer Strauss[1]

1. Berkeley Seismological Lab

In 2016, the ShakeAlert earthquake early warning (EEW) system for the US West Coast progressed from demonstration to production prototype operations. This progress has been funded by the US Geological Survey and the Gordon & Betty Moore Foundation. Earthquake early warning (EEW) is the ability to detect an earthquake quickly and provide a few seconds of warning before destructive shaking starts. Alerts from an EEW system can improve resilience if their recipients have developed plans for responding and act on them. During the demonstration phase, beta-test users from critical industries and institutions in US West Coast states were recruited for the EEW system, to observe the alerts produced, think about actions their organization could take and provide feedback for improving the system. With the advent of the prototype production system, some users are developing and implementing actions - planned responses to an alert that would protect lives and reduce losses. We also continue to test and develop alert delivery mechanisms, procedures and products. Our most effective collaboration has been with the Bay Area Rapid Transit District (BART). Since 2012 the BART system has been using EEW information to automatically slow trains. BART receives alerts via the internet and feeds them into the train operating system. In both the 2014 South Napa (M6) earthquake and a M5 earthquake near The Geysers, CA, the BART operations center received EEW alerts from ShakeAlert and their automatic actions worked as planned. Most recently, PG&E, a northern California gas and electrical power company has begun a pilot project to explore and implement personal and automatic actions to ensure staff safety and improve resilience. Other pilot project participants include additional mass transit organizations and utilities, emergency management offices at various levels of government, school districts, pipeline operators, mass media organizations such as radio and television, and medical centers.

Keywords: Earthquake Early Warning, Seismology, earthquakes and society, rapid earthquake information