

Disaster Recovery Reform Act and Earthquake Early Warning Systems

This fact sheet explains how Section 1233 of the Disaster Recovery Reform Act of 2018 is implemented under the Hazard Mitigation Assistance (HMA) grant programs. Additional information on the Hazard Mitigation Assistance grant programs can be found in the HMA Guide.¹

Background

On October 5, 2018, the President signed into law the Disaster Recovery Reform Act (DRRA) of 2018 as part of the Federal Aviation Administration Reauthorization Act of 2018. DRRA Section 1233 amends Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), which authorizes funding for earthquake risk reduction activities under the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities Program (BRIC).

Specifically, DRRA Section 1233 added a new Section 404(g) to allow recipients of hazard mitigation assistance to leverage funding to support building capability for the U.S. Geological Survey (USGS)-managed ShakeAlert® Earthquake Early Warning (EEW) System. This system is currently operational in California, Oregon, and Washington.

For more information on USGS's ShakeAlert® EEW System please visit: <https://www.shakealert.org>.

Activities Available for Hazard Mitigation Assistance Funding

Under HMGP and BRIC, FEMA will consider proposals to fund the purchase and installation of seismometers, GPS receivers, and the associated infrastructure as needed to build additional capability for existing EEW systems. Additionally, the data gathered from these monitoring networks are freely available to the public.² The HMA programs require mitigation activities to be effective in providing a long-term solution.³ EEW systems are exempt from the requirement to demonstrate cost-effectiveness for the three categories of activities that support building capabilities: 1) regional seismic networks; 2) geodetic networks; and 3) seismometers, Global Positioning System receivers, and associated infrastructure.⁴ For seismometers, GPS receivers and associated infrastructure to be effective, they must be part of a system that enables timely notification of end-users.

FEMA, in consultation with the USGS, has determined the USGS-managed ShakeAlert EEW System is the only system which currently enables alert delivery to people (i.e., via cell phone) and to automated systems (i.e., slowing a train). Seismic and geodetic sensors and the infrastructure necessary to transmit the signal to a network funded under HMGP or BRIC must be integrated into an existing operational earthquake monitoring network.⁵

1 2023 Hazard Mitigation Assistance Program and Policy Guide (HMA Guide).
2 HMA Guide
3 44 C.F.R. 206.434(c)(4)
4 HMA Guide
5 Cost effectiveness may have to be documented for last mile solutions for BRIC Program. Consult FEMA Regional Office.



Additionally, ShakeAlert Messages must be freely available to USGS authorized licensees (i.e., License to Operate) that are indispensable partners in protecting the public and critical infrastructure. Under DRRRA Section 1233, FEMA will not fund operations or maintenance costs for support of a network or ShakeAlert System operations. HMA funding can also support the development and implementation of “last-mile” automated systems that protect critical infrastructure such as transportation systems or utilities with the goal of enhancing resistance to earthquake shaking and minimizing the downtime of critical systems.

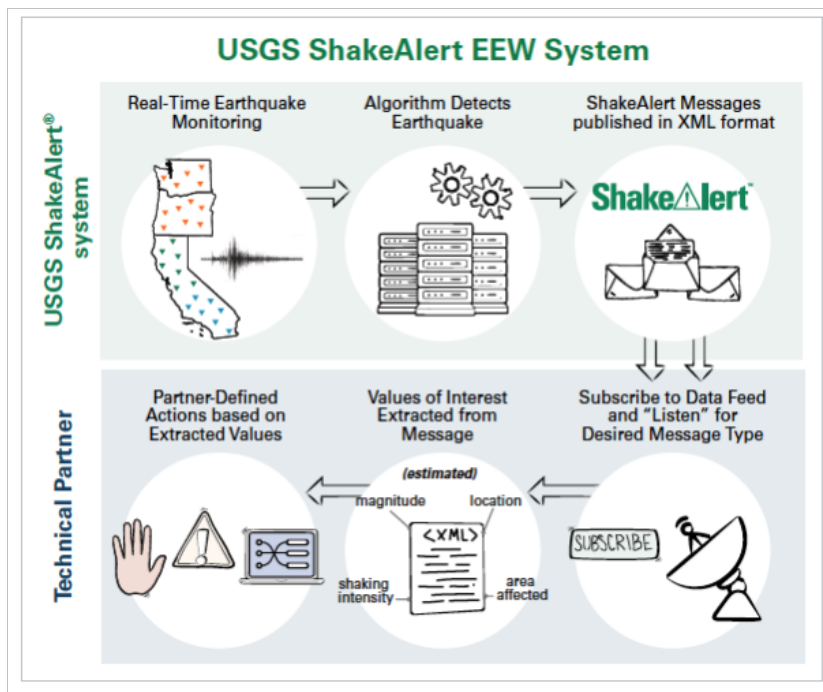


Figure 1. FEMA will fund components, such as sensor networks and existing network and alert processing centers, needed to provide additional capability for existing EEW systems designed as part of the Advanced National Seismic System (ANSS) and “last-mile” mitigation-based implementations that trigger automated actions.

Pathway to ShakeAlert System Implementation

In California, Oregon, and Washington the implementation of the ShakeAlert System is a successful example of a partnership model between state and federal partners. Update and expansion of the ANSS network in other regions could allow expansion of ShakeAlert to other high-risk regions, such as Anchorage, Reno, and Las Vegas. As of early 2023, the ANSS sensor network supporting the ShakeAlert system is over 82% completed in California and 87% in Washington and Oregon. Expected completion date of 1,675 stations in all three states is late 2025. The USGS is committed to completing buildout in these states before any further expansion is undertaken.

One Tool in the Risk Reduction Toolbox

FEMA is accepting ShakeAlert project applications under both HMGP and BRIC. Sub-applications will need to clearly demonstrate how the proposed activities will integrate into operational monitoring networks (i.e., ANSS ShakeAlert EEW) to build additional ShakeAlert capability and help to reduce risk from earthquakes. To ensure the appropriate information is contained in the HMA application, applicants are strongly encouraged to consult with their FEMA Region. The ShakeAlert System will see its greatest successes when it is integrated with mitigation planning and actions which break the cycle of disaster damage, reconstruction, and repeated damage. Factored into hazard mitigation equation, the ShakeAlert System will contribute to long-term solutions that will reduce the impact of future earthquakes.