

Earthquake Warning California For Utility Providers

Don't Get Caught Off Guard

Earthquakes can happen in California at any time. Utility providers should be appropriately prepared to react and respond quickly when an earthquake occurs, including using earthquake warnings as part of their preparedness efforts.

The California Governor's Office of Emergency Services (Cal OES) invites utility providers, including but not limited to water, electric, gas, solar, and others, to learn about important resources that can help them to prepare and respond when an earthquake happens. This fact sheet outlines some of the resources available through "Earthquake Warning California," California's statewide earthquake warning system, and how they can be applied in utility provider settings as part of a comprehensive emergency plan.

This document is meant to supplement existing emergency preparedness procedures and help all Californians to learn about available earthquake warning tools and resources to help ensure their safety. Utility provider personnel should review earthquake preparedness plans specific to their sector and facility for full information on what to do in an emergency situation.

Earthquake Warning California

Scientists are still unable to predict earthquakes, but thanks to new technology, individuals and organizations can potentially receive a few seconds notice to take appropriate safety precautions before an earthquake strikes. Earthquake Warning California is the first statewide earthquake warning system in the nation, and includes tools such as:

- **Wireless Emergency Alerts (WEAs)** that deliver no-cost text messages for emergency situations for earthquakes magnitude 5.0 and higher;
- **MyShake App**, a free smartphone application that provides users with an audio and visual warning for earthquakes magnitude 4.5 and higher; and
- **Android Alerts** that use the same ground sensor technology as the MyShake App and are automatically included in Android phones with updated operating systems.

Earthquake Warning California uses technology to detect earthquakes that have already started and ground motion sensors to estimate the earthquake size, location, and impact. When the estimate predicts a strong enough magnitude, the Earthquake Warning California quickly issues a warning through its various communication channels

(MyShake App, etc.) to warn mobile device users nearby that shaking is about to occur. When users receive a warning, they should immediately take steps to protect themselves, such as to drop to the ground, cover their heads with their arms, and hold onto their necks with both hands until shaking stops.

Benefits and Applications

Electricity Providers

Power outages often occur during and after a significant earthquake. Electric utility providers can prepare equipment using Earthquake Warning California to reduce damage with no downstream negative impacts. Electric utility providers can apply Earthquake Warning California resources at strategic locations to achieve the greatest benefits with the lowest costs. For example, it would not be appropriate to apply earthquake warning systems to automatically shut-off substations or transformers that supply power to essential services for hospitals, transportation agencies, elevators, or to any part of the power grid that would cause natural gas to be shut down outside the area of concern. Assess the potential negative impact an earthquake may have across geographic regions and determine whether automatic shut offs would be appropriate in mitigating secondary damage.

Earthquake Warning California Benefits

- Reduce injury and deaths due to electrocution and burns
- Reduce or minimize asset damages
- Reduce time needed for power restoration time and minimize business interruptions
- Reduce fires resulting from downed live lines

Earthquake Warning California Costs

- Installation of earthquake warning equipment to attach to system or components
- IT support to develop and maintain automatic systems
- Maintenance and system testing
- Equipment or safety training for employees
- Equipment depreciation and replacement costs over time

Gas Providers

Gas utilities are particularly vulnerable to earthquake damage because gas travels predominantly through an underground network of transmission and distribution pipes. Gas line ruptures can cause severe fires during and after an earthquake. Automated

actions associated with Earthquake Warning California could reduce the potential for gas-leak fires, primarily through automatic shut off valves.

Earthquake Warning California Benefits

- Installation of automatic shutoff valves can reduce fire damage, business interruption, injuries, and fatalities
- In highly populated service areas, net benefits could exceed \$2.7 billion in fire damage avoidance

Earthquake Warning California Costs

- The cost of a single earthquake automatic shut-off valve for a gas transmission or distribution line is estimated to be \$1 million (service life of 50 years)

Water Providers

Water providers are particularly vulnerable to earthquake damage because water and wastewater travel predominantly through a network of pipes underground and tend to be several years old. Because of this vulnerability, water providers like metropolitan water districts have developed contingency planning to ensure that reserve water supplies are available quickly, and that any failures in the system are readily repaired to expedite resumption of essential service. These backup systems are ready and would commence in the wake of an earthquake. Resuming water delivery after an earthquake depends on engineers, technicians, and trained staff being able to mobilize quickly.

Earthquake Warning California Benefits

- Reduce injuries to water system employees
- Quickly resume water services, allowing the economy to normalize more quickly
- Reduce fire damages as more water is available for fire suppression
- Reduce injuries resulting from fire damage

Earthquake Warning California Costs

- Minimal, as infrastructure is already in place at most sites
- Staff time to add Earthquake Warning California as part of emergency preparedness training

Getting Utility Providers Prepared

In addition to the damage caused directly by earthquakes, additional hazards can be triggered as a secondary effect, such as dam failures, hazardous material spills / leaks,

downed power lines, and electrical fires. Below are five tips that can aid in the preparation process:

- 1. Conduct Vulnerability & Risk Assessment.** To reduce damage and injuries that could result from an earthquake, utility providers should identify potential risks and areas of vulnerability. Evaluate all utility channels to determine what could fail in the event of an earthquake and whether steps can be taken in advance to reduce the likelihood of a secondary disaster from utility damage. Ensure all equipment is anchored down and cannot easily topple over in an earthquake. Evaluate whether retrofitting can reinforce existing equipment.
- 2. Develop Organizational & Employee Preparedness Plans.** Utility providers should have a series of emergency plans for different levels of emergencies and develop potential responses for each situation. The plan should identify clear roles and responsibilities for all levels of personnel to take in advance of, during, and after a major earthquake. These steps should also be incorporated into emergency drills / training in preparation of emergency situations.
- 3. Download or Enable Earthquake Warning California Resources.** The MyShake App, Android Alerts, and WEAs can supplement existing warning systems and give employees time to take cover before shaking starts. Demonstrate to employees what an earthquake warning sounds and looks like. Employees should take steps to ensure earthquake warnings can be activated and heard in an emergency situation, such as ensuring their phone location settings are set to "always on." Warnings do not override silent and "Do Not Disturb" settings.
- 4. Integrate Earthquake Warnings.** Utilities should evaluate which functions of their operations can be automatically enabled in advance of an earthquake and which can be quickly be done by employees while still keeping them safe, such as putting machinery into safety mode. Utility providers can implement Internet-connected devices, also known as monitor or control, to listen for earthquake warnings. When a warning is issued, the software evaluates the warning to determine whether it meets the criteria to stop or start equipment. For example, the software can stop rotating machinery, sound an alarm, or shut off power to prevent electrical fire.
- 5. Share Information with Customers.** Utility providers are an essential service and can aid in educating a broad range of groups on earthquake preparedness and mitigation planning. Consider including information about earthquake safety and the earthquake alert system into customer communications, including steps the utility organization is taking to prepare.

For More Information

Earthquake Warning California is a comprehensive program of earthquake warning services managed by the California Governor's Office of Emergency Services (Cal OES). The goal of the program is to provide individuals, organizations, and communities with direct and easily accessible emergency preparedness information and resources to keep individuals and families safe in an emergency situation. Visit the Earthquake Warning California website for the latest tools, news, information, and resources: www.earthquake.ca.gov.

For information, questions, or comments relating to this fact sheet, email Cal OES at: earthquakeinfo@caloes.ca.gov