ShakeAlert™ Because seconds matter.

STANWOOD-CAMANO SCHOOL DISTRICT, WA

EDUCATION SECTOR CASE STUDY

ShakeAlert® Earthquake Early Warning in Schools

The Stanwood-Camano School District uses the USGS-managed ShakeAlert® Earthquake Early Warning System (EEW) to protect students and staff by sending earthquake alerts through its public address system.

The Stanwood-Camano School District serves 4,600 students and employs hundreds of staff in western Washington. Stanwood-Camano worked with a ShakeAlert Licensed Operator (LtO) to automatically alert students and staff in each of its buildings to quickly **DROP-COVER-HOLD ON**, potentially before earthquake shaking arrives.

What is the ShakeAlert System?

The US Geological Survey-managed **ShakeAlert Earthquake Early Warning System** rapidly detects significant earthquakes, estimates the amount of shaking around the quake, and issues ShakeAlert Messages. Then, ShakeAlert Licensed Operators use the information contained in these Messages to deliver alerts and trigger automated actions to protect people, vital systems, and infrastructure.

The Challenge and the Opportunity

The Stanwood-Camano School District is exposed to potentially hazardous shaking from three main sources: shallow, crustal fault earthquakes; deeper earthquakes, such as the 2001 Nisqually earthquake; and "The Big One," a magnitude 9+ earthquake in the Cascadia Subduction Zone.

Shaking from a significant earthquake is dangerous in a school setting, as strong ground motion can topple furniture, dislodge ceiling tiles, and toss students and teachers to the ground.

The potential seconds of advance warning enabled by ShakeAlert EEW allows people to prepare for shaking by taking a protective action, such as DROP-COVER-HOLD ON.

Stanwood Camano School District

ShakeAlert Licensed Operators (LtOs) are licensed by the USGS to distribute or sell products that deliver ShakeAlert-powered products and services to end-users, such as school districts.

See the current list of LtOs here.

Students in the Stanwood-Camano School District practiced DROP-COVER-HOLD ON during a ShakeOut drill. Image is courtesy of the University of Washington.

Rising to the Challenge

"School districts have a special role to play in earthquake readiness because our community's children are in our care for seven hours or more each day. The ShakeAlert System helps us meet the challenge of providing a safe learning environment for our students and staff."

Deborah Rumbaugh, Superintendent
Stanwood-Camano School District

Getting Started with the ShakeAlert System

It started with a fourth-grade field trip, when Stanwood-Camano PTA parent and professional engineer Dale-Ann Baker chaperoned students to the Pacific Northwest Seismic Network. There, she learned the ShakeAlert System provided a significant opportunity to bolster the school district's emergency preparedness. Baker met with Dan Ervin of the engineering firm Varius Inc., one of several ShakeAlert LtOs that can deliver ShakeAlert-powered alerts to public address systems in schools.*

By fall 2019, Stanwood Elementary became the first school in Washington to connect to the ShakeAlert System. The Stanwood-Camano School District has since added alerting capability to all 13 of its buildings and connected them to a centralized public address system that is automatically activated when shaking is expected.

A ShakeAlert-powered box (12 in. by 16 in.) is mounted on the wall in the main office of Stanwood Elementary. Image is courtesy of Varius Inc.

IMPLEMENTATION DETAILS

Engineers at Varius Inc. recognized the need for ShakeAlert-powered equipment in schools to be easily installed with minimal maintenance. In a typical installation, such as the one in Stanwood Elementary, "the physical ShakeAlert-powered computer box sits on the wall, connects to the internet, and plugs into a public address system," Ervin explained.

When shaking is expected at Stanwood, the box automatically pushes an alert tone through the public address (PA) system, which is followed by a spoken message: "Earthquake! Earthquake! Expect shaking soon. Drop, Cover, Hold On. Protect yourself now."

Following an assessment of facilities, it was determined that Stanwood Elementary could act as an earthquake alerting hub for the district's 13 schools and support buildings. Next, an outside communications firm found a way to distribute the alert to all district buildings by connecting each building's PA system to a central source.

Telecom Considerations

Any school district exploring automated PA alerting should consider its ability to receive earthquake early warning data quickly, whether through wired internet, cellular networks, or radio signals.

Cost-Benefit Considerations

COSTS

Equipment Upgrades – While implementing ShakeAlert EEW, the school district chose to upgrade its outdated PA equipment to a centralized, district-wide network. The total cost of implementing ShakeAlert EEW and upgrading the PA network at the school district was under $100,000. Grants covered most of the expense of the initial installation of the ShakeAlert-powered hardware, and the school district covered the network upgrade, which made up most of the total cost.

Many ShakeAlert-powered devices are compatible with older PA infrastructure. An upgraded network is not required, so implementation costs may be significantly less for simpler integrations. Ongoing expenses for the Stanwood-Camano School District are minimal, costing about $150 per month.

BENEFITS

Student, Staff Protection – As a result of getting connected to the ShakeAlert System, the school district's 4,600 students and hundreds of staff members now have an opportunity to protect themselves before shaking arrives. Because the school district's PA system automatically issues alerts across all district buildings, all students and staff are warned quickly and simultaneously.

Common Sense Safety

In schools in the Pacific Northwest, an earthquake is twice as likely as a fire. Yet, no school is without a fire alarm.

Better Earthquake Drills – Integrating ShakeAlert-powered alert tones and messaging into the school district's regular earthquake drills enables Stanwood-Camano students and staff to be better prepared, since drills now more accurately simulate what will be experienced during an actual earthquake.

Teachable Moments – Earthquake Early Warning can bring Science, Technology, Engineering, and Math (STEM) learning to life in the classroom. Teachers can use ShakeAlert-powered alerts and drills as touchstones in the earth science curriculum. The ShakeAlert System team has developed learning materials such as videos, animations, and activities that can be used in classrooms, museums, libraries, and other learning environments. Visit ShakeAlert.org to learn more.

Stanwood-Camano recognizes the value of ShakeAlert EEW … because seconds matter.

Next Steps

- ✓ To learn more about how to boost safety in the education sector, see the Education Sector ShakeAlert Messaging Toolkit.
- ✓ To learn more about ShakeAlert Technical Partners, see the FAQ: Understanding ShakeAlert Partnerships and the Seismic Network, and the FAQ: How to Become a Technical Partner.
- ✓ See the current list of licensed ShakeAlert LtOs here.
- ✓ Contact a ShakeAlert Technical Engagement Regional Coordinator (below).

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*Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the United States government.