Times Standard

Not My Fault: Taking the effort to prepare pays off

Lori Dengler for the Times-Standard

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California's Earthquake Brace and bolt Program provides assistance for homeowners to retrofit their home for earthquakes.

Resilience is a theme I mention frequently. Overused and misused in some quarters, it's the best word I can think of for any community threatened by weather, earthquakes, fire, or other internal or external attacks. Resilient communities suffer less damage and bounce back more quickly than vulnerable ones.

Resilience takes knowledge, effort, and resources. It's never achieved but always a work in progress. Resilience requires sustained effort, respect, and the involvement of all parts of a society. For earthquakes it starts with identifying the primary sources of loss and injury.

My favorite class when I was in the Geology Department at Humboldt was Natural Disasters. It was a General Ed class that brought in students of diverse backgrounds, ages, and interests. Everyone brought a different perspective to resilience. On the final exam I always asked them to identify the most important way to reduce losses from a variety of disasters. For a number of them, the answer was an effective warning system.

Such is not the case with earthquakes. We cannot predict them in advance. But we know what causes injuries and loss: falling objects, damage to structures and infrastructure, and the inability of responders to reach/handle all of the areas of need. To attain earthquake resilience, we need to mitigate all three.

Knowing the best thing to do while the ground is shaking is only a start. On December 20th, we learned that being in bed was a scary, but relatively safe place to be in strong shaking. But we also learned that our homes were filled with items that became projectiles in the night, and

shattered items were dangerous, time-consuming to clean up, and costly to replace. With a bit of effort now, you really can reduce these hazards.

A Facebook friend of mine, Peter Craven, recently posted "Following the Dec 20th 2021 earthquake which severely shook our home in Rio Dell, we set about anchoring all the tall furniture to the walls, more firmly attaching the stuff hanging on the walls and putting quake-hold putty on the bottom of breakable items to hold them in place. We put flashlights up hanging from the bedposts and started keeping shoes by the bed. On December 20th 2022, that work paid off and again on January 1st 2023."

The 2022 shaking was much more violent than 2021, yet Peter's preparedness actions reduced the damage to his home to a manageable few toppled items. He had much less damage in the stronger quake. He added, "The actions we took are simple to do and not expensive."

I want to highlight one North Coast earthquake hazard that will require a bit more effort to reduce: bracing free-standing wood stoves. Many people, including some stove dealers, have the misconception that because wood stoves are heavy, they won't move in an earthquake. Sadly, the opposite is the case.

The heavier an object, the more inertia. If an earthquake suddenly tosses your home in one direction and then another, heavy objects will tend to stay where they were. After the 1992 M7.2 Cape Mendocino earthquake, we did surveys of earthquake impacts. Over 70% of free-standing wood stoves in Petrolia either toppled over or pulled away from the wall and stovepipe. In Ferndale and Rio Dell, just about half of these stoves suffered a similar fate.

The best way to secure a stove is to anchor the feet to a structural support in the floor. But just building up a brick wall around the feet can significantly reduce the risk of moving. You can find more information on bracing wood stoves and other non-structural hazard reduction in Step 1 of our Living On Shaky Ground magazine (https://rctwg.humboldt.edu/seven-steps/step1).

Do-it-yourself efforts are a good place to start, requiring little technical background and expense. But there's a bigger problem that may require expert help. Your home is even heavier than a wood stove and may slide if the foundation is weak. Many homes built before the 1950s and 60s have pier and post foundations or weak cripple walls that elevate the structure several feet above the ground. Many of the red- and yellow-tagged structures in the Ferndale earthquake and a large chunk of the financial losses were due to foundation failures.

It is very expensive to repair a damaged foundation. It is also costly to retrofit a home by adding a perimeter foundation or strengthening the existing foundation. I know from personal experience. One of the first things my son did after buying an 1893 home in Arcata was to replace the pier and post foundation. It's a no-brainer that one of the best ways to make communities more earthquake resilient is to facilitate retrofitting foundations.

California has a program to do just this. It's called Brace and Bolt and is funded by the California Earthquake Authority (CEA) and the State Office of Emergency Services (https://www.earthquakebracebolt.com/). In the past five years, 17,000 homeowners have received grants to help cover retrofit costs. The program has just received a new influx of funding to assist lower income homeowners to strengthen their homes.

There is a caveat, however. A State-certified contractor has to do the work and Humboldt County has only one or two that have gone through the certification process. Let me shout out to the building community to take the steps to be recognized by the Brace and Bolt program – the steps are outlined on the web site above. Next week several CEA and OES officials will be visiting Rio Dell and I will meet with them. I look forward to learning more about Brace and Bolt. I will also be pushing for making it easier for contractors to be accredited in the program and encouraging more people to apply.

Finally, consider becoming part of a Community Emergency Response Team (CERT) in your area or getting one started. This is a great way to combat feelings of earthquake helplessness, meet your neighbors and learn the nuts and bolts of how you can safely help response in the critical first hours after an emergency when professionals are stretched to thin and/or can't access many areas. Check out their new webpage https://www.humboldtcert.com/ or follow Humboldt CERT on Facebook https://www.facebook.com/groups/HumboldtCERTCoalition.

Lori Dengler is an emeritus professor of geology at Cal Poly Humboldt and an expert in tsunami and earthquake hazards. The opinions expressed are hers and not the Times-Standard's. All Not My Fault columns are archived online at https://kamome.humboldt.edu/resources and may be reused for educational purposes. Leave a message at (707) 826-6019 or email rctwg@humboldt.edu for questions and comments about this column, or to request a free copy of the North Coast preparedness magazine "Living on Shaky Ground."