

Dear friends and neighbors,

I've been saying this week that the only things that could make our current situation worse would be a terrorist incident exploiting our vulnerability or a natural disaster, particularly an earthquake, that damages our water and other infrastructure. Also, I've been saying that I'm not totally sorry to see people buying (though hopefully not hoarding!) water because, while they don't need it for the pandemic, we will need it when—not if—we have a big earthquake in Utah.

All kidding aside, there is now a slightly elevated risk of another, bigger earthquake, especially during the next 24 hours – that is, that the 5.7 magnitude quake will turn out, in hindsight, to be a “foreshock” before another, bigger earthquake. Right now we are seeing lots of aftershocks of the initial quake that are smaller than the original quake, and that is probably what will continue, but there is some small, but nontrivial risk that a bigger earthquake will occur in the next little bit.

Some short term things to consider (not necessarily in order of importance):

1. Shoes and Coat. I put on my good shoes, warm clothes, and found my coat. You should know where your shoes and coat are for the next little while. Leave your shoes by your bedside tonight.
2. Water. You could consider filling your bathtubs (not so full that it will slosh out too much). The tubs will drain slowly over time. You could also fill up other available containers. We were using this pandemic incident as a reminder to fill up and change over our water storage, so we are currently filling and refilling ours now. For most people, their water supply isn't movable, but consider putting at least some water in a place in your home or outside that would be easily accessible even if your home were seriously damaged.
3. Car. You might want to move your car outside your garage in case a bigger quake makes it difficult for you to get it out later (or you don't know how to open your garage door without electricity).
4. Knowledge is Power. Look up how to turn off your natural gas and water main. **DO NOT UNDER ANY CIRCUMSTANCES TURN ANYTHING OFF NOW. AND EVEN AFTER AN EARTHQUAKE, DO NOT TURN OFF YOUR GAS UNLESS YOU SMELL GAS.** It will take the gas company a long time to get everyone's gas turned back on if people unnecessarily turn it off. If you have an old phone book, the information is often printed there. If not, watch youtube videos now and print off instructions and tape them somewhere you could see them. You will not be able to look up this information after a large quake as

internet and phone communications will likely be jammed or down, at least in the short term.

5. Family Plan. Hopefully you are practicing social distancing and sheltering in place at home right now because of the pandemic risk, but you should have a plan in place about what you would do to reconnect if an earthquake occurred when you were separated from family members. This is a great time to talk about these kind of issues with your family. Also consider who else would need your help following a quake and what their current circumstances are.
6. Short-term food and supplies. If you don't have a 72 hour kit, consider putting some food, clothes, essential medication, important documentation, flashlights, radio, batteries, etc., somewhere easy to grab, perhaps in your car trunk if your car can be parked somewhere safe. If you do have a 72-hour kit, make sure it's accessible.
7. Scope out your house. Look for things that would be a hazard in the earthquake - breaking glass from windows, falling mirrors, books, things that could shake out of cupboards, etc. Is your water heater properly strapped? Address those risks if you can. Be selective about where you spend your time for the next little bit.

If your house is built out of stone or brick AND was built before about 1980, you may live in an unreinforced masonry building (or URM). A URM is a building that lacks wood or steel reinforcement in the walls and is just brick-on-brick or stone-on-stone to hold the structure up. Most earthquake deaths in Utah -- estimated to be around 3000 during a 7.0ish quake when people are mostly home -- will occur when these "killer buildings" collapse. If your house is very old and you know it lacks wood or steel reinforcement in the walls, you might consider whether there is somewhere newer and safer you could be during the next 24 hours. Be careful not to unnecessarily compromise your social distancing, which is very important at this time.

8. Take some deep breaths. We will be okay. The probability of a bigger quake is still low.

In the longer term, this should serve as an important wakeup call for us. Let's all use the this Pandemic/Earthquake moment to think about our personal and community preparedness for all hazards more broadly.

According to FEMA modeling, there is a 43% chance of a 6.75 or greater quake along the Wasatch Front in the next 50 years, and a 57% chance of a 6.0 or greater quake. A magnitude 7.0 quake is 10x more powerful than a 6.0 quake, and that kind of quake

here could kill close to 3000 people. It will leave close to half a million households along the Wasatch Front without water, and nearly that many (440,000) without power. At 90 days after the earthquake, FEMA models suggest that there will still be more than 300,000 households without potable water. Sewer restoration will likely take 2-3 times as long as water restoration. Think carefully about exactly what that means. People in Christchurch, New Zealand, were fighting over portable toilets long after the earthquake there.

Personal preparedness is important, but there are also critically important steps we need to take as a community to mitigate this risk so that our communities and the State will be resilient and can recovery as quickly as possible after an earthquake. These steps include:

- a) Addressing and retrofitting our unreinforced masonry buildings. We still have around 140,000 along the Wasatch Front, including single family homes, apartment buildings, commercial buildings, etc. Solutions might include mandating retrofitting for some buildings, requiring risk disclosure at the time of sale, subsidizing retrofitting by low-income households, and educating Utahns about that risk so they don't miss windows of opportunity to retrofit when they are, for example, remodeling their homes or reroofing.
- b) Upgrading the seismic resiliency of our school buildings, some of which still pose significant threat to Utah's students during a major quake.
- c) Considering upgrading our building codes to address not just life-and-safety, but also longer term habitability. Right now our building codes are designed to ensure only that the building doesn't kill or injure people in a quake; they provide no assurance that the building will ever be usable again. This includes your house.
- d) Investing in the resiliency of our lifeline infrastructure, such as a water, power, and sewage systems.

Hopefully we can use this opportunity to think carefully about what we can accomplish together to mitigate these risks. Our officials and first responders are doing a great job of emergency response; we just need to start thinking about longer term risk mitigation, resilience, and recovery.

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