

Date: February 7, 2022
To: Senate Energy and Environment Committee
From: Written Testimony from Yumei Wang
Affiliate Faculty, Portland State University
Subject: Support for SB 1567, 2022 Oregon Legislative Session

Chair Lieber, Vice Chair Findley, and members of the committee,

My name is Yumei Wang and I am a professional engineer and a professional geologist with extensive experience investigating earthquake disasters worldwide. I am an affiliate faculty member in engineering at PSU and a private consultant. I worked for the Oregon Department of Geology and Mineral Industries (DOGAMI) for 26 years and am widely recognized for my expertise on the vulnerability of Oregon's energy sector to Cascadia earthquake risks.

In 2007, I conducted the first-ever study of the earthquake risk of a concentration of energy facilities along the lower Willamette River that are of vital importance to the entire state of Oregon. That study—in which I coined the now commonly used term “critical energy infrastructure hub,” or “CEI hub”—identified and characterized the extreme vulnerability of the CEI hub to extensive damage from a Cascadia earthquake. The study was published in the seminal 2013 DOGAMI report on which I am the lead author (*Wang and others, Oregon Risk Study Critical Energy Infrastructure* <http://www.oregongeology.org/pubs/ofr/p-O-13-09.htm>).

So, it was 15 years ago since the State first learned that the CEI hub has immense vulnerabilities. In that time, I have continued to work on improving our understanding of this problem and on possible ways to mitigate the risk that it poses for 4 million Oregonians. I can accurately and fairly say that I am the leading authority on this topic (i.e., the vulnerability of CEI hub to earthquake hazards and risk). Many other studies on the vulnerability of the CEI hub have been conducted, on topics such as the risk for oil spills and the economic and environmental consequences. Unfortunately, there has been little, if any, meaningful action to improve the dangers that lurk there.

I was the lead engineer on fuels and natural gas on the American Society of Civil Engineers (ASCE) team that traveled to Japan to investigate the 2011 earthquake and tsunami disaster. Some of the older and under-designed fuel tanks and terminals burned to the ground and destroyed entire neighborhoods. You know about our massive problem and the risk for a similar disaster in Oregon because you heard from a variety of experts in your November 16th briefing. Starting with SB 1567, you can prevent Japan's same tragedy from happening here, and focus on improving fuel safety and energy security. This gives me great hope.

SB 1567 is a profoundly important bill. and I whole-heartedly support it. I worked with Senator Michael Dembrow on this bill, which is designed to improve safety of Oregonians across the entire state. The bill is sensible, balanced, fair, and well-crafted to reverse current risky trends and steer us on a corrective course—to carefully and methodically reduce the enormous risk that currently exists, and to help develop greater local self-reliance for fuel needs throughout the State.

It would represent the beginning of a sound, systematic process where each bulk fuel terminal would analyze their own facility, determine how best to fix their biggest and most serious problems, report their plans to DEQ, and work together for their approval on this complex problem.

SB 1567 is necessary because current regulations are sorely lacking and leave enormous gaps in seismic safety—for the bulk oil tanks, for the hazardous ground that will liquefy into quicksand, for waterfront structures that are needed to transfer oil over water, and for the oil pipes and valves. Regarding tanks alone, recent studies indicate that only 2% of tanks in the CEI hub are up to modern seismic standards, and some of those may not have been properly mitigated against liquefaction hazards.

SB 1567 is desperately needed because it will help facilities identify important details about their specific risks and ways to improve safety at each fuel terminal. Each facility has its own strengths, vulnerabilities and priorities, and this will become apparent with each facility's individual work and their reports to the DEQ. For example, some terminals will identify weaknesses in their piping system and will want to add shut off valves to have better controls in place. Some will likely want to add ShakeAlert for earthquake early warning to help protect their own specialized and skilled workers—workers we depend on—and to automatically shut down expensive equipment to protect it. Oregon needs SB 1567 to put prioritized plans into action.

With passage of SB 1567, the Oregon Department of Energy (ODOE) would establish a plan to help communities with energy security across the state. Remember the mad rush on toilet paper when COVID hit — leaving shelves empty in the stores? People dreaded life without toilet paper. This situation unfolded over many weeks. Imagine, a mad rush not on creature comforts but on fuel, immediately after an earthquake, all at once. Real life and death situations—for search and rescue, fighting fires, ambulances, locating damage on bridges and power lines and water lines, and so on. After an earthquake, Oregon will suffer staggering and pervasive fuel shortages and have extensive unmet needs. The State may not have any ability to distribute fuel—even to communities with the greatest needs—for several weeks. SB 1567 will help with planning so that communities can be much more self-reliant with their own local fuel supplies and Oregonians will be able to recover after a Cascadia earthquake.

This bill will ultimately improve: (1) Fuel terminal safety for people and the environment with DEQ in the lead regulatory role; and (2) Energy security for communities in disasters across the state with ODOE in the lead planning role. These two complementary pieces are integral to an effective solution.

On the other hand, if this bill is not passed and the risks are left uncorrected, the next Cascadia earthquake will collapse our living standards across Oregon—economy and every citizen's wellbeing would suffer. Not to act is a very bad option.

I believe that SB 1567 is the most important disaster safety bill I have seen in seven legislative sessions. It steers the ship in a corrective direction to address Oregon's most serious and longstanding disaster preparedness problem through improving safety for all of our communities. It provides a smart solution to the enormous problem of fuel safety, and it provides a better safety net for all communities. I strongly urge you to take ownership of this proposed solution by co-sponsoring the bill and passing it. Thank you.

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