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Resilience Through **Community Engagement** and **Technology**

2026 EERI Distinguished Lecture – Towards Critical Infrastructure Resilience: Lessons from the Oregon Experience

Y. Wang¹

ABSTRACT

Critical infrastructure (civic and lifeline) is essential for public safety and normal societal functioning. Much critical infrastructure remains vulnerable to extensive damage from earthquakes, as evidenced by past earthquakes and numerous risk studies. To assure effective post-disaster response and timely recovery after future earthquakes, it is imperative that the reliability and resilience of our critical infrastructure be substantially improved.

In this presentation, I will discuss efforts in Oregon over the past 30 years to improve the resilience of the state's civic infrastructure (e.g., schools and emergency response facilities, such as hospitals and fire stations) and lifeline systems (e.g., water, wastewater, electricity, natural gas, liquid fuels, communications, and transportation). Our experience in Oregon has possible relevance for other regions with unsafe critical infrastructure. We have used innovative approaches to achieve the enactment of successful statewide policies and programs to improve the safety of schools and emergency response facilities from earthquakes and tsunamis. We have systematically identified and quantified expected post-earthquake delays in resumption of basic lifeline services—as reflected in the 2013 Oregon Resilience Plan—and we have initiated statewide efforts to improve lifeline system resilience. We have used research results from local risk studies as well as information on the actual performance of lifelines from various earthquakes to increase awareness and to inform the creation of new policies and programs. I will also discuss significant vulnerabilities in existing lifeline systems, their interdependencies, lack of coordination among lifeline systems, and lack of regulatory oversight of existing system performance.

Our society is still in the early stages of understanding and addressing the resilience of critical infrastructure, particularly the reliability of lifeline services after earthquakes. To assure public safety, the earthquake professional community must make it a priority to remedy the deficiencies in our critical infrastructure, especially including lifeline systems.

¹ Affiliate Faculty, Senior Advisor on Infrastructure Resilience and Risk, Dept. of Civil and Environmental Engineering, Portland State University, Portland, OR 97201 (email: yumei2@pdx.edu)