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**TANK FARM POSITION STATEMENT**

Communities along the Willamette, such as Linnton, value our views of four mountains and the sight of the flowing river. The forests surround us and sounds of foghorns are heard in the early morning hours. It is generally a peaceful scene. But the 6-mile riverfront is also home to scores of fuel tanks—a potentially catastrophic threat to local people and their homes. However, these tanks supply 90% of the entire state’s fuel (gasoline, diesel, jet fuel, electricity) and pose a severe challenge to all of Oregon’s resilience following a major seismic event.

The Cascadia fault, the primary seismic hazard, runs for 700 miles from northern California to southern Canada.

**History of Reports**

The Oregon Resiliency Plan was published in 2013 by the Oregon Seismic Safety Policy Advisory Commission. After Oregon’s Department of Geology and Mineral Industries (DOGAMI) staff studied the Critical Energy Infrastructure (CEI) Hub, they cited “major seismic vulnerabilities” due to “no or antiquated standards of building structure” and “soils susceptible to liquefaction.” According to this report, “Cascadia earthquakes pose substantial risk to the CEI Hub and to Oregon. Not only are the energy sector facilities in the CEI Hub dependent on other sectors and systems in Oregon, including transportation and communication, they are interdependent upon each other.” They recommended to the state that placement of tanks be diversified and located on bedrock.

Tony Schick, writing for OPB in 2015 in “How We Mapped NW Portland’s ‘Tank Farms’” furthered our knowledge of the CEI Hub risks. Schick dubbed the CEI Hub “Oregon’s Seismic Achilles Heel” and stated, “when OPB began its coverage of the Cascadia subduction zone and Oregon’s seismic vulnerabilities, the ‘tank farms’ in Northwest Portland emerged very quickly as an important part of the series.” OPB produced a mapped database of storage tanks and their contents, each tank shaded according to the year of its construction, confirming these tanks dated back to the 1920’s when seismic standards did not exist. Map tiles from historic topographic maps from 1905 were used to show where lakes, marshes, and the river path used to be. Then, using Portland’s building footprint data, they identified where fill had been used to create the infrastructure to support the creation of commercial and industrial areas, including fuel tanks, substations, pipelines and transmission lines, thus confirming the locations of liquefaction risk.

**So, how vulnerable are we?**

Consider the variables here, each of which causes concern but taken together are a recipe for disaster.

* The CEI Hub is built on dredged soil which is likely to liquefy in an earthquake. In OPB’s report, “the soils could become permeated with water, giving them the consistency of a sandy pudding. If that happens, it can damage buildings, tanks, and pipes.” A report from the City Club of Portland, “Big Steps Before The Big One,” echoes that prediction.
* Tanks were constructed scores of years ago. They date back to 1929, before any modern day seismic standards were established. This heightens the risk of their failure during an earthquake: toppling, splitting, and exploding are all possible.
* Pipelines are projected to suffer hundreds of breaks and scores of leaks. How effective will the current remediation efforts of operators be? These efforts include remotely operated valves, check valves, enhanced leak detection systems, and increased surveillance.
* Geologic fault structure and the activity of the Juan de Fuca plate have been studied by experts. They state there is a 15% probability of a whole margin subduction event in the next 50 years, and this figure jumps to 37% for a southern margin subduction event. Predictions of destruction are huge: 15 of 17 bridges, 1 out of every 3 fire stations, 1 of every 2 police stations, 2 out of 3 hospitals, and 3000 schools, according to Scott Burns, PSU seismic geologist. Following a major seismic event there will be no electricity for 1-3 months, no water for 1 month, no sewer or highways for 6 months, and taxpayers will pay 75% of the cost. The New Yorker predicts the devastation in detail at https://www.newyorker.com/magazine/2015/07/20/the-really-big-one
* Structures which are responsible for gasoline, diesel, jet fuel, and electricity are located in close proximity. The energy required for disaster recovery will be high. Resiliency will be inversely proportional due to impaired infrastructure for these key resources: energy, communication, and transportation.

**What should we do?**

This is not a NIMBY (“not in my backyard”) position. Energy sources should not be centralized in any singular location, but especially not in one that is unstable and hazardous. Not only will their proximity exacerbate a disaster, but they will collectively handicap our recovery efforts. Those knowledgeable about the world’s seismic events, such as Scott Burns, report the recovery efforts following a major seismic event are daunting and we must do all that we can to minimize the risk and maximize our recovery potential.

We acknowledge the following efforts:

The City Club of Portland recommends the following to reduce the risk of catastrophic CEI Hub Failure:

1. Oregon’s DOGAMI should commission a geotechnical study of soils of the CEI Hub and alternatives for soil hardening. If grant funding is available, the Legislature should appropriate funds for the study.

2. The Governor and Legislature should designate a single state agency to oversee seismic risks at the CEI Hub. That agency should have the authority to:

* Require all owners of CEI Hub facilities to provide an engineering assessment of their facilities’ vulnerability to a CSZ earthquake and other information relevant to mitigating the current risks.
* Develop and implement, in collaboration with industry stakeholders, standards for construction and retrofit of storage tanks at the CEI Hub. The standards should be designed to prevent releases and to preserve substantial functionality in the event of a CSZ earthquake.

The Oregon Seismic Safety Policy Advisory Committee has been formally tasked to conduct a 15-month study of the CEI Hub with a report to be submitted to the Office of the State Resilience Officer by December 31, 2019. The report will be provided to the House and Senate Veteran and Emergency Preparedness Committees with recommendations for the 2020 legislative short session which will focus on:

1. Conducting an analysis of state and federal guidance on the regulatory authority for seismic upgrades to both structures (tanks, terminals) and pipelines, to include land mitigation.
2. Working in conjunction with Oregon Solutions, determine incentives from a public-private view that focuses on hardening current infrastructure.
3. Showcasing the Earthquake Early Warning (ShakeAlert) system to encourage seismic awareness within the private sector.
4. Determining if a current state agency has statutory authority to develop long-term mitigation efforts. If not, recommend which state agency would be best suited for this new authority.

SB 850, Community Resilience Report, will be released in September 2018.

https://gov.oregonlive.com/bill/2017/SB850/

The above efforts promise to be lengthy and costly processes with unknown success. We don’t need to make decisions about what is to be done; the experts have already done that: The CEI Hub must be decentralized and relocated to stable bedrock areas.