Written Testimony of
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Field Hearing
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Good morning Madame Chair and members of the committee. I greatly appreciate the opportunity to speak with you today about two significant events that could impact our energy infrastructure. First are the impacts that could occur to Washington state and the Pacific Northwest following a magnitude 9.0 earthquake on the Cascadia Subduction Zone. Second are the potential consequences to the energy sector from a cyber event.

A rupture of the Cascadia Subduction Zone will be catastrophic all along the West Coast – from British Columbia to Northern California. In 2001, when the Nisqually earthquake struck Western Washington, the ground shook at a magnitude 6.8 for about 45 seconds. The damage from this quake totaled more than one billion dollars. Unreinforced masonry buildings crumbled, and damage to our infrastructure was extensive. A magnitude 9 quake on the CSZ will result in ground shaking in the urban area of Western Washington at about the same magnitude as Nisqually, but for a duration of up to 6 minutes. The duration of shaking will increase expected damages by many orders of magnitude. In fact, damage from a CSZ rupture will greatly exceed damage from any natural disaster our nation has seen to date.

A Homeland Security Infrastructure Threat and Risk Analysis Center (HITRAC) Study, completed in 2011, estimates that our transportation infrastructure, communication systems, energy distribution, water, sewage, and our health care system will be severely compromised or inoperable. For example, in Western Washington, bridges will collapse and roadways will be rendered impassible. The coast will be cut off from the I-5 corridor and Western Washington will be cut off from Eastern Washington.

When it comes to electric power, we anticipate it failing across the region from significant impacts to both transmission and distribution systems. Restoration will be time consuming, with urban areas being without power for weeks to months and outlying areas potentially requiring a couple of years before power is restored.

The pipelines delivering fuel, oil and natural gas will be compromised, and possibly destroyed. This means we will be left with only the fuel on hand in tanks that have not ruptured, be it at local gas stations, agency fuel depots, or with the military. This has immediate implications to the response as fuel will be required for generators, response vehicles and a host

of other needs. Once local stocks are depleted, all required fuel will have to be transported into the region over the degraded or destroyed transportation infrastructure. I could go on and on about the impacts in all of the lifeline infrastructure sectors. It's a grim picture, but all the underlying things we rely on to live our 21st century lives will be gone.

However, the most significant impact of a CSZ rupture will be to the people themselves. Depending on the time of year, we could see upwards of ten thousand fatalities from the resulting tsunami and from collapsed buildings and landslides. The HITRAC study estimates we will need to provide food and water to upwards of one million people immediately following the earthquake. That number will increase with each passing day as individual and family preparedness supplies are exhausted.

We conducted a major exercise, Cascadia Rising 2016 (CR 2016), from June 7th to 10th of this year. We gained valuable lessons learned that will engage our preparation activities for years to come. But perhaps the most important thing we drew from the exercise was perspective.

Our overarching priority immediately following a CSZ event will be to provide for the life safety and life sustaining needs of our populace. The fundamental challenge of a Cascadia Subduction Zone earthquake is that we, as a nation, must mount an effective response over a destroyed infrastructure against a ticking clock to avert a humanitarian catastrophe. We do not have the luxury of time to get assistance and commodities flowing into the area. Each day that passes increases the vulnerability and need of our residents. This puts a critical imperative on restoring our basic infrastructure starting with transportation, communications, and power.

If we are to provide an effective response, detailed, integrated planning must take place in advance of the event. An earthquake is fundamentally different from a major hurricane in that one can see the hurricane coming well in advance and take the appropriate steps. An earthquake is a low frequency, no-notice, high consequence event that we must plan for the eventuality of it happening. Stakeholders at every level of government from local, tribal, county, state, and federal, as well as private industry and non-governmental organizations must come together to address the fundamental challenges that will face us when the CSZ next rips. It is only through this detailed level of planning that we will be able to build a modicum of preparedness that will help us to mount a successful response.

In prioritizing our planning activities for the next several years, we must look to the following:

1. Development of strong continuity of operations plans by all levels of government, the private sector, and non-governmental organizations. Contingency planning looks at what could be impacted by various hazards and develops plans so that essential functions can continue in the event of a disaster.
2. Prioritizing the restoration of electric power and fuel
3. Assurance of lifeline transportation routes into the affected area. This includes airfields, roads, rail and ports. This is absolutely critical if we are to mount an effective response and recovery.
4. Planning to meet basic life safety and sustaining needs. This includes mass care and medical.

5. Transitioning from a pull system of logistics to a push system in which needed materials and supplies are automatically pushed into our area following a major disaster.
6. Ensuring the availability and redundancy of public safety and emergency management communications
7. Individual and family preparedness

While this list is not all-encompassing, it gets to the heart of the basic challenge we have before us – taking care of the people who will be dramatically impacted by the disaster and ensuring that government and critical infrastructure are able to provide their essential services.

I'd like to comment about planning for electric power restoration. Power is the enabling component of our 21st century lives. It also has key interdependencies with other critical infrastructure industries such as water and wastewater services, natural gas supply and delivery, telecommunications technologies of all types. Without electric power our infrastructure cannot operate. Power is key to a successful response and recovery. Therefore, electric power restoration has to be a top priority for us all.

Much of our electric power infrastructure is privately owned; other parts of it are publicly owned or fall within cooperatives. Regardless of ownership, it is imperative that the industry has strong foundational Continuity of Operations plans so that essential services can continue to be provided in the event of a disaster and that the industry works toward building resiliency. A resilient infrastructure can either withstand a major disaster or can be quickly restored in days or weeks rather than months or years. Additionally, I would like to make a case that as part of our planning efforts, the electric power industry and stakeholders across the whole of community plan together to establish power restoration priorities and develop strategies so that basic life sustaining needs can be met and the engine of recovery can be jump-started.

CR16 showed the importance of the delivery of all types of fuel and petroleum products, including jet fuel, as well as providing for storage depots. A CSZ event will damage the major pipeline for delivery of jet fuel, as well as natural gas pipelines, and will of course disrupt the transportation networks making fuel delivery by truck to existing depots impossible. Without fuel our response efforts will grind to a halt. This is an area we need to focus on collectively in our lessons learned.

I'd like to close by making a plea. A CSZ rupture threatens the entire nation. Without power or the ability to move supplies and services, our entire nation's economy is at risk. Given that, it will take resources from every level of government to mount an effective response. As a state and nation, we must invest in resiliency. As an emergency manager, I would much rather see us invest in our electric power transmission and distribution systems and our fuel pipelines ahead of a disaster so when it strikes, they're resilient and survive, reducing the need for even larger investments and last-minute workarounds after the event. It will take investments by private industry and at all levels of government if we are to truly build resiliency in our region.

Organic within the Washington National Guard structure is a cyber protection unit whose capabilities can assist with assessment and recommendations concerning Industrial Control Systems (ICS). They have the expertise, relationships, security clearances and the credibility to partner and collaborate with the ICS community toward cyber preparedness. Most recently, in

Washington state in a proof of concept demonstration our National Guard worked successfully with the Snohomish County Public Utility District to assess their systems and provide them key suggestions on how they can harden their infrastructure against cyber penetration and exploitation.