February 15, 2011

Governor John Kitzhaber, M.D.
160 State Capitol
900 Court Street
Salem, Oregon 97301-4047

Dear Governor Kitzhaber and members of the Legislative Assembly:

On behalf of your Oregon Seismic Safety Policy Advisory Commission (OSSPAC), I am pleased to present to you a summary of our recent activities and a look forward into the challenges we all face as Oregonians in the upcoming biennium and beyond. I would like to summarize the following pages with a few bullet points:

- State agencies, public and private utilities, hospitals, cities, and major employers have worked hard to prepare their operations for a catastrophic seismic event, but Oregon is currently well short of where it needs to be.

- The present pace of seismic retrofitting schools and emergency facilities is much too slow, at the current rate it will take more than thirty (30) bienniums to fix all the schools, compared with the original plan of ten (10). The seismic strengthening of Oregon’s bridges will take even longer (at its current pace).

- The first round of the Seismic Rehabilitation Bond Program, administered by Oregon Emergency Management, was a terrific success. But, as we sit here today, more than a quarter of a million Oregon school children are forced to attend classes in buildings that are at a “High” or “Very High” risk of collapse in a major seismic event.

- We request the Governor and the Legislature allocate $200 million of general obligation bonds in the current biennial budget for the Seismic Rehabilitation Bond Program.

- Finally, we would like to point out that this spending will also be good for Oregon’s ailing construction sector, since about sixty cents (60¢) of every dollar spent on seismic rehabilitation will go directly into “labor” putting thousands of currently unemployed tradesmen and women back to work. This proposal is a “Win Win.” Oregon puts construction workers back to work, and makes schools safer for our children at the same time.
Since our last formal update, presented in 2007, the Commission has been busy on several fronts; however the two that have received the most attention are: 1) assisting in the implementation of the Seismic Rehabilitation Bond program to retrofit public schools and emergency facilities; and 2) taking testimony from federal, state, and local agencies, as well as private and public utilities and other stakeholders that would be affected by a major seismic event, in order to gauge their level of preparedness. I would like to report that everything is moving along smoothly; that the (approximately) $1.5 to 2 billion originally approved by the voters in 2002 to fix the more than 1,350 schools and emergency facilities is in the process of being efficiently implemented; and I'd like to report that we found all of the state and local agencies (public and private) were prepared or at least getting prepared to survive a major Cascadia Subduction Zone Earthquake and possible coastal tsunami. Sadly, I cannot report that we are making great headway, because we are not.

Public Schools and Emergency Facilities – Seismic Rehabilitation Bond Program:

The Seismic Rehabilitation Bond program traces its history back to the 2001 legislative session and the introduction (by Senator Gary George on behalf of Senator Peter Courtney) of five bills related to seismic preparedness and rehabilitation of schools. In 2002 Ballot Measures 15 and 16 both passed allowing the state to issue bonds for seismic upgrades. In 2005 Senate Bills 2, 3, 4, and 5 were introduced by Senate President Courtney which directed the Oregon Department of Geology and Mineral Industries (DOGAMI) to inventory and assess the seismic/structural capacity of schools and emergency facilities in Oregon and to direct Oregon Emergency Management (OEM) to establish and manage a new seismic rehabilitation grant program.

The task of starting up a new grant program fell to OEM, and it was a larger and more complicated task than originally contemplated. The program had to be set up in such a way as not to bias the selection of the grant recipients either in reality or perception. This meant assembling a panel of stakeholders and other experts (mostly within state government and its Boards and Commissions, including OSSPAC), to draft a standard application and weight the various attributes of the responses. In addition, OEM had to create a “Cost Benefit Analysis” tool that could be easily and fairly applied, to assure optimal use of public funds\(^1\). Then OEM had to let prospective school districts and cities and counties with emergency facilities know that the program was underway and how to apply for the funds. This all took time, but the first round was effectively implemented by the fall of 2009 and the second round began during the summer of 2010.

According to the 2007 DOGAMI study, there are more than 1,100 public schools and 250 emergency facilities that are at a High or Very High risk of collapse in a major seismic event. These schools and emergency facilities house more than a quarter of a million school children and emergency responders. In order to fix these schools and emergency facilities, the Oregon Legislature originally contemplated a program funded at $200 million per biennium over ten biennium’s (or 20 years). To date, we have

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\(^1\) In addition, OEM had to write and have approved Administrative Rules, authorizing and regulating the process.
funded only $15 million under the grant program\(^2\). The remaining $15 million bonds are pending on the Treasurer’s calendar for a March 2011 sale. Furthermore, we have been told that it will be difficult to fund the program in the 2011 session, given the dire economic condition the state is currently experiencing.

OSSPAC requests the Governor’s budget include and the Legislature appropriate the full $200 million for the 2011-13 biennium budget cycle. Not only is this a legal and moral obligation it also makes good economic sense. The Oregon construction community is currently experiencing its greatest downturn, perhaps since the Great Depression. Seismic upgrades in schools and emergency facilities will employ the entire range of construction trades, from demolition laborers to electricians, creating an estimated 3,300 jobs (2,000 direct and another 1,300 indirect). An estimated 60 cents of every building construction dollar goes directly into labor (whereas roads and bridges have much higher materials and equipment components).

**Oregon’s Seismic Preparedness**

In order to assess the status of Oregon’s seismic preparedness, OSSPAC has taken testimony from more than twenty federal, state, and municipal agencies along with public utilities and stakeholders like the Port of Portland and healthcare sector representatives. The result of these hearings has, as you might have suspected, painted a mixed picture of both good and not-so-good seismic awareness and seismic preparedness.

Based on the testimony we have taken, OSSPAC has the following observations and recommendations:

**Transportation:** The state needs to develop a comprehensive Seismic Transportation Reliability Plan, which identifies critical transportation lifelines and making seismic upgrades along these lifeline routes. This will have to be a multi-agency effort that includes (and should be led by) ODOT, OEM, DOGAMI, Oregon cities and counties, as well as stakeholder groups like the Oregon Trucking Association, the American Automobile Association, and major public utilities. ODOT is currently undertaking a program to seismically upgrade its bridges, but this program is woefully underfunded and at the current rate of five bridges per year it will literally take more than 500 years to fully protect Oregon’s 2,700 bridges. Identifying transportation lifelines will at least allow the state to prioritize which bridges to rehabilitate in the near term.

**Dam Safety:** Oregon’s 1,350 dams, like its bridges, also need attention according to testimony presented by Barry Norris, Dam Safety Engineer for the Oregon Water Resources Department. Dam Safety currently only draws 2.6 FTE employees\(^3\) inspecting and assessing the safety of our water impoundments. There are 134 high hazard dams in Oregon and according to Mr. Norris, dams along the coastal and coast range areas are most likely to fail in a major Cascadia earthquake.

**Cities:** Carmen Merlo and Patty Rueter from the City of Portland Emergency Management testified that the City is in relatively good shape, but a lot still needs to be done there, too. Of the 155 bridges, 87 or 56% still need seismic upgrades (and the

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\(^2\) We would note that the Legislature also appropriated funds for seismic rehabilitation of other state buildings including buildings at state universities, which is outside of the OEM grant fund program.

\(^3\) FTE: Full Time Equivalent is the number of full time employees that are assigned to a specific identified task.
Sellwood Bridge needs to be replaced. 29 of thirty fire stations have been seismically upgraded as have all five police stations. Every City agency is now required to have an Emergency Operations Plan – however as of the hearing, the plans have not been fully integrated, meaning one agency’s plan may overlap or require the interconnectivity with other agencies, and that has not been fully implemented. Problems the City still faces deal with the delivery of municipal services, such as water, sewer, natural gas and electrical power service following an earthquake.

**Utilities:** Testimony taken from Brendan McCarthy of Portland General Electric and Michael Ball and Debbie Guerra of PacifiCorp raised concerns about our public utilities’ ability to repair damaged power infrastructure and be “back up and running” after a major event. Of particular concern is the stationing of assets – repair vehicles, equipment, materials, and personnel – on both sides of the Willamette River, which may prove difficult to cross.

Within its city limits, Portland has five open water reservoirs and a number of elevated tanks, including its newest and largest on Powell Butte. A program of seismic upgrades are planned for the city’s open and elevated reservoirs. However, the city still depends on a number of aging and brittle cast iron transmission lines which cross the Willamette River and supply the west side of Portland as well as other western valley communities (such as Tualatin) with water from the Bull Run Reservoirs.

A presentation by DOGAMI’s Yumei Wang, P.E., pointed out other energy and transportation infrastructure risks. Specifically, the major rail lines located along the Willamette and Columbia rivers are subject to liquefaction and lateral spreading failures. Marine oil terminals and gasoline tank farms located in Northwest Portland, also along the Willamette River are likewise subject to liquefaction failures. Fuel pipelines that cross into Oregon from Washington are supported by wood pile wharves in North Portland, which were designed and constructed decades ago. The seismic capacity of these structures is highly questionable.

**Healthcare:** Ann Steeves testified before the Commission last January (2010) regarding the capability and capacity of our hospital system in the event of a disaster. While her testimony focused on the Oregon coast, many of the same issues she discussed will be problems for Oregon’s largest metropolitan area. Specifically, the capacity to treat the injured following a major Cascadia earthquake is simply not there. Most metropolitan hospitals, assuming they survive the earthquake and patients can get to them, already operate near their capacity most days. The total number of vacant hospital beds in Portland (or Oregon as a whole for that matter) on a given day, is nowhere near the number that will be needed following a major earthquake. Secondary treatment centers, such as the Oregon Convention Center and Portland’s Rose Garden Arena may or may not be usable (and aren’t equipped with the hundreds or even thousands of beds that would be needed). Ms. Steeves testified that plans are in the works to take patients to other states, including Idaho and Utah, but those plans were...

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4 Yumei Wang is also a Commission Member of OSSPAC.
not finalized at the time of her testimony. Even after the agreement is in place, a plan for moving the patients has out of state needs to be studied.

**Ports:** Michael Patterson, Tom Peterson, and Donna Tyner, all of the Port of Portland testified before OSSPAC in March of 2009 regarding the Port’s business continuity in the aftermath of a Cascadia Subduction Zone earthquake. The Port’s most visible asset, the Portland International Airport, has been built over many years. Some of the buildings there date back to the 1960’s and even earlier. Many of the major buildings at the airport are likely to survive a major earthquake, since both the North and South concourses were constructed to meet modern Building Codes (in the post 1994 UBC era). Furthermore, the runways are designed to survive the violent shaking of a subduction zone earthquake. However, the roads and bridges leading to the airport may not survive the earthquake, and depending on the time of year, subterranean utility corridors could become flooded, which could cause power to fail in much of the facility.

Since our meeting Stan Watters, an executive with the Port, has joined our Commission and the Port has committed to developing a business continuation plan in the event of a major earthquake.

**Corrections:** Captain John Lewis and Ms. Cherie Greenwade of the Oregon Corrections Department testified that the Oregon Department of Corrections sees itself as part of the State’s “Emergency Preparedness System.” They noted that the majority of its 14,000 inmates are non-violent, low or minimum security offenders and pointed out that inmates were used to clear land and roadways in the aftermath of the 2007 floods in and around Vernonia. Also, the facilities themselves were, for the most part, designed and constructed in the era of modern seismic building codes. In particular, the Snake River Correctional Institution, Two Rivers Correctional Institution, Coffee Creek Correctional Facility, Warner Creek Correctional Facility, and Deer Ridge Correctional Institution, were all designed and constructed under the 1994 or 1997 Uniform Building Codes (UBC) or the more recent International Building Code (IBC). And, the Department does have a business continuity plan, in the case of a major disaster.

However, while all the facilities have back-up electrical power generators, the on-site supply of fuel to run those generators is limited. Worse, “DOC’s institutions cannot go for more than a day without water or sewer services” which are delivered from outside municipal systems. The Department’s continuity plan calls for the immediate “placement of portable toilets on institutions grounds” but they do not identify where they would obtain those toilets, who would supply them, or how they would be delivered, if the roadway system and bridges were compromised. In a bit of understatement, the Department notes that with “hundreds to thousands of inmates at each location, the need for fresh potable water, and sewer service will be critical, if a large disaster occurs.”

The Department has in place a plan which they could not share with OSSPAC out of security concerns, to deal with high and maximum security inmates, to make sure that they are not released into the general (prison) population and mistakenly sent out to

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5 We assume this would involve Oregon National Guard helicopters stationed at Pendleton, Oregon’s air base there. But to our knowledge, plans for this evacuation have yet to be formalized and landing sites inside the city have not been identified.
work on construction and clean-up crews outside the prison. But it is possible that the Department will have to evacuate several hundred, or even more than a thousand, high and maximum security offenders to facilities out of the state.

**Oregon Coast:** Jay Raskin and others from Oregon’s coastal communities have testified before our Commission (on more than one occasion), concerned about various issues from tsunami inundation to Liquefied Natural Gas terminals. Your OSSPAC is on record as favoring vertical escape structures (though I and our vice chair, personally opposed the resolution) and expressed concern about locating an LNG terminal in a Tsunami Inundation Zone.

In my short time as OSSPAC Chair, we have witnessed the devastation caused by a number of major earthquakes in Peru, China, Haiti, Iran, and Chile. Well more than 100,000 people have perished under collapsed schools and other buildings. This need not be the fate of Oregon. A Cascadia Subduction Zone earthquake is a clear and present danger to Oregon and especially Oregon’s school children; but there is something we can do about it, we can fully fund the Seismic Rehabilitation Grant Program to renovate public schools. At the same time, this measure will create thousands of well-paying construction jobs, which will, in turn expand the tax base. For the sake of Oregon’s school children, and all its citizens, we must gather the will to act NOW!

Sincerely,

Gerald H. Williams, Jr., Ph.D., P.E.
Commission Chair, OSSPAC

Cc: Legislative Assembly
OSSPAC Commissioners

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6 The earthquake and resulting tsunami in Indonesia and southeast Asia occurred during my first month on the Commission, well before I became Chair, and took the lives of about 230,000 people in that one seismic event.