Testimony in opposition to SB 990

Chair Helm and members of the committee,

Thank you for hearing our testimony today. My name is Chuck Johnson and I am Director of the Task Force on Nuclear Power for Oregon and Washington Physicians for Social Responsibility. I am also a member of the US Department of Energy's Hanford Advisory Board.

In 1980, Oregon's voters approved a moratorium on the financing and construction of nuclear power plants until two conditions are met:

1) a permanent repository for extremely dangerous and long-lived high-level nuclear waste is established by the federal government and is licensed to operate and accept the waste from the proposed plant; and,

2) voters approve the new, proposed plant in a statewide vote.

To this day, nearly forty years later, the extremely difficult problem of safely storing waste that will remain lethal for centuries and dangerous for millennia has not been solved by the federal government.

Despite repeated promises from the nuclear power industry and federal nuclear agencies, the first requirement for building new nuclear power plants in Oregon has not been met – there is no permanent repository for high-level nuclear waste.

SB 990 is ill-advised, premature legislation that would create a special exemption from Oregon's voter-passed moratorium on nuclear power plant construction for small modular reactors – no longer requiring that a permanent repository for high-level radioactive waste be in place for the nuclear waste that would be generated by nuclear reactors 300 Megawatts (MW) or smaller.

SB 990 would also eliminate the requirement for a statewide vote and instead require a public vote only in the city or county in which the proposed small modular reactor nuclear power plant is planned to be constructed.

Oregon PSR believes, at the very least, that any new nuclear power plant system ought to prove itself before our State Legislature should even consider creating a loophole through a voter-passed law.

The NuScale/Fluor reactor system being designed in Corvallis has not yet proven itself. It has not been built anywhere in the world. Its design was submitted for review to the Nuclear Regulatory Commission in January of this year and it is not expected that this review will be completed until 2020. The first-of-its-kind NuScale/Fluor reactor system is proposed for a site in Idaho, with construction to begin in 2022 and completed in 2026 – a date that recently slipped from 2023. 34 municipal utilities, mostly in Utah, are being asked to buy into its construction and operation.

Because it will be cost prohibitive to do otherwise, it is expected NuScale/Fluor reactor systems will be 600 MW in size, with a battery of twelve 50 MW nuclear reactors. This is more than half the size of our region's one operating nuclear power plant at the Hanford Nuclear Reservation. Such a plant, if built in Oregon, would be the largest thermal energy facility in the state, 50 MW larger than the Boardman coal plant.

The high-level radioactive waste generated by the light-water reactors that are part of this system is identical to waste generated by the current fleet of nuclear power plants in the United States for which there is no permanent disposal site.

Oregon Physicians for Social Responsibility
The U.S. affiliate of International Physicians for the Prevention of Nuclear War, Recipient of the 1985 Nobel Peace Prize
1020 SW Taylor Street, Suite 275, Portland, OR 97205
Tel: 503-274-2720 info@oregonpsr.org www.oregonpsr.org

Just for a quick snapshot of the difficulty of handling this waste let me give you some figures about its lethality if it is not properly shielded. A single fuel assembly from a standard nuclear plant, after 1 year, would only take 7 seconds to emit a lethal dose of radiation to someone standing nearby and unshielded. After 10 years, it would take 70 seconds, and even after 100 years, it would take only 12 minutes and 30 seconds to receive a lethal dose of radiation. This is the danger of radiation poisoning from outward exposure and does not reflect the danger to humans and life if portions of radioactive materials escape containment and are ingested or inhaled.

Given that this reactor system is unproven and it proposes to generate the same waste that subjects other proposed nuclear power plants to the state moratorium, it makes no sense to ignore Oregon's voter-passed law.

We urge you to oppose SB 990 and similar legislation that may be before you in the coming years until the state's waste requirements have been met.

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In closing I leave you with a few lines from a famous short paper by Admiral Hyman Rickover, the father of the Nuclear Navy, who first wrote this in 1953, but continued to circulate it in the succeeding decades as it continued to be relevant and is relevant to this day:

Paper Reactors, Real Reactors (written in 1953 and read into the record at the Atomic Energy Commission Congressional Hearings in 1970)

"An academic reactor or reactor plant almost always has the following basic characteristics: 1) It is simple. 2) It is small. 3) It is cheap. 4) It is light. 5) It can be built very quickly. 6) It is very flexible in purpose. 7) Very little development will be required. It will use off-the-shelf components. 8) The reactor is in the study phase. It is not being built now.

On the other hand a practical reactor can be distinguished by the following characteristics: 1) It is being built now. 2) It is behind schedule. 3) It requires an immense amount of development on apparently trivial items. 4) It is very expensive. 5) It takes a long time to build because of its engineering development problems. 6) It is large. 7) It is heavy. 8) It is complicated.

…Unfortunately for those who must make far-reaching decisions without the benefit of an intimate knowledge of reactor technology, it is much easier to get the academic side of an issue than the practical side. For a large part those involved with the academic reactors have more inclination and time to present their ideas in reports and orally to those who will listen

…Those involved with practical reactors, humbled by their experiences, speak less and worry more."

I also refer you to four papers that outline some of the challenges and concerns that current expert analysts have with the difficulty of designing and building small modular reactors that are safe, adequately address radioactive waste concerns, are economically competitive, and are resistant to nuclear weapons proliferation:

http://www.ucsusa.org/news/press_release/small-modular-nuclear-reactor-0404.html#.VCONr1eKWNF

http://ieer.org/resource/energy-issues/light-water-designs-of-small-modular-reactors-facts-and-analysis/

https://www.nirs.org/reactorwatch/newreactors/cooper-smrsaretheproblemnotthesolution.pdf

http://www.sciencedirect.com/science/article/pii/S2214629614000486

Thank you, again for your time.

For further information, please contact me directly at chuck@oregonpsr.org or by phone at (503) 777-2794

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Oregon lawmakers shouldn't allow nuclear power until there's a safe solution for its waste

(Guest opinion)
http://www.oregonlive.com/opinion/index.ssf/2017/05/oregon_lawmakers_shouldnt_allo.html

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By Barbara Roberts and John Savage

In 1980, Oregon's voters approved a moratorium on the financing and construction of nuclear power plants in Oregon until two conditions are met:

First, that a permanent repository for extremely dangerous and long-lived high-level nuclear waste is established by the federal government and is licensed to operate and accept the waste from a proposed plant. And second, that voters approve the new, proposed plant in a statewide vote.

To this day, nearly 40 years later, the extremely difficult problem of safely storing waste that will remain lethal for centuries has not been solved. The recent and ongoing troubles at the Hanford Nuclear Reservation to contain its radioactive waste is a reminder of the wisdom of Oregon voters' decision in 1980.

The first requirement for building new nuclear power plants in Oregon has not been met - there is no permanent repository for high-level nuclear waste.

Senate Bill 990, which has passed the Oregon Senate and is now under consideration in Oregon's House of Representatives, is, in our view, premature legislation that would create a special exemption from Oregon's voter-passed moratorium on nuclear power plant construction. For small modular reactors, SB 990 would no longer require that a permanent repository for high-level radioactive waste be in place for the nuclear waste that would be generated by these nuclear reactors.

SB 990 would also eliminate the requirement for a statewide vote and instead require a public vote only in the city or county in which the proposed small modular reactor nuclear power plant is planned to be built.

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We share the urgency of the bill's proponents in developing new sources of replacement power for fossil fuels in electric generation. However, any new nuclear power plant system should be proven safe and viable before our state legislature should consider creating a loophole to Oregon's requirement for the establishment of a secure facility to contain its nuclear wastes.

The NuScale/Fluor reactor system being researched in Corvallis has promising safety features, but has not yet been built anywhere in the world. Its design was submitted for review to the Nuclear Regulatory Commission in January of this year and it is not expected that this review will be completed until 2020. The NuScale/Fluor reactor system is proposed for a site in Idaho, with construction to begin in 2022 and be completed in 2026. There are currently no plans or prospects for such a plant to be financed or built in Oregon.

In summary, SB 990 is premature, removes safeguards, and limits citizen approval by Oregonians. We urge a 'no' vote.

-- Barbara Roberts was Secretary of State from 1985-91 and Governor of Oregon from 1991-95; John Savage was Director of the Oregon Department of Energy from 1993-2001 and an Oregon Public Utility Commissioner from 2003-17.