BEFORE THE HOUSE COMMITTEE ON ENERGY AND THE ENVIRONMENT
OREGON STATE LEGISLATURE

TESTIMONY IN SUPPORT OF SENATE BILL 990

ARMOND COHEN, EXECUTIVE DIRECTOR, CLEAN AIR TASK FORCE

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To the Committee:

The Clean Air Task Force (CATF) is a non-profit environmental organization whose mission is to fight climate change through advancing good policy and commercial innovation. I have personally spent my entire 33 year career advocating for technologies and policies that reduce the energy system's burden on human health and the environment. CATF appreciates the opportunity to submit these comments.

Despite the recent national elections, the laws of nature and physics have not been repealed. The best science indicates that to avoid the worst effects of climate change, we will need a near-zero carbon emitting energy system soon after mid-century, and a zero carbon electric sooner, since electricity will be the vehicle by which much of the transport sector and industrial sector is decarbonized.[1]

How could this zero carbon grid be accomplished in a few decades time? Nearly every study of this matter from national and international authorities concludes that the task is large, the risks and stakes of failure are high, and it would therefore be prudent at this stage to deploy every available zero carbon technology – and not prematurely exclude options. These studies – including recent analysis by the Nobel Prize-winning Intergovernmental Panel on Climate Change and the Obama administration,[2] note that nuclear energy, along with renewable energy, carbon

[1] See Fawcett, Allen A., et al. "Can Paris pledges avert severe climate change?." *Science* 350.6265 (2015): 1168-1169; Rockström, Johan, et al. "A roadmap for rapid decarbonization." *Science*355.6331 (2017): 1269-1271.

[2] See, e.g., Intergovernmental Panel on Climate Change, Working Group III – Mitigation of Climate Change, http://www.ipcc.ch/report/ar5/wg3/, Presentation, slides 32-33; International Energy Agency, World Energy Outlook 2014, p. 396; UN Sustainable Solutions Network, "Pathways to Deep Decarbonization" (July 2014), at page 33; United States Mid-century Strategy for Deep Decarbonization (December 2016), https://unfccc.int/files/focus/long-

capture and storage, and energy efficiency improvements, is likely to be a necessary part of the low carbon mix.

While some contend that a decarbonized grid could be run all or nearly all on wind, solar and other renewable energy, the strong scientific consensus is that a more diverse portfolio of technologies will likely be more feasible and will lead to a lower-cost, low-carbon economy in the U.S. This conclusion is driven by a number of factors including the very large size of a variable renewable-dominated system due to low capacity factor and the need to generate surplus; the declining marginal value of every new unit of output at high levels of renewable penetration since all such energy is produced at the same time, necessitating spillage and curtailment; the absence of multi-day, weekly and monthly storage on the horizon to discharge in multi-day to seasonal periods of low wind and sun that are typical across the continent; and the residual need for substantial residual on-demand power or storage to operate at lower levels of utilization.[3]

Conventional nuclear power options face a variety of economic challenges, but these are being addressed by a wide variety of companies and innovators developing new designs.[4] Most advanced among these designs are light water Small Modular Reactors (SMRs), which are on the verge of entering the US licensing process. It is important that the next generation of reactors be built at commercial scale in the 2030 time frame.

SB 990 would make that possible in Oregon by removing the prior requirement of a permanent national nuclear waste disposal facility. While the nuclear waste issue has not been politically resolved nationally, there are a variety of technical options readily available, including interim centralized dry cask storage, recommended by a broad swath of experts. By the time SMRs are ready to be deployed in Oregon, it is plausible that this and other options will be moving forward. But even if the issue remains unresolved, the limited risks associated with a finite and tractable amount of nuclear waste must be weighed against the unknowable but likely substantial risks of

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term_strategies/application/pdf/mid_century_strategy_report-final_red.pdf (envisioning a 50-200% increase in US nuclear energy capacity by 2050)

[3] See Jenkins and Thernstrom (2017). Jesse D. Jenkins and Samuel Thernstrom, "Deep Decarbonization of the Electric Power Sector: Insights from Recent Literature," EIRP (Energy Innovations Reform Project), February 2017; Loftus et al. (2015). Peter J. Loftus, Armond M. Cohen, Jane C. S. Long, and Jesse D. Jenkins, "A critical review of global decarbonization scenarios: what do they tell us about feasibility?" *WIREs Climate Change* 6, no. 1, Jan.–Feb. 2015, 93–112.

[4] See Clean Air Task Force, "Advanced Nuclear Energy: Need, Characteristics, Project Costs and Opportunities" ((November 2016), http://www.catf.us/resources/publications/view/232

climate change. Moreover, SB 990 preserves local community control over plant siting.

All technologies that reduce carbon have challenges at scale, and nuclear energy is no exception. But if we are to achieve a near-zeroing of carbon in the next few decades, we can't effectively exclude any option now, which Oregon law presently does; the risks and consequences of failure of a narrow strategy are too high. SB 990 appropriately preserves the advanced nuclear energy option for Oregon in a realistic way.