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26 February 2020

To
Standing Committee on Environment and Planning
Parliament of Victoria

Dear Committee Members,

Re: Inquiry into nuclear prohibition

In investigating the potential benefits to Victoria in removing prohibitions, I think you should consider the following points.

1. Nuclear energy is fading in importance. Nuclear power's share of global electricity generation has steadily declined from a peak of 17.5 percent in 1996 to 10.1 percent in 2018. The downward trend is expected to continue for many reasons.¹
2. Nuclear plants are not a financially viable way to generate electricity. Constructing new reactors has proven extremely expensive and alternatives to nuclear energy, in particular renewable sources of electricity like wind and solar energy, have become drastically cheaper. This difference will get more exacerbated with time.
3. These economic challenges add to the other well-known problems associated with nuclear energy, in particular, the absence of any demonstrated solutions to managing radioactive waste in the long run and the potential for catastrophic accidents.² No reactor design is immune to these problems and efforts to ameliorate one of these problems typically makes other problems worse.³

¹ M. V. Ramana, "The Frontiers of Energy: A Gradual Decline?," *Nature Energy* 1, no. 1 (January 11, 2016): 7, <https://doi.org/10.1038/nenergy.2015.20>.

² M. V. Ramana, "Technical and Social Problems of Nuclear Waste," *Wiley Interdisciplinary Reviews: Energy and Environment* 7, no. 4 (August 2018): e289, <https://doi.org/10.1002/wene.289>; M. V. Ramana, "No Escape from Accidents," in *Costs, Risks, and Myths of Nuclear Power: NGO World-Wide Study on the Implications of the Catastrophe at the Fukushima Dai-Ichi Nuclear Power Station*, ed. Ray Acheson (New York: Reaching Critical Will, 2011), 26–29, <http://www.reachingcriticalwill.org/resources/publications-and-research/publications/103-costs-risks-and-myths-of-nuclear-power>.

³ M. V. Ramana and Zia Mian, "One Size Doesn't Fit All: Social Priorities and Technical Conflicts for Small Modular Reactors," *Energy Research & Social Science* 2 (June 2014): 115–24, <https://doi.org/10.1016/j.erss.2014.04.015>.



4. The decline in nuclear energy has had implications for the commodity that is at the base of nuclear power generation, uranium. Uranium prices have declined precipitously from a high of \$136.80 per pound of uranium oxide in June 2007,⁴ to a low of \$19.60 per pound of uranium oxide in June 2017 before recovering modestly.⁵ Mining companies like Cameco have been halting production at mines, and laying off workers.⁶ When announcing an unprecedented \$62 million net loss for the year 2016, Cameco president and CEO Tim Gitzel said “I think it’s fair to say that no one, including me, by the way, expected the market would go this low and for this long,” adding “we must manage our business as if difficult market conditions will persist”.⁷
5. Finally, inasmuch as intermittent renewables such as solar photovoltaics and wind turbines are becoming a more important part of the electricity supply, technologies like nuclear power that are best suited for baseload power will become less relevant. Instead, the need is for flexible sources of power and storage capacity. In my opinion, those areas are where new investment and research and development should be focused.

Please feel free to email me if you need any further information. You can contact me at

[REDACTED]

With best wishes,

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⁴ NEA, “Uranium 2009: Resources, Production and Demand” (Paris: Nuclear Energy Agency, OECD and International Atomic Energy Agency, 2010), 97.

⁵ Jessica Sondgeroth, “Uptick Vulnerable to End-of-Month Trades,” *Nuclear Intelligence Weekly*, June 30, 2017.

⁶ Natalie Obiko Pearson, Stephen Stapczynski, and Joe Deaux, “Cameco Suspends Production Indefinitely at Uranium Mine,” *Bloomberg Business*, July 25, 2018, <https://www.bloomberg.com/news/articles/2018-07-25/cameco-suspends-production-at-canadian-uranium-mine-indefinitely>; Jennifer Quesnel, “Cameco Has Cut Half Its Sask. Workforce since Fukushima Meltdown,” *CBC News*, February 27, 2019, <https://www.cbc.ca/news/canada/saskatoon/cameco-cut-half-workforce-after-fukushima-1.5035176>.

⁷ Alex MacPherson, “‘No One...expected the Market Would Go This Low and for This Long’: Cameco Records \$62-Million Net Loss for 2016 | Saskatoon StarPhoenix,” *Saskatoon StarPhoenix*, February 10, 2017, <https://thestarphoenix.com/business/mining/cameco-records-62-million-net-loss-for-2016>.