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8 September 2019

To
Committee Secretariat
PO Box 6021
Parliament House
CANBERRA
Canberra ACT 2600

Dear Secretariat,

Re: Inquiry into the prerequisites for nuclear energy in Australia

1. Nuclear energy is fading in importance globally. The peak in nuclear power's share of global electricity generation was 17.5 percent in 1996. Since then, this fraction has steadily declined reaching 10.1 percent in 2018 and the downward trend is expected to continue [http://www.nature.com/articles/nenergy201520].
2. The most important reason for the decline is that nuclear plants are no longer financially viable. In the last decade, it has become clear that is not just constructing new reactors, but just operating one has ceased to make economic sense. This is because alternatives to nuclear energy, in particular renewable sources of electricity like wind and solar energy, have become drastically cheaper. It is for this reason that many utilities in the United States have required government subsidies to keep operating.
3. Nuclear plants have a long track record of proving more expensive than initially projected.
4. New nuclear reactor designs too are likely to be much more expensive in reality than paper studies project. What are called Small Modular Reactors (SMRs) start off with an economic disadvantage because they lose out on economies of scale. SMR proponents hope that this can be compensated through mass manufacture and learning, but even under optimistic assumptions about the rates of learning, hundreds if not thousands of SMRs would have to be constructed before they break even in costs with large reactors, which are themselves not economical.
5. 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. No reactor design is immune to these problems. Efforts to ameliorate one of these problems typically makes other problems worse.

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6. 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 are going to become more redundant. Instead, the need is for flexible sources of power and storage capacity.

For all these reasons, and more, it does not make sense for Australia to embark on nuclear energy. I am attaching a few of my papers which explain these points in more detail. Please feel free to email me if you need any further information. You can contact me at [redacted]

With best wishes,

[redacted]

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