



NUCLEAR FOR CLIMATE AUSTRALIA

P.O. Box 7071, Berrima, NSW 2577

Submission to:

National COVID-19 Coordination Commission

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The Chairman
National COVID-19 Coordination Commission
Department of the Prime Minister and Cabinet
PO Box 6500
Canberra ACT 2600

To quote the former Governor of the Bank of England Mark Carney: “We can't self-isolate from climate change”. What’s needed more than ever is collective international action and Australia must play its part and this means reducing economy wide emissions by 90% by 2050. For electricity generation that equates to less than 50gr CO₂/kWh.

Our current responses are puny and are limited to the slow, ineffective and uneconomic use of wind and solar energy. No nation on earth has achieved the level of emissions reductions necessary to address climate change using these sources. In South Australia, despite achieving close to 50% of renewable energy, the state still has an emissions intensity of around 300 gr CO₂/kWh.

Two sources of energy have enabled nations such as Sweden, France and the Canadian province of Ontario to regularly achieve low electricity emissions of around 30 gr CO₂/kWh. These are hydro, which can be ruled out in Australia, and nuclear energy which is our only viable option.

If we are to seriously address global warming then, by 2050, Australia needs to have virtually decarbonised all our energy supplies. Not just electricity but also our transport, agricultural and industrial sectors. Decarbonising electricity is the easy part - the low hanging fruit and it accounts for only a third of our greenhouse gas emissions. Yet, after nearly twenty years we have made no serious inroads into reducing emissions in the technically easiest part of our economy.

Minerals mining and value adding are central to the Australian economy. These processes require low carbon electricity available 24/7 to meet the needs industrial and transport process such as:



- A steel sector using hydrogen reduction of the type being trialled by SSAB in Sweden and Thyssen in Germany
- A secure aluminium smelting industry with value added castings for international export or the smelting of other metal such as nickel or copper. As a bi-product increased levels of slag production from metal smelting can greatly reduce the need for calcining in cement production by acting as a cement replacement – a very difficult problem from a greenhouse gas perspective
- Hydrogen and ammonia production for the synthesis of transport fuels
- Desalination of water for both for domestic and agricultural needs.

The economics of these processes is destroyed when the energy delivery is variable in both time and quantity. The Covid outbreak has demonstrated our strategic vulnerability and underlined why we need to improve our manufacturing base and materials refinement and for this we need electricity derived from nuclear energy

As a first step we believe the recommendations of the “Report of the Inquiry into the Prerequisites for Nuclear Energy in Australia” by the House of Representatives Standing Committee on the Environment and Energy should be implemented.

For brevity these are summarised as follows:

Recommendation 1

- Prioritise the delivery of affordable and reliable energy while fulfilling Australia’s international emissions reduction obligations.
- Engage with International partners on nuclear energy.
- Investigating the nations’ industrial and personnel resources to develop nuclear energy.
- Ensuring ongoing community engagement.

Recommendation 2

- Undertaking a technical assessment of nuclear power plants suitable for the Australian grid.
- Assessing the economic viability of nuclear energy on a whole of system basis including its comparative performance in economically reducing carbon emissions.
- Assessing the major resources, legislative and governance issues required to implement nuclear energy as well as matters surrounding used fuel storage and health and safety
- Entering into a community engagement programme



Recommendation 3

- Remove legislative hurdles preventing modern nuclear power plants.

Viability of Nuclear Energy in Australia

We are aware of the GenCost 2019-20: report prepared by CSIRO and AEMO. We note it contains prices for Small Modular Nuclear Power plants of \$16,200/kW. No reporting of large scale plants is included such as the recent construction by South Korea in the United Arab Emirates. The report admits that the values that have been adopted cannot be justified but has failed to provide a more balanced approach to the valuations. Some 55 nuclear power plants are currently under construction world wide in places as diverse as Bangladesh, South Korea and China yet, CSIRO did not undertake any balanced analysis of these developments.

At Nuclear for Climate Australia we have attempted to plug this gap in projected costs for nuclear power plants. We have drawn on data provided in South Korea during a recent study tour of their industry. We have also taken heed of the vendor costings by NuScale and General Electric Hitachi of their BWRX-300 Small Nuclear Power Plant.

The results are shown in **Figure 1** where we included the Levelised Costs of Energy for both large and small scale nuclear power plants. We also show the electricity demand since 2008 and the changes in wholesale electricity prices on a state by state basis.

A nuclear energy programme in Australia would create a resource with strategic benefits for a century.

Robert Parker

Founder of Nuclear For Climate Australia and
Vice President, Australian Nuclear Association

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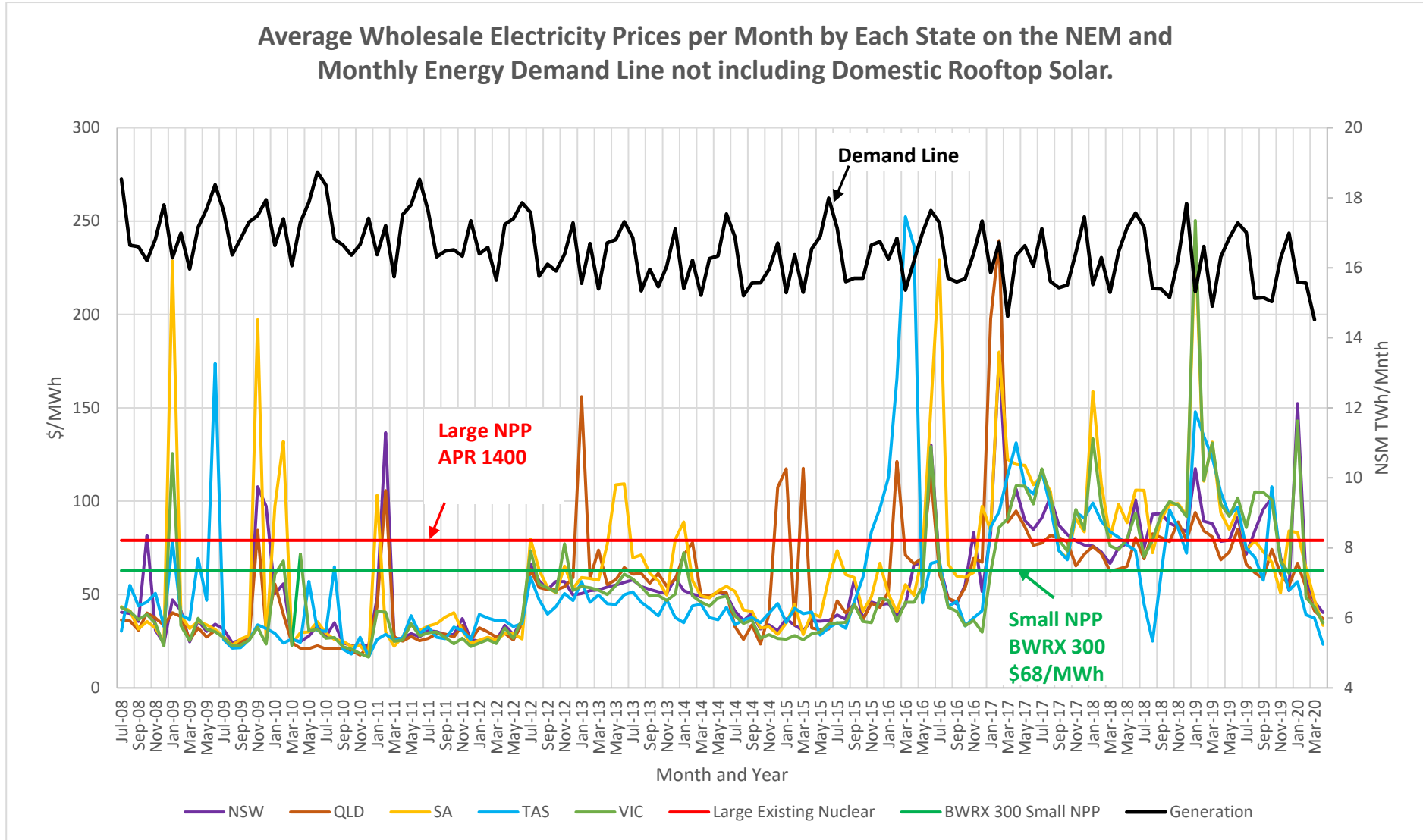


Figure 1 - Electricity supply costs, demand and Nuclear Power Plant costs