

## INQUIRY INTO URANIUM MINING AND NUCLEAR FACILITIES (PROHIBITIONS) REPEAL BILL 2019

**Organisation:** Australian Academy of Technology and Engineering - NSW  
Division

**Date Received:** 18 October 2019

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## Submission to the NSW Parliament Legislative Council Inquiry into the Uranium Mining and Nuclear Facilities (Prohibitions) Repeal Bill 2

**Executive summary.** The undersigned Fellows of the Australian Academy of Technology and Engineering<sup>1</sup> New South Wales Division strongly support nuclear energy as a potentially important element of Australia's low emission generation technologies mix. With national policy supporting technological neutrality, Australia must be open to rational analysis of the nuclear power option.

**Introduction.** Nuclear power, now delivering over 10% of the world's primary electricity supplies, some generated from Australian uranium, is a proven technology safely deployed by 30 sovereign nations, half the world's population, with more planning to follow. Today's nuclear power generation technologies are ready to make a much-needed contribution to low-emission dispatchable generation for Australia. France, with over 70% nuclear energy generation, delivers amongst the world's lowest emission levels, lowest retail prices and highest reliability levels, while exporting power to dependent nations experiencing shortages.

We acknowledge the events of Three Mile Island, Chernobyl and Fukushima but understand they would be extraordinarily unlikely with today's advanced reactors together with extremely strong international safety regulations. The industry worldwide has responded responsibly and effectively to these critical safety challenges.

Meantime Australia's uranium exports continue to contribute substantially to international electricity generation. Our nation is a world leader in nuclear medicines, nuclear waste disposal technologies and nuclear research and development, but has fallen behind in acknowledging the potential of nuclear power for reliable electricity generation and meeting international 2050 decarbonisation imperatives. There is no justifiable rationale for nuclear power to remain illegal in Australia.

**The benefits.** Nuclear energy could enrich Australia. Its addition to the nation's generation mix alongside proven renewables (solar, wind and hydro) with the shared goal of decarbonisation could:

- Well exceed Australia's committed emission reduction targets (eg Paris and subsequent).
- Deliver essential dispatchable electricity to the National Electricity Market to meet firm base-load demand reliably at an acceptable cost.
- Progressively contribute to the replacement of Australia's ageing fleet of coal fired power stations, while retaining proven system benefits, notably system stability.
- Provide reliable dispatchable generation to balance variable renewable generation.
- Provide affordable power for Australia's growing needs for electric transport, hydrogen production, metals refining, process heat for new industries, water desalination and more.
- Help renew confidence in Australian industry, in recent years diminished as productive manufacturing investment has slowed and industries have closed or moved offshore, in part due to high power costs.
- Efficiently utilise established transmission, distribution and management assets, where appropriate using deployment sites already committed to power generation assets.
- Create meaningful productive careers for young aspirational Australians.
- Enhance potential export opportunities for Australian technologies and education.

**The challenges.** To achieve these benefits and more, Australia needs to:

- Commit to a genuinely technology-neutral long-term energy policy, as advocated by Australia's Chief Scientist.
- Repeal outdated state and federal legislation inhibiting informed consideration of nuclear.
- Initiate informed public debate towards achieving social licence while acknowledging concerns of reactor safety, nuclear waste disposal, radiation protection and proliferation.
- Focus on electricity generation affordability, reliability and sustainability, accounting for total system costs, not terminal costs, in establishing an optimal mix of proven technologies.
- Consider establishing separate markets for energy (MWh) and capacity (MW). Each has a distinct value.

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<sup>1</sup> The Australian Academy of Technology and Engineering is an independent, apolitical expert think-tank that helps Australians understand and use technology to solve complex problems. The Academy brings together Australia's leading experts in applied science, technology and engineering to provide impartial, practical and evidence-based advice aimed at achieving sustainable solutions which advance national prosperity.

- Enhance Australia's nuclear regulatory regime based on the established capabilities internationally respected regulatory agencies ARPANSA and ASNO.
- Foster supportive international technology exchange linkages.
- Invite credible proposals to establish the business case for nuclear power.
- Enhance research and development, drawing deeply on ANSTO's facilities and expertise.
- Support every level of education and training needed by related emerging industries.

**The opportunities.** Adding nuclear power to Australia's generation mix would open opportunities to:

- Establish new industries supported by Australia's renowned innovation and R&D capabilities.
- Benefit from the extraordinary advances in safety, reliability and efficiency offered by new technologies, notably small modular reactors (SMRs), well proven in marine applications and soon to be deployed internationally in public electricity and thermal energy supply systems.
- Acknowledge that deployment of SMRs would be well suited for electricity supply to the well-established Australian high voltage transmission and distribution systems.
- Recognise that SMRs, progressively located at ageing coal station sites, could employ established skills while minimising additional system costs of off-grid renewable installations.

#### **Commitment.**

Should the prohibitive legislation be repealed as strongly commended, New South Wales could expect a surge of interest in the potential deployment of nuclear power generation, both at the GW scale, replacing retiring coal fired baseload capacity, and at the emerging scale of factory manufactured small modular reactors (SMRs).

Collectively, and supported by other informed professional associations, we commit to supporting the New South Wales Government, and those of the Commonwealth of Australia and its other States and Territories, in supporting this enhanced interest in nuclear power through informative publications and public education. We will use best endeavours to mobilise available resources, contribute to balanced and open public education, communicate constructively with media, help develop strong international connections, and, above all, help develop Australia as a safe, reliable and respected nation in the world's energy sector.

#### **Submitted by the undersigned Fellows of the Australian Academy of Technology and Engineering:**

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**18 October 2019**