
The Parliament of the Commonwealth of Australia

Not without your approval: a way forward for nuclear technology in Australia

**Report of the inquiry into the prerequisites for nuclear energy in
Australia**

**House of Representatives
Standing Committee on the Environment and Energy**

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Canberra

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Foreword

Not without your approval: a way forward for nuclear technology in Australia

Energy is a highly contested area of public policy in Australia.

Like the rest of the world, Australia is amidst an energy transition as we seek to deliver affordable and reliable energy while also reducing emissions. This is no easy feat and it requires a preparedness to consider, among other things, new and emerging technologies, including nuclear technology.

In adopting a referral from the Minister to inquire into nuclear energy, it was important for the Environment and Energy Committee to take an evidence-based approach and to bring dispassionate independence in assessing the evidence that came before us.

The Committee worked well together to inquire into a very important topic over a relatively short period of time. The Committee consisted of members of the Government, the Opposition and the cross-bench, so it may not surprise people to learn that we had differing opinions.

Nevertheless, I believe this report – entitled *Not without your approval* – provides a way forward for nuclear technology in Australia by proposing three recommendations to the Commonwealth Government. Firstly, that it consider the prospect of nuclear technology as part of its future energy mix; secondly, that it undertake a body of work to progress the understanding of nuclear technology in the Australian context; and thirdly, that it consider lifting the current moratorium on nuclear energy partially – that is, for new and emerging nuclear technologies only, and conditionally – that is, subject to the results of a technology assessment and to a commitment to community consent for approving nuclear facilities.

Ted O'Brien MP
Chair



Committee Membership

Chair	Mr Ted O'Brien MP	
Deputy Chair	Mr Josh Wilson MP	
Members	Mrs Bridget Archer MP	Ms Zali Steggall OAM MP
	Mr Josh Burns MP	Mr Rick Wilson MP
	Hon Dr David Gillespie MP	Mr Trent Zimmerman MP
Supplementary Members	Hon Keith Pitt MP (from 20 August 2019)	Mrs Fiona Phillips MP (from 17 September 2019)



Terms of reference

The Australian Government supports an energy system which delivers affordable and reliable energy to consumers while fulfilling Australia's international emissions reduction obligations.

Successive Labor and Coalition governments have maintained a bipartisan moratorium on nuclear electricity generation in Australia. Australia's bipartisan moratorium on nuclear energy will remain in place.

Australia's energy systems are changing with new technologies, changing consumer demand patterns and changes in demand load from major industries. At the same time the National Electricity Market is seeing a significant increase in capacity in intermittent low emissions generation technologies.

The Committee specifically inquire into and report on the circumstances and prerequisites necessary for any future government's consideration of nuclear energy generation including small modular reactor technologies in Australia, including:

- waste management, transport and storage,
- health and safety,
- environmental impacts,
- energy affordability and reliability,
- economic feasibility,
- community engagement,
- workforce capability,
- security implications,
- national consensus, and
- any other relevant matter.

The inquiry will have regard to previous inquiries into the nuclear fuel cycle including the South Australian Nuclear Fuel Cycle Royal Commission 2016 commissioned by the Labor Government in South Australia and the 2006 Switkowski nuclear energy review.



List of recommendations

Recommendation 1

The Committee recommends that the Australian Government consider the prospect of nuclear energy technology as part of its future energy mix by:

- a. Prioritising the delivery of affordable and reliable energy while fulfilling Australia's international emissions reduction obligations.
- b. Adopting a strategic approach to the possibility of entering the nuclear energy industry which considers:
 - i. collaborating with, and learning from, international partners with expertise in nuclear energy;
 - ii. developing Australia's own national sovereign capability in nuclear energy over time; and
 - iii. procuring next-of-a-kind nuclear reactors only, not first-of-a-kind.
- c. Adopting a holistic approach to the possibility of leveraging nuclear technology which considers:
 - i. opportunities to create electricity and to participate in other areas of the end-to-end nuclear fuel cycle;
 - ii. an expansion of our activities in medical research including pursuit of applications to treat cancers;
 - iii. opportunities for other non-energy commercial applications in areas including health, water, food and agriculture;
 - iv. likely impacts on jobs, industry and Australia's economic competitiveness; and
 - v. ensuring continued compliance with the Nuclear Non-Proliferation Treaty.
- d. Putting the community at the centre of efforts to progress consideration of nuclear energy in Australia by:

- i. embracing a principle of transparency with the Australian public in all nuclear related matters;
- ii. seeking bipartisanship where possible, especially on major public policy decisions relating to nuclear energy; and
- iii. seeking cooperation from state and local jurisdictions in Australia, where necessary.

Recommendation 2

The Committee recommends that the Australian Government undertake a body of work to progress the understanding of nuclear energy technology by:

- a. Commissioning the Australian Nuclear Science and Technology Organisation (ANSTO), or other equivalent expert reviewer, to undertake a technological assessment on nuclear energy reactors to:
 - i. produce a list of reactors that are defined under the categories of Generation I, II, III, III+ and IV;
 - ii. advise on the technological status of Generation III+ and Generation IV reactors including small modular reactors;
 - iii. advise on the feasibility and suitability of Generation III+ and Generation IV reactors including small modular reactors in the Australian context; and
 - iv. formulate a framework to be used by Government to monitor the status of new and emerging nuclear technologies.
- b. Commissioning the Productivity Commission, or other equivalent expert reviewer, to undertake an independent assessment of the economic viability of nuclear energy generation in the Australian context with account for:
 - i. both baseload and peak demand;
 - ii. whole of system costs;
 - iii. variances in the cost of capital, government subsidies, and other interventions;
 - iv. economic costs;
 - v. environmental outcomes including carbon emissions; and
 - vi. other alternative energy sources.
- c. Commissioning the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), or other equivalent expert reviewer, to lead and coordinate a whole-of-government assessment that identifies the major

requirements that would need to be in place before Australia was ready to adopt nuclear energy, particularly:

- i. waste management;
 - ii. health and safety;
 - iii. workforce capability;
 - iv. security; and
 - v. governance issues.
- d. Commissioning an expert body to manage an independent community engagement program that would educate and inform Australians on nuclear technology, answer their queries and hear their views.

Recommendation 3

The Committee recommends that the Australian Government allow partial and conditional consideration of nuclear energy technology by:

- a. maintaining its moratorium on nuclear energy in relation to Generation I, Generation II and Generation III nuclear technology; and
- b. lifting its moratorium on nuclear energy in relation to Generation III+ and Generation IV nuclear technology including small modular reactors, subject to the results of a technology assessment (see recommendation 2a) and a commitment to community consent as a condition of approval (see below).

Further, the Committee recommends that:

- c. the Australian Government, in cooperation with relevant state and territory governments, respect the will of the Australian people by committing to a condition of approval for any nuclear power or nuclear waste disposal facility being the prior informed consent of local impacted communities, obtained following extensive consultation with local residents including local Indigenous peoples.



List of abbreviations

AEMO	Australian Energy Market Operator
ANSTO	Australian Nuclear Science and Technology Organisation
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ARPANS Act	<i>Australian Radiation Protection and Nuclear Safety Act 1998 (Cth)</i>
ASNO	Australian Safeguards and Non-Proliferation Office
CSIRO	Commonwealth Scientific and Industrial Research Organisation
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
GenCost report	The CSIRO and AEMO report <i>GenCost 2018: Updated projections of electricity generation technology costs</i> , December 2018.
GIF	Generation IV International Forum
IAEA	International Atomic Energy Agency
OECD	Organisation for Economic Co-operation and Development
NPT	Nuclear Non-Proliferation Treaty, 1970
SARC	South Australian Royal Commission on the nuclear fuel cycle, 2016
SMR	Small Modular Reactor(s)
[Solar] PV	Photovoltaic

Switkowski Review	The <i>Uranium Mining, Processing and Nuclear Energy – Opportunities for Australia?</i> report (2006). Also known as UMPNER.
UMPNER	The <i>Uranium Mining, Processing and Nuclear Energy – Opportunities for Australia?</i> report (2006). Also known as the Switkowski review.
UNFCCC	United Nations Framework Convention on Climate Change, 1994
WNA	World Nuclear Association
kW (e)	Kilowatt (electric): 1,000 watts of electricity
MW (e)	Megawatt (electric): 1 million watts of electricity
GW (e)	Gigawatt (electric): 1 billion watts of electricity