

15 November 2024

House Select Committee on Nuclear Energy
Parliament of Australia
Commonwealth Government
Lodged online via [submission portal](#)

Dear Committee Members,

Response to House Select Committee's Inquiry into nuclear power generation in Australia

The Clean Energy Investor Group (CEIG) welcomes the opportunity to provide feedback on the House Select Committee's Inquiry into nuclear power generation in Australia, established in October 2024.

CEIG represents domestic and global renewable energy developers and investors, with more than 16GW of installed renewable energy capacity across more than 76 power stations and a combined portfolio value of around \$38 billion. CEIG members' project pipeline is estimated to be more than 46GW across Australia. CEIG strongly advocates for an efficient transition to a clean energy future on behalf of the investors who will provide the low-cost capital required for this transition.

Key Points

- **CEIG does not support the development of nuclear energy for electricity generation in Australia.**
- The barriers to developing nuclear energy in Australia mean it **would not be ready in time to contribute to meeting Australia's 2030 targets.**
- **Several nuclear bans at both the Commonwealth and State level exist** and would need to be repealed by the respective governments to establish a nuclear energy industry in Australia.
- Since there is no existing nuclear power generation industry in Australia, **the development of extensive supporting infrastructure would be necessary.**

- **It is unlikely that a nuclear industry in Australia would gain sufficient public support to secure social licence for its operations.**
- **CEIG Members recently ranked nuclear energy as the least favourable clean energy technology in terms of investment potential.**
- **Attracting corporate investment in nuclear energy would require substantial taxpayer funding to cover high capital and operational costs, which would ultimately be borne by consumers.**
- As renewable energy continues to expand its role in the grid, **the economic viability of nuclear power will only decline further.**
- **Nuclear energy has been found to be up to six times more expensive than renewable energy** (noting that: existing estimates are conservative and do not consider many associated costs actual costs for an industry that does not exist in Australia are uncertain and are likely to be higher than forecast).
- The safe operation of nuclear power in Australia **would require establishing comprehensive safety regulations and enforcement bodies**, a lengthy and costly process that would rely on taxpayer funding.
- **Nuclear energy is not suitable for high-VRE grids** and could pose a risk to Australia's renewable energy goals by deterring investment.
- **The establishment of nuclear energy in Australia would displace renewables**, despite their LCOE, leading to a less efficient, more costly energy mix.
- The **absence of commercial-scale SMR development in Western nations** leaves no evidence of their reliable operation, feasibility, or actual operating costs as power stations.

GENERAL COMMENTS

CEIG welcomes the establishment of the House Select Committee on Nuclear Energy in Australia (the Committee). We appreciate the Inquiry's intent to explore Australia's future energy needs, and we see this as a crucial opportunity to evaluate the feasibility of nuclear energy within the Australian context.

CEIG understands that the Committee aims to investigate the financial, environmental, technical, and legal implications of pursuing nuclear energy in Australia, alongside other considerations.

As outlined in our submission, CEIG does not support the development of nuclear energy for electricity generation in Australia. This position is based on the significant challenges associated with developing a nuclear energy industry in Australia, including prohibitive costs, lack of investability, risks to current renewable energy investments, insurance difficulties, extended deployment timelines, and likely obstacles in securing social licence for plant locations and nuclear waste management.

AUSTRALIA WILL NOT MEET ITS TARGETS WITH NUCLEAR ENERGY

The Australian Government has made a legally binding commitment to achieve net zero emissions. In 2022, Australia formalised its targets to reduce greenhouse gas emissions by 43 percent from 2005 levels by 2030 and reach net zero by 2050.

Australia has also set an ambitious goal of sourcing 82 percent of its electricity from renewables by 2030. Significant public and private investments have already been made to advance Australia towards these climate goals. Currently, around 40 percent of the country's electricity comes from renewable energy sources, with initiatives like the Capacity Investment Scheme (CIS) expected to help push this to 82 percent by the end of the decade.

Beyond Australia's climate targets, urgent decarbonisation is first and foremost a scientific imperative, backed by extensive evidence of increasing extreme weather events, biodiversity loss and economic risks associated with inaction. Australia has firsthand experience of the loss and damage caused by more frequent and intense climate-related events, such as bushfires and floods.

The Intergovernmental Panel on Climate Change (IPCC) warns that accelerated climate action this decade is critical¹. Global emissions must be halved by 2030 to keep warming within its recommended 1.5°C threshold. Research from the Climate Council further suggests that reducing emissions from coal, oil and gas more rapidly, while building clean energy infrastructure in the 2020s, can limit the severity of future floods, fires and destructive storms².

To meet these targets – that will in turn help to mitigate the negative impacts of global warming on Australians and the Australian economy – the pace of renewable energy investment must accelerate. According to the Australian Energy Market Operator's (AEMO) 2024 Integrated System Plan, Australia needs to add at least 6 GW of utility scale generation to the National Electricity Market (NEM) each year to meet the Federal Government's target of 82 percent renewables by 2030³.

As detailed further in this submission, the barriers to developing nuclear energy in Australia mean it would not be ready in time to contribute to meeting the 2030 targets. Even small modular reactors (SMRs) would be too late to contribute to Australia's emission reduction goals⁴.

LENGTHY TIMELINE

Current nuclear bans across Australia

When considering the potential timeline for implementing nuclear energy in Australia, the country's existing bans must be acknowledged. At the Commonwealth level, the *Australian Radiation Protection and Nuclear Safety Act 1998* and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) both prohibit nuclear power generation^{5,6}. These laws prevent the approval, licensing, construction, and operation of nuclear facilities for power generation, fuel fabrication, uranium enrichment, and nuclear waste

¹ IPCC (Mar-23) [Urgent climate action can secure a liveable future for all](#)

² Climate Council (Jun-24) [Too Close to Home: How we keep communities safer from escalating climate impacts](#)

³ AEMO (Jun-24) [Integrated System Plan](#)

⁴ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

⁵ [Australian Radiation Protection and Nuclear Safety Act 1998, No. 133, 1998](#)

⁶ [Environment Protection and Biodiversity Conservation Act 1999, No. 91, 1999](#)

reprocessing. To establish a nuclear energy industry, these bans would need to be lifted with the support of the Australian Government and Parliament.

State laws have comparable prohibitions in place⁷:

- Victoria: *Nuclear Activities (Prohibitions) Act 1983*
- Queensland: *Nuclear Facilities Prohibition Act 2007*
- Western Australia: *Nuclear Waste Storage (Prohibition) Act 1999*
- NSW: *Uranium Mining and Nuclear Facilities (Prohibitions) Act 1986*

For nuclear energy development to proceed, these state-level bans would also need to be repealed by the respective state governments.

Lack of supportive infrastructure

Since there is no existing nuclear power generation industry in Australia, the development of the following supporting infrastructure would be necessary⁸:

- Regulatory body
- Emergence response facilities
- Monitoring stations
- Access roads
- Utilities
- Waste management facilities
- Security systems
- Communications systems

This process would be lengthy; according to the Chair of the Australian Energy Regulator (AER), establishing the regulatory framework for nuclear alone would take 8 to 10 years.

Lack of social licence

Social licence is already a challenge for renewable energy projects, often causing delays.

It is unlikely that a nuclear industry in Australia would gain sufficient public support to secure social licence for its operations and for the management of waste resources.

Currently, there is no social licence for nuclear power operations in the country. A minority of Australians support nuclear energy, while the majority oppose it, and most people are unwilling to reside near a nuclear power plant⁹.

There is also clear opposition to nuclear waste management sites, as demonstrated in June 2023 when efforts to construct a low-level nuclear waste site in South Australia were successfully blocked¹⁰.

Thus, community opposition and potential legal disputes add further risks to the already lengthy and costly process of establishing a nuclear energy industry in Australia.

⁷ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

⁸ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

⁹ HSF (Sep-23) [Is Nuclear Power the solution to Australia's Energy Transition?](#)

¹⁰ The Guardian (Jul-23) [Traditional owners win court case to stop nuclear waste dump in South Australia](#)

AUSTRALIAN INVESTORS ARE NOT INTERESTED IN NUCLEAR

CEIG recently conducted a survey of our Members, asking them to rank all forms of clean energy technology based on investment potential – nuclear energy was ranked the lowest among all options.

Currently, investors in Australia's clean energy sector are not interested in nuclear energy due to its extended timelines and potential cost overruns. Instead, they favour large-scale wind and solar projects, which are already providing affordable energy to the grid and outcompeting coal.

To attract corporate investment in nuclear energy, substantial taxpayer funding would be necessary to cover the high capital costs, as private investors are generally unwilling to fund nuclear projects¹¹. Additional government funding would also be needed to cover operational costs, given nuclear's need for constant operation and function as baseload power. These costs would ultimately be passed on to consumers, at a time when cost-of-living pressures are already a major concern in Australia.

As renewable energy continues to expand its role in the grid, the economic viability of nuclear power will only decline further, and the taxpayer subsidies required for its operation will correspondingly increase.

Prohibitive cost

CEIG is dedicated to advocating for investors on the policies and market design necessary to unlock low-cost capital for Australia's clean energy transition. The AEMO's ISP – the blueprint for future development of Australia's energy grid – concludes that clean energy, combined with storage technologies like wind and hydro, offers the least-cost and quickest way to replace aging coal-fired power stations¹².

In contrast, nuclear energy has been found to be up to six times more expensive than renewable energy¹³. It is important to note that many associated costs – such as grid upgrades, transmission, social and environmental impacts, waste management, decommissioning, permitting, and regulatory compliance – are often excluded from nuclear cost estimates due to uncertainty. Thus, actual costs are uncertain and are likely to be higher than forecast.

Recent research also indicates that the presence of an established nuclear industry in a region significantly affects its cost competitiveness as a form of energy¹⁴. In Australia, where nuclear energy is prohibited under Commonwealth and State laws and there is no existing nuclear infrastructure, the viability of nuclear power as a cost-competitive option is significantly diminished.

Insurance and safety risks and challenges

The safe operation of nuclear power depends on comprehensive safety regulations and enforcement bodies, which currently do not exist in Australia¹⁵. Establishing these

¹¹ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

¹² AEMO (Jun-24) [Integrated System Plan](#)

¹³ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

¹⁴ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

¹⁵ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

frameworks would be a lengthy process, requiring significant government funding, ultimately borne by taxpayers.

In addition, research by the Australia Institute has shown that Australian financial institutions do not provide insurance coverage for nuclear accidents. If nuclear power plant operators were required to obtain such insurance, it would further diminish the economic viability of nuclear energy¹⁶.

For example, the United States' *Price-Anderson Act 1957* covers liability claims for damages resulting from a nuclear power plant accident¹⁷. This legislation places a cap on liability, encouraging private investment in nuclear power. Similar legislation would be necessary in Australia to limit investor risk and stimulate market participation.

NUCLEAR NOT VIABLE IN A HIGH VRE GRID

For Australia, which already operates in a high VRE environment, a critical consideration is whether nuclear energy could integrate effectively within the existing generation mix and market structure. If Australia aims to achieve its 82 percent renewable energy target by 2030, this integration suitability is crucial.

In an energy grid, the interaction between different energy sources can either enhance or hinder each other. Given the aforementioned barriers to nuclear energy development, it is likely that Australia's grid will be predominantly VRE-driven by the time nuclear could feasibly come online.

Nuclear energy is not suitable for a high-VRE grid and could pose a risk to Australia's renewable energy goals by deterring investment. Nuclear plants lack the operational flexibility necessary in a renewables-heavy system. While they can reduce output, doing so lowers their capacity factor, impacting economic viability since nuclear's strength lies in delivering steady baseload output at low marginal cost after covering high initial construction expenses¹⁸.

On the other hand, renewables can be scaled back more readily. This means that in a grid that includes nuclear, renewables would face more frequent curtailment. Consequently, nuclear would displace renewables, despite their low Levelised Cost of Electricity (LCOE), leading to a less efficient, more costly grid¹⁹.

SMALL MODULAR REACTORS

CEIG is aware that nuclear SMRs are currently not commercially viable in any Western country. No SMRs are under construction in Europe, and the only SMR project in North America was cancelled in November 2023 due to insufficient subscriptions to move

¹⁶ The Australia Institute (Oct-19) [Nuclear Power Uninsurable and Uneconomic in Australia](#)

¹⁷ U.S. Nuclear Regulatory Commission (Apr-24) [Nuclear Insurance: Price-Anderson Act](#)

¹⁸ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

¹⁹ Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)

forward²⁰.

The lack of SMR development in Western nations means there is no proven evidence of their secure, reliable operation or feasibility. Additionally, there is no data available to support claims about SMR operating costs when used as operating power stations²¹.

Research has also found that SMRs would not be ready in time to contribute to Australia's 2030 emissions reduction targets or to help keep climate warming within the IPCC's recommended 1.5°C limit and would be challenging to integrate into the NEM to meet Australia's net zero by 2050 target²².

CEIG thanks the Committee for the opportunity to provide feedback on its Inquiry into nuclear energy power generation in Australia and looks forward to continued engagement on those issues. Our Head of Policy and Advocacy can be contacted at marilyne.crestias@ceig.org.au if you would like to further discuss any elements of this submission.

Yours sincerely,



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²⁰ NuScale (Nov-23) [Utah Associated Municipal Power Systems \(UAMPS\) and NuScale Power Agree to Terminate the Carbon Free Power Project \(CFPP\)](#)

²¹ Dr Alan Finkel (Mar-24) [Here's why there is no nuclear option for Australia to reach net zero](#)

²² Egis & CEC (May-24) [Levelised Cost of Electricity Review](#)