

This is the last newsletter of this series, coming up to the 2025 Federal Election. We look at what's needed to develop nuclear energy in Australia, by government, authorities and institutions. This list is not exhaustive, and it will need to evolve to account for emerging technologies that will be most suitable in Australia.

The changes outlined here aren't difficult, the greatest challenge is likely to involve changing attitudes, and roadblocks put in place by vested interest groups.

The following actions by government departments, agencies, institutes and academic bodies can occur in parallel, and if commenced in 2025, can be in place to address Australia's energy transition in a timely manner based on a series of Initial Steps followed by a series of less critical Supporting Steps, outlined below.

INITIAL STEPS

Federal Government - Establish a nuclear energy regulator that oversees the introduction and implementation of nuclear energy, and coordinates with state and federal energy authorities. A framework has been provided by the International Atomic Energy Agency (IAEA) "*Milestones in the development of a national infrastructure for nuclear power*", to standardize this process [1]. In Australia this will include amending the following acts:

EPBC Act to provide a pathway for federal environmental approval of nuclear installations. EPBC Act: 37J (No declarations relating to nuclear action), 140A (No approval for certain nuclear installations), 146M (No approvals relating to nuclear actions) and 305(2)(d) (Minster may enter into conservation agreements). [2]

ARPANS Act, which regulates the construction, operation, and licencing of the Opal reactor at ANSTO, is expanded for the licencing and regulation of civil nuclear power stations. This would also involve expanding the existing scope and application of the licencing regime under that Act to address specific nuclear power plants. [3]

NRWMA Act - National Radioactive Waste Management Act 2012, *the Australian Nuclear Science and Technology Organisation Act 1987*, and *the Nuclear Non-Proliferation (Safeguards) Act 1987*. [4]

State Governments – statewide bans are in place in various forms across Australia to prevent uranium mining, nuclear energy, and nuclear waste management facilities. Each of these will need to be addressed on a case-by-case basis.

SUPPORTING STEPS

ANSTO – expands its role to assist the government in developing a program to address nuclear energy projects, fuel supply, spent fuel management, security and safeguards. ANSTO engage nuclear specialists, including consultants and contractors. [5]

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ARPANSA - develop a plan, timeline and staffing requirements to expand ARPANSA to be able to oversee the design verification, certification processes, construction and the operation of a fleet on nuclear power reactors. [6]

Department of Climate Change, Energy, Environment and Water DCCEEW - expand the capabilities of DCCEEW to include environmental planning considerations for nuclear power plants, fuel management and spent fuel storage. Where possible adopt international best practice in developing capabilities, to an international standard.[7]

CSIRO - employ a range of leadership and technical staff, that are familiar with nuclear energy, developments, options and pricing. In the medium to long term develop nuclear physics capabilities, in line with other leading scientific organizations around the world (such as Oak Ridge, Sandia, UKNNL etc...). [8]

AEMO - employ a range of leadership and technical staff, that are knowledgeable in various aspects of nuclear reactor design, construction and integration. AEMO will also need to restructure the NEM trading mechanism to reduce volatility and provide a trading mechanism to protect baseload energy investment. [9]

Engineers Australia - support the development of nuclear energy and integrated pathways to promote nuclear energy education and various types of certifications for nuclear energy projects, with reference to best practices around the world. [10]

Australian Submarine Agency - look at synergies, resources and education opportunities that are consistent between the AUKUS and nuclear energy projects. This may include fuel handling and spent fuel storage. Heavy industries such as steel production may also have synergies. [11]

UNSW Nuclear Engineering - expand courses both at UNSW and other institutions across Australia, in a steady but focused manner to expand our nuclear engineering and physics resources. This will complement imported capabilities that are provided by consultants, contractors and suppliers. [12]

Secondary Schools - STEM programs are expanded to include nuclear energy and technology, and courses are expanded on in years 11 and 12 Physics and Chemistry to include fundamental nuclear science.

Universities - ideological biases against nuclear energy need to be addressed, based on a more progressive understanding of nuclear energy and its importance in contributing to CO2 emissions reduction. Nuclear energy courses receive the necessary support, to provide for both Australian and SE. Asian nuclear energy markets.

[1] https://www-pub.iaea.org/MTCD/Publications/PDF/PUB2073_web.pdf

[2] <https://www.legislation.gov.au/C2004A00485/latest/text>

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- [3] <https://www.arpansa.gov.au/regulation-and-licensing/regulation/about-regulatory-services/why-we-regulate/arpans-legislation>
- [4] <https://www.legislation.gov.au/C2012A00029/latest/text>
- [5] <https://www.ansto.gov.au/about/governance>
- [6] <https://www.arpansa.gov.au/>
- [7] <https://www.dcceew.gov.au/>
- [8] <https://www.csiro.au/en/about/Policies/Governance-Policy>
- [9] https://aemo.com.au/-/media/files/about_aemo/board_and_governance/aemo-statement-of-role---160922.pdf?la=en
- [10] <https://www.engineersaustralia.org.au/sites/default/files/2025-02/Engineers%20Australia-Nuclear-energy-select-committee-submission.pdf>
- [11] <https://www.asa.gov.au/about>
- [12] <https://www.unsw.edu.au/engineering/study-with-us/study-areas/nuclear-engineering>