

**Submission
No 54**

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

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Inquiry into the Uranium Mining and Nuclear Facilities (Prohibitions) Repeal Bill 2019

1. URANIUM MINING

Currently it is legal to explore for uranium in NSW but it is illegal to mine it if it is found. Mining uranium is legal in South Australia, Western Australia and the Northern Territory. Removing the prohibition will benefit regional centres by allowing uranium mines to be developed where proposals meet the already stringent mining regulations and licensing processes.

Most of the risks, radiation hazards and environmental impact of uranium mining are similar to those of other mines already regulated and licenced in NSW. A uranium mine, especially if underground like Olympic Dam in S A, would also need to meet NSW radiation safety regulations which apply to the workers at the mine and the public, including possible radon exposure. Radiation regulations needed for mining uranium are very well established and already applied in industries managing radioactive materials and in mines with significant naturally occurring radioactivity. Any uranium mine would use modern mining practices and have to meet current mining regulations including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (Radiation Protection Series No.9).

The modern uranium mining industry in S A has a good safety record. Radiation dose records are compiled by major mining companies under the scrutiny of regulatory authorities. Aside from radiation, particularly radon in the atmosphere underground, the occupational health and safety hazards of modern uranium mining are no greater than, nor distinct from, other comparable mining operations.

There is no justification for continuing the historic prohibition of uranium mining. The prohibition on mining in NSW should be repealed so that NSW can benefit from the international trade in uranium.

2. NUCLEAR POWER

2.1 Remove Prohibitions to allow Nuclear Facilities to be Considered on their Merits

Nuclear power is a major generator of electricity in most advanced and many developing countries where it is considered an essential part of their electricity supply. There are currently 449 operable nuclear reactors around the world, generating approximately 400 GigaWatts equivalent, with new reactors coming online every year.

The Small Modular Reactors such as the NuScale SMR manufactured in Oregon USA, and pictured below are a game-changer. Each module can generate 60Megawatts, sufficient to power a regional town like Dubbo, and surrounding community, and as many as 12 can be sequenced to provide a major installation. The first commercial model is due to be switched on in Idaho in 2026. It has a minimal footprint on the ground, being approximately 4 metres diameter and 18 metres high, requiring little water cooling. It is manufactured in Oregon and shipped to the site where it can fit inside an existing building along with turbines and electric power generation facilities. There is an existing Chinese version in use and there is considerable experience from nuclear submarine and ship use.

The cost is approximately \$4,000 to \$5,000 per kilowatt, or about US\$4 to 5 million, which compares favourably with other power plant costs.



NSW has historic prohibitions from 1986 that prohibit the construction or operation of nuclear facilities in NSW including a nuclear reactor designed for the purpose of generating nuclear power. The Act has exceptions allowing construction of the Opal research reactor and ANSTO nuclear facility used to supply isotopes for nuclear medicine amongst other uses. It also allows the construction and operation of a facility for storage or disposal of radioactive waste from the use of authorised purposes and the operation of nuclear-powered vessels. Currently ANSTO has developed an amazing new process called Synroc for disposing of nuclear medicine waste in a solid rock-like form for commercial use.

The reason given in the Act for these prohibitions is to protect the health, safety and welfare of the people of New South Wales and the environment in which they live. Repealing the prohibition against nuclear facilities would allow proposals for nuclear facilities in NSW including nuclear power plants to be considered on their merits as part Australia's energy system, a mix that is sorely needed in this era of rapidly rising electricity costs to households and industry, particularly the price spikes that occur under conditions when solar and wind are not generating.. Based on the overseas experience, nuclear power would increase electricity supply reliability and affordability as well as reduce carbon emissions. Nuclear power plants in regional locations in outback NSW would provide the reliability and affordability these communities so desperately need. They would provide long-term technical employment

including many highly skilled jobs. Nuclear would enhance the health and welfare of people in NSW and improve the environment by reducing carbon emissions and other air pollution.

An OECD 2019 study concludes that:

“... diversity of energy sources drives down total costs of energy in a low-carbon system, whereas taking options off the table – such as nuclear – creates extra costs to society”.

It also indicates that:

“... the impacts of decarbonisation targets on the optimal investment policies are not linear and some targets may yield a share of a particular technology e.g. wind, that under a more stringent target may not be present in the optimal mix”.

It is therefore important that decarbonisation policies are not based on ideology or pre-specified shares of low-carbon resources in the mix, but rather on ambitious CO₂ reduction goals and a pre-specified agenda. To enable modelling of the optimum energy mix to proceed it is essential that more thorough collaborative cost analyses be carried out directly with reliable vendors who have established track records in successful project implementation.

It is important that the legislative prohibitions be removed so that nuclear can be properly assessed on its merits. The unproven assumption that the cost of nuclear will be so high as to be uneconomic is no reason to maintain legislative prohibitions.

2.2. Safety and Public Acceptance

Even including the major accidents in Chernobyl in 1986 and Fukushima in 2011, nuclear power remains among the safest of all generation technologies based on lives lost per unit of electricity produced over the 60 years of commercial operation.

As with the aircraft industry over many years, nuclear power plant designs are continually being improved, based on the operating experience of current nuclear power plants. The most significant design improvements in both large scale Generation III and Small Modular Reactors (SMRs) is the introduction of safety features which enable these reactors to automatically shut down and remove decay heat using passive controls, such as air-cooling. There is no such thing as perfect safety even in the space program such as Apollo, however we can get close enough so as to regard commercial airline travel as approximating to it. Passive safety means that the reactors remain safe without an external power supply or human intervention for the danger period.

Social acceptance of nuclear is increasing in Australia, especially amongst the millennial generation, however greater acceptance and education is needed. Experience overseas in Finland and France shows that it can be achieved by providing worthwhile incentives and benefits to the community where a nuclear facility is located. Unfortunately, businesses such as BHP are being held back by the current State and Federal prohibitions which must be removed before a proper consideration of nuclear benefits can occur. A particular concern that has been identified and that needs to be addressed is the mismatch in support between males and females in the population, the latter tending to remain sceptical, mainly through lack of knowledge. However, the universal desire to see electricity prices reduce is rapidly changing that perception.

3. I join with the Australian Nuclear Association of which I am a member, in strongly recommending passage of the *Uranium Mining and Nuclear Facilities (Prohibitions) Repeal Bill 2019* to repeal the historic prohibitions against uranium mining and nuclear power.