Will Australia get serious about nuclear power?

Earlier this month Energy Minister Angus Taylor initiated an inquiry on the prerequisites for nuclear energy in Australia. But haven't we been here before? In 1952, South Australian Premier Thomas Playford confidently stated that the first nuclear power station in Australia would be located on the shores of Spencer Gulf. It was to be operational by 1960. In 1969, a 500 megawatt (MW) nuclear power station was proposed for Jervis Bay, 150 km south of Sydney. But in 1971 the Australian government dropped the project, citing economic reasons. Today, the "renewables experiment" in South Australia has left the state with the world's highest electricity prices.

The entire National Energy Market (NEM) has a generative capacity of about 54,000 MW. The $5 billion-plus "Snowy 2.0" pumped-storage hydropower project will generate about 2,000 MW. The world's biggest battery in South Australia can supply a measly 100 MW, for only an hour. Battery storage of electricity is *close to 100 time more expensive* than pumped hydro as expressed in $/megawatt-hour of stored power. And as good as pumped hydro is, covering Australia with windfarms and small, expensive and otherwise useless dams would be an environmental as much as an economic disaster. Nuclear power is the only serious alternative to coal, as many environmentalists now admit.

Consider Michael Shellenberger, a former renewable energy advisor to Barack Obama who was named a *Time* magazine "Hero of the Environment" in 2008. "Like most people, I started out pretty anti-nuclear. I changed my mind as I realised you can't power a modern economy on solar and wind", he told *The Australian* in September 2017. "When you do nuclear, what additional benefit does wind and solar bring? All they do is make the electricity system chaotic and provide greenwash for fossil fuels. Nuclear is the only technology that can lift everyone out of poverty and reverse human impact."

Speaking to Alan Jones on 2GB on 6 June this year, Shellenberger elaborated: "I think it's just a matter of time that people will start to see nuclear for what it really is, which is it's the most beautiful, best source of energy. It produces heat without fire, and it's a very strange thing for us, it's a very recent thing in human development, but it's what makes nuclear the best from an environmental point of view." Shellenberger added that between 400 and 700 times more land area is required for solar and wind than for either nuclear or natural gas.

The anti-nuclear lobby continue in their attempt to generate an "unshakable conviction that snow is black", as Bertrand Russell infamously propagandised. "The cheapest form of new generation is renewables plus storage. Cheaper than new coal and far cheaper than nuclear", former Goldman Sachs Australia boss Malcolm Turnbull posted on Twitter on 5 August. Never mind the evidence in South Australia; or that the cost of electricity in France, 70 per cent of which comes from nuclear, is around half that in neighbouring Germany, which has taken the "green" path.

Small Modular Reactors

Under the headline "The new nuclear option: small, safe and cheap", an article in the *Australian Financial Review* on 15 August lauded the new generation of nuclear powerplants known as Small Modular Reactors (SMRs), which can be prefabricated and transported by truck or barge to location. There are about 150 designs under way around the world, including in Russia, China, Britain and the USA. Rolls-Royce is designing a reactor that will be 4.5 metres wide, to fit under the 4.95 m British road height limit. Such SMR designs will provide 220-440 MW of power, depending on the configuration. Multiple SMRs can be added at the same site as power demands increase. As SMR production volume increases, Rolls-Royce says electricity cost will potentially be cheaper with SMRs than with today's largescale reactors.

American-based Advanced Reactor Concepts, L.L.C. (ARC) has a reactor, known as the ARC-100, with nonproliferation features that make it suitable for deployment anywhere in the world. The "walk away" passive safety system of the ARC-100 insures the reactor will never melt down, even in a disaster that causes a complete loss of power to the plant site. The radioactive fuel for the ARC-100 would only have to be changed every 20 years. AFR reports that ARC Nuclear Canada plans to start selling a small nuclear power plant in 2028, with the assistance of Sydney-based engineering group Worley Parsons.

The ARC-100, which will produce 100 MW of electricity 24/7, will be suitable for regional areas where the traditional 1,000 MW station would not be considered. But aside from advances in SMR design, the standard 1,000 MW station, albeit with the latest safety features, is still in high demand. In total worldwide, 111 reactors are planned in 18 countries with a total electricity generation capacity of 121,829 MW. Most are expected to be in operation in the next decade.

Australian Alert Service, 21 August 2019