Until quite recently the possibility of nuclear power as an alternative energy was simply unthinkable. Now, at last there seems to be a wakening awareness of the impossibilities of the economic, technical, resource, environmental, and operational demands of the wind and solar fantasy, further compounded by the networking complexity plus the multiple vulnerabilities to accidents, weather extremes, solar flares, sabotage, and cyber security this will also present.

However, now that nuclear power is starting to be reconsidered, it appears that the public debate remains largely focused on technologically obsolete gigawatt scale custom-built systems involving decades of planning, permits, and construction, tens of billions in capital investment along with further huge increases in grid infrastructure to distribute the massive power output to distant users.

The alternative technology of Small Modular Reactors offers multiple advantages which deserve better recognition and discussion:

1. Manufacture of a standardised design offers significant economies of scale in regulatory approval, manufacture, installation, installed capacity, and backup.
2. SMR technology avoids requirements for rare or limited resources, components, or suppliers.
3. SMR technology has an extensive history of employment in ships, submarines, research facilities and remote installations with an outstanding record for reliability and safety.
4. In ships and submarines, it also has an extensive worldwide record of thousands of visits to many dozens of major port cities with no problems anywhere, ever.
5. Half of the cost of power to consumers is in the grid and 20% of the power transmitted is lost. The diffuse nature of wind and solar power plus the site requirements for energy farms will demand a doubling of grid infrastructure. SMRs can be installed close to wherever power is needed thus eliminating the need for massive grid infrastructure while also achieving negligible transmission losses, operational complexities, and vulnerabilities.
6. SMRs can be mounted on ships, barges, railcars, and trucks to enable quick backup in an emergency.
7. The service life of SMRs is also several times greater than wind or solar systems, the reliability record is far better, and standby backup for calm nights is unneeded.
8. The depleted fuel from SMRs can be reprocessed in a few large-scale fast breeder reactors to achieve minimal end-use nuclear waste which can then be relatively easy to securely store deep underground.
9. Multiple advanced SMR designs for commercial power generation are in advanced stages of development. Rolls Royce plans to have 30 or more units in operation by the end of the decade. They also have a $300 million contract with the U.S. Department of Defence for development of a mobile SMR design for military use by 2024.

Over three quarters of our population now live in cities of 100,000 or more inhabitants, where most of the larger buildings and infrastructure would quickly become uninhabitable in an extended blackout. Continuing to increase the complexity, vulnerability and inter-dependence of the entire electrical system with ever increasing levels of highly erratic and unpredictable input while decreasing the capacity of reliable backup is beyond ignorance or even stupidity. It can only be a form of mental disease, perhaps environmentally induced by our lifestyle, our educational system, or even an addiction to social media. China, Russia, North Korea, and Iran must surely be laughing as they agree to all we preach about climate change while themselves practicing the opposite.

There is now an excellent opportunity for Australia to get in on the ground floor for development and deployment of SMR technology. If we wait until it is widely accepted we may find ourselves well back in a long line of other nations already contracted to receive their own reactors. Hopefully, our abundance of uranium

as well as thorium might still provide some leverage for priority delivery of SMRs, but, getting in on development sooner rather than later would still be the smartest bet.

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