Senate Select Committee on Energy Planning and Regulation

Public Hearing 31 October 2024 Tabling of Introductory Remarks

Independent Engineers, Scientists and Professionals

Thanks for the opportunity to contribute to the Committee's enquiry. I am Dr James Taylor, Electrical Engineer and the Lead Author of a group of Independent Engineers, Scientists and Professionals.

The most severe energy planning problem is the complete lack of accountability for the technical and financial viability of AEMO's Integrated System Plan. Our previous submissions to AEMO, backed up by detailed analysis, concluded that the ISP fails to meet any of the National Electricity Objectives for reliability, affordable cost and reduced emissions.

High reliability systems engineering is based on rigorous worst-case conditions with added safety margins to protect against outages of some facilities for maintenance and repairs. The NEM's dispatchable reserve margin has already fallen from 20% to 6%. It will be minus 19% by 2030 when blackouts are inevitable. By 2040, it is estimated at minus 30%, based on AEMO's own figures.

Other fields, such as commercial aviation and nuclear power plants, are governed by strong, independent regulatory bodies properly staffed to exert detailed design oversight of developers before providing certification. Nothing like this exists for the design of the future NEM. AER and AEMC do not appear capable of playing this role.

CSIRO's GenCost reports are used by government to justify policies based on the misleading claim that wind and solar are the cheapest form of electricity generation. However, GenCost itself warns that its Levelised Cost of Electricity method, separately examining various generation technologies, is not a replacement for whole-of-system analysis.

Government policies are now used to prescribe wind and solar targets in the National Electricity Objectives. AEMC's National Electricity Rules impose them on AEMO's ISP.

As a result, AEMO has not considered a broad range of alternative technologies for comparisons to determine the most reliable, lowest cost and best emission reductions. This essential fact prevents AEMO from telling truth to power.

The ISP misleadingly portrays high dispatchable power capability. The reality is much of it is batteries having just a few hours output, when renewables can be out for days. The ISP's example of wind and solar drought conditions, in a deceptive attempt to prove reliability, is a flawed simulation not based on worst-case conditions.

The ISP avoids full system cost disclosure with a single paragraph claiming a capital cost estimate of $122 billion present value (at 7% discounted cash flow), which excludes many system costs. Our whole-of-system cost estimate, using ISP capacities for both generation and storage and GenCost capital cost factors shows a dramatically different reality. Total capital cash cost exceeds a trillion dollars and a 7% discounted present value for that is over $600 billion – more than 5 times the ISP's estimate for a system that cannot provide reliable power.

The same costing methodology applied to grid designs based on coal, gas and nuclear all show capital costs less than half of those for the ISP and have far longer facility lifetimes. The implication is for dramatically lower consumer tariffs.

Wind and solar emissions are most definitely not zero emission technologies. Accounting for whole-of-system and whole-of life emissions takes into account mining, processing and manufacture of massively more materials than required for conventional baseload power systems designs. Their relatively short

lifetimes and major disposal problems are substantial drawbacks, which will not improve global emissions. Accounting only for operating emissions in Australia is fundamentally dishonest.

The significant environmental impacts of the ISP are now being realised by the general public. Over 1.6 million hectares will be required for wind and solar farms and vast transmission lines.

The ongoing rollout out of Demand Side Participation and time-of-use tariffs is nothing more than surreptitious power rationing to alleviate the failure to design for proper ISP reliability. Customers now serve the grid rather than the grid serving customers with power when they need it.

The current approach will have a severe impact on the economy and the well being of all Australians. It is making us completely dependent on China for the majority of all materials and equipment needed for our energy system, along with major exposures to future trade embargoes and cyber attacks. A weakened economy will substantially impair our national security.

It is now beyond time to call for a pause in the mad dash to transform the NEM and consider major changes to the processes of energy planning and regulation to incorporate proper accountability.