

A Submission to the Energy Security Board (ESB) on Post-2025 Market Design

**Robert Pritchard
ResourcesLaw International
Sydney**

Key Points

- **This submission outlines the cumulative effect of oil-dependence and weather-dependence on Australian energy security and energy investment and the manner in which the redesign of the National Electricity Market (NEM) needs to be approached, emphasising the criticality of government and industry working together.**
- **Since the 1973 oil crisis, all oil-dependent countries have been at significant risk of interruption to their oil imports. In the case of Australia, the risk has become acute, due to the decline in its domestic oil production since 2001.**
- **Australia has world-class indigenous resources of coal, natural gas and uranium. It has compensated for its oil-dependence by exporting them. This has been a huge financial success story but it has done nothing to reduce Australia's energy security risk.**
- **In 1988, following the 1986 Chernobyl disaster, the Australian government imposed a legislative ban on nuclear power, effectively preventing Australian industry from even considering it as an option in power generation. The ban is overdue for repeal.**
- **Over the last decade, the introduction of part-time, weather-dependent, renewable energy generation into Australia's power system has raised doubts about system reliability. At the same time, it has increased the risk of investment in the system to a level that most investors are finding intolerable.**
- **A diversity of supply options, and the ability to switch from one to the other, are necessary to manage Australia's energy security risk. There is no single pathway. A fundamental redesign of the NEM, a review of interrelations amongst the market institutions and reconsideration of the government's scheme for underwriting new investment are all necessary.**
- **In September 2019, at the request of the COAG Energy Council, the ESB instituted a Post-2025 Market Design Project, supplementing no less than 13 related initiatives already being undertaken by other market institutions. The main obstacle to this work, apart from its sheer complexity, is the involvement of too many cooks, including too many governments. If it is to be successful within a sensible time frame, the project needs to be streamlined and pursued in close partnership with industry.**
- **A simple and effective way of proceeding would be to replace the AER and AEMC representatives on the board of the ESB with two industry representatives and allocate to the ESB the resources necessary to complete the entire project within six months.**

Increased energy security risk

Due to a decline in domestic oil production since 2001, Australia now imports 75% of its needs of crude oil and 50% of its needs of refined petroleum products. In consequence, its energy security risk has been significantly increased.

Over the same period, however, Australia expanded the production and export of coal, natural gas and uranium to Asian markets. This strategy was so successful that it encouraged many politicians to regularly describe Australia as an 'energy super-power'.

However, super-power status has little value if demand for coal, natural gas and uranium drops and export prices fall. It has certainly done nothing to reduce Australia's oil dependence.

Australia is now concerned about its energy security but it is not alone. At their June 2019 Summit in Osaka, G20 Leaders endorsed energy security as a guiding principle for the transformation of energy systems:

'...the importance of [transforming] our energy systems into affordable, reliable, sustainable and low GHG emissions systems as soon as possible

... the role of all energy sources and technologies

... different possible national paths to achieve cleaner energy systems

... global energy security as one of the guiding principles for the transformation of energy systems, including resilience, safety and development of infrastructure and uninterrupted flow of energy from various sources, suppliers, and routes.'

(emphasis provided)

What did we learn about energy security from the history of oil development? What did we learn from the activities of OPEC, from the creeping expropriations of oil concessions in the Middle East, and from the threats of some countries to use the 'oil weapon'? What did we learn from Russia's push to establish the Gas Exporting Countries Forum and its threats to curtail gas supply to Western Europe? What are we now to learn from Iran's recent threats to tanker traffic in the Straits of Hormuz?

Australia's energy security risk is now acute but what path can Australia take to improve its energy security at the same time as it seeks to redesign the NEM?

Climate policy disruption

Perhaps the greatest long-term threat now looming over Australia's energy production is the disruption being caused by Australia's Paris Agreement undertakings and by its climate-related policies and actions.

Could Australia's vast resources of coal and natural gas become quarantined by future requirements to reduce emissions? What effect would that have on Australia's relations with its key customers? Could Australia avoid the climate threat by investing heavily in technologies to reduce emissions-intensity?

Destabilising our power systems / market failure

In most countries, including Australia, there is a rising demand for electricity, not just to keep the lights on, but as a source of heat for industry and as a transport fuel to take the future place of petroleum.

As an early-stage response to the threat of climate change, Australian federal and state governments rushed over the last decade to encourage renewable energy generation in electricity markets. This was prompted in large measure by falling costs but it has destabilised our power systems, threatening reliable supply, and forcing dispatchable, base-load generators out of business. In short, the market has failed.

The three market institutions: the AEMC, AEMO and the AER, are presently undertaking a total of 13 initiatives to improve the operation of the NEM, listed in Annex B of the issues paper for the Post-2025 Market Design Project. It is intended that these initiatives will continue in parallel.

For some time, we might anticipate political tinkering to keep the lights on, while doing the best we can to keep prices affordable. We might also anticipate political interventions in the form of tougher environmental laws, carbon reduction targets, and subsidisation of both old and new generation.

Effect on investment

The penetration of part-time weather-dependent, renewable energy generation into Australia's electricity system has raised doubts not only about the reliability of its electricity supply but also about the long-term risk of investment in electricity generation assets.

Ageing generation assets are now being closed down and storage technologies are in increasing demand. However, replacement assets are unlikely to be built under current market rules without assistance. These include the Commonwealth's ownership of the Snowy 2.0 project, recourse by industry to power purchase agreements with a variety of players, 'reverse auctions' by state governments and the Commonwealth's 'Underwriting New Generation Investments' (UNGI) scheme.

The ESB and market redesign

In 2017, the Coalition of Australian Governments (COAG) established the ESB to take policy responsibility for energy supply reliability, acting on the recommendation of the Finkel Committee.

In September 2019, the ESB resolved at the request of the COAG Energy Council to undertake a post-2025 market design project to review how the NEM could be redesigned '*to meet the needs of future diverse sources of non-dispatchable generation and flexible resources.*'

The project will be no simple task. It will analyse overseas market experience but it aims to develop an understanding of what it describes as '*the range of future worlds that are likely to exist*' and look at a range of scenarios that may be unique to Australia.

The ESB acknowledged in its September 2019 issues paper that a key challenge to reliability is whether or not the market will provide sufficient incentives for investment.

According to the ESB:

'To maintain reliability and affordability for consumers, it is also essential that market arrangements enable an orderly exit of coal fired generators and incentivise timely replacement by firm, dispatchable generation. The timing of the closure of coal fired generation units is critical to ensuring an orderly transition to a low emission generation mix.

...

'Despite the need for flexible and dispatchable capacity to ensure reliable supply under a range of conditions, the market is currently attracting only limited investment of this nature.'

The ESB acknowledged the limitations of short-term markets:

'The short-term nature of the NEM (both spot and contract markets) may mean revenues are not sufficiently secure and predictable over the medium to long-term to enable sufficient levels of capex maintenance on existing plant and support efficient investment in new plant.'

The ESB emphasised the criticality of delivering efficient price signals to long-term investors:

'The key question for future market design is therefore how the market can deliver efficient price signals to deliver the optimal level of investment and consumption. This implies examining if current market arrangements provide the required long-term price signals for future investment in flexible resources, if recent initiatives are sufficient to avoid disorderly exit of existing coal-fired generation capacity and bring on investment in flexible resources. Are other market design elements needed to incentivise such investment?'

To which this author would respond: No, the long-term price signals for investment in flexible resources, with their high capital needs, are not provided by the market as currently structured.

Our Energy Security in the Future

The key theme in managing our future energy security will be diversity. There is no single path on which we should rely.

The overall challenge for Australia is to continue exporting energy security to its main customers, who will be dismayed if they find their energy supply choked off by political or market disruptions, and, at the same time, reduce its own high level of dependence on imported oil, while not exposing its power system to the vagaries of the weather.

Energy security is therefore an increasingly complex challenge with multiple stakeholders interacting on multiple fronts, in different ways and with different levels of intensity.

The key strategic response must be diversity. Energy security will always be enhanced by the availability of a diversity of options and the flexibility to switch from one to the other.

In keeping with this key response, Australia may need to consider the pursuit of a range of energy security strategies. Nine are listed in the following table:

Table: Strategic Options for Australia

<p>1. Investing heavily in carbon capture, use and storage and other emissions-reduction technologies</p>	<p>– requiring a national effort to prevent our vast resources of coal and natural gas being quarantined by international emissions-reduction commitments</p>
<p>2. Diversifying our use of different energy forms</p>	<p>– requiring a diversified portfolio of interchangeable energy forms that includes renewables, fossil fuels, hydrogen and nuclear power, all with a focus on reducing costs and lowering emissions – lifting the ban on nuclear power at the same time as enhancing the value of our vast uranium resources</p>
<p>3. Diversifying our supply sources</p>	<p>– requiring a diversified portfolio of supply sources from different geographical regions and commercial suppliers, all with a focus on reducing costs and risks</p>
<p>4. Increasing competition</p>	<p>– requiring as much competition as possible with the aim of reducing costs</p>
<p>5. Reducing our oil-dependence or, ideally, attaining oil self-sufficiency</p>	<p>– requiring increased domestic exploration - with adequate emergency stockpiling systems to play a balancing role during oil shortages</p>
<p>6. Building interconnections</p>	<p>– to reduce our vulnerability to system failure and fuel shortages</p>
<p>7. Installing fuel switching systems</p>	<p>– to provide flexibility and adaptability</p>
<p>8. Investing in other energy infrastructure</p>	<p>– to provide pipelines, transmission grids, storage facilities and systems to better protect our energy infrastructure from weather and other events</p>
<p>9. Investing in more efficient, innovative and flexible energy technologies</p>	<p>– to reduce the energy intensity of the economy, including reducing fuel use in transport.</p>

Streamlining the Project

In conclusion, the ESB has instituted a Post-2025 Market Design Project, supplementing no less than 13 related initiatives that already being undertaken by other market institutions. This is a daunting project that the ESB may find impossible to implement except in close partnership with industry.

The main obstacle to the Project, apart from its sheer complexity, is the involvement of too many cooks, including too many governments. If it is to be successfully undertaken within a sensible time frame, the Project surely needs to be streamlined and pursued in close partnership with industry.

A simple and effective way of achieving this would be for the COAG Energy Council to replace the AER and AEMC representatives on the board of the ESB with two industry representatives and allocate to the ESB the resources necessary to complete the entire project within six months.

In pursuing its strategies over the short, medium and long-terms, there will be a need for regular consultation with our key trading partners, with industry and with the community, to entrench and underpin their support.

Diversity is the key theme that Australia should pursue for its energy security. There is no single technology and no single pathway that will suffice.

29 September 2019

About the Author

Robert Pritchard is managing director of ResourcesLaw International, executive director of the Energy Policy Institute of Australia, an independent industry policy body, and a non-executive director of the St Baker Energy Innovation Fund and SMR Nuclear Technology.

This article represents the author's views and does not reflect the views of the Institute or any of its members. The author may be contacted at robert.pritchard@resourceslaw.net