

Policy Options for Strengthening Australia's Electricity Market During the Renewable Transition

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Australia's *National Electricity Market (NEM)* is one of the longest electricity systems in the world, stretching from far north Queensland to Tasmania and around to South Australia. It is undergoing one of the fastest energy transitions in the world. Renewable generation has increased from around 8 per cent in 2010 to more than 40 per cent today, while rooftop solar has become the single largest source of installed capacity. At the same time, ageing coal generators are retiring as they reach the end of their engineering lives. Governments have shifted away from the use of market-based instruments such as carbon pricing and renewable certificate schemes towards direct intervention via underwriting schemes to drive new investment.

Figure 1: The National Electricity Market (NEM)'s operation across timeframes



As highlighted in Figure 1, the *NEM* (created in 1998) was intended to operate as an integrated system across three timeframes: a) *in the short term*, spot prices coordinate the dispatch of generation to meet demand with significant price volatility driving efficient use of resources; b) *in the medium term*, derivative markets allow participants to hedge this price volatility and manage financial risk; and c) *in the long term*, expectations of future spot and contract prices drive investment decisions in new capacity.

The effectiveness of the market depends on strong linkages between these layers. Spot outcomes inform contract pricing, and contract markets in turn shape both bidding behaviour and investment incentives.

The energy transition is not simply technological; it is fundamentally reshaping how electricity markets' function. It is in this context that Australian governments commissioned an independent expert review of the *NEM* in late 2024. The Expert Panel provided its final report in late 2025 with key recommendations being supported and implementation now underway (Nelson *et al.*, 2025). The key insights from the Review were not that any one component of market design was significantly deficient, but that the linkages between short-term dispatch, medium-term risk management and long-term investment pricing signals have weakened. Without reform, the lack of consistent price signals across different timeframes risks undermining reliability, increasing costs and reducing competition.

Problems identified by the *NEM* Review

Firstly, the rapid growth of behind-the-meter resources (such as rooftop solar, batteries and flexible demand) has created a class of 'hidden' participants. These resources increasingly respond to wholesale prices but are not fully visible to the market operator in dispatch. As a result, prices no longer fully reflect system-wide supply and demand conditions. Without reform, batteries could be discharging while other batteries are charging with significant and unnecessary overinvestment.

Secondly, the shift to weather-dependent renewable generation has fundamentally changed the nature of the physical electricity system and energy market risk. Electricity prices are now driven less by fuel costs and more by weather patterns. Periods of very low prices during high solar output are increasingly interspersed with sharp price spikes when wind and solar are scarce. The system has become both predictably variable (i.e. the sun rises and sets each day) and unpredictably volatile (e.g. stochastic wind availability).



And finally, a mismatch has emerged between the contracting horizons of market participants and the financing needs of new generation assets. Retailers and large customers typically contract only a few years ahead, while renewable and firming generation assets require long-term revenue certainty in a system that is undergoing significant technological change. The Review termed this mismatch of contracting horizons the 'tenor gap' and noted it is now a key barrier to investment.

Key Recommendations of the NEM Review

1. Improve visibility in the short-term market

Efficient price formation requires that all material supply and demand be visible to the dispatch process. As behind-the-meter resources (such as solar, batteries and EVs) are increasingly deployed by households and small businesses, policy should ensure that price-responsive resources are either directly dispatchable or visible to the market operator. This reinforces a core economic principle of the market's original design: *prices can only allocate resources efficiently when all relevant information is incorporated.*

2. Strengthen forward contract markets

Investment in renewables has increased the proportion of resources that are *weather dependent*. As such, the nature of risk is evolving away from fuel (coal and gas prices) and towards weather patterns. While the system has changed physically in this way, the contracts used to manage price risk have been slow to evolve. But forward markets are central to risk allocation, retail competition and investment. Without evolution, the changing nature of the risks of operating in the spot market cannot be managed in the forward contract market.

The *NEM Review* therefore makes two important recommendations:



- The regular convening of an industry-led contract standardisation design process. This would develop contract products suited to a weather-dependent system, including contracts for energy (i.e. MWh) shaping (i.e. storage) and firming (i.e. continuous dispatchable capacity) services.
- A market-making obligation to ensure minimum liquidity and price transparency for trade in these products.

These measures would support competition and allow risks of spot market participation to be more efficiently managed.

3. Address the tenor gap with targeted intervention

The most significant structural issue identified in the *NEM Review* is the 'tenor gap'. Without long-term contracting, capital-intensive investments in renewables, storage and firming capacity are difficult to finance. The *NEM Review* recommends a new Electricity Services Entry Mechanism (ESEM) to address this gap. The ESEM would:

- Procure long-term contracts for key services (energy, shaping and firming) through a reverse auction process.
- Operate only where private markets cannot provide sufficient contracting depth.
- Issue standardised, tradeable contracts (defined through the contract design process – see above) that integrate with forward markets.

The ESEM would effectively utilise price signals that integrate with forward markets and (eventually) the spot market.



Conclusion: reinforcing the market's original architecture

The *NEM's* core design remains fit for purpose. The central issue is not the spot market, but the weakening of the institutional links that connect spot (dispatch), forwards (risk management) and investment. The *NEM Review's* recommendation restores the coherence of the *NEM's* original design while adapting it to the realities of a weather-dependent, distributed and decarbonising electricity system.

References

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