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Missing money, missing policy and Resource Adequacy in Australia's National Electricity Market

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Paul Simshauser

Australia's National Electricity Market (NEM) has a globally unique design in that it comprises a real-time (5-minute dispatch) spot electricity market with eight co-optimised Frequency Control Ancillary Services markets, with no formal day-ahead or capacity market. A single operator coordinates all regions and all physical markets across the NEMs five 'loosely connected' regions. The NEM has delivered consistent economic and technical performance for two decades, and has been a marvel of microeconomic reform - until 2016/17.

During the 16/17 financial year the NEM Market Operator issued more than 20 Lack off Reserve notices, had three major blackouts in the South Australian region, including a black system event. Futures prices surged to AUD $100+/MWh - more than double the long run average spot price of $42.50/MWh. The NEM was experiencing its first serious episode of the Resource Adequacy problem – that is, adequate plant stocks to ensure a reliable supply. Compounding matters for policymakers were sustained sharp increases in final electricity tariffs in prior periods – viz. 2008-2014 due to problems with regulated networks (gold plating). A politically charged electricity industry inquiry was inevitable. Like most inquiries of its type, some useful policy recommendations emerged amongst the myriad of misguided ones.

To understand what really happened in 2016/17, the analysis must trace back to decisions made over the preceding decade. Structural oversupply, policy-induced new capacity including from a greatly expanded Renewable Energy Target, large discoveries of natural gas, falling system demand and the rapid uptake of rooftop solar PV all combined to produce significant excess capacity. From this point, the 'missing money' commonly associated with energy-only electricity markets progressively accumulated placing enormous financial strains on the incumbent plant stock. Ultimately, it resulted in *plant exit at-scale* with an average notification period of just five months. Almost simultaneously, the implications of missing policy (viz. *climate change policy discontinuity*) crystalised – a distinct gap in the new entrant pipeline. Further compounding matters, this all coincided with the commissioning of 3 x 2 LNG export terminals, the capacity of which exceeded credible gas production thus creating shortages in the market for gas and resulting in the *critical holdup* of gas fired entrants or expansion. The NEM had rapidly progressed from one extreme to the other, excess capacity to energy shortages, and it did so within the space of a year.

The NEM and its inherent design does not require an overhaul. The market performed to specification in that prices reflected supply and demand dynamics. The problems that require policymaker attention include (i) greater transparency over plant exit decisions, (ii) stability vis-a-vis climate change policy and (iii) closer links between gas reserves and approved export capacity developments.

Contact p.simshauser@griffith.edu.au
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