



The regulation of electricity transmission in Australia's National Electricity Market: user charges, investment and access

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Paul Simshauser^{♥♣♠1}

Non-Technical Summary

The creation of Australia's National Electricity Market and the associated structural reforms triggered the separation of transmission from generation during the 1990s. As a product of history, electricity transmission in Australia is organised around state boundaries. Consequently, there are five transmission network utilities matching the five eastern and south-eastern states. Three of the five transmission utilities were privatised (Victoria during the 1990s, South Australia in the 2000s and NSW in the 2010s) while the other two remain state-owned corporations (Queensland, Tasmania).

With respect to the shared network, transmission network utilities are subject to regulation in the form of an 'incentives-based' revenue cap. Once the 'base year' regulated revenue cap is established, subsequent adjustments occur throughout the five-year determination period following Littlechild's (1983) 'RPI-X' approach. Key components of the regulatory framework are described in the Rules which were established during the 1990s, refined during the 2000s and subject to continuous change thereafter. While the Regulator provides additional guidelines on some aspects of the regulatory framework (some of which are mandatory), in practice the AER has very limited ability to deviate from the *highly prescriptive* Rules.

Transmission charges for the shared network are levied on end-use consumers, with shallow power station connection costs paid by generators. Locational signals and investment decisions by generators are influenced by the combination of shallow connection costs, zonal spot prices and more prominently, the NEM's Marginal Loss Factor coefficients.

Investment in the shared network is subject to highly prescriptive Rules. In a 'propose and respond' model, the regulator can only accept forecast Capex if it is satisfied that the in

[♥] Powerlink Queensland.

[♣] Centre for Applied Energy Economics & Policy Research, Griffith University.

[♠] Energy Policy Research Group, University of Cambridge.

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vestment profile submitted reasonably reflects that of a benchmark efficient network business seeking recovery of efficient costs.

Although regulatory determinations approved by the AER contain Capex forecasts, all discrete investments in new transmission assets above a set threshold (currently \$7 million) are subject to a Regulatory Investment Test - Transmission, known as the 'RiT-T'. The RiT-T is subject to a specific objective, viz. to identify the credible option that maximises the present value of net benefits to the market (i.e. generators, consumers and networks as distinct from the broader economy). Such options may also include non-network investments such as embedded generation, demand response or some other offsetting technology although in practice, non-network investment solutions have been rare.

The NEM experienced one episode of network over-investment (viz. 2007-2015) but there is no evidence of regulatory failure per se. Investment mistakes in retrospect were driven by policy error and forecast error – noting this period was preceded by very strong growth in electricity demand, and then coincided with the Global Financial Crisis (2007-2009) and Australia's rapid uptake of rooftop solar PV – the effects of which were virtually unforecastable, ex ante.

From 2015, the regulatory framework proved effective in correcting the 2007-2015 cycle with electricity networks now considered the more stable part of the energy supply chain. However, while NEM regulation has been effective in dealing with episodes of overcapacity, as to whether the rigid and highly prescriptive Rules are capable of dealing with the accelerating task of decarbonisation is an open question. NEM State Governments are legislating outside the Rules to meet their own policy objectives and timeframes.

The strengths of Australia's regulatory framework include:

1. The NEM's institutional design is one of the strengths of the Australian market, and of network regulation. The separation of policymaking (Energy Ministers), rulemaking (AEMC), regulation (AER) and market operations (AEMO) ensures transparency for market participants.
2. The open-source approach to Rulemaking has the beneficial effect of minimising misguided political interference vis-à-vis Rule changes. It also means that Rule changes sought by a market participant (investor focus) can be scrutinised by consumer groups and the regulator (consumer focus), and vice versa.
3. Items 1-2 above provide confidence to institutional investors. There is practical evidence from capital markets which tends to support this statement via observation of Merger and Acquisition (M&A) events. Between 2000 and 2022 there were 37 regulated utility M&A events in Australia with a cumulative transaction value of \$97.9 billion (real 2022\$).
4. Although contentious within Australia, by international standards, the NEM's approach to new renewable Connection and Access *applications* is a strength in that the typical extensively congested 'connection queues' are not observed.

Weaknesses of the regulatory framework include:



1. It is noteworthy that interference by State and Commonwealth Governments in network investment and network coordination has been rising. The rigidity of the current regulatory system, and its ability to satisfactorily deal with current policy objectives (viz. Net Zero policy objectives) is the most likely source.
2. The very strength which provide investors with confidence (viz. institutional design, highly prescriptive Rules) also limits the AER's ability to sensibly adjust in real-time to policy circumstances (a weakness). The AER has been unable to adjust its frameworks and approach to 'net zero by 2050' policies of the Commonwealth and all State Governments. In practical terms, this appears to have dealt the AER out of facilitating market development. The Rules require the regulator to operate as a braking system on network development. State Governments evidently have different policy objectives and accelerated timeframes. As a result, State Governments are increasingly bypassing the Rules with their own State-based derogations for new network investment.
3. Network Tariff Reform was noted as important by the AEMC at least as far back as 2012. World-record solar PV uptake rates makes this crucial. But the political economy of electricity prices and the impact tariff reforms (i.e. winners and losers) has proven intractable in all NEM jurisdictions.

Contact p.simshauser@griffith.edu.au
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