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Renewable Energy Zones in Australia's National Electricity Market

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Australia's National Electricity Market (NEM) experienced a VRE investment supercycle from 2016-2020, comprising 13,000MW of new plant commitments. A number of these projects subsequently experienced significant entry frictions. The NEM's multi-zonal market design and strength of locational investment signals have been queried by policymakers. Yet an examination of the 'majority sources of investment failure' found post-commitment system strength connection lags, system strength remediation, system strength-related curtailment and movements in MLFs to be primarily responsible. NEM locational signals were found to be among the strongest of 12 of the world's major wholesale markets, through zonal price differences and MLFs. Real-time dispatch constraints arising from network congestion are presently a minority source of investment failure.

The common thread amongst the majority sources of investment failure is NEM hosting capacity – perhaps unsurprising given the NEM's transmission network is amongst the longest and stringiest in the world. One novel policy solution currently being explored by NEM policymakers is expanding network hosting capacity by way of special Renewable Energy Zones (REZ). However, the NEM's regulatory framework adopts a narrow view of benefit (e.g. resource costs) when assessing augmentations. Consequently, the 'regulatory triggering' of a REZ is likely to be limited to forecast reliability shortages. VRE developers, customer preferences and jurisdictional governments – driven by environmental considerations vis-à-vis decarbonisation – demand faster action. As is commonly said amongst NEM participants, *'there's no transition without transmission'*.

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Prima face, this tends to suggest policymaking associated with transmission regulatory benefits needs revision. The NEM's principal State Governments (Victoria, New South Wales and Queensland) have recently devised their own REZ policies which side-step imperfect regulation and regulatory lag. NEM Rules largely accommodate the possibility of a market REZ (albeit with minor modifications possibly required) and this may be preferable in the first instance due to the superior allocation of risk.

Analysis in this article analyses the prospect of market-based REZs developed by a (bounded) *risk-seeking*, *anticipatory transmission network planner*. Benefits of a market REZ over regulatory solutions includes speed of adjustment (given regulatory lag), and a superior allocation of investment risk (to proponents rather than franchise end-use consumers). A market REZ developed under uncertainty and underpinned by the sale of radial property rights, allocated on a subscription basis at planning timeframes in an otherwise open access regime.

Central to the market REZ was the nature, source and structure of capital deployed. An oversized concessional mezzanine debt facility ('Super Mezz') was demonstrated to provide the market REZ with a pliable and low-cost funding source. A pliable coupon rate delivered necessary 'financial breathing space' required by a (bounded) risk seeking, anticipatory transmission planner.

Regulatory processes run at half the pace of merchant markets. Regulated augmentations are dominated by reliability-driven investments. Consequently, relying on a centrally planned REZ may stifle opportunity through regulatory lag, and plausibly do more harm than good if they have the effect of delaying proceedings relative to the decarbonisation objectives of Australia's jurisdictional governments, the *'ESG'* appetite and imperatives of Australian corporates and VRE developers.

With jurisdictional renewable targets of 50% by 2030 and an existing renewable market share of ~20%, a sophisticated, risk-seeking anticipatory transmission planner should expect good returns given their understanding of local network capacity and their unique line-of-sight over the universe of VRE development proposals (i.e. the first meeting a VRE developer typically organises for a new project is with the transmission network regarding grid connection). Conversely, the same anticipatory transmission planner may find their risk appetite wanning when renewable market share approaches 50% in the absence of more ambitious targets, in which case refining regulatory frameworks may become important.

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