

# Renewable Energy Zones in Australia's National Electricity Market

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**Abstract** Australia's National Electricity Market operates in one of the world's longest and stringiest transmission networks. The 2016-2020 investment supercycle, in which 13,000 MW of renewables were committed, is slowly revealing the limits of network hosting capacity for renewable plant. In this article, side-effects arising from the supercycle are analysed. The majority sources of renewable investment failure relate to deteriorating system strength, viz. associated connection lags, remediation and curtailment costs. Although a multi-zonal market, the NEMs locational investment signals remain visibly strong. A change to nodal arrangements may refine dispatch efficiency but the bigger policy problem is rapidly diminishing network hosting capacity for new renewables, imperfect regulation and regulatory lag associated with augmentation. Markets participants seek to move faster than regulatory frameworks allow. Renewable Energy Zones (REZ) are examined through both i). a consumer-funded regulatory model and ii). a renewable generator-funded market model. A 'super-sized concessional mezzanine' facility is presented as a critical element of REZ capital funding. It forms the means by which to optimise market-based REZ transmission augmentation and moderate sponsor risks of transient underutilisation.

**Keywords** Electricity, Renewable Energy Zones, transmission investment, locational investment signals

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