DRAWING INSIGHTS FOR NEW ZEALAND'S ELECTRICITY MARKET FROM THE AUSTRALIAN EXPERIENCE

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Overview

The New Zealand Government has a goal of a 100% renewable electricity system by 2030. Demand is expected to grow strongly over the next 3 decades as the economy electrifies. We review current market arrangements in New Zealand and argue that there are problems with it including coordination issues, barriers to retail entry, wholesale market power, limited solar PV rollout and not enough policy to realise New Zealand's climate change ambitions. We review the Australian experience, particularly the extraordinary rise of solar PV, as well as direct government procurement of renewable generation and batteries to achieve climate change goals. We use the lessons learned here to propose several policy options for the New Zealand electricity markets to accelerate the rollout of PV rooftop solar, reduce wholesale and retail market power, reduce consumer prices and ensure that New Zealand achieves its 100% renewable electricity target at least cost.

Methods

Current Market arrangements for the New Zealand Electricity Market are reviewed critically. We argue that the current energy-only market with light-handed regulation is not fit for the purpose of enabling the large-scale deployment of wind and solar generation needed to achieve the 100% renewable target. Market power in both the wholesale and retail markets is identified as a serious issue. There are no policies to encourage renewables, including rooftop solar PV, which is seen as problematic. Current investment by the existing oligopoly is nowhere near enough to be on track to achieve the path of renewable generation targets. There should be clear policies to commission the required new build renewables at optimum locations and an optimum mix of solar and wind. New transmission builds must match the new generation as part of the strategic plan to best use available resources. We describe the new electricity market policies in the Australian states, particularly Victoria and New South Wales. We also analyse the subsidies for solar PV uptake in Australia which have achieved remarkable success in achieving high solar PV penetration. We looked at the potential for solar PV generation in New Zealand and found that it is close to that seen in coastal cities in Australia.

Results

Several critical takeouts from the Australian experience are salient to the New Zealand Market.
The first is that policy support for solar PV has dramatically impacted two levels: utility-scale and small-scale distributed generation, with the latter outpacing the former.
The second is that Australian state governments are directly involved in driving generation investment, with large amounts of wind and solar procured by auctions for utility-scale intermittent renewables and Li-Ion batteries, which are expected to increase dramatically to achieve ambitious climate targets, and with the governments of Victoria and NSW establishing new power corporations (majority owned by the State) to play a substantial part as market participants.

We suggest the creation of a new government-owned entity, which we will refer to as the Electricity Corporation of New Zealand (ECNZ). ECNZ would auction off the required new build of transmission, utility-scale generation, and battery storage every year, with a preference for generation in locations identified by a strategic plan to be mapped out by Transpower or the Ministry of Business Innovation and Enterprise. The new build with current technology would be either grid-scale solar or wind, with separate auctions for each. Because electricity is a joint product, optimising the transmission network with location and new generation type makes sense.

In addition to ensuring the required investment, public procurement will likely put downward pressure on electricity prices if the auction prices align with those seen in Australia. The government should be able to procure enough new supply to drive average spot prices down to the LRMC of the new build – somewhere around NZ$50-$60/MWh. By comparison, the average spot price over the last few years has been between $100-$150 MWh.

The systematic promotion of rooftop solar power in New Zealand seems justified based on the Australian evidence that policy support has helped develop a popular, cheap, and adequate supply. The same should be possible in NZ, considering its comparable resource availability, housing stock, and electricity prices. An additional rationale for policy support for rooftop solar would be as a much cheaper alternative to public (consumer) funding for Pumped Hydro Storage (or other storage), and one which is likely to be far more effective per MWh of (firm) clean energy supply. companies. We also suggest a government subsidy of $4000 a year for a 5kW system with a sliding scale depending on the size and some support for Feed Tariffs.

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Conclusions

New Zealand has the opportunity to achieve its climate change goals with lower prices and less misuse of market power by moving away from the energy-only spot market as the main driver for investment to a planned procurement process through competitive auctions for renewable generation and storage and support for a substantial build of rooftop solar. Starting from a hydro-dominated system with plenty of diurnal and seasonal storage capacity, rooftop solar on customers' premises should be by far the cheapest source of new production. It would significantly increase the value of the existing hydro storage capacity, providing benefit also to the existing owners.

The new wholesale market design with direct government auctions we propose would help New Zealand achieve its climate goals at the least cost. The accelerated rollout of rooftop solar will put downward pressure on prices, restore market agency to households and small business users, and reduce the need for substantial grid investments. The changes in the market design will also provide investment certainty and will mean the government can be sure of meeting its climate ambitions. Market power will be substantially reduced in both the retail and wholesale markets. At the same time, the complex issues of balancing distributed against central generation and intermittent renewables against firm backstop capacity can be addressed by learning the lessons from Australian states such as Victoria and South Australia, which are much further down the path to 100% renewable electricity.