

## Solar + Storage = long-term cap on electricity prices

Potential bidders for the NSW 'poles and wires' privatisations are likely spending their days and nights pouring through regulatory decisions and developing plans to adjust to the recently imposed cuts to capital expenditure, operating costs and allowable returns over the period to 2019. However, they might be better served looking a bit further over the horizon.

Electricity distribution and transmission networks have historically been an attractive regulated monopoly business. They don't generate electricity and they don't deal directly with 'pesky' customers. Instead, they provide the transmission and distribution networks that transport electricity that someone else has generated to end-users. Their customers are the electricity retailers – which pass on the cost of network charges to users.

Their revenue model is reasonably straightforward. The regulator estimates the cost of efficiently running the network, which forms the allowable revenue base. These costs include both operating expenditure, as well as a 'fair' return on the capital cost of the network. In simplistic terms, this revenue is then divided by the amount of electricity that flows through the network to give the charge for use of the network. For residential customers these charges account for around half of their total bill.

Under this model, on the surface, the network businesses don't care how much power flows through their networks, how much it cost to generate, or even what retail customers pay for it. Rather, their main focus is on what revenue does the regulator allow them to charge.

While the recent AER decisions are painful, and involve large cuts to allowable operating expenditure and the weighted average cost of capital (WACC), potential bidders probably see these effects as transitory. That is, it will take time to reduce the network's cost base to match the regulator's requirement, but once this is done, it won't have an ongoing impact on returns.

Similarly, while the regulator's decision to adopt a return on equity of 7.1% is unappetising – particularly given that most infrastructure investors have return targets closer to 10% - they will take comfort that this estimate is based on a risk free rate of 2.55%. They would also hope that the next regulatory reset, in 2020, would occur in a period of more 'normal' interest rates and, hence, the WACC would be revised up.

Under the current framework, higher interest rates at a future regulatory reset mathematically feed into higher network charges. For example, if interest rates were 2% higher, which is quite possible, this would push network charges up by around 15%. In theory, the networks have a monopoly over an essential asset, and while there is much gnashing of teeth by the public, the networks would get to boost their returns. However, as the old saw goes, in theory there is no difference between theory and practice. In practice there is.

The absolute monopoly enjoyed by electricity networks is under threat. Solar generation and battery storage systems have fallen in price such that they are increasingly competitive with grid-based electricity. For example, Origin has a solar as a service offering where they install solar panels on your home/business and sell you the power generated at 11 cents per KWh under a 15 year contract. This is 30-70% below grid-based retail tariffs. This pricing would be below the network charges in some jurisdictions.

While I don't think that the majority of households will disconnect from the grid, an increasing proportion of customers will source a large fraction of their electricity usage from solar. Increasingly, this will include afternoon/evening use through stored solar power. This won't be because of government subsidies, but rather because the cost of solar has fallen such that, for day-time use, it is now fundamentally cheaper than grid provided power.

This creates a medium-term challenge for the networks. While they enjoy a monopoly over their component of the supply chain – the entire supply chain is under threat from new technology. Solar and storage will place an effective cap on electricity prices. A cap that will fall as the technology continues to scale up and system costs fall. This cap will place a practical limit on future electricity price rises.



While there is potential for networks to mitigate this impact through higher connection and other fixed fees (allowing them to reduce per KWh charges) – so called tariff reform – this will not be easy. Higher connection charges will be unpopular with the community – they will disproportionately affect the elderly and the poor. Furthermore, existing solar PV costumers, whose ‘savings’ would be undermined by an increase in fixed charges, would powerfully resist wholesale changes. For example, the AER has just rejected a plan by SA Power Networks to charge solar PV customers higher fixed connection fees.

For myself, there is no doubt that substantial regulatory reform will be required in order to ensure the sustainability of the network. However, whether this reform will be pragmatic and strategic, and thus occur sufficiently in advance of market structural change, is a key question. If the network is considered too large relative demand/customers at some point in the future, another question is who bears this cost – network owners through a write –down or customers through excessive charges? The lag time between the announcement of the need for reform, and the actual reform itself, will also have a dramatic impact on valuations in the intervening period.

All of this highlights the challenges of valuing a 99 year lease in the context of declining demand and technological disruption.