

## When power becomes a worthless by-product – peculiar incentives from the Renewable Energy Target

Now I have got your attention with some “click bait” – sorry – I would like to raise some potentially odd outcomes from the current policy settings for renewable electricity. Renewable power stations (i.e. wind or solar farms) earn their returns through two revenue streams:

- the electricity they produce, the so called black power, which is valued/traded the same as any other electricity (including power from conventional generation sources); and
- the sale of large scale generation certificates (LGCs) – the so called green revenue. Under the Renewable Energy Target (RET) legalisation retailers are required to surrender a certain number of LGCs for each MWh of power they sell to end-users. This creates demand from retailers to buy LGCs from renewable generators.

The last year has seen wind power generation costs fall and the value of LGCs soar. It has now reached the point where the long-run production costs of wind are approximately equal to LGC prices. For example, Hornsdale windfarm just entered into a 20 year contract for difference with the ACT Government at \$77 (fixed nominal). This almost exactly matches the current spot price (\$74.50) and futures prices a dollar or so higher each year out to 2020 – where the futures price is \$82.50.

This means a windfarm could hypothetically cover its costs (including a return of capital) from just the sale of LGCs with no reliance on the black power revenue.

That is, electricity would be a worthless by-product!

This is an odd outcome – and it is hard to think it makes economic or environmental sense. In my view it is a symptom of a sub-optimal set of regulatory arrangements.

A few observations:

- It is likely that a portion of the current spike in LGC prices reflects a short-term squeeze between the ramp up of RET requirements and the dearth of new renewable development during the Abbott government. That is, the long-term LGC price (say over 20 years) is lower than the current spot price or the futures price over the next 4-5 years. While this may be the case – maybe the long-term price is only \$60 or so (and there haven't been many long-term LGC offtakes from retailers at the moment). However, it is undeniably the case that the vast majority of the levelised cost of recent wind developments is being delivered by the LGCs produced, not the electricity generated. This has important implications – it means that projects are being selected on the basis of maximising generation rather than maximising the value of the power generated (for example, by optimising the location of generation or the time of supply).
- The RET arrangements, and increased wind generation in particular, have seen an increase in the number of periods with negative pool prices. That is, points in time where generators pay for the right to produce electricity. Historically, these periods had been quite unusual and had generally arisen due to fluctuations in demand not being able to be easily met by the ramp-up/down capacities of coal fired generation. For example, you might have a situation where demand is expected to peak, with coal fired plants ramping up production to meet this peak and, in the short run, this creates an excess supply of electricity that drives the price negative. In these circumstances negative prices could occur, but they tend to be modest, rare and brief. For example, in South Australia, between 2005-07 and 2007-08 there were an average of four negative trading intervals per year. By contrast, between 2008 09 to 2012-13, when installed wind capacity had more than tripled from circa 400 MW to circa 1200 MW, the number of negative price events averaged around 100 per year. These events typically occur in the middle of the night when demand is low, which is also when most wind generation is at its maximum. Why would a producer keep producing when prices are negative? Wind farms can be



incentivised to keep producing even when prices are negative, because if they don't, they miss out on the LGC revenue.

The RET was initially intended as a stepping stone on the path to a carbon price. It works OK when renewables are a small share of total generation. However, it is the wrong policy for decarbonising the electricity system. The RET rewards cheap renewable generation. However, it doesn't distinguish when, or where, that renewable generation occurs. What we need is a system that rewards the delivery of the electricity consumers and businesses need without the carbon pollution. While this sounds similar – the outcome is very different.

While participants need to work within the rules set by government – we would encourage participants to recognise that rules can change and one of the catalysts for change can be perverse outcomes.