

Tom King

## Batteries have been the missing link for renewables

Nanuks CIO, Tom King, believes that batteries have potential to change the world. While there is an uneasy debate in Australia between different sides of the climate debate, it is getting easier to mount a case against building anymore coal-powered electricity plants.

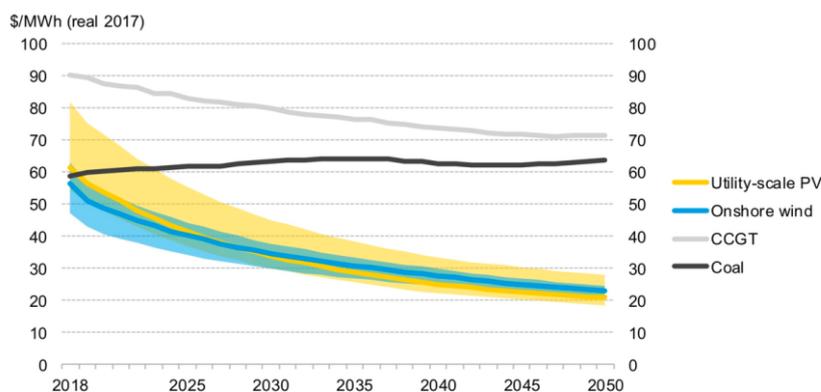
Tom says any deeper discussion about batteries must also include talking about the lower production costs for renewables, energy storage and the surge in new electric vehicle models across nearly all car makers.

The key reason he is so confident in the growth in renewables, electric vehicles and energy storage is the evidence of cost reductions that are extremely likely to continue at similar rates into the future.

“In the last 10 years the cost of wind turbines (measured in EUR per MW of generating capacity) has come down by 30-40%. At the same time improvements in technology have improved the operating performance by a similar amount, allowing turbines to operate over wider wind ranges, more efficiently and with less downtime. The unsubsidised cost of solar and wind power are dropping. Solar now wins as the lowest cost of new generating capacity in many parts of the world. Similarly in regions with good wind resources wind is now the cheapest source of new generating capacity, with a cost of around 4c/kWh – cheaper than our wholesale power prices in Australia.”

Already in Australia, we have 1-in-5 houses having a rooftop solar which translates into nearly 3 million solar systems. That is as high as anywhere in the world and translates to around 1 solar panel per Australian.

Chart - Cost of New-build Generation in China (USD 2017 real)

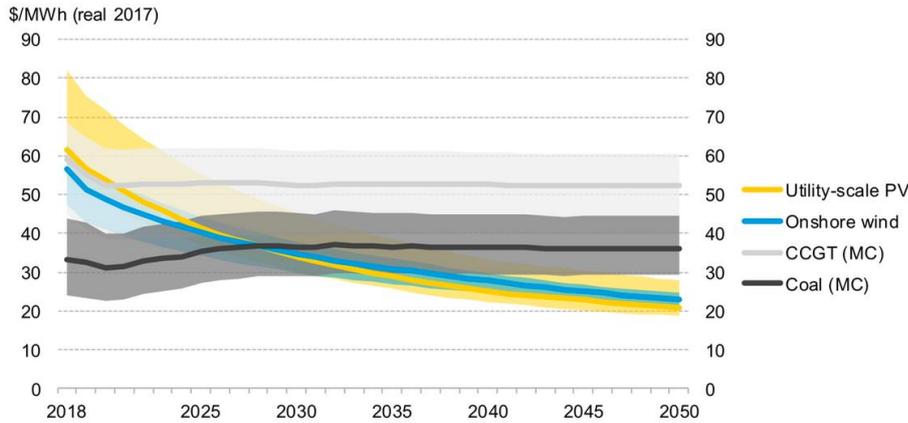


Source: Bloomberg New Energy Finance

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To put that into perspective, this chart shows the cost of electricity generated from newly built wind (blue) and solar (yellow) generation versus the cost of new generation from coal (black) and gas (grey) in China.

Chart - Cost of new Solar and Wind generation vs existing Coal and Gas Generation in China



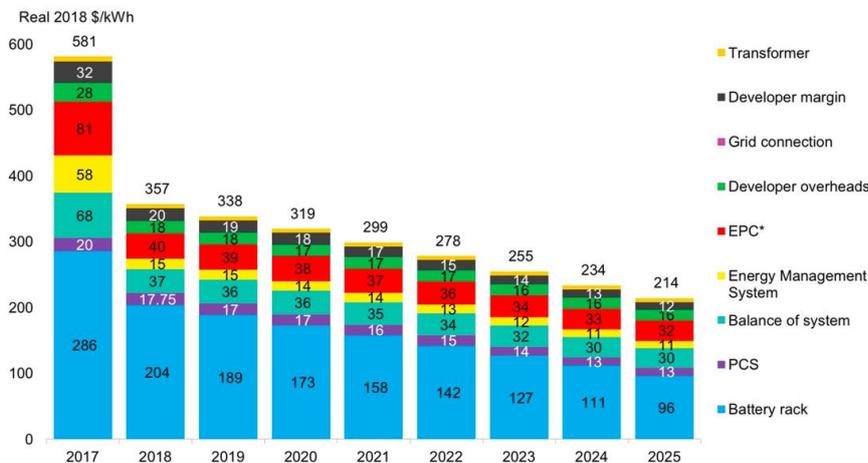
Source: Bloomberg New Energy Finance

Tom King thinks this chart has significant implications for the new coal power station argument.

“This next chart is more profound. It shows the cost of new solar and wind generation (same as previous chart) vs the cost of operating existing coal and gas generation in China. As you’d expect the variable costs of operating existing coal and gas are cheaper than renewables today. However, by the mid to late 2020s it is likely that it will be cheaper to build new wind and solar generation than continue to run existing coal and gas generation. The obvious objection to displacement of coal and gas is the inability of renewables to provide reliable round the clock electricity – which is where storage is so important. Historically storage has been far too expensive to provide a viable means of solving that problem – but that is changing very quickly,” said Mr King.

Storage is getting cheaper as technology improves batteries and mega factories are built. The cost of lithium ion batteries has fallen by over 80% since in the last decade, at around 20% per annum.

Chart - Energy Storage System Capital Cost (20MW/80MWh System)



Source: Bloomberg New Energy Finance

Reductions are likely to continue at this type of rate.

Tom King – Chief Investment Officer, Nanuk Asset Management