From: Ben Cosh [mailto:ben.cosh@tgcrenewables.com]
Sent: 05 May 2015 12:50
To: 'communications@theccc.gsi.gov.uk.'
Subject: 5th Carbon Budget Call for Evidence

Hi,
Thanks for providing the opportunity to provide evidence into this process.

TGC is a renewables company with experience of over 150 projects in the UK. These include wind and solar, but also peaking plant and storage solutions.

Question 5. In the area(s) of your expertise, what are the opportunities and challenges in reducing emissions to 2032, and at what cost? What may be required by 2032 to prepare for the 2050 target, recognising that this may require that emissions in some areas are reduced close to zero?

The impact of solar on total system costs is not yet clearly understood. It needs to be properly modelled. By analysing electricity prices, you can see solar has already reduced the cost of wholesale electricity by taking around £6/MWh off the summer peak / base load spread.

Just like mobile phones or laptop computers, solar's costs keep coming down, and CFD clearing prices for deliverable solar projects are expected to be in the low £70s/MWh for the 2015/16 auction, with around 1 GW of PV easily beating onshore wind. After the initial 15 years of operation under CFDs, a typical solar module will have 25 yrs more life, generating electricity at near zero marginal cost. This will further reduce the wholesale cost and additionally reduce the retail cost of electricity without increasing the levies paid by consumers for CFDs.

Its worth comparing this to nuclear which has a longer CFD at a higher price, and will continue to burden consumers for long after PV is generating free electricity.

Over £5b of investment has been made into electricity storage technologies by VCs in the past few years. Even at today's pricing, the technology is almost viable (just look at Tesla's latest announcements) so as the peak base load spread continues to reduce it is highly likely that the daily arbitrage market will develop – buying cheap solar electricity and selling it into the peak demand markets in the evenings. Clearly, even at British latitudes, 100% of summer demand could easily be met by solar + storage at a price which competes with nuclear + gas.

Furthermore, the capacity auctions showed there is a huge amount of standby generation already deployed, and capable of being used as peaking plant generating during winter evenings. There is no argument that solar pushes up the costs of the capacity market.

These technologies have repeatedly shown their ability to reduce costs and deploy faster than civil servants predict. Rather than extrapolating today's costs with feeble 10% learning rates, it would be more enlightening to follow the USA's sun shot initiative and establish the ambition - what cost do these exciting technologies need to be by 2020 & 2030?

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