

Aurora Blog

The UK energy industry is grappling with a deceptively simple, but potentially intractable problem

On Tuesday, 20 March, Aurora Energy Research, the leading energy market intelligence firm, held its annual [Spring Forum](#). The Spring Forum, a key fixture in the energy industry's calendar, brings together senior business leaders to discuss and debate the big issues facing the global industry. This year's Forum focused on 'Navigating the Global Energy Transition' and one of the lead themes was subsidy-free renewables, and the transformative effect this will have. Hugo Batten, Aurora's Head of GB Renewables offers his insights on this important topic.

Renewables have become very cheap – depending on how you do the calculations, cheaper than new build CCGTs. Therefore, they should be able to be deployed 'subsidy-free'. Indeed, we have seen a few, relatively small projects, which have taken the wholesale market price risk and been deployed without subsidy in the UK. But the more renewables we deploy, the more those renewables 'cannibalise' their own capture prices. In economic models, where we often assume rational actors with perfect foresight, renewables should build only to the extent that price cannibalisation prevents the additional marginal unit of new build renewables from meeting their required rates of return and all the existing assets proceed to make a sensible return for their investors.

In the real world, there are two very sub-optimal, potential alternative scenarios.

The first scenario is that renewable investors think price cannibalisation is too much of a threat, and the nascent subsidy-free renewable model never really gets going. We then end up in a world where we have less renewables than we should, or we require subsidies from the government forever to deploy renewables (subsidies that often act in subtle ways to distort energy markets).

The second (but less likely) scenario is that renewables do take off subsidy-free, but that we overbuild and renewables investors get burnt when the capture prices for their assets fall and they do not make sufficient returns. This would scar the industry and stifle subsequent renewables investment for a long time.

This is the problem described in its very simplest terms. There is a lot of complexity that can be layered over this that makes identifying solution even harder. How do cheap lithium-ion batteries help stabilise solar capture prices? Should subsidy-free renewables be rewarded for their contribution to security-of-supply in the Capacity Market? And how should they be de-rated in the Capacity Market?

How can wind be remunerated for potential contributions to balancing and ancillary markets? Should government offer less distorting 'zero-subsidy' CfDs to support renewable build-out? The list goes on.

There are a few archetypal responses from the industry when answering these issues, many of which were vigorously debated by delegates at Aurora's annual Spring Forum this year.

The most direct view is that all energy generation has some form of 'subsidy' and that we should continue to support the build-out of renewables by letting government deal with the price-risk indefinitely. This was expressed by a number of senior industry figures at the Forum.

A more techno-optimist view is that by pairing renewables with cheap batteries (for solar) or flexible gas (for wind) we can 'firm-up' renewable production and that these hybrid solutions will become more economic as flex and renewable technology costs continue to decline.

The investment bankers are looking for financial solutions to mitigate price-risk, in particular by developing a deeper and more liquid PPA (Power Purchase Agreement) market, or, allowing renewables to 'revenue-stack' between markets.

Getting this right is a big deal – Aurora's analysis indicates subsidy-free renewables could reach up to 18GW potentially by 2030 in GB alone (over-and-above subsidised renewables), and over 60GW across North-West Europe (which would equate to a £56bn investment opportunity).

Aurora is making its contribution to addressing this issue by developing robust 'Worst Case Scenarios' by renewable technology type. Aurora has analysed critical risks across several markets from commodity price falls; to the impact of future renewables deployment; to the amount of flexibility on the system; to the impact of EVs. By quantifying these risks and understanding how they interact, it is possible to establish a genuinely 'Worst-Case Scenario' for capture prices and hence returns – a benchmark for renewables capture price to use in debt financing and PPAs, which are critical in unlocking the investment opportunity.

The ultimate solution is likely to involve a mixture of all of the potential approaches outlined here, supported by rigorous analytics that captures the full complexity of GB and North-West Europe's energy markets.

It remains to be seen where we will be next year, and what our topics will be at next year's Forum!