

Competition, contracts and auctions for renewable electricity support: Competition for the market but not yet in the market

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Stephen Littlechild's many duties as the first Director-General of Electricity Supply was to oversee a series of auctions for renewable generators in the first of the UK's four schemes for supporting low-carbon generation. This landmark support scheme that enabled competition for the market pre-dated the subsequent immensely successful spectrum auctions of 2000. These early auctions witnessed rapid cost falls but failed to deliver adequate volumes. They were replaced in 2002 by a demand-driven market-dependent Renewables Obligation scheme – a premium support that delivered greater volumes but at high cost. Continental feed-in tariffs demonstrated the lower cost of fixed price contracts, a form of which, Contracts for Difference with Feed-in Tariffs (CfDs with FiTs) were introduced after the third reform of British electricity markets in 2014. These reverted to setting prices by last-price auctions, after an initial round in which strike prices were set administratively.

The competition for the market delivered by the CfD auctions led to falling prices but the contract holders failed to engage in competition in the market. As Renewable Electricity Supply, RES, penetration increased and transmission investment lagged, constraint and redispatch costs escalated, leading to the Review of Electricity Market Arrangements in 2022, since when the Government ruled out locational and zonal pricing. This paper surveys Britain's attempts at delivering adequate volumes of RES at an acceptable system cost, and suggests how they can be improved.

The 2022 energy crisis delivered entirely unjustified windfall gains to premium support schemes (and to nuclear power), and encouraged a rethink on RES support by the European Commission. EU Regulation 2024/1747 noted that the energy crisis revealed shortcomings and unexpected consequences. It concluded that public support schemes should be voluntary two-way CfDs and holders should participate efficiently in the electricity markets. UK CfDs by now meet almost all of these requirements. They are voluntary and two-way and since 2020 CfDs receive no difference payments when the Intermittent Market Reference Price is negative. NESO should ensure that balancing market payment never exceeds the strike price.

In Britain, replacing fossil generation by VRE located in very different places and often distant from demand has caused a rapid increase in congestion, demands for new transmission links

and a growing urgency to provide better locational guidance for investment, dispatch, and balancing the system in real time. As CfD holders are guaranteed firm access to the grid and are compensated if constrained-off, they have guaranteed revenue for their output to 15 years, over-encouraging distant high resource and often congested locations. This is serious as curtailment rates of grid-connected windfarms are rising rapidly. In 2023 all curtailment occurred in Scotland where of the potential 80 TWh that might have been produced, 10 TWh was curtailed but compensated by consumers. Some wind-farms were curtailed half the time, doubling the cost of delivered power.

Now that the Government has ruled out locational price signals, guiding efficient location and operation needs alternative solutions. The simplest is to grandfather all existing annual Generation Transmission Network Use of System charges and offer carefully designed forward-looking long-term contracts for new connections. Firm access and locational transmission pricing can work if support is suspended in negative price periods and transmission charges for new entrants are based on marginal expansion costs. The proposed new subsea HVDC links from Scotland would require new windfarms to have capacity factors of 50% to compete with windfarms in England of 34% capacity factors, while onshore links would deliver at current modest transmission charges. That should redirect new RES to less constrained areas, even where they have lower capacity factors they would deliver power at lower total system cost.

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