



The Forward Market Dilemma in Energy-Only Electricity Markets

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Fixed price two-way Contracts-for-Difference (CfDs) have become a core part of the Government toolkit for pursuing decarbonisation targets in the electricity sector globally. The use of CfDs has been highly successful in facilitating new VRE plant entry, replacing traditional baseload coal generation. Fixed price two-way CfDs originated by governments are typically ‘off-market’, meaning their capacity does not enter the over-the-counter forward markets. The resulting increased use of fixed price two-way CfDs could have adverse impacts on forward market depth and liquidity.

A liquid forward market for derivatives is a crucial design feature of energy-only electricity markets, particularly those with high price caps such as Australia’s National Electricity Market. Hedge contracts provide the link between new entry and secure revenues for the financing of plant construction. More crucially, forward markets form the basis for risk-neutral and risk-averse energy retailers to manage price risk associated with customer loads.

This article assesses whether and how baseload coal exit, driven by an increasing market share of VRE underwritten by government-initiated (i.e. ‘off-market’) two-way fixed price CfDs, could lead to shortfalls of ‘primary issuance’ hedge contract capacity. Such shortfalls may arise either due to perceived risks of double hedging and paying out twice under a fixed price structure, or because the auction design (by providing a floor on returns) unintentionally encourages active spot market exposure by renewable entrants rather than hedging by successful auction participants.

The structural issue for projects from fixed price two-way CfDs arises because renewable projects cannot ‘double hedge’ (i.e. where a project sells its capacity via a government-initiated CfD, it cannot hedge the same output twice via an on-market run-of-plant PPA). Whilst the forward sale via an on-market PPA is desired from a forward market perspective, the potential volatility to a project’s revenue could result in financial distress.

In this article, each mainland region of the NEM’s forward market is modelled as a non-connected system to determine impacts of two-way fixed price CfDs on forward market liquidity. CfDs were used to increase VRE market share and subsequently coal plant exited the system, with some new firming capacity also being added. Two model results were shown for each region. The first results set observes VRE capacity entering via off-market government-initiated CfDs. In the second set of results, VRE enters via on-market run-of-plant PPAs.

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The first set of results for each region (off-market CfDs) showed significant shortfalls of primary issuance hedge contracts across NEM regions. This indicated that forward market liquidity was likely to decrease. This would leave second-tier non-vertically integrated retailers without adequate hedge contracts.

The second set of results (on-market PPAs) showed no shortfalls in primary issuance hedge contracts. Shortfalls were mitigated as PPAs were able to be recycled in forward markets. Importantly this should allow second tier non-vertically integrated retailers continued access to hedge contracts and avoid over exposure to volatile spot markets.

These results reaffirmed CfDs use as a highly effective tool for increasing VRE market share to meet decarbonisation policy goals. However, careful thought must be made towards the follow-on implications of CfD transaction design. Some form of CfD-recycling seems crucial to ensuring a liquid primary-issuance hedge market. Certain jurisdictions are considering these implications and have already begun implementing contracts or policies which encourage forward market participation. Examples come from New South Wales and the Commonwealth of Australia's use of revenue collar products, and France's retailer contract guarantee.