

On the impact of government-initiated CfD's in Australia's National Electricity Market

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An intriguing characteristic of Australian energy market policymaking is the almost exclusive focus on spot market dynamics. With few exceptions, the policy development cycle displays a virtual disregard for, and of, the power system's financial markets. At one level this is understandable; the spot market is where real-time supply and demand is balanced, and is easier to grasp. In contrast, the forward markets and their endless array of derivative instruments are *horribly complex*. Yet the irony is that forward contract prices, not spot prices, form the defining wholesale price input to end-user tariffs.

In Australia, a number of State and Territory Governments have recently stepped into the forward markets by originating long-dated "Contracts-for-Differences" or CfDs to facilitate new plant entry – mostly renewable plant. The Commonwealth is also planning to do so. At their core, CfDs are a form of forward contract in which a government sets a fixed price for the output, which has the effect of shielding power plant investors from the vagaries and volatility of spot electricity prices (and in the case of renewable plant, the price of carbon and/or Renewable Energy Certificates).

Used judiciously, government-initiated CfDs can be shown to play a legitimate role in dealing with energy market failures relating to 'missing' and 'incomplete' markets (e.g. carbon markets and liquid PPA markets, respectively). They represent a reliable means by which to deliver generation plant capacity that, for whatever reason, the market is failing to deliver. Government-initiated CfDs have the effect of diversifying demand-side forward market liquidity and in doing so bring about certain short run benefits. CfDs can 'prime' a market, facilitate state development, and by adding new supply holding all else constant, can reduce spot prices and CO₂ emissions.

But what happens when CfDs are not used to 'prime' a market, but rather, are used to replace the market – that is – replace broad-based market mechanisms to meet policy objectives and in turn drive non-trivial levels of (off-market) entry?

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Government-initiated CfD programs can be expected to be successful in facilitating new plant entry, and this will drive the exit of aging coal plant. But when coal plant exit, they cease offering forward contracts. These forward contracts are used by energy retailers to

hedge customer loads and provide customers with fixed prices. New plant entering via government-initiated CfDs cannot sell their output twice. Consequently, while government-initiated CfDs have the effect of diversifying demand-side forward market liquidity, they simultaneously extract supply-side contract market liquidity.

In this article, the impacts of a *wide-ranging* program of government-initiated CfDs on power system financial markets are analysed. Power system modelling demonstrates that a wide-ranging program of government-initiated CfDs has the potential to damage the power system's financial markets because the policy will necessarily result in off-market CfD instruments progressively forming a larger share of the forward market, while primary-issuance hedge contract supply will shrink as merchant plant are forced to exit. In the long run, hedge contract supply shortfalls are predictable.

In a market characterised by falling liquidity, proprietary traders and independent energy retailers can be expected to close out forward positions, not open new positions. The reason they exit markets with falling liquidity is to avoid being caught with unwanted hedge contract inventory, or unmanageable spot market exposures. A wide-ranging program of government-initiated CfDs can in turn (unintentionally) foreclose non-integrated independent energy retailers who rely on the forward markets to hedge their customer loads. Viewed in this light, such a policy can be (unintentionally) anti-competitive.

The South Australian (SA) region of the NEM has experienced an episode of hedge contract supply shortfalls during 2016-2018 as renewables entered, and coal plant exited. Run-of-plant PPAs and some government-initiated CfDs (ironically by another government) were not good substitutes for the swap contracts once provided by exiting thermal plant. Some traders and independent retailers closed their SA positions.

The surprising sophistication, and level of energy market literacy now displayed by large Industrial (manufacturing) customers in South Australia explains how the SA market adjusted to the shortfall. When hedge contract prices and premiums rose sharply, contract volumes and premiums were rationed across the SA power system

according to segment-level price elasticities of demand. That is, end-user tariffs in the residential and SME consumer segments rose in line with elevated contract premiums, while any hedge market shortage was largely absorbed by Industrial customers, many being needlessly forced into accepting some level of risky spot market exposure. In many cases, these exposures remain suboptimal and unwanted.

A wide-ranging program of government-initiated CfDs introduce large numbers of quasi-market participants (i.e. the holders of CfDs) – quasi in that the CfD protects the power plant owner from price, volume, policy and credit risk through the credit-wrapping undertaken by taxpayers. CfD auctions can result in plant capacity that is poorly timed, poorly sized and

poorly located because ultimately, a central buyer (i.e. government) are remote from power system operations and power system consumer hedge contract requirements.

Used carefully and judiciously, CfDs present policymakers with a reliable tool which can be used to overcome an array of targeted market failures, including those associated with missing or incomplete markets (emergency plant for security of supply reasons, certain positive or negative externalities including CO2 emissions, priming markets, R&D and externalities arising from first-of-a-kind commercialisation investments). In the NEM, targeted CfDs have been used effectively by State Governments to 'prime' emerging markets, navigate Commonwealth Government policy discontinuity, with material on-market transactions following.

But a wide-ranging program of government-initiated CfDs can be expected to impair market efficiency because it replaces on-market transactions. No matter how *well-designed* and *well-resourced* a wide-ranging program of government-initiated CfDs may be, it can be expected to do material damage to the power system's financial markets by creating hedge supply shortages, thus raising forward contract prices above the efficient level, needlessly forcing the most price-sensitive (manufacturing) customers to accept some level of risky spot price exposure, unintentionally foreclose 2nd tier retailers and replace well-functioning forward markets with quasi-market participants who are indifferent to the physical and financial outcomes facing market customers – all of which can be expected to harm consumer welfare in the long run.

If there is an upside, it is that the number of policy instruments available to government to achieve policy objectives has expanded rapidly. For the NEM the *National Energy Guarantee*, with its acute focus on the critical role that forward markets play, is a good place to start.

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