Contracts for Difference Explainer

Routes to Market Series

- **Part 1—Contracts for Difference explainer**
- Part 2—Contracts for Difference Allocation Round 4 update

ITPEnergised (ITPE) has undertaken a review of Contracts for Difference (CfD) in this paper – part one; and the upcoming Allocation Round 4 (AR4) consultation and proposed changes, which will be in part two, to follow.

This 2-part series is targeted at funds, utilities, developers, policy makers and network companies who would like to:

- **Understand the CfD mechanism at a high level;**
- **Understand some of the historic pricing achieved; and**
- **Understand what CfD AR 4 may hold.**

Introduction

CfD is a central pillar of the UK government's Electricity Market Reform (EMR) as first laid out in the Government's July 2011 White Paper. This scheme replaces the Renewable Obligation Certificates (ROCs) scheme which started in 2002 for new larger >5MW low carbon generators and closed to new capacity in 2017. This CfD scheme is designed to create price stability for low carbon generators that in turn reduces project risks, and therefore the cost of capital, and in the end allowing for more affordable low carbon electricity for consumers.

The CfD is currently run as an auction process that is capped by budget and in AR3, additionally, by a capacity cap. The auction characteristic tends to favour the "best" projects first (lowest cost, lowest cost of capital and highest capacity factor / best locations) which, by rationale auction behaviour, would tend to go to the front of the queue. The lowest bids are accepted until the maximum predefined budget is reached. No bids above the administered strike price (ASP) set by Government are accepted and the market clearing price is lower than the Government's calculated ASP. The ASP is the maximum price the Government is willing to provide to developers for each technology in a given delivery year. The clearing price is set by the bid made by the last project allocated a contract in that delivery year before the auction closes. In AR3 the ASP is set by considering evidence of renewable energy costs in each technology in each year and targeting the 25% of the lowest cost capacity of each technology that should be able to participate. The ASP considers factors such as capex, opex, financing costs, wholesale electricity prices, discount when signing power purchase agreements (PPAs) and policy considerations.

Contracts for Difference

A sum of the net present value (NPV) of total expected costs and revenues in each year is derived to make the total NPV equal to zero[1] through the calculated strike price. The market clearing price is what generators get paid in comparison to a market reference price. The private contract is between the generator and the UK Government's Low Carbon Contracts Company (LCCC). When the market reference price is lower than the strike price the generator receives a top up payment from the LCCC funded through a CfD Supplier Obligation on all active GB electricity suppliers and therefore ultimately paid by electricity consumers. Conversely, when the market reference price is higher than the strike price the generator pays the difference back to the LCCC, therefore consumers. Please refer to Figure 1 below. The strike price is index linked to the Consumer Price Index (CPI).

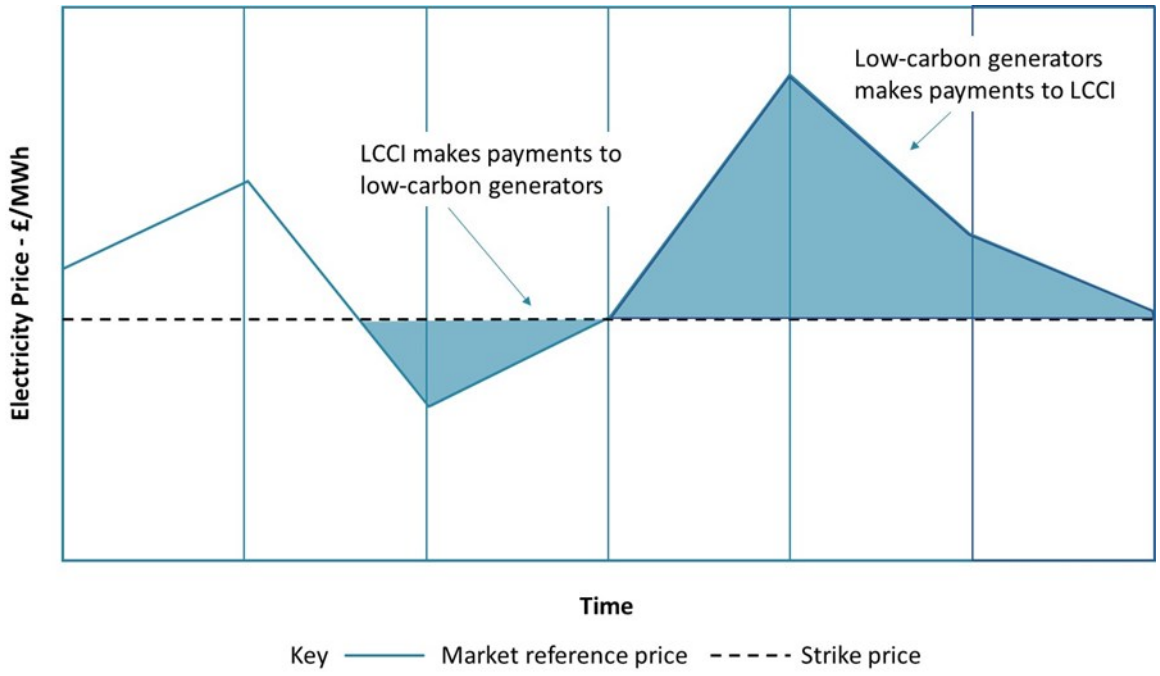

Figure 1 - Payments between LCCI and low carbon generators

The contracts last for 15 years for renewable projects with billing every 24 hours with quarterly reconciliations. Successful generators have to take Financial Investment Decision (FID) within 12 months of the auction or demonstrate that they have already spent 10% of the total project cost – that is the Milestone Delivery Date (MDD) up until AR3. This appears to be an execution risk that needs managed well. Work from here progresses to meet the Delivery Year.

Clearing prices through auction have been markedly lower than the ASPs calculated by Government showing the ability of the process to provide benefits to the consumer. In AR3 strike prices were lower than the Government's view of market reference prices[2] leading to an expected zero impact to the Government monetary budget.

[1] Contracts for difference, Methodology used to set Administrative Strike Prices for CfD Allocation Round 3, BEIS, December 2018, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765690/Admin_Strike_Prices_Methodology_AR3.pdf

[2] BEIS, September 2019, revised on 11 October 2019, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915678/cfd-ar3-results-corrected-111019.pdf

Contracts for Difference

CfD holders still require a route to market

It is highlighted that this mechanism is not a subsidy in the sense of payment per unit of electricity generated (MWh) or payment per MW of installed capacity, but stabilises income against a strike price.

Given this certainty of cashflow, this model is akin to infrastructure finance projects. The electricity is typically sold to the wholesale market on a merchant basis or to an off-taker through a corporate power purchase agreement (CPPA). This may be physical or sleeved PPA[3] with the supplier and buyer connected on the same grid network or a virtual / synthetic PPA where the counterparties are not on the same network but electricity is sold and bought, for example, around an agreed strike price. To evidence that the offtaker is purchasing renewable energy, the sale of power is often accompanied by renewable energy certificates or Guarantees of Origin in Europe. The PPA offtaker will also need to negotiate with the utility to reach an agreement to manage this power, including balancing of the intermittent energy, however some corporates manage their own energy deliveries on top of the PPA. CfD holders are still required to have a route to market. Some companies are offering PPAs that are compatible with CfDs. These contracts ensure that the agreed reference price, which could be the Baseload Market Reference Price (BMRP) or the Intermittent Market Reference Price[4] (IMRP) with the LCCC is matched in the PPA.

Whilst the UK Government has launched an Offtaker of Last Resort (OLR) scheme[5] in October 2015 by the Department for Energy and Climate Change (DECC) prevailing at the time, there have been no applications and no Backstop PPAs (BPPA) have been entered into via this competitive auction process. Mandatory suppliers to this scheme in 2019-2020 are those companies that supply 6% or more of all electricity to customers in Great Britain in the relevant OLR year. The terms are set by the Government in standard form and construct of pricing is that it is discounted to the market price with the BPPA running for a limited one year tenor.

Qualifying for CfD

The criteria for a project to be allocated a CfD are technology-specific according to the "pots" within the CfD allocation round. As well as using a specific low carbon technology, some of the qualifying criteria[6], in AR3 as an example, includes:

- Larger scale renewable projects in England, Scotland and Wales > 5MW capacity;
- Supply of your Company registration number and certificate of incorporation / equivalent if a non-UK Company; and
- Confirmation of which of the 5 Applicable Planning Consents (Allocation Regulation 24) applies to your project for the CfD Unit and acceptance of a grid connection offer to the transmission / distribution system or private wire network.

[3] Corporate Renewable Power Purchase Agreements: Scaling up globally, WBCSD, October 2016, https://www.wbcsd.org/Programs/Climate-and-Energy/Climate/Resources/Corporate_Renewable_PPAs_Scaling_up_globally

[4] The Intermittent Market Reference Price (IMRP) is calculated using a weighted average price of the EPEX SPOT and N2EX exchange Day-ahead prices. It is calculated every hour, and alongside metering data (how much electricity has been generated by the Facility) and Strike Price this data is used for billing purposes. The payment for the settlement period (the hour) is therefore: (Strike Price (£/MWh) – IMRP (£/MWh)) x Exported Electricity (MWh)

[5] Offtaker of Last Resort (OLR), OLR Annual Report 2019-2020, Ofgem, 30 September 2020, https://www.ofgem.gov.uk/system/files/docs/2020/09/offtaker_of_last_resort_annual_report_2019-20_0.pdf

[6] BEIS, CfD AR3 portal, FAQ, https://www.cfdallocationround.uk/faqs

Contracts for Difference

If these requirements have not been fulfilled for the upcoming AR, the generator will need to go into the next AR, which is typically every 2 years; or, of course, take a route without CfD. We expect that on a biannual cycle the next AR5 to start in 2023. We understand that there is lobbying to change this to an annual basis to avoid bottlenecking Local Planning Authorities and statutory stakeholders with AR pipeline queue build-ups every 2 years.

History

A brief history of the CfD allocation rounds 1-3 (AR1-3) results to date is shown in Table 1 below:

Timeline	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Capacities awarded - MW Offshore wind	Onshore wind	Solar
AR1											1,162.0	748.6	71.6
AR2											3,196.0	0.0	0.0
AR3											5,466.0	0.0	0.0
AR1-3											9,824.0	748.6	71.6

Table 1 - CfD capacity awards to date

In Table 1 we can see that around 9.8GW of offshore wind but only a much smaller tranche of onshore wind at around 750MW, and even lessor amount of solar PV at around 70MW was awarded across all three ARs. AR1 was the only round to date that was open to bidding from onshore wind and solar PV, except for onshore wind for remote island applications in AR3. The timeline on the left-hand side shows the delivery year of the respective auction.

In Table 2 on the next page we show the trendlines over the 3 ARs for offshore wind, onshore wind and solar as they best fit into each year. The longest trend of offshore wind that spans all three ARs shows the rapid reduction in both the ASPs and clearing price. The ASP has reduced from GBP140/MWh in 2017 to GBP56/MWh in 2024 with the clearing price reducing from GBP119.9 to GBP39.7/MWh. All Strike Prices through AR1-AR3 are shown in 2012 prices. There is a much-reduced trend line for onshore wind and solar PV given it was only able to bid into AR1.

Contracts for Difference

Description	Trendline	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
OFF/S Wind - Admin Price - GBP/MWh				140.0	140.0	140.0		105.0	100.0	56.0	56.0
OFF/S Wind - Clearing Price - GBP/MWh				119.9	114.4	114.4		74.75	57.5	39.7	39.7
OFF/S Wind - Savings - %				14.4%	14.4%	18.3%		28.8%	42.5%	29.2%	29.2%
OFF/S Wind - Capacity - MW				357.0	581.0	224.0		430.0	1598.0	3901.0	2733
OFF/S Wind - Cumulative Capacity - MW				357.0	938.0	1162.0	1162.0	1592.0	3190.0	7091.0	9824.0
ON/S Wind - Admin Price - GBP/MWh			95.0	95.0	95.0						
ON/S Wind - Clearing Price - GBP/MWh			79.2	80.0	82.5	82.5					
ON/S Wind - Savings - %			16.6%	15.8%	13.2%	13.2%					
ON/S Wind - Capacity - MW			22.5	61.3	351.8	313.0					
ON/S Wind - Cumulative Capacity - MW			22.5	83.8	435.5	748.6					
Solar - Admin Price - GBP/MWh		120.0	120.0	120.0							
Solar - Clearing Price - GBP/MWh		50.0	79.2	79.2							
Solar - Savings - %		58.3%	34.0%	34.0%							
Solar - Capacity - MW		16.4	35.8	19.3							
Solar- Cumulative Capacity - MW		16.4	52.2	71.6							

Table 2 - CfD pricing and savings to date

Given the pipeline for UK renewable energy development we would expect competition for the upcoming CfD AR4 to be fierce. As onshore wind and solar PV have been without support for a number of years these may have been developed on an unsubsidised basis and will likely represent a strong proportion of construction ready sites for AR4.

An update of the key changes in CfD AR4 is the focus of part 2 to this series