

A photograph of an offshore wind farm with several white wind turbines on a blue sea under a cloudy sky. A dark green rectangular box is overlaid on the left side of the image, containing the title and subtitle.

Winner takes all

*High stakes in the UK offshore wind
CFD auctions*

Contact Information

Dr. Lee Clarke
Director
Chief Operating Officer
lee.clarke@renewablescg.com

Dan Pearson
Director
Head of Financial Services Practice
dan.pearson@renewablescg.com

Gareth Lewis
Director
Co-Regional Head, EMEA
gareth.lewis@renewablescg.com

Executive Summary

Billions of pounds of investment is needed to replace the United Kingdom's aging power generation assets and meet Government objectives for decarbonisation of the electricity sector. The Department of Energy and Climate Change (DECC) introduced Electricity Market Reform (EMR), which included a new scheme comprising long-term Contracts for Difference (CfD), contracts to support investment in new low carbon generation. The CfD provides a guaranteed strike price for power purchases, regardless of market prices, and is the new mechanism for subsidising offshore wind generation.

CfD contracts were awarded to some offshore wind projects ahead of the introduction of the EMR legislation under the so-called Final Investment Decision (FID) Enabling programme. A single round of CfD auctions subsequently took place, with further offshore wind projects securing contracts, albeit at much lower strike prices.

Following the General Election, the new Government has changed course on renewable energy policy, and has delayed further CfD auctions. A key reason for the postponement is the high cost of the contracts and the knock-on impact on the Levy Control Framework budget, the mechanism that provides a nominal cap on subsidy for low- carbon electricity schemes. In an attempt to "reset" policy, a new CfD auction has now been promised during the course of 2016 and subsequent auctions before 2020, but only if the offshore wind industry can cut costs, reducing the level of subsidy needed as part of the contracts.

Without long-term contracts it is impossible to invest the upfront capital needed to construct large-scale offshore wind projects. Without visibility as to the timing and volume of contracts there is a danger that development on existing offshore wind projects will be terminated and the hundreds of millions invested in early stage development will be completely wasted. The Government is treading a fine line between supporting a nascent industry and keeping subsidy costs under control.

Background

The Department of Energy and Climate Change (DECC) estimates that around £100 billion of investment is required in the electricity generation and transmission sector to replace the UK's ageing assets and meet Government objectives for decarbonisation of the electricity sector, energy security; and minimising costs to consumers.

To help secure investment of this scale, DECC created the Electricity Market Reform (EMR) programme, consisting of a variety of mechanisms to deliver secure supplies and new low carbon generation. Of key relevance to offshore wind development is the Contracts for Difference (CfD) scheme to support investment in new low carbon generation, which was introduced under the Energy Act 2013. This replaces the Renewables Obligation (RO). The RO will close to new generators on 31 Mar 2017. Electricity generation that is accredited under the RO will continue to receive its full lifetime of support (20 years) until the scheme closes in 2037.

A CfD is a long term agreement between a low-carbon electricity generator and Low Carbon Contracts Company Ltd (LCCC). It is designed to provide the generator with a stable pre-agreed price (the "strike price") for the lifetime of the contract. This is done by paying the difference where prices are less than the strike price and receiving the difference when prices are higher than the strike price. LCCC is a private limited company, wholly owned by the Secretary of State for Energy and Climate Change. The company was established to be the counterparty to CfDs. In the case of offshore wind, the duration of the contract is for 15

years from the point of first generation. The Government sets an overall budget for each 'allocation round' or auction. This is broken down into a number of technology categories or 'pots'. Low-carbon electricity generators are invited to submit a sealed bid for the strike price they are willing to accept in order to develop the wind farm. These bids must be lower than the Administrative Strike Price set by DECC. Projects are ranked in ascending order according to the strike price they bid until the available budget is exhausted.

Final Investment Decision Enabling programme

Originally all CfDs were intended to be allocated using the auction process. However, there were widespread concerns that the scheme would not be in place soon enough to prevent damaging industry-wide interruption in investment in new projects. As a result, the Government put in place a Final Investment Decision (FID) Enabling programme to help developers of renewable energy projects make final investment decisions ahead of the new CfD regime being introduced as part of EMR. DECC launched FID Enabling for Renewables in March 2013.

In April 2014 DECC announced that eight renewable electricity projects had been offered investment contracts, allocating the first CfDs. The projects are all expected (and incentivised) to be in production by 2020, supporting jobs and delivery of low-carbon electricity targets. Five offshore wind projects were awarded FID enabling CfDs. The strike price was set at £140/MWh - £150/MWh for the 15-year contracts, depending on expected start dates. The projects are listed in Exhibit 1.

Exhibit 1

FID Enabling for Renewables

Successful offshore wind projects offered investment contract (listed in alphabetical order).

Project	Developer	Total Capacity MWe	Location	Phase	Capacity MWe	Strike price, £/MWh	Target Commissioning Date
Beatrice	Beatrice Offshore Windfarm Ltd	664	Outer Moray Firth, Scotland	1	280	£140.00	31 March 2018
				2	384	£140.00	31 March 2019
Burbo Bank Extension	Dong Energy Wind Power A/S	258	Liverpool Bay		258	150.00	31 March 2017
Dudgeon	Dudgeon Offshore Wind Ltd	402	The Wash north of Cromer	1	90	150.00	1 March 2017
				2	210	150.00	1 August 2017
				3	102	150.00	1 October 2017
Hornsea 1	Dong Energy Wind Power A/S	1200	North Sea, off the Yorkshire Coast	1	400	140.00	31 March 2019
				2	400	140.00	31 March 2020
				3	400	140.00	31 March 2021
Walney Extension	Dong Energy A/S	660	Irish Sea, off the Cumbria Coast	1	330	£150.00	31 March 2017
				2	330	£150.00	31 March 2018

FID Enabling for Renewables, Successful Projects (DECC, Updated 23 April 2014)

Source: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/305781/Successful_Projects.pdf

All contracts have a Longstop Period of two years after the target commissioning dates. The final installed capacity must be at least 85% of the Initial Installed Capacity nominated under the contract.

DECC has published criteria for Investment Contract Allocation under the FID Enabling for Renewables regime¹.

1. *Final Investment Decision Enabling for Renewables: Updates 2* (DECC; 27 Jun 2013)
Source: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209367/2013_-_06_-_27_FIDe_Update_2_Master_Draft__2_.pdf

To show that the project will be completed by the target commissioning date (or by the end of the target commissioning window), the response from the developer should, to a level commensurate with the project type and its maturity, demonstrate the following:

- » The requirements to obtain the relevant consents, clearances, agreements etc. have been satisfied and these are consistent with the project being completed by the target commissioning date (or by the end of the target commissioning window); and
- » A credible plan is in place to ensure that any outstanding land availability, planning, grid connection and radar/aviation issues will be resolved in time to allow the project to be completed by the target commissioning date (or by the end of the target commissioning window).

The National Audit Office (NAO) subsequently examined the rationale for the FID Enabling scheme and the value for money of these early contracts². The NAO concluded that these early contracts were awarded at administratively set strike prices which may provide higher returns to developers than needed to secure the investment. They estimate that the early contracts have committed up to £16.6 billion or around 58 per cent of the funds available for renewable contracts for difference to 2020-21 under the Levy Control Framework (LCF). The NAO concedes this gave the UK's renewables industry greater confidence in the near-term and was likely to have helped secure progress with projects, supply chain jobs and investment, including Siemens' investment in wind turbine production and installation facilities in Yorkshire. However, they also noted that there was an increased the risk that later projects would be unable to obtaining support due to a lack of funds.

2. *Early contracts for renewable electricity* (NAO, 24 June 2014)

Contracts for Difference (CFD) Allocation Round One

DECC published the outcome of the first CfD allocation round on 26 Feb 2015. Public domain information on the successful offshore wind applicants is shown in Exhibit 2 (strike prices are in 2012 prices).

The CFD requires a generator to demonstrate by the Milestone Delivery Date that they have made a significant financial commitment to the construction of their new generation

plant. The Milestone Delivery Date is 12 months from the date of the CFD agreement. Generators demonstrate this requirement by providing LCCC with evidence that they either have spent a specified amount of project cost or have entered into contracts committing to equivalent significant expenditure by the Milestone Delivery Date. Press releases from LCCC are issued confirming milestone delivery.

Exhibit 2 **Contracts for Difference (CFD)** *Allocation Round One Outcome, Offshore Wind*

Project	Developer	Total capacity MWe	Location	Strike price, £/MWh	Delivery Year
EA 1	Scottishpower Renewables (UK) Ltd	714	North Sea, off the coast of East Anglia	£119.89	2017 – 2018*
Near na Gaoithe	Near na Gaoithe Offshore Wind Ltd	448	North Sea, off the Fife coast	£114.39	2018 - 2019

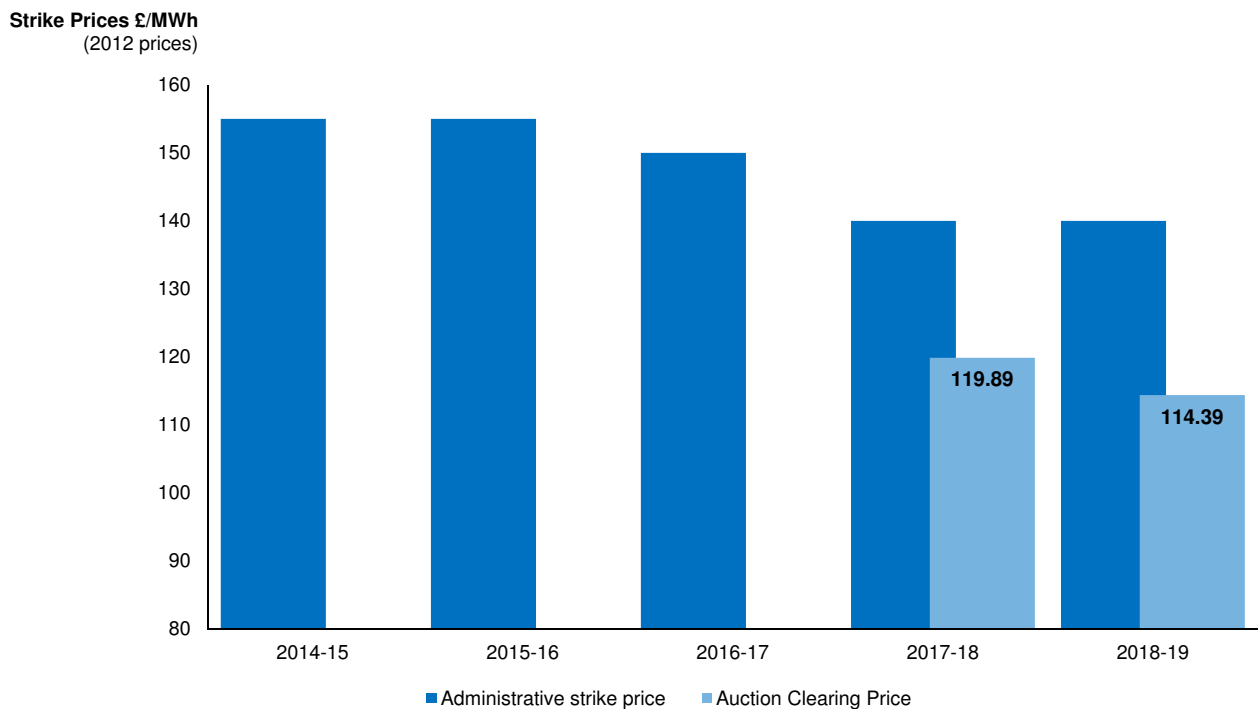
* EA1 (East Anglia One) will be built in three phases; 2017/18 is the delivery year for phase 1

Source: Low Carbon Contracts Company, CFD Register (<https://lowcarboncontracts.uk/cfds>; data extracted 31 Dec 2015)

The strike prices achieved in the Round One CfD Auction were far lower than the level struck under the FID enabling contract (£114-£120/MWh compared with £140-£150/MWh) and significantly below the Administrative Strike Price (see Exhibit 3).

The large difference between the competitive clearing prices and the Administrative Strike Price suggests that the auction process delivered a successful, competitive result. The Government expects CfD strike prices to reduce as technology improvements and operational innovation bring down the costs.

Exhibit 3
Offshore wind Contracts for Difference strike price



Note: All years are financial years. All money is in 2012 prices.

Source: Investing in renewable technologies – CfD contract terms and strike prices (DECC, Dec 2013) and Low Carbon Contracts Company, CFD Register (<https://lowcarboncontracts.uk/cfds>; data extracted 31 Dec 2015)

However, it is also possible that the first round of CfD auctions removed lower-cost projects from the pool of potential future bidders.

Exhibit 4 details all of the offshore wind projects currently receiving CFD support. Projects totalling 4,346 MW have received support under the CFD mechanism covering the period from 2016 to 2021.

Exhibit 4
Contracts for Difference (CFD)
Extract from Low Carbon Contracts Company CFD Register, Offshore Wind

Project	Counterparty	Capacity MWe	Target Commissioning Date	LCCC Unique ID	CFD Agreement Type	Allocation Strike price, £/MWh	Current Strike price, £/MWh
Dudgeon Phase 1	Dudgeon Offshore Wind Ltd	90	1 Mar 2017	INV-DUD-001	Investment	150.00	157.93
Burbo	Dong Energy Burbo Extension (UK) Ltd	258	31 Mar 2017	INV-BUR-001	Investment	150.00	157.93
Walney Phase 1	Dong Energy Walney Extension (UK) Ltd	330	31 Mar 2017	INV-WAL-001	Investment	150.00	157.93
Dudgeon Phase 2	Dudgeon Offshore Wind Ltd	210	1 Aug 2017	INV-DUD-002	Investment	150.00	157.93
Dudgeon Phase 3	Dudgeon Offshore Wind Ltd	102	15 Dec 2017	INV-DUD-003	Investment	150.00	157.93
Beatrice Phase 1	Beatrice Offshore Wind Farm Ltd	280	31 Mar 2018	INV-BEA-001	Investment	140.00	147.42
EA1, Phase 1	East Anglia One Ltd	179	31 Mar 2018	CAA-EAS-166	Phased (Apportioned)	119.89	126.27
Walney Phase 2	Dong Energy Walney Extension (UK) Ltd	330	31 Mar 2018	INV-WAL-002	Investment	150.00	157.93
Beatrice Phase 2	Beatrice Offshore Wind Farm Ltd	384	31 Mar 2019	INV-BEA-002	Investment	140.00	147.42
EA 1, Phase 2	Dong Energy Burbo Extension (UK) Ltd	285	31 Mar 2019	CAA-EAS-167	Phased (Apportioned)	119.89	126.27
Hornsea Phase 1	Heron Wind Ltd	400	31 Mar 2019	INV-HOR-001	Investment	140.00	147.42
Near na Gaoithe	Near na Gaoithe Offshore Wind Ltd	448	31 Mar 2019	AAA-NEA-195	Generic	114.39	147.42
EA 1, Phase 3	East Anglia One Ltd	250	31 Mar 2020	CAA-EAS-168	Phased (Apportioned)	119.89	126.27
Hornsea Phase 2	Heron Wind Ltd	400	31 Mar 2020	INV-HOR-002	Investment	140.00	147.42
Hornsea Phase 3	Njord Wind Ltd	400	31 Mar 2021	INV-HOR-003	Investment	140.00	147.42

Source: Low Carbon Contracts Company, CFD Register (<https://lowcarboncontracts.uk/cfds>; data extracted 31 Dec 2015)

Future CfD Rounds

The CfD scheme was first used under the FID Enabling programme. Subsequently, the first CFD auction was held. These auctions were planned to be held annually, with details published in October and the round ending in spring of the following year (the first round was launched on 16 Oct 2014, the application window closed on 30 Oct 2014, and the round ended 15 Apr 2015).

As discussed, the Government expects there to be a degeneration in the level of subsidy support to offshore wind, corresponding to reductions in the levelised cost of energy from the technology that reflect growing economies of scale and technology advances. The ultimate aim is to phase out subsidy (though some form of long-term contract may be needed to support investment).

The CfD scheme is essential to underpin capital investments in offshore wind projects. The postponement of this year's auction, and this lack of clarity over future dates and budgets, leaves the industry uncertain about if or when companies will be able to bid for a contract for their power.

DECC's latest forecasts under the Levy Control Framework (LCF), which funds the subsidy to renewable energies, has shown that forecast spend will be much higher than its planned budget unless action is taken³ (see Exhibit 5). The Government has set a limit of £7.6bn in 2020-2021 (in 2011/12 prices). The current forecast is £1.5bn above that limit due to accelerated developments in technological efficiency, higher than expected uptake of demand-led schemes and falling wholesale power prices. It has been estimated that around £0.5bn of the £1.5bn is due to reductions in forecast wholesale electricity costs⁴.

As wholesale power prices fall, the level of subsidy increases.

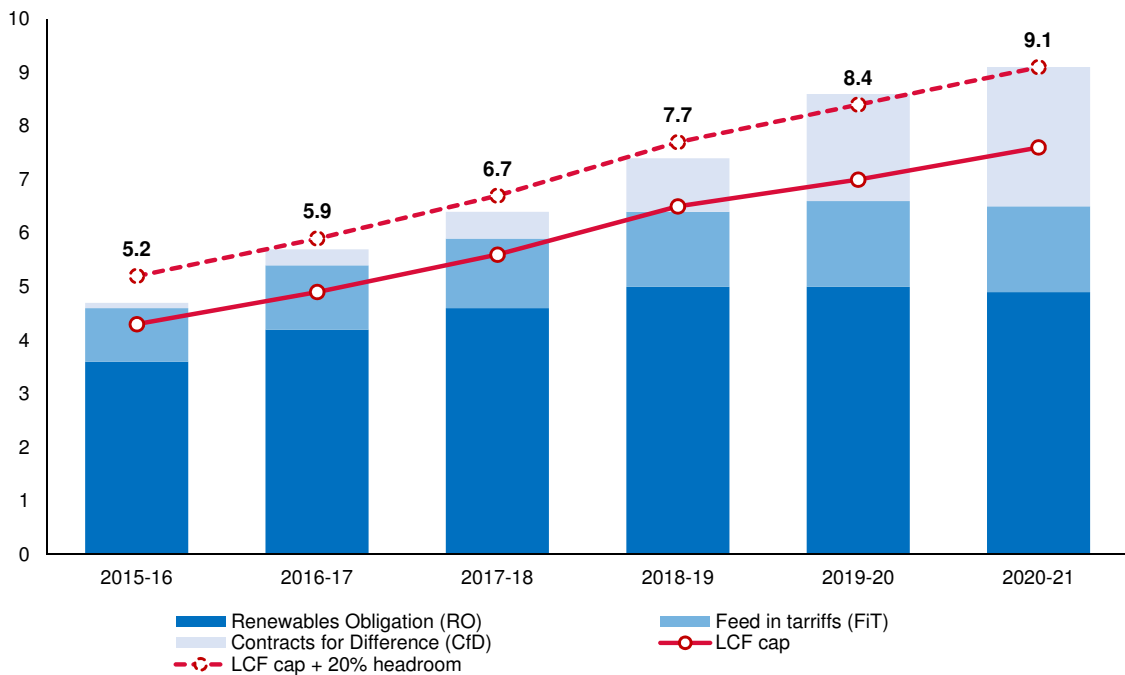
This means that the forecast of future spend under the LCF is now estimated at around £11.4bn (in nominal prices) or £9.1bn (in 2011/12 prices) in 2020/21.

3. *Written statement to Parliament on Levy Control Framework cost controls* (DECC, 22 Jul 2015).
Source: <https://www.gov.uk/government/speeches/levy-control-framework-cost-controls>

4. *Revealed: Emails undermine government's argument for cutting renewables support* (Carbon Brief, 5 Jan 2016)
Source: <http://www.carbonbrief.org/revealedemailsundermine-governmentsargumentforcuttingrenewablessupport>

Exhibit 5 Levy Control Framework and estimated spend

£ billion per annum



Note: All years are financial years. All money is in 2011-12 prices.

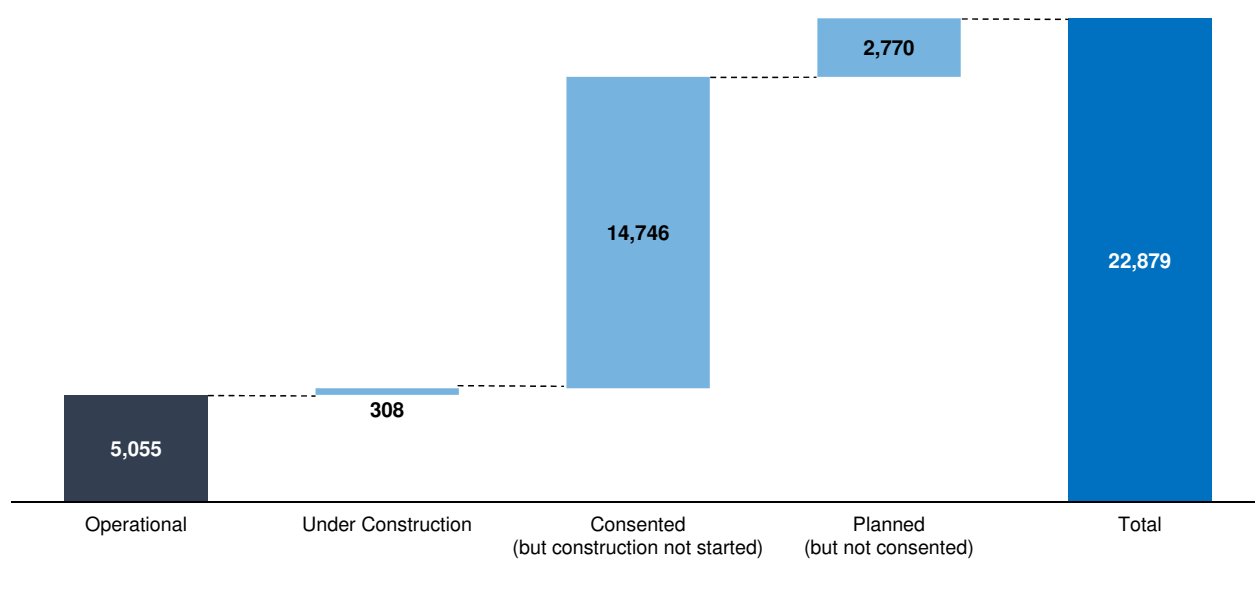
Source: OBR; Policy Exchange (Jul 2015)

DECC must either increase the LCF budget or cut spending on subsidising CfDs. In the current political climate, cuts seem the mostly likely outcome.

The current status of the UK's offshore wind sector is summarised in Exhibit 6.

Some 14.7 GW of project capacity are consented, but for which construction has not started. Of this perhaps 1 GW may seek subsidy support under the previous RO system, 4.1 GW has secured CfDs, leaving 9.6 GW of consented capacity seeking future CfDs (or alternative support mechanisms).

Exhibit 6
Summary of UK Offshore Wind Capacity in MWe



Source: RCG analysis

The apportionment of CfD capacity from the FID Enabling and Allocation Round One processes is summarised in Exhibit 7. This indicates a peak allocation of c. 1,500 MW. Cumulative capacity under the existing allocations reaches 3,632 MW by 2020/21 assuming all projects are developed as planned.

Even if the cost of energy from offshore wind continues to drop rapidly, reducing the required strike price for projects, it is

unlikely that future allocations will support considerably higher volumes. This leaves some 9 GW of capacity already consented, but yet to receive support, chasing up to around 1.5 GW of capacity subsidy per annum. These projects have already invested many tens of millions of pounds in early-stage development to achieve planning consents. There is a real risk that this investment will be wasted as planning consents, which are time limited, expire.

Exhibit 7
Summary of allocated CFD capacity for offshore wind

Project	Capacity MWe	Financial Year					
		2016 / 17	2017 / 18	2018 / 19	2019 / 20	2020 / 21	2021 / 22
Burbo Bank Extension	258	258					
Dudgeon	402	90	312				
Walney Extension	660	330	330				
Beatrice	664		280	384			
East Anglia Project 1	714		238	238	238		
Hornsea Project 1	1200			400	400	400	
Neart na Gaoithe	448			448			
Total	4346	678	1160	1470	638	400	0
Future rounds?					1000	1000	1500

Data extracted from DECC's Renewable Energy Planning Database ('REPD'), July 2015 update

Source: <https://www.gov.uk/government/statistics/renewable-energy-planning-database-monthly-extract>

Policy Announcements

The EMR legislation was developed under the Conservative-Liberal Democrat Coalition Government. Following the general election in May 2015, the new Conservative administration has been reviewing energy policy. The emphasis has shifted from delivery of sustainable electricity supplies (carbon reduction) and industrial development (jobs), towards affordability (consumer bills) and security of supply.

During the summer of 2015, the Secretary of State, Amber Rudd MP, confirmed there would be no CfD auction in October 2015 as originally planned, but instead the Government would set out its plans⁵. The Energy & Climate Change Secretary went on to announce sweeping changes to the UK's energy policy on 18 Nov 2015 in her long-awaited 'energy policy reset' speech⁶. The speech stressed the importance of energy security, as well as continuing the energy affordability for "hard working families".

However, the Secretary of State also said that energy security and affordability will not be achieved to the detriment of decarbonisation. A commitment to delivering against existing carbon budgets was also made.

To achieve decarbonisation, the Government plans to close all coal-fired power stations by 2025 and restrict their use by 2023⁷. The Government expects them to be replaced by a fleet of new gas-fired plants and nuclear facilities.

The decline in the use of coal has been anticipated, but the finality of the announcement was somewhat more of a surprise. Most analysts expected only one or two unabated coal plants (that is, those without carbon capture and storage) to be operating beyond the early 2020s as tough emissions restrictions made continued operation impossible. The closure of coal-fired plants sent a strong message ahead of the Paris climate negotiations that took place in early December⁸.

Gas-fired power generation is the main beneficiary of the announcements. This is aligned with the Government's previous stance supporting the development of an onshore shale gas industry. The policy was backed up by the award of 159 onshore exploration blocks under the 14th Onshore Oil and Gas Licensing Round by The Oil & Gas Authority (OGA) – the UK's oil and gas regulator⁹.

5. Secretary of State, Amber Rudd, evidence to the Energy & Climate Change Select Committee, 21 July 2015,

6. Amber Rudd's speech on a new direction for UK energy policy, 18 Nov 2015, Institution of Civil Engineers, London (Transcript of the speech, exactly as it was delivered)
<https://www.gov.uk/government/speeches/amber-rudds-speech-on-a-new-direction-for-uk-energy-policy>

7. Government announces plans to close coal power stations by 2025, 18 Nov 2015

<https://www.gov.uk/government/news/government-announces-plans-to-close-coal-power-stations-by-2025>

8. New direction for UK energy policy, 18 Nov 2015

<https://www.gov.uk/government/news/new-direction-for-uk-energy-policy>

9. New onshore oil and gas licences offered, 17 December 2015

<https://www.gov.uk/government/news/new-onshore-oil-and-gas-licences-offered>

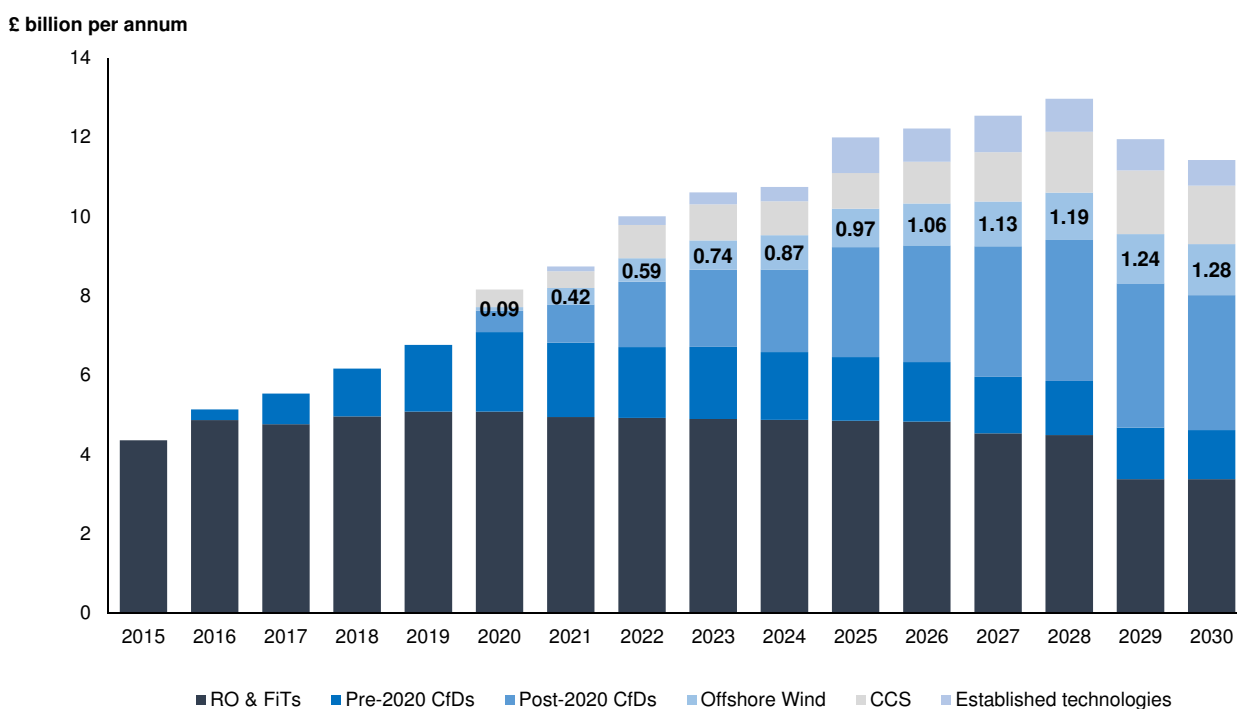
Whilst there was little encouragement for proponents of renewable energy in general, qualified support was given to offshore wind. The Secretary of State specified that “... we should also support the growth of our world leading offshore wind industry.” The Government noted that on current plans it expects to see 10 GW of offshore wind capacity installed by 2020. It was announced that the Government is prepared to support up to 10 GW of additional offshore wind capacity to be constructed during the 2020s. However, Government will only provide support if the cost of offshore wind continues to come down.

It was announced that a further three CfD auction rounds will be held during the current Parliament (before May 2020), the first of which will take place during 2016. The competition for funding through the auction mechanism has demonstrated that cost savings and efficiency improvements can be made; the Government has now introduced more conditionality into the process. The target level for cost reduction was not revealed; these details will need to be clarified by DECC over the coming months.

“... if, and only if, the Government's conditions on cost reduction [for offshore wind] are met - we will make funding available for three auctions in this Parliament.”

The announcements on offshore wind will bring very welcome clarity to investors in the offshore wind sector. There remains much uncertainty regarding projected spending under the Levy Control Framework, as well as the timing and format of future CfD allocation rounds. The size of the subsidy pot is not known, so it is impossible to estimate the volume of capacity that might be supported in the next or subsequent CfD auctions. The 2020-21 Levy Control Framework is already overspent by around £1.5bn. The Government's Climate Change Committee (CCC) scenario forecasts cumulative £0.5bn - £1.0bn extra for offshore wind, 2021-2025.

Exhibit 8
Levy control framework forecast (2015 - 2030)



Note: All years are calendar years. All money is in £2014. The LCF cap for 2020/21 is £7.9n in the calendar year 2020.

Source: Data from Sectoral scenarios for the fifth carbon budget – Technical report (Committee on Climate Change, Nov 2015)
<https://www.theccc.org.uk/publication/sectoral-scenarios-for-the-fifth-carbon-budget-technical-report/>

The second auction round was originally scheduled for autumn 2015, so a delay into 2016 puts pressure on those projects that have received planning consent, but cannot move ahead without a CfD contract. It may be speculated that Government has delayed the auction to allow a greater number of participants to take place, thus maximising competition for scarce CfDs, causing the players to bid down prices.

Offshore wind projects with a total capacity of around 9 GW have already received consent.

Projects that have already demonstrated that all Government evaluation criteria are satisfied (consents, grid, and aviation permissions) are in a more favourable position to secure support than those that are still in the planning process.

Conclusions

Projects totalling 4.3 GW have received support under the CfD mechanism covering the period from 2016 to 2021.

From the last CfD allocation round it is reasonable to assume that the maximum volume receiving support in any one year is approximately 1.5 GW of installed capacity.

The capacity of projects that have already received consent, but which are still competing for CfD subsidy support totals around 9 GW. These projects are currently in a favourable position to secure support as all Government evaluation criteria are satisfied (consents, grid, and aviation permissions).

Government has delayed the next allocation round for CfDs because of concerns over the Levy Control Framework budget. This will intensify competition when the next round takes place. For many projects the “clock is ticking” on planning consents, which could expire before they can begin construction because gaining a CfD contract is a prerequisite for reaching financial close. There is a real risk that tens of millions of pounds of early-stage development investment will be wasted due to delays in allocating contracts.

The offshore wind industry still requires clarity over the timing and budgets for the next CfD allocation round. Further delays to the process is likely to further damage investor confidence in the UK market and call into question Government ambitions to meet mid-term low-carbon electricity targets.

About the Authors

Dr. Lee Clarke is a Director and Chief Operating Officer at The Renewables Consulting Group based from the UK headquarters. He has more than 20 years' experience in the energy industry, and a broad range of general management, consultancy, commercial, operational, and strategy experience. Dr. Clarke previously served as Project Director for Forewind, the international joint venture developing the Dogger Bank offshore wind concession.

Dan Pearson is a Director and Global Practice Head for Financial Services and Private Equity based in London. Dan has more than 16 years' experience in renewable energy development, financing and construction both in the UK and overseas with significant technical understanding and commercial project finance experience. Mr Pearson previously worked at GE Capital leading due diligence, deal structuring, commercial negotiations and asset management for wind, solar and hydro energy investments throughout Europe.

Gareth Lewis is a Director and Co-Regional Head for EMEA based from the UK headquarters. A highly technically skilled and successful renewables practitioner, with 24 years' experience in marine and onshore developments and 15 years in the offshore renewable energy sector. Mr Lewis was previously Head of Offshore Development in the Forewind Consortium, which successfully secured the largest offshore wind consent to date totaling 4.8GW. Mr Lewis is Chair of the RenewableUK Consents & Licensing Group.

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145 - 157 St Johns Street
London, EC1V 4PW

41 Madison Ave, 31st Floor
New York, NY 10010

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