Department for Energy Security & Net Zero

Contracts for Difference for Low Carbon Electricity Generation

Consultation on proposed amendments for Allocation Round 7 and future rounds

Closing date: 11 March 2024 (extended from 7 March)

January 2024

Any enquiries regarding this publication should be sent to us at:
ContractsforDifference@energysecurity.gov.uk

Contents

General information

Why we are consulting

The Contracts for Difference (CfD) scheme is the Government's main mechanism for supporting new, low carbon electricity generation projects in Great Britain. The Government is considering a number of changes to the way the CfD scheme operates, and which projects it supports, so that it can continue to support the scale and pace of renewable electricity deployment needed whilst considering the potential cost to electricity consumers. The consultation seeks views from stakeholders and interested parties on these proposals. The seventh CfD allocation round is expected to open in 2025 and will be the third in the new series of annual CfD rounds.

Consultation details

Issued: 11 January 2024

Respond by: 11 March 2024

Enquiries to:

The CfD Team
Department for Energy Security and Net Zero
3-8 Whitehall Place
London
SW1A 2AW

Email: ContractsforDifference@energysecurity.gov.uk

Consultation reference: Contracts for Difference for Low Carbon Electricity Generation: Consultation on proposed amendments for Allocation Round 7 and future rounds

Audiences:

The Government welcomes responses from anyone with an interest in the policy area. We envisage that the consultation will be of particular interest to those considering the development of new renewable energy projects in Great Britain, electricity traders and suppliers, businesses operating in the offshore wind sector, and consumer and environmental groups with an interest in the electricity sector.

Territorial extent:

This consultation applies to Great Britain only as the CfD scheme does not currently operate in Northern Ireland.

How to respond

Your response will be most helpful if it is framed in direct response to the questions we have asked, though further comments and evidence are also welcome. When responding, please state whether you are responding as an individual or representing the views of an organisation. Electronic responses submitted via Citizen Space are preferred, but we will also consider responses submitted via email.

Respond online at: energygovuk.citizenspace.com/clean-electricity/cfd-ar7-and-future-round-amendment-proposals

or

Email to: ContractsforDifference@energysecurity.gov.uk

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential, please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our privacy policy.

We will summarise all responses and publish this summary on GOV.UK. The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's consultation principles. If you have any complaints about the way this consultation has been conducted, please email: bru@energysecurity.gov.uk.

List of acronyms

Acronym	Definition
ASP	Administrative Strike Price
BMU	Balancing Mechanism Unit
BSC	Balancing and Settlement Code
CfD	Contracts for Difference
COD	Commercial Operation Date
CPI	Consumer Price Index
DESNZ	Department for Energy Security and Net Zero
GB	Great Britain
HVDC	High-Voltage Direct Current
HM	Home Market
LCCC	Low Carbon Contracts Company
MDD	Milestone Delivery Date
NG ESO	National Grid Electricity Systems Operator
OBZ	Offshore Bidding Zone
OHA	Offshore Hybrid Asset
ONS	Office for National Statistics
OTNR	Offshore Transmission Network Review
OWF-MPI	Offshore Wind Farm - Multi-Purpose Interconnector
PPI	Producer Price Index
REMA	Review of Electricity Market Arrangements
TCD	Target Commissioning Date
TCW	Target Commissioning Window
UK	United Kingdom

Introduction

Context

The changes proposed in this document form part of the Government's overall strategy to deliver a secure, affordable, and decarbonised power system by 2035. Low-cost renewables are central to delivering this aim and the CfD remains the Government's flagship scheme in driving forward new deployment.

The CfD scheme has so far awarded contracts totalling over 30GW of new renewable capacity. The latest Allocation Round 5 awarded contracts to a significant capacity of solar and onshore wind generation, as well as new tidal stream and, for the first time, geothermal projects. A shift to more frequent, annual CfD rounds was announced in February 2022[1], aimed at accelerating the rollout of low-cost renewable electricity.

These successes are an important step towards decarbonising the UK's energy system. The UK's 2050 net zero emissions and 2035 power sector decarbonisation targets mean that we will continue to require substantial amounts of new, low carbon power sources to be built before 2050. This transition will be ever more complex, requiring a significant, consistent, and coordinated transformation of the energy system. The CfD needs to evolve to accommodate the complex challenges and new configurations of this transition. It is in this context and in light of supply chain constraints and a challenging economic environment that the Government is considering how to evolve the CfD in future rounds in order to meet decarbonisation targets both quickly and sustainably.

The proposed introduction of a new CfD Sustainable Industry Reward is another way in which the Government is working to improve and adapt the scheme. The CfD Sustainable Industry Reward aims to accelerate the deployment of low carbon electricity generation, specifically offshore wind and floating offshore wind. A separate consultation[2] on the introduction of a CfD Sustainable Industry Reward was published on 16 November 2023 and closed on 11 January 2024.

The changes proposed in this document would, if implemented, build on these plans. The success of previous CfD allocation rounds in securing substantial amounts of new, low carbon electricity whilst minimising costs to consumers has been a key consideration in reviewing the scheme ahead of the next round. The Government has considered a series of changes proposed in this consultation to continue to support these aims, summarised below.

The ongoing Review of Electricity Market Arrangements (REMA) was launched to tackle challenges faced by the electricity system in the longer term, focussing on delivering enduring market reform. Proposals for wider and longer-term changes to the CfD to address these challenges continue to be explored through the REMA programme.

[1] Press release: *Government hits accelerator on low-cost renewable power* (February 2022) https://www.gov.uk/government/news/government-hits-accelerator-on-low-cost-renewable-power

[2] Consultation: *Introducing a Contracts for Difference (CfD) Sustainable Industry Reward* (November 2023) *https://www.gov.uk/government/consultations/introducing-a-contracts-for-difference-cfd-sustainable-industry-reward*

Scope

This consultation seeks views and supporting evidence on specific changes proposed for the seventh Allocation Round of the CfD scheme (AR7) – scheduled to open to applications from generators of renewable technologies in March 2025.

The consultation also seeks early views and evidence on longer-term policy considerations for future rounds which reflects the shift to more frequent, annual CfD rounds; the reduced time to deliver important policy changes between rounds leading to the Government considering policy adjustments multiple rounds in advance. This call for evidence on longer-term proposals will help shape policy thinking but does not prejudge final policy decisions. The Government retains flexibility to adjust proposals at a later stage based on consultation feedback.

This consultation therefore proposes two groups of changes that would, if implemented, apply to contracts awarded through future allocation rounds. Some of these potential proposals would be deliverable for Allocation Round 7 (scheduled to open in 2025) and others are longer-term considerations that we are seeking early views from stakeholders on through a Call for Evidence.

Section 1 – Proposals for Allocation Round 7

This section seeks views and supporting evidence on a range of proposals that would, if taken forward, be implemented by Allocation Round 7.

- **Repowering** – A significant portion of renewable assets may be coming to the end of their operational life during the late 2020s and throughout the 2030s. The Government is proposing to enable repowering projects to apply for the CfD in AR7, in limited circumstances, for onshore wind projects.
- **Appeals** – The timeline for a CfD allocation round currently runs to one of five possible scenarios, depending on whether applicants appeal decisions made by the Delivery Body. The Government is considering streamlining this process to benefit participants and enable more rapid learning between consecutive annual auctions.
- **Phased CfDs for floating offshore wind** – The Government has set out an ambition to deliver up to 5 GW of floating offshore wind by the end of the decade and anticipates further rapid expansion of the sector throughout the 2030s. The Government is consulting on expanding the phased CfD policy to floating offshore wind projects.
- **Co-located generation and hybrid metering** – The changing needs of a fully decarbonised electricity system will create new opportunities for technological and business model innovation among renewable sites, such as providing flexibility and operability services, or optimising grid connections. The Government is considering introducing changes to metering that would make it easier for CfD generators to co-locate with other assets in line with current CfD policy and is assessing how we can best enable innovation in a way that maintains the integrity of the scheme.

Section 2 – Considerations for future allocation rounds

This section seeks views on proposals that the Government may consider implementing for indeterminate rounds in future. The questions posed will therefore allow for a gathering of evidence with a view to potentially consulting on more detailed proposals again, in future.

- **How could the CfD support delivery of improved coordination of offshore transmission infrastructure?** As offshore wind development scales-up on the path to net zero, improved coordination is needed to deliver these commitments whilst avoiding unnecessary disruption to communities and the natural environment. The Government is considering how the CfD could better support projects that include offshore hybrid assets and/or bootstrap infrastructure.
- **How could the CfD support innovation in floating offshore wind foundation technology as the sector develops?** This consultation seeks further stakeholder views on how to define floating offshore wind so that the CfD does not hinder new or innovative offshore wind foundation technologies.
- **Should CfD indexation be updated to better reflect inflation risks?** CfDs currently protect against inflation risk, which is plausibly outside a developer's control, through indexation of strike prices. The Government is considering whether to update the indexation methodology to provide greater inflation protection during the construction period of future CfD projects.

We welcome responses from anyone with an interest in the policy area but envisage that the consultation will be of particular interest to those considering developing new renewable energy projects in Great Britain (GB), businesses involved in low carbon electricity generation supply chains, electricity traders and suppliers, businesses operating in the floating offshore wind sector and consumer and environmental groups with an interest in the electricity sector.

Next steps

Stakeholders and other interested parties are invited to provide their views on the government's proposed changes to the CfD scheme; the questions set out in the consultation are summarised at the end of the document.

During the consultation period DESNZ will be hosting several consultation webinars to discuss the proposals with stakeholders in more detail, and gather feedback. You can register to attend the webinars here. Questions can be submitted in advance to ContractsforDifference@energysecurity.gov.uk.

The consultation closes on 7 March 2024 and details on how to respond are provided in the General Information section above.

Once the consultation has closed, DESNZ will analyse responses and set out how it intends to proceed in a Government Response. This may involve further consultation where, for example, changes to the CfD contract standard terms, are required to implement policy change. A Government Response will provide a summary of the views expressed in response to the consultation and will set out the decisions that Government has taken.

Proposals in this consultation are presented as a package and would, if implemented, be done so together. However, subject to the consultation responses received and the timing of future

allocation rounds, some may not be taken forward or their implementation may be staggered over future rounds. If your response in respect of one or more proposals may be materially affected by the introduction, or not, of other proposals, please make this clear in your response. If necessary, the Government may choose to consult further on the detail of any changes if a decision is taken to move them forward. We note that where applicable, some proposals may be subject to seeking applicable regulatory approval.

Section 1: Proposals for Allocation Round 7

Repowering

As part of a previous consultation the Government sought views and further evidence on whether projects that are derived from the full repowering of existing projects should be better enabled via the CfD scheme. This chapter sets out the Government's minded to position for consultation, proposing changes to the Contracts for Difference regulatory framework to enable projects seeking to fully repower, provided that they satisfy the repowering eligibility criteria, to bid into the CfD from Allocation Round 7 (AR7) onwards.

Policy context

The CfD scheme was designed to support assets during the earlier stages of development and generation, with the asset expected to become fully exposed to market conditions towards the tail-end of its operational life. Current CfD legislation (the CfD (Allocation) Regulations 2014) and the Allocation Framework put limitations on sites looking to repower, with each application considered on a case-by-case basis as per the process outlined in each allocation round's documentation.

Responses to the Considerations for future Contracts for Difference Rounds consultation[3], alongside our own internal analysis, have reaffirmed the Government's view that repowering of renewable electricity generation sites could play an important role in the future electricity system and meeting net zero and energy security objectives. The Government are therefore considering further the role that the CfD could play in better enabling full repowering. Consideration of the impact of policy changes to planning or grid connection reforms are not within scope of this consultation chapter.

Importance for decarbonisation of electricity and meeting our net zero targets

Keeping low carbon renewable generation online through repowering could support decarbonisation of the power system in a timely manner and prevent the loss of low carbon electricity supply. It could also help to ensure that Great Britain is less affected by fluctuations in volatile global gas prices and that we can continue to reap the benefits of renewable electricity generation.

Full repowering could help achieve this by securing the use of existing sites with the best topography for electricity generation and existing network infrastructure. It could also improve the efficiency and optimisation of those sites and could even increase the capacity produced from the same site significantly, providing additional efficient carbon abatement. Retirement of these projects risks both the low carbon generation being replaced by higher emissions from generation equivalent to the existing power sector capacity mix but also risks missing the opportunity for increasing capacity of each site. This opportunity would be site and technology specific.

[3] Consultation: *Considerations for Future Contracts for Difference (CfD) Rounds* (December 2022) https://www.gov.uk/government/consultations/considerations-for-future-contracts-for-difference-cfd-rounds

Our analysis suggests that there is approximately 2.0 GW[4] total renewable capacity coming to the end of its operating life between 2027 and 2030. Breaking this down further, the Government estimate that c.1.3 GW of this will be onshore wind (around two thirds of the total capacity), c.400 MW will be landfill gas (c.20%), and c.300MW from other technologies[5]. Thereafter, we estimate that approximately 0.5-1 GW of low carbon capacity will reach the end of its expected operational lifetime per annum from 2030 onwards. In total, we estimate c.2.2 GW of onshore wind will reach end of life between 2031 and 2035.

We estimate that we will need 140-174 GW[6] of renewable capacity in 2035 to meet our Carbon Budget 6 power sector decarbonisation commitments, up from approximately 56GW[7] in 2023. This is a 150% to 200% increase in installed capacity. Should existing renewable projects retire at the end of their life rather than repower during this period, this capacity would also need to be replaced in addition to these deployment expectations. Enabling full repowering could not only enable more efficient use of existing resource and retain this capacity but also increase capacity and play a stronger role in meeting deployment targets.

In addition to the impact of full repowering on specific decarbonisation targets, existing sites tend to be in areas where the community are already supportive or have adapted to the existing infrastructure. Full repowering of these sites could therefore have a secondary benefit for those communities in which they are based and the potential to support highly skilled green jobs.

Comparison to new build projects when delivering a fully repowered project

The CfD is designed to accelerate investment into, and therefore deployment of, new build renewable projects which have high upfront capital costs and sustained price risk across a long operating life. For the purpose of this CfD consultation, we therefore consider that full repowering would require the 'decommissioning and recommissioning of the existing site, incurring similarly high upfront capital costs to that of a new build'. Under this definition, it can be considered that the case for intervention between new build and a fully repowered project, with regards to cost, is similar.

Each project will have different cost profiles and will therefore need to be considered on a case-by-case basis. However, we do expect similarly high upfront capital costs to be applicable to full repowering as for new build. In some cases, projects will be able to avoid some of the costs of new build projects. For example, by reusing road infrastructure or avoiding certain development costs during site scoping and feasibility assessment. Additional complexities of decommissioning an operational project whilst also preparing for construction of a new project

[4] Internal DESNZ data on Renewables Obligation projects. Does not include potential merchant projects approaching end of operating lifetime. End of life estimates based on known project start dates and Generation Cost report assumptions on technology operating lifetimes.
[5] Including anaerobic digestion, biomass CHP, dedicated biomass, and sewage gas. Unabated coal-to-biomass conversions are not within scope of this consultation as the Government is working towards a power bioenergy with carbon capture and storage (BECCS) business model that will look to support these types of technologies in the future, subject to value for money and availability of relevant transport and storage infrastructure. [We are considering whether transitional support arrangements could be needed to support biomass generators' transition to power BECCS. We will consult separately on this, including potential delivery options.]
[6] 2035 figure based the 2022 Net Zero Lower and Net Zero Higher scenarios consistent with meeting CB6 from the Department's power sector model, the Dynamic dispatch Model. Published in Annex O of the Energy and emissions projections.
[7] Energy Trends, December 2023. Table 6.1 https://www.gov.uk/government/statistics/energy-trends-section-6-renewables.

in parallel could, however, incur additional risks and capital costs which will likely offset any avoided costs.

We consider that life extension or partial repowering would not incur the same magnitude of costs to that of a new build project and therefore the case for intervention via the CfD here is not considered appropriate or proportional at this stage. This will be kept under review.

Uncertain revenues may hamper investment

Fully repowered projects are also likely to gain additional revenue compared to an existing project through increased capacity and would be able to generate electricity more efficiently due to technology advancements. This is however set against the context of potentially lower revenue returns overall for some renewable and low carbon technologies from the late 2020s.

It is our assessment that from the late 2020s onwards, price cannibalisation and economic curtailment[8] may become more prevalent and reduce the wholesale market revenues captured by renewable assets, thus increasing the potential for retirement towards their end of life as opposed to life extension or repowering. This is particularly prominent for intermittent renewable technologies.

In full repowering scenarios of intermittent renewable technologies where capital costs are similar to that of a new build, our expectation is that the costs of fully repowering combined with the risk and prevalence of price cannibalisation in the future wholesale market is likely to limit opportunities for merchant deployment due to increased investment risk. We therefore consider that, as with new build, support is likely to be required to incentivise deployment of fully repowered intermittent renewable sites at scale, maximising renewable deployment through more efficient and increased generation and ensuring security of supply. Where repowering is unlikely to equate to similar cost as a new build then the case for intervention is less clear.

This argument is also less clear for baseload and dispatchable technologies. Some of these technologies, such as biomass, incur higher, more fluctuating operational costs and therefore require greater revenue than most non-fuelled techs to meet their costs. It is also viable however that these technologies have greater access to alternative revenue streams such as the capacity market, balancing market, and ancillary services. Whilst these markets are competitive and returns would be technology and project specific, it is more feasible as an additional revenue stream than for intermittent technologies. There is significant uncertainty in the impact of the future wholesale market and the role of alternative revenue support on capture prices of baseload technologies going forwards and therefore significant uncertainty when considering the value for money proposition of enabling these technologies access to a CfD for repowering at this stage.

Impact on cost to consumers

When considering the role of the CfD in incentivising repowering, we have also considered how this may impact the overall proportion of renewables that operate under a CfD in the future electricity system and how this may impact cost to the consumer.

[8] Price cannibalisation can be defined as the depressive influence on the wholesale electricity price at times of high output from intermittent, weather-driven generation such as solar, onshore and offshore wind. Economic Curtailment can be defined as the deliberate reduction in output by generators below what could have been produced to balance energy supply and demand.

Rapid deployment of low carbon electricity will enable a systemic transformation across the economy working with technologies across the system to deliver cheaper, more secure energy. More low-cost renewables will be central to this goal and to meeting our net zero and Carbon Budget targets. The CfD has proven its ability to deliver renewable capacity at scale and at prices that reflect good value for the electricity consumer. As set out in the scheme evaluation, it is estimated that the generation from awarded CfD contracts between Allocation Round 1 and Allocation Round 3 has saved consumers in the region of £3bn, in comparison with supporting the same projects under the RO[9]. Any increase in deployment resulting from enabling repowered assets to participate would be associated with some increase in consumer levy costs to support that additional capacity. However, the expectation that fully repowered projects compete with new build projects should ensure they are successful only when they are cost-effective, and therefore they would provide an additional stream of cheap, low carbon generation.

There are some elements of the current CfD design that can be costly for the day-to-day management of the electricity system and that will only amplify as more CfD assets, including repowered assets, come online. Through this consultation and REMA, we need to ensure the CfD strikes the best balance between providing investor confidence and enabling renewable assets to respond to system needs, rather than distorting behaviours and decision-making and leading to externalised cost. Any intervention on repowering via the CfD should support theses aims, with a view to limiting these distortive impacts and higher costs to the consumer. We will also need to consider the possible impacts having an increasing number of assets on CfDs will have on the proper functioning of the market itself, including effective price formulation so that prices accurately reflect market needs.

The CfD as a mechanism itself drives value for the consumer through competition. As we consider that the costs of a fully repowered project would be similar to that of a new build, it would likely be this competition which continues to provide value to the consumer. Additionally, more projects competing due to a prevalence of repowered projects could increase the level of competition in the auction and further drive value to the consumer. Any auction design and consideration of pot structures would however need to be carefully considered to mitigate against any gaming risk or overcompensation and ensure it is appropriately designed to match the need for deployment with ensuring value for money. This is subject to further work and the impact on consumers will be considered alongside any final policy decision.

Proposals

On balance, the Government considers that there is a case for intervention to better incentivise the full repowering of projects from 2027 onwards. We consider that there is only a case for intervention at this stage where this would appropriately protect consumers and ensure efficient allocation of risk among investors, consumers and the Government.

Supporting these projects specifically to fully repower via the CfD could deliver the greatest benefits to consumer, security of supply, and decarbonisation, and also comes with greatest certainty that intervention would be needed. This contrasts with life extension or partial repowering whereby lower up front capital costs or continual refurbishment costs spread over an extended period would not incur the same level of cost of capital and therefore there is greater uncertainty over the case for intervention.

[9] Final Report: (*BEIS Evaluation of the Contracts for Difference Schem Phase 3, page 33)* (March 2021) https://www.gov.uk/government/publications/evaluation-of-the-contracts-for-difference-scheme

Proposed principles for intervention and repowering eligibility criteria

Intervention must therefore have due regard to the following key principles:

- Firstly, the rationale for enabling full repowering via the CfD should align with the rationale for that of a new build as per the CfD policy objectives in the Energy Act and subsidy control principles. Thus, appropriately balancing the need to ensure decarbonisation and security of supply with costs to the consumer.
- Secondly, that any policy implemented to enable repowering via the CfD should seek to minimise complexity of auction design and scheme delivery to enable implementation in time for AR7. For example, any CfD offered to a repowered project would be on standard CfD terms and conditions (i.e. 15-year term). Auction parameters will be set out ahead of each allocation round and integrated into existing practices, thus not impacting the standard process of an allocation round.
- Thirdly, that any intervention should align with the findings of REMA.

To deliver on these principles, the Government therefore considers that repowering via the CfD in AR7 should only be possible where projects meet all of the following criteria:

- **Technologies must already be eligible for the CfD scheme**[10]. This differs slightly to other schemes and technologies would need to abide by the specific eligibility criteria under the CfD, including size and sustainability requirements. Eligibility criteria are reviewed ahead of each allocation round but, for the purpose of this consultation, we considered technologies eligible in Allocation Round 6 as our baseline. To note, we would seek to remove existing regulatory restrictions for fully repowered projects subject to this consultation.
- **Projects must have at least reached the end of their operating life by/before the end of that applicable Delivery Year in Allocation Round 7 (AR7)[11] and are not in receipt of any other subsidy for electricity generation at that point**. We consider that there is greatest certainty in the case for intervention at the end of a project's operational life, as opposed to the end of their support scheme or any other point. As set out above, there are also still significant carbon and system benefits to intervening at this point. We also propose to define 'end of operating life' in line with operating life assumptions drawn from the published 2023 DESNZ Electricity Generation Costs Report[12], which represent best available evidence. For example, the DESNZ generation cost data suggests 25 years to the end of operating life for onshore wind, 30 years for offshore wind, and 35 years for solar PV. We also consider that we should aim for implementation of this policy for AR7. AR7 is the earliest the necessary policy and legislative changes could be implemented. We consider implementation by AR7 is required to deliver the market signal to developers and investors to accelerate repowering throughout the 2030s. For future allocation rounds we propose that eligibility should continue to be linked to the respective delivery years of each round.

[10] AR5 Allocation Framework (March 2023)
https://www.gov.uk/government/publications/contracts-for-difference-cfd-allocation-round-5-allocation-framework
[11] For our internal analysis this has been assumed to be 2027-2030 however is subject to final policy decision for each allocation round.
[12] Final Report: *Electricity Generation Costs Report 2023* (November 2023)
Electricity generation costs 2023: Annex A: Additional estimates and key assumptions (updated 16 November 2023)

- **Projects must also be able to at least retain their current capacity over the term of the contract**. This will ensure value to the consumer and decarbonisation benefits are at least retained from the previous project and throughout the term of the CfD contract. It also enables projects to bid in at increased capacity as they seek to optimise their repowered sites. Recognising that the ability to increase capacity will depend on the specific circumstances of each project, we consider that 'at least retain capacity' is most appropriate.

- **Projects must align to the fundamental CfD case for intervention including high upfront capital costs**. The CfD offers price certainty to low carbon projects which have high upfront capital costs and long operational lives with significant price risk across that period. We consider that any intervention on full repowering should meet the same rationale, resulting in the eligibility of only those technologies whereby their full repowering model is expected to have high upfront costs and associated price risk, similar to a new build.

Enabling access to the CfD for technologies which do not demonstrably meet these criteria could result in suboptimal policy outcomes, potentially resulting in additional and avoidable cost to consumers. For example, it may enable access to some technologies which would have been able to fully repower without support or create perverse incentives to fully repower just to obtain a CfD rather than prioritising innovation or site optimisation through other end of life options.

These eligibility criteria enable us to protect the consumer and ensure that the Government is intervening only where necessary and have greater assurance on the value for money of doing so. It is therefore our proposed approach to enable technologies which abide by the proposed criteria and to keep these criteria under review for each allocation round.

Proposed eligibility

We have considered the eligibility of each technology under the above criteria and set out the Government's minded to position on the eligibility of each technology below, whereby a technology must meet all of the criteria to be eligible. A more detailed assessment of each technology can be found in Annex A. We welcome any further evidence you may have to further inform this position.

- Reached end of operating life by AR7 delivery years.

Of all the technologies eligible for a CfD, it is our assessment that only onshore wind and landfill gas have a pipeline that requires consideration in time for AR7 delivery years. This equates to approximately 1.3GW for onshore wind and 370MW for landfill gas[13]. We have considered the case for all other technologies against all criteria, however all other technologies, including solar and offshore wind, have been discounted on the basis that they do not have a pipeline for AR7 delivery years. We will review the evidence for each future allocation round.

- High upfront capital costs similar to a new build and unable to recoup O&M costs.

Full repowering of an onshore wind site, particularly first-generation sites, is likely to be similar in cost to that of commissioning a new build and will require similarly high upfront costs. Whilst some costs will be avoided, for instance those associated with assessing site feasibility or

[13] Internal DESNZ data on Renewables Obligation projects. Does not include potential merchant projects approaching end of operating lifetime. End of life estimates based on known project start dates and Generation Cost report assumptions on technology operating lifetimes.

securing land rights, the costs of turbine supply and construction will be equal to if not greater than that of a new site, given the need to remove and dispose of extant infrastructure as well as purchase and install new infrastructure. It is also our assessment that, from the late 2020s onwards, price cannibalisation and economic curtailment may become more prevalent and reduce the wholesale market revenues captured by onshore wind assets, thus increasing the potential for retirement at the end of life as opposed to life extension or repowering.

It is not clear however from existing evidence that full repowering of landfill gas would require high upfront capital costs equivalent to that of a new build, or that full repowering would be an efficient and desirable approach for landfill sites developers or an efficient outcome for consumers. As landfill sites become smaller, regular replacement of gas engines are required to ensure they are appropriately sized and efficient. However, it is unlikely that the replacement of gas engines and pipes would incur capital costs equivalent to that of a new build, and the cost profile of this expenditure more closely resembles partial repowering or continual refurbishment rather than full repowering. There is however evidence to suggest that the high costs of operating landfill gas sites may increase the potential for retirement at the end of life as opposed to life extension or repowering.

- Able to at least retain their current capacity over the term of the contract.

Case studies for previously repowered projects in the onshore wind sector have also proven that through developments in technology, for example the increased power rating of turbines, it is possible to deliver capacity increases compared to the original project. This is assuming appropriate approvals are met such as planning consent, Environmental Impact Assessments and grid connections. For example, Carland Cross (an onshore wind farm near Newquay and operated by Scottish Power Renewables) was repowered in 2013 and increased its capacity from 6 MW (15 turbines) to 20 MW (10 turbines). The more recent example of Hagshaw Hill Repowering (in South Lanarkshire and also operated by Scottish Power Renewables) intends to increase capacity from 46MW with 42 turbines to 79MW with only 14 turbines. Whilst we note that the ability to fully repower each onshore wind project will be case-by-case, there is sufficient evidence to demonstrate increased capacity is possible for this technology via full repowering.

Due to the declining size of landfill sites over time, it is unlikely that a landfill gas site would be able to retain its current capacity throughout the length of the CfD contract.

Implementation

The Government is therefore minded to enable only onshore wind for full repowering via the CfD in AR7 in the instances where projects meet the repowering criteria, which have been designed to appropriately protect consumers and ensure efficient allocation of risk among investors, consumers and the Government. We also consider that offshore wind projects could be eligible in future rounds subject to further evidence on when the pipeline will emerge and the likely costs of full repowering. We are not currently minded to enable eligibility for all other technologies based on existing evidence.

The Government also recognises, however, that power generation from landfill gas currently plays an important role in contributing to our net zero goals by reducing methane emissions. The Government is therefore committed to ensure landfill gas sites continue to contribute to our environmental goals and we would be keen to work with the sector to inform this work.

We will consider the inclusion of other technologies in AR7 and later rounds however subject to the emergence of further evidence in response to this consultation that these technologies meet the suggested eligibility criteria for repowering.

Subject to the outcome of this consultation, the Government proposes to enable this policy by making amendments to the Contracts for Difference (Allocation) Regulations 2014, to the Allocation Framework for AR7 to enable existing onshore wind projects to bid into the CfD whereby they meet the outlined repowering eligibility criteria, and to the contract where appropriate.

Forward bidding

To better enable repowering, the Government is also considering amendments to the Contracts for Difference (Allocation) Regulations 2014 and Contracts for Difference (Definition of Eligible Generator) Regulations 2014 that would enable forward bidding into the CfD for repowering projects.

Forward bidding would enable a generator to apply for a CfD, for the purposes of repowering, whilst a generator was still operating. The developer would have to provide written assurances to ESO that they intend to fully repower in line with the delivery date of their awarded CfD.

Under the current CfD regulatory framework, generators cannot make an application for a CfD asset that has already been commissioned. The generator would have to decommission that asset first before applying for a CfD. This restriction could disadvantage repowering projects relative to new builds. This is because a repowering project would have to incur the costs of decommissioning and would not be able to generate electricity, before applying for a CfD. Projects would have to incur this cost with no guarantee of a CfD award. In addition, this limitation could increase lead in times for a repowering project timeline since a project may not be able to begin construction for repowering until after it has been awarded a CfD due to commercial uncertainty.

We believe that enabling forward bidding would enable a generator to apply for a CfD, for the purposes of full repowering, whilst a generator is still operating. The developer would have to provide written assurances to ESO that they intend to fully repower in line with the delivery date in their awarded CfD. The intended aim being to ensure that the regulatory framework for the CfD does not disadvantage full repowering projects compared to new builds, minimising delays, and periods of non-generation.

Consultation questions:

1. Do you agree that the eligibility criteria for full repowering appropriately balances CfD policy objectives of supporting decarbonisation, ensuring security of supply, and minimising costs to consumer?

2. Do you agree that use of the power generation cost assumptions to define end of operating life is an appropriate metric to capture those projects which will be seeking to fully repower in each allocation round?

3. Do you consider that each project should need to at least retain capacity, or do you foresee any challenges with this assumption?

4. Do you agree full repowering of onshore wind sites meets each of the repowering eligibility criteria and should therefore be eligible for AR7? What evidence do you have to support this?

5. Do you agree that all other technologies do not meet the eligibility criteria for AR7? If not, why not and what evidence do you have to support this position? We are

particularly interested in any costs data and definitions you may be able to provide on the full repowering of respective technologies.

6. Is enabling forward bidding for repowered projects required to better enable repowering via the CfD? What impact would enabling forward bidding have on reducing non-generation periods between decommissioning and recommissioning of the site?

Appeals

The current structure of the CfD appeals process is such that it can cause uncertainty around delivery timelines. This structure can potentially add months of delay to the publication of the auction results. This section examines whether altering the appeals process can potentially reduce the uncertainty faced by developers whilst also maintaining a fair appeals process.

Policy context

The CfD is an established and successful scheme that provides greater confidence to investors of renewable electricity projects. Retaining this confidence is important to ensure the scheme's success continues as we evolve it further.

The timeline for an allocation round runs to one of five possible scenarios. Which scenario the round runs to, and therefore the length of the allocation round, currently depends on whether any applicants make an appeal and dispute the decisions made by the Delivery Body (National Grid Electricity System Operator (NG ESO)) at assessment or review stages.

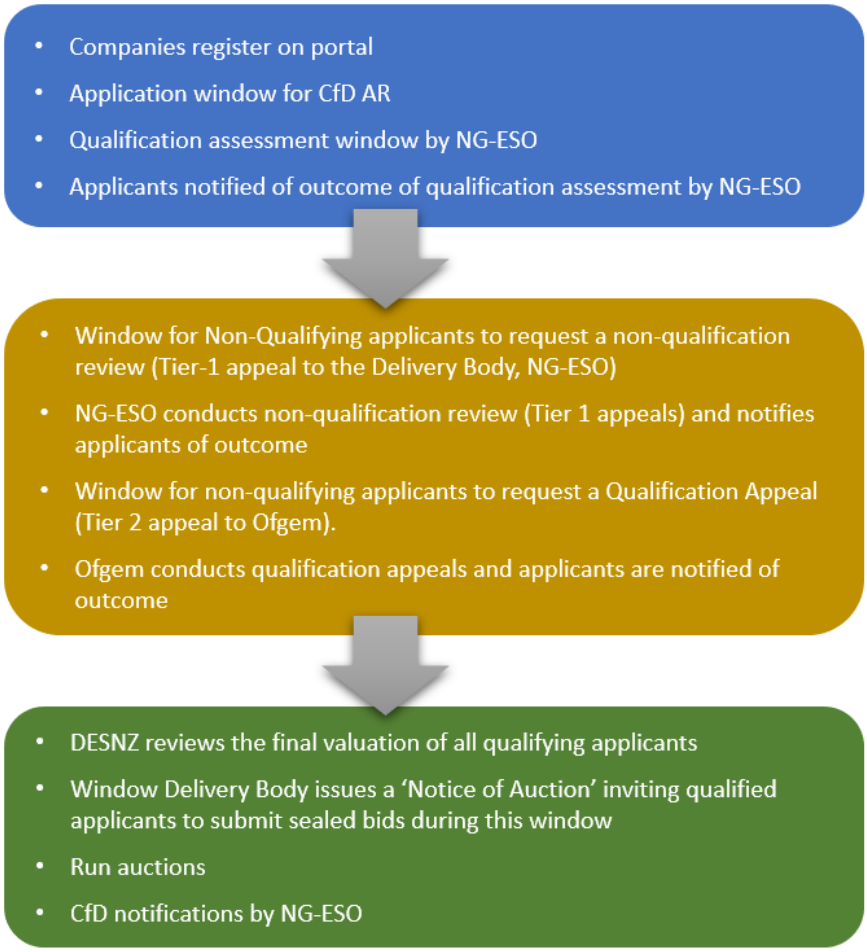
Currently, the CfD scheme appeals process has two levels, Tier 1 and Tier 2. Tier 1 appeals occur when applicants who have been unsuccessful in qualifying to participate in an allocation round appeal to the Delivery Body (NG ESO) to review the decision (10 working days, see Figure 1). Tier 2 appeals occur if, after the Delivery Body has reviewed the Tier 1 appeal and has upheld its original decision, the non-qualifying applicants requests an appeal, which is conducted by Ofgem (20 working days, see Figure 1).

All timeline scenarios are defined through the CfD (Allocation) Regulations 2014 and are communicated via the CfD microsite and other channels. The shortest timeline occurs when all applicants qualify and triggering the appeals process results in the longer timeline scenarios. The CfD timeline is not pot-specific, meaning that an appeal in one pot will shift all applicants in all pots to a longer timeline. The allocation process can only take place after the appeals process is completed.

Currently it is not possible to confirm exactly when the results from any CfD round will be announced as it depends on the number of Tier 1 and Tier 2 appeals received. In Allocation Round 5, for example, the application window was opened in March 2023 and results were released in September 2023. These results, however, could have been available in July 2023 if the appeals process had not been engaged. Such a scenario potentially creates uncertainty for developers and the wider market. It also has knock on effects for developing the next allocation round, as the lead-in time between auctions becomes very short given the CfD has moved to annual auctions.

Figure 1 - The current CfD appeals process.

An indicative timeline for the current appeals process, showing how the allocation round is disrupted and the auction possibly delayed by the appeal process. Applicants register and submit their applications. There are no quality control checks before the application window closes. The results of the qualification assessment are communicated to applicants. Unsuccessful applicants can begin the appeals process at this point. Once all appeals have concluded, the auction can run, and outcomes are publicly announced.



Proposal

In the Allocation Round 6 consultation[14], stakeholders were asked if there were any preferences as to changing the current appeals process. The most common consultee feedback suggestion was to establish a fixed timeline, where the current 5-scenario timeline is removed, and a specific appeals window is put in place. This would, at a bare minimum, provide developers an increased certainty as to the auction timelines.

We have considered a range of possibilities, building on consultee feedback and other options, assessing their feasibility and probable impact on the successful and timely delivery of forthcoming CfD allocation rounds. The Government considers that there are three main options which should be considered further, which we present in this consultation.

[14] Consultation outcome: *Considerations for future Contracts for Difference (CfD) rounds* (July 2023) https://www.gov.uk/government/consultations/considerations-for-future-contracts-for-difference-cfd-rounds

Option 1: Publish a fixed timetable.

By adopting this proposal, the fundamental structure of the CfD appeals process would not change. DESNZ would make a timetable publicly available, and this timeline will assume that both the Tier 1 and Tier 2 processes will take place.

If the appeals process is not triggered in this scenario, the results will still not be published until a fixed date. Publishing a fixed timeline will allow developers to plan for exactly when the auction results will be known. Even if a Tier 1 and/or Tier 2 appeal is not triggered, the results would still be released on the published maximum timeline and this option would not necessarily reduce the number of appeals being made.

Another element of this possible option may be to reduce the time taken for appeals slightly by, for example, reducing the time available to developers to consider making an appeal or reducing the window for submitting missing documents. However, implementing any of these ideas would require careful consideration both in terms of resource constraints for both generators, NG ESO and Ofgem and in terms of the impact on auction outcomes if they cause any changes to the available pipeline.

Option 2: Change the grounds for appeal.

There are currently no regulations in place which restrict the grounds for appeal. When analysing the grounds for appeal in the last few auctions, the most common reasons were clerical errors, documentation not provided, and documentation not correctly signed / dated / completed. A more robust stance on issues such as clerical errors in applications might help to avoid appeals on these grounds. This would then reduce the overall number of appeals thereby reducing the likelihood that the longer CfD timelines are triggered.

Option 3 (Preferred Option): Introduce a pre-qualification process and move the qualification checks and appeals process before the round opens to applications.

The timeline for this option would be similar to that used by the Capacity Market prequalification model[15], as indicated below in Figure 2. It would allow the timeline to be fixed, with results from the auction being released approximately 2 months after the close of applications, improving certainty for developers. There could also be potential opportunities to include in the pre-qualification window timeline a feedback process in which clerical errors might be identified, negating the need for some appeals. There may be merit in giving the Delivery Body the flexibility to request information during the pre-qualification stage which corrects a non-material administrative or clerical error that would have otherwise resulted in a Tier 2 appeal.

Another benefit of this model is that it would give increased certainty as to the pipeline when setting auction budgets, reducing the likelihood that parameters need to be revised to reflect changing pipeline estimates post-Budget Notice. As part of this, applicants could be required to bid at the same capacity for their lowest bid as in their original application, to allow parameters to better reflect the capacity that has qualified to take part in the auction, thereby reducing the risk of unintended consequences that reduce auction value for money to consumers. (flexible bids could still be submitted for less capacity at higher strike prices and would not need to be revealed at this stage). However, there are potential draw backs if it reduces the flexibility available to developers, and/or reduces the budget and/or capacity available to other projects where a successful project would otherwise have bid in at a smaller capacity without the change. We are seeking further views on this and other potential consequences. It should be

[15] EMR Delivery Body – Capacity Market https://www.emrdeliverybody.com/cm/home.aspx

noted that if introduced, this will not change when in the process core parameters are announced.

If we were to adopt this option, then applications would be assessed at an earlier stage than under the current arrangements and as such some projects may not have obtained their planning approval within the pre-qualification window. For this reason, careful consideration would need to be given as to the extent to which projects are approved with 'conditions' attached, for example, with the need to confirm planning approvals ahead of the auction starting. A clear cut off point would also need to be established as to when those conditions should be met so that a much shorter formal application window can follow when the round opens.

The shift in timelines to adopt this model will bring forward the application to opening AR7 earlier, potentially in December. This would only allow a few months to prepare for the opening of AR7 after the conclusion of AR6.

Preferred model

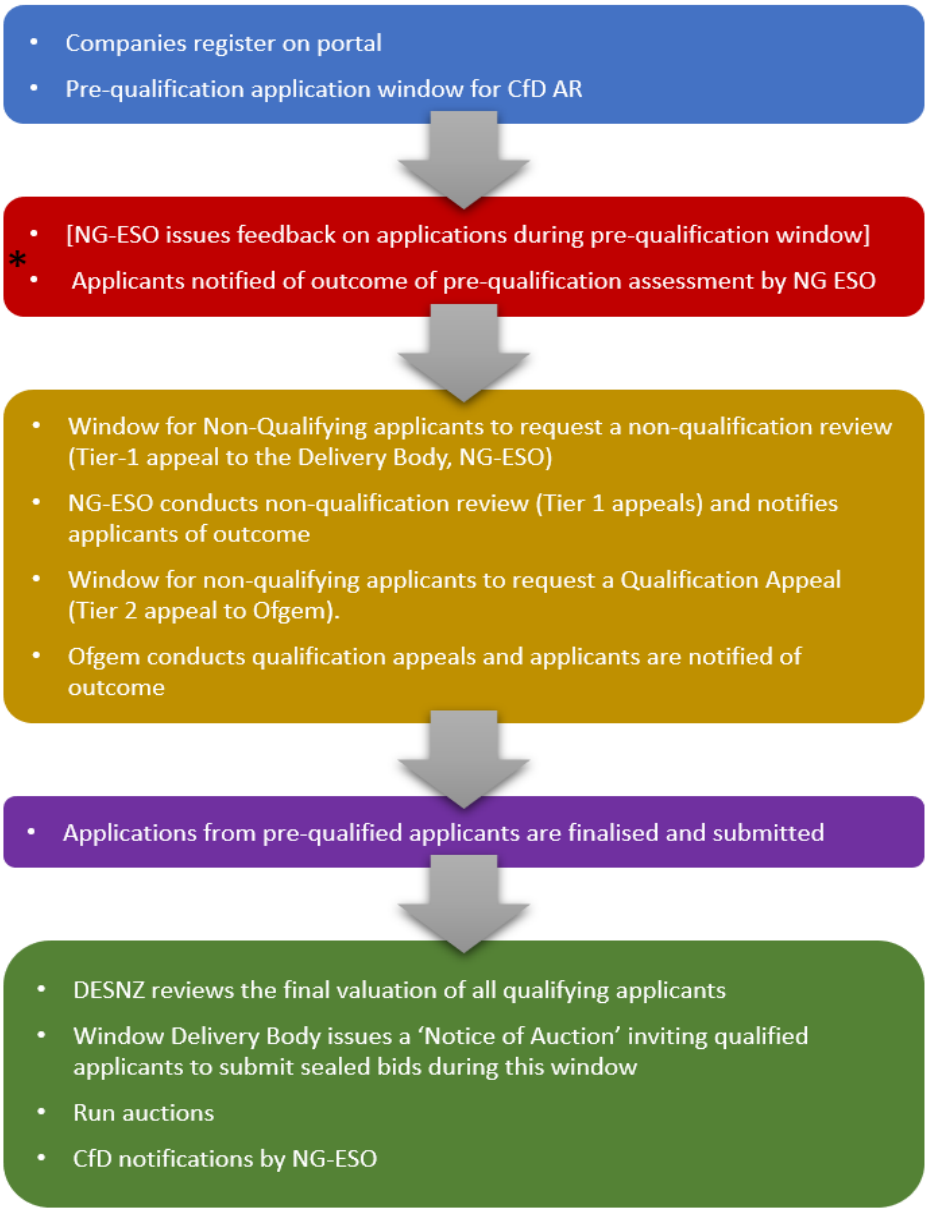
Through careful consideration, at this stage we are currently most supportive of Option 3. The reasons for this include that it would provide a more stable timetable for the CfD, with known date outputs. Whilst this may be the case in terms of Option 1, Option 3 also has the additional benefit of reducing the time between the application window closing and results being announced, allowing developers to know whether they have been successful sooner. Option 3 will also enable greater spacing between auctions, providing more time for auction design analysis and consequently greater certainty over budgets when they are set, as they are less likely to be revised. It is possible however, that the timeline for delivery of this option could be shifted from AR7 to AR8. This is due to the reliance on NG ESO's computer system being upgraded and the need for this process to keep to its current timetable. If this is the case, implementation of Option 1 may be considered for AR7. Option 2 could also be taken forward with either Option 1 or Option 3, they are not mutually exclusive. There may still be merit in reducing the number of appeals even if the timetable is fixed or amended.

Other minor changes

As we may need to amend the regulations in order to implement any decided change to the appeals process, we may also take the opportunity to update the Regulations to allow for all documents already shared between applicants and ESO to also be shared with Ofgem as part of the Tier 2 disputes process. This will help to speed up the process and allow for a quicker consideration of appeals.

Figure 2 - The appeals process if a pre-qualification approach were used.

This would mean that the process is likely to begin at least 3-4 months ahead of any allocation round opening. This timeline follows the Capacity Market model. Applicants register and create their applications, and a new a pre-qualification process for applications is followed, with eligibility checks carried out on applications by NG ESO, subject to how far ahead of time the applications a submitted before with window closes, and NG EGO's resources. After the pre-qualification window has closed, the applications which qualify for taking part in the auction are announced. Unsuccessful applicants can begin the appeals process at this point. The prequalification and appeals process both conclude before the round is opened.



*The Sustainable Industry Awards process, which is currently being consulted on separately, will run parallel to part of the application process but have a separate appeals/dispute resolutions process.

Consultation Questions

7. What are your views on the three options outlined above? Is there one option in particular which, in your view, would be the most suitable to take forward in helping to deliver an increased certainty of delivery timelines for applicants?

8. If we were to follow Option 2, i.e. changing the grounds for appeal, what kind of reasons for an appeal should be ruled out? Would there be any unintended consequences in taking this approach e.g. by removing the right to appeal due to clerical errors?

9. If an appeals process happens ahead of the allocation round formally opening, as with Option 3, should projects be able to be approved with conditions, provided they are met before the formal application window closes? If yes, what conditions might be appropriate?

10. If an appeals process happens ahead of the allocation round formally opening, as with Option 3, should we require developers to agree that they will not change the capacity of their main bid post submitting their application, to increase certainty when setting auction budgets?

11. If we were to change the application and appeals window for AR7, or later allocation rounds, are there any transitional impacts that we need to be aware of?

12. Are there times in the year where you would prefer not to have the auction results released (which in turn may trigger contractual and milestone processes)?

Phased CfDs for floating offshore wind

The British Energy Security Strategy announced the UK's ambition to deliver up to 50 GW of offshore wind by 2030, including up to 5 GW of floating offshore wind. The Government anticipates further rapid expansion of the floating offshore wind sector throughout the 2030s. This section seeks views on a proposal to extend to floating offshore wind projects the ability to build projects in multiple phases in order to help de-risk the overall construction process and improve the sector's commercial viability and development.

Policy context

CfD phasing policy, allowing projects to be built out in multiple stages, was designed to provide support for early offshore wind projects by mirroring as closely as possible the commercial realities of constructing those projects. When projects for the first CfD allocation round were planned, installation times per turbine were longer and developers were largely restricted to building in summer when sea conditions were likely to be calmer. By de-risking the construction process, phasing increased investor confidence, which helped to lower the overall cost of capital.

The CfD scheme currently provides fixed-bottom offshore wind projects within the same Crown Estate seabed lease area, the option to be built in up to three phases, with each phase party to its own CfD Agreement. The overall capacity of a phased project is capped at 1500 MW and at least 25% of the total project capacity must be constructed and commissioned in the first phase. The Target Commissioning Date (TCD) of the final phase must be no later than 2 years after the TCD of the first phase, and the Target Commissioning Windows of phases can, but are not required to, overlap. Developers can re-designate turbines between phases to deliver the required capacity.

As an emerging technology with only c.200 MW of capacity deployed worldwide to date[16], the floating offshore wind farm construction process is yet to be industrialised. There are several factors that are likely to result in a slower buildout rate than is now the case for established fixed-bottom offshore wind, including limitations on suitable port capacity and increased sensitivity to adverse weather conditions. As a result, there are similarities to the status of fixed-bottom offshore wind technology when phasing was first introduced, for the reasons set out above. In addition, the scale of floating wind farms in development is substantially greater from that of early fixed-bottom wind farms, with multiple floating wind farms in development targeting total capacities greater than 1 GW, and some larger than 2-3 GW in scale. This points to a steeper scale-up in the size and complexity of floating wind projects than for early fixed-bottom projects, which may cause a commensurate increase in construction risk.

Conversely, a number of the components utilised in floating offshore wind turbines are common to established fixed-bottom offshore wind, and therefore have manufacturing processes that are well established and already highly cost effective. While this may reduce the risk of manufacturing defects that could cause delays to wind farm delivery, it also leaves the sector exposed to risks caused by current constraints in the offshore wind supply chain.

The phasing rules in combination (i.e. the 1500 MW cap, a requirement to build within one lease area, and stipulations on the number of phases and timing) were deliberately designed to prevent applicants submitting one bid to develop several different projects. In doing that, they

[16] Source: RenewableUK EnergyPulse

would receive the same strike price for each project and build out over many years, benefiting from cost reductions over time.

Proposals

Given the emerging status of the floating offshore wind sector, projects may be subject to a greater level of construction risk for the reasons outlined above. The Government therefore welcomes views on whether it should extend the ability to floating offshore wind to build projects in multiple phases in order to help de-risk the overall construction process and to help improve the sector's commercial viability and development. Extending phasing to floating offshore wind would require changes to the CfD Allocation Regulations 2014.

Potential positive impacts of extending phasing eligibility to floating offshore wind include increased investor confidence and lowering the overall cost of capital for floating offshore wind developers. By doing so, it could help enable the delivery of floating offshore wind projects, in particular those of greater generating capacity, contributing towards the UK's deployment ambitions and decarbonisation targets. However, increasing developers' confidence in their ability to build larger projects in any given allocation round's delivery period could result in increased cost to consumers, with developers potentially able to secure a higher strike price for a greater project capacity in an earlier allocation round as opposed to delivering the project in stages over multiple rounds, once technology costs have come down.

As the scale and nature of renewable projects evolves enroute to net zero, the Government will also consider if, and how, our approach to phasing in the CfD should adapt more widely, across technology types. This may be the subject of further engagement with stakeholders.

Consultation questions:

13. The Government welcome views on whether CfD phasing policy should be extended to floating offshore wind.

14. The Government welcomes views on the potential impact of extending phasing, or not, to floating offshore wind projects.

15. If extending phasing to floating offshore wind, the Government welcomes views on whether the existing rules for fixed-bottom offshore wind project phasing, including the 1500 MW cap, are appropriate for the technology, and if not, why?

Co-located generation and hybrid metering

As CfD-supported generation makes up a greater and greater proportion of the GB power supply, it is paramount that the scheme supports the evolution of the electricity system as a whole. The hybrid metering approach described in this section would uncouple the CfD from the Balancing and Settlement Code at certain points and could reduce the barriers that currently prevent some innovative, co-located generation models from being viable. The aim is that this new metering approach would make it easier for CfD generators to co-locate with other assets, including merchant capacity and storage.

Policy context

The primary aim of the CfD scheme is to encourage low carbon electricity generation, whilst having regard to decarbonisation targets and carbon budgets, security of supply and the likely cost to consumers. We are considering how the CfD scheme can support innovations that contribute to these core objectives, for example by facilitating new business models or the provision of flexibility and operability services, which allow for a more efficient and secure clean energy system. The ability to meter electricity flows reliably is critical to enabling innovation in a way that maintains the integrity of the CfD scheme.

The Government is aware that developers of several renewable generation technologies, including onshore wind, offshore wind and solar, have indicated that they would like to co-locate additional assets with their CfD generation facility, such as battery storage, hydrogen production, merchant capacity and other renewable technology types.

Updated guidance was published by the Low Carbon Contracts Company (LCCC) in May 2023[17], which set out the current permitted arrangements for CfD generation to co-locate with electricity storage and hydrogen production. However, this guidance is limited in scope as it requires all assets to be metered at the Balancing Mechanism Unit (BMU)[18] level under the Balancing and Settlement Code (BSC). There is some evidence to suggest that this requirement may leave several enduring challenges. These include:

- Metering requirements to separate CfD and merchant generation at the BSC level can be onerous and overly complex.
- Metering all CfD output at BSC level makes all CfD generation a part of the wider energy system at the point it is generated and does not allow for the optimisation of grid connections behind this point. Shifting this generation to a time when it is more valuable to the system, or using it for alternative purposes, could help relieve constraints and avoid renewable electricity being curtailed during periods of high production.
- Co-located battery storage cannot be operated in the most effective way for providing ancillary services when it is metered at BSC level.

[17] LCCC CfD Co-location generator guidance (May 2023) https://www.cfdallocationround.uk/publications/cfd-co-location-generator-guidance

[18] Balancing Mechanism Units (BMUs) are used as units of trade within the Balancing Mechanism. Each BM Unit accounts for a collection of plant and/or apparatus and is considered the smallest grouping that can be independently controlled. Within the CfD scheme, BMUs are at the edge of the facility at the boundary point, and anything behind it cannot be metered currently by the BSC. This proposal aims to circumvent not being able to do so while still adhering to the BSC's rules.

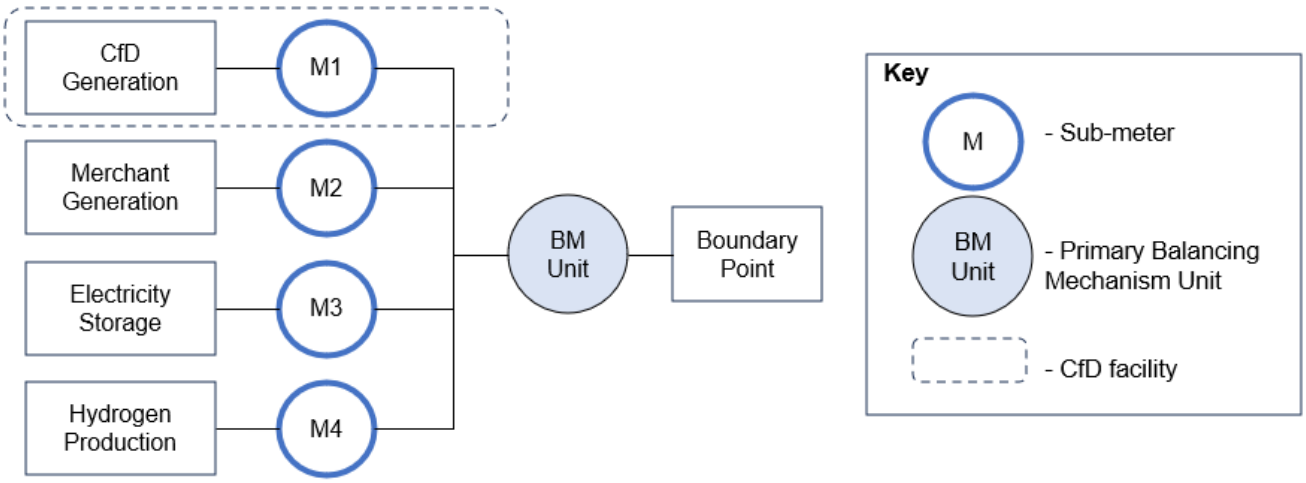
- Hydrogen electrolysers may not be able to co-locate in the way that delivers maximum system value.
- New arrangements and innovations are not easily accommodated, such as metering between countries or facilitating coordination of offshore assets.

Proposals

The hybrid metering approach described in this section could help facilitate CfD co-location with other assets in line with current CfD policy, as well as facilitating potential changes to permitted arrangements in line with our policy objectives in the future. We will consider how any potential new arrangements align with the CfD scheme's primary aim to encourage low carbon electricity generation that is exported to the grid. Hybrid metering is an enabler of policy relating to co-located arrangements and the Government and LCCC will retain discretion over how co-location is implemented.

A hybrid approach to metering would permit CfD generators to measure their Metered Output used to calculate CfD difference payments at a sub-BMU level (outside of the BSC) while co-located alongside other assets (for example, merchant generation, battery storage or hydrogen). The whole site would, from a market perspective, still settle at the BMU boundary point (inside the BSC), as per the below diagram. This proposal would apply to all technology types supported by the CfD scheme. Note that in this approach, no supply of electricity may be located 'behind' the CfD generation sub-meter used for calculating CfD difference payments (M1). This would ensure the integrity of the scheme's fundamental two-way payback design, and therefore value for money for consumers, is maintained.

Figure 3 - Example of co-located assets behind the boundary point BM Unit, each asset is separately metered using a sub-meter outside of the BSC.



Subject to the outcome of this consultation, the Government intends to consult on contract changes to allow CfD generators to use non-BSC metering for the settlement of the CfD where appropriate and by agreement with LCCC, based on a new Metering Operational Framework and Technical System Requirements annexes, similar to the current Private Network CfD. Contract changes would be supported by detailed guidance setting out permitted arrangements using the hybrid metering approach, and all arrangements would be subject to agreement with LCCC. We are considering amending the CfD eligibility criteria, where appropriate, to enable arrangements that use hybrid metering. LCCC would collect data directly from generators' operational systems and have access to more granular data and

greater visibility of electricity flows than under the current system. Sub-meters would provide data of the same or better standard than the BSC by tying the Metering Operational Framework to BSC Codes of Practice.

CfD generation would be measured at the point and time of generation, not at the BMU boundary point. No CfD generation would be able to be used by other co-located assets without first being metered. This ensures that generators cannot avoid CfD repayments when the reference price is above the strike price, maintaining the consumer protection provided by the CfD scheme. All power produced under a CfD that is exported to the transmission and distribution systems would have to meet the requirements of the BSC under the generator's non-CfD obligations.

A further benefit of this system is that it is adaptable to future arrangements and innovations, for example where analogue metering of storage embedded inside wind turbines is not possible due to space constraints, or where metering between two or more countries may be required in future.

When considering permitted arrangements using hybrid metering, they will be measured against the core objectives of the CfD scheme. We will retain discretion over how hybrid metering is implemented if models are not aligned with previously stated CfD policy, and all hybrid metering arrangements would be subject to agreement with LCCC.

Consultation questions:

16. To what extent do you agree with the identified challenges that the current CfD metering requirements creates, as set out above?

17. To what extent do you agree that introducing hybrid metering would support innovation and more flexible use of CfD-supported renewable generation?

18. Specifically, to what extent could hybrid metering remove barriers to the deployment of low-carbon hydrogen?

19. Could you provide any evidence on the potential cost savings that could arise from introducing hybrid metering?

20. What would be the potential drawbacks or unintended consequences, including any potential for gaming, of introducing hybrid metering?

Section 2: Considerations for future allocation rounds

The transition to a fully decarbonised power sector by 2035 will mean delivering significant investment in new low carbon electricity capacity. This transition will be ever more complex, requiring the sustained and coordinated transformation of the energy system. The CfD scheme will need to evolve to meet a range of challenges, including supporting increasingly innovative and large-scale offshore wind deployment, and maintaining investor confidence in an increasingly volatile economic context. This section seeks views and evidence to support the policy development process around a number of challenges we think the CfD may need to address in future allocation rounds. Obtaining evidence, opinion, and insight from those with expertise in the sector is a vital part of designing effective, functioning policies. Where this leads to more comprehensive proposals for changes to the CfD framework the Government would expect to consult further ahead of allocation rounds in future.

1. How could the CfD support innovation in floating offshore wind foundation technology as the sector develops?

The Government anticipates further rapid expansion of the floating offshore wind sector throughout the 2030s. New or innovative foundation technologies with the potential to unlock cost-effective commercial deployment of offshore wind in deep waters could play a key role in this. The Government is gathering evidence on how to ensure that CfD eligibility requirements do not impede innovation in future rounds.

Floating offshore wind is an emerging technology in the offshore wind sector. This technology allows for the deployment of offshore wind in deeper waters than was previously commercially viable.

Regulation 27ZA(4) of the CfD (Allocation) Regulations 2014 defines the parameters under which a CfD unit is considered to be 'floating offshore wind' and contains the requirement that:

> "all turbines forming part of the relevant CfD unit —
>
> (i) are mounted on floating foundations; and
>
> (ii) are situated in offshore waters of at least 45 metres depth (measured from the seabed to chart datum);"

This definition means that to be considered 'floating offshore wind', and therefore eligible to compete alongside other emerging technologies in the CfD, then any foundation designs used must float. However, the Government is aware of novel foundation designs which may be suitable for deep water deployment but do not technically float and would therefore not be considered eligible as 'floating foundations' under the CfD.

As with conventional floating designs, the anticipated costs of these novel designs are relatively high compared to established fixed-bottom technology. Therefore, being ineligible for the uplifted support available to floating wind could restrict commercial opportunities for these novel designs.

The Government recognises that there has not yet been the scale of deep water offshore wind deployment necessary for the sector to determine the most cost-effective technological solutions. The Government therefore believes that new or innovative foundation technologies with the potential to unlock cost-effective commercial deployment of offshore wind in deep waters should not be blocked from coming to market due to not being floating foundations. However, it is also critical to ensure that if eligibility to compete alongside other emerging technologies in the CfD were extended to non-floating deep water foundations, this does not enable gaming of the CfD by more established technologies capable of deploying at lower cost, and thereby negatively impact value for money for the consumer.

In a previous consultation[19] for CfD Allocation Round 6 (AR6), consultees were asked whether they supported a change to the regulations for the reasons outlined above. While the majority of respondents agreed on the need for a change to the regulation, there was no consensus on what this change should be. The Government response was therefore that we would keep this area under review and continue to work with industry and other stakeholders with a view to developing a long-term solution.

The Floating Offshore Wind Taskforce, a joint Government-industry forum, has been considering this issue in more detail since the previous consultation response was published. A working group of industry experts held a series of meetings to discuss possible solutions. The working group included representation from both ‘conventional’ floating foundation developers who would be covered by the existing definition, and also those developing novel designs that may not technically float and may therefore be excluded under the current definition.

The working group concluded that, given the uncertainty about which deep water technologies may prove the most commercially viable, that it was not workable to develop a catch-all definition of floating offshore wind which covered all possible designs.

The group felt that any definition of ‘floating’ that attempted to incorporate novel or unusual features would be too tightly defined and restrict innovation, and also be open to the potential risk of bias interpretation or legal challenge on nuanced points of differentiation. It was also noted that various industry experts, including classification societies, already have an established role in the assessment of new, novel, and unusual design, technology or features around offshore assets. They maintain the technical expertise to evaluate and recommend offshore classification that is then relied upon by the offshore industry and insurers and financial institutions. A complex floating definition created by Government had the potential to conflict with these established industry processes.

As such, the working group’s recommendation is to consider explicitly defining established offshore wind foundation technologies (e.g. jackets, monopiles, gravity-based foundations) as those ineligible to compete with emerging technologies and benefit from any higher administrative strike prices. Foundation technologies that did not meet the definition of any of these established designs would be eligible to compete as emerging technologies by default. The Government would keep the list of established foundations under review, to prevent

[19] Consultation on policy considerations for future rounds of the Contracts for Difference scheme (December 2022)
https://www.gov.uk/government/consultations/considerations-for-future-contracts-for-difference-cfd-rounds

potential gaming of the CfD regulatory system as new foundation designs become more cost competitive.

Government recognises the potential complexities and issues of this approach and so is seeking initial views from consultees on how workable it may or may not be.

The working group also considered the use of water depth in defining floating offshore wind and the potential use of the terminology ‘deep water’ offshore wind. The working group was not in favour of a definition based on water depth, highlighting that water depth alone is not the only factor that may drive a need for novel solutions or lead to increased costs. Additionally, in water depths of 60-110m both fixed and floating solutions may be viable.

However, the Government considers that a minimum water depth requirement may still be necessary for emerging foundation technologies, in order to safeguard consumer value for money by restricting support for more expensive designs only to those projects where their use is appropriate and necessary, and deployment could not be achieved with established foundation types.

Consultation questions:

21. What are your initial views on the proposed approach to determining technological eligibility for established and emerging technology tariffs in the CfD scheme? Include any early concerns or potential risks you may foresee. We are particularly interested in any potential gaming risks or unintended consequences you have identified.

22. If Government was to consider more tightly defining ‘established fixed-bottom’ offshore wind, with a view to then considering anything else eligible as an emerging foundation technology, do you have any initial suggestions on appropriate definitions or metrics by which to define ‘established fixed-bottom’?

23. Government recognises the limitations of water depth for use in such definitions. However, should this be necessary, the Government welcomes views on the appropriate minimum depth requirement for emerging foundation technology deployment.

2. How could the CfD support delivery of improved coordination of offshore transmission infrastructure?

The Offshore Transmission Network Review (OTNR) was launched to address the barriers to large scale deployment of offshore wind and consider how to deliver the required transmission connections, whilst minimising impacts on the community and the environment. In a previous consultation on future CfD rounds, we asked whether CfD support should be made available to 'hybrid' or 'multi-purpose interconnector' projects. This section outlines how these kinds of assets could be treated in the CfD and seeks further evidence over how these projects should or could be compensated.

Policy context

In the Energy White Paper[20] published on 14 December 2020, the Government set out a target of increasing offshore wind capacity to 40 GW by 2030 in order to accelerate the transition to net zero. This has since increased to an ambition of up to 50 GW by 2030, as detailed in the Energy Security Strategy published on 7 April 2023. Offshore wind is necessary to reach our decarbonisation goals, and the development of offshore infrastructure and its integration into our energy system is a key priority for the Government.

As offshore wind development scales-up on the path to net zero, improved coordination is needed to deliver our commitments and avoid unnecessary disruption to communities and the natural environment. Greater coordination will deliver security of supply and decarbonisation benefits, contribute to the Government's ambitions on offshore wind and interconnection and could also deliver significant socio-economic benefits.

The Offshore Transmission Network Review (OTNR) has identified multi-purpose interconnectors (MPIs), a type of Offshore Hybrid Asset (OHA), as an enabler to better coordination, as it allows offshore wind farms to share key infrastructure with interconnectors and other jurisdictions, reducing the number of individual connections to the UK coast. Bootstrap connections are another coordination solution that aim to reduce new onshore connections and will be covered in this consultation. The Government is aware of a number of MPI and bootstrap projects and so we are looking at how to best support these innovations, with any final decisions made once analysis is completed.

The Government has been engaging stakeholders closely, and there have been a series of recent consultations on MPIs and OHAs:

- DESNZ AR6 Considerations for future Contracts for Difference rounds[21] (December 2022)
- Ofgem Regulatory Framework: Offshore Hybrid Assets and Non-Standard Interconnectors[22] (June 2023)

[20] Energy White Paper: Powering Our Net Zero Future (December 2020) https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future
[21] Consultation on policy considerations for future rounds of the Contracts for Difference scheme (December 2022) https://www.gov.uk/government/consultations/considerations-for-future-contracts-for-difference-cfd-rounds
[22] https://www.ofgem.gov.uk/publications/consultation-regulatory-framework-including-market-arrangements-offshore-hybrid-assets-multi-purpose-interconnectors-and-non-standard-interconnectors

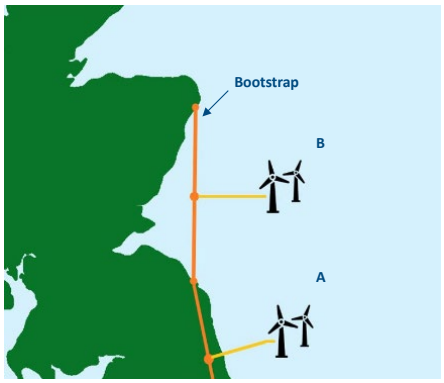
- Ofgem-DESNZ Market Arrangements for Multi-Purpose Interconnectors[23] (June 2023)

DESNZ's emerging view is that MPIs and bootstraps should be eligible for CfD contracts, where they demonstrate good value for money for consumers and wider benefits to the energy system. Analysis is currently underway, and outputs will be conveyed as part of the Spring 2024 consultation response.

Bootstraps

'Bootstraps' are large offshore subsea High Voltage Direct Current (HVDC) cables connecting one onshore substation to another onshore substation further along the coastline. This allows for the transfer of electricity from remote locations of generation to demand centres across the UK, helping to relieve constraints on the transmission system and reducing the onshore infrastructure.

Figure 4 - Project B radially connects to bootstrap similar to standard Project A to onshore station



There is potential for offshore renewable generation projects to connect to a bootstrap, rather than to a point onshore which reduces the number of points of onshore connection for offshore projects (see illustration in Figure 4).

Under Ofgem classifications, bootstraps are considered (national) onshore transmission infrastructure, meaning offshore projects can connect to them in the same way as to other parts of the electricity network.

CfD regulations set out the main eligibility requirements for the CfD scheme. We do not believe change is required to regulations to support eligibility of these projects, but further work is needed:

- To clarify the costs of bootstrap-connected projects, to understand how they should be categorised in CfD auctions – work on the levelised costs of electricity should inform this;
- To clarify any changes that may be needed to the contract or allocation framework.

Subject to the further work noted above the Government considers that bootstrap projects should be eligible for participation in the CfD in AR7 (scheduled to open in 2025).

[23]https://www.ofgem.gov.uk/publications/consultation-regulatory-framework-including-market-arrangements-offshore-hybrid-assets-multi-purpose-interconnectors-and-non-standard-interconnectors

Questions:

24. Do you agree with the Government's assessment of bootstrap-connected projects?

Multi-Purpose Interconnectors

For MPIs the question is more complex, and the mechanism by which the CfD supports these projects will vary depending on the market arrangements and regulatory regime decided. A key question to answer is how best to use these assets in cross-border trade. The two proposed market models are the Home Market (HM) and Offshore Bidding Zones (OBZ), consulted on by Ofgem and DESNZ earlier this year.

The HM model is effectively the status quo and is similar to the model used for current radial connections of Offshore Wind Farms (OWFs) to shore. OWFs connected to MPIs will be part of their home market and will have priority access (a guaranteed proportion of capacity) to the MPI cable over cross-border capacity – i.e. overflows to/from connecting jurisdictions. Because of this, the OWF will always bid into and receive the price of its domestic market, regardless of market forces and direction of interconnector flows.

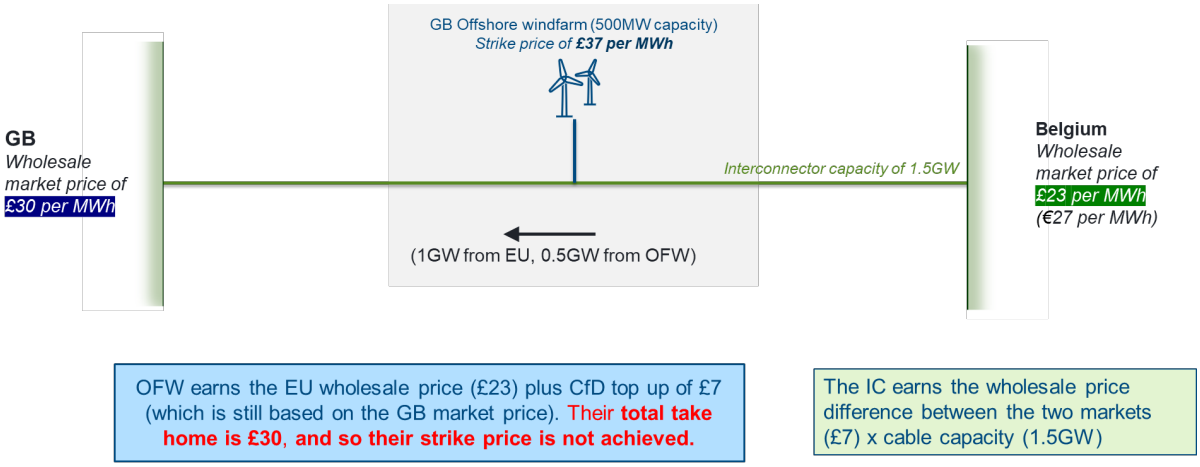
However, broader issues arise from this model, with the main challenges being a lower revenue for the interconnector due to guaranteed capacity, and costly consequences to consumers where there are errors in that capacity forecasting. The OBZ model, with its more efficient trading and allocation mechanism, is therefore seen as the preferred model.

Under the OBZ model, a neutral bidding zone is created in the relevant jurisdiction, in this case GB, for the OWF-MPI. Instead of having priority access to cable capacity, the OWF will compete with bids and offers from market players from both GB and connecting countries for access to the cable to all connecting markets. On the assumption that implicit trading arrangements are in place (i.e. most significantly, the bundling of wholesale energy prices and capacity allocation prices) a central algorithm will match bids and offers and dispatch the OWF appropriately to optimise the overall use of the MPI asset.

A key challenge to this model is a price risk issue which the CfD is seeking to address, in order to support coordination. The underpinning algorithmic principle is to move excess/cheaper energy (determined by the wholesale price, available interconnector capacity, bids, and other inputs) from one market to another, to optimise energy flows whilst (in theory) also delivering the cheapest price to consumers. To remain competitive the OWF will necessarily take the lower market price of the markets it is connected to as the OBZ.

However, the importation of cheaper energy (i.e. from EU country to GB) over the MPI results in a revenue gap for the OWFs, disincentivising the OWF to switch from a radial connection. Normally, the CfD tops up from the GB reference price to the agreed strike price should the former fall below the latter. The lower EU reference price, however, will create a shortfall up to the GB reference price, from where the CfD top-up payment is calculated. The OWF therefore loses revenue.

Figure 5 - Offshore Bidding Zone 'import' (prices are illustrative only)



Options to support OWF-MPIs in an OBZ model have to consider this additional risk placed on OWF-MPI developers, and how the CfD should account for this. There are three scenarios as to who takes the risk:

- Scenario A: No intervention is made, and risk is placed on the OWF-MPI, as there will be periods where they do not receive the full strike price;
- Scenario B: Interconnector congestion rent revenue is shared between the OWF and interconnector owners, reducing their revenue and so placing the risk on the interconnector.
- Scenario C: The CfD makes up the difference between the EU reference price and the agreed CfD strike price (per radial connections), with risk placed on consumers.

Scenario C is the only one that would incentivise OFW-MPI projects to build. It is therefore, in principle, the preferred approach in an OBZ model. However, this is a new cost to consumers compared to a counterfactual of a radial connection, and we will consider the pending analysis first before taking any final decision.

Proposals

In the Ofgem-DESNZ Market Arrangements consultation, two questions were asked as to whether and how OWFs should be compensated. Suggested solutions are in the below table.

Table 1 - High level options assessment

Option	Mechanics	Risk Burden	Closes revenue gap?	Deliver-ability?	Pursue/ Discard
Congestion rent sharing	The income earned by the MPI is proportionately shared with the OWF	MPI			
Flexible CfD	Consumer pays the top up from either the GB or foreign market reference price	Consumer			

Asset life CfD	Extend the CfD contract to 25-30 years to reduce EU lower market price risk	Consumer			
Deemed Generation	Subsidy payments based on output deemed to have been generated during the time period instead of metered payment	Consumer			
Cap and Floor	Generators guaranteed a minimum amount of revenue (floor) in each period and pay back a % of any earnings over a maximum amount of revenue (cap)	Consumer			
Always use the GB ref price	Consumer pays the top up from the GB ref price; with foreign market paying (lower) reference price – status quo	Consumer			

Options were considered according to:

i) its ability to directly address the revenue gap;
ii) where the risk burden fell heaviest between the OWF, the MPI, and the consumer;
iii) the deliverability of the option; and
iv) other pros and cons (not set out here).

Congestion rent sharing was widely rejected by consultation respondents on the basis that the lower revenue would be too punitive to interconnectors and reduce funding for future investment into the coordination infrastructure. We broadly agree with this and will not pursue this further at this stage. The remaining options suggested changes to the CfD.

We note that none of the Asset Life CfD, Deemed Generation, and Cap and Floor options appear to clearly resolve the revenue gap problem. It is possible they might reduce the shortfall incurred by the OWFs by the lower strike prices as the overall risk is reduced, but compensation via the flexible CfD would likely still be needed.

These three options also amount to substantive changes to the CfD, with additional potential to resolve issues not necessarily unique to OWFs connected to interconnectors. Changes of this scale are therefore being considered in the round through the Review of Electricity Market Arrangements (REMA) programme, with updates and further thinking to be consulted on in due course. More immediately, therefore, we see the Flexible CfD as a promising solution to the problem at hand, which may also complement one of the REMA options.

We have discarded the GB price option on the basis that it does not solve the problem of a revenue gap for developers, and there is no ability to amend payments from EU sources to take the GB price.

The Flexible CfD is seen as the most promising option as payment will flex to the appropriate market reference price as determined by the OBZ algorithm, with the CfD topping up from that level. (We note the expectation is that direction of flow will mainly be from GB-EU, meaning the

GB reference price would prevail). It also brings OWF-MPI arrangements back on a level playing field with radially connected windfarms. On initial assessment, it is deliverable through LCCC settlement systems, with further work required to identify the best pathway to service this. Amendments will likely be required to the Contracts for Difference (Allocation) Regulations 2014 to ensure eligibility of OFWs connected to an MPI for the scheme. Any decision however is subject to a full Impact Assessment to properly evaluate the cost and benefit to consumers, but the option if viable could be delivered by Allocation Round 8, scheduled to open in 2026.

Analysis and Timings

We cannot come to a final conclusion on options until we have considered the full evidence on the benefits of the OWF-MPI arrangement against any increased costs to the consumer. Analysis is underway, and outputs (the Impact Assessment) will be ready for a Spring 2024 response. Any final decisions on the CfD amendment options are subject to this work and we will update in the Spring 2024 Government response with an indicative timeline.

Consultation questions:

25. Do you agree with the Government's assessment of the role of the CfD in the HM and OBZ models?

26. Do you have any evidence on the additional costs and benefits to consumers of an OWF-MPI arrangement?

27. Are there other options that could better address the issues outlined in this consultation?

3. Should CfD indexation be updated to better reflect inflation risks?

CfD strike prices are currently indexed to the Consumer Price Index as a form of inflation protection. In recent years commodity price inflation has outpaced general inflation. The Government is gathering evidence on whether changes to CfD indexation should be considered in future to better reflect inflation risk in a way which benefits both developers and consumers.

Project development costs are sensitive to change as a result of rising or falling input costs. The effect of this on the cost of renewable electricity generation projects can be particularly acute during construction, when exposure to the risk of fluctuations in key input costs (for example, steel) is high.

The CfD scheme currently manages inflation risk, which is plausibly outside developers' control, through annual indexation of strike prices. Since the CfD scheme was established strike prices have been fully indexed to the Consumer Price Index (CPI) throughout the 15-year contract term, with revisions made on an annual basis by the Low Carbon Contracts Company (LCCC). When the CfD was established, CPI was thought to be the most appropriate index, as a well-understood price index that reflects the general inflation of goods and services.

The value of CfD payments is linked to CPI via a multi-directional, annual strike price adjustment, protecting projects from the risk of increases to key input costs, while also providing electricity consumers value for money by passing through falling costs. To date, this approach has been effective in balancing how risk is distributed across both renewable developers and electricity consumers, who ultimately fund the CfD. The UK is one of only a few jurisdictions to provide full indexation across the entire contract period; many countries do not index for the operational portion of a contract or offer only partial indexation.

However, recent macroeconomic shocks have caused a global rise in inflation and sustained volatility of commodity prices. This has placed significant upward pressure on renewable project costs; causing them in some cases to climb in excess of the general inflation rate to which strike prices are indexed. For example, the price of steel, which makes up on average 70% of the total cost of a wind turbine, more than doubled between July 2020 and December 2022.[24]

Indexation of the strike price to CPI accounts for changes in the average price of goods and services facing consumers over the lifetime of a CfD contract. However, we are aware that in recent times, commodity cost inflation has outpaced CPI as a result of supply-side shocks contributed to by COVID-19 and the Russia-Ukraine conflict. In periods of high commodity cost inflation like we have witnessed over the last several years this means that the current indexation methodology may not be fully reflective of the cost increases being faced by developers. For example, between July 2022 and July 2023, CPI inflation peaked at 11.1%, while evidence from industry suggests that project development costs have, in some instances, increased by up to 40% within a year.[25]

There is a risk that if unmanaged, developers address commodity price uncertainty by pricing in a risk premium to bid prices at additional cost to the consumer. This could deliver poor value for money for electricity consumers, as any risk premium would be based on forecasted

[24] CfD input cost analysis, Baringa-BEIS internal report 2023.
[25] https://reports.electricinsights.co.uk/q2-2023/offshore-wind-held-up-by-the-inflation-storm/

scenarios rather than outturn data. The addition of a risk premium to CfD bids would – if projects are successful at auction – apply across the entire 15-year contract term. Conversely, if these risks are not sufficiently priced in, then commodity shocks could affect the ability of the project to deliver as we have witnessed in recent years. The Government considers this to be a poor outcome for electricity consumers, considering the potential additional cost and risk of non-delivery of renewable generation capacity.

Commodity price volatility is expected to persist in the short to medium-term, at the same time as a crucial period of delivery leading up to the UK's 2035 target to decarbonise the power sector. As a result, the Government has been considering whether reforms to the method by which CfD contracts are inflation-indexed could (and should) provide greater protection against commodity price volatility in future, to partially mitigate the risks to project delivery and consumer value for money.

Traditionally CfDs have been structured to achieve a balance of risk so that developers take on construction risk while consumers take on the price risk of generation. Any changes to inflation-indexation must be done in a way that does not come at an unreasonable cost to consumers. The Government is therefore mindful of the potential additional cost to consumers that could arise from shifting greater construction risk from renewable developers to consumers, via more comprehensive inflation protection.

28. The Government is interested in views on whether a change in the inflation-indexation of CfDs could help to future-proof projects against macroeconomic shocks in future. Please provide supporting evidence where possible.

29. Do you consider that a change to the way CfDs are indexed in future could better protect against inflation risk for developers, whilst also protecting electricity consumers from unreasonable costs? Please provide supporting evidence wherever possible.

30. Do you think electricity consumers, who ultimately fund CfDs, should bear greater construction risk through more comprehensive inflation protection to accommodate commodity price increases?

31. The Government is interested in views on the significance of commodity price risk for developers. How significant are these risks compared to labour costs, cost of debt and exchange rate risk?

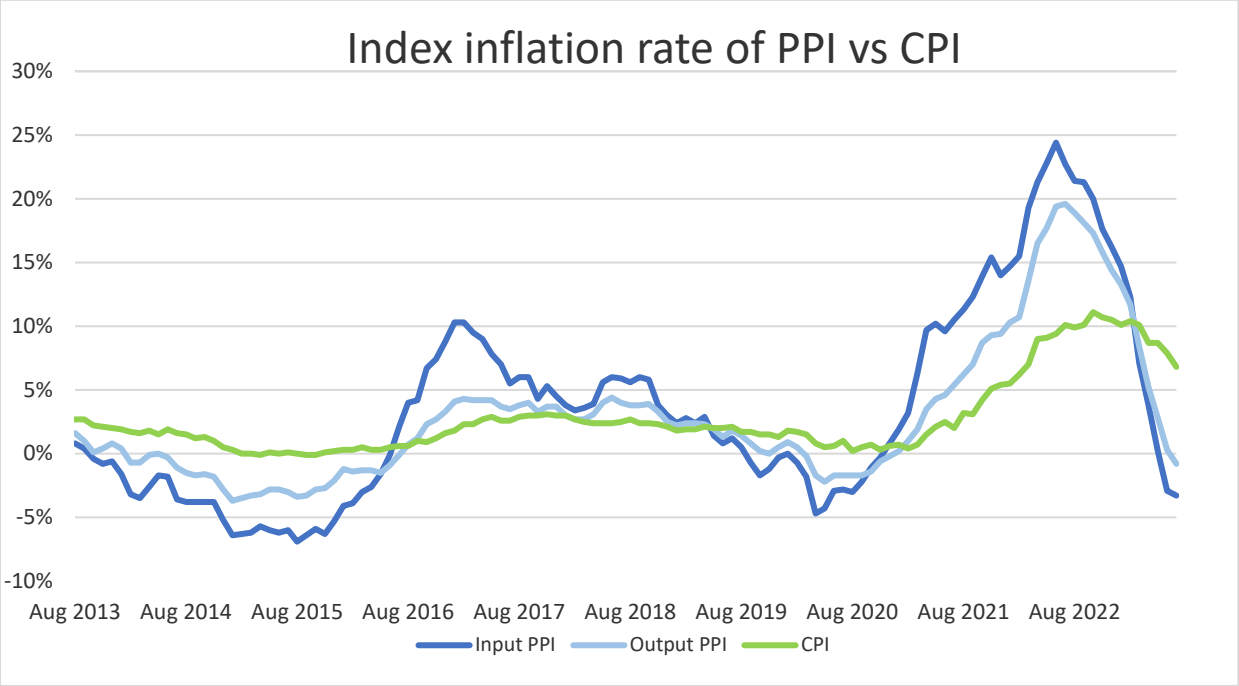
The Government considers commodity price risks to be most acute during construction stage of renewable projects. Currently, strike prices are adjusted for CPI inflation every April following CfD agreement and no distinction is made between construction and operational phases of the CfD contract. Making such a distinction between these phases of the CfD and indexing them differently could ensure that developers are better protected for the time period in which they are exposed to volatile commodity prices while limiting the potential additional costs to consumers.

There could be several different ways to define the 'start' and 'end' dates of a construction phase of a CfD project and the Government welcomes views and supporting evidence on how to do so for the purpose of indexation. We are interested in understanding the merits and risks of using particular dates, project or contract milestones that best define the period when developers are most exposed to volatile commodity costs. This could include, for example, the period between contract signature and the Milestone Delivery Date (the deadline by which generators awarded a CfD must demonstrate delivery progress).

32. The Government is interested in views on how to define the period in which renewable generating projects are most likely to be exposed to fluctuations in key input costs, and therefore benefit from greater inflation protection. Please provide supporting evidence wherever possible.

The Government is also considering the merits of indexation against different price indices during the construction phase of a project. Our emerging view is that indexing strike prices to the Producer Price Index (PPI) in the construction phase of a CfD, whilst retaining CPI-indexation during the operational phase, could better reflect costs borne by developers in this period, than current CPI indexation. This is because, while CPI tracks inflation in consumers goods and services, PPI measures the price of goods bought and sold by UK manufacturers which better reflects commodity prices. Recent commodity price increases outpacing CPI have shown that CPI indexation for the construction phase risks inadequate inflation protection. Data shows that PPI (particularly input, compared with output PPI), has better reflected increases to commodity prices than CPI over the last two years. However, PPI has also historically been more volatile than CPI as a metric. The Government is therefore interested to understand the implications of indexing strike prices to PPI in this period on investor confidence, and the overall effect this could have on project hurdle rates.

Figure 6 - Chart illustrating annual index inflation rates of CPI and PPI over a 10 year period. In general PPI has historically tracked higher than CPI (from 2016 onwards), but is a more volatile overall measure of inflation. Source: ONS[26].



33. The Government is interested in views and evidence on whether indexing strike prices to PPI during the construction phase of a project would better reflect increases in project costs than CPI. Please provide supporting evidence where possible. We are interested in an assessment of both the short-term and long-term impacts that this change could have.

[26] CPI: https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/d7g7/mm23 and PPI: https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/producerpriceinflation/september2023includingservicesjulytoseptember2023

34. The Government is interested in views and evidence on the implications of indexing strike prices to PPI in the construction phase of a CfD project on investor confidence, and the overall effect this could have on project hurdle rates.

35. Over the last 10 years, PPI has historically been more volatile than CPI, but has also tracked higher overall. What effect do stakeholders think this could have on CfD bids? Please provide supporting evidence wherever possible and assess both the short-term and long-term impacts.

The CfD scheme plays an important role in protecting consumers from high wholesale electricity prices. The Government is therefore mindful of the potential magnitude of additional costs to consumers that greater inflation protection could have. It may, therefore, be desirable to consider what additional guardrails or protections could be put in place to provide value for money for consumers. The Government is interested in views on how to protect additional costs to consumers if we were to consider indexing CfD contracts to PPI during the construction phase of projects.

36. What trade-offs (for example, partial indexation later in the contract) or protections should the Government consider to retain consumer value for money?

The Government has considered approaches taken in other jurisdictions to indexation of renewable energy support. In particular, we have considered options that include weightings for individual commodities (e.g. steel and copper). Our emerging view is that commodity weightings are not appropriate for the GB market. Unlike many partner countries, CfD auctions in GB require different technologies with different inputs to compete with each other at auction. Introducing different indexation methodologies for different technologies not only creates significant additional scheme complexity that may make annual CfD auctions less deliverable and increase uncertainty for investors but would also arguably undermine the principle of competition on a level playing field across technologies. PPI in contrast is transparent, well understood and can be broadly applied to all technologies.

37. Are there alternative proposals that could offer similar benefits that the Government should explore and if so, what are these and why? Please provide supporting evidence.

List of questions

Section 1 – Proposals for Allocation Round 7

Repowering

1. Do you agree that the eligibility criteria for full repowering appropriately balances CfD policy objectives of supporting decarbonisation, ensuring security of supply, and minimising costs to consumer?
2. Do you agree that use of the power generation cost assumptions to define end of operating life is an appropriate metric to capture those projects which will be seeking to fully repower in each allocation round?
3. Do you consider that each project should need to at least retain capacity, or do you foresee any challenges with this assumption?
4. Do you agree full repowering of onshore wind sites meets each of the repowering eligibility criteria and should therefore be eligible for AR7? What evidence do you have to support this?
5. Do you agree that all other technologies do not meet the eligibility criteria for AR7? If not, why not and what evidence do you have to support this position? We are particularly interested in any costs data and definitions you may be able to provide on the full repowering of respective technologies.
6. Is enabling forward bidding for repowered projects required to better enable repowering via the CfD? What impact would enabling forward bidding have on reducing non-generation periods between decommissioning and recommissioning of the site?

Appeals

7. What are your views on the three options outlined? Is there one option in particular which, in your view, would be the most suitable to take forward in helping to deliver an increased certainty of delivery timelines for applicants?
8. If we were to follow Option 2, i.e. changing the grounds for appeal, what kind of reasons for an appeal should be ruled out? Would there be any unintended consequences in taking this approach e.g. by removing the right to appeal due to clerical errors?
9. If an appeals process happens ahead of the allocation round formally opening, as with Option 3, should projects be able to be approved with conditions, provided they are met before the formal application window closes? If yes, what conditions might be appropriate?
10. If an appeals process happens ahead of the allocation round formally opening, as with Option 3, should we require developers to agree that they will not change the capacity of their main bid post submitting their application, to increase certainty when setting auction budgets?
11. If we were to change the application and appeals window for AR7, or later allocation rounds, are there any transitional impacts that we need to be aware of?

12. Are there times in the year where you would prefer not to have the auction results released (which in turn may trigger contractual and milestone processes)?

Phased CfDs for floating offshore wind

13. The Government welcome views on whether CfD phasing policy should be extended to floating offshore wind.

14. The Government welcomes views on the potential impact of extending phasing, or not, to floating offshore wind projects.

15. If extending phasing to floating offshore wind, the Government welcomes views on whether the existing rules for fixed-bottom offshore wind project phasing, including the 1500 MW cap, are appropriate for the technology, and if not, why?

Co-located generation and hybrid metering

16. To what extent do you agree with the identified challenges that the current CfD metering requirements creates, as set out?

17. To what extent do you agree that introducing hybrid metering would support innovation and more flexible use of CfD-supported renewable generation?

18. Specifically, to what extent could hybrid metering remove barriers to the deployment of low-carbon hydrogen?

19. Could you provide any evidence on the potential cost savings that could arise from introducing hybrid metering?

20. What would be the potential drawbacks or unintended consequences, including any potential for gaming, of introducing hybrid metering?

Section 2 – Considerations for future allocation rounds

How could the CfD support innovation in floating offshore wind foundation technology as the sector develops?

21. What are your initial views on the proposed approach to determining technological eligibility for established and emerging technology tariffs in the CfD scheme? Include any early concerns or potential risks you may foresee. We are particularly interested in any potential gaming risks or unintended consequences you have identified.

22. If Government was to consider more tightly defining ‘established fixed-bottom’ offshore wind, with a view to then considering anything else eligible as an emerging foundation technology, do you have any initial suggestions on appropriate definitions or metrics by which to define ‘established fixed-bottom’?

23. The Government recognises the limitations of water depth for use in such definitions. However, should this be necessary, the Government welcomes views on the appropriate minimum depth requirement for emerging foundation technology deployment.

How could the CfD support delivery of improved coordination of offshore transmission infrastructure?

24. Do you agree with the Government's assessment of bootstrap-connected projects?

25. Do you agree with the Government's assessment of the role of the CfD in the HM and OBZ models?

26. Do you have any evidence on the additional costs and benefits to consumers of an OWF-MPI arrangement?

27. Are there other options that could better address the issues outlined in this consultation?

Should CfD indexation be updated to better reflect inflation risks?

28. The Government is interested in views on whether a change in the inflation-indexation of CfDs could help to future-proof projects against macroeconomic shocks in future. Please provide supporting evidence where possible.

29. Do you consider that a change to the way CfDs are indexed in future could better protect against inflation risk for developers, whilst also protecting electricity consumers from unreasonable costs? Please provide supporting evidence wherever possible.

30. Do you think electricity consumers, who ultimately fund CfDs, should bear greater construction risk through more comprehensive inflation protection to accommodate commodity price increases?

31. The Government is interested in views on the significance of commodity price risk for developers. How significant are these risks compared to labour costs, cost of debt and exchange rate risk?

32. The Government is interested in views on how to define the period in which renewable generating projects are most likely to be exposed to fluctuations in key input costs, and therefore benefit from greater inflation protection. Please provide supporting evidence wherever possible.

33. The Government is interested in views and evidence on whether indexing strike prices to PPI during the construction phase of a project would better reflect increases in project costs than CPI. Please provide supporting evidence where possible. We are interested in an assessment of both the short-term and long-term impacts that this change could have.

34. The Government is interested in views and evidence on the implications of indexing strike prices to PPI in the construction phase of a CfD project on investor confidence, and the overall effect this could have on project hurdle rates.

35. Over the last 10 years, PPI has historically been more volatile than CPI, but has also tracked higher overall. What effect do stakeholders think this could have on CfD bids? Please provide supporting evidence wherever possible and assess both the short-term and long-term impacts.

36. What trade-offs (for example, partial indexation later in the contract) or protections should the Government consider to retain consumer value for money?

37. Are there alternative proposals that could offer similar benefits that the Government should explore and if so, what are these and why? Please provide supporting evidence.

Annex A – Technology eligibility for full repowering via the CfD

We have considered the eligibility of each technology against our repowering eligibility criteria, whereby a technology must meet all the criteria to be eligible. This Annex contains a detailed assessment of the eligibility of each technology against those criteria.

Onshore wind

- **Reached end of operating life by AR7 delivery years**. Onshore wind is one of the most established renewable technologies and reached maturity at an earlier stage than offshore wind and solar PV in particular. Whilst onshore wind projects were being installed in great volume in the late 1990s and 2000s, it was not until the middle half of the 2010s that we saw similar operational volumes in solar and offshore wind in the UK. As such, the volume of onshore wind projects that are reaching the end of their operational life from 2027 is far greater. Our analysis indicates that there is a potential pipeline of c.1.3 GW of onshore wind projects that will be reaching the end of operational life and end of support in assumed AR7 Delivery Years.
- **High upfront capital costs similar to a new build and unable to recoup O&M costs**. A full repowering of onshore wind sites, particularly first-generation sites, are likely to be similar in cost to that of commissioning a new build and will require similarly high upfront costs. Whilst some costs will be avoided, for instance those associated with assessing site feasibility or securing land rights, the costs of turbine supply and construction will be equal to if not greater than that of a new site, given the need to remove and dispose of extant infrastructure as well as purchase and install new infrastructure. It is also our assessment that, from the late 2020s onwards, price cannibalisation and economic curtailment may become more prevalent and reduce the wholesale market revenues captured by onshore wind assets, thus increasing the potential for retirement at the end of life as opposed to life extension or repowering.
- **Able to at least retain their current capacity over the term of the contract**. Case studies for previously repowered projects in the sector have also proven that by virtue of developments in technology, including new turbines having an increased power rating, it is possible to deliver capacity increases compared to the original project. Carland Cross (an onshore wind farm near Newquay and operated by Scottish Power Renewables) for example was repowered in 2013 and increased its capacity from 6 MW (15 turbines) to 20 MW (10 turbines). The most recent example of Hagshaw Hill (in Lanark and also operated by Scottish Power Renewables) intends to increase capacity from 46MW with 42 turbines to 79MW with only 14 turbines. Whilst we note that the ability to fully repower each onshore wind project will be case-by-case, there is sufficient evidence to showcase increase capacity is possible for this technology via full repowering.

Based on an assessment of onshore wind repowering against the repowering eligibility criteria, it is Government's view that onshore wind as a technology can meet all of the criteria and therefore should be eligible for repowering via the CFD for AR7. Each specific project will need to meet the criteria to be eligible.

Offshore Wind

- **Reached end of operating life by AR7 delivery years**. Offshore wind was developed much later than onshore wind. The first commercial scale offshore windfarms (North Hoyle, Scroby Sands, Kentish Flats) became operational from 2003 – 2005 and project sizes then started to grow as turbine sizes increased and developers gained more construction experience. Government currently assumes 30 years for offshore windfarms to reach the end of their operating lifetime. Projects that wish to repower might also need a new development consent. We are not aware of any offshore wind projects seeking to repower in time for AR7. Initial analysis suggests the first project that could be eligible for repowering under these criteria would be in around 2033 and we would need to consider whether this was sufficient to run a competitive auction at this point to deliver value to the consumer.
- **High upfront capital costs similar to a new build and unable to recoup O&M costs**. Whilst existing evidence on the costs of repowering is uncertain due to the maturity of the industry and lack of sites reaching end of operational life, existing evidence suggests upfront capital costs for full repowering of offshore wind could be equivalent to that of a new build. The parameters of the new, repowered project might be different to the original project since developers may prefer to use larger turbines and manufacturers may have ceased production of small turbines. The environmental impacts of any works relating to removing existing infrastructure and installing a new windfarm may also require assessment. It is also our assessment that, from the late 2020s onwards, price cannibalisation and economic curtailment may become more prevalent and reduce the wholesale market revenues captured by offshore wind assets, thus increasing the potential for retirement at the end of life as opposed to life extension or repowering.
- **Able to at least retain their current capacity over the term of the contract**. Due to similar technological advancement to onshore wind turbines, we also consider that offshore wind projects should be able to at least retain their capacity by virtues of developments in technology including larger turbines.

We therefore consider that repowered offshore wind is not eligible for AR7 but could become eligible later, once a pipeline emerges. We welcome further evidence on costs of fully repowering offshore wind projects to support continued policy work in this area.

Solar

- **Reached end of operating life by AR7 delivery years**. Our analysis highlights that there is no pipeline of solar projects coming to the end of their operational life (35 years), in time for AR7 delivery years.
- **High upfront capital costs similar to a new build and unable to recoup O&M costs**. There is some evidence to suggest that costs of full repowering for solar projects would be equivalent to that of a new build. Our analysis indicates however that, compared to onshore and offshore wind, solar may have a more favourable business case on the merchant market towards the end of its life and from the late 2020s onwards. This is largely due to lower fixed operating and maintenance costs than onshore and offshore wind. This could incentivise solar projects to life extend based on expected merchant revenues.

- **Able to at least retain their current capacity over the term of the contract**. Due to technological advancement in panel design, there is evidence to suggest that solar projects should be able to at least retain their capacity.

We therefore consider that repowered solar is not eligible for AR7 but will review its eligibility in future rounds, subject to the emergence of a pipeline, further evidence from this consultation on full repowering costs for this technology, and as our certainty over the future market price increases.

Landfill gas

- **Reached end of operating life by AR7 delivery years**. Landfill gas is expected to have an AR7 pipeline of approximately 400MW which has reached both its end of support under the RO and end of operating life. With most projects developed prior to the RO's closure, there is some evidence to suggest that landfill gas sites may struggle to recoup their operating costs from revenue purely on the wholesale market and that other revenue streams may be limited.
- **High upfront capital costs similar to a new build and unable to recoup O&M costs**. It is not clear however from existing evidence that full repowering of landfill gas would require high upfront capital costs equivalent to that of a new build, or that full repowering would be an efficient and desirable approach for landfill sites developers or an efficient outcome for consumers. As landfill sites become smaller, regular replacement of gas engines are required to ensure they are appropriately sized and efficient. However, it is unlikely that the replacement of gas engines and pipes would incur capital costs equivalent to that of a new build, and the cost profile of this expenditure more closely resembles partial repowering or continual refurbishment rather than full repowering. There is however evidence to suggest that the high costs of operating landfill gas sites may increase the potential for retirement at the end of life as opposed to life extension or repowering.
- **Able to at least retain their current capacity over the term of the contract**. Due to the declining size of landfill sites over time, it is unlikely that a landfill gas site would be able to retain its current capacity throughout the length of the CfD contract.

As such landfill gas does not meet the eligibility criteria and is not considered eligible for repowering via the CfD from AR7 subject to any further evidence gathered through this consultation.

Government also recognises, however, that power generation from landfill gas plays an important role in contributing to our net zero goals by reducing methane emissions. Government, through collaboration between DESNZ, the Department for Environment, Rural, Farming and Agriculture and the Department for Transport, is therefore committed to ensure landfill gas sites continue to contribute to our environmental goals and we would be keen to work with the sector to inform this work.

Other Biomass technologies

- **Reached end of operating life by AR7 delivery years**. Our analysis highlights that there is no significant pipeline for AR7 from one particular technology other than for landfill gas.
- **High upfront capital costs similar to a new build and unable to recoup O&M costs**. As outlined above, there is significant uncertainty in the impact of the future wholesale market and the role of alternative revenue support on capture prices of baseload technologies going forwards – particularly biomass. This category includes anaerobic digestion, dedicated biomass with CHP, energy from waste with CHP, sewage gas and advanced conversion technologies. In addition to this, we do not have sufficient evidence of the costs of fully repowering the various biomass technologies that are eligible for a CfD.
- **Able to at least retain their current capacity over the term of the contract**. Eligibility under these criteria would be technology-specific and is not expected to be a limitation for most technologies except for landfill gas.

It is our assessment that we do not have sufficient evidence to enable the eligibility of full repowering via the CfD for these biomass technologies at this stage however welcome further evidence to support further policy work.

Hydropower

- **Reached end of operating life by AR7 delivery years**. We do not anticipate a repowering pipeline for AR7. Although most hydropower was built before 2002, hydropower generators have a long operating lifetime, and a number of sites were already refurbished in 2009.
- **High upfront capital costs similar to a new build and unable to recoup O&M costs** The cost profile for repowering hydropower is different from new builds with it believed that the replacement of mechanical infrastructure and the electrical plant represents a small proportion of the overall capital cost of a new build, which is dominated by the cost of civil works. Hydropower is also expected to be capable of operating in the future wholesale market without support as its operational costs are likely to be lower than future wholesale prices of electricity. Further, as hydropower generators have flexibility in choosing when to generate, they are unlikely to be significantly impacted by the effects of price cannibalisation.
- **Able to at least retain their current capacity over the term of the contract**. We do however anticipate that hydropower stations would be able to at least retain their current capacity.

For those reasons, we propose that hydropower should not be eligible for a CfD for repowering from AR7 subject to further evidence gathered in this consultation.

Emerging technologies

Our evidence suggests that there is no pipeline for repowering of emergent technologies such as floating offshore wind, tidal and geothermal, with the first tidal stream project reaching its end of its operating life in 2034 and geothermal and floating offshore wind sites only becoming operational this decade. We have therefore prioritised consideration of the eligibility of other technologies for AR7 however will review the case for these emerging technologies once a pipeline emerges.

This consultation is available from: www.gov.uk/government/consultations/proposed-amendments-to-contracts-for-difference-for-allocation-round-7-and-future-rounds

If you need a version of this document in a more accessible format, please email alt.formats@energysecurity.gov.uk. Please tell us what format you need. It will help us if you say what assistive technology you use.