Enabling a High Renewable, Net Zero Electricity System: Call for Evidence

The CBI welcomes the opportunity to respond to the BEIS Enabling a High Renewable, Net Zero Electricity System: Call for Evidence. The CBI is the UK's leading business organisation, speaking for some 190,000 businesses that together employ around a third of the private sector workforce. With offices across the UK as well as representation in Brussels, Washington, Beijing, and Delhi, the CBI communicates the British business voice around the world.

The CBI would be happy to expand upon any of our answers below.

CBI Response

Maintaining growth in renewable deployment to meet net zero targets

1. **How is the industry currently approaching developing renewables projects without CfDs? In what ways might non-CfD backed projects obtain revenue from wholesale and other markets, and secure investment?**

The CBI fully supports the CfD as a credible way of bringing forward various types of renewable power generation and we welcome the recent return of Pot 1 auctions and the inclusion of floating offshore wind for the 2021 allocation round. We do, however, recognise that the CfD may need to be adapted to remain fit for purpose.

The ceasing of Pot 1 auctions for Allocation Rounds 2 and 3 clearly demonstrates the difficulty of deploying onshore projects without a CfD, with deployment rates significantly reducing between 2015 and the present. During this period, developers have struggled to make a viable business case without a clear route to market, among other factors such as a lack of a supportive planning policy, that can provide a stable revenue stream to satisfy the requirements of most categories of investors. As a result, only a small number of merchant projects have progressed during the period, either through the direct selling of power to market (with a utility providing a route to market service but not taking price edge risk) or, more frequently, through Corporate Purchase Power Agreements (cPPAs). This is despite a continuing reduction in the costs of both solar and onshore wind technologies.

The UK cPPA market is still in its early stages with the majority of cPPAs to date being linked to projects that also availed of the RO or CFD scheme. Lately, a small number of corporates appear willing to offer price hedges / cPPAs over a longer term in the UK enabling projects to proceed similar to what has occurred to date in the Nordics, Netherlands and Spain. However, the demand for cPPAs in the UK from projects still far exceeds the supply.

Solar PV deployment was able to adapt to a somewhat greater extent than onshore wind when Pot 1 auctions ceased, this can be attributed to the smaller scale of individual projects, which made it easier to match the demand from individual corporate purchasers. However, merchant projects cannot access the lowest cost of capital as a project that benefits from the price hedge that a cPPA or CfD provides. This is because in order to access the lowest cost of capital from investors, it is necessary to demonstrate a high level of certainty in the revenue a project can earn. Projects that

proceed on a merchant basis (i.e., not benefiting from some form of price hedge) are exposed to a higher market risk which results in a higher cost of capital.

The evidence shows that non-CfD backed projects are still niche, with route to markets limited to a shallow pool of cPPA off-takers, scarce utility PPAs offering a price hedge or proceeding on a higher risk fully merchant basis. Therefore, in order to reach the capacity of renewable energy required to reach net-zero at the lowest cost to energy consumers, the CBI believes that both wind and solar technologies still require CfD auctions to provide a stable route to market that has a viable investment case.

2. What do you consider to be the effects of increased low-carbon deployment on future wholesale power prices and renewable capture prices?

The CBI recognises that increased deployment of renewable power generation will lead to lower wholesale prices and the price cannibalisation outlined in the call for evidence.

During periods of high renewable output, these technologies can out-compete fuelled generation due to the having low operating costs. As a result, higher marginal cost fuelled generation is pushed to the margins and the wholesale price for renewable generation reduces. As the proportion of renewable generation on the system increases, this effect will continue and the average wholesale price will reduce further. Modelling[1] suggests that as wholesale prices reduce, it will become a material factor for investment decisions for future renewable generation. This is then a revenue risk for the renewable generator, resultantly, leading to an increase in the cost of capital and making it less likely that a project can proceed without the revenue guarantee that a CfD provides. Given the correct support, future projects could seek to use storage technologies to manage the cannibalisation risk at project level *(more detail in Question 3).* Ensuring that guarantee revenue schemes (like the CfD) are available for generators will be important for a substantial period to maintain investor confidence and to secure the build rates of low-carbon generation required for net-zero.

3. How viable will investment in new renewable projects based primarily on wholesale prices be in future? Could this investment case be supported if there was more extensive deployment of flexible assets such as storage?

We have outlined our concerns of the impact of wholesale pricing above in *Question 2*, where we outlined why the continuing reduction in wholesale prices and the effect of price cannibalisation will impact the investment case for renewable generators.

Whilst some non-CfD backed onshore and solar projects are proceeding, the volumes are far below that which is needed to reach net-zero, as set out by the Committee on Climate Change; some form of price hedge, either CfD or cPPA, is required to reach the deployment at a scale that will enable net-zero. Flexible assets, such as storage, have the potential to improve the economics for wind and solar projects, the main benefit of co-locating at present is the ability to share grid costs. However,

[1] Cornwall Insight, Wholesale Price Cannibalisation. Access here: https://www.cornwall-insight.com/insight-papers/wholesale-power-price-cannibalisation

projects are currently restricted in the deployment of flexible assets due to the lack of government revenue support for such assets, negatively hindering investment decisions.

Storage assets will not only provide generators with options to improve the economics of their projects in the short term, but storage will also be critical infrastructure in the future to enable generators to optimise revenues by managing intermittent generation. This is also a crucial part in the UK's ability to meet net-zero; as there are higher levels of intermittent renewable energy on the system, the UK must have the balancing mechanisms to meet demand during periods of low renewable resource. We welcomed the recent movement on the Capacity Market rules to allow battery storage and DSR to take part, and we urge Government to explore how further changes could be made to support long-term support for storage assets, and also explore additional funding processes, similar to the National Grid Stability Pathfinder tender.

4. How much longer after the 2021 allocation round should the current CfD be used? Is a price based on a short-run marginal cost market the most effective basis for a long-term renewables contract?

The CfD has been highly successful thus far in procuring large volumes of low-carbon power at the lowest cost to the consumer. The mechanism has achieved this by securing revenue certainty that has bolstered investor confidence, made wind competitive in global markets and enabling competition – allowing projects to secure lowest costs of capital and bring down project costs. It is undeniable that the CfD has been an efficient procurement mechanism for high capex, low opex projects, such as onshore and offshore wind. Therefore, the CBI fully supports the CfD as a credible way of bringing forward renewable power generation and the Government's ambition to continue holding regular auctions at least every 2 years.

We recognise, however, that the UK has a legally binding net-zero target and ambitious offshore wind deployment targets, including 40GW offshore by 2030, and, if necessary, the Government must be prepared to adapt the current market design in order to deliver these large volumes of low-carbon power at the lowest cost to consumers. Support for low-carbon power generation should not be considered in isolation, future electricity market reform must consider all the technologies and infrastructure required for a net-zero system, including the requirement for substantial storage assets. In order to achieve the required volume of low-carbon power generation, the CfD framework must continue for the planned allocation rounds, alongside clear policy on the repowering of existing assets in order to maintain existing capacity.

The CBI disagrees that a price based on a short-run marginal cost market is the most effective basis for a long-term renewables contract. The future system will be dominated by low-carbon generation, characterised by high fixed costs but low operational costs. This means that the wholesale market based on short-run marginal costs will be volatile as fossil-fuel generation continues to reduce resulting in the short-run marginal costs being based on increasing volumes of renewable generation that has very low or no marginal cost.

5. Are there any changes or alternatives to the wholesale market that might facilitate merchant deployment?

The current wholescale market design is focused on delivering efficient dispatch of generation. The CBI recognises the role that the wholesale market will continue to play, and that it will be inefficient

to amend the wholesale market to facilitate merchant deployment of variable low-carbon power. To improve wholesale market signals, the Electricity System Operator could consider how it rewards inflexible generation; contracts such as ODFM or bilateral contracts with specific units can distort price signals and take away opportunities for flexible units to fulfil this role.

6. **How can market participants be encouraged to provide contracts to secure low-cost investment in renewables?**

The CBI recognises the potential to provide positive incentives for electricity customers at all scales to support further investment in renewable generation, this provides an opportunity for corporates to link renewable investment to corporate decarbonisation and sustainability objectives. It is critical that these incentives are linked to additional actions that go beyond "business as usual" investment already supported by CfDs or other, and it could be appropriate to implement a metric/ system to reliably demonstrate 'additionality.'

Ensuring overall system costs are minimised

7. **How could intermittent renewable generators change their operating or investment behaviour to respond to wholesale price signals?**

The CBI sees a role for both generators and the system operators to facilitate increasing responsiveness to market signals.

8. **What would be the impact on the cost of capital of introducing greater exposure to the market price for power?**

In our response to the BEIS CfD Consultation on proposed amendments to the scheme last year, the CBI outlined the potential risk of introducing greater market exposure through the proposed changes to the negative pricing rule.

We again would like to outline the potential risks for investor perception. By creating greater exposure to the market price through the removal of top-up payments, there is increased revenue risk that will in turn increase debt financing costs and reduce project investment gearing ratios. Consequently, projects will incur higher costs and result in higher strike prices. If this risk chain plays out, the result could be higher cost to the consumer for the delivery of low carbon generation.

This example from the proposed changes to negative prices demonstrates that any changes to the CfD mechanism that increases generator exposure to the market price for power must take into consideration the impact on investor confidence that will ultimately impact the delivery price for projects and the cost to consumers.

9. **In your view which of the potential options for providing increased exposure to market signals offers the greatest benefit to the consumer? Are there any other options that we should be considering?**

As outlined, we urge Government to consider the investment risk and impact on consumer prices when considering further alterations to the CfD scheme.

Of the examples set out in the call for evidence document, CBI members see only two as potentially viable options, with the remainder still presenting the risk of greater revenue uncertainty that may

lead to higher CfD prices for projects, this will ultimately shift risk to the UK consumer through higher consumer bills. We encourage Government to consider how these options (below) could support the evolution and enhancement of the existing CfD framework, or an alternative support mechanism.

1. The first option that could offer the greatest benefit to the consumer is 'Moving from paying based on physical output to paying on deemed generation, thus reducing the incentive to export power to the grid in order to receive payments and presenting the opportunity to utilise other market opportunities.'. The CBI notes that this option could provide renewable generators with stronger incentives to respond to wholesale price signal whilst retaining sufficient security on a minimum level of stable revenues.
2. The second option that could offer some benefit to the consumer is 'Moving to a price floor where generators would retain the 'upside' of high prices but be protected against low prices. Or combine with a cap so that generators are exposed to variable prices but are protected against very low prices and must payback an extra revenue earned at very high prices.'. We would note, however, that this option still reduces revenue certainty for developers overall and will increase costs of capital and costs for consumers as a result.

10. Should CfD generators be incentivised to account for flexibility and wider system impacts, and/or to provide balancing services to the system operator? How could this be achieved?

The CBI supports the CfD mechanism providing incentives for generators to account for flexibility and provide balancing services. It is important that any mechanism to incentivise generators must consider the impact on investor perception and overall cost of capital, both of which will ultimately impact cost to consumers. We recommend that incentives are not mandatory obligations.

The "DS3" program in Ireland is a good example of where incentivising generators to provide wider system benefits and balancing services has been successful through providing financial incentives for better project performance. So far, the DS3 program has helped EirGrid to increase levels of renewable generation on the system from 50% to 65% and is targeting 75%.

Furthermore, if the CfD does provide incentives for flexibility and balancing services, it is crucial that these do not negatively impact competition for storage and DSR who are not receiving incentives; negatively impacting this competition could deter technological development that could help address intermittency. The overall aim should be to maximise the balancing services available to the system, and incentives to CfD generators should complement existing non-CfD DSR.

11. Should the CfD mechanism incentivise minimum grid stability requirements (in CfD plants) to minimise system costs and help ensure secure and stable operation? How could this be achieved and what are the barriers?

The CBI recognises the potential role for CfD plants to contribute to the wider stability of the system to reduce system costs and support operation. However, we are mindful of the potential cost burden on projects if stability services become a requirement, particularly the impact on smaller projects or on projects for less established technologies which are already competing to reduce costs.

Furthermore, Government must take into consideration the bigger picture and identify if there are market and regulatory failures in incentivising grid services. If failures exist, the Government should prioritise these wider failures rather than serve additional requirements to developers that could negatively impact low-carbon generation deployment. Therefore, we urge Government to consider if any failures can be tackled outside of the CfD scheme, and if the duty does lie with developers, Government must consider how the CfD scheme can incentivise stability services within the scheme, working with non-CfD backed stability mechanisms, whilst not negatively impacting cost reductions.

12. Do CfD projects receive the right incentives to locate in the optimum locations?

It is important that there are robust locational signals that are consistent for all types of generation. The CBI supports the CfD mechanism remaining a location neutral auction, with mechanisms such as the locational TNUoS costs and TLMs addressing locational signals independently of the CfD.

13. Are there actions which Government should consider, outside of Ofgem's current electricity network charging reviews, to help incentivise efficient market behaviour regarding the location of renewable assets?

The CBI supports the Government examining the options for encouraging the projects to locate in resource optimum locations, however we would flag the implications this could have on interfering with existing locational signals, which is likely to result in a confusing and inefficient outcome.

14. Should the CfD do more to enable the sustainable growth, cost reduction and competitivity of UK supply chains and how could this be achieved?

The CfD framework already has a requirement for developers to implement a Supply Chain Plan for larger projects and developers are supportive of this. The offshore wind sector is already in detailed discussions with BEIS on further refinements to the conditions, and industry is confident that this is a suitable way to proceed. The CBI is supportive of measures that promote the development of a strong UK supply chain if this growth can be delivered at no additional cost for projects and consumers.

Supporting and adapting to innovative technologies and business models

15. What are the benefits of renewable projects using multiple low carbon technologies or being co-located with low-carbon flexible assets? Should the CfD support these projects and why?

Co-located projects allow generators to optimise their assets, such as sharing grid costs, and increase returns by adapting their usage profile to respond to market signals. Furthermore, co-location will aid in mitigating the impact of intermittent generation. The benefits of co-location vary between technologies, these are outlined below.

Wind and Solar

There are benefits of co-locating the two different technologies to maximise locational resources. Often, wind and solar resources peak at different times, therefore co-locating projects will allow sites to achieve maximum output at any time based on the resources available. This enables shared grid assets whilst maximising generation which will reduce costs of capital and unlock lower prices. Finally, from an investor perspective, maximising output by utilising resources means a positive return on investment as more income in guaranteed.

Storage

There are a wide range of options and business models that are well suited for co-location of storage with a CfD project, and the CBI supports incentives in the CfD mechanism for generators to explore storage options. Co-location can allow a storage operator to avoid some of the costs of connecting to the grid, which improves the business case for the storage asset. This includes both the regulatory costs of operating a connection and the costs of the physical connection assets, both of which can be shared with the CfD project. The business case for storage is further strengthened by maximising the range of services that can be delivered, thereby building up a revenue stack.

From the point of view of customers, facilitating the co-location of storage with CfD projects will minimise the total cost of installing the further storage that is needed to develop a flexible future electricity system, as that reduction in cost will ultimately be passed on to the customers. It is in all stakeholders' interests to maximise the cost-effective opportunities to co-locate storage.

Whilst the CBI supports the co-location of electricity storage assets with renewable CfD projects, we are mindful of the barriers that are present, these are outlined in the CBI's response to BEIS 'Contracts for Difference for Low Carbon electricity Generation – Consultation on proposed amendments to the scheme'. We would like more clarity from Government on the planned metering changes to maximise the benefit of batteries to the system, the developer and the consumer.

Green Hydrogen

There are also a range of business models for green hydrogen that are suited for co-location with renewable energy generation and a CfD scheme. Hydrogen production can be co-located with both solar, onshore, and offshore wind farms, as well as nuclear, with all options demonstrating clear benefits. In particular, onsite production of hydrogen reduces the requirement for electricity grid connection. The CBI welcomes the recent commitment from Government to publish a hydrogen strategy and a hydrogen business models consultation in Q2 2021 and we hope to see clarity on the potential role for co-location with CfD projects.

16. What are the benefits of projects with assets in different locations, including projects paired with flexible assets? Should the CfD support these and why?

The CBI recognises the benefit of projects with assets in different locations, particularly for resource dependent generation such as wind or solar that must be located in an area with optimum resources. This is a particularly interesting option for smaller projects where there is an opportunity to create an aggregated pool of generation across a Virtual Power Plant, promoting behind the meter services. The CfD should provide generators the ability to maximise the potential of each project and site, whilst ensuring the lowest cost for consumers. However, any more fundamental changes to the CfD, in order to facilitate operation across multiple locations and technologies, might benefit from first being subject to demonstration to fully understand the benefits and costs.

17. What changes would Government need to make to the Contract for Difference regime to facilitate the coordination of offshore energy infrastructure, what would be the benefits and costs of making them, and could there be a similar case for other renewable technologies?

The CBI is conscious of the issues that the current design for offshore energy infrastructure will present for the future offshore system as more generation is required. The Offshore Transmission

Network Review is welcomed as a means of identifying the opportunities for the current framework and as a process to design and implement an enduring regime. Whilst we recognise the role that the CfD could play in facilitating the adaption of the current framework to support the future system, we are cautious that requirements for offshore projects to facilitate the coordination of infrastructure could lead higher cost of capital. Ultimately, this could result in higher strike prices and result in higher consumer bills.

18. **What changes would Government need to make for the Contract for Difference to facilitate deployment of offshore wind as part of a hybrid offshore wind interconnector project, and what would be the benefits and costs of making them?**

Any consideration to facilitate the deployment of offshore wind as part of a hybrid offshore wind interconnector project through the CfD must provide assurance that the services and outputs are being delivered and at a fair cost for the consumer. Supporting hybrid and multi-technology projects through the CfD does bring the inherent risk that the support provision is less effective than targeting the individual components with bespoke support. Overall, we would support CfD support for hybrid projects, and CfD generators should have the flexibility to combine with other technologies and services to maximise the potential for each project, but each project must demonstrate the system and consumer benefits it provides.

19. **What role could international renewable projects play in our future generation mix in GB? Are there benefits to supporting these projects with government schemes and how could this be achieved?**

The CBI is cautious of the proposal for the UK Government to support overseas projects. The UK has an abundant natural wind and marine resource, is a world leader in offshore wind and is now leading in the scale-up of floating offshore wind and other innovations. The Government must now ensure that the correct support is given to expanding our domestic low-carbon power generation portfolio.

Furthermore, investment in overseas projects will have a negative impact on domestic skills and supply chains. The UK is home to a wealth of existing skills and knowledge that, given the correct support, can be harnessed to support the UK's transition to net-zero and the expansion of our renewable generation capacity. Skills from traditional industries, such as oil and gas, can be repurposed to support various technologies, including floating offshore wind, CCUS and hydrogen gas generation, distribution and storage. The UK has world class innovation and supply chain potential, particularly for emerging technologies such as green hydrogen where the UK is home to some of the world leaders in electrolyser manufacturing.

The Government must not ignore the potential that renewable projects have for supporting the Governments 'levelling-up' agenda and secure the UK's position as a world leader in the technologies that will enable net-zero.

20. **Should part-built project continue to be eligible to compete for CfDs after the fourth allocation round? Are we considering the right implications and what are your views on these?**

The CBI supports the continuation of part-built projects being able to compete for CfDs after Allocation Round 4, this will help ensure that optimum volumes of low-carbon generation is deployed at lowest cost for consumers.

21. **Can cost savings be achieved by developing extensions to existing projects, if so, how great are these cost savings, and what is the justification for these projects being supported through CfDs or any other government mechanism?**
22. **Similarly, can cost savings be achieved by repowering older projects, if so, how great are these cost savings, and what is the justification for these projects being supported through CfDs or any other government mechanism?**

CBI is supportive of life-extensions and repowering of projects as this will be crucial for attaining the quantity of renewable power required to enable all sectors of the economy to achieve net-zero.

Both extensions and repowering allow projects to benefit from utilising existing infrastructure, this is particularly important for offshore wind projects which can use existing offshore transmission and connection infrastructure. It is however important to distinguish between the different types of repowering and life extensions, this is because the cost of capital varies between them and therefore so does the case for CfD support varies between them.

1. The first is simple life extension; extending period that the project remains operational for with limited to no infrastructure change. CfD support for these projects will not aide innovation, nor provide the most efficient generation of power.
2. The second is extensions to existing projects; extensions use the latest technology, such as turbine size, and require similar levels of capital expenditure to new projects. For this reason, we support extensions to existing projects being supported by the CfD.
3. The final type is full repowering; this is where an existing site is effectively rebuilt, including new foundations, towards, and turbines. Full repowering is the equivalent of developing a new site, using the latest technology to generate the most efficient energy for the consumer. Due to the largest capital cost of a full repowering project, we believe that CfD support should be given.