

Energy UK Response to BEIS Call for Evidence: Enabling a High Renewable, Net Zero Electricity System

8th March 2021

About Energy UK

Energy UK is the trade association for the energy industry with over 100 members spanning every aspect of the energy sector – from established FTSE 100 companies, right through to new, growing suppliers and generators, which now make up over half of our membership.

We represent the diverse nature of the UK's energy industry with our members delivering over 80% of both the UK's power generation and energy supply for the 28 million UK homes as well as businesses.

The energy industry invests £13bn annually, delivers £31bn in gross value added on top of the £95bn in economic activity through its supply chain and interaction with other sectors, and supports 738,000 jobs in every corner of the country.

Executive Summary

CfDs – An Ongoing Success Story

Energy UK welcomes the opportunity to respond to the BEIS call for evidence (CfE) on enabling a high renewable, net-zero electricity system. We agree with the vision expressed in the CfE document that moving to a system with a greater proportion of intermittent renewables requires a different type of electricity system, and we believe that BEIS is asking many of the right questions to prepare for this transition.

We are, however, concerned by some of the negative rhetoric towards the CfD scheme in the CfE document and broader sector dialogue. Whilst we recognise the challenges in relying on the CfD to underpin a future system dominated by intermittent renewables, we believe the scheme has a clear role to play for the foreseeable future in attracting institutional investment, which is critical to maintaining deployment rates aligned with a Net Zero trajectory.

The CfD framework has been a successful tool for delivering investment and bringing forward low-cost, low-carbon generation. It is important that going forward the CfD regime is maintained (based on competitive auctions) and continues to drive the decarbonisation of the power sector and deliver low-cost electricity to homes and businesses. This joint government and industry effort helped to deliver the cost reduction targets set for offshore wind (£100/MWh) four years ahead of target and the last auction saw clearing prices well below expectations at £39.65/MWh resulting in zero impact on the Monetary Budget¹.

To date, the CfD has driven substantial cost reductions and stimulated innovation, benefitting UK consumers and the economy, whilst delivering cost-effective decarbonisation. It has also delivered international emission reductions by driving and therefore showcasing wind cost reductions. We, therefore, support the continuation of the current two-way CfD framework to provide the stable investment climate that developers and the supply chain need, and ensure that momentum in renewables deployment is continued.

A CfD Procurement Strategy

¹ BEIS – CfD Allocation Round 3 Results – 2019. Access [here](#).

Energy UK recommends that government publishes a CfD Procurement Strategy out to 2030. We suggest that this Strategy includes a timetable of auctions and a minimum average total GWh (to account for the different load factors of technologies) deployment that is consistent with a Net Zero trajectory. This approach would boost investor and supply chain confidence by showing that government is aligning policy ambition with CCC advice/government's own targets, without tying BEIS down to specific auction designs.

In addition to the above, we would also suggest introducing a structured process by which the particular volume in each auction is determined, with reference to the longer term trajectory of deployment that is required. At the moment, there is no structure (at least publicly) on how auction volume is selected. We believe that introducing some principles, the key factors, and a calculation process would further increase confidence that developers and manufacturers can rely on future CfD volumes, by making it more mechanical and linked to a long term plan and trajectory – so less vulnerable to short term policy decisions.

System Optimisation

Energy UK welcomes the themes in the CfE document around ensuring overall system costs are minimised and innovative technologies are brought forward. We believe that a smart, flexible energy system is crucial to meeting net zero at lowest cost. A smart system will allow renewable generation to be maximised and network reinforcement to be minimised.

We are supportive of amendments to the CfD scheme to allow innovative technologies and business models, such as multi-technology sites, to compete on a level playing field. However, we caution against introducing explicit incentives into the CfD mechanism, recognising this risk this would create around unintended market distortions. In general, we believe the CfD mechanism should facilitate the most efficient technologies, business plans and external market signals, whilst continuing to deliver against the core objective of delivering bulk, low-cost, low-carbon power.

Adopting a Whole Systems Approach

It is clear that the transition to Net Zero will involve a blurring of sector boundaries and create a plethora of opportunities for cross sector/market benefits, but also unintended distortions. We therefore urge government to adopt a whole systems approach to future policy design. Many of the challenges and options highlighted in the CfE document cannot and should not be viewed in isolation. For example, the long-term future of the CfD scheme is heavily dependent on changes to other parts of the energy market that may or may not be introduced.

Energy UK now has a dedicated workstream on the topic of future market design. We are keen to engage with government and other key stakeholders on this topic to ensure that any reforms to the market are managed in a way that preserves the attractiveness of the UK as a destination for investment in low-carbon technologies. In addition to this, Energy UK has been actively calling for government to introduce a 'Net Zero Test' for all future policies. We believe such a test should involve consideration of cross sector/market opportunities and risks and therefore help embed whole systems thinking in future government policy formation.

Should you have any questions regarding this consultation response then please do not hesitate to get in touch via the details below.

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Summary of Key Energy UK Proposals

1. Publish a CfD Procurement Strategy, at least out to 2030.
2. Create a formal stakeholder engagement process on low-carbon power to review to long-term options for striking a balance between incentivising efficient market behaviour and ensuring large-scale investment.
3. Ensure the above aligns closely with broader work on market reform with the ultimate goal of maintaining the UK's attractiveness as destination for investment in low-carbon technologies.
4. Move to annual CfD auctions.
5. Initiate a joint industry / government technical workstream on removing the barriers to co-location of low-carbon technologies and flexible assets.
6. Introduce a Net Zero Test on all future government policies.

Response to Questions**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?

There are two primary routes to market for renewables projects without CfDs: Corporate Power Purchase Agreements (CPPAs), and merchant deployment. Energy UK believes that procuring bulk low-carbon power via the merchant route will remain very challenging for the foreseeable future. The reason for this is that existing merchant revenue streams available to renewable projects are highly volatile and uncertain. This results in an inability to attract institutional investors, which require reliable revenues, and are crucial to providing the scale of infrastructure investment needed to deliver the government's climate change agenda. In addition, the increasing deployment of low-carbon generation with zero or very low marginal cost (wind, solar and nuclear) onto the system will significantly reduce merchant prices and their ability to support the investment needed. Energy UK therefore believes that the merchant market will remain niche and have a limited contribution to reaching Net Zero.

CPPAs are a well-established route to market for renewables developers and, as with merchant deployment, Energy UK believes that such non-CfD opportunities should be explored further, where possible. We see an increasing but limited market for CPPAs, and encourage government to maximise this route to market via the actions proposed in response to question 6. The market for lenders with a sufficient credit risk appetite to act as a counterparty to renewable CPPAs is finite, and the number of corporates large enough to pursue renewable projects of a meaningful size is limited. We therefore wish to reiterate the importance of the CfD scheme in facilitating the scale of deployment required to achieve 2030 and 2050 targets. At present the CfD scheme is indispensable.

Energy UK wishes to reiterate the success of the CfD scheme to date, and the importance of maintaining the scheme for the foreseeable future until a clear superior option, which can guarantee the scale of investment required, emerges. The CfD framework has been a successful tool for delivering investment and bringing forward low-cost, low-carbon generation. To date, the CfD has driven substantial cost reductions and stimulated innovation, benefitting UK consumers and the economy, whilst delivering cost-effective decarbonisation. This joint industry and Government effort helped to deliver the cost reduction targets set for offshore wind (£100/MWh) four years ahead of target and the last auction saw clearing prices well below expectations at £39.65/MWh.

It has also delivered international emission reductions by driving and therefore showcasing wind cost reductions. We, therefore, support the continuation of the current two-way CfD framework to provide the stable investment climate that developers and the supply chain need, and ensure that momentum in renewables deployment is continued.

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

There exists a range of views in the market regarding the degree of price cannibalisation that will be caused by increasing shares of low-marginal cost renewables entering the market. However, there is clear consensus that some degree of price cannibalisation will occur, and that this phenomenon is increasing uncertainty in the market, and therefore having a negative impact on investment.

Energy UK recognises that there is already evidence of price cannibalisation in the market. The combination of lower demand from COVID-19 lockdowns, and an ever increasing share of low-marginal cost technologies connecting to the system, resulted in Great Britain experiencing 80 hours of negative pricing in the day-ahead market in the first 9 months of 2020². This scenario, whereby oversupply of low-marginal cost renewables to the market forces prices into negative territory, is expected to become more common in future as the UK builds towards the Government's targets of 68% emissions reduction by 2030 and Net Zero by 2050.

Future wholesale market prices are inherently uncertain due to the many variables involved, such as gas prices, carbon prices, generation mix etc. Many projects assume a decline in wholesale prices as the share of low-marginal cost renewables increases, but some do show prices being maintained near current levels. However, even if baseload prices are maintained through high peak prices, the increased penetration of renewables will certainly have an impact on renewables capture prices.

LCP modelling suggests that wind captured prices as a proportion of baseload price will halve by the mid-2030s, dropping to around 25% by 2050. Again, there are many mitigating variables which might reduce this impact, such as interconnection (especially with uncorrelated markets), storage, demand side response and so on. Even with strong mitigation from these inputs, there is consensus that renewables capture prices will fall with increased deployment, creating a feedback loop that must be addressed to ensure that investment continues to flow into the market.

3. How viable will investment in new renewables 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?

Energy UK believes that future opportunities for investment in new merchant renewables projects will be limited (although some members do see growth in the CPPA market). The influx of low-marginal cost intermittent generation into the market has created greater price volatility and uncertainty in the wholesale market. The effect of this is that the wholesale market is now no longer delivering effective medium- and long-term investment signals for any new generation project. We do, however, believe that the wholesale market is still delivering effective near-term investment signals and plays a critical role in dispatching the generation stack.

Any consideration of the future effectiveness of the wholesale market in delivering medium- to long-term investment signals must be taken with a holistic view of the market including all technology types, revenue streams and impacts from other markets such as the electrification of heat and transport. There should also be careful consideration of how any reforms to the market can be managed in a way that preserves the attractiveness of the UK as a destination for investment in low-carbon technologies. Energy UK has launched a dedicated workstream on the topic of future market design and we are keen to engage with government and other key stakeholders on this topic.

Energy UK believes that a smart, flexible energy system is crucial to meeting net zero at lowest cost. A smart system will allow renewable generation to be maximised and network reinforcement to be minimised. We further believe that a long-term effective carbon price is needed to help drive investment in low-carbon technologies and underpin the transition towards a net-zero electricity system.

² Current News – Instances of negative pricing more than double across Europe in 2020. Access [here](#).

The increasing penetration of intermittent technologies is expected to lead to longer durations of high and low price periods across all markets. Such longer periods of extreme pricing lead to an increase in the system cost benefit of longer duration storage assets, such as pumped storage or hydrogen production and storage. These technologies will be crucial to shifting power between longer periods of high and low renewable generation in day-ahead and balancing markets.

There is currently no route to market for long duration storage technologies other than the Capacity Market, where opportunities are limited. The extent to which these technologies can support renewables wholesale investment cases will depend on the outcome of government work on hydrogen business models, and the potential introduction of a revenue support mechanism for other long duration storage technologies. A recent paper has found that pumped-hydro storage could deliver electricity system cost savings in the region of £690m per year by 2050³. Some members believe that these cost savings, and the wider benefits that long-duration storage technologies offer such as ancillary services and congestion management, merit a review of the existing and alternative routes to market for these technologies.

Similarly, a lack of certainty and stability in future revenues is limiting the further deployment of short duration storage. Some members believe that policy support could unlock substantial additional short term storage at least cost to the consumer, which would provide significant value to the system. Others point to RenewableUK's latest Energy Storage Project Intelligence report shows that more than 16.1GW of battery storage capacity is operating, under construction or being planned in the UK across 729 projects⁴ and believe that this striking willingness to invest in battery storage should be sufficient to show that no further incentives are needed.

Regardless of whether or not additional subsidies are needed, we believe that there is a clear requirement for substantial additions of storage in all its forms to ensure that we are utilising our generation and demand assets in the most efficient manner, and therefore driving value for money and system security.

At present, the revenue certainties of storage and renewables projects (non-CfD supported) are similarly uncertain. As a result, storage technologies have a limited positive influence on the revenue certainty of renewables projects and therefore, with the current arrangements, are unlikely to incentivise institutional investment in merchant renewables projects. This dynamic can be shifted by creating a clear route to market for all types of storage provision. Energy UK encourages the BEIS CfD Team to closely engage with colleagues responsible for the upcoming Smart Systems Plan to identify opportunities to maximise the positive impact that storage can have on renewables investment cases.

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?

There is widespread agreement that the CfD framework has been a successful tool for delivering investment and bringing forward low-cost, low-carbon generation. It is important that going forward the CfD regime is maintained (based on competitive auctions and a level playing field) and continues to drive the decarbonisation of the power sector and deliver low-cost electricity to homes and businesses. Reductions in technology costs, driven by the competitive auction design, have been unprecedented. We, therefore, support the continuation of the current two-way CfD framework to provide the stable investment climate that developers and the supply chain need, and ensure that momentum in renewables deployment is continued.

Energy UK proposes that a formal CfD scheme review process is implemented to ensure that the effectiveness of the scheme can be monitored and to create opportunities for refinement. There is existing precedent for such a process in the Capacity Market (CM) and whilst BEIS recently conducted

³ Imperial College & SSE – Whole-system value of long-duration energy storage in a net-zero emission energy system for Great Britain. Access [here](#).

⁴ The Energyst – UK's total pipeline of battery storage projects now stands at over 16GW. Access [here](#).

an internal review of the CfD scheme, Energy UK believes that the proposed process should involve public engagement, and could potentially be aligned with the CM review timetable.

We recognise the challenges of relying on the CfD in a future market dominated by intermittent renewables, but it is clear that the mechanism is the best available option for deploying bulk low-carbon power and should be maintained until a clear superior option emerges. Energy UK members that operate in several other international markets are keen to highlight that the UK is currently one of the most attractive investment environments for investment in renewables and believe that retaining this investor confidence is fundamental to achieving the government's decarbonisation goals.

It is crucial that this investment attractiveness is maintained in an increasingly competitive global market. Renewable investment now mainly comes from large institutional investors or funds, which are usually pan-European and therefore have plenty of choice over where to deploy their capital. The cost of capital in other markets (particularly Nordics and Iberia) is lower and, therefore, there is a risk that pan-European investors could be attracted to other markets. We also see in other markets a greater flow of projects coming to the market, achieved through more progressive planning regimes (quicker, more accommodating of new technology, etc.) and frequent auctions. In Ireland, RESS has an auction planned each year for the next five years. In France, regular auctions are held and sometimes these are multiple times a year. In Germany, auctions are held four times a year for some technologies and yearly for others.

The UK needs private investment to support the infrastructure needed to meet net zero. To attract investment there needs to be a stable policy environment and low cost of capital otherwise that investment may go elsewhere. Another key recent issue for investors is the impact of charging reforms, which requires consideration as the reforms have impacted operating assets and this in turn has impacted investor confidence.

In order to maintain confidence in the scheme, we recommend that government publishes a CfD Procurement Strategy out to 2030. We suggest that this Strategy includes a timetable of auctions and a minimum average total GWh (to account for the different load factors of technologies) deployment that is consistent with a Net Zero trajectory. This approach would boost investor and supply chain confidence by showing that government is aligning policy ambition with CCC advice/government's own targets, without tying BEIS down to specific auction designs.

In addition to the above, we would also suggest introducing a structured process by which the particular volume in each auction is determined, with reference to the longer term trajectory of deployment that is required. At the moment, there is no structure (at least publicly) on how auction volume is selected. We believe that introducing some principles, the key factors, and a calculation process would further increase confidence that developers and manufacturers can rely on future CfD volumes, by making it more mechanical and linked to a long term plan and trajectory – so less vulnerable to short term policy decisions.

Energy UK has a long-standing position that the CfD auctions should be run on an annual basis. We note that during Electricity Market Reform, auctions were envisaged on a six-monthly or annual basis; a two-year schedule is the divergence, not the other way around. Benefits of increased auction frequency include:

- Materially easing the pressure on the Statutory Nature Conservation Bodies and Planning Authorities by smoothing the development pipeline, as projects will no longer have to rush consent applications in order to fit the bi-annual cycle;
- Reducing the risk of consented projects being sterilised, if a project was unsuccessful in an auction and the consent or lease expires before next auction 2 years later;
- De-risking projects by increasing developers' confidence, so they would be more willing to commit development expenditure; this would create a pipeline of more established and better

evaluated projects entering auctions which both reduces the risk of non-delivery and aids cost reduction;

- Benefits to the supply chain by smoothing out delivery profile; under the current system unsuccessful projects and their associated supply chains face a two year hiatus, which increases the risk of losing capability to other countries; the supply chain could instead plan, make provision for new capacity and parts can be ordered in bulk, allowing cost reduction via economies of scale;
- A similar smoothing effect on the skilled labour required, reducing the need to employ foreign nationals for specialist jobs.

There is sufficient liquidity in the market to enable annual auctions; government can use proportionate capacity caps when required to retain competitive tension but at sub-£40/MWh, prices are reaching a point where cost reduction will be less relevant than the need to deliver the maximum capacity required to meet the UK's net-zero targets and place the necessary focus on supply chain growth.

We note there is a perceived Government administrative burden (e.g. consultation processes) and would therefore welcome evidence as to why this burden cannot be efficiently deployed across multiple auctions. With regards to evidence on annual auctions, we point the Government to the analysis from Oxford University's Institute for Energy Studies which shows annual auction modelling:-

"enables bidders to generate information on prices from previous rounds (competition level, total capacity auctioned) as well as on technology cost developments. Basically, we can see that the updated information on technology costs becoming available in each year leads to lower overall bid prices when it can be directly incorporated into participants' bids.

We believe it is the right time to consider the range of options available to incentivise CfD generators to be more responsive to market signals. There are several options that merit further exploration, including some of those highlighted in the CfE document. However, Energy UK reiterates the need to strike a balance between incentivising efficient behaviour based on the needs of the market and providing security of price to facilitate lower costs of financing. We strongly agree with the government view that further changes to increase exposure to market prices would need to be done in a way that allows security for investors, while rewarding those who innovate their financing strategies and physical assets.

As mentioned above, Energy UK believes that any consideration of the future effectiveness of the CfD in incentivising efficient market behaviour, and of the wholesale market in delivering medium- to long-term investment signals, must be taken with a holistic view of the market including all technology types, revenue streams and impacts from other markets such as the electrification of heat and transport. Energy UK is currently progressing work in this area and is keen to work alongside BEIS on this topic to ensure that any reforms to the market are managed in a way that preserves the attractiveness of the UK as a destination for investment in low-carbon technologies

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

Alternatives to the wholesale market exist in the form of CPPAs and merchant deployment, however as detailed in response to question 1, the scale of these markets is limited (although some members do see growth in the CPPA market). Energy UK supports renewables deployment via either of these routes, but it is clear that neither are suitable to the risk-appetite of institutional investors. Ultimately, the focus of government should be on the most efficient means of attracting institutional investors into the market to deliver the lowest overall cost, as these are the lenders that will supply the bulk of investment in low-carbon technologies between now and 2050.

Energy UK believes that the wholesale market is effective in delivering near-term investment signals and plays a critical role in efficient dispatching of the generation stack. Beyond these roles, we believe

the current market arrangements are unsuitable to attracting merchant investment in renewables at Net Zero scale. We do not currently see any change or alternative to the wholesale market that can facilitate merchant renewables deployment at anything like the scale required for Net Zero. Given the aforementioned price volatility and uncertainty in the market, and the positive feedback loop that an increasing share of intermittent renewables has on these, we believe that some form of government intervention is required to increase the security of revenue and therefore attract large-scale investment.

As mentioned above, we believe it is the correct time for BEIS to consider the range of options to strike a balance between incentivising efficient behaviour based on the needs of the market and providing security of price to facilitate lower costs of financing. Some of the options include an adapted CfD mechanism (there are several options here), a dedicated market for low-carbon power, or even a central buyer/central dispatch approach. Energy UK believes the current CfD is very effective in deploying bulk low-carbon power and can be amended to ensure this remains the case in the foreseeable future. We do not see any clarity on a longer-term option, and therefore encourage BEIS to assess the range of options that could enable large volumes of low-carbon power to come forward on an equal footing.

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

One means by which government could support renewables deployment would be to mandate public procurement of green power. Such a move would have a primary impact of creating a new secure revenue stream for renewables projects. A secondary, and potentially more influential impact in the context of Net Zero, would be the image that government is setting an example for the wider public to follow.

We see an increasing but limited opportunity in CPPAs. We believe that BEIS could better enable CPPA propositions with three low-cost actions that would also help solve some existing issues in the market.

1. Consider the provision of guarantees for CPPAs to enable smaller corporate to participate
2. Provide additional benefits/categorisation of suppliers that provide subsidy-free backed renewable tariffs
3. Better enable renewables generation deployment by improving planning application, grid connection costs and access to land.

Energy UK acknowledges that further work is needed to ensure that consumers can be confident that the power they are procuring is truly low-carbon. We therefore support the government commitment in the Energy White Paper to review the regulatory framework regarding green tariffs. We also believe that the use of effective data management, and technology such as 24/7 matching, is crucial to facilitating effective procurement of green power by larger consumers. We therefore encourage government to consider how these systems and technologies can be brought forward in the upcoming Smart Systems Plan and the review of green tariffs.

As mentioned above, opportunities for merchant investment in renewables are clearly limited in the current market arrangements. The post-subsidy business case for renewables projects is also increasingly uncertain given the bearish forecast for renewables capture prices, which some forecasts suggest will drop below ongoing operational costs. We therefore welcome the government review of the range of options that could enable large volumes of low-carbon power to come forward, and be maintained. We urge government to engage heavily with industry on the assessment of these options and note that that this should be done as part of a wider review of electricity market arrangements.

Ensuring overall system costs are minimised

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

Energy UK agrees with the vision expressed in the consultation document that moving to a system with a greater proportion of intermittent renewables likely requires a different type of electricity system. We agree that the most cost efficient future net-zero GB electricity system will have a greater reliance on intermittent renewable sources, alongside firm low-carbon power technologies such as nuclear, low-carbon hydrogen, and gas or biomass generation with CCUS. It is also clear that there will be a shift to a more active and responsive demand side, enabled by smart metering and digitalisation, indeed this shift is already visible.

We are concerned by some of the negative rhetoric towards the CfD scheme in the CfE document and broader sector dialogue. We wish to reiterate the success of the CfD framework in delivering investment and bringing forward low-cost, low-carbon generation. Energy UK believes the current CfD is very effective in deploying bulk low-carbon power and can be amended to ensure this remains the case in the foreseeable future. We recognise the challenges of relying on the CfD in a market dominated by intermittent renewables but it is clear that the mechanism is the best available option for deploying bulk low-carbon power and should be maintained until a clear superior option emerges.

Energy UK recognises the need to strike a balance between incentivising efficient behaviour based on the needs of the market and providing security of price to facilitate lower costs of financing. We strongly agree with the government view that further changes to increase exposure to market prices would need to be done in a way that allows security for investors, while rewarding those who innovate their financing strategies and physical assets.

We welcome the move from government to assess an array of options for incentivising more efficient CfD unit behaviour, however we note that it is challenging to provide a deep assessment of the options proposed based on the limited amount of detail provided in the call for evidence document. Furthermore, we do not yet see any clarity on a longer-term option, and therefore encourage BEIS to assess the range of options that could enable large volumes of low-carbon power to come forward on an equal footing.

We acknowledge that if the way CfD generators are paid is decoupled from output, this could incentivise behaviour that is more responsive to the needs of the market. Therefore, moving from payment based on physical output to paying on deemed generation is an option that merits further consideration in parallel with other changes to the market. The interpretation of the term 'deemed generation' here is important. We interpret this term as a shift to payment which would effectively be on availability, rather than output. We believe this could incentivise more efficient market behaviour without materially increasing risk to investors and therefore cost of capital, however, we note that there would need to be extensive further work to ensure that the mechanism is designed in such a manner to incentivise efficient market behaviour. Furthermore, there would need to be a detailed review of the implications of such a shift and consideration of other changes to the market that could be implemented to ensure that investment continues to flow. Energy UK would be keen to explore this option further with BEIS colleagues.

Moving the reference price from the day-ahead hourly market to a more forward market such as the seasonal market price used for baseload plant will change the risk profile of a CfD project, increasing developers' exposure to price risk. We note that such a move will decouple CfDs from the short-term market and possibly incentivise developers to actively respond to market signals to maximise revenues. This approach would provide a baseline assurance of minimum level of income, but it does not decouple the CfD from payment on output. We note that the effectiveness of this approach may vary significantly for different technologies and that it would likely require a shift to payment on availability to be workable.

Again, this option merits further consideration in parallel with other changes to the CfD and wider market reform.

Energy UK believes that the option to reduce contract length is the least desirable option. We have covered the issue of bearish renewables capture prices in response to question 2, where we note that it appears unlikely that future capture prices will cover post-subsidy ongoing renewables operational costs alone (further capex costs will also need to be recouped post-CfD). We believe that reducing contract term will lead to an increase in strike prices as developers look to recoup costs over a shorter term. It will lead to an increase in the cost of capital due to the longer merchant tail, which in turn will further inflate strike prices. This will result in lower value for money for consumers.

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

Energy UK strongly believes that increasing exposure to market prices (e.g. removing CfD support) would dramatically push up the cost of capital, particularly as renewables capture prices become more depressed over time. Given that, any further changes would need to be done in a way that allows security for investors, while rewarding those who innovate their financing strategies and physical assets. There is a clear inverse relationship between cost of capital and exposure to the market price for power. We are broadly supportive of utilising market dynamics to drive competition and therefore efficient outcomes. However, it is clear that greater exposure to the current market framework will lead to a significant cost increase for consumers, and in the worst case scenario, deter investment altogether.

Research from consultancy firm Arup on the cost of capital benefits of revenue stabilisation via a CfD found that the increased certainty of such a mechanism can lower the levelised cost of energy for an onshore wind farm by between £6-£12/MWh⁵. CfD Allocation Round (AR) 4 onshore wind projects are expected to come in at, or below, the lowest AR3 strike price (~£40/MWh). Therefore, the findings from the Arup suggest that removing the CfD could result in an increase in the cost of onshore wind of up to 30%. Energy UK encourages government to undertake rigorous impact assessments on any potential changes to the CfD to increase exposure to the market price. This is an important exercise to protect consumers in what is an especially challenging current economic environment.

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

As mentioned above, Energy UK welcomes the move from government to assess an array of options for incentivising more efficient CfD unit behaviour, however we note that it is challenging to provide a deep assessment of the options proposed based on the limited amount of detail provided in the call for evidence document. Furthermore, we do not yet see any clarity on a longer-term option, and therefore encourage BEIS to assess the range of options that could enable large volumes of low-carbon power to come forward on an equal footing.

Apart from the proposal to reduce contract tenure, we believe that the other options put forward in the CfE document merit further exploration. The proposal to move from paying based on physical output to paying on deemed generation may be most favourable of the options in the CfE for providing increased exposure to the market, however, we caveat this with the fact that very limited detail has been provided and extensive concept development would be required. It is for this reason that we suggest that government maps out all options for future large-scale low-carbon power deployment and approaches the assessment of these options on a level footing. We urge government to ensure that the assessment is done through a whole systems lens and that all relevant stakeholders are engaged extensively throughout this process.

⁵ Arup: Cost of Capital Benefits of Revenue Stabilisation via a CfD. Access [here](#).

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?

Energy UK is strongly opposed to the idea of the CfD regime incentivising generators to account for flexibility and wider system impacts, and/or to provide balancing services to the system operator. While CfD generators can deliver flexibility services and should be able to compete to provide such services to the TSO or DNOs, there should not be any specific change to the CfD regime.

Energy UK notes that the objective of the CfD is to procure bulk low-carbon power at low cost. We consider that this should remain the objective of the CfD and that flexibility should be procured at a system level rather than an individual generator level. There is a separate issue around the suitability of existing incentives to drive the level of flexibility required on the system, and this issue should be addressed in the Smart Systems Plan that government is currently developing.

We believe that introducing explicit incentives in the CfD will increase scheme costs and risks creating unintended market distortions. There is a clear distinction between explicitly incentivising, and facilitating the involvement of CfD generators in system service markets. Energy UK is fully supportive of the latter and believes that a move to CfD payments based on deemed generation (availability) rather than output could remove some of the barriers to involvement in system service markets.

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?

Energy UK notes that there is already a mechanism to ensure minimum grid stability requirements in the Grid Code. We do not support adapting the CfD mechanism to attempt to create any further incentivisation for minimum grid stability requirements. We believe that the Grid Code is the correct medium to address this issue and, similar to our point above, we believe that the CfD scheme should stick to the objective of delivering bulk, low-cost, low-carbon power. System requirements should be addressed at a system level to maximise simplicity at the CfD and system level and to avoid the introduction of any unintended market distortions.

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

Energy UK recognises the ongoing debate around transmission charges and the use of these charges to incentivise location of assets in the most efficient areas, however, we do not believe that this issue should be addressed through the CfD. Similar to our reasoning in response to questions 10 and 11, we believe that system requirements (be they system services, location of assets or stability requirements) should be addressed at a system level. We believe that introducing additional levers to the CfD mechanism to attempt to influence the location of CfD assets would add complexity not only to the CfD but also to the broader debate around general location of generation assets (i.e. non-CfD).

We also highlight the uncertainty around what constitutes the 'optimum location' for CfD assets. There are many factors that need to be considered in the debate around the optimum location for assets, such as availability of natural resource, proximity to demand, ability to obtain planning consent, availability of a grid connection, and politics (i.e. levelling up). It is important that decisions on the definition of an optimum location are taken at the system level to ensure a level playing field for all types of generation.

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?

As mentioned above, we do not believe that BEIS should look to introduce a locational aspect to the CfD mechanism due to the complexity and potential distortions this would introduce. We suggest that BEIS explores whether locational signals are needed in the wholesale market to ensure that locational challenges are mitigated at the wholesale market level, rather than through the Balancing Mechanism.

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

Energy UK welcomed the opportunity to respond to the BEIS consultation on Contracts for Difference (CfD) – changes to Supply Chain Plans (SCPs) and the CfD contract. We share government's ambition to strengthen the UK based renewables supply chain and the intention to align the SCP process to the government priorities in the Industrial Strategy. Energy UK believes that a robust and enduring SCP process, with a strengthened compliance process, is an important factor in supporting the expansion of UK-based renewables supply chains and increasing the domestic content of UK projects.

We disagreed with the approach to compliance proposed by government in the consultation. We believe that the proposed penalty (CfD contract termination) is disproportionate to any potential non-delivery of SCP commitments, is a blunt method of assessment, and may introduce an unintended barrier to deploying the government target of 40GW of offshore wind by 2030. We were further concerned by the proposal to introduce the sanction at the post-construction phase of the project and the significant additional risk this places on investors at the point of Final Investment Decision (FID).

We supported an alternative approach to strengthening the SCP compliance process, which we believe better satisfies the public policy goals of promoting the UK supply chain, minimising project delivery risk and cost to consumers, ease of implementation, and appropriate allocation of roles and responsibilities. We suggested that the timing of the sanction is brought forward to the Milestone Delivery Date (MDD) and that an interim, non-binary assessment/compliance stage should be introduced at this earlier stage, involving the potential for voluntary payments into an existing industry supply chain fund (Offshore Wind Growth Partnership – OWGP). We also suggested that any new SCP process implemented is backed by clear and upfront criteria by government, with ongoing monitoring and guidance, and an independent appeals process. We believe this alternative approach, combined with other complimentary policies, can stimulate investment towards a globally competitive UK renewables supply chain. We look forward to the government response to the consultation.

Without sight of the government response, it is difficult to comment on the need to do more to enable the sustainable growth, cost reduction and competitiveness of UK supply chains. However, we believe that the recent process was accelerated with the aim of finding a solution for AR4, and that there may now be an opportunity for a deeper review of the SCP process. This review should look to ensure that the CfD scheme takes greater account of the need to stimulate long-term sustainable growth and drive cost reduction and competitiveness, whilst also meeting its objective of delivering bulk, low-cost, low-carbon power.

Supporting and adapting to innovative technologies and business models

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

Energy UK supports any move from government to remove barriers to involvement. We believe that increasing technology optionality creates opportunities for further cost reductions and therefore better outcomes for consumers.

We recognise that there are barriers to involvement for co-location of assets under the CfD scheme. For example, there are difficulties with ensuring that brown power from storage technologies co-located with a renewable asset does not receive CfD payments. To date, this means that co-location of storage with a CfD asset must occur behind the meter. As a result of these arrangements, this storage asset would not be able to provide the full range of market services that it could if it was separated from the CfD site. Energy UK believes that a joint industry and government technical workstream should be established to attempt to find a solution for this issue. Whilst the metering arrangements may be complex, we believe that it should be possible to find a solution whereby services from the storage asset to the CfD unit and the wider system can be accurately measured and therefore appropriately compensated.

There is some uncertainty around the interpretation of the term 'support' in the question. If government use of the term refers to removing barriers and increasing optionality, then Energy UK is supportive of actions to this end. However, we do not believe that the CfD should be used to explicitly incentivise the co-location of assets together. Furthermore, whilst we agree with facilitating co-location of storage with renewables, we note that co-locating storage with a CfD unit, rather than elsewhere may not always be the most efficient solution from a system perspective. We also note that flexibility from end-users is a largely untapped flexibility resource that will grow with increased electrification of transport and heat. Government must ensure end-users down to domestic level are able to participate in all markets, and we encourage government to consider all of the above flexibility options in the upcoming Smart Systems Plan.

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?

Following the principle from the question above, Energy UK is supportive of government removing barriers to projects with assets in different locations, but we do not support adapting the CfD scheme to actively incentivise this behaviour.

At this point it is important to reiterate the importance of maintaining technology neutrality in the CfD scheme wherever possible. We support moves from government to create dedicated routes to market for flexible assets such as the CCUS Dispatchable Power Agreement, and we encourage government to consider existing (i.e. CM) and alternative mechanisms to support other flexible assets such as long- and short-duration storage, and hydrogen production and storage. Given that these dedicated flexibility markets are being developed, we strongly believe that the CfD scheme should only facilitate involvement of these technologies rather than incentivise. The latter is likely to create unintended market distortions given the flexibility signals forming in other areas of the market, it is also likely to increase CfD scheme complexity, which will have a negative impact on investment.

17. What changes would government need to make to the CfD 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 renewables technologies?

Energy UK supports the move from government and Ofgem to launch the Offshore Transmission Network Review (OTNR). It is clear that the North Sea will see a vast expansion of energy infrastructure as we transition towards Net Zero, and it is crucial that decisions on the location and connection of these assets are taken in a coordinated manner. We look forward to the outcome of the OTNR and hope that this provides some clarity on the role that CfDs could play in the wider framework.

At present, it is difficult to suggest the role that the CfD scheme can play in coordinating offshore infrastructure without sight of the outcomes of the OTNR. However, Energy UK sees a potential role for reopeners on a CfD contract to allow for instances where changes to a CfD project are needed after a strike price has been agreed. For example, if it was determined that the connection arrangements of an offshore CfD unit should be changed after the original contract was signed, a reopener would provide the flexibility to facilitate that change and deliver an overall more efficient outcome for the offshore network.

We have identified some obstacles to developing a joint and coordinated offshore grid infrastructure. If several independent projects were to share offshore infrastructure, projects may have different delivery timelines or receive CfDs at different times, and cannot commit to their share of cost for such joint infrastructure until they have passed FID and received the certainty of a CfD. Allowing for anticipatory investment in offshore transmission infrastructure should help facilitate a coordinated offshore grid system. This should help avoid projects choosing individual point-to-point connections by protecting against different project timeframes. We understand this is being considered under the OTNR and support this approach. Furthermore, the CfD mechanism could be adapted to allow for joint bids or dependent bids (that a developer could withdraw if the other project is not successful) for projects that are aiming to build joint offshore transmission infrastructure.

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

Energy UK sees a role for hybrid wind interconnector projects in an increasingly busy marine environment. We believe that the CfD scheme should be adapted to facilitate such projects, however, we are keen to see that this does not lead to any distortions in competition. Therefore, BEIS should avoid introducing any explicit incentive for hybrid wind interconnector projects and ensure a level playing field.

We foresee some potential complications with hybrid wind interconnector projects. One issue revolves around the UK's exit from the EU and the subsequent potential loss of mutual recognition of green certificates. As mentioned in response to question 6, we support the government commitment in the Energy White Paper to review the regulatory framework regarding green tariffs, and we encourage BEIS CfD colleagues to actively engage in that work and consider the possible implications for power from hybrid wind interconnector projects. We also identify some other issues, such as accounting for differentials in grid charges and measuring power delivered from different sites. We do, however, believe these issues can be resolved and urge BEIS to ensure that a level playing field is maintained.

19. What role could international renewables 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?

Energy UK agrees that having international renewable projects can be beneficial as long as level playing field is maintained and reciprocal access is ensured. Under State Aid rules, it is mandatory to open up national schemes to cross-border participation where possible, however, there is limited evidence of this in practice. The UK's exit from the EU raises questions regarding the new subsidy approval regime and the obligations this will place on promoting cross-border participation.

Energy UK is broadly supportive of cross-border participation and notes the wider system benefits, such as being able to sell excess renewable power at times of high supply and tap into geographically diverse renewable power at times of low UK supply. However, we note that there are challenges to overcome around metering and certification of green power. We believe that this is another issue which requires a whole systems view. Furthermore, with increased interconnection with neighbouring countries, the UK's pursuit of Net Zero ultimately becomes more contingent on the decarbonisation progress and politics of those nations, over which the UK has no control.

Finally, if any such arrangement was enacted than reciprocal access to that overseas market's renewable support regime would also need to be agreed.

Energy UK also wishes to highlight an alternative view to enabling international renewables projects. Under the Paris Agreement, each country has taken on an obligation to deliver carbon reductions by its own efforts as far as possible, before considering external opportunities with other countries that can offer carbon emission reductions that are surplus to their own obligations. Given the scale of the Net Zero challenge, every country will need to maximise their own opportunities for carbon reductions.

The UK has some of the best and most abundant renewable resources in the world and the priority should be for the UK to focus on maximising indigenous renewable generation, while maximising the export opportunities for emerging technologies such as floating offshore wind and green hydrogen. In our view, the UK Government should continue to prioritise investing in renewable generation capacity across all parts of the UK.

Another concern is that supporting international projects in place of UK projects would diminish the economic potential and supply chain benefits that UK projects can bring, supported by the current CfD regime.

20. Should part-built projects 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?

Energy UK acknowledges that only projects that have been commissioned are excluded from applying for a CfD. We have covered the different routes to market for renewable projects and the relative size of these markets. We believe that the majority of renewable generation that will come forward in the near-to medium-term will require a CfD. Whilst there are pros and cons to placing the CfD eligibility threshold earlier in the project development timeline, we do not see any issues with current arrangements and therefore would advise that no action is taken in this area.

There is an argument that projects that have managed to pass FID stage without a CfD should be able to operate profitably without a CfD, and therefore, should not have access to contracts that are crucial for other projects. However, the alternative view to this is that the objective of the CfD scheme is to source the lowest-cost, low-carbon power, which would likely be those projects that have managed to pass FID without a CfD.

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?

Developing extensions to existing projects could offer marginal cost savings from the reuse of existing infrastructure such as connections, substations, side tracks and hard standings. However, the cost saving is unlikely to be significant as there will often be a requirement for technology upgrades, new connections (as the existing connection is unlikely to have been oversized), and it is likely that completely different supply chains will be used. The extent of the cost saving is likely to be site-specific as extension projects often use separate development infrastructure and different supply chain components compared to the operational asset.

It is also important to consider how such extension might feed into a future offshore transmission network and possible associated savings. We believe that extensions should be treated in the same way as greenfield sites to reduce complexity in the scheme.

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?

This is an example where the interpretation of the question is important to the response. Energy UK interprets repowering in this context as rebuilding old technology that would otherwise be decommissioned and demolished. Energy UK is supportive of introducing policy to support repowering of projects as it is clear that much of the existing renewable portfolio will need to be repowered by 2050 if we are to reach Net Zero. Another important consideration is that many of the existing sites have been chosen as they are optimal sites in terms of wind speed, water depth, construction risk etc. when combined with an increasingly congested marine environment with limited sites, it becomes clear that repowering projects should be supported by the CfD scheme.

We note that repowering is effectively a new project albeit it is on land that previously had a project on it and once built it would need to be commissioned. The cost savings here mostly come from planning, so it is important that the existing wind farm is accepted as the baseline, not requiring extensive EIA and lengthy planning processes. Energy UK considers that these sites should otherwise be treated as greenfield sites in future CfD rounds as long as they are full repowering projects with the latest technology. Energy UK is keen to work with government on the issue of repowering and the definitions and support available for different forms of repowering. We believe it is crucial to develop clear definitions of the different forms of repowering and consider the best means of support (if any) for these different approaches. Repowering will ultimately become the dominant form of development, and therefore, a clear framework is needed.