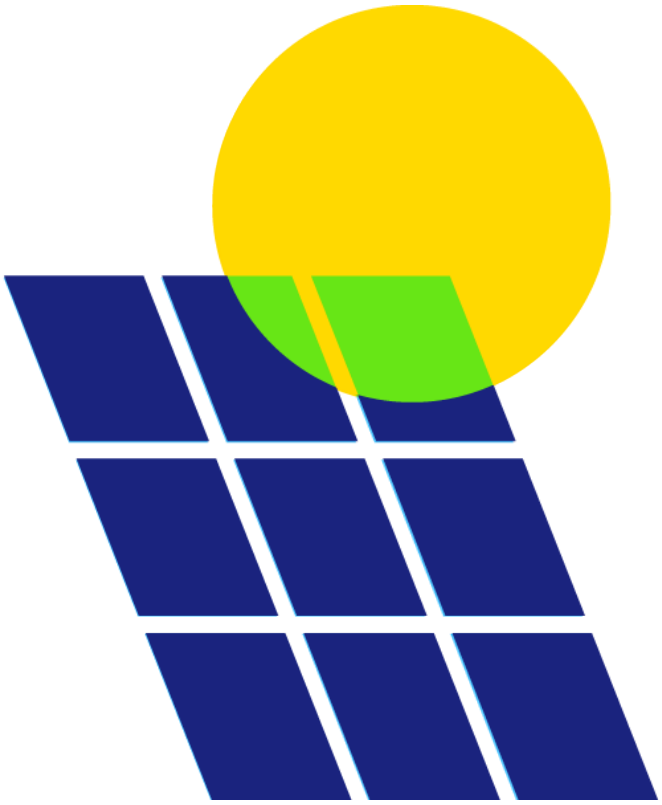
Call for Evidence: Enabling a High Renewable, Net Zero Electricity System

Solar Energy UK Response



About us

Since 1978, Solar Energy UK has worked to promote the benefits of solar energy and to make its adoption easy and profitable for domestic and commercial users. A not-for-profit association, we are funded entirely by our membership, which includes installers, manufacturers, distributors, utility-scale developers, investors, and law firms.

Our mission is to empower the UK solar transformation. We are catalysing our members to pave the way for 40GW of solar energy capacity by 2030. We represent solar heat, solar power and energy storage, with a proven track record of securing breakthroughs for all three.

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Would you like this response to remain confidential? No

Introduction

Solar Energy UK welcomes the opportunity to respond to this consultation. We are committed to enabling the deployment of 40GW of solar by 2030, in line with what is required to achieve net zero according to multiple independent analyses conducted by the Climate Change Committee (CCC)[1], National Infrastructure Commission, and others.

The CCC's central scenario forecast estimates the UK will need 22GW of solar PV by 2025, increasing to 54GW of solar PV by 2035, to achieve the Government's net zero targets. This represents a deployment rate of between 2.7-3.7GW per annum through to 2050, depending on the time horizon measured against. Our analysis, in partnership with Solar Media, shows that in 2020 the UK solar industry added 545MW of new generation capacity.[2] This reflects strong year-on-year growth of 27%, particularly when considering the impact of the coronavirus pandemic and national lockdowns, and is evidence of the sector's continued resilience. However, this is still far from the annual rate of deployment required to achieve net zero.

[1] https://www.theccc.org.uk/wp-content/uploads/2019/05/CCC-Accelerated-Electrification-Vivid-Economics-Imperial-1.pdf
[2] https://solarenergyuk.org/news/uk-solar-capacity-grows-by-545-mw-in-2020/

The Contracts for Difference (CfD) scheme will remain a key policy mechanism for achieving the deployment levels required to meet the Government's net zero ambitions, and Solar Energy UK is focused on enabling the successful participation of solar and storage projects at all scales in the CfD scheme.

Executive Summary

The overarching message from our members has been clear; the CfD scheme is essential for providing greater certainty of revenue and reducing the cost of capital for solar and storage projects. Below are our key recommendations to ensure the CfD scheme continues to deliver on this objective.

1. **More frequent allocation rounds:** Multiple independent analyses have shown that it will not be possible to deliver the capacity needed to achieve net zero by 2050 if auctions are only held once every two years. Solar is a rapid technology to deploy, and more frequent auctions are essential to increase the participation of solar projects in CfD auctions, allowing projects to compete as and when they are ready, reducing the risk of lost investments and stranded assets. Several European markets successfully hold regular 6-monthly, or even quarterly, renewable energy auctions. More frequent auctions will improve CfD delivery by allowing policy makers regular opportunities to revise auction design to reflect current market conditions. However, this requires adequate resourcing of both the auction facilitation and policy review functions. Regular solar auctions are needed to send a clear signal to investment markets that the UK is taking its climate change obligations seriously, thereby leveraging additional project finance and reducing the cost of capital.

2. **Certainty of continued access for Pot 1 technologies:** Solar and storage developers need certainty of continued access to the CfD mechanism, alongside additional clarity around auction design and timing for further Pot 1 allocation rounds, to enable potential bidders to plan accordingly and ensure a pipeline of competitive projects. A one-off allocation round for solar projects, as happened previously following the removal of Pot 1 after AR1, creates uncertainty amongst investors and developers, and will not generate the level of interest and pipeline of projects needed to meaningfully advance the Government's decarbonisation objectives. Certainty and consistency regarding the availability of the CfD mechanism will increase the cumulative capacity of solar projects bidding into CfDs, which in turn will increase strike-price competition and deliver benefits to consumers, alongside increased zero-carbon electricity deployment.

3. **Remove barriers to participation for co-located projects:** Much of this consultation focuses on the role of the CfD in enabling greater system flexibility. While we have set out in detail below that we do not believe the CfD is the appropriate mechanism to send grid stability, locational, or flexibility signals at an individual project level, the CfD scheme can play its part by making it easier for co-

located projects to participate. This will help increase the delivery of zero-carbon storage onto the system and enable transmission and distribution networks to efficiently manage the projected increase in variable renewable generation technologies, without undermining the broader transition to a zero-carbon economy by delivering flexibility through carbon intensive technologies. There is a strong argument for enabling solar with co-located battery storage to be able to bid into CfD auctions, particularly with regards to mitigating the impacts of the projected increase in periods of negative pricing. Defining co-located solar and storage projects as an eligible technology would remove a major barrier for storage in accessing CfDs.

Responses to Questions

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?**

Solar is a mature technology, and the UK industry has been operating in a subsidy free environment since the closure of the Renewables Obligation (RO) and Feed-in-Tariff (FiT) schemes in 2017 and 2019 respectively. Since this time, there have been two major routes to market for solar plants – Power Purchase Agreements (PPA), which take several forms including on-site, off-site, and private-wire, and on a purely merchant revenue basis, with sites competing in the wholesale market.

The UK corporate renewable PPA market has grown by over 600MW in the last two years, funding new solar and wind assets. There is increasing interest amongst corporates to demonstrate leadership and decarbonise their operations, and we believe there is scope for continued growth which we are supporting at an industry level.

However, while projects are being progressed on a merchant and PPA basis, these routes to market are highly unlikely to deliver the level of renewable energy required to achieve net zero. As a greater proportion of the generation mix is made up of variable renewables, we can expect greater volatility in the power markets, though partially mitigated by the rise in storage technology. This volatility, the resulting uncertainty, and the increasing complexity of electricity markets makes the financing of merchant projects more challenging meaning a far shallower pool of capital is available, primarily resulting from less access to debt and pension fund investment. The result being a higher cost of capital to compensate for the risk than would otherwise be the case for projects with more certain revenue streams.

It is important to note that, based on projected wholesale costs, solar PV projects would, over the course of a CfD contract, pay back as much or more than they receive in revenue stabilisation payments. This is in line with the Government's own conclusions, as presented in the 2020 consultation on future amendments to the CfD scheme.

The increasingly volatile nature of wholesale revenues, and the fundamental nature of the CfD as a revenue stabilisation mechanism are critical elements to consider when looking at the landscape of routes to market for renewable energy technologies. CfDs should not be viewed

as a subsidy mechanism or cost burden to taxpayers as contracts can in many cases provide income to the CfD scheme to cross-subsidise other technologies. We would argue that the CfD mechanism is more analogous to a fixed term mortgage in that regard, which are viewed as a legitimate market product rather than a subsidy.

The nature of the CfD mechanism presents equal risks to the investor in potentially having to pay back more than they receive in top up payments. The real value is in creating long-term revenue certainty. This in turn helps mobilise private capital to invest at scale in zero carbon generation, while delivering value for money to taxpayers.

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

This will depend on a multitude of variables, including network charging structures, use of system costs, gas prices, carbon prices, the generation mix of the electricity system, and the extent to which flexibility and storage assets are incentivised on a system level.

Notwithstanding the short to medium term impacts of COVID-19 on wholesale electricity prices, there remains moderate confidence amongst investors and developers regarding wholesale price recovery in the medium term. Forward price projections, from Independent Commodity Intelligence Services (ICIS) for example, indicate that wholesale prices are expected to have largely recovered within the AR4 delivery window, returning to between £45-£50/MWh by winter 2022. However, this is only taking into account the central case, which increasingly cannot be relied upon as forecasts. Looking at the range of scenarios, there is significant variance and downside risk. Increased exposure to merchant risk coupled with increased uncertainty in capture prices makes financing projects challenging.

There are numerous independent analyses interrogating the impact of increased renewable generation on wholesale prices. Some models show significant reductions in wholesale prices, while other have shown wholesale prices being maintained at or near current levels. To date, there appears to be somewhat of a disconnect between increased renewable penetration and wholesale prices in European markets. While the overall direction of travel is difficult to project with certainty, it is clear that increased price volatility is now a common feature of wholesale markets. Therefore, the need to provide revenue stabilisation and increased certainty for all parties involved in developing assets, specifically through mechanisms like the CfD scheme, is growing in importance.

Even if baseload prices are maintained, it is widely accepted that the increased penetration of renewable electricity generation will result in lower capture prices, though this will not impact all technologies equally and there are several mitigating factors to take into consideration.

The National Grid's Future Energy Scenarios for 2020[3] project under several deployment scenarios that solar will maintain higher capture prices than other renewable technologies. However, by 2050 the capture price for solar is still projected to fall to between 50-60% of the baseload electricity prices, and we are already seeing this trend in falling capture price forecasts. Storage and flexibility technologies present a key opportunity to mitigate the impacts

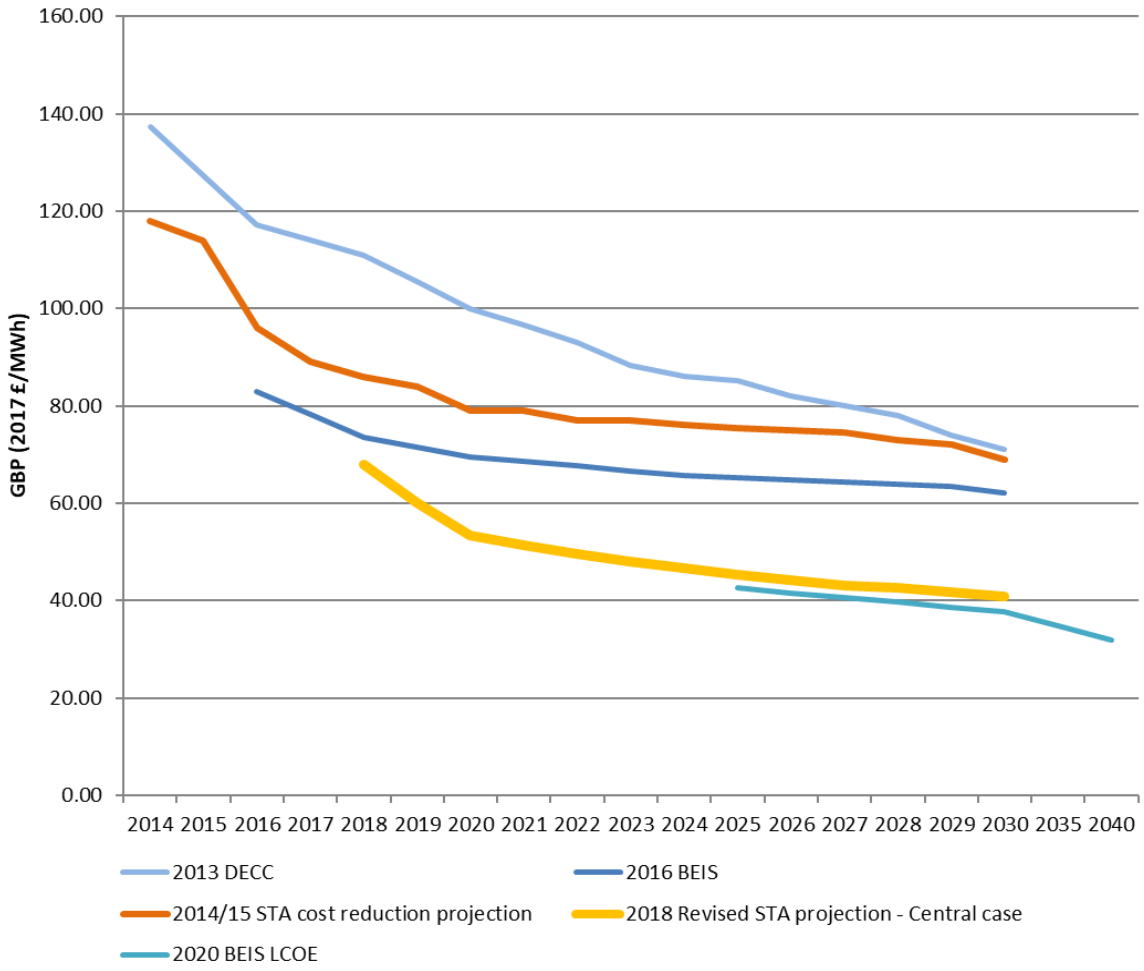
[3] https://www.nationalgrideso.com/document/173821/download

on capture price. However, going forwards the CfD scheme should consider as a core objective providing certainty to investors and developers to deliver the increased levels of renewable generation that are required to achieve net zero.

There are clear benefits to consumers from delivering net zero through the lowest cost renewable technologies. However, the future design of the CfD mechanism must recognise that capture prices will fall significantly over the period to 2050, and mechanisms to mitigate this would support achieving net zero aims at the lowest cost to consumers.

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?

Based purely on future wholesale prices projects would be financed and built, however this would happen at a much slower rate than is required. Increased levels of storage penetration and co-location can work to stabilise volatility in the wholesale markets and support the deployment of further solar. This is paired with the continuation of falling costs and increased penetration of renewables. The cost of solar technologies has fallen dramatically in the last decade, while the Government's latest projections show this trend is expected to continue for decades to come.



Our internal analysis backs up these projections, and preliminary figures for 2020 and 2021 projects indicate even greater reductions in LCOE over the next decade than the latest BEIS LCOE figures. However, as discussed it is difficult to project with certainty how wholesale prices will respond to increased penetration of variable generation over the medium to long-term. Therefore, there remains a need for government to ensure certainty for the industry and support a variety of routes to market. Solar and storage assets can be deployed at a wide range of scales, with a diverse mix of site and applications, and there is no one size fits all approach to market participation.

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?

First, Solar Energy UK strongly supports the Government's decision to extend the delivery years for the scheme out to 2035. In the context of net zero, we would recommend that the necessity and efficacy of the CfD mechanism continue to be regularly reviewed as we approach 2035, and that extending delivery years beyond 2035 be considered.

However, the current cycle of the CfD is out of step with the pace of development of solar projects. **Our principal recommendation for improving the Allocation Round process is to move to an annual allocation cycle**, in line with the Capacity Market mechanism. Alongside this, the government must provide certainty of continued access for Pot 1 technologies and a stable policy framework in the medium-long term to stimulate deployment.

Our members have strongly indicated that now is not the time to be considering alternative mechanisms of policy support. Regular predictable auctions and CfDs have been shown to deliver project volumes and drive down costs in markets across the world. Policy making takes time and investors then take time to get comfortable with new support mechanisms. The CfD auction programme is fit for purpose to deliver the GW of renewable deployment required; price stabilisation is one of the most effective ways to lower the cost of financing projects which in turn lowers the cost of energy to consumers.

There is an increasing volume of institutional capital with investment strategies to target real assets with predictable yield. The CfD programme provides an efficient way to channel this capital into clean energy infrastructure.

However, the pace of auction rounds must be accelerated. Multiple independent analyses have shown that it will not be possible to deliver the capacity needed to achieve net zero by 2050 if auctions are only held once every two years. Solar is a rapid technology to deploy, and more frequent auctions are essential to increase the participation of solar projects in CfD auctions, allowing projects to compete as and when they are ready, reducing the risk of lost investments and stranded assets.

The timeline for developing utility-scale solar projects is roughly 18-24 months. This includes:

- Securing Land Consent – 6 months
- Securing Grid Contracts – 6 months
- Securing Planning Permission – 12-18 months

These processes run concurrently, and a project could feasibility connect to the grid less than 2 years from beginning the process of engagement with the landowner. Holding allocation

rounds every two years could mean that for many projects this mechanism would simply not be available.

Six-monthly, or even quarterly, solar auctions are held successfully in several European markets. Moving to an annual allocation round cycle would not be practically difficult to implement, as this is already the case for the Capacity Market and aligning processes could simplify the administrative burden. However, this would of course still need to be adequately resourced so that improvements to scheme design and consultations on future allocation rounds could happen concurrently with the administration of ongoing allocation rounds.

More frequent allocation rounds would result in further opportunities to improve CfD delivery by allowing policy makers regular opportunities to revise auction design to reflect current market conditions. As noted, cost projections for solar have evolved rapidly to date, and if the CfD mechanism is to enable the successful delivery of solar projects this must be regularly reviewed and reflected in scheme design. Regular solar auctions are needed to send a clear signal to investment markets that the UK is taking its climate change obligations seriously, thereby leveraging additional project finance and reducing the cost of capital.

This is not an issue that impacts solar alone. SSE Renewables for example has stated that without annual auctions from 2025 for offshore wind, which has much longer development timelines, it will be impossible to achieve the Government's target of 40GW of deployment by 2030.[4] This is comparable to the level of PV deployment required by 2030 to keep in line with the CCC's central net zero forecasts. Considering the feasibility and necessity of implementing more frequent solar auctions to achieve net zero, it is our view that at least annual solar auctions, ideally moving to every 6 months by 2025, is the necessary frequency to support the required levels of deployment.

Lastly, Solar Energy UK recommends a separate review of how to incentivise smaller generation projects. Current CfD scheme design lends itself more to the requirements of larger scale projects. Smaller projects must also be encouraged and can help to provide system level benefits by locating closer to load centres and potentially increasing the geographic spread of generation.

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

The wholesale market is largely unsuitable for variable renewable energy generators, as the system was originally designed for large baseload generators. The latest government figures[5] show that the current UK electricity generation mix consists of 40% renewables. The market requires better mechanisms for trading variable renewable power. This includes reforms to increase liquidity and transparency in both the baseload and peak-load markets to enable more variable renewable projects to be brought forward.

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

No comment.

[4] https://sse.com/media/669511/Delivering-40GW-of-offshore-wind-by-2030.pdf
[5] https://www.ofgem.gov.uk/data-portal/electricity-generation-mix-quarter-and-fuel-source-gb

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

One of the primary ways the industry is already responding to wholesale price signals is through the co-location of storage and flexibility assets. It is of critical strategic importance in achieving decarbonisation that the deployment of zero-carbon storage onto the system is accelerated. This will enable transmission and distribution networks to efficiently manage the projected increase in variable renewable generation technologies, without undermining the broader transition to a zero-carbon economy by delivering flexibility through carbon intensive technologies.

There is a strong argument for enabling solar with co-located battery storage to be able to bid into CfD auctions, particularly with regards to mitigating the impacts of the projected increase in periods of negative pricing. Promoting co-located projects via CfDs could also have system wide benefits, as well as those which flow directly to the developer and consumers. Defining co-located solar and storage projects as an eligible technology would remove a major barrier for storage in accessing CfDs.

Beyond what generators themselves can do, supporting increased transparency is one way in which government can enable generators to respond more effectively to price signals in the wholesale market. For example, greater transparency of balancing and use of system costs for generators can help drive locational decision making.

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

As discussed above, increasing merchant exposure for renewable energy projects at a time when power markets are becoming more complex and volatile will undoubtedly push up the cost of capital. It is difficult to quantify just how much of an impact this could have, due to the complexity and number of variables involved. However, our members have shared that based on their internal models this could result in an increase in capital costs for onshore projects of between 3-5%. This is significant in relation to the still quite narrow margins for solar projects, and again must be considered from the perspective of minimising costs 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 discussed above, price stabilisation is one of the most effective ways to lower the cost of financing projects which in turn lowers the cost of energy to consumers.

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**

It is not clear that the CfD is the best mechanism for incentivising generators to account for flexibility individually, or to address system impacts and balancing services. There are existing mechanisms, such as the Capacity Market and other flexibility markets, that are designed

specifically to provide these services, and these markets should have specific decarbonisation targets built in to prioritise the deployment procurement of zero carbon flexibility wherever possible.

With further changes to prioritise the decarbonisation of flexibility, the Capacity Market would provide strong signals encouraging the deployment of zero-carbon storage, as well as co-located solar and storage or wind and storage projects which offer firmer power. Carbon pricing, or at least carbon intensity benchmarking, should be introduced into the Capacity Market mechanism to ensure that fossil fuel and high carbon emitting technologies are deprioritised in the procurement of flexibility and balancing services.

That said, there are also improvements that can be made to the CfD scheme to enable greater participation of co-located projects, which will directly support the ability of system operators to resource and procure ancillary services. The distributed nature of solar technology, particularly when combined with storage, can significantly increase system efficiency and reduce costs to consumers by enabling the generation and storage of energy where it's most needed, and allowing export levels to be more closely aligned.

Under the current scheme design, significant barriers remain to the participation of storage assets. As we noted in our response to the AR4 consultation, our members have concerns regarding the reforms to the application of the Intermittent Market Reference Price (IMRP) in determining top up payments under periods of negative pricing. Modelling we have commissioned shows a peak of 400 hours per year of periods of negative pricing in the mid-2020s. However, this analysis indicates that even this substantial increase in negative price periods will not generate adequate revenue for storage on its own.

Revising regulations to enable growth in co-located storage is particularly important. Currently, CfD regulations exclude storage projects which import 'brown' power to be co-located with solar unless registered as a Balancing Mechanism Unit (BMU). Registering as a BMU creates additional costs and is itself a barrier to co-located storage facilities. This should be revisited as increased periods of negative system prices will make the ability of CfD generators to time-shift output increasingly valuable and would benefit both individual generators and the sustainability and flexibility of the system as a whole. Connection regulations also need to be revised to allow for greater participation of storage and maximise the available flexibility provided by CfDs.

These issues, particularly metering and charging requirements and the subsequent impacts on CfD generators, are incredibly complex. Solar Energy UK recommends that BEIS create a dedicated technical workstream to review in more detail what changes to current metering arrangements are required to enable greater participation of storage units through the scheme.

In future Allocation Rounds, co-located energy storage could also be included in a separate CfD round or pot, with a small amount of volume awarded to achieve price disclosure, on the basis of providing a certain volume for competition. The Government should also consider the ability to award CfD contracts to energy produced by solar plants for consumption co-located storage facilities. Co-located storage facilities participating in CfDs should also be allowed to contract capacity payments.

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?

As with our response to Question 10, it is not clear that the CfD mechanism is best placed to guide decision making around grid stability requirements. Solar Energy UK members have expressed concerns about the CfD mechanism becoming overly complex and trying to achieve a range of disparate system benefits, instead of focusing on its primary revenue stabilisation objectives, for which it is fit for purpose.

Solar Energy UK recommends that the remit of the CfD remain focused on procuring additional renewable and low-carbon generation capacity. As we have outlined, there are ways in which the scheme can be improved to allow a diverse mix of technology types and scales of projects to compete, to deliver competition and provide system wide benefits which will lower costs for consumers.

It should also be noted that the UK solar industry already contributes significant capital investment, including grid enhancement costs, to deliver additional renewable generation capacity. Our internal figures show that, based on average connection charging arrangements across Network Operators, the roughly 8GW of utility-scale solar installed today will have resulted in the UK solar industry contributing roughly £400 million to grid infrastructure.

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

Again, it is not clear that the CfD scheme is the most appropriate mechanism for incentivising locational decision making at the project level. The appropriateness and strength of locational signals is currently under review as part of the Targeted Charging Review, and the outcomes of this review will undoubtedly have a substantial impact on where future projects decide to locate.

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?

There is a major piece of work to be done to enable greater data collection and transparency across the piece to provide the visibility required to improve the efficiency of locational signals. This is of course being looked at as part of the RIIO-2 price controls and network charging reviews.

Greater visibility of existing and future assets on the system, as well as balancing and use of system costs, is essential both from a system management perspective, and to guide the siting and planning of future assets. We would encourage BEIS to consider how the fundamental data principles of 'presumed open' and 'presumed collected' are built into future scheme design. Solar Energy UK recommends that as early as possible in the process information about successful projects is shared with the relevant DNO and with transmission operators so this can be built into decision making and the needs case for anticipatory investments in the network.

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?

Solar Energy UK is committed to supporting sustainable practices and products across the whole of the solar and storage value chain. It is important to note that multiple economic analyses have shown that the average UK content for solar investments is well over 60%, and this is projected to increase to as much as 80% by 2030.

In our response to the recent consultation on Supply Chain Plan (SCP) requirements, our members expressed significant concerns about the introduction of a new Operational Condition Precedent (OCP) applied to the SCP process. Solar Energy UK is keen to work with government to ensure that the process for any further requirements and review of SCPs is clear and proportionate, to enable the successful participation of solar projects without creating over burdensome requirements. To date, it has largely been offshore wind projects which have been subject to the existing SCP requirements. While almost all solar projects in the UK have been below the 300MW threshold for submitting a SCP, it is possible that in future a small number of solar projects applying to the CfD scheme may exceed this threshold.

Solar Energy UK is keen to support domestic supply chain development for projects at all scales. Any proposed supply chain support requirements must work for all technologies and project scales. As we anticipate there will only be a small number of qualifying solar projects over the 300MW threshold, it is not practical to establish the equivalent of the Offshore Wind Growth Partnership, for example. However, it may be feasible to establish a dedicated and independent mechanism by which solar developers can direct funding to appropriate initiatives to promote the UK supply chain. This would deliver increased domestic job growth potential across the entire solar value chain and could be further directed to provide funding support for photovoltaic R&D in the UK, which would deliver added value to UK economy and increase domestic intellectual capital.

Solar Energy UK recommends that the Government establishes a joint workstream with solar developers to develop a mutually acceptable process for solar CfD projects to provide funding for UK supply chain development. Any such workstream should consider the specific economics underpinning utility-scale solar projects in the UK, particularly differences in load factor compared to other generation technologies. Further, Solar Energy UK would recommend any benchmarking with supply chain requirements for other generation technologies be carried out based on MWh output, rather than installed capacity.

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?

See our response to Question 10. Solar Energy UK strongly agrees that the CfD mechanism should support co-located projects to deliver renewable energy at lowest cost to consumers. Co-located assets will be able to share the upfront costs of network connections, which represent a significant portion of capex, usually between 10-20% of the total. The benefits of this will likely increase as the strength of locational price signals increases.

The changes to the scheme we have recommended to provide support to the net exports of co-located assets could also benefit projects by reducing the amount of renewable curtailment on the network, thereby further improving revenue certainty.

Modelling from LCP energy analytics has shown that high curtailment based on locational factors is likely to increase with renewable penetration. This will likely further increase the value of co-locating generation and flexibility assets to reduce locational constraints. The CfD should incentivise additional co-location based on the system impacts observed during low demand periods over 2020, which resulted in very high costs of system balancing actions. This feeds through into use of system costs which impacts on consumer bills and can be mitigated with additional system flexibility.

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?**

No comment.

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?**

No comment.

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?**

No comment.

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?**

No comment.

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?**

Solar Energy UK would support the participation of part-built projects to enable rapid delivery of new assets through the CfD scheme. While our preferred solution is still for more frequent auctions, this reform could allow for more solar projects to compete under the current 2-year cycle. Projects which have already received connection agreements are required to demonstrate progress in line with DNO milestone delivery requirement. It seems sensible that these projects still be eligible to participate in the CfD mechanism. The Government should consider what the appropriate thresholds should be for part-built projects, potentially through a specified percentage of capex spent.

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?

Undoubtedly, allowing for extensions to existing projects to participate in the CfD scheme would result in cost savings. Not least because, as mentioned above, the costs of grid connections make up a significant proportion of capex. These projects would likely also be able to achieve some cost savings through operations and maintenance efficiencies. Variable generation sources like solar could potentially achieve greater utilisation of existing connections through extensions to existing assets, efficiently increasing the amount of renewable energy on the system without the need for costly network reinforcement.

Solar Energy UK would support reviewing in more detail the opportunities for expanding the CfD mechanism to include developing extensions to existing projects. Any review should carefully consider how these projects would compete in allocation rounds to ensure the deployment of new projects is not undercut.

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?

Solar Energy UK would support exploring the expansion of the CfD scheme to support repowering older projects. This could be one of the fastest and most cost-effective options for delivering additional renewable generation capacity onto the system.

However, as with our response to Question 21, we would recommend a further review of the implications of allowing repowering projects to receive CfD support. It is important to ensure repowering projects do not undercut the delivery of new projects through the scheme. This could be achieved by creating a separate Pot for repowering projects, for example.

It is important to note, in the context of repowering, that there have been significant improvements in photovoltaic panel technology, both output and efficiency, over the past decade. Based on our recent analysis, ground-mount sites would likely be able to achieve roughly a 30% increase in output within the same site footprint if repowering an entire site with the latest panel technology.