REA response to BEIS Consultation on CfD Policy for Biomass, CHP, Remote Island Wind and ACT plants

The Renewable Energy Association (REA) is pleased to submit this response to the above consultation. The REA represents a wide variety of organisations, including generators, project developers, fuel and power suppliers, investors, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are around 550 corporate members of the REA, making it the largest renewable energy and clean tech trade association in the UK. We have around 100 members active in the energy storage industry, also making the REA the trade association with the largest number of active storage members.

Introduction & Main Points

The CfD scheme is vital to the build-out of new renewable power capacity in the UK following the closure of the Renewables Obligation (RO) to new projects without grace periods. The scheme has undergone significant change since inception which has still further dented investor confidence and will have a longer-term impact on renewables deployment. These include a lack of visibility over future auctions and both a cap on fuelled plants and a lack of a minimum deployment for emerging technologies.

This results in stop-start deployment which is not healthy for the industry. Technological industries such as Biomass with CCS cannot simply be 'turned on and off' at short notice- consistent deployment and support is necessary in order to grow a long-term, sustainable industry and prevent the loss of supply chain capability, skills and knowledge.

The industry believes that the CfD policy is now being shaped away from supporting biomass CHP and ACT schemes- two technologies offering significant advantages to the UK in terms of dispatchable, baseload profile power delivering a Circular Economy.

- As repeatedly stated, a pipeline of power-led projects is required in the short to medium term in order for ACT projects to deliver the advanced transport fuels and chemicals the Bioenergy Strategy envisages in the longer term. The proposals being consulted on will make this much more difficult as the efficiency requirements are so challenging.

- Regarding the biomass CHP proposals on GHGs, we are concerned that the proposed criteria are too strict for the industry to comply with and that the chosen methodology is less useful than intended. As outlined below, the methodology overemphasises the smaller biomass plants and significantly understates the larger plants.

- The CHP proposals are very challenging for projects to be able to deliver, especially in combination with the GHG requirements (for Biomass CHP

plants), and ACT proposals (for those commissioning as CHP). We believe these proposals will make fuelled stations aiming to combine heat and power far more difficult to commission in the UK, and we question how this will advance the circular economy in this country.

Existing CfD Policy Barriers that should also be addressed by reforms

Before examining the direct proposals, the REA would like to take this opportunity to raise a number of existing CfD policy concerns that should also be addressed to help deliver the new capacity that BEIS wish to prioritise:

- *Provide a clear trajectory for future CfD allocation rounds*

Crucial to getting the ACT industry, and other emerging technologies, established is providing a predictable and fair policy environment within future CfD allocation rounds. In the last five years, the lack of clear projected dates for future rounds has meant that many potentially commercially viable projects have been delayed or abandoned. They have been left unable to secure financial closure while also having to pay significant ongoing costs, such as staff, while not knowing when they would next be able to bid for a CfD to move their projects forward. The most beneficial thing BEIS could do for all technologies within the CfD would be to clearly set out when they project all remaining allocation rounds to take place, utilising the remaining £557mn budget.

- *Ensure the MW Capacity Cap for Fuelled Technologies is removed.*

BEIS should fully analyse the impact the Fuelled Technology MW Capacity Cap within the results of the 2017 allocation round. Modelled analysis, submitted in Annex to this response, and produced by members of the REA, indicates that if BEIS had opted for a financial cap (rather than MW cap) 300 MW of ACT could have won CfDs at an auction clearing price of £70/MWh. The short-term budget would have been slightly higher than the actual outcome, but the long-term budget would have been reduced by £5m per annum or more. This potentially could have equated to 10-11 additional 25MW ACT plants clearing the auction at a lower strike price than actually achieved in 2017. This would have been both good for the industry, delivering the critical mass of commercial projects that could have driven the industry forward, while providing a better deal for consumers.

It is expected that if the proposed reforms within this consultation are to be introduced then there should be no reason for the damaging MW Capacity Cap to remain in place. BEIS should state this categorically, as early as possible, making clear that they do not intend to implement a capacity cap in future rounds. If it is the case that BEIS wish to maintain a cap then it is vital that it should be a financial cap rather than the overly restrictive MW capacity cap that undermined the auction in 2017.

- *Address the ACT Long Stop Date within the CfD Contract*

Once a project has successfully cleared the CfD auction, the long stop date within the LCCC CfD contract currently creates a cliff edge liability after which, if not commissioned, the project could lose the CfD. While it is accepted that this is an appropriate measure to avoid stalled projects, it currently also creates significant risk for projects that simply experience rectifiable delays in commissioning. For financiers this risk is currently opaque, depending largely how the LCCC decide to treat the project and the level of latitude they are willing to provide on the cut-off date.

To date, the LCCC has provided some discretion in relation to existing CfD projects, by extending dates where appropriate. However, such a case by case basis does not ensure all are treated equally or provide clear indications to funders of what the true implications of delays could be. As such, the CfD contract itself should be amended to ensure long stop date obligations are more explicit. For example, a long stop date could be automatically extended based on money spent. If a project can demonstrate they have spent 50% of their budget it can apply for a 1-year extension, or if they can demonstrate an 80% spend they can apply for 2 years (less any previous extensions already provided). Naturally, this also means they will miss out on the first year, or two, of their CfD contract, however, this is a fairer more transparent penalty than potentially losing the contract altogether.

- *Market Stabilisation CfD (aka 'Subsidy free CfD')*

Given the potential provided by the technologies covered by these proposals and the importance of establishing these industries, it would be wrong if the proposed amendments left technologies outside the application criteria without a route to market. As such, we would encourage BEIS to revisit proposals for a Market Stabilisation CfD. Such 'subsidy free' long-term contracts would provide appropriate revenue for grid services and the energy generated, but no more. This could help to suitably de-risk potential revenue streams, allowing projects to go ahead with a technology neutral contract outside of the CfD.

High-level Comments in relation to the proposed ACT Reforms

It is encouraging that BEIS recognise, and wish to promote, ACT technologies which can deliver alternative renewable products beyond power production, including renewable transport fuels, green chemicals and heat. However, the proposed reforms try to shoehorn the delivery of these renewable products into a support mechanism that is designed to deliver power capacity. As such, the reforms are misplaced and risk confusing the policy environment further, likely to the detriment of ACT deployment. Some ACT developers are now looking at creating renewable transport fuels and heat projects through purpose designed mechanisms like the Renewable Transport Fuel Obligation (RTFO) and the Renewable Heat Incentive (RHI). This is an encouraging development. As such, the purpose and role of the CfD should remain consistent; namely, focused on the delivery of efficient ACT power projects through a cost-based auction, rather than trying to replicate what is now starting to be delivered elsewhere.

The CfD continues to have an important role to play in the delivery of a viable ACT industry. Firstly, ACT provides real value in the delivery of decentralised ACT power projects, providing baseload renewable power, localised waste management solutions and the potential for secondary products. There may be an argument for a proportion of the CfD support to be ring-fenced for projects that are focused on power with secondary material extractions, such as heat; however, given the primary aim of the CfD, it is not appropriate that this should exclude viable power only projects from the support mechanism.

Secondly, the CfD has an important role to play in getting a critical mass of affordable commercial scale ACT projects delivered. Increased deployment creates a virtuous circle by establishing supply chains, realising efficiencies and delivering cost reductions, all of which also builds investor confidence. Overall, ACT

deployment through the CfD, which has been a Government objective since the RO, creates the critical pathway that advances the ACT industry. It is upon this platform that projects utilising the RTFO and RHI can now build.

The industry recognises BEIS's ambition to ensure only efficient gasification projects are being supported by the CfD. However, the reforms risk setting criteria that do not achieve their policy intent, are administratively burdensome to deliver and which affects the technologies' ability to compete in an already competitive cost-based auction. At the same time, there are concerns that the performance criteria proposed are too narrow, favouring some forms of gasification, while unnecessarily restricting viable power projects that could contribute to the critical pathway already mentioned. These assertions are also supported by the Cobalt Energy report, submitted in response to this consultation by REA members Rolton Kilbride and which we encourage BEIS to consider closely.

The reforms also demonstrate the current dysfunctional ACT policy making taking place in Government. This consultation comes at a time when DfT has recently reviewed the RTFO to include ACT as a development fuel; BEIS have reviewed the RHI, resetting the biomethane and biogas tariffs; and the Government has reformed their whole energy policy outlook through the welcome ambitions of the Clean Growth Plan. Furthermore, further changes are expected through the publication of the Waste and Resource Strategy (DEFRA) and the Bioeconomy Strategy (BEIS), both of which are expected to have a bearing on the ACT industry. Finally, the National Infrastructure Commission (NIC) is also due to complete its extensive modelling work looking at the UK's waste infrastructure priorities. With so many different announcements and work streams taking place, a more comprehensive plan within Government needs to be established before BEIS consider changing the ACT criteria within the CfD. Instead, BEIS and DEFRA should be using the work of the NIC to inform the Bioeconomy Strategy and Waste and Resource Strategy, so that they can clearly stipulate what they want to be achieved in relation to ACTs. Once decided, Government – with industry help – should then lay out clearly designed policies to deliver these aims. This will likely achieve better results than trying to forcefully adapt a power support mechanism to do something it was never designed to do.

Overall, we do not believe BEIS is introducing the right reforms to realise the benefits of ACT technologies and we have detailed comments on the proposals and provided alternatives in response to the questions below. Delivery of renewable transport fuels, green chemicals and heat will not be achieved through a mechanism designed to deliver power capacity. Rather the CfD should be used to ensure initial commercial power projects can be delivered so that industry and investors are provided with the confidence to move on to more innovative projects, utilising other Government mechanisms better designed to realise this ambition. As such, these reforms will likely hinder ACT deployment by unnecessarily blocking viable power projects.

Responses to Specific Consultation Questions:

4. The government welcomes views on the proposal to use higher load factors in the valuation formula, rather than central estimates – including on whether this approach is sufficient to mitigate the risk of overspend and protect consumers from unexpected costs.

5. The government welcomes views on the proposal to potentially use different load factors for subsets of the same technology in the valuation formula, and welcome thoughts on how subsets might best be defined.
6. The government welcomes views on whether the proposed approach of generators submitting their expected load factors/generation output to the LCCC is the best way to obtain accurate estimates of load factors for successful CfD projects.
7. The proposal does not require generators to provide evidence to the LCCC alongside their load factor estimate. The government welcomes views on whether a requirement for supporting evidence and/or a Director's Certificate would be a suitable means of ensuring that generators submit estimates of their load factors that are, to the best of their knowledge, accurate, and on whether there are alternative approaches that might be more effective.

We agree with using higher load factor projections for valuation of CfD bids, though this situation has been significantly eased in the past year due to the updated load factors now applied.

The best approaches for ensuring reliable load factors may vary by technology, as there is not much variation possible in some technologies, whereas others such as wind can vary considerably based on weather conditions and technological innovations.

We believe the submission of expected load factors is logical, however, this should not be required to be backed up by a Directors' Certificate or evidence. This is because administration of the scheme is already very burdensome for smaller companies and there will be instances when evidence cannot be procured as it is new technology being installed (and conditions will vary). Given that the required evidence would need to be presented following contract award, there should be no incentive for generators to under-report their expected load factors.

8. The government welcomes views on the proposed efficiency criterion, the proposed means of measuring it, whether there are other ways of measuring conversion efficiency that could be more effective, and whether it could be circumvented. Government also welcomes views and evidence on whether setting the conversion efficiency threshold at 60% is appropriate, or whether a different figure should be used.

Industry recognises BEISs objective in trying to ensure that the most efficient forms of gasification qualify for support through the CfD scheme. Chemical Composition Analysis and measurement of Calorific Value (CV) is certainly possible, although burdensome. It is noted that BEIS have not provided enough detail around the nature of this test to be able to confidently comment on the associated costs. This includes failing to stipulate the calculation proposed to determine the CV or what the actual measurement test is going to be. If BEIS is to instigate a CV measurement the industry would encourage them to adopt the methodology and criteria already in place for the Renewable Obligation, which measures Gross Calorific Values.

However, within a support mechanism that is designed to deliver power capacity a 60% threshold conversion efficiency of biogenic content is not appropriate. The only way for a project to reach such efficiencies would be for there to be secondary or third material extractions, such as heat or chemicals. As already described this goes beyond the purpose of what the CfD is supposed to deliver, namely power capacity.

While such projects are not currently in development under the CfD, we accept there may be an argument for ring-fenced CfD support for their delivery, but that cannot be at the cost of excluding all viable ACT power capacity within the auction.

The Cobalt Report, submitted by Rolton Kilbride, assumes a 'Cold Gas Efficiency' measurement and highlights that a fluidized bed gasification of RDF could achieve a 40-50% efficiency level. As such, we believe it would not be appropriate to apply a threshold above this, as it would likely rule out RDF fuels from the CfD.

It should also be considered that such a restrictive pass/fail threshold is unlikely to achieve BEIS's longer-term aim of establishing a vibrant ACT market to deliver the most innovative project that maximises the processing of waste to produce alternative renewable products.

The efficiency of a site depends on the state and composition of the feedstock being used. Such a threshold will encourage the processing of waste off-sites, with additional energy and transportation going into the drying and transferring of waste rather than utilising the waste stream directly. While the efficiency level of the plant has gone up, it is the same waste that is being processed with increases in truck journeys and emissions. Arguably efficiency is not increased, but a further barrier to projects being easily deployed is raised.

A process focused on life-cycle efficiency and actual carbon savings could address this issue better than a blunt efficiency threshold. Given the long-term aim of BEIS to deliver decarbonisation in alternative sectors through the development of transport fuels and green chemicals, as well as realise waste management efficiencies, a focus on deliverable carbon savings could drive the delivery of the most innovative and advanced technologies. To this aim, the existing carbon saving and sustainability criteria used within the Renewable Transport Fuel Obligation for ACTs could be considered for adoption within the CfD. This would have the additional benefit of standardising requirements across support mechanisms. We do, however, appreciate that such a mechanism will be complex and difficult to administer, but we would welcome the opportunity to work with Government to understand how a carbon-based metric could be applied.

A further alternative to relying on a fail/pass measure could be to introduce a variable factor approach that would see the Renewable Qualifying Multiplier within the LCCC contract differ based on the efficiency of the technology. Lower efficiency projects, or those using other unattractive constituents, could get a lower RQM, while a higher efficiency would be rewarded by a higher RQM. The variation in RQM would need to be suitable to avoid any unintended consequences. Such a method would require trialling and an appropriate, cost-reflective, testing regime established to ensure projects are being appropriately rewarded. We again, recognise the potential complexity of administering such a system, however, believe it is worth further consideration as a way to avoid the problem of totally locking out viable projects from entering the auction.

For all the above suggestions, and for the potential 60% efficiency threshold, we would also encourage BEIS to develop a demonstration plant, so that a full demonstration of the plants testing capabilities can be appropriately analysed before being applied to the industry.

9. The government welcomes views on the additional measure for plants with mixed feedstocks, including whether C12:C14 testing is an appropriate and reliable way to establish the biogenic fraction of the syngas or synliquid for plants using waste, and on whether there are better approaches establish the biogenic fraction of the syngas to a reasonable level of accuracy.

As identified, the testing of C12: C14 ratio is possible, providing data on the biogenic content of mixed waste feedstocks. Given the heterogeneous nature of waste feedstock, taking an average ratio of the biogenic fraction of the resulting syngas or synliquid is considered a more accurate and reliable test than the CV test in Question 8. As such, if a C12: C14 ratio measurement is introduced this should be instead of, rather than in addition to, the measurement of CV of the feedstock. The need to do both tests should be unnecessary, as the efficiency of the plant can also be inferred from the C12: C14 test.

It is also noted that if BEIS is proposing this test to ensure stations are not gaming the system by adding high CV fossil fuels, such as met coke, to their feedstock in order to meet syngas quality and efficiency tests, then BEIS should be aware that the carbon to hydrogen ratio of biomass and possible fossil additives are not the same. For example, additives such as propane would have more hydrogen and additives such as coke would have no hydrogen. Re-imposing the limits on fossil additions to the feedstock, as applied in the RO, would be a more appropriate method of resolving this issue.

The C12:C14 test is currently costly, in part due to a limited number of providers. It can be expected that this cost could decrease if demand for the test is increased by both more plants commissioning and new policies. This would encourage more test providers to enter the market and stimulate competition. This, however, means that both the ACT industry and test providers need to go through an industrialisation phase, with competition being encouraged, before the test can be widely adopted.

With this in mind, if BEIS is to introduce such criteria, careful implementation trialling should be done. This should aim to clearly demonstrate the availability of the testing capacity, the current test costs and how these can be expected to change following increased demand and competition. From this, a cost-benefit assessment can be made to demonstrate that the additional costs of requiring such tests will deliver better value projects through the CfD process.

10. The government welcomes views on whether there are sufficient incentives on the efficient generation of electricity for ACT for an efficiency threshold not to be required at this stage of the production process

The REA accept that the CfD provides a sufficient incentive for the efficient generation of electricity from ACT.

11. The government welcomes views on the proposal to set a maximum level of combustibles in syngas or synliquid
12. The government welcomes views on the proposed level of 20% and whether this a suitably ambitious but achievable threshold
13. For processes that produce liquids or mixtures of liquids and gases, the government welcomes evidence on the proposed maximum allowable amount of

non-combustible material in the liquid (such as water) and on whether it is worth testing liquids for non-combustible material.

We believe there is no benefit to be gained from bringing in a maximum level of combustibles in syngas or synliquid, as well as there being little evidence to support the proposed level of 20%. Syngas produced from RDF typically contains much higher percentages of incombustibles but, given the clean-up processes, this has no bearing on the quality of power produced or emission profile of a project. As such, the proposals will unnecessarily exclude viable waste based ACT projects without any benefits being realised for Government or the industry.

It is important to recognise that different forms of ACT will deliver different Syngas or Synliquid compositions; this is not a symptom of inefficiencies but relates directly to what the syngas is to be used for. As such, the level of incombustibles is not consistent amongst all emerging technologies. This should be borne in mind, as these proposals could end up exclude exactly the types of projects that BEIS wish to encourage. Furthermore, if the criteria 1 proposal is introduced then the quality of syngas will be ascertained through these tests, with little further insight to be gained from a incombustibles test.

14. The government welcomes information on the availability of laboratories that would be capable of carrying out these tests, and the likely cost of testing

Currently, there are few laboratories offering these tests. However, this is in part due to a lack of demand. This does also mean that tests are currently costly. More labs can be expected to enter the market as more ACT projects are built and if the regulations determine the test is required. However, it will take time for labs to respond to a developing market need. This lag needs to be considered before stringent requirements for the tests are introduced, as they would currently present a significant challenge to normal operations.

15 The government welcomes views on Criterion 3, including on the relative merits of Option A, Option B and any other potential approaches, on the ease of implementing these measures, and the extent to which compliance could be circumvented.
16. The government welcomes views on the likely impact of this criterion on what types of project would be eligible to receive CfD support, and whether this change would encourage generators to carry out further clean-up or processing of the syngas
17. The government welcomes information on any known close-coupled combustion ACTs that could be clearly differentiated from direct combustion technologies, and capable of delivering affordable and efficient low-carbon electricity.

As stated in our opening comments, the primary objective of the CfD should be the delivery of renewable power generation. As such, both option A and B create too blunt a mechanisms for excluding viable technologies that could deliver this power capacity through the cost based auction. With this in mind, the use of appropriate efficiency thresholds, based on what is realistically achievable; provide a technology neutral method for BEIS to encourage high-quality projects to be built out. As such, we do not state a preference for either option A or B. Option A would likely be too restrictive, while option B will depend greatly on the definitions proposed and be difficult to administer.

Similarly, we do not believe BEIS should explicitly exclude close-coupled combustion ACTs. Rather, the use of appropriate efficiency levels, which properly consider what can be achieved by industry, will mean that they would have to demonstrate a minimum standard in order to benefit from support.

18. Views are welcomed on the relative merits of the three options for frequency of sampling, whether they provide a suitably robust measure at a reasonable cost, and whether there are any other means of sampling or demonstrating compliance that may be preferable. The government is also seeking views on the possibility of monitoring processes on a continuous basis (for example, whether this is already undertaken for quality assurance processes).
19. Views are welcomed on the proposed penalties for non-compliance with these criteria

Given the costs, administration and time required for tests to be completed it would be unreasonable for testing to be done on a weekly basis - as such any new regime should not go over the monthly testing as seen within the RO. We would also encourage BEIS to consider the appropriate level of testing in relation to the size of a project. Larger projects can be better expected to bear the cost of more frequent testing, then compared to smaller plants.

BEIS should also consider the use of simpler and cheaper onsite proxy testing, such as Chloride and Ammonia, which operators can conduct on a frequent onsite basis. This will provide a higher density of testing that provides the parameters necessary when looking at the heterogeneous nature of waste. These tests can be compared to more detailed lab testing on a quarterly or, if necessary, monthly basis. This lab testing would highlight any skewed results seen within the onsite proxy test results, which the operator would then be required to address. Such a system should keep costs down, appropriately deal with the heterogeneous nature of waste and meet the objectives of BEIS.

BEIS are correct in pointing out concerns over a risk of seeing payments withdrawn for a period of non-compliance. To address this, BEIS should also accept a system of rolling averages when reviewing results. There should be no reason for BEIS to assume that the next month's performance of a site would be any different to previous historic results; as such, it should be assumed that CfD payments will continue. Where non-compliant results are found within lab testing, it should not automatically mean payments are stopped. Rather an anomalous result, compared against the historical performance of a site, should trigger an appropriate investigation made by the LCCC to ensure that the result is indeed anomalous and not the result of a more systemic problem. If such investigation proves there is an issue of systemic non-compliance then it would be acceptable to see appropriate penalties applied and CfD payments stopped. For such a system to work it is accepted that the CfD counterparty should also have the right to conduct independent testing, with short notice, to verify results once or twice a year.

Questions relating to CHP schemes

20. The government welcomes views on the preferred approach, Alternative 1, and Alternative 2, including on their relative merits.
21. The government welcomes views on the proposals to introduce an overall efficiency threshold for schemes below 25MWe, and the options presented. In particular, Government welcomes views on the extent to which those schemes are capable of delivering 70% overall efficiency (as per the preferred approach).
22. The government welcomes views on the extent to which Alternative 1 might incentivise schemes to be sized to just under 25MWe, or place insufficient requirements on smaller schemes.
23. The government welcomes views on the merits of increasing the minimum heat efficiency (in addition to a higher overall efficiency threshold) for all schemes proposed under Alternative 2, including whether the combination of thresholds proposed is the most appropriate.
24. The government welcomes views on this proposal to amend the Regulations to remove the reference to the CHPQA Standard.
25. The government welcomes views on whether this proposal provides sufficient clarity for applicants of Dedicated Biomass with CHP and Energy from Waste with CHP projects.

Our members are of the view that these efficiency targets (both alternatives) will be very challenging to achieve and potentially significantly harm deployment. Achieving a 70% threshold for some projects is very challenging as there are still a limited number of notable heat off-takers in the UK.

As an example, one company developing CHP projects surveyed over 1500 possible UK sites for suitable heat offtakers, before having to narrow down to only around a dozen possible locations with the right type and volume of heat available. Developing such projects is not just a matter of securing any available heat source, it is a matter of finding appropriate types and quality of heat, which significantly narrows down the possibilities. For this reason, increasing a heat efficiency requirement is especially challenging.

Adjusting existing GN44 rules is however favourable to a whole new mechanism being introduced if changes are to be made. In addition, any interactions with the RHI scheme should also be considered as there is a connection between GN44 for power and RHI components.

Questions relating to Biomass CHP projects

26) The government welcomes views on all aspects of the proposed approach, including:
a) setting a new (and lower) criterion than the one used up to now

We support the Government's ambitions in wanting to further tighten the requirements for GHG savings within the CfD scheme. Moving towards 2050, all power generation technologies will need to reduce their emissions, biomass power included. The vast majority of generation already far exceed the current minimum requirements for GHG savings, and most already meet the criteria set for 2025 today. There are therefore good reasons to gradually lower the criteria for new biomass power generation to ensure that future biomass delivers even steeper GHG reductions.

However, we are concerned that the proposed criteria are too strict for the industry to comply with and that the chosen methodology is less useful than intended. As outlined below, the methodology overemphasises the impact of smaller biomass plants and significantly understates the larger plants. Implementing such a strict GHG requirement would exclude most new biomass schemes from bidding for a CfD.

Furthermore, the wider benefits of biomass are not being recognised. The consultation states that the government is mindful of "Ensuring that the criterion does not exclude projects or technologies which could provide low carbon electricity in a cost-effective way through the scheme". Implementing such a strict GHG requirement would exclude most new biomass schemes from bidding at CfD auctions. Considering the wider benefits of biomass power generation, i.e. the whole systems costs, it would be significantly less cost-effective if biomass power had no viable route to market. Biomass power minimises the system integration costs of variable renewable technologies, such as wind and solar, as it addresses a number of system issues:

1. *Variability* – variable renewable technologies have less control over their output than dispatchable technologies, which reduces their ability to contribute to system management. Capture price of biomass is above average electricity prices because of their ability to switch on and off easily at times when needed to provide inertia and voltage control. It is more desirable during periods of peak demand due to its dispatchability and flexibility, i.e. it provides services that are more highly valued on the grid. Capture prices reflect a value to the system based on matching supply and demand more or less closely.

2. *Security of supply* – To maintain the security of supply, notably at times when variable generation is not available, backup power must always be on hand through mechanisms such as the Capacity Market, which is also paid for by the consumer via energy bills. Dispatchable biomass is significantly more cost-effective from a security of supply perspective, as reduces the need for the capacity market.

3. *Balancing* – Balancing costs are incurred when a technology fails to deliver the output it has committed to with the system operator in advance of actual delivery. Biomass has little or no balancing costs, meeting its commitments more frequently and at times even making money in the balancing market by over-delivering when necessary, which can help to lower associated subsidies.

4. *Transmission* – Transmission and distribution costs are based on the location of the power generator with the highest costs going to generators located farther away from demand centres. A portion of these costs is passed on to the consumer. Biomass has lower transmission costs than other renewables because it is often deployed at existing grid connection points.

When considering the whole system costs outlined above, biomass power becomes more valuable. It would, therefore, be less cost-effective for the system and the policy if the new GHG limitations excluded biomass from the CfD scheme.

b) using recent performance under the existing criteria as a basis for defining a new criterion

We are concerned with the chosen methodology, which bases its analysis on the mean GHG emission of each plant rather than the mean of the overall tonnage. This distorts the analysis, as it equates the GHG emissions of a plant of 50MW with the emissions of a plant of 500MW. It will skew the scheme towards smaller plants rather than larger plants, as it will likely only support small-scale biomass projects, which use local sourcing. Some of the smaller biomass power plants already have fuel onsite, as they are connected to the timber industry. The policy proposal would most likely exclude sites that do not have local sourcing. The larger, potentially more efficient plants would be excluded from the scheme, which again is not aligned with the principle of ensuring cost-effective low carbon electricity.

By using the mean of each station's average GHG emissions rather than the overall biomass generation in the UK, the analysis does not reflect the current UK generation as illustrated below.

Table 1: GHG emission reported under the RO 2013 - 2016

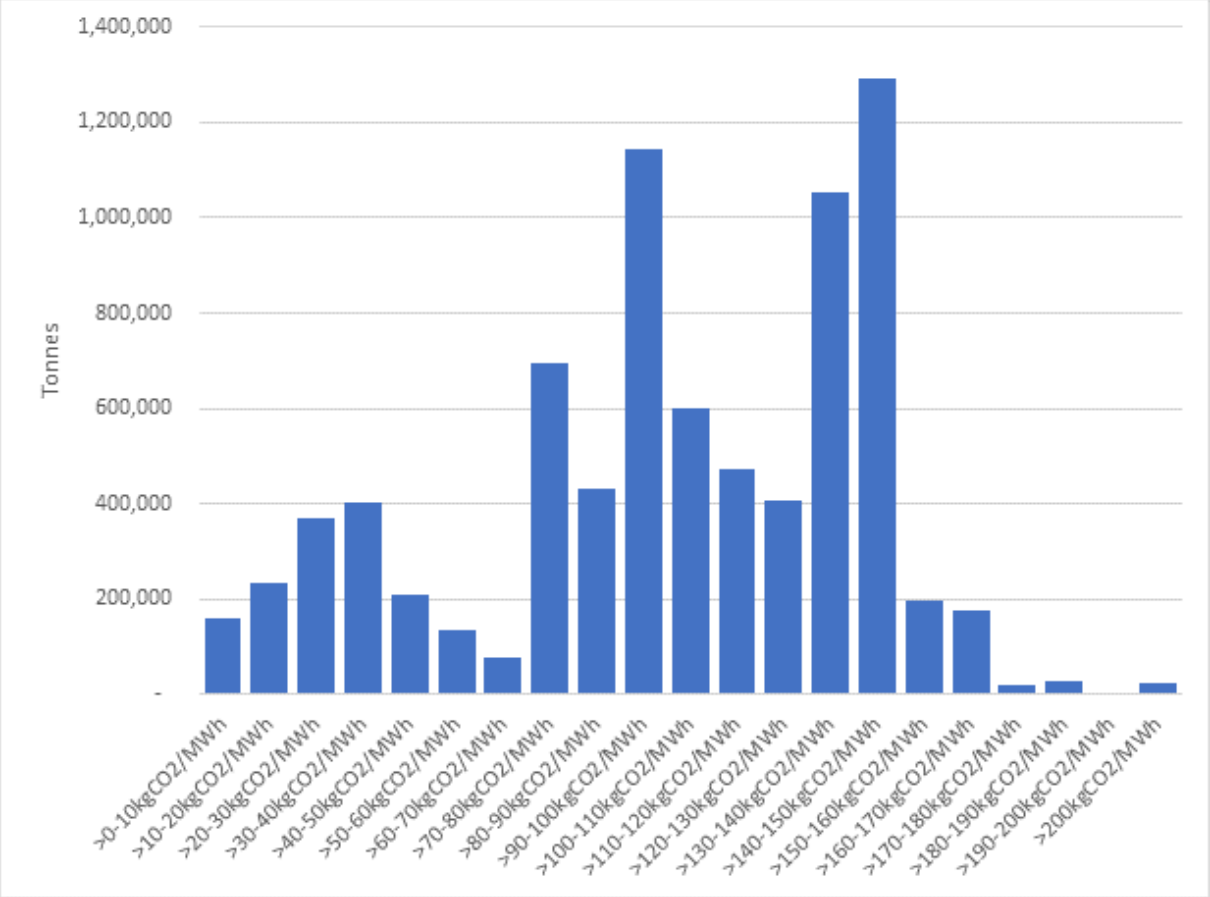
RO reporting period		kg CO_{2e} / MWh	GHG saving compared to **EU fossil power average**	GHG saving compared to **coal**
2015/16	**Weighted Average**	**101.01**	**86%**	**89%**
2014/15	Weighted Average	115.21	84%	87%
2013/14	Weighted Average	131.93	81%	85%

Notes: Based the RO "Biomass Sustainability Report 2015-16 dataset" released by Ofgem, analysed by the NNFCC. Comparator for EU Fossil power average is 198g CO_{2eq}/MJ, as per the EU Report on Sustainability requirements for biomass[1]. The UK Government's benchmark figure for GHG emission from coal is 250.8g CO_{2eq}/MJ. The weighted average is per tonnage of feedstock.

Table 1 above shows the current GHG emissions as reported under the RO, which is significantly lower than the current GHG criteria as outlined in the consultation in section 78. Figure 1 below illustrates the tonnages of solid biomass used in the RO falling into different emissions bands (based on 2015/16 Obligation year data, representing the most recent available data and taking account of technical developments to reduce emissions).

[1] EU comparators for heat and electricity are on p17 of the EU report on the requirement for sustainability criteria for solid biomass and biogas: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0011:FIN:EN:PDF.

Figure 1: Biomass power GHG emissions in emissions bands (RO 2015/16)



Notes: Based the RO "Biomass Sustainability Report 2015-16 dataset" released by Ofgem, analysed by the NNFCC.

On the basis of this analysis, only 7% of the total tonnage used would be able to comply with a <25kg CO_{2e}/MWh criteria and only 14% would be able to comply with the <40kg CO_{2e}/MWh criteria, illustrating how unworkable the proposals are. Tightening the GHG criteria too much and too fast would exclude biomass from competing, while also ignoring the significant reductions already achieved (e.g. 23% reduction in emissions between 2013/14 and 2015/16).

Looking at the consignments from anaerobic digestion plants under the RO Biomass Sustainability Report 2015-16 dataset, the same conclusion applies. Of the 80 consignments reported in the database for biogas plants:

- All consignments would comply with the target of 240 kg CO_{2e} / MWh by 2020
- 8 consignments (8%) would not comply with the target of 200 kg CO_{2e} / MWh from 2020 to 2025
- 11 consignments (14%) would not comply with the target of 180 kg CO_{2e} / MWh from 2025 to 2030.
- 50 consignments (63%) would not comply with the target of 40 kg CO_{2e} / MWh for new projects commissioning between 2021/22 – 2025/26.
- 61 consignments (76%) would not comply with the limit of 25 kg CO_{2e} / MWh for new projects commissioning between 2021/22 – 2025/26.

This would therefore also significantly limit the ability of anaerobic digestion plants to meet the proposed targets and thereby limit the ability to bid for CfDs and deployment. Currently there are no AD plants accredited under the CfD scheme,

however, this will be more of an issue once the FiT scheme closes in April 2019, as more AD plants use the CfD scheme as a route to market.

It is also worth considering ensuring alignment with the EU sustainability criteria for biomass as outlined in the new clean energy package. Although the current comparator can seem outdated, it was chosen due to historical reasons and is useful in an international context when trading and comparing requirements between states. Choosing a new comparator does not actually change the GHG requirement, but just what percentage GHG savings is stated. The emissions will still be the same.

c) <u>defining a single criterion applying across five commissioning years</u>

We welcome having a single criterion across five commissioning years, as this makes it easier for projects to plan their projects.

d) <u>setting a criterion that will remain constant for the duration of a 15-year CfD contract</u>

Although it is useful to have a consistent approach across the lifetime of the CfD, the current policy has a reducing trajectory for carbon emission, which would lower the limit over time. This allows operators to streamline their supply chain and achieve deeper GHG reductions over time, by encouraging innovation and investment to reduce emissions. This would, in the end, deliver even further carbon reductions compared to a constant 15-year limit.

e) <u>which of Option 1 and 2 appears most appropriate</u>

We refer to our answer in 26a & 26b. Neither option is appropriate if the Government wants to ensure a thriving biomass power sector.

A viable option would be to align GHG criteria with other policies, such as the RO limit and CCC suggestions for average emissions. This would allow the following criteria:

Year	**GHG emission limits**
2020 – 2025	200 kg CO_{2e} / MWh
2025 – 2030	180 kg CO_{2e} / MWh
2030 – 2035	132 kg CO_{2e} / MWh
2035 – 2040	100 kg CO_{2e} / MWh
2040 – 2045	40 kg CO_{2e} / MWh
2045 – 2050	0 kg CO_{2e} / MWh

f) <u>the proposal not to change the emissions limit for single consignments</u>

We support this proposal, and it will allow more flexibility for the generators, but still ensure significant reduction in GHG emissions.

g) <u>scope for unintended consequences</u>

There would be a number of unintended consequences, as outlined below:

- Limiting the potential deployment of biomass power generation will also limit the development of Bioenergy Carbon Capture, Utilisation, and

Storage (BECCUS). The vast majority of the IPCC scenarios for achieving a temperature increase below 2°C include negative-emission technologies, such as BECCUS. The large-scale deployment will likely need an existing industry ready to innovate and to streamline supply chains to be able to achieve negative emissions. Furthermore, these will likely need to be large operations, which would make it less useful for the policy to only promote small, locally sourced biomass plants.

- Increased costs to the consumers as per the higher whole system costs (see response to Q26a).

Definition changes:

Force Majeure

27. Force Majeure- The government proposes to make these proposed clarifications but is consulting to allow respondents to highlight if they consider that they could lead to any unintended adverse consequences which the government should properly take into account before making any such changes and/or which may impact the way the proposals are drafted.

28. The government welcomes views on these proposed amendments including, but not limited to, whether they could lead to any unintended consequences.

We have no comments to make other than the proposal appears acceptable.

Grid connection delays

29. The government proposes to make these proposed clarifications but is consulting to allow respondents to highlight if they consider that they could lead to any unintended adverse consequences which the government should properly take into account before making any such changes and/or which may impact the way the way the proposals are drafted.

We have no comments to make other than the proposal appears acceptable.

Total Installed Capacity

30. The government welcomes views on our proposal to clarify the definition of "Installed Capacity" and introduce newly defined terms for 'parasitic electrical load' and 'electrical losses' as suggested above, including whether these changes could lead to any unintended consequences. Given the variable nature of parasitic loads and electrical losses, we would also welcome views on any practical issues that we should consider in relation to determining the level of parasitic loads and electrical losses for the purposes of determining net capacity, e.g. whether these should be calculated on an average basis.

Clarification would be welcomed on whether the definition of 'parasitic load' includes pre-processing of waste feedstocks. The proposal differs from the RO's approach, therefore, industry will need to adjust and further guidance would be welcomed.

Facility definition

31 - The government welcomes views on the proposal to clarify the definition of Facility, including whether it could lead to any unintended consequences.

The proposals appear acceptable.

Eligible generators - Amended waste definition

32. The government welcomes views on the proposal to amend the definition of 'waste' in the Eligible Generator Regulations and the CfD Agreement to bring it into line with the new 'waste' definition in the Renewable Energy Directive. The new definition would apply for all purposes where the word 'waste' is used in the CfD scheme.

33. The government welcomes comment on the view that participants in future CfD rounds do not intend to use modified waste and that they would want to ensure that the fuels they use meet the appropriate sustainability standards and that consequently, this amendment is likely to have no impact on the fuelled technology sector?

We support the principles behind this change and the proposed amendments. We are not aware of any projects planning to develop schemes using such modified material.

Conclusion

The proposals for Biomass CHP plant GHG emissions levels and ACT plant efficiencies are not workable and must be amended, as the above analysis illustrates they would make a large number of plants unviable in the UK at present.

We would be very happy to discuss any of the above further and work together towards more workable solutions.

REA, March 2018