Department for Energy Security & Net Zero

Transitional support mechanism for large-scale biomass generators

Government response to the consultation

February 2025

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

Contents

1. Introduction

1.1 Context and consultation overview

On 18 January 2024, under the previous administration, government consulted on transitional support for large-scale biomass generators. This government response provides summaries of the responses we received to the consultation and this government's related decisions.

Case for intervention

Biomass generation is a significant and reliable contributor to the UK's energy mix. Large-scale biomass plants, converted from coal, can provide dispatchable power and currently contribute around 5% of UK electricity generation. Current government support for these plants ends in 2027. At this point, we do not anticipate that there would be sufficient incentive for these generators to continue operating without support after their existing subsidies end.

Maintaining existing large-scale biomass generators would therefore increase the resilience of the electricity system and support security of supply. The alternatives to large-scale biomass generators are limited given their scale and low carbon dispatchability in the timescale required to replace it. Continued support in the late 2020s to early 2030s would significantly reduce the pressures on other security of supply mechanisms such as the Capacity Market.

The last government consulted on introducing a mechanism which could provide short-term support for large-scale biomass generators from 2027. Having considered the responses to the consultation we are planning to provide short-term support to these generators, subject to a rigorous economic assessment to ensure this provides value for money for consumers.

1.2 Summary of stakeholder engagement and responses received

The consultation was published on gov.uk and on the BEIS Citizen Space consultation hub on 18 January 2024 and closed on 29 February 2024.

We received 103 responses to the consultation from a range of organisations, including large and small-scale generators, academic institutions, and non-governmental organisations. We also received 2,079 petition template responses from private individuals, via a Biofuelwatch campaign against new subsidies for biomass. We refer to these as the 'campaign responses'.

Given the large number of responses to our consultation, this document focuses on the most common or relevant points for each consultation question, rather than summarising every point made. We have, however, considered and given due weight to all responses when developing the details of our proposed support mechanism.

The campaign responses did not respond to all the questions posed in the consultation; they focused on the respondents' concerns about the low carbon credentials of biomass and opposed our proposals on these grounds.

We do not use the exact or absolute numbers of respondents in this document, mainly because the number of respondents to each question varied. Instead, we use the following categories:

- 'most' is used when referring to more than 50% of those that provided a response to the question
- 'many' is used when referring to 21-50% of those that provided a response to the question
- 'some' is used when referring to 11-20% of those that provided a response to the question; and
- 'a few' is used when referring to up to 10% of those that provided a response to the question

1.3 Overview of decisions

After careful consideration of the responses and given the situation inherited from the last government, this government believes there is a case in principle for development of a short-term support mechanism for large-scale biomass generators. This decision recognises, on the basis of the consultation responses and advice received from the National Energy System Operator, that the continued operation of these plants plays an important role in bolstering our security of supply between the late 2020s and early 2030s by providing low-carbon, dispatchable electricity to the grid. This is the primary driving reason for the decision the government has made.

However, any final decisions to formally agree contracts with generators will have to pass strict plant specific, value for money assessments, sustainability checks, and confirmation that eligibility criteria have been met.

Any support provided to generators will be for lower volumes of generation than under current arrangements and designed to maximise energy security benefits. Consequently, we expect the resulting total costs to consumers to be significantly lower than those incurred under the existing funding schemes.

We acknowledge that there are some strongly held objections to government's wider position on biomass. However, the government considers that biomass that is sourced in line with strict sustainability criteria can be used as a low carbon source of energy. Global institutions such as the IPCC and the UK CCC also recognise that bioenergy can play a significant role in decarbonising economies and meeting net zero, provided that relevant policy strategies can be put in place to mitigate the use of unsustainable biomass. Forest-derived woody biomass is a biogenic plant material where the energy stored within it came from the sun and the plant

material can re-grow. The carbon absorbed by the plant material as it grew is released when it is combusted. In a sustainably managed forest, it is possible to maintain the production of forests decade after decade, with the carbon stocks of forests being maintained over time. This is because there are trees of different ages harvested in sequence and then restocked with saplings. This decision also means that, if agreements are reached, it keeps the option of these plants converting to power BECCS and deploying within a timeframe to contribute to future Carbon Budgets.

The government only considers forest-derived woody biomass a low-carbon energy source if it meets certain sustainability conditions, including ensuring that the productivity of the forests from which the biomass is sourced is maintained over time. Enhanced sustainability criteria will be put in place to ensure that biomass supported under this scheme meets these conditions. While existing criteria are designed to mitigate the risks around forest-scale carbon debt and foregone sequestration raised in the responses to this consultation, we recognise the need to evaluate the current approach against a developing evidence base. This will be considered as part of the development of the Biomass Sustainability Common Framework (question 12). Further details on the enhanced sustainability requirements for this support mechanism are described under questions 10-12, including requirements related to wider supply chain emissions from biomass use.

In this response, we set out decisions which will apply to any support mechanism provided. We intend to lay before Parliament regulations making the supporting amendments to secondary legislation as soon as possible.

The key overarching decisions relate to:

a. Delivery option of a support mechanism (see question 4)

The last government consulted on four delivery options:

1. Contract for Difference (CfD) – unconstrained: a contract similar to existing arrangements for biomass generators, with a strike price set for generators. Generators have flexibility around the volume of generation.

2. CfD – with a generation collar: as above, but amended to include minimum and maximum generation volumes for generators (i.e., a generation floor and generation cap).

3. Availability Payment: a payment in return for maintaining the availability of assets, but with no subsidy of generation activity itself.

4. Regulated Margin: an open-book arrangement in which support is given so that there is a minimum profit level for the assets, but with the consumer then sharing in any profit above that level.

We have opted for option 2, CfD with a generation collar, because it:

- Lowers overall costs to consumers compared to an unconstrained CfD, as generation subject to difference payments would be capped at the agreed maximum generation volume
- Provides generation certainty through a generation floor mechanism
- Significantly reduces commercial optionality compared to an unconstrained CfD (where generators can capture a merchant price premium by selling fuel rather than generating in periods of high power prices), as generators would be required to meet the generation floor regardless of power prices
- Supports decarbonisation to a greater extent than an Availability Payment (which would likely require fossil fuel generation to replace lost biomass generation) and an Unconstrained CfD (which risks displacing more intermittent renewables)

We have also decided to develop an option for an Excess Returns Mechanism and will determine whether this is appropriate during negotiations with any eligible generators. This mechanism will require generators to pay a share of profits above a set threshold back to the government counterparty, therefore protecting billpayers against the risk of generator overcompensation.

b. The eligibility criteria for potential large-scale generators

We have decided to proceed with the eligibility criteria set out in the consultation. The full list is provided in chapter 4. While most respondents were opposed to some or all the proposed eligibility criteria, over half of these objected to the proposed mechanism in principle. However, some parties who supported the wider principle of support objected to an eligibility threshold of minimum electricity export of 100MW. This threshold means small-scale biomass generators will not be eligible for support under this mechanism.

We have decided to maintain the threshold of a minimum electricity export of 100MW. This ensures any short-term support targets those low carbon generators best able to provide a significant contribution to security of supply within a constrained timeframe, helping the UK on its decarbonisation pathway through the provision of clean power. This also retains the option of future large-scale power BECCS.

We are also setting up an independent review to consider howoptions for greenhouse gas removal , including large-scale power BECCS and DACCS, can assist the UK in meeting our Net Zero targets, and ensuring security of supply, out to 2050. Further details of the review will be shared in due course.

c. Sustainability criteria for support

We consulted on changes to two aspects of the biomass sustainability criteria required under the Renewables Obligation (RO) and Contracts for Difference (CfD) schemes: the greenhouse gas (GHG) criteria, and the minimum percentage of woody biomass that must come from a sustainable source. In the Biomass Strategy, we made a minded-to decision to increase the

minimum percentage from 70% to 100% as part of the future Biomass Sustainability Common Framework to be consulted on later in this year.

We have decided to set the GHG threshold at 36.6 gCO2e/MJ, which aligns with the EU Renewable Energy Directive (RED III).

We have also decided to proceed with raising the minimum woody biomass criteria from the current 70% sustainability requirement to 100% under any contracts entered into as part of the support mechanism, rather than wait for the Biomass Sustainability Common Framework consultation. This is a significant increase on existing levels and is indicative of our commitment to continue to improve sustainability criteria.

We also stated in the consultation that there was scope for us to be more stringent where we considered it to be appropriate. We will also exclude material sourced from primary and old-growth forests from receiving support payments. This reinforces our commitment to continuously review and improve sustainability criteria.

In addition, we are considering the recommendations from the National Audit Office report on Monitoring, Reporting and Verification (MRV) and assurance. Work is underway in government, together with Ofgem, to evaluate the current assurance arrangements on biomass sustainability for large-scale generators to ensure it continues to be suitably robust. We will be reviewing the outcome of that work alongside research being undertaken as part of preparations for the Biomass Sustainability Common Framework, and will use this to enhance the MRV arrangements in any contracts awarded under this mechanism.

d. Legislative amendments

We consulted on amendments to secondary legislation that we anticipated would be required for the transitional support mechanism. We will decide in due course on the amendments necessary to enable the wider policy intent set out in this document.

1.4 Next steps

The government will complete an assessment of biomass generators against the eligibility criteria. Decisions will then be taken as to whether support is warranted through a value for money assessment, sustainability checks, and confirmation that eligibility criteria have been met. The award of any support contracts will also be subject to subsidy control assessment and Parliamentary approval of the enabling legislative amendments set out in this publication.

2. The case for intervention

2.1 Question 1 – Do you think the government should intervene to create a support mechanism to help biomass generators transition to power BECCS?

What we said

Our latest analysis suggests that the deployment of power BECCS is part of cost-effective pathways to meeting net zero. Analysis undertaken for the Net Zero Strategy suggested Greenhouse Gas Removal (GGR) may need to contribute up to 23 Mt of negative carbon emissions per year by 2035.[1] Compared to other GGR technologies, power BECCS is a relatively cost-effective and low risk option and is expected to deliver a steady increase of engineered removals that would support the UK in meeting Carbon Budget 6 (CB6) between 2033-37.

Based on our current evidence and understanding of the power BECCS project pipeline, we believe the most mature, reliable, and cost-effective options for delivering power BECCS on CB6 timescales will involve converting existing biomass power plants to operate with Carbon Capture, Utilisation and Storage (CCUS). This is because conversion requires less time, cost and engineering effort than building a new power BECCS plant from scratch.

Significant work is in train to support the transition to power BECCS, but there will be a gap between the date when existing support arrangements for some large-scale biomass generators ends in 2027 and their potential transition to the power BECCS business model, which is unlikely to take effect until after 2030.

Existing biomass electricity generation has previously been eligible for support under a range of schemes. Most biomass-based electricity generation, and some biomass with combined heat and power (CHP), has been incentivised in the UK since 2002 under the RO. The CfD scheme is now the government's main mechanism for supporting new low carbon electricity generation in Great Britain. Plants converted from coal to biomass are not currently eligible for new contracts under the CfD scheme.

There are few existing large-scale biomass power plants in the UK. All of them currently rely on government support to generate electricity competitively. This support has enabled funding for significant capital investments. These arrangements for former coal plants which converted to biomass expire in 2027. Biomass as a generation technology is subject to relatively high fuel prices, relative to expectations of power prices and other generation income such as the Capacity Market. Plant operators have indicated that without government support they are unlikely to be incentivised to continue generating electricity.

[1] Net Zero Strategy: Build Back Greener, 2021

The sustainable biomass fuel market, particularly for woody biomass pellets, is relatively immature and developing. This means that generators rely primarily on longer-term contracts and/or self-supply. The elasticity of supply in biomass is lower than for other thermal fuels such as gas, with a spot market that is relatively thin and illiquid. The storage of biomass fuel carries material costs and hence storage capacity is limited. Transport of biomass relies on specialist supply chain logistics, which incur costs when flexed. As such, there are operational limits to the ability to flex fuel supplies in addition to the challenges of the relatively illiquid spot market.

Closure of such large-scale (formerly coal) biomass plants would hinder their conversion to power BECCS. This, in turn, could narrow the range of technologies capable of delivering negative emissions on CB6 timescales. We would need to enable the deployment of less certain and potentially more expensive pathways to meet our commitments to reduce CO2 emissions.

Plant closures could also have significant implications for the UK's near-term security of supply. There are supply-side factors that may increase the relative importance of reliable and dispatchable power generation, like biomass, to the UK's energy mix during the expected period of the transition mechanism. We have phased out UK coal generation and some existing gas and nuclear capacity is expected to reach the end of its natural lifespan by the end of the decade. With an increasing proportion of intermittent renewables on the system, we will need dispatchable capacity to ensure the continuous supply of electricity.

This transition coincides with an estimated increase in the demand for electricity. We anticipate that there could be an approximately 50% increase in demand by 2035, and a doubling by 2050. This is due to the electrification of other sectors of the economy as they decarbonise in the transition to net zero. In short, the retiring of a significant proportion of biomass generation capacity could place additional supply side pressure on the UK's energy system. This supply side pressure would fall on the Capacity Market to resolve as our current main tool for ensuring electricity security of supply. This could lead to upwards pressure on Capacity Market clearing prices and the provision of more highly carbon-emitting generation on longer contracts. However, any cost increase in the Capacity Market would need to be considered against the cost of support.

We intend that any such support would be for the short term only and targeted at those large-scale generators best placed to transition to power BECCS and deliver its benefits.

What you said

Every respondent engaged with this question. Most respondents rejected the need for a transitional support mechanism and advocated against biomass more fundamentally. For many of this group, this was on the basis of rejecting biomass' low carbon credentials because they contend that the methodology ignores the carbon debt from burning wood and the foregone carbon sequestration in forests. This argument was the central focus of the campaign response, and the related arguments were often provided throughout the rest of the specific responses from environmental campaigning organisations and other private individuals.

Concerns were also raised about associated emissions from the transportation of wood pellets, and some respondents questioned the viability of power BECCS.

Conversely many respondents, largely from trade bodies and generators, explained that without such support, meeting our carbon budgets and net zero targets, protecting jobs, and ensuring assets remain operationally viable will be extremely difficult. A few respondents argued that the biomass market predominantly operates on long-term contracts, rather than short-term. A move to shorter-term support, such as under the Capacity Market model for existing generation, or increased use of the spot market, would reduce market certainty and increase volatility in pricing. It was argued that transitional support was also needed to maintain supply chains and associated infrastructure, such as port capacity and maintenance of generation facilities, ahead of transition to power BECCS.

Generators stressed that, outside of existing support from the RO, their biomass generation assets would not be commercially viable without government intervention. Government support, they argued, aligns with net zero and CB6 ambitions. They argued that subsidies are therefore required to assist any future transition so that power BECCS can contribute towards negative emissions, energy security, skill retention, and green job growth in the early 2030s. On a related point, a few respondents noted that the ongoing delays to nuclear projects further underline the importance of maintaining critical low carbon generation like biomass. With electricity demand set to rise by the end of the decade, this will support energy security and keeping consumer costs down.

A few small-scale generators pointed out this should be a mechanism that supports all generators, which this government response will address in more detail in question 9.

Our response

Government has decided to progress the option of short-term support for large-scale generators from 2027, subject to value-for-money and sustainability checks, and wider assurances. This will ensure that we keep open the possibility of these generators contributing low-carbon dispatchable power necessary to provide resilience to our electricity system and protect security of supply.

Large-scale generators have also indicated that support is needed to keep open the option of converting to power BECCS. We are setting up an independent review to consider how options for greenhouse gas removal, to consider how respective GGR technologies, including large-scale power BECCS and DACCS, can assist the UK in meeting our Net Zero targets, and ensuring security of supply, out to 2050. Further details of the review will be shared in due course.

Our decision to progress the option of a support mechanism also does not commit government to provide support to any particular generator(s). Any future support would only be awarded following robust negotiations with potentially eligible generators, value-for-money assessments, and subsidy control assessment. We expect any support to be for lower volumes of generation than currently provided by large-scale biomass generators, but still within a level

which will provide important energy security resilience. Consequently, we expect the resulting total cost to consumers to be lower than those incurred under the existing funding schemes.

Generators would also have to demonstrate they can meet the enhanced eligibility criteria set out in this government response and would be subject to the enhanced sustainability criteria set out in chapter 4. As the remainder of this response shows, we will require large-scale biomass generators to demonstrate compliance with enhanced sustainability criteria in order to qualify for support. Biomass that is sourced in line with strict sustainability criteria can be used as a low-carbon source of energy. Forest-derived woody biomass is a biogenic plant material where the energy stored within it came from the sun and the plant material can re-grow. The carbon absorbed by the plant material as it grew is released when it is combusted. In a sustainably managed forest, it is possible to maintain the production of forests decade after decade, with the carbon stocks of forests being maintained over time. This is because there are trees of different ages harvested in sequence and then restocked with saplings.

Therefore, the government only considers forest derived woody biomass a low-carbon energy source if it meets certain sustainability conditions, including, ensuring that the productivity of the forests from which the biomass is sourced is maintained over time. Sustainability criteria based on existing arrangements will be put in place to ensure that biomass supported under this scheme meets these conditions. This will include requirements under the land criteria to ensure that the productivity of the forest is maintained. While this requirement is designed to mitigate the risks around carbon debt and foregone sequestration raised in the responses to this consultation, we recognise the need to evaluate the current approach against a developing evidence base, and it will be considered as part of the development of the Biomass Sustainability Common Framework (question 12). Further details on additional sustainability requirements for this support mechanism is described under questions 10-12, including requirements related to wider supply chain emissions from biomass use.

3. Proposed policy interventions

3.1 Questions 2 and 3 - Do you agree with the success factors we have identified? Are there additional success factors we should consider?

What we said

We set out a range of success factors which we considered critical to meeting the overarching policy objective. These were:

1. **A successful potential mechanism must provide generators with an opportunity to remain in the market ahead of any future transition, while being affordable and providing value for money for consumers and/or the public purse**. Factors to consider include:

    - the value of the generation capacity being available to help ensure security of supply.
    - the direct cost to the consumer, noting that biomass is a relatively expensive fuel source. We anticipate that a support mechanism would be funded through a levy on consumer electricity bills, consistent with the approach taken for existing CfDs.
    - the extent to which generators are incentivised to generate when power is most valuable to the consumer, noting the increased capacity of intermittent generation expected to come onto the system in the late 2020s and early 2030s.
    - the carbon benefits of biomass generation over that of gas and other fossil fuels, dependent in part on the extent to which the policy does or does not lead to any crowding out of other intermittent renewable generation.

2. **A potential mechanism must be deliverable within a constrained timetable to achieve the intended benefits.**

    We are considering transitional arrangements for eligible generators whose current government support mechanisms end in 2027. If we decide to proceed with transitional support, it must be through a robust mechanism which can be implemented quickly to give certainty and security for both the wider market and generators needing to take investment and operational decisions. It would be preferable to deliver any intervention through existing primary legislation.

3. **It should be consistent with subsidy control principles** which underpin the subsidy control regime introduced by the Subsidy Control Act 2022.[2]

[2] Subsidy Control Act 2022

4. **The mechanism should be designed to manage the changing circumstances which may affect an eligible generator's success in transitioning to a future power BECCS system.**

   There is a risk that an eligible generator is subsequently unsuccessful in their bid to participate in any regulatory mechanisms for future power BECCS support, or indeed an eligible generator chooses not to take appropriate steps to seek to enable a transition to power BECCS. There will therefore need to be arrangements to wind down, or put a time limit on, transitional support efficiently. Any transitional arrangement should provide sufficient certainty to a participating generator to help secure operation, whilst retaining some flexibility of tenure to respond to the development of CCUS and be proportionate to provide value for money and affordability.

What you said

Question 2: Do you agree with the success factors we have identified?

Of the 40 responses to this question, most disagreed with them, while some were either in favour or of mixed opinion. Of the positive responses, several respondents stressed the importance of success factor 2 (being deliverable within a constrained timescale), arguing that delays will lead to increased costs. Several responses also stressed the importance of success factor 1 (the opportunity for generators to remain in the market), in order to contribute to security of supply and maintain healthy supply chains.

Many responses, both negative and positive, welcomed our inclusion of a value-for-money consideration in success factor 1, although some questioned whether we would achieve that through the proposals in this consultation.

Most of the negative responses focused on more cross-cutting concerns about the merits of transitional support itself, criticising the cost, environmental impacts, health impacts, and compatibility with subsidy control principles. With regards to the success factors, several responses criticised the fact that generators would have no obligation to transition to power BECCS under the current success factors. There were also many responses that criticised the lack of any success factors addressing environmental concerns. Some responses expressed concern at including the value of the generation capacity being available to help ensure security of supply, within success factor 1. They stated that security of supply should be handled through the Capacity Market, arguing that it had been designed for that purpose.

Question 3: Are there additional success factors we should consider?

There were 68 responses to the question of whether we should include additional success factors in our design. There were 2 responses that stated they were content with our proposed success factors.

By far the most common suggestion for inclusion in the success factors was one that considered the environmental impact of any intervention. Respondents gave a variety of environmental criteria here, including aspects such as minimising emissions of air pollutants,

demonstrating sustainable sourcing, Greenhouse Gas abatement, and making supply chains more sustainable.

The second most common theme was a success factor which considered the certainty of power BECCS being developed at the end of the transition period; many respondents suggested that this should involve requiring eligible generators to transition to power BECCS.

Some responses argued that the health of supply chains should be considered in the success factors. Additionally, other responses included that there should be a focus on generation, not just capacity, for the very reason that this would help to maintain the health of supply chains and increase the likelihood of a more effective power BECCS transition.

Some responses also argued that one of the success factors should encourage the inclusion of stations with capacities of <100MW.

Although less common, the following themes were mentioned more than once: a sunset clause, the agreement not leading to excessive profits, and consideration of the range of ancillary services provided by biomass generators.

Our response

We have decided to proceed with the success factors proposed in the consultation without any additions. We are satisfied that the overarching design of the policy intervention set out in this response pays careful attention to the environmental considerations raised by respondents in answer to this question. To address some of the environmental concerns raised here more directly, we are proposing to strengthen our already stringent sustainability criteria (see questions 10,11 and 12) for the period of support, and plants will need to meet these to receive subsidies. Our eligibility criteria also set out other measures which address environmental concerns (see question 9). We therefore do not consider there to be a need to introduce a specific success factor on this issue.

In response to stakeholder feedback regarding energy security, we believe that arrangements in the Capacity Market are unlikely to provide sufficient incentive to enable these types of assets to remain online and deliver the expected benefits for electricity security and carbon budgets. This is due to the need for revenue certainty over longer timescales for sites with complex fuel supply chains and greater levels of revenue support which we believe is more appropriately delivered through the preferred option of the generation collar. We believe this option will provide incentives to maintain adequate fuel stocks that will give further assurance for electricity security in light of the high cost of biomass relative to central expectations of power prices.

3.2 Question 4 & 5 – Do you agree with the options above being included as preferred options? If no, please articulate why the option is not suitable and provide evidence where appropriate

What we said

In developing our options, we considered the operational characteristics of large-scale biomass electricity generation. In the consultation, we identified four preferred options.

Under any of the options, the intervention would be for a limited duration to reflect the expected length of support required and would be agreed on a bilateral basis. Most options were based around a consumer-funded CfD, a mechanism of which government has significant experience from existing CfD arrangements. The agreed funding structure would be decided based on a range of considerations including legal powers, value for money, and contract design.

The four options we consulted on were as follows:

1. CfD – unconstrained; a contract similar to existing arrangements for biomass generators, with a strike price set for generators and generators having flexibility over the volume of generation. We expected this to lead to relatively high biomass generation volume during the transition period.
2. CfD – with a generation collar; as above but amended to include minimum and maximum volumes for generators. We expected this to lead to moderate biomass generation volume over the transition period.
3. Availability Payment; a payment in return for maintaining the availability of assets, but with no subsidy of generation activity itself. We expected this to lead to quite low volumes of biomass generation over the transition period.
4. Regulated Margin; an open-book arrangement in which support is given such that there is a minimum profit level for the assets, but with the consumer then sharing in the profit above that level. This option could correlate to a moderate or high volume of generation, depending on how it is calibrated.

What you said

Many of the responses were opposed to all the policy options presented. This was principally due to respondents' view that biomass could not be considered low carbon and therefore should not be supported by any transitional mechanism. This group, which was predominantly made up of the campaign responses, did not pass direct comment on the specific policy options.

CfD - Unconstrained

There was broad support for the unconstrained CfD from trade bodies, as well as small and large-scale generators. Respondents argued that the system is tried and tested, and that they are confident that the scheme would facilitate biomass generation under normal market conditions, maintaining the associated benefits of biomass generation. Many argued that the unconstrained CfD is more in keeping with retaining a lighter touch in the workings of the power market and will support existing supply chain arrangements.

There were several critics of the mechanism, who pointed specifically to recent press releases (including from Bloomberg) which suggested that an unconstrained CfD model had contributed to some generators receiving higher prices for their electricity during periods of constraint, to the disadvantage of consumers.

CfD - Generation Collar

Of respondents who engaged with the policy options individually, there was strong support for the generation collar option. Some argued that it was preferrable to an unconstrained CfD in that it seeks to avoid a high level of subsidies for biomass generation. Subject to an appropriate cap on generation volumes, supporters argued that it would enable biomass generators to align fuel requirements under power BECCS to the cap on generation volumes, facilitating a smooth transition to power BECCS at a lower cost to the consumer.

By comparison to the availability payment and the regulated margin, a few respondents argued that the CfD design has the benefit of being a well-established and proven model for renewable generators, aligning with the need for a support mechanism which could be delivered quickly and without the need to amend primary legislation. Generators would likely target generation in periods of low variable renewables generation due to higher prices being available in these periods. This would reduce the risk of biomass generation displacing variable generation, thereby supporting government’s stated success factors.

Some respondents criticised the mechanism, suggesting that it was still likely to lead to an over-reliance on biomass, and a few went further to argue that the generation collar could be treated similarly to the existing unconstrained CfD where generators have received higher prices.

Availability Payment

Most of the respondents supported the availability payment option on grounds that they were keen to see the lowest proportion of biomass being used. Almost all of this group were not broadly supportive of transitional support. Respondents who generally expressed a more positive view of biomass mostly thought it unlikely that the availability payment option could be implemented within the relevant timescale. They argued that this made it ultimately unworkable and incoherent with our longer-term policy ambition. Moreover, some said that the likely load factor would be so low that it would not support long-term fuel contracting. As only a low amount of fuel is kept on site, biomass would have to be purchased on spot markets, making supply uncertain and pricing volatile. This, in turn, would affect security of supply.

Regulated Margin

There were a low number of responses that directly commented on the regulated margin policy option; most that did were received from those in industry. Of these responses, most argued that the mechanism was too interventionist, with concerns over an additional administrative burden and a negative impact on the ability to secure long-term contracts with pellet suppliers. Most argued that the novel nature of the intervention would mean that it would take more time and resource to design and administer over the life of the contract. A few argued that the attempt to address asymmetrical information on fuel costs was useful for an industry that was unsustainable in its current form. However, a similar number expressed concerns of large-scale generators' influence over pellet supply prices and felt that the system could be gamed to their advantage.

Our response

Following consideration of the four options, we have opted to pursue Option 2 – CfD with generation collar – with the proposed addition of an Excess Returns Mechanism to further guard against the risk of generator overcompensation.

We have opted for a CfD with a generation collar primarily because it:

- Lowers overall costs to consumers compared to an unconstrained CfD, as generation subject to difference payments would be capped at the agreed maximum generation volume
- Provides generation certainty to the system through a generation floor mechanism
- Significantly reduces commercial optionality compared to an unconstrained CfD (where generators can capture a merchant price premium by selling fuel rather than generating in periods of high power prices), as generators would be required to meet the generation floor regardless of power prices
- Supports decarbonisation to a greater extent than an availability payment (which would likely require fossil fuel generation to replace lost biomass generation) and an unconstrained CfD (which risks displacing more intermittent renewables)
- The generation collar CfD has the benefit of building on the existing CfD support structures, unlike an availability payment

The introduction of a generation cap to the CfD will help to ensure a lower cost to consumers for the duration of the contract (compared to an unconstrained CfD) and aligns with our strategic intent to reduce unabated biomass generation. In normal market circumstances we would not expect generation to be viable above the generation cap, but generators will retain the ability to generate on a merchant basis above the cap should short run marginal revenues exceed the marginal costs of fuel (a possibility in stressed market conditions). The generation collar CfD would continue to use the Baseload Market Reference Price (BMRP) as the reference price, meaning that generators will have an incentive, within the capped volume, to target the most valuable price periods. This will help target generation at the times within a

season where there is the best overall value for the consumer, making use of the dispatchable nature of the assets and minimising the risk of intermittent renewables being displaced.

Alongside the generation cap, the introduction of a generation floor reduces the incentive for generators to sell long-term contracted fuel in the spot market, rather than generating electricity, at times of system stress.

In addition, we have decided to develop an Excess Returns Mechanism and will determine whether this is appropriate during negotiations with any eligible generators. This mechanism will require generators to pay a share of profits above a set threshold back to the government counterparty, therefore protecting billpayers against the risk of generator overcompensation.

3.3 Question 6 – Do you have views on approaches we should consider as part of our options to ensure generators are not overcompensated?

What you said

Most of the individual responses received either did not answer this question or limited their response to reiterating opposition to any form of transitional support to biomass generators. We received 28 responses which addressed the question more directly.

From this subgroup of responses, the majority were in favour of a cap on how much a generator can receive overall. There were a few ideas that elaborated on how this could potentially work:

- increasing or linking CfD strike prices in line with current generator costs and capping them at that level
- a fixed strike price
- a generation cap/collar

Some other suggestions to reduce the risk of over-compensating generators included:

- fast-tracking projects awarded transitional support through the CCUS programme, to reduce the need for transitional support for longer than is necessary
- assessing and controlling compensation paid to shareholders and executives from generation profits
- subsidy support paid to generators to be scrutinised, reviewed, and adjusted accordingly by government annually, on the basis of the profit margins declared by the generator
- establishing a strict time limit on the duration of any support mechanism

- establishing a maximum level of financial support a generator can receive when taking into account the many government schemes available to them (i.e., a maximum a generator can receive if benefitting from a number of schemes at any one time)
- ensuring that generators cannot benefit from multiple schemes at any one time
- only providing subsidies to generators using 100% UK-sourced bio-material
- regular reviews to ensure support reflects value for money throughout the transition period

Some respondents raised concerns about how generators operate; in particular, generators 'gaming' the system by setting unrealistic/high availability costs and generators using the transitional support to finance retrofitting for Carbon Capture and Storage (CCS), in addition to receiving finance from any future power BECCS schemes, resulting in the generator being paid twice for power BECCS.

Some responses stated that support should only be given to generators 'legally committed' to converting to power BECCS and that this transition should take place within a specific time period. Should the generator fail to comply, the government should enforce repayment of any subsidies received by the generator.

A few respondents also reflected that to avoid over-compensating generators, the government must ensure that generators do not receive better terms through a transitional scheme than they currently have through existing schemes.

Our response

As above, we have opted for the CfD with generation collar alongside an option for an Excess Returns Mechanism. We consider that this combination best protects against the risk of generator overcompensation. In addition, any potential contract would be taken through subsidy control and value-for-money assessment, and generators will not be able to receive multiple subsidies for the same generation units. This will further mitigate the risk of overcompensation.

Some of respondents' proposals for avoiding over-compensation are considered in the eligibility criteria section of this government response. Generators will not be eligible to receive 'repeat' funding for retrofitting to power BECCS. Any contracts for support will be for the purposes of maintaining existing large-scale biomass generation assets prior to their potential transition rather than for the costs of transition. Receipt of a contract for support will not determine the plant's positioning in seeking a CCUS business model. Decisions on future support for power BECCS are to be taken outside of this process. Any potential projects must go through due process in a CCUS allocation round including eligibility checks, assessment, and due diligence ahead of any project negotiations. Likewise, we consider options in relation to sustainable sourcing when setting out our decisions on sustainability criteria.

3.4 Question 7 – Do you have any other material comments relating to the mechanics of each option or the outline evaluation as articulated? If so, please provide details

What we said

In developing our options, we considered the operational characteristics of large-scale biomass electricity generation as outlined in the Context chapter of the consultation document. We identified and proposed four preferred options: CfD – unconstrained; CfD – with a generation collar; Availability Payment; Regulated Margin. We also considered two additional approaches which, overall, we do not consider meet our success factors. In this section, we sought views on the delivery of each option, and for any alternatives or additions to be considered in developing the policy options.

What you said

Of the individual consultation responses we received to this question, we received 16 direct responses, mainly from large-scale generators and associated trade bodies. The remaining 87 individual responses either declined to answer this question or reiterated their opposition to providing any form of transitional support to biomass generators.

Most responses favoured options 2 and 3 as the most feasible options out of the four. Generally, responses noted that:

- Option 1 would not work for baseload generation and could potentially distort the market for other generators
- Option 4 was far too complex for a short-term arrangement

There were several considerations put forward in relation to option 2, which included:

- Some noted that the current CfD standard terms set a threshold for Greenhouse Gas (GHG) emissions that is perceived to be unachievable for large-scale generators. They argued that existing arrangements for GHG criteria should be kept as they are until the transition to power BECCS takes place
- When devising the mechanism, the government should consider certain aspects of operation for large-scale generators such as liquidity, hedging, staffing, maintenance of site, fuel supply, logistics and the posting of collateral when GB wholesale prices are higher than the day ahead
- Remuneration methods and impacts on behaviour
- Setting the cap and floor price to align with the generation typically expected for winter peaks/on a seasonal basis (much like the Baseload Market Reference Price calculation)
- Could be designed to recognise grid services and the role biomass generation has in providing firm capacity; valuing power production when it is most valuable to the grid and encouraging generation at those times

- To maximise generation when required, merchant generation above the cap should be allowed to continue
- Any cap on volumes would need to reflect the risks to the generator when it comes to the strike price within contracts, to ensure that the costs of hedging at least the minimum output are incorporated
- Include a 'safety value' on the collar to ensure that generators are protected against the inability to hedge, due to extreme market volatility or illiquidity

One large-scale operator noted that option 3 reflected a fair subsidy, providing government set appropriate levels. While the consumer would still be contributing to the subsidy, the facility would have to be available on demand in return, similar to how the Capacity Market operates. This option would also prevent the generator from seeking alternative routes to market during periods of high prices, as the generator will be obligated to be available.

Carbon pricing

A few responses raised concerns that solutions based around appropriate carbon pricing have not been sufficiently explored through the design process of the mechanisms proposed. One trade body response suggested that stronger CO2 emissions pricing would provide the appropriate market signals for biomass operations within the GB electricity market, whilst delivering value for money for the consumer.

Competitive process

Two responses from trade bodies disagreed with our proposal not to run a competitive process for the awarding of support to generators above 100MW, based on our expectation that the number of eligible generators is likely to be small, limiting the viability of a competitive process. They argued that the current 100MW cap on the power BECCS model, and that they envisaged only two generators would be eligible for transitional support, removing competition.

They both urged that transitional support needs to be urgently clarified for assets below the 100MW cap.

They also acknowledged perceived value-for-money concerns apparent between the dual-CfD approach to the power BECCS business model for assets greater than 100MW and the single-CfD approach to the GGR model for sub 100MW assets. They concluded that this could potentially lead to a perception that the GGR CfD price is uncompetitive compared to that of the power BECCS model. This is not relevant to our proposals for short-term support.

End date for support

Many of the responses highlighted the need for a clear 'end date' at which support will end. It was recognised that one of the primary reasons for the proposed policy intervention is to ensure an effective transition period which retains the option for the deployment of power BECCS. Several responses proposed that, in order to provide investment certainty, the initial term should be fixed to the end of the CB5 period (2032).

One large-scale generator proposed that, in the event of a generator not taking the appropriate steps towards maintaining the optionality of deployment of power BECCS, and/or should the generator fail to meet the required criteria of any application for deployment in CB6, this term should not be extended further. However, in the event where the generator continues to provide power BECCS readiness into the CB6 period, but has not deployed by 2032, the term of transitional support may be extended to facilitate this later transition, with a lead-time appropriate to the project. The response also argued there should be sufficient contract flexibility to enable another route to market for power if this were to be in consumers' interests.

Alternative feedstocks

One response from an academic institution proposed some alternative materials for use in biomass generation. They suggested burning quick growing species and continually replanting to ensure the process is sustainable and proposed hemp as an alternative crop, instead of woody biomass. The biomass used should be grown in areas which are not prime agricultural land, in order to avoid competition with food security. They also highlighted the issue of ensuring plantations are not replacing valuable ecosystems, as has reportedly happened in other plantations such as palm oil plantations in Borneo.

Ofgem investigations

A common theme within the campaign responses, as well as one independent substantive response, was that support should not be awarded until Ofgem has concluded its investigation into whether Drax Power Limited is in breach of annual profiling reporting requirements relating to the RO scheme.

Our response

Following consideration of the issues raised above, we have opted to pursue Option 2 – CfD with generation collar – with the option for an Excess Returns Mechanism to further guard against the risk of generator overcompensation.

On duration of the contract, we agree that any potential contract will need a clear end date established for the contracted term of support. We would expect any potential contract to cover the period from 2027 to 2031, as continued support in the late 2020s to early 2030s would significantly reduce the pressures on other security of supply mechanisms, such as the Capacity Market, and contribute to the government's Clean Power 2030 ambition. Further, the potential transition to the Power BECCS business model is unlikely to take effect until after 2030. It is our view that agreeing arrangements very far in the future may not represent good value for money, and any support needed in the longer term should be made on the basis of the latest available evidence.

There were numerous comments about the generation collar mechanism, which have been noted. In particular, some respondents commented on this proposal being a cap and floor on pricing, but this is incorrect as we are referring to a cap and floor on generation volume only. Generators would be permitted to generate above the cap on a merchant basis under this type of arrangement.

On points raised around a competitive process, we can confirm that there is a process to declare eligibility as set out in 1.4 – Next Steps, and that our rationale for proceeding with 100MW threshold is set out in our response to question 9. Carbon pricing and the role of alternative feedstocks sit outside the scope of this consultation.

In relation to Ofgem's investigation into Drax Power Ltd, those investigations have now been concluded and Ofgem's report, published in August 2024, can be found here: https://www.ofgem.gov.uk/publications/ofgem-decision-investigation-drax-power-limited). Ofgem did not find any evidence to suggest that Drax incorrectly received subsidy payments via the RO scheme. Whilst they were satisfied that Drax complied with government's sustainability criteria, they found that Drax had failed to report all data accurately. This is a serious matter, and government expects full compliance with all regulatory obligations. Future support arrangements will go further by requiring more stringent Monitoring, Reporting and Verification processes.

3.5 Question 8 – Do you agree that these options should be discounted and considered as non-preferred? If not, please provide rationale and any evidence

What we said

In the consultation, we identified and outlined two 'non-preferred' options – early deployment of a difference payment for the low carbon electricity generated (referred to as a Contract for Difference electricity or CfDe), which is being developed as part of the dual payment method for large-scale power BECCS – and mothballing. Our initial view is that these options may offer benefits, but we consider them unlikely to meet our overarching success factors and therefore do not intend to pursue them. In this section, we sought views as to whether we were right to discount these options.

What you said

Of the individual consultation responses we received to this question, we received 28 direct responses, from large-scale generators, small-scale generators and associated trade bodies. The remaining 75 individual responses either declined to answer this question or reiterated their opposition to providing any form of transitional support to biomass generators. Many responses stated that they agreed overall that the correct options have been discounted. A common theme throughout the responses was around the practice of 'mothballing' – a term to describe the deactivation and preservation of equipment or a production facility for possible future use or sale. It can also mean the setting aside of an object or idea for possible reuse or revisiting in the future.

There were, however, mixed views on whether mothballing should remain a consideration, particularly amongst small-scale generators and associated trade bodies.

Three small-scale generators felt that mothballing should not be a discounted option for large-scale generators and should remain a consideration. They argued that being reliant on old combined-cycle gas turbine assets in the transition period, as would be the case for Drax and Lynemouth, will keep energy prices low for consumers and will not significantly impact the UK's GHG inventory, especially if carbon removals can be achieved from alternative assets, such as anaerobic digestion (AD). One large-scale (non-biomass) generator also argued that mothballing should not be discounted on the basis that it could represent a significantly lower cost for consumers. They referred to gas plants in the UK and Europe that were mothballed prior to the introduction of the Capacity Market in 2014 and have successfully returned to service.

Two other small-scale generators agreed with government that mothballing should be discounted, citing that it would be costly both financially and environmentally in terms of higher carbon emissions brought on by a greater dependence on gas generation. They also felt it would result in supply chain disruption (particularly the loss of fuel supply).

Two responses from large-scale biomass generators worried that mothballing might have unintended consequences, such as job losses – particularly those with specialist skills that will be harder to replace – and potential damage to assets. As noted by the small-scale generators and trade bodies, there were concerns over supply chain disruption.

Some campaign responses disagreed with our assertions that mothballing would lead to higher carbon emissions due to higher levels of gas generation, as they believe the GHG impact of the biomass currently burned by large-scale generators exceed that of fossil fuels. We note that this is consistent with broader views expressed on biomass within the campaign responses. Therefore, they disagreed that this option should be discounted.

In addition to the mothballing issue, some responses highlighted that they agree that early deployment of CfDe options will be a time-consuming approach and feel the power BECCS business model should be designed in totality and not separated into two different processes. Others commented on how critical the work to develop the dual payment mechanisms for large-scale power BECCS is, and asked that this work continues at pace and in parallel this year, considering that the overall goal of the transitional support mechanism and business model is, ultimately, to support biomass generation to transition to BECCS.

Some campaign responses urged generators to use the remaining three years of the current subsidies to implement a closure plan that would include a just transition for the workforce and local economy and for government to focus on alternative renewable generation. They disagree that biomass is necessary for the UK's energy security and believe that it would not leave a gap in generation if biomass generators closed after 2027.

Our response

We have decided to continue discounting mothballing as an option at this stage. Mothballing would remove the benefits of increased short-term energy security resilience from maintaining existing large-scale generation. Mothballing the assets would likely increase pressure on, and costs in, the Capacity Market, during the interim period, to cover the loss of dispatchable

capacity. This would also mean that large-scale biomass generators were not contributing to government's efforts to decarbonise the power sector by 2030.

It could also decrease the likelihood of maintaining the optionality of a potential future transition to power BECCS. Mothballing could create knock-on implications for supply chain access and the availability of specialised labour.

We have also decided to continue discounting the early deployment of the CfDe being developed for the power BECCS business model. As set out in the consultation, and recognised by several respondents, this is too time-consuming an option to meet the aims of a short-term support mechanism.

4. Delivering a transitional arrangement

4.1 Question 9 – Do you agree with the eligibility criteria and assessment process set out? If no, how should they be adapted to be more suitable?

What we said

We proposed eligibility criteria for a transitional support mechanism. These were intended to ensure that any generators supported under such a mechanism were the most suitable for addressing the strategic objectives of the project. The criteria were developed to identify large-scale biomass generators that could feasibly transition to power BECCS, and in turn support the government's net zero goals.

Our draft eligibility criteria for potential transitional support were developed in line with the following considerations:

- the policy proposals would support the UK's security of supply.
- maintain the generators so that they are available to transition to large-scale power BECCS to produce substantial negative emissions.

The proposed eligibility criteria were developed with consideration of the power BECCS eligibility criteria published as part of the expansion of the Hynet Track 1 cluster on the CCUS programme.[3] We proposed that projects would have to meet the criteria below at a minimum to be considered for support as part of the eligibility assessment process. For full details of each criterion previously proposed, please see the consultation.

Located onshore in Great Britain

Projects are required to be located onshore in Great Britain.

Potential to provide net-negative emissions

Projects must be able to achieve permanent atmospheric CO2 removal through geological storage once converted to power BECCS.

Have one of the eligible configurations

Projects must be thermal generation with sustainable biomass as the primary fuel input.

The proposed power BECCS plant must be one of the following technology types: Post-combustion, pre-combustion (on-site), or oxy-fuelled combustion.

[3] Carbon capture, usage and storage (CCUS): December 2023 statement

Use eligible feedstock

Projects must use predominantly biogenic feedstock (90% or higher).

Have a minimum projected capture rate of 90%

The plant's proposed power BECCS project must be designed to achieve a minimum of a 90% capture rate when the plant is operating at full load.

Have a minimum abated power generation capacity of 100MW

A power generation capacity of 100MW was deemed necessary to ensure that policy objectives would be met. This means supporting plants that can deliver on both negative emission pathways[4] and provide significant, stable baseload power to the grid. Projects must therefore be able to generate a minimum of 100MW and export this to the grid.

The project must not be receiving other subsidy for the same power generation upon start of support

This eligibility criterion is in place to prevent over-subsidising of the same power generation. The generator must not be in receipt of more than one support mechanism for the same power generation as the costs would be covered by more than one subsidy scheme.[5]

Provide credible plans to contribute to Carbon Budget Six

Projects would need to demonstrate credible deployment plans that can contribute to CB6. Deployment plans will be subject to gaining access to a CCUS Transport and Storage network.

Demonstrate need for transitional support

Projects would be asked to demonstrate the need for a power BECCS transitional support mechanism.

What you said

Most respondents were opposed to some or all of the proposed eligibility criteria. In some cases, the respondent ostensibly supported the criteria but on the provision that woody biomass should be excluded. Over half of opposing respondents objected on grounds relating to disagreement with the proposed mechanism in principle, i.e., disagreement that it could be considered low-carbon or carbon-neutral, the deliverability of power BECCS and, in a few cases, disagreement with introduction of power BECCS or carbon capture and storage at all.

Many respondents (principally small-scale generators and trade bodies) objected to the eligibility criteria on grounds that they were too prescriptive as to which types of technology and/or biomass generator would be eligible. Some argued that biomass generators operating at under 100MW should also be included on the basis that these assets provide valuable generation and carbon removal, as well as ancillary services. A few parties argued that it would

[4] Net Zero Strategy: Build Back Greener, 2021
[5] The same power generation relates to the same unit of generation e.g., the same mw/h of power should not be subsidised twice.

be anti-competitive and potentially counter to the subsidy control principles to take a technology-specific approach.

Some responses raised concerns that other proposed criteria were insufficiently strong. This was particularly the case in relation to having a minimum projected carbon capture rate of 90%. It was argued that 90% was too low and/or that the criteria should relate to actual carbon capture rather than projected. A few argued that restrictions on double subsidy should apply to the lifetime of the contract, not just at the start. We can clarify that this was the original intent of this proposed criterion.

Some respondents were in favour of the eligibility criteria. A few of these noted the importance of review periods although a few others (generators) were opposed to the proposed wind-down clause, arguing it removed certainty. A few in favour also argued for the inclusion of small-scale biomass generation or for strengthening provisions relating to verification of net-negative emissions or providing annual evidence of contribution to Carbon Budgets during the lifetime of the contract.

Our response

We have decided to retain the eligibility criteria as proposed in the consultation. A 100MW minimum electricity capacity ensures that any support is focused on existing generators that could make an important difference to the UK's energy resilience throughout the late 2020s. It also aligns with the power BECCS business model eligibility criteria.

We set out below the final eligibility criteria.

Criteria relating to the power station

Criteria	Decision	Rationale
Location	Project must be located onshore in Great Britain.	This reflects that Northern Ireland has a separate electricity market and therefore is excluded from this support mechanism.
Technology / Configurations	Post-combustion, pre-combustion (onsite) or oxy-fuel.	These technology types are mature and in large-scale operation around the world.
Minimum Output	Must be able to generate and export at least 100 megawatts of low carbon electricity (100 MWe).	We have decided to maintain the 100MW threshold for support. The key policy objective of providing short-term support is to ensure energy security (which is achieved through support for stations able to generate a valuable quantity of electricity). In addition, this would align with the required capacity under the power BECCS business model, and so maintains that optionality.
Feedstock	A minimum of 90% of the CO2 generated from the feedstock shall be of biogenic origin and to be eligible it must meet relevant sustainability requirements. This is consistent with definition of 'biomass' used in previous subsidy schemes such as the RO and will ensure a high level of negative emissions (if connected to CCS).	This is a consistent approach for the definition of 'biomass' across government support schemes.
Demonstrate need for transitional support	Parties would be expected to provide evidence of actual need for transitional support, such as in the form of a financial statement and generation cost/revenue analysis where business plans for the organisations involved and details of how the project fits with the company's overall strategic ambition are provided.	This eligibility criterion is to help focus the support mechanism towards addressing a genuine market gap needed to be filled to secure the optionality of large-scale biomass generation transitioning to power BECCS.

Criteria relating to the proposed power BECCS project

Criteria	Decision	Rationale
Minimum Capture Rate	The plant's proposed power BECCS project must be designed to achieve a minimum of a 90% capture rate when the plant is operating at full load. Calculate it using: Capture rate (%) $$\text{Capture rate (\%)} = \frac{\text{CO}_{2\text{exp}}}{\text{CO}_{2\text{gen}}}$$ Where: = total flow of CO2 into the T&S network during an hour of operation at full load. = total flow of CO2 in streams intended to be routed to the capture plant during an hour of operation at full load.	Projects receiving a contract under the support mechanism will not be operating as a power BECCS project during the lifetime of this contract. We do not think it is reasonable to set an 'actual' capture rate which would not apply (nor could be assessed) until after the relevant contract had ended. Therefore, the potential specified rate is consistent with the design of the power BECCS CCUS business model. This rate is also designed to ensure wide competition between different CCUS technologies. Projects are also incentivised through negative emission payments to maximise capture rate.
Net-Negative Emissions	Project must be able to contribute to the delivery of permanent atmospheric CO2 removal through geological storage once converted to power BECCS. For a project to be credibly 'net-negative' it must remove more GHGs from the atmosphere than it creates throughout its entire supply chain (both domestic and international).	This reflects the focus of contributing to decarbonisation pathways, such as carbon budgets and nationally determined contributions, through net-negative emissions. Supply chains must be efficient and fully accounted for so negative emissions to have a real effect on residual emissions in hard-to-decarbonise sectors of the economy.
Subsidy	Project must not be receiving government subsidy for the same power generation and/or negative emissions upon target deployment date (i.e., deployment of power BECCS). This also applies to power generation during transitional support.	This is designed to ensure that the project does not receive double subsidy during the lifetime of the short-term support contract and/or during a power BECCS subsidy.

Criteria	Decision	Rationale
Provide credible plans to contribute to Carbon Budget Six	We expect this could take the form of a project schedule with logic that incorporates activity durations which are judged to be within reason. For example, in comparison to similar activities undertaken on other projects and considering any applicable processes, such as acquiring any necessary planning permissions or procuring suppliers. The critical path and relevant lead times would be clearly identified with floats incorporated as required.	Power BECCS technology is an important part of the UK's Net Zero Strategy scenarios, forecast to provide the single largest source of negative emissions required to offset residual emissions in 2050. This criterion also ensures the retention of potential options to generate negative emissions for decarbonisation for CB6.

4.2 Question 10 – During a transition period from biomass electricity to power BECCS, do you think that the GHG criteria should be strengthened? If so, how? Please provide evidence to support your views

What we said

We reiterated the previous government's firm commitment to the sustainable use of biomass. The Biomass Strategy 2023 set out that the previous administration would only support biomass uses across the economy that demonstrated compliance with the relevant sustainability criteria. This would remain the case with any potential transitional support mechanism.

The government recognises that the evidence base around improving sustainability criteria is constantly evolving. We intend to review existing sustainability criteria and develop a Biomass Sustainability Common Framework, subject to consultation later this year. This will consider where further improvements could be made to existing criteria based on the developing evidence base.

Moving forward, we want to ensure that the sustainability requirements of potential transitional arrangements remain fit for purpose, whilst also being proportionate and ensuring deliverability. One of the areas we set out in the consultation was strengthening the GHG criteria. The GHG criteria require that lifecycle GHG emissions associated with biomass use (including production, cultivation, harvesting or collection, transportation, and processing) are included in emission calculations. At present, operators must meet set thresholds to ensure a minimum GHG saving is achieved against a fossil-fuel reference. We have considered, through this consultation, whether we should strengthen these measures further ahead of the development of the Biomass Sustainability Common Framework which we are consulting on later this year.

What you said

There were around 70 unique responses to this question. Of those responses, many were opposed to the proposed changes. This was principally either due to respondents' view that any strengthening of sustainability measures could still not be considered low carbon, or that power BECCS is an unproven technology (for more detail on this refer to question 12). By implication these respondents indicated that an amendment to GHG thresholds was superfluous. A similar number, who were also critical of the CO2 emissions linked to biomass, were in favour of strengthening the GHG threshold to reduce emissions as far as possible. There was no clear consensus as to what level that should be.

Some of the respondents not in favour of strengthening GHG thresholds further suggested that the changes would be better made under the new Common Framework and that this work should focus solely on a transitional mechanism. These respondents indicated that there was

no need to make changes to sustainability criteria under a transitional arrangement as a full consultation on the Biomass Sustainability Common Framework would be approaching.

A few responses stressed that large-scale biomass generators are currently compliant with existing sustainability measures but should be responsive to any future changes in standards through the updated Common Framework. Conversely, some other respondents claimed that large-scale generators were already non-compliant with current sustainability requirements.

Our response

We have decided to tighten the requirements and reduce the GHG threshold to 36.6 gCO2e/MJ, which aligns with the level set in the EU's Renewable Energy Directive (RED III).

As set out in questions 4 and 5, we have decided on a CfD with generation collar as the delivery model for support, which will tend to produce lower load factors than an unconstrained CfD approach. Running a biomass generator at lower load has a negative impact on GHG efficiency, so we recognise this is a great challenge, but it is achievable and demonstrates government's intent to minimise supply chain emissions as far as possible.

On broader sustainability criteria aspects, including on compliance, please refer to the response under question 12, which sets out our view on existing requirements and planned future work.

4.3 Question 11 – As part of the proposed transitional support mechanism for large-scale biomass generators that plan to transition to power BECCS, do you think that we should increase the minimum percentage of woody biomass that must be obtained from a sustainable source? If so, what should be the minimum percentage be set at? Please provide evidence to support your views

What we said

Under the RO and CfD sustainability criteria, a minimum of 70% of woody biomass must be obtained from a sustainable source. The actions in the Biomass Strategy 2023 set out that we are minded to increase this requirement to 100%. We have considered how we can best ensure the sustainability requirements of the transitional support remain fit for purpose given the planned Biomass Sustainability Common Framework consultation later this year, whilst also being proportionate and ensuring deliverability. For example, we will consider whether updated sustainability objectives could be incorporated into a contract, either via a contractual or legislative route, once the contract's term has started.

What you said

Most respondents were supportive of the proposed strengthening of the minimum percentage of woody biomass. Over half of supporting respondents supported this change on the grounds that, in their view, biomass can only be considered low carbon or carbon neutral if the sustainability criterion for woody biomass is 100%. Whilst this group were not broadly supportive of the transitional support mechanism, they were keen to see a reduction in emissions resulting from biomass. Some respondents went further and stated that the burning of material from primary forests was neither legitimate nor sustainable, even if the biomass was obtained from a sustainable source as defined in existing criteria.

Some respondents stated that existing large-scale generators are already meeting much higher levels than 70%. Of these responses, principally from generators and trade bodies, most stated a need for caution as whilst the criteria should set a high bar, they should be flexible enough to proportionately account for unforeseen issues outside of the generator's control where it has followed robust and audited procedures. These generators and trade bodies suggested that detailed discussions with industry and the supply chain were required to understand the process more completely. A few suggested that this threshold should be set at 5% under 100% to provide sufficient operational tolerance.

A few respondents opposed strengthening the criteria further as they indicated that there was no need to make reforms under the transitional arrangement when a full consultation on the Common Framework is approaching.

Some responses raised concerns that the definition of sustainability was not sufficiently broad and should also apply to the supply chain, taking into consideration land-use change, sourcing, transportation, and processing.

Our response

We have decided to proceed with raising the minimum woody biomass criteria from 70% to 100%. This is a significant increase on existing obligations and is indicative of our commitment to continuously strengthen sustainability criteria. We have decided not to wait for the implementation of the Common Framework and want to provide further confidence in the woody biomass supply chains that can meet the sustainability criteria, and continue to enable the use of qualifying sustainable biomass as a low-carbon technology.

We recognise that the supply chains for biomass can be complex. We will ensure that this change is implemented in a way that achieves the ambition of only providing support payments for biomass that is from a proven sustainable source but also considers operational realities.

We have also decided to exclude material sourced from primary and old-growth forests from receiving support payments. This reinforces our commitment to continuously review and improve sustainability criteria. We believe that this will address a number of the challenges raised in the consultation by respondents.

4.4 Question 12 – Are there any additional sustainability criteria we should consider strengthening specifically as part of the proposed transitional support arrangements?

What we said

As part of the consideration to update and strengthen the sustainability criteria, we would like to take into account additional views and evidence on whether there are any other specific sustainability criteria we should consider amending as part of the potential transitional support arrangements.

What you said

There were around 60 direct responses to this question and most of these were in support of additional sustainability criteria. Out of these, more than half stated that the sustainability criteria should take account of impact on biodiversity and ecosystem function and services (including supply chain impacts). More specifically, seven respondents requested that the environmental impacts on water and/or soil need to be considered. One respondent suggested that the criteria should be in line with the COP15 global target to reduce to near-zero the loss of areas of high biodiversity importance.

Some of the responses specified that all sources of carbon dioxide in the supply chain need to be accounted for, including foregone sequestration of logged forest. A few requested verification of the carbon sequestration rates of replanted forests and their continued health.

There were also a number of respondents who stated that the sustainability criteria need to take account of the social and health impacts on local communities and indigenous groups affected by the burning and production of wood pellets, including land-use changes and air-quality impacts.

Some respondents argued that the environmental impacts of transportation should be included in the criteria, and a few opposed the import of biomass from outside the UK altogether.

A few respondents suggested that sustainability practices should be included at the outset of any contract, rather than allowing for subsequent changes to contracts to be made. The contracts should also stipulate that subsidies can be stopped if operators or the supply chain fail to meet the sustainability criteria.

A quarter of the total responses either opposed government support of biomass beyond 2027 or rejected the use of biomass for electricity generation. While not supportive of subsidising biomass, three of these responses provided a view on additional sustainability criteria. This included a suggestion of a prohibition on the use of biomass sourced directly from forests or from ‘virgin’ forests, and a question on whether alternatives to wood fuel have been assessed.

Nine respondents were not supportive of strengthening additional sustainability criteria, with five arguing that the UK already has very comprehensive sustainability criteria in place. Three

respondents raised a concern of additional criteria being added after the transitional support mechanism had been agreed. Two said that a review of sustainability criteria is best placed in the UK Biomass Sustainability Common Framework consultation. Some respondents also argued that the recent National Audit Office report recommendations on MRV and assurance should be implemented before any support is agreed.

Our response

Current biomass sustainability requirements for large scale biomass generators include 'land criteria' and 'GHG criteria' to ensure that biomass use supported in the UK can be considered sustainable and low carbon. MRV is also required under existing large-scale biomass support schemes to ensure compliance with the biomass sustainability criteria. Requirements on land criteria, GHG Criteria and MRV will continue to apply to support arrangements, and we will increase the minimum requirement on the percentage of woody biomass proven to be from a sustainable source (question 11). The current land criteria for woody biomass, that will continue to apply, stipulate that all feedstocks must be legally sourced according to the laws in the country of harvest. Woody biomass proven to be from a sustainable source includes requirements for sustainable forest management and harvesting that account for protection for biodiversity and ecosystem services (such as soil and water quality) and to ensure forest productivity is maintained. Requirements also cover land rights that span the traditional, legal or customary land rights of local communities, and labour rights that cover health and safety and the rights of workers and dispute mechanisms.

The government recognises that the evidence base around improving sustainability criteria is constantly evolving. We intend to review existing sustainability criteria and develop a Biomass Sustainability Common Framework, subject to consultation later this year. This will consider where further improvements could be made to existing criteria based on the developing evidence base.

We are also considering the recommendations from the recent National Audit Office report on MRV and assurance. Work is underway in government, together with Ofgem, to evaluate the government's current assurance process on biomass sustainability for large-scale generators to ensure it continues to be suitably robust. We will review the outcome of that work, alongside research being undertaken as part of preparations for the Biomass Sustainability Common Framework and will use this to enhance the MRV arrangements in any contracts awarded under this mechanism.

4.5 Proposed legislative amendments

We also consulted on several proposed legislative amendments to enable potential contracts to be awarded to eligible generators following successful negotiations and value-for money-assessments. We will consider further the necessary legislative changes required to enable the policy intent set out in this decision document. However, we set out below for completeness a summary of the questions asked in the consultation and responses.

Questions 13 & 14

Question 13: Do you have any comments on the proposed amendment to the definition of an eligible generator to specify that generating stations which are already generating are eligible generators?

Question 14: Do you have any comments on the proposed amendment to the definition of an eligible generator to specify that biomass conversion stations are an eligible generating station?

What we said

We set out in the consultation that potential support would require amendments to secondary legislation. We consulted on where changes might be required to existing legislation to enable the policy options proposed.

We anticipated that changes would be required to the definition of an eligible generator (see section 10(2) of the Energy Act 2013), which is specified in regulation 3 of the Contracts for Difference (Definition of Eligible Generator) Regulations 2014 ('the Eligible Generator Regulations').[6] We proposed to widen the existing definition to enable existing generators with the potential to connect to a complete CCS system to continue to operate during a transition period, consistent with the overarching policy intention.

We also proposed to include biomass conversion stations within the list of eligible generating stations set out in Schedule 1 of the Eligible Generator Regulations.

What you said

There were relatively few responses to these questions. There were fewer than 50 responses to question 13. Of those responses, most were opposed to the proposed changes. This was principally due to respondents' view that biomass could not be considered low carbon. A few of this sub-group were concerned that the proposed amendment did not provide sufficient monitoring of eligible generators' transition to power BECCS, arguing that there needed to be an obligation to transition. A similarly small number argued that the amendment should require UK sourced timber.

Some respondents were in favour of the proposed amendments to the definition, including a few advising that it should be limited to existing generators to be most cost effective. Some

[6] The Contracts for Difference (Definition of Eligible Generator) Regulations 2014

others raised wider points, two of which advised that carbon certificates should be priced accordingly to ensure appropriate return on investment; advocating for contracts to be issued at either a site or unit level where an eligible party had multiple units on one site and one calling for arrangements to be part of the Capacity Market.

Fewer respondents answered the related question on proposed changes to Schedule 1. The responses to this matched the overarching response to the previous question: most were opposed to the amendment on the grounds that they considered biomass not to be low carbon and a few raised concerns that transition to power BECCS/CCUS should be required. Some other respondents were in favour of the amendment, with a few adding the caveat that it should allow for contracts at either a unit or plant level where there were multiple units on one site. A few other responses did not give a clear preference.

Question 15

Question 15 – Do you agree with the government's proposal to enable the Secretary of State to issue a direction to a CfD counterparty to modify any section 10 contract to reflect updated sustainability objectives?

What we said

We consulted on whether we should seek to add a provision to the Electricity Market Reform (General) Regulations 2014 ('EMR Regulations') so that the Secretary of State may require the CfD counterparty to implement amendments to the sustainability obligations in a CfD entered into following a direction under section 10 of the Energy Act 2013 (a 'section 10 CfD'). This would be in addition to the existing provisions in regulation 18 which enable the Secretary of State to issue a direction to the CfD counterparty to modify existing CfD contracts if a change has been made to the CfD sustainability obligations within the standard terms.[7]

What you said

Fewer than 35 respondents expressed an opinion on proposals to enable the Secretary of State to issue a direction to a CfD counterparty to modify any section 10 CfD to reflect updated sustainability obligations. Of these, many supported the proposal, although in several cases with caveats. One of these was that resulting contracts should exclude the generator from receiving compensation for increased costs resulting a retrospective change in sustainability criteria, while another specified the Secretary of State should be able to end contracts without compensation if subsequent international agreements on emissions or biodiversity required this. Two generators argued that any increases should be introduced as part of the Biomass Sustainability Common Framework rather than earlier, with one arguing that there was a risk of creating a precedent for post-contract changes which would impact the investability of CfDs, Dispatchable Power Agreements or other bilaterally negotiated private-law contracts. A few also argued that any changes must be reasonable for generators to meet. A few parties argued that government was rushing the decision-making process.

[7] The Electricity Market Reform (General) Regulations 2014

Many other respondents were opposed to the amendment. Most recurring arguments were that the decision process was too quick or that the overarching approach could not be considered low carbon. A few of the opposed responses argued that decisions should not be based on whether a generator could reasonably meet the changes. We also received some responses which were less clearly in favour or opposed to the changes. Some of these raised concerns with whether some existing generators were meeting existing sustainability requirements. A small number were not opposed in principle to the changes but argued existing arrangements should be grandfathered to avoid piecemeal changes to contracts.

Question 16

Question 16 – Do you have any comments on the proposal to make amendments to Contracts for Difference legislation consequential to the design of the support mechanism?

What we said

We anticipated that some of the preferred policy options in the consultation might require consequential changes to CfD legislation made under the Energy Act 2013. For example, we suggested that if the availability payment or regulated margin option were to be adopted it might be appropriate to amend the Contracts for Difference (Electricity Supplier Obligations) Regulations 2014 (the ESO Regulations) to reflect the different contract design. The ESO Regulations require licensed electricity suppliers to pay a contribution to the CfD counterparty which funds the CfD counterparty's payments to generators. The contribution is currently calculated with reference to the amount of electricity generated by a generating station, so this might need to be widened to include calculations based on the amount of low carbon generating capacity made available. Also, where existing legislation assumes a strike price/market reference price structure, alternative mechanisms may need to be reflected, for example in regulation 7 of the ESO Regulations, which deals with the CfD counterparty's estimate of the amount it will be required to pay to parties under CfDs. We noted that some of these amendments might be captured by the proposed amendments suggested in the Carbon Capture Usage and Storage: Amendment to Electricity Supplier Obligation Regulations consultation on the implementation of the Dispatchable Power Agreement business model.

What you said

This question received fewer than 25 responses. Many were opposed on the grounds that they did not consider the overarching approach to be low carbon. A few were in favour, but most responses were more mixed, such as encouraging coordination across related proposed changes from government, encouraging minimal changes where change is necessary or concerns about existing arrangements.

This publication is available from: www.gov.uk/government/consultations/transitional-support-mechanism-for-large-scale-biomass-electricity-generators

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