Department for
Business, Energy
& Industrial Strategy

Carbon Capture, Usage and Storage

Government response to consultation on the Industrial Carbon Capture business model

December 2022

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Introduction

Carbon capture, usage and storage (CCUS) will be essential to meeting the UK's 2050 net zero target, playing a vital role in levelling up the economy, supporting the low-carbon economic transformation of our industrial regions, and creating new high value jobs.

The government has set out its aim to establish CCUS in at least two industrial clusters by the mid-2020s and a further two by 2030, and to capture and store 20-30 megatonnes of carbon dioxide per year ($MtCO_2pa$) by 2030, subject to value for money and affordability considerations. A key step towards delivering this ambition is the establishment of a series of business models to enable investment into CCUS.

The Industrial Carbon Capture (ICC) business models have been designed to incentivise the deployment of carbon capture technology by industrial and waste management users who often have no viable alternative to achieve deep decarbonisation. It will incorporate:

- An up to 15-year contract that provides the emitter with a payment per tonne of captured and stored carbon dioxide (CO_2), which is intended to cover operational expenses, fees for the transport and storage of captured carbon dioxide, and repayment of and rate of return on capital investment; and
- for projects that have applied through Phase-2 of the Cluster Sequencing Process for CCUS deployment only, government capex co-funding via a grant from the £1 billion CCS Infrastructure Fund (CIF).

In April 2022, the government published a draft ICC Contract (consisting of the front end agreement and the standard terms and conditions) alongside a consultation seeking views on the ICC business models and draft ICC Contract.

This document sets out the government's response to the views gathered as part of this consultation on the ICC business model support package and has been published alongside the ICC Business Model Summary, updated draft ICC Contract, Waste ICC Contracts Biogenic CEMS rider, Waste ICC Contracts Summary Table, the Greenhouse Gas Removal Credits Annex, ICC Form of Supply Chain Report Spreadsheet[1] and Grant Funding Agreement (GFA)[2].

Overview of consultation proposals

The consultation on the proposed ICC business models and draft ICC Contract ran from 12 April to 10 June 2022, lasting over 8 weeks, and invited views on the extent to which the proposed model is deliverable, investable, and supports effective decarbonisation. A draft of the full-form ICC Contract was published alongside the consultation, with a Heads of Terms for

[1] https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models
[2] https://www.gov.uk/government/publications/design-of-the-carbon-capture-and-storage-ccs-infrastructure-fund

the GFA having been published in November 2021. It also sought feedback on the extent to which there are any potential risks of the Waste ICC Contract impacting the waste hierarchy. 25 responses were received from individuals, businesses, trade bodies and other organisations. The consultation comprised of fourteen questions and sought to determine the extent to which the proposed ICC business models and draft ICC Contract meet the principles guiding the design of the ICC business model specified in the December update.

Stakeholder Engagement

A series of engagements were conducted with key stakeholders and interested parties alongside the ICC business model consultation. Three Expert Panel meetings (including on the adaptations of the ICC business model for the waste sector) were held between 12 April to 10 June 2022 with a combined attendance of approximately 300 individuals. These events focused on the questions and issues set out in the consultation, including a session focussing specifically on the published draft ICC Contract.

This response also takes into account engagement with stakeholders that has taken place during the development of the ICC business model through 2021 and 2022.

BEIS will continue to work with the relevant devolved administrations to ensure that the proposed policies take account of devolved responsibilities and policies across the UK to facilitate successful deployment.

Next Steps

The policy positions set out in this government response alongside the proposals in the accompanying ICC Business Model Summary, ICC Contract, Waste ICC Contracts Biogenic CEMS rider, Waste ICC Contracts Summary Table and the GFA are indicative only and do not constitute an offer by government and do not create a basis for any form of expectation or reliance. The government reserves the right to review and amend all such provisions, for any reason and in particular to ensure that proposals provide value for money (VfM) and are consistent with subsidy control principles.

On 12 August 2022, the government published the list of Power CCUS, ICC, Waste and CCUS-enabled hydrogen projects that have proceeded to the due diligence stage of the Phase-2 Cluster Sequencing process[3]. This shortlist follows the selection of the HyNet and East Coast Clusters as Track-1 clusters in November 2021. Projects underwent a rigorous assessment process, and the publication of the shortlist marked a significant step towards realising our ambition to deploy CCUS in at least two industrial clusters by the mid-2020s (as

[3] https://www.gov.uk/government/publications/cluster-sequencing-phase-2-eligible-projects-power-ccus-hydrogen-and-icc/cluster-sequencing-phase-2-shortlisted-projects-power-ccus-hydrogen-and-icc-august-2022

per the Prime Minister's 10 Point Plan[4] and the Net Zero Strategy[5]) and to bring forward at least one power CCUS plant in the mid-2020s.

[4] https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution/title
[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

Responses to the Consultation

This government response summarises the responses received to the consultation and outlines the policy responses. In developing the policy responses, the government has carefully considered the responses received to the consultation and taken into account the policy aims of the business model.

We acknowledge that this government response is being published outside of the usual 12-week window recommended in the government's Consultation Principles 2018. The reason for this is that a number of technical components of the business model have taken a significant amount of time to work through and HMG have been working in collaboration with industry (through expert groups) to do this. In order to provide a more detailed, and helpful, response to the consultation we made the decision to publish the response outside of the usual 12-week window.

Q1: To what extent does the ICC business model represent an investable proposition in the context of known HMG policies, stated ambitions and the Net Zero commitment?

Summary of responses received and HMG Response

Generally, stakeholders viewed the business model as an investible proposition, acknowledging that this is dependent upon the outcome of negotiations. More detailed response points, including where improvements were suggested to make the model more investable, are discussed in turn below.

Energy prices

In the April 2022 publication, we stated that the strike price will be adjusted for inflation based on changes in the Consumer Prices Index (CPI). A recurring concern from stakeholders was around the use of CPI to adjust the strike price to take account of inflation, with a desire for this to align more closely with energy prices due to energy being one of the greatest costs of CCUS operations.

The government position remains that energy price indexation is not appropriate for the ICC and Waste ICC Contracts, it is still our intention to apply CPI across all of the opex including the energy price related portion. This is because we still consider that Emitters are best placed to manage energy price risk as part of their energy cost management strategy for their portfolio. Energy price indexation may not best reflect how certain Emitters may manage these costs and could therefore risk overcompensation in some circumstances. Indexation of strike prices to energy prices would also lead to significant cost uncertainty for HMG.

Given the recent unprecedented level of energy prices and the impacts that this could have on project costs, we will continue to monitor energy price risk.

Free Allowances

A number of respondents commented about the way UK ETS Free Allowances (FAs) and alternate carbon leakage policies are treated within the business model. Further details on FA treatment are provided in response to questions 8a and 8b.

Termination

A response was raised with respect to termination provisions, indicating that termination protections could leave investors out of pocket in no fault terminations, including in the case of T&S network failures. We consider that risk sharing proposals are adequate and a number of termination provisions are on a no-liability basis reflecting their no-fault nature. More detail is provided on this in response to question 10. In the scenario where the ICC Contract is terminated because of T&S prolonged unavailability, then compensation will be payable to the Emitter. We will provide compensation for (to the extent that these costs arise) costs which are wholly attributable to the post-Agreement Date development, construction, testing, completion, commissioning or decommissioning of the Capture Plant; and break costs associated with the Emitter's contractual arrangements (excluding financing); up to the balance of the Total Capex Payment (excluding the return on capex). This will be reduced to reflect any savings which have been, will be or are reasonably likely to be made by or received in respect of the project by the Emitter, which may include; avoided out of pocket costs, tax reliefs/reductions, insurance proceeds and other compensation (including the net recoverable value from the Capture Plant).

Contractual Mechanisms

One stakeholder expressed a desire for mechanisms within the Contract to allow renegotiation due to unforeseen circumstances. There are a number of provisions in the Contract that we consider offer Emitters a degree of protection to circumstances out of their control (such as Qualifying Change in Law (QCiL) provisions); we therefore consider that no additional reopener scenarios are required in the Contract.

One comment expressed the view that the model was good for ICC projects but less so for Greenhouse Gas Removal (GGR) projects, which will need additional support both in terms of the level of revenue and the protection against loss of revenue due to unavailability of T&S infrastructure. The objective of the ICC Contract is to support industrial emitters to deploy CCUS and it is not aimed to incentivise GGR projects specifically. A GGR specific business model is in the process of being developed and a consultation was launched on 5 July 2022 seeking views on the design of a business model to attract private investment and enable GGR projects to deploy at scale from the mid-2020s.

One respondent sought an update with respect to Capture as a Service (CaaS). Our position in respect of CaaS (as published in April 2022) remains the same. We have not made any further developments since the April 2022 publication. We plan to engage with industry to assist our developments of the CaaS position in advance of any Track-2 process. The CaaS Co provisions previously detailed in the ICC Front End Agreement have been removed from the version published in the December 2022 publication as BEIS has not received any CaaS Co proposals from shortlisted Track-1 emitters.

Opex Reopener

Numerous stakeholders welcomed the use of an opex reopener although expressed some concerns around timings as one year of operation may not be long enough for first-of-a-kind (FOAK) projects to fully understand the potential maintenance costs.

Given the feedback from respondents we have amended the opex reopener process so that rather than it taking place one year after the start of operations, it will take place after the Capture Plant has been working at close to its full potential for 12 individual months. Full details are set out in the ICC Contract and summarised in the December 2022 ICC Business Model summary document[6]. The rationale behind this is to ensure that the opex reopener is based upon a sufficient sample size which is representative of the operations of the Capture Plant.

CCU

One respondent highlighted that the ICC business model does not cover CCU. CCU only projects are not eligible for ICC business model support under Phase-2 Cluster Sequencing, however hybrid CCU/CCS projects are (although support under the business model will only be in relation to the captured CO_2 emissions directed to the T&S network). This is primarily because we want to prioritise support for the deployment of CCS in the UK, with a focus on incentivising large-scale abatement of CO_2 and the establishment of T&S infrastructure essential to meet carbon budget and net zero targets.

Capital grant support

Capital grants will be available for ICC projects that have applied through Phase-2 of the Cluster Sequencing Process for CCUS deployment. Financing information provided by applicants in Phase-2 will be used to inform negotiations, during which, the amount of any capital grant funding will be agreed. Further details on the due diligence and negotiations process, including as it relates to CIF support will be shared with successful projects. The range of capital grant funding offered will be the lesser of:

- an agreed monetary amount; and
- below 50% of the actual construction cost of the capture plant.

All capital grant funding will be subject to affordability, VfM and subsidy control considerations. We are not considering increasing the maximum grant.

Summary of responses received in relation to the Waste ICC model and HMG Response

Stakeholders generally stated that they are content with a number of the proposals for the Waste ICC Contract including: the use of a market reference price, items that are negotiable (strike price, capex repayment, capital grant and opex reopener), and 10-year Contract term

[6] See Section 4 of the December 2022 ICC Business Models Summary document for details of the Opex Reopener.

(with a possibility of contract extension for up to 5 further years), as well as noting that a position on negative emissions is needed.

Carbon Price

Stakeholders raised points in relation to the ability of passing costs through to consumers, noting that the ability to do so would be reliant on contractual renegotiations with customers as the reference price within the Contract would be unlikely to fall under the change in law provisions of their consumer contracts. It was considered that this would be a requirement for financiers. Additionally, the ability to pass through reference price costs associated with the capture of biogenic emissions was noted to be unlikely if biogenic emissions are zero-rated under the UK ETS. Waste stakeholders therefore agreed with the proposed Applicable Carbon Price being used as the reference price within the Waste ICC Contract, stating the sector's inability to pass through any of the costs associated with biogenic emission capture. This approach also means that a reference price of zero will be in effect whilst the waste sector does not have carbon pricing applied to it, i.e., that there will be no deduction from the strike price.

Stakeholders raised broader concerns about how carbon pricing could be implemented across the waste sector and implications that could arise from FAs and potential distorting impacts for those sectors that receive free allowances but use waste derived fuels. This point is out of scope of this business models consultation. However, the UK is committed to protect our industry from carbon leakage as our economy decarbonises which is why a proportion of allowances, worth several billion pounds a year at current prices, are already allocated for free to businesses at risk of carbon leakage under the UK ETS. Recognising the need for certainty in the near term, the recent 'Developing the UK ETS' consultation proposed to guarantee current levels of free allocation until 2026, subject to activity level changes. This will support industry in the transition to net zero in the context of high global energy prices while incentivising long term decarbonisation. A second stage of the review, which will be consulted on no later than the end of 2023, will look at the methodology for distributing free allowances and explore ways to better target free allocations for those most at risk of carbon leakage to ensure they are fairly distributed.

Symmetric Payments

One consultation response raised concerns relating to the proposed symmetric payments model design. A recommendation was made to reduce reference price exposure caused by having a symmetric payment structure (i.e., when Emitters need to pay back the counterparty when the reference price is greater than the strike price), such as by applying asymmetric payments or to capping the reference price at the costs of CCS. This was thought to provide benefit to customers which would encourage their participation in CCS at an early stage whilst reducing the risks of delayed deployment or inflated strike prices.

BEIS do not consider that asymmetric payments are required in the Waste ICC Contract. The Waste ICC Contract is a Contract for Difference and the uncertainty about the reference price is a risk that will be shared between government and the contracted project: Contract holders benefit from protection when the reference price is low, but government pays lower subsidy

payments or receives payments if the reference price is high. Unlike the generic ICC Contract, the reference price is market-linked throughout the Waste ICC Contract term (subject to carbon pricing) rather than being set in advance and therefore the asymmetric payments to ensure VfM for government in the generic ICC Contract are not needed for waste CCS projects.

However, a cap on symmetric payments will be implemented to provide a limit to the symmetric payment in line with the full costs of deploying and running CCS over 10-years. The cap will be set so that a project only pays back money that they receive from government through the Waste ICC Contract and GFA.

Negative Emissions

Stakeholders raised that it was important that any restriction on negative emissions sales was reviewed at an appropriate juncture. Although initially restricted, the Counterparty will be able to trigger a review of the restriction to allow the sale of negative emissions into voluntary and compliance markets. The Counterparty will trigger this review when they deem it to be an appropriate juncture. For a full description of the negative emission positions in both the Waste ICC Contract and generic ICC Contracts, please consult the December 2022 ICC Business Model summary document.

Q2: To what extent do you consider the ICC Contract will incentivise development of low carbon industrial production that has the potential to operate subsidy free at the end of the ICC Contract term?

Summary of responses received and HMG Response

We note broad support from respondents on our approach to business model design and how the model works to attract investment into low carbon industrial production through deployment of carbon capture. Stakeholders indicated areas where further refinement could be made (e.g., on CCS Network Code) to enable the CCUS to run subsidy free at the end of the Contract term as outlined below.

Decarbonisation Policies

Consultation responses highlighted the uncertainty in the future direction of various carbon pricing policies, particularly relating to international competition and carbon leakage risks, and that this impacts the investment decisions of industry.

The approach to design principles such as the price and volume protection of FAs have been developed to be compatible with the UK ETS policy and mitigate the uncertainty of the number of FAs the Emitter will be allocated over the lifetime of the ICC Contract. Having considered the responses to the consultation, we view that the business model strikes an appropriate balance between providing predictability to investors and reducing subsidy payments over time. We recognise the role that wider decarbonisation policies such as the UK ETS, the potential introduction of a UK Carbon Border Adjustment Mechanisms (CBAM) and low emissions

industrial markets may play in making CCUS investable for industrial sectors and will review these interactions as we evolve any future business model towards a more market-based model.

Competitive Allocation

The government has launched Phase-2 of the CCUS Cluster Sequencing Process and considers the approach of bilateral negotiation as the most appropriate allocation mechanism for FOAK projects to assess projects of varying sizes at different levels of maturity. We expect, following the investment and delivery of CCUS under Phase-2 of the Cluster Sequencing Process, that more competitive allocations process will be viable in the future and intend to evolve such processes accordingly, incorporating learnings from current allocation rounds, to achieve value for money and reduce costs over time.

T&S Network

We understand that emitters are keen to understand how T&S network capacity is allocated after the end of the ICC Contract term with stakeholders indicating that a sustainable solution to T&S will be required before CCS can be run without ICC Contractual Support.

The government is progressing work on the T&S business model and how individual emitters interface with the T&S network (i.e., the CCS Network Code). An indicative Heads of Terms was published in June 2022 which sets out that network users can apply for additional long-term network capacity up to 15 years in advance (see Section E of the publication[7]). An update to the CCS Network Code was published in December 2022[8].

Summary of Waste stakeholders responses received and HMG Response

Carbon Price

Stakeholders set out that they may be able to run subsidy free at the end of the Contract, but it will be dependent on the carbon price and any relevant FAs. If the carbon price is sufficiently high, then the carbon price will support running of CCS without support. Generating revenues from negative emissions is also a way in which costs of CCS could, in the future, be supported beyond Contract holders.

BEIS note that for the waste sector, the ongoing operations of CCS are tied to the application and scope of carbon pricing to the sector, which was the subject of a Call for Evidence that closed in June 2022. In addition, the potential monetisation of negative emissions is particularly important for waste sector projects that have a high proportion of biogenic emissions. The sale of negative emissions during the Term (to the extent allowed by the counterparty in accordance with the terms of the Waste ICC Contract) could help to stimulate a market for negative emissions, which could help sustain CCS after Contracts end.

[7] https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models
[8] https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models

Q3: Does the ICC business model as described in this document and accompanying updates published alongside this publication, create, risk the creation of, or through its approach unsuccessfully protect against the creation of, any perverse incentives for the creation of excess carbon?

Summary of responses received and HMG Response

The majority of respondents stated that the business model does not create any perverse incentives to create excess carbon that are not otherwise mitigated through the business model.

Reporting Requirements

Two respondents raised concerns that the carbon intensity reporting requirement could be too onerous, and that the requirement should be proportionate to the risk. We note that the requirement has been designed to avoid undue burden for emitters, but also that the integrity of the scheme is essential for taxpayer value for money and decarbonisation objectives. By using existing information that emitters are expected to already have and by aligning with UK ETS reporting timelines, we have sought to streamline the process for emitters and therefore consider the reporting requirement to be proportionate.

There were responses directly related to the methodology of the Carbon Intensity Reporting, noting that the process should take account of different fuels, performance of the plant and planned maintenance. These are factors that the Carbon Intensity Reporting process will account for.

In addition, a respondent noted that they considered UK ETS verifiers would be more appropriate to audit the reports rather than financial auditors. We agree and the ICC Contracts has been amended to require technical auditing experts with specific knowledge to conduct this function.

A couple of responses noted that by not allowing Emitters to increase the size of their carbon capture facility and to send more CO_2 to the T&S network, they either may be limited in increasing production as they would have to face the carbon price for these emissions or producing high carbon products unnecessarily. Government welcomes potential for expansion of low carbon industrial production but is also restricted by a finite spending envelope as well as the importance of allowing potential future projects to access funding opportunities. Therefore, we are only able to commit project funding under any given ICC Contract based upon the size the project applied for.

Alternative methods of carbon abatement and capture

One respondent asked BEIS to consider alternative methods of carbon abatement and capture. While this consultation focuses solely on Industrial Carbon Capture, BEIS is

supporting more novel technologies through the Direct Air Capture and other GGR technologies competition[9].

Summary of Waste stakeholders responses received and HMG Response

Several stakeholders responded noting that for EfW plants the composition of their waste can fluctuate either by the customer changing the waste feedstock, or by the plant entering into a contract with a new customer. These fluctuations mean that historical comparisons wouldn't be appropriate for the EfW sector. BEIS has taken on board this feedback and agrees that as the EfW industry has little control over the carbon intensity of the waste it processes, and consequently that historical comparisons are not appropriate, the Carbon Intensity Reporting requirement will be removed for EfW projects.

Some stakeholders consider it important to maintain the balance between different facets of the waste sector (e.g. EfW and Waste-to-Fuel), whereas others think that Waste-to-Fuel projects should be prioritised as it can help to decarbonise hard to decarbonise sectors. Another stakeholder mentioned that installation of CCS at EfW plants could create or lock in EfW capacity, especially if EfW plants are supported via the Waste ICC Contract.

The Waste ICC Contract has been designed, where possible, to be agnostic of technology within the waste sector, focusing on incentivising the deployment of CCUS equipment in the sector. The eligibility criteria set for the waste ICC Contract were set with a requirement for the project to be operational by the end of 2027. Residual waste is expected past the end of Track-1 Waste ICC Contracts, and therefore CCS is an essential technology to help decarbonisation. Further consideration of the interactions between the Waste ICC Contract and waste sector dynamics are included under questions 13 and 14.

Q4: To what extent do you consider that the proposed negotiations approach will lead to successful agreements of ICC contracts?

Summary of responses received and HMG Response

In total, BEIS received over 10 responses on the proposed negotiations approach. Given the bespoke nature of the CCUS programme, and early development stages of some of the projects, respondents agreed that bilateral negotiations will likely result in successful agreement of ICC Contracts.

Respondents highlighted approval for negotiating the key aspects of the payment mechanism, including (but not limited to) the various elements of the capex payment rate and the strike price.

[9] https://www.gov.uk/government/publications/direct-air-capture-and-other-greenhouse-gas-removal-technologies-competition

Several responses highlighted the importance of negotiations remaining flexible to address potential changes in design and development costs as projects progress into FEED and combat uncertainty of future market challenges or cost risks that emitters may face. Government will continue to explore options to maintain a flexible negotiations approach and manage project cost uncertainty to ensure that risks are suitably apportioned between the parties.

One stakeholder requested clarity on costs incurred pre-FID (e.g., development costs). With regards to development costs, the ICC business models will support eligible opex and capex project costs incurred after the Agreement Date (and the Agreement Date will occur after FID). Pre-FEED and FEED (FEL 3) are defined in accordance with the Phase-2 Cluster Sequencing guidance[10] as the stage at which 'design and cost estimates defined to a level sufficient for a financial investment decision to be taken and the implementation stage to commence'. Therefore, the ICC business model will not include development (i.e. pre-FEED and FEED) costs, as such costs will be incurred prior to the Agreement Date and may be subsidised under the Industrial Energy Transformation Fund or Industrial Decarbonisation Challenge. BEIS' policy has always been that such costs would be borne by emitters, whether or not they are successful in being awarded an ICC/ICC Waste Contract.

One response indicated a concern that negotiations will be resource intensive for both emitters and government. Government recognises this and will ensure that there is sufficient transparency in the approach to negotiations to ensure that emitters adequately understand the resourcing requirements by them ahead of commencing negotiations. BEIS considers that the resources available to it are sufficient for the anticipated scope of negotiations.

There were some concerns over the potentially time-consuming nature of the competitive negotiation and allocation process, which could risk delaying project deployment. Responses noted that the priority should be on the rapid selection and deployment of FOAK projects. Some respondents also highlighted the need for a more flexible and less time-consuming allocation process. Government recognises the FOAK nature of many of the ICC projects and will take that into consideration during the due diligence and negotiations phases. The CCUS Cluster Sequencing programme accounts for the development timelines of government policy and of all the different projects that need to come together to deliver a viable cluster.

In addition, one response suggested including wider local authorities, investors or regulators who have existing cluster decarbonisation planning work underway or relationships with individual emitters in the negotiation process. Government will consider appropriate routes for engagement with third party stakeholders during due diligence and negotiations on a case-by-case basis.

Some responses also raised concerns about increasing energy costs and the impact this will have during the construction phase. Please refer to the response to Question 1 for further details on this matter.

[10] https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-deployment-phase-2

Q5: To what extent does the ICC business model, as delivered by the proposed contract, succeed in supporting the development of innovative and competitive ICC projects? If not, please explain how the Contract terms inhibit development of innovative and competitive ICC projects?

Summary of responses received and HMG Response

There were 11 responses to this question which covered a range of themes. Some focused on the commercial design of the model, including the use of the Consumer Price Index (CPI) to adjust the strike price and the opex reopener in the first year, and some focused on innovation. This section will focus on innovation, whilst the commercial responses with regard to energy prices and the opex reopener is covered in Question 1.

There was strong consensus among respondents that the business model could, in principle, help to successfully support the development and deployment of innovative projects. However, it was noted that the extent to which it succeeds in doing so will become clearer during negotiations, early allocation and, eventually, the deployment of ICC projects. It was widely recognised that the capture rate requirement will help to ensure innovative projects of a high standard are promoted.

Please see below for additional concerns raised by respondents, together with a response from BEIS for each concern raised.

Capture rate

There was one concern raised that the 85% capture rate requirement might inhibit the development of innovative and competitive ICC projects that could operate at lower cost. An 85% capture rate requirement was chosen following detailed technical investigation (including through gathering stakeholder feedback). 85% was found to be the most appropriate and fair level for industry as a whole, balancing the need to promote high capture rates that deliver the most effective decarbonisation whilst also recognising a risk that a higher capture rate may not always be achievable for industrial facilities across all sectors due to various reasons, including heterogeneity of industry, varying levels of technological readiness and the presence of dilute CO_2 concentrations in the stream directed to the capture plant.

We want to drive innovation which will lead to technological improvements and higher capture rates in future, therefore, we intend to keep this under review for future Contracts. More stringent requirements relating to capture rates may be applied in future Contracts, following the initial application of carbon capture to industrial and waste management projects.

Solvent disclosure and Metering

One response indicated concern over elements of costs of the proposed systems including additional metering expenditure and potential disclosure of proprietary solvent information,

which could lead to additional costs and discourage investment in innovative technology and hence lower capture costs.

On metering, metering expenditure directly related to Contract requirements will be covered by the business model, which includes any related capital and operational costs incurred after the Agreement Date. The business model has been designed with the aim of minimising unnecessary cost and burden where possible, but it remains essential that appropriate and robust metering requirements are in place to ensure taxpayer funds are spent effectively.

On solvent disclosure, Defra wrote to the CCSA in January 2022 confirming the regulatory requirement for the disclosure of solvents. The government and the regulator in England, the Environment Agency (EA), are engaging with industry on the permitting of novel energy transition processes including CCUS. The EA is working with CCUS operators to establish and communicate guidance on regulatory requirements to support innovation and good environmental and public health standards.

Whilst we want to incentivise and support industry to deploy cost effective technologies at pace and scale, it must be recognised that public confidence in CCUS technology is also critical to its successful deployment. The disclosure requirements play a vital role in underpinning public confidence in our environmental regulatory framework, as well as public confidence in the sectors which operate within that framework. Transparency in environmental regulation is all the more important for novel technologies such as carbon capture where we are continuing to build the evidence base on environmental and public health impacts.

Non-Pipeline Transport (NPT) and dispersed sites

Respondents highlighted the need to expand the T&S network to include NPT and to also develop the business model so that it can cater for dispersed sites. In the Net Zero Strategy, government set out its intention to explore opportunities for faster decarbonisation of dispersed sites in the 2020s. We are therefore working with stakeholders to identify ways of overcoming key barriers, including exploring different ways in which dispersed sites could access key decarbonisation technologies.

Track-2 and long-term certainty

There were concerns raised that there is currently no long-term certainty to projects outside of Phase-2, and that the government needs to provide clarity to ensure there is a clearer pipeline of projects in future. We continue to build on our experience of sequencing Track-1 clusters and the lessons learned from it will, whilst always maintaining competitive tension and ensuring value for money, be considered in the design of any future Track-2 process. Government continues to work on developing a potential Track-2 process and details will be brought forward in due course.

Q6: We are developing the business model package including conditions set out in indicative heads of terms for the CCS Infrastructure Fund grant funding agreement, such that there is equitable apportioning of risk inherent to a FOAK project between both the developer and HMG. To what extent do you consider risk is sufficiently balanced to enable investment in projects and VFM for taxpayers? If not, please identify those areas of the business model package where risk apportionment is disproportionate?

Summary of responses received and HMG Response

The following key themes were raised in response to this question:

- The business model should recognise that businesses that are potentially able to fund a CCS project without the need for CIF support should also benefit from the construction risk sharing that CIF funding offers;
- The stance of the capital grant being used only in the context of being a 'lender of last resort' should be reviewed;
- Capex funding support through the CIF may carry a risk that such funding may create 'operational gearing', which means that the finance is smaller relative to the ongoing operating costs and risks of the project and it may prove harder for financiers to accept clauses that may work on proven, fully-financed projects in existing industries;
- The stance of the capital grant being used only in the context of being a 'lender of last resort' should be reviewed.

Capital Grant Support

We feel it is appropriate to tie the risk sharing mechanism into the capital grant. Subject to affordability, the grant funding offered will be the lesser of:

- An agreed monetary amount; and
- Y% of actual capital costs, where Y% is below 50%.

This mechanism offers limited risk sharing and predominantly serves to offset the greater relative exposure of private capital to construction cost overruns in the case where a grant is received. We therefore feel it is appropriate to tie the risk sharing mechanism into the capital grant.

We are not considering additional risk sharing around operational costs for projects receiving a capital grant, although note that the opex reopener under the contract addresses some of the

FOAK risk. Further responses to specific concerns around risk distribution and impacts on bankability can be found in Questions 7 and 10.

Projects have been asked to indicate what their financing gap might be and the minimum level of grant to fulfil this financing need. This will enable us to understand the minimum government financing required to enable projects to proceed. Subject to affordability, our current intention is to increase the value of grant awarded to successful projects to the extent that this reduces the ongoing revenue support required. Projects have also been asked to provide information on how a grant can be used to improve their financing proposition and the preferred level of grant. Ultimately the value of the grant for each project will be determined within negotiations and will be subject to affordability, value for money and subsidy control considerations. The maximum value of grant is up to but not including 50% of total capital costs.

Q7: To what extent do the payment mechanics proposed for the main contract term and for the extension period(s) offer a fair balance of financial return, risk and protection in circumstances where costs and market circumstances diverge from expectations?

Summary of responses received and HMG Response

18 responses were received to this question which mainly reflected broad support from respondents around the design of payment mechanics in relation to potential risks Emitter's may face during the Contract. Responses indicated an appropriate balance of risk apportionment reflected within the proposed payment mechanics and focused on payment structure, including capex repayments and consistency between the generic ICC and Waste CCS Contract, carbon price volatility and penalties. More detailed response points are discussed in turn below. Responses on the Opex Reopener and energy prices are covered in Question 1.

Asymmetric Payments

Three responses expressed that asymmetric payments (which apply in the first 10 years of the initial ICC Contract payment term for non-waste management projects) provided necessary revenue certainty for Track-1 Phase-2 projects, which is important for attracting investment. In view of the responses welcoming the use of asymmetric payments in the ICC Contract term (for Track-1 Phase-2 projects), we intend to proceed with this proposal.

Extension Period

Two responses indicated that the requirement to apply for an annual extension after 10 years would have an administrative burden on Emitters and the Counterparty and proposed breaking the extension period into 3+2 structure. We consider that the requirement to apply for an annual extension is proportionate as the majority of administrative checks are undertaken by the ICC Contract Counterparty. In addition, as the ICC Contract moves to symmetrical

payments during the extension period, this approach enables the emitter to decide if extending their ICC Contract is viable for them throughout years 10 – 15 of the Contract term.

Capex Payments

As there was consensus on the benefits of the capex repayment rate approach, we intend to proceed with the proposal for generic ICC projects for capex to be repaid in the first 5 years (subject to an annual capex payment limit) or up to the end of year 10, whichever occurs sooner (for waste management projects, the proposed capex payments period is 10 years). Further information can be found in the December 2022 ICC Business Model summary document. We recognise that this flexibility to recoup capex payments beyond the first 5 years is useful for ICC projects to protect against factors that may impact capture plant availability and/or low product demand.

Payment suspensions

There were some concerns from stakeholders of 'immediate' payment suspension if the Emitter breaches minimum capture rate. An Emitter does not immediately face suspension of payments if it breaches the minimum capture rate. The Emitter must be in breach of the Minimum CO2 Capture Rate Obligation for either three consecutive months or three non-consecutive months within a six month period for a Minimum CO2 Capture Rate Breach to occur. The Emitter then has six months from the date of receiving notice of the Minimum CO2 Capture Rate Breach to either rectify the breach or provide a rectification plan (which meets the minimum requirements). The ICC Contract Counterparty must first notify the Emitter of its intentions to suspend payments and the date from which the suspension will apply.

Free Allowances

Government's view is that it is necessary to take a position on the treatment of FAs (i.e. compensation in return for forfeited FAs and, if applicable, protected FAs) in the generic ICC Contract in order to provide certainty to investors and VfM for Government. Government intends to continue with its proposed treatment of FAs. We consider that our approach provides a fair balance in ensuring emitters are left no worse off through entering an ICC Contract and minimises risk of competitive distortions within industrial sectors between ICC Contract holders and non-ICC Contract holders. Government has engaged with industry regularly through publications and expert groups to explain our approach and further details on government response to this can be found in [Q8].

Stakeholder Engagement

There was a response that suggested the ICC Contracts should be tested with EPC (engineering, procurement and construction) contractors as it is expected Emitters will transfer risk to EPC contractors through sub-contractual arrangements. We recognise the range of industry stakeholders involved in deploying CCS projects which is why we have regularly sought industry feedback through expert groups, publications on updates and consultations. The business model has been designed taking into consideration the responses we have received through these forums.

CaaS

One respondent sought an update with respect to CaaS (Capture as a Service). Our position in respect of CaaS (as published in April 2022) remains the same. We have not made any further developments since the April 2022 publication. We will engage with industry to assist our development of the CaaS position in advance of any Track-2 process. The CaaS Co provisions previously detailed in the ICC Front End Agreement have been removed from the version published in the December 2022 publication as BEIS has not received any CaaS Co proposals from Track 1 emitters.

Some respondents expressed concern regarding possible exposure to T&S charges, which is addressed as part of the response to Q11, and energy price risk, which is addressed as part of the response to Q1.

Summary of Waste stakeholders responses received and HMG Response

Capex payments period

Some waste stakeholders stated that if a 10-year capex payments period is used then there is less flexibility for waste projects to make up for a shortfall of capex payments than is available to generic ICC Contract holders. This would lead to risk being added into costs to protect against lower than expected capture volumes. To overcome this, respondents suggested using a shorter capex payments period or the extension period to make up capex.

BEIS consider a 10-year capex payments period to be appropriate for the Waste ICC Contract given the different commercial structures present in the waste sector and the lower exposure to international competition compared to other industrial sectors. BEIS considers that the flexibilities within the Contract, such as the ability to account for planned ramp up and maintenance within the expected capture volumes and compensation provisions for T&S network outages, provide sufficient protection for emitters to receive their capex payments. In addition, a longer capex payments period lowers year on year peak spend for government, particularly in a scenario where carbon pricing has not been introduced when a project becomes operational.

The possibility of the extension period to the Contract after the end of the initial 10 year payment term was welcomed, but one stakeholder suggested that a single 5-year extension period be offered instead of annual iterations.

The extension period can be requested subject to market and performance conditions being met. A single 5-year extension is not considered to be in the best interest of either party. This is because it does not allow for the Contract to fall away if the market is in a position to sustain CCS operations and, considering the position on symmetric payments, a single 5-year extension would also tie emitters into paying back to the Counterparty for the duration of the extension period.

Symmetric payments

One respondent noted that the risk for an Emitter that is only able to pass through the lesser of carbon price or CCUS costs will mean that symmetric payments would be challenging to implement.

Government has considered the risk associated with an Emitter only being able to pass through the lesser of carbon pricing costs or the costs of CCS. By applying unlimited symmetric payments, the Emitter would retain full UK ETS exposure (if subject to the UK ETS), which could severely hamper the attractiveness of investing in CCS. As a result, for the initial Waste ICC Contract, a cap will be applied to symmetric payments so that a contracted project will only be liable to pay back to the Counterparty money that they have received through subsidy payments (via the Waste ICC Contract and the Grant Funding Agreement). In other words, payments from the Emitter to the Counterparty will only be due when the sum of subsidy payments made to the Emitter minus the sum of payments received back from the Emitter is greater than 0.

Q8a: Included within the business model are proposals for the treatment of UK ETS Free Allowances. To what extent does the proposed treatment of Free Allowances within the BM operate effectively within the UK ETS framework (e.g. timelines, allocation processes etc)

Q8b: In light of the key principles that have guided ICC BM design, namely the development of a deliverable, investable BM that supports effective decarbonisation whilst delivering VFM for taxpayers, to what extent do you consider the proposed treatment of UK ETS Free Allowances complies with these principles? How would you account for UK ETS free allowances within the BM in light of these principles?

Summary of responses received and HMG Response

There were mixed levels of support from respondents on our proposed treatment of FAs within the ICC Contract and how this operates effectively within the UK ETS framework.

Method for determining number of forfeited FAs

Some responses stated a preference for using UK ETS calculation methodology when calculating the number of forfeited FAs to allow for alignment of the two schemes, compared to the April 2022 policy position of pre-capture metering being the default measurement method.

The business model requirements for metering feed into capture factor calculations, and therefore, the FA forfeiture calculation.

For industrial facilities that are not part of a CaaS group, use of direct measurement via pre-capture meter(s) will be the default measurement method unless a specified exemption applies to an Emitter at the two designated measurement points (please refer to the ICC business models summary document for more details). However, provided the daily reported granularity and measurement uncertainty (≤ 7.5%) are met, there are two exceptions to this default measurement method:

- For cases where:

a) the CO_2 routed to the Capture Plant is solely sourced from the combustion of homogenous gaseous or liquid fuel(s); and

b) where emitters have existing, or will install, fiscal quality metering (flow and composition) of this fuel

use of an indirect (UK ETS-compliant) calculation methodology will be allowed.

- For cases where there are site-specific constraints which make the installation of pre-capture metering equipment unfeasible from a technical perspective, or prohibitively expensive, we will allow the Emitter to use capture plant stack metering of the residual CO_2 emissions emitted to atmosphere.

BEIS recognises the variety of industrial processes and monitoring regimes across the different sectors, and we consider that this position enables Emitters to deploy a suitable method to their site requirements whilst meeting the business model requirements in terms of accuracy and granularity of data, which is essential for the integrity of the business model and to ensure taxpayer value for money. This position means that the business model requirements for metering, which feed into the capture factor calculations (and therefore FA forfeiture), may not align with UK ETS data requirements. However, the position has been designed to align where possible whilst ensuring that FAs are forfeited in line with captured and stored volumes.

FA Forfeiture Timings

Some responses questioned why the ICC Contract requires FAs to be forfeited at the start of the year in line with expected captured and stored volumes, and then reconciled at the end of the year with actual captured and stored volumes. Respondents stated that it would be simpler to forfeit FAs at the end of the year in line with actual captured volumes, which would require no reconciliation. The rationale for forfeiting in advance is to ensure the Emitter has enough FAs to forfeit to the Counterparty, and that FAs are not traded during the year.

The ICC Contract offers price assurance on forfeited FAs at the reference price. For the reconciliation process, the relevant Settlement Unit's reference price is used (the reference price that applies for the day when the emissions were captured, noting that the reference price will increase each calendar year as set out in the front-end agreement). The reference price may not exactly reflect the actual carbon market price at that point in time, but it provides

certainty to the Emitter on revenue streams as allowance pricing can vary significantly within any given year in an open market and ensures that Emitters are not overcompensated if the market price is greater, which would mean taxpayers are paying more than necessary to support projects and risk competitive distortions.

Under the volume assurance protection offered within the ICC Contract, Emitters receive some certainty on the volume of free allowances for which they will receive compensation in case their FAs were to be reduced through future UK ETS policy changes. Volume assurance is designed to act as a 'backstop'; if the volume of forfeited FAs is higher than the volume of protected FAs, the Contract provides compensation for the volume of forfeited FAs. Total FA compensation provided through the ICC Contract is either for the figure of ‘protected FAs’ or the volume of forfeited FAs, whichever is higher.

Future Decarbonisation Policies

Several respondents noted concerns over the uncertainty around the upcoming government consultation on alternate carbon leakage policies and the current UK ETS consultation. We recognise the role that wider decarbonisation policies such as the UK ETS, and the potential introductions of a UK CBAM and low emissions industrial markets may play in making CCUS investable for industrial sectors. We will review these interactions as we evolve any future business model towards a more market-based model (refer to the response to Question 2). In addition, QCiL CBAM provisions have been included in the ICC Contract.

FA Treatment

One respondent agreed that the proposed treatment of FAs complies with the principles of ICC business model design and would like this treatment extended to all future ICC Contract holders until CCUS is established. The current ICC business model iteration is for FOAK projects, and it is anticipated that the model will evolve as CCUS matures under future rounds of allocation, when forfeiture and compensation of FAs may no longer be required.

Some respondents suggested that the treatment of FAs within the business model does not operate effectively with the UK ETS Framework and wanted the business model to remove exposure to carbon pricing on all emissions. The model aims to keep an Emitter’s proportionate exposure to the carbon price the same as before installing CCUS (they are still exposed on their residual emissions, in line with captured and stored volumes, but these will be lower in absolute terms when CO_2 is captured and stored). The rationale for the proposed treatment of FAs is to provide Contract holders with price certainty on their forfeited FAs (as if the carbon price were to fall, Contract holders are not exposed to this in respect of their forfeited FAs), protect against overcompensation (if carbon prices are higher than the reference price), keep a level playing field between Contract and non-Contract holders in respect of costs they are exposed to on residual emissions, and to encourage higher capture volumes and continued decarbonisation where achievable.

FA Allocation

Some responses expressed a desire for the inclusion of a hardship clause to cover the scenario of an Emitter’s FA allocation being reduced to zero. HMG recognises the role that

wider decarbonisation policies such as the UK ETS may play in making CCUS investable for industrial sectors and will review these interactions as we evolve to a more market-based business model for future allocation. However, UK ETS policy is separate to the ICC business model, and whilst we will continue to review these interactions, decisions reflected in the ICC business model do not pre-empt future UK ETS policy.

If an Emitter's FAs are reduced to 0 during the first ten years of the generic ICC Contract, then they will still receive some certainty on revenues through the volume assurance mechanism. Volume assurance is designed to provide Contract holders with some certainty on the volume of free allowances for which they will receive compensation in case their FAs are/were to be reduced through future policy changes (see April 2022 update for detail).

Q9: Recognising that the ICC Contract has been drafted to offer consistency with the Allocation Round 4 CfD and the Dispatchable Power Agreement contracts where appropriate and applicable, are there any areas of the ICC contract where this consistency has not been achieved, inconsistencies are inappropriate, or where the ICC contract does not reflect the BM as described in this document and accompanying updates published alongside this publication?

Summary of responses received and HMG Response

Generally, responses indicated that the ICC business models are broadly consistent with the principles of the Allocation Round 4 CfD and the Dispatchable Power Agreement Contracts where appropriate and applicable. Stakeholders highlighted where there are nuances for ICC, and highlighted several suggested variations to reflect the variety of industries that the ICC business models covers These are discussed in turn below.

Supply Chain Reporting Requirements

Generally, views with respect to supply chain reporting requirements were supportive, with responses indicating support for further measures to secure supply chain development and local content. There was a suggestion that the level of Supply Chain Report Fees could possibly be scaled to match the scale of activity involved (or scaled depending on Contract size and asset size). HMG considered that the fees for non-compliance with respect to supply chain reporting requirements are considered to be nominal and proportionate to ensure compliance, and therefore any further reductions are not considered appropriate or necessary. In addition, any fees payable in respect of the first report will not need to be paid until the Start Date has occurred and payments under the ICC Contract have commenced (except in any circumstance whereby payments are due to the Emitter before the Start Date, such as QCiL Compensation payments, in this case the ICC Counterparty may set off the accrued fees

against such amount). There is also a 6-month period in which the first report can be submitted (between 12 and 18 months after ICC Contract signature) which is deemed to be sufficient time for Contract holders to compile and submit the report and limits the risk of an emitter receiving a non-compliance fee (for late or invalid submission). Overall, we do not consider this to be an onerous reporting requirement given that there are only three Supply Chain Report milestones over the course of the ICC Contract.

Risk Allocation

Some responses requested more equitable risk allocation for projects which are not accessing government capex funding. If a project does not choose to use the CIF grant to help fund the project, then the project is taking an increased risk, but they may get a greater reward as they make a return on investment on that increased risk. Government consider that the risk and reward is appropriately shared between government and contracted projects. Further details on this topic are also outlined in response to Question 6.

One respondent noted that predicting CO_2 volumes can be challenging and the business model should allow the carry forward of excess CO_2 volumes to help de-risk capital. Whilst we appreciate that this may be difficult and may have an impact on payments received, we have put in place mitigations to help Emitters manage this risk. These include the yearly capex payment cap multiplier, which is a cap which can vary each year, depending on expected changes in production over the first five years of the Capex Payment Period, and will be agreed during negotiations. We have also made an allowance whereby any underperformance against the metered CO_2 output estimate and associated forgone capex payments in the first five years, can be made whole in remaining years (this does not apply to Waste ICC Contracts). Therefore, Emitters who have not achieved their estimated amount of CO_2 captured and stored in the first five years of the Capex Payment Period, are entitled to receive capex payments up to the end of the Initial Term (not the Extended Term).

Variations

One response expressed a desire to support allowing for the structural and financial arrangements of unincorporated joint ventures through a separate CfD template agreement. Given the added complexity and impact on timings of preparing a separate template agreement, and issues with compliance and monitoring, government does not consider it necessary to support Unincorporated Joint Ventures through the business models.

One response indicated that the Contracts should be amended to reflect the risks inherent with the CCUS project being reliant upon an underlying commercial business. The business model has been designed to support emitters to deploy carbon capture, not the underlying, non-CCUS portion of an Emitter’s activities.

OCPs and Payments

Responses highlighted the need for early and clear specification of the framework for the discharge of OCPs to support development of efficient finance. Additionally, responses noted that when determining when payments should commence, there is a need to consider that there will be no operational track record and that a graduated approach should be taken.

As part of Contract development, BEIS has produced a detailed and clear testing schedule, annexed to the full Contract. This clearly sets out the requirements for meeting OCPs and for the Start Date to be triggered. BEIS have also utilised lessons learnt, through the experience of the counterparty and the review and application of relevant contractual mechanisms, from existing schemes (particularly the CfD) when developing the ICC Contract.

Alignment with the CCS Network Code development

Respondents noted the need for flexibility within the ICC Contract to allow certain annual adjustments that may result from the future development of the CCS Network Code. We agree that it is critical that the ICC Contract is aligned with any future development of the CCS Network Code, and government considers the ICC Contract to be flexible enough to appropriately accommodate future iterations of the CCS Network Code.

Q10: In the business model update and draft ICC Contract, we have set out our view as to how the government and Emitters should share the impact and costs of key risks (including in relation to qualifying changes in law and termination events) We have also set out our proposals relating to the payment of compensation following the occurrence of such risks, with the aim that such compensation i) is proportionate, ii) gives Emitters sufficient protection to ensure that the underlying industrial facility is not rendered uneconomic, the possibility of deploying CCUS is still achievable and that the ICC Contract is investable/bankable and iii) is limited to what is necessary to provide such protection. The proposed compensation considers the extent to which Emitters can themselves partially mitigate some of these risks, just as they would have to in a situation where government subsidy is not required because the market appropriately prices in the cost of CO_2 emissions and CCUS deployment is sufficiently de-risked. In any scenario, are there specific costs which you feel government has not considered and are not protected via either i) the proposed business model compensation or ii) compensation available beyond the business model (for example from your own revenue streams). Please provide detailed analysis to evidence your response if yes.

Summary of responses received and HMG responses

Some responses were raised with regards to the interaction of the business model with future decarbonisation policies, this is covered in our response to questions 2, 7 and 8a/b. There were responses around the risk allocation between projects not accessing the Capex grant funding, to which government responses can be found under questions 6 and 9.

Lost Product Revenue

Some respondents queried why no compensation was available for lost product revenue as a result of a T&S commissioning delay, outage, constraint or termination due to Prolonged T&S Unavailability.

We recognise that these T&S events are generally beyond the control of Emitters (unless they arise out of connection with any act or omission by the emitter, for example, over-injecting to the network or injecting CO_2 which does not meet the network specifications) and therefore we propose offering a degree of protection to Emitters affected by these issues[11]. However, this protection must be proportionate and represent VfM for the taxpayer. Furthermore, the aim of the ICC Contract is to support the deployment of CCUS by industrial Emitters, with payments based on tonnes of CO_2 captured and stored, rather than tonnes of low-carbon industrial product produced. Therefore, as the ICC contractual payments are not designed to provide protection for product revenue, we do not consider it appropriate to provide compensation for lost product revenue.

Data Requirements

One respondent queried the need for daily granularity of data. Due to the ICC settlement period being one day (due to a variety of reasons, such as the requirement for frequent access to data, and monitoring of outages), we require that the data submitted to the ICC Contract Counterparty (and any other relevant party requiring data from the Emitter to fulfil their ICC Contract obligations) has a granularity of one day[12]. We have worked closely with stakeholders during our development of the measurement methodologies to calculate the required data for the ICC Contract and are confident that daily granularity is achievable across all industrial sectors.

Financing Costs

A number of respondents raised concerns with the exclusion of financing costs from compensation. We anticipate that due to the FOAK nature of these projects, and our target of a 5-year capex repayment term, corporate financing may be most likely to be used and therefore the financing costs arising in this situation can be absorbed by the Emitter within their wider cashflows (noting that we are offering up to the balance of the Total Capex Payment as compensation).

Decommissioning Costs

One stakeholder requested clarity around the cover for decommissioning costs. In the December 2020 update we confirmed that decommissioning risk was the sole responsibility of the emitter, and that the costs of decommissioning would be borne by the emitter. We have developed the proposed compensation with this in mind (set out in the April 2022 business model update), and the fact that if the risk of early closure of the plant had not arisen, the emitter would receive, at maximum, the total capex payment, return on capex, opex, FA

[11] See Section 12 of the December 2022 ICC business models summary for details of compensation provided in event of a T&S commissioning delay, outage, constraint or termination due to Prolonged T&S Unavailability.
[12] The requirement for data to have a granularity of one day is considered to be a minimum requirement.

compensation and T&S charges throughout the Contract term, and there would be no additional support for an emitter who decides to decommission the plant following the Contract end. Therefore, we do not provide additional compensation for decommissioning costs in addition to the costs outlined above, and where decommissioning costs are an eligible cost to be included in compensation (e.g. T&SCo Prolonged Unavailability Event) the total compensation is capped at the Total Capex Payment.

The exception to this is the QCiL construction event payment, which is a scenario where the emitter is permanently prevented from completing construction of the capture plant. If this event were to arise, it would be wholly as a result of a change in law which is a risk that we consider most appropriately sits with government, and therefore we consider it is appropriate to provide the emitter with compensation specifically for decommissioning costs.

Development costs (i.e. pre-FEED and FEED costs) are not eligible within the capex payments for the ICC Contract or the capital grant for the GFA (any costs incurred prior to the Agreement Date will not be included in these payments). In the event of a QCiL Construction Event or T&S Termination Event arises, we provide compensation for all irrecoverable and unavoidable out-of-pocket costs which could include post-Agreement Date development costs.

QCiL Costs

One respondent queried whether the following costs could be eligible for compensation if a QCiL event were to arise:

- **Irrecoverable VAT** - the ICC calculation covers a "QCiL Tax Liability" which includes "a liability of the Emitter to make an actual payment of a QCiL Tax to a tax authority". Therefore, if irrecoverable VAT arises as a direct result of a QCiL, it is likely to be compensated under the ICC Contract.
- **'General' changes in law** - it is not appropriate for Emitters to be protected from 'general' changes in law that apply across the economy or across industry as a whole. This would go beyond protections offered elsewhere, would risk the scheme being perceived as being difficult to manage within the required budget, could introduce competitive distortions between Contract holders and non-Contract holders, and may (in certain circumstances) discourage necessary changes in law that benefit consumers and/or taxpayers. We also note that the approach to indexation (outlined above) means that ICC payments are linked to a measure of inflation and so will rise over time in line with general macroeconomic changes, including those driven by general changes in law. We are, therefore, mindful of the risk that the Contract could be perceived as providing two forms of protection against general changes in law, ultimately at increased cost to taxpayers, if protections for 'general' changes in law were included.
- **Compensation for capex which has been incurred but is no longer required** - If a QCiL permanently shuts down the Capture Plant (either during construction or once the Capture Plant is operational), an Emitter will be compensated for the capex it has incurred relating to the Capture Plant but has not been able to repay through the receipt of Capex Payments (excluding any return on such capex). Alternatively, where a QCiL requires an Emitter to incur additional capex during the term of the ICC Contract, an

Emitter will be compensated for such capex as "QCiL Capital Costs", noting that in each case the calculation and payment of capex compensation will be subject to the requirements set out in the ICC Contract.

- **Amendment or relief from compliance with obligations under the Agreement** - In the case of a Force Majeure (FM) (which includes any CiL) delay impacting an emitter's commissioning process, the emitter's Milestone Delivery Date, Target Commissioning Window (TCW) and/or Longstop Period will be extended day-for-day (provided the emitter satisfies FM requirements/conditions).

Default Termination Fee

Three stakeholders expressed that the Default Termination Fee was harsh. With regards to the Default Termination Fee, the rationale for the termination payments was a point that was very carefully considered by government. It is reflective of the renewable CfD position and equally reflective of the position taken under the DPA which has a similar calculation based on a nominal figure in the case of the DPA looking at the electrical capacity of the facility. We consider the proposed default termination fee rate, a nominal figure of £5/tCO_2, to be a fair amount. The £5/tCO_2 figure has been proposed to strike a balance such that it would not risk severe economic impact to company that may have defaulted in distressed circumstances but would offer an opportunity for the Counterparty to claw back a portion of support that was predicated on persistent decarbonisation. In addition, the Default Termination Payment decreases as time progresses at a reduction rate of 0.66 for year 9 & 0.33 for years 10-15 (this aligns with the QCiL arrangements).

CiL

One response perceived the definition of CiL and FM to be too narrow, and that FM should be longer than 18 months.

We carefully considered the length of FM event that allows termination due to a prolonged FM to occur, and we consider that 18 months offers a balance between supporting projects through FM events which do not significantly delay development, construction, completion, testing and/or commissioning of the Capture Plant, and allowing the right for the Contract to be terminated when there have been very significant delays, out with the control of the Emitter.

Target Commissioning Window

One response stated that the requirement for the TCW to end on or before 31 December 2027 means that Emitters who aim for commissioning in late 2027 don't get the full benefit of the length of the TCW. Government set out the requirements for eligible ICC Projects in section 4 of the Cluster Sequencing Guidance. Namely, projects must be able to be operational no later than December 2027. We defined that Commercial Operation Date (COD) as the date that the plant is confirmed to have met the Operational Conditions Precedent (OCP) and the Project begins operating and exporting captured CO_2. However, we recognise that the TCW must be aligned with the T&S Cluster plans and will reference this to support alignment of the two. Therefore, we now required the TCW to commence prior to 31 December 2027. The Initial TCW shall be a 12-month period which will be set out in the Front-End Agreement and

determined in the due diligence and negotiation phase prior to the Agreement Date and with reference to the wider Cluster delivery plan.

CaaS

There was some concern from respondents about how CaaS risks are shared amongst Emitters and CaaS Co. Our position in respect of CaaS (as published in April 2022) remains the same. We have not made any further developments since the April 2022 publication. We will engage with industry to assist our development of the CaaS position in advance of any Track 2 process. The CaaS Co provisions previously detailed in the ICC Front End Agreement have been removed from the version published in the December 2022 publication as BEIS has not received any CaaS Co proposals from Track 1 Emitters.

Q11: ICC projects will be part of a wider CCUS network. A T&S Prolonged Unavailability Event would have a significant impact on any project connected to the network, including those projects holding ICC contracts. We need to consider how to best manage the interface risk. We have set out an initial minded position on the termination right where there is a T&S prolonged unavailability event, which seeks to balance the risk held by investors in the ICC project and investors in T&S and the wider network. Do you consider that there is a fair allocation of risk between the different interests in relations to termination for T&S prolonged unavailability events? If not, please provide your rationale.

Summary of responses received and HMG Response

Financing Costs

A number of respondents raised concerns with the exclusion of financing costs from compensation. The response to Question 10 covers the government's position on this.

Alternative T&S Plan

One respondent queried whether an emitter could receive compensation for any additional opex or capex required to implement an Alternative T&S Network Solution Plan. An Alternative T&S Network Solution Plan will be assessed by the ICC Contract Counterparty (in its sole and absolute discretion) by considering the circumstances at the time, including overall decarbonisation strategy and the feasibility and cost (capex and opex) of the suggested alternative route to store. The Emitter and the ICC Contract Counterparty may agree a bespoke variation to the ICC Contract to reflect the new arrangement which may include amendments to reflect the additional costs associated with such plan. If an Alternative T&S Network Solution Plan cannot be developed, or a plan cannot be agreed, then the ICC Contract Counterparty may terminate the ICC Contract for failure to remedy the T&S

Prolonged Unavailability Event and the Emitter will be entitled to compensation as set out in the ICC Contract.

Some respondents raised concerns that the emitter would not be best placed to develop an Alternative T&S Network Solution Plan (in the event of a Prolonged T&S Unavailability Event). We recognise the complexity required to prepare an Alternative T&S Network Solution Plan and anticipate that there would be significant input and information sharing from relevant parties, as the obligations throughout the process require the sharing of information which the emitter will receive from the T&S operator as well as the emitter's intended next steps (whether this is to wait for the T&S to be brought back online, produce an Alternative T&S Network Solution Plan, or that the Emitter has explored the available options and determined that it is not possible to produce such a plan).

It is important that an emitter keeps the ICC Counterparty updated on its plans to enable the ICC Counterparty to manage the ICC Contract, however, the obligations are not designed to penalise the emitter in circumstances where the T&S operator has not provided the necessary information. The Alternative T&S Network Solution Plan is designed as a mechanism to allow, in the low-probability high-impact event that their existing T&S Network is unavailable for a prolonged period of time, Emitters to seek out and engage with any existing CO_2 storage options available if this scenario were to arise.

The process includes the option for the emitter to notify the ICC Counterparty that they are unable to provide an Alternative T&S Network Solution plan due to a specified 'No Alternative T&S Solution Reason', which is intended to include scenarios where there is not an available commercial store which is technically capable or willing to accept captured CO_2 from the emitter. We consider that an Emitter is best placed to explore any storage options that are available to them at the time, as they will have the best understanding of the technical and commercial constraints their individual project faces but anticipate government will likely be engaging with Emitters throughout this process.

Exposure to T&S Charges

A number of respondents raised more general concerns that Emitters could be exposed to T&S charges. In the ICC business model, the T&S charges are expected to be passed through. This means that the business model subsidy payments would include a T&S charge portion, which the Emitter would receive as part of the regular subsidy payments, and pass on the T&S charge portion to the T&SCo. Our intention, across the ICC business models, is that Emitter subsidy payments will be received ahead of the T&S charge invoice becoming due and therefore Emitters will not be exposed to T&S charges (subject to the caps proposed in the April 2022 update, which reflect the capture quantities agreed in the ICC Contract). We are still considering, in parallel with the development of the CCS Network Code, the extent to which T&S Charges will be passed through under the ICC Contract where the Emitter is unable to deliver carbon dioxide (whether fully or partially) to the T&S Network as a result of something that the Emitter has done or failed to do (and such charges remain payable).

Q12: Where the BM calculates payments using a market carbon price – i.e. in the extension period of generic ICC Contracts and potentially in the Waste ICC Contracts – our preference is to a monthly-averaged carbon price, calculated for each calendar month. We have also considered using a daily market carbon price. Please provide your consideration on these two options.

Summary of responses received and HMG Response

Respondents highlighted approval for the use of a monthly-average carbon price calculated in respect of each calendar month. Several responses highlighted the importance of a monthly price to smooth out some volatility of the daily price and provide some certainty. It was also noted that monthly averaging periods also align well with current payment cycles.

Respondents agreed that a daily carbon price would be too volatile, burdensome and would make budgeting too challenging, and therefore a reference price that changes on a daily basis was not considered to be practicable.

There were some respondents who requested longer averaging times including quarterly or annually. Longer averaging periods were requested to align with UK ETS reporting (annually), or to further mitigate against volatility (including volatility that may arise from a failure in the T&S network resulting in higher demand for allowances). Longer averaging periods are less representative and a stakeholder suggested that a reconciliation could be required to overcome this.

Government is in agreement that a monthly-averaging period would be beneficial for both government and Contracted Projects by smoothing out price volatility. A monthly average will also align with the Contract payment schedule. A longer averaging time would provide additional benefits in relation to protecting against price volatility but is less representative of the carbon price within any given month. The use of reconciliation would also add complexity to the Contract. Therefore, government have concluded that a monthly average carbon price is the best fit for the ICC Contract and Waste ICC Contract.

Q13: We consider that the support proposed to be provided to waste management CCUS projects through the waste ICC Contract is unlikely to create perverse incentives that undermine the waste hierarchy (for example, by creating perverse incentives to send waste that could have otherwise been used further up the waste hierarchy towards waste recovery processes such as EfW, ATT or ACT processes). Do you agree? If not, how do you consider that support provided through the waste ICC Contract can mitigate this risk? Please set out any evidence behind your response.

Summary of Waste stakeholders responses received and HMG Response

Thirteen stakeholders provided responses specifically to this question. Nine stakeholders generally agreed that the proposed approach for the Waste ICC Contract should not create any perverse incentives on the waste markets and the waste hierarchy.

One stakeholder raised concerns that the Waste ICC Contract may impact processing facilities if the Contract payment is higher than costs of separating plastics. It was noted that balancing the incentives to change compositions of waste also depends on interactions with other schemes like the Renewable Transport Fuel Obligation (RTFO). One stakeholder noted that the introduction of negative emissions as permittable for sale in the Waste ICC Contract may lead to some distortion of the waste hierarchy as biogenic-rich wastes may be diverted from being used as a recyclate where it could have more value.

One stakeholder raised concerns about supporting new incineration plants that could incentivise waste being disposed and locking in the technology into the future.

The Waste ICC Contract has been designed to have a minimal impact on gate fees to avoid distorting incentives influencing where waste is processed. Many plants, particularly those built under PFI/PPP contracts, are limited by their size in the volumes of waste they can process. We consider that these factors should minimise potential impacts on the waste hierarchy. Government's use of the applicable carbon price reference price applied within the Waste ICC Contract aligns with the carbon price incentives outside the Contract. Therefore, government considers that the Waste ICC Contract, which is intended to cover only the costs of the CCS equipment and the operational costs of CCS, is unlikely to change the relative incentives for Contracted projects to process waste compared to non-contracted projects.

Government recognises that an area where the incentives in the waste ICC Contract differ from non-contracted projects is the ability to generate additional revenues from negative emission credits, which are not fully deducted from the subsidy payment calculation. This would apply when and if the Counterparty allows the sale of such credits in accordance with the process set out in the Waste ICC Contract. We note that such process would give the

Counterparty the right to include additional conditions of participation to the extent any specific concerns were identified at the time. We consider the partial deduction of emission credits from the subsidy payment calculation to be appropriate, as it will reduce the overall cost to the taxpayer and the revenues that are not deducted are intended to cover the costs of participation and an incentive to participate in those carbon markets.

Additionally, we consider that it is unlikely to impact the waste hierarchy as there are legislative, contractual and operational restrictions which should limit a contracted project's ability to manipulate feedstocks to increase biogenic content to achieve a greater reward. In October 2020 as part of the Circular Economy Package, government legislated, through the Environmental (England and Wales) Permitting Regulations 2016, to include a permit condition for landfill and incineration operators, meaning they cannot accept separately collected paper, metal, glass or plastic for landfill or incineration unless it has gone through some form of treatment process first and is the best environmental outcome.

As part of Phase-2 of the Cluster Sequencing process, applicants needed to demonstrate that they have the capability and capacity to deliver the project by the end of 2027. Applicants that did not sufficiently demonstrate commercial or technical viability to deliver their project to this timeline were not be able to achieve the minimum score of 2. This was a requirement for projects to proceed to further evaluation, shortlisting or negotiations. Evidence considered in this assessment included that projects, including new waste facilities, were already significantly far through any applicable planning processes and had properly accounted for securing any permits in their schedule. As a result, in this round of allocation the waste ICC Contract will be awarded to projects that are either already operational or sufficiently progressed to meet these timelines, and not incentivise new projects to come forward. For future Contract allocation rounds, we will continue to keep eligibility requirements in the business model under review, including considering any potential impacts on the waste hierarchy, such as recycling.

Q14: What methodologies do you consider would be most appropriate to monitor the waste compositions and volumes being processed at waste management facilities receiving a waste ICC Contract? The purpose of such monitoring would be to ensure that data is collected on waste composition and volumes to help monitor if there is any unintended impact on these as a result of any support provided by waste ICC Contracts. How frequently do you think any monitoring and reporting of waste compositions should occur? Please explain the rationale behind any methodologies you consider to be appropriate and the frequency of monitoring and reporting you consider to be most appropriate.

Summary of Waste stakeholders responses received and HMG Response

Question 14 asked respondents which methodologies are appropriate for monitoring waste composition and volumes, and the frequency at which this should be conducted; 11 responses were received.

Monitoring Methodology

Six respondents noted that the methodology for monitoring fossil and biogenic CO_2 should align with the methodology permitted under the UK ETS, if this is extended to the waste sector. Of those respondents that included a frequency for monitoring, a preference was noted for monthly monitoring. One respondent noted that monitoring waste compositions was an ineffective way of determining the fossil and biogenic split in waste. Whilst other respondents noted that feedstock waste sampling carried out in isolation is not an accurate method for determining the biogenic and fossil split in waste and if used should be carried out in conjunction with other monitoring methodologies (e.g. carbon-14). Some respondents noted that clarity is required on the definition of waste compositions.

Determining the relative fossil and biogenic CO_2 captured is required under the Waste ICC Contract to determine the application of the carbon reference price. Government has considered the different monitoring approaches and determined that carbon-14 analysis on a monthly composite sample, collected using a biogenic CO_2 continuous emission monitoring system, will provide a robust and accurate monthly biogenic and fossil percentage CO_2 split. This monthly split will be applied to the applicable monthly carbon reference price.

Further details on the requirements for determining the fossil and biogenic CO_2 percentage split can be found in the December 2022 Industrial Carbon Capture business model update document, as well as in the accompanying Waste ICC Contract Biogenic CEMS rider.

The government is currently considering whether to include emissions from the waste sector in the UK ETS. This would apply a carbon price to those emissions, and make relevant facilities subject to MRV requirements. We recognise that a decision on this will be made following the Waste ICC Contract and within BEIS, the UK Emissions Trading Scheme (ETS) team and ICC business model team are working closely together and understand the need to limit additional MRV burden if carbon pricing is introduced, for those projects that will hold a Waste ICC Contract.

'Other section' – Government response to waste responses on consultation

Response to R1 concerns raised in Question 13

We recognise the responses received sharing concerns with how the R1[13] status of a waste plant would be impacted by installing a carbon capture plant. Government intends to support facilities that maximise the energy value of waste, aligning with the Resource and Waste Strategy for England. Therefore, an R1 efficiency rating was required as a condition of eligibility for certain waste management technologies. To ensure we continue to support only more efficient waste management plants, the Waste ICC Contract includes R1 efficiency requirements, using the definitions of R1 set out in the relevant legislation at the outset of the Contract. It is important to note that the current definition of the R1 efficiency rating set out in the relevant legislation will remain applicable for the entire length of the Contract and any changes to the definition set out in the relevant legislation will not be apply.

We have worked closely with the Environment Agency for England to understand the impact of the installation of CCUS on the achievement of R1 status. The installation of CCUS is not expected to have any significant direct impact on the achievement of R1 status under current rules, for the following reasons:

- CCUS may reduce the amount of heat exported, assuming that steam is already exported at the installation. However, there should be no difference to the R1 calculation as that heat will instead be used for the CCUS and will be treated in the same way as if it had been exported (as heat used for CCUS would also be classed as "commercial heat" in the R1 calculation).
- CCUS will reduce the electricity that can be exported due to increased parasitic load from the carbon capture plant. However, the electricity output in the R1 calculation is counted as the electricity generated at the generator terminals, rather than electricity exported, so this should make no difference to the R1 value.
- CCUS may increase the R1 value as, while the electricity generated at the terminals will reduce when the steam is extracted for the carbon capture plant, this will likely be

[13] R1 requirement refers to the efficiency of the plant before the CCUS facility has been installed only and does not take into consideration any requirement from the capture plant.

compensated for by a large increase in steam being supplied for “commercial use”, resulting in an overall increase in the R1 value.

Stakeholders seeking further information on this should contact the Environment Agency in England, or relevant competent authority in Scotland, Wales and Northern Ireland.

This consultation is available from: www.gov.uk/government/consultations/carbon-capture-usage-and-storage-ccus-industrial-carbon-capture-business-model

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