Department for
Energy Security
& Net Zero

Carbon Capture, Usage and Storage

Industrial Carbon Capture business models
Update for Track-1 Expansion and Track-2

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Introduction

Carbon capture, usage and storage (CCUS) has a key role in the UK's Net Zero Strategy[1] and helping meet our legally binding commitment to achieving net zero by 2050.

In April 2022, the British Energy Security Strategy[2] re-stated the government's ambition to deliver CCUS in four industrial clusters and capture and store 20-30 megatonnes of carbon dioxide ($MtCO_2$) per annum by 2030, where industrial emissions make up 6 $MtCO_2$ per annum by 2030 and increase to 9 $MtCO_2$ per annum by 2035, with the potential for more: our modelling assumptions indicate that a 'least societal cost' pathway will require capturing and storing around 10 $MtCO_2$ per year by 2035. In September 2023, the government updated the CCUS market on proposed plans for Track-1 expansion for both East Coast Cluster (ECC) and HyNet. The December 2023 CCUS publication package provided an update on how we are delivering against these ambitions, including the launch of the CCUS Track-1 expansion HyNet Process for new CCUS projects wishing to connect to the HyNet cluster by 2030. Following the agreement of the transport and storage (T&S) heads of terms[3] with the ECC T&S company in December 2023, the government will now consider the best timing for launching an expansion process, beginning with an assessment of store readiness.

In October 2023, the Energy Bill was granted Royal Assent and is now the Energy Act 2023. This landmark Act will deliver a cleaner, more affordable and more secure energy system for the long term and is the most significant piece of primary legislation relating to energy since 2013. The Energy Act 2023 provides the primary powers necessary to deliver the ICC business models and secondary legislation is planned to be laid in 2024, following a consultation and publication of the government response last year[4].

The government has also committed to further development of CCUS through the Track-2 process[5] which will establish two new clusters, with the Acorn and Viking T&S systems selected subject to final decisions, due diligence, consenting, subsidy control, affordability and value for money assessments[6]. The government has started initial engagement with the Acorn and Viking T&S systems, and will ask Acorn and Viking to submit plans for assessment of an 'anchor phase' of initial capture projects provisionally targeting deployment from 2028-2029, subject to technical feasibility, affordability, and value for money assessments.

The development of business models for industrial carbon capture (ICC) to unlock private investment and scale up the deployment of CCUS at industrial and waste management facilities in the UK, plays a key role in delivering the government's ambitions. In October 2023,

[1] https://www.gov.uk/government/publications/net-zero-strategy
[2] https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy
[3] https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-business-models
[4] https://www.gov.uk/government/consultations/proposals-for-hydrogen-production-and-industrial-carbon-capture-regulations
[5] https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-track-2/ccus-cluster-sequencing-track-2-market-update-december-2023
[6] https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-track-2

a summary of the ICC and Waste ICC business models for Track-1 was published[7]. This document outlines the potential areas of evolution for key design aspects of the ICC and Waste ICC business models for initial projects successful in Track-1 expansion and/or Track-2 processes. Some of these positions, specified below, may also apply to the support available for Track-1 projects.

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

Disclaimer

This document sets out further details on the government's current proposals on the potential business models for industrial facilities (including waste management facilities) with carbon capture usage and storage (CCUS). The proposals, as set out in the document, in whatever form they are expressed, 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 updates published within this document, are not final and are subject to further development by the government, and approval by Ministers, in consultation with relevant regulators and the devolved administrations, as well as the development and Parliamentary approval of any necessary legislation, and completion of necessary contractual documentation. We reserve the right to review and amend all provisions within the document for any reason and in particular to ensure that proposals provide value for money, are consistent with subsidy control principles and government is comfortable with balance sheet implications.

The Department for Energy Security and Net Zero ("the department") will continue to engage with stakeholders as it works to refine its proposals, including engagement with the devolved administrations, to ensure that the proposed policies take account of devolved responsibilities and policies across the UK.

Purpose of this document

The potential changes outlined in this publication mark the first stage in the evolution of the industrial carbon capture (ICC) business models towards enduring business models and represent some of the changes that we envision at this stage will be made for the base form of contract available to Track-1 expansion and Track-2 projects, including interactions with any project benefitting from the sustainable aviation fuels (SAF) mandate. We may seek to continue to evolve the ICC business models in the future for further allocation rounds.

Work to develop these business models from the Track-1 model design is ongoing, therefore the proposals in this publication do not constitute the only changes we may make to the business models. Further updates in 2024 will explain the design of the support which may be available in more detail and engagement with industry is, and has been, essential to this process, and will continue throughout the development of the models.

We are introducing changes to the ICC models that have been signalled in previous publications as the technology and investment confidence relating to these models matures, such as a market-driven carbon price (for ICC Contracts). We expect to proceed with the same 10 year, with an up to 5 year extension, Contract for Difference (CfD) style framework of the business models for Track-1 expansion and Track-2, which covers operational expenses, carbon dioxide transportation and storage (T&S) charges, and repayment of capital expenditure plus a rate of return on capital investment. We also expect to retain shortened periods for repayment of capital expenditure for the ICC business model. This will continue to be underpinned by an ICC or Waste ICC Contract structure and the agreement will be signed between the project and the ICC/Waste ICC Contract Counterparty (which is planned to be the Low Carbon Contracts Company, subject to completion of legal and administration arrangements).

The longer-term strategy for the ICC business models and allocation framework is outlined in the CCUS Vision[8], published in December 2023, and will not be covered in this document. The CCUS Vision sets out plans for a new competitive market in CCUS by 2035 – to unlock investment and drive economic growth, adding £5 billion to the UK economy by 2050. This includes moving to a competitive allocation process for carbon capture projects from 2027 to speed up the building of the UK's CCUS sector.

We welcome stakeholder views on the proposals outlined in this document. Please send any enquiries or feedback to: ICCbusinessmodels@energysecurity.gov.uk.

[8] https://assets.publishing.service.gov.uk/media/6594718a579941000d35a7bf/carbon-capture-usage-and-storage-vision-to-establish-a-competitive-market.pdf

Business Model summary

What are the ICC business models?

The ICC and Waste ICC business models ("the ICC business models") have been designed to incentivise the deployment of carbon capture technology by industrial users who often have no viable alternative to achieve deep decarbonisation. They comprise revenue support funded by the Industrial Decarbonisation and Hydrogen Revenue Support (IDHRS) scheme and, potentially, capital co-funding. There are also two variants of the revenue support contracts; the 'generic' "ICC Contract" for successful CCS projects from all eligible industrial sectors apart from successful waste management CCS projects. Successful waste management CCS projects would be offered the "Waste ICC Contract".

The CCUS Vision sets out four guiding principles for the CCUS sector. These can be considered in the context of the ICC business models.

Guiding principles of the ICC business models

Decarbonising for future generations: aligning to a carbon budget compliant CO_2 abatement pathway.

- The business models should incentivise efficient abatement of CO_2 emissions to atmosphere using CCUS technologies and should not incentivise production of CO_2 or result in perverse outcomes.

Global Leader: exporting the UK supply chain to help other countries build CCUS, as a well as using UK CO_2 stores to sequester other countries' emissions.

- Policies should create value to the UK economy and support existing and new-build industrial facilities which have a viable future in the UK to invest in CCUS to decarbonise rather than continue to emit.

Creating growth and supporting levelling up: creating low carbon inward investment opportunities through support for a UK CCUS sector

- Policies should instil confidence among investors and attract new entrants to the market in a sustainable manner and have the potential to be self-sustaining, with government intervention reducing over time.
- Policies should be cost-efficient, providing value for money for taxpayers and consumers, and provide a risk-adjusted fair return to investors whilst recognising the first of a kind (FOAK) nature of the sector that, with industry, we need to develop.

Building a self-sustaining CCUS sector: increasing private sector confidence in a growing CCUS market that leads to a reduction in government support.

- Where possible, the design of the model should evolve in a way that reduces complexity and moves towards stable enduring business models.
- Policies should be market based and minimise distortions in existing and new markets. They should be compatible with existing market frameworks but retain the flexibility to respond to market conditions as markets and policies mature.

Emitters successful in the relevant process would be offered an ICC or Waste ICC Contract that will set out conditions for revenue support payments and, where relevant, a Grant Funding Agreement (GFA) which will set out terms and conditions for any capital grant support payments. The ICC or Waste Contract would be entered into by the Emitter and the Contract Counterparty, which is planned to be the Low Carbon Contracts Company (LCCC, subject to completion of legal and administrative arrangements).

Capital Grant

Capital grants can be useful tools to reduce capital requirements for projects. The department is considering how they could be deployed and whether alternative approaches could be taken where this would improve value for money.

Any business model support via grant allocation (if applicable) and/or ICC or Waste ICC Contract offered will not duplicate other government capital grants awarded/ to be awarded to industrial sites for the same carbon capture activity, such as that which is available through the IETF[9] and any other schemes.

Pre-FID expenditure

Projects will continue to need to be sufficiently developed ahead of applying to demonstrate their deliverability in applications and negotiations for business model support. However, we are minded to allow some recovery of development costs under the business model, subject to negotiations, assurance and eligibility of those costs and where this represents value for money.

In return, we expect that any rate of return agreed during negotiations will take account of this derisking of project spend and ensure value for money for taxpayers. We expect to specify a milestone from which eligible development costs could be recoverable from, for example entering into bilateral negotiations with the department or a later milestone in the negotiations process. We may also want to further refine the categories of development costs that are eligible for support, for example, excluding certain costs categories. This position is expected to be applied to the Track-1, Track-1 expansion and Track-2 business models.

As set out in previous publications[10], the department is minded to allow pre-FID capex (i.e. capital expenditure incurred prior to final investment decision (FID)) relating to long-lead items to be eligible capital expenditure and recovered under the business model. Such pre-FID capex will be considered and assured by exception on a case-by-case basis (requiring full supporting evidence) and will be subject to compliance with the subsidy control principles. The department would need to be satisfied that this pre-FID project capex is allowable, economic, efficient and effective through the cost assessment process and such expenditure would solely be at the Emitter's risk prior to the completion of FID.

Interactions with other government schemes

The department is aware that other schemes may be, or may have been, in place to support projects with similar activities. Where projects have received, or receive in the future, any support from such schemes (or indeed receive support from other public sources in respect of

[9] https://www.gov.uk/government/collections/industrial-energy-transformation-fund
[10] https://assets.publishing.service.gov.uk/media/652f9008d86b1b000d3a5166/ccus-iccc-front-end-agreement-october-2023.pdf

any of the activities also supported under the business model) appropriate deductions from the business model support available will be required to ensure compliance with applicable subsidy control rules and, often, the rules of those other schemes. For example, considerations around interactions with projects in receipt of revenue as a result of Low Carbon Fuel (LCF) support schemes are detailed in a later section.

In particular, we recognise that some Emitters may be looking to apply for the Industrial Energy Transformation Fund (IETF) and projects will need to apply for funding in accordance with scheme guidelines. The IETF is designed to help businesses with high energy use to cut their energy bills and carbon emissions through investing in energy efficiency and low-carbon technologies, that have a Technology Readiness Level (TRL) of 7-9 at the commencement of the proposed IETF funded project. If a project is successful in securing support through the CCUS cluster sequencing process, then that project cannot also claim for IETF support for overlapping elements of the CCUS study or deployment project. Applicants should ensure that the scope of the IETF project or study that they intend to pursue is viable as an independent investment and is not reliant on securing further subsidy from the business model. Projects are not able to claim business model (or grant support, if applicable) for any eligible costs supported by an IETF grant and could risk not being eligible for support for business model funding for the same scope of work. For example, this would include application for any devex or pre-FID capex support through the IETF that would also depend on funding for additional devex and pre-FID capex activities sought under the business model. Projects that are looking to apply to the IETF (or already in the process of receiving IETF support) should refer to the IETF guidance[9] for subsidy control rules when considering possible impacts on their ability to claim for certain business model support.

Track-1 expansion and Track-2 allocation process

The proposed business model changes outlined in this document are intended to apply to the support available for initial projects successful in Track-1 expansion and/or Track-2 processes. One of these positions, specified above, may also apply to the support available for Track-1 projects.

The recently published Track-1 expansion HyNet Application Guidance[11] provides further detail on the eligibility criteria and assessment criteria for selecting projects that will proceed to negotiations to access HyNet transport and storage. Eligibility criteria for further allocation rounds may be updated in the future.

As set out in the December 2023 update[12], government has started engagement with the T&S systems selected for Track-2 (Acorn and Viking) and further guidance on the process, the

[11] https://www.gov.uk/government/publications/carbon-capture-usage-and-storage-ccus-deployment-track-1-expansion-hynet-cluster
[12] https://www.gov.uk/government/publications/cluster-sequencing-for-carbon-capture-usage-and-storage-ccus-track-2/ccus-cluster-sequencing-track-2-market-update-december-2023

criteria appliable to any projects in the initial anchor phase, and the respective role of government and the T&S system will be provided in due course.

ICC business model evolution

This section sets out the proposed updates to the 'generic' ICC business model, which applies to all industrial sectors except the waste management sector.

Reference price

For the initial Track-1 business model, a fixed trajectory reference price was published in advance of contract negotiations as a stable analogue to the carbon market price to provide predictability to investors in respect of support payments and reduce subsidy over time. It has always been our intention to evolve this position to a reference price that is linked to an Emitter's carbon price exposure.

For Track-1 expansion and Track-2 projects, our minded-to position is to transition from a fixed trajectory reference price to an applicable carbon market reference price. A fixed trajectory reference price was applied for the Track-1 business model as it provided predictability to investors and revenue certainty for FOAK projects, creating an investable business model and providing cost certainty for HMG. Whilst a fixed trajectory reference price was appropriate for Track-1 projects, continuation of a fixed trajectory reference price for the next allocation round(s) increases the risk of over or under compensation (depending on UK Emissions Trading Scheme (UK ETS) market dynamics) as it is an artificial analogue to the market carbon price. Therefore, a fixed trajectory reference price is not the optimum choice of reference price as we transition towards our enduring business model position, which is a more market-based business model (as signalled in the CCUS Vision). Since the design of the Track-1 business model, the UK ETS is now more established, so we consider this is the right time to make this change and for the model to be more representative of the carbon costs faced by Emitters. Furthermore, we have considered the position of the ICC business model alongside other carbon CfD schemes being implemented internationally and consider that a move to a carbon market reference price more closely aligns with the principles of other carbon CfD schemes.

In general, CfDs operate on the basis of 'two-way' payments, meaning that:

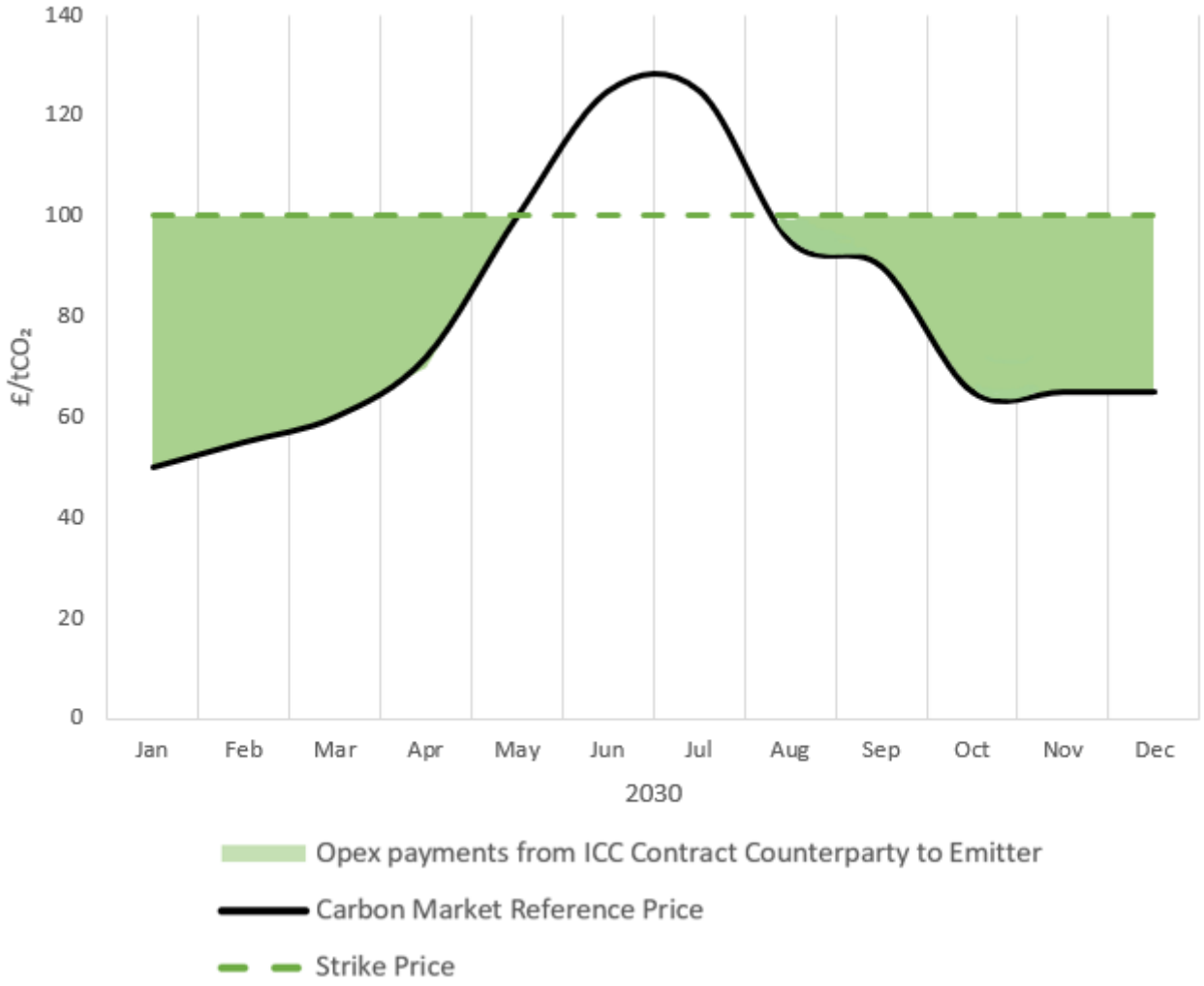
- if the strike price is above the reference price, the Emitter is paid the difference by the contract counterparty; and
- if the reference price is above the strike price, the Emitter pays the difference to the contract counterparty.

In the ICC business model, the payments are made of several different components: the capex payment, the opex payment, the T&S payment, and, if applicable, a greenhouse gas removals credit. The opex payment due will be calculated by subtracting the reference price from the strike price, and then combining this payment with the other payments to calculate the amount that is due to or from the Emitter in each billing period.

For Track-1 expansion and Track-2 projects, we are considering whether payments will be asymmetrical, meaning if the carbon market reference price is above the strike price in a given billing period (a calendar month), then no opex payment will be owed by the Emitter to the ICC Contract Counterparty.

We recognise the level of risk that two-way payments introduce for industrial Emitters, depending on the extent to which the Emitter is able to pass-through the additional costs to consumers and contractual obligations of the ICC Contract monthly payment structure (which Emitters would not face if they invested in carbon capture outside the Contract). Full continued exposure to the carbon price within the ICC Contract may also reduce the incentive for industrial emitters to invest in carbon capture. These risks are particularly acute for industrial sectors that compete in international markets and/or face relatively high uncertainty over the future demand for their products. For this reason, we do not think it is a risk that can be borne fully by projects and are therefore considering a different approach to that taken under the Waste ICC Contract, reflecting the differences between sectors. As a result, it is our minded-to position to retain the Track-1 structure of asymmetric opex payments for the ICC Contract during the initial 10-year term.

Figure 1: Illustrative example of how payment asymmetry would operate with a carbon market reference price



In the example shown in Figure 1, a monthly reference price applies, and in June and July the monthly average carbon market reference price is above the Strike Price. As payments are asymmetric, no opex payment is owed from the Emitter to the ICC Contract Counterparty[13].

We will continue to develop the ICC Contract reference price design and associated features, and review this minded-to position as we develop the policy further, including taking into consideration HMG cost certainty and the views of stakeholders on the proposals before finalisation.

[13] The business model is comprised of three components: opex payments, capex payments and T&S payments. When the reference price exceeds the opex strike price, the difference will be netted off capex and T&S payments, effectively lowering subsidy payments when the reference price is high. This is different from the Track-1 model where capex, T&S and FA payment rates continued when the reference price exceeded the opex strike price. For simplicity, only opex payments are shown in Figure 1.

Free Allowances

The Track-1 ICC Contract requires Emitters to forfeit some of their UK ETS Free Allowances (FAs) to the ICC Contract Counterparty during the 10-year Initial Term of the ICC Contract, in line with volumes of CO_2 captured and stored, and compensates Emitters in respect of those forfeited FAs at the fixed trajectory reference price. Emitters also receive a degree of FA volume protection during this period.

For Track-1 expansion and Track-2 projects, our minded-to position is that Emitters will no longer be required to forfeit FAs to the ICC Contract Counterparty. Instead, Emitters will retain any FAs that they are allocated under the UK ETS. This complements the transition from a fixed trajectory reference price to a carbon market reference price and will simplify the ICC business model for both Emitters and the ICC Contract Counterparty. As FAs are no longer forfeited to the ICC Contract Counterparty, there will be no price assurance on FAs.

In addition, it is our minded-to position to no longer provide volume protection in respect of FAs. The removal of FA volume protection aligns with the reference price change being considered in relation to the Track-1 expansion and Track-2 ICC business model. The removal of FA forfeiture and payment mechanisms in the business model further improves the simplicity of the model for both Emitters and the ICC Contract Counterparty. As described in previous publications, it has always been our intention that the FA provisions in the Track-1 ICC Contract would be relevant for initial projects only.

This position aligns more closely with the principles of other international carbon CfD schemes on offer and potential interactions with the UK Carbon Border Adjustment Mechanism (CBAM), which will be introduced from 2027, and future changes being considered in UK ETS policy[14]. The government published a consultation on the design and administration of a UK CBAM in March 2024[15].

[14] https://assets.publishing.service.gov.uk/media/657c865883ba380013e1b667/uk-ets-free-allocation-review-consultation.pdf
[15] https://www.gov.uk/government/consultations/consultation-on-the-introduction-of-a-uk-carbon-border-adjustment-mechanism

Biogenic emissions

The introduction of an applicable carbon market reference price will require the ICC Contract to identify and account for fossil and biogenic CO_2 being captured. This is because certain biogenic CO_2 emissions under the UK ETS are zero rated and therefore have no associated carbon price, subject to the biogenic fuel meeting specific sustainability criteria. Accordingly, it is the policy intention for captured biogenic CO_2 emissions that would be zero rated under the UK ETS to also be zero rated within the ICC Contract, aligning with the Waste ICC business model applicable carbon market reference price.

As a consequence of the introduction of an applicable carbon market reference price, the ICC Contract will need to be updated to incorporate a monitoring, reporting and verification framework that monitors the biogenic/fossil CO_2 split of captured emissions to ensure opex payments are accurate and reflect the Emitter's counterfactual exposure to the UK ETS. In addition, some Emitters may have heterogenous fuel feedstock comprising biomass and therefore an appropriate sustainability criteria will be required for certain projects. It is important that, in line with the government's Biomass Strategy[16], the ICC Contract does not create incentives for the use of biomass if unsustainably sourced, and that the applicable carbon market reference price appropriately reflects an Emitter's counterfactual exposure to the UK ETS throughout the term of the ICC Contract.

Methodology for determining biogenic/fossil CO_2 percentages

An appropriate methodology will need to be established in the ICC Contract for measuring the biogenic/fossil CO_2 split of captured emissions for Emitters that are not expected to generate either entirely biogenic or fossil CO_2 emissions.

As part of this assessment we will consider if the ICC business model should adopt the Waste ICC business model approach for measuring the biogenic/fossil CO_2 split. The Waste ICC business model already includes a method for determining the biogenic/fossil CO_2 percentage split and the monthly reporting structure used for the Waste ICC Contract which is consistent with the contract framework and billing structure of the 'generic' ICC Contract. The current Waste ICC business model approach involves Carbon-14 analysis on a monthly composite sample, collected using a biogenic CO_2 long-term sampling system (LTSS), to be analysed at an accredited laboratory, to provide a monthly biogenic/fossil CO_2 percentage that is representative of the CO_2 captured for the entire month. We will consider to what extent the current MRV approach in the Waste ICC Contract is suitable for ICC Emitters considering the type and heterogeneity in biomass feedstocks such Emitters may use.

It is recognised that there is a low possibility of certain ICC Emitters generating biogenic CO_2 emissions and therefore we will consider the proportionality of requiring any measurement of the biogenic/fossil CO_2 split for such projects before arriving at a final decision.

[16] https://www.gov.uk/government/publications/biomass-strategy

Sustainability criteria

For ICC Emitters, a methodology will be required to distinguish between sustainable and unsustainable biomass, where biomass produces CO_2 to be captured by the Capture Plant. This is because unsustainable CO_2 biomass emissions are not zero-rated under UK ETS and therefore business models support would need to reflect this accordingly.

For the waste sector, in the July 2023 government response to the Developing the UK ETS consultation, the UK ETS Authority announced its intention to expand the UK ETS to waste incineration and energy from waste from 2028. Biogenic emissions generated from waste are not expected to be included in the scope of the scheme and therefore would not be subject to sustainability criteria in relation to UK ETS[17].

The Biomass Strategy reiterated the government's firm commitment to the sustainable use of biomass. The government only supports biomass uses across the economy that demonstrate compliance with the relevant sustainability criteria that currently exist under different sectoral schemes. Building on this, the Biomass Strategy made a commitment to consult on the development of a UK cross-sector sustainability framework for biomass use, which would seek to: (i) ensure minimum standards and better alignment between sectors, and (ii) strengthen the existing criteria based on up-to-date evidence. A consultation is planned for later this year, to enable the successful implementation of the cross-sectoral sustainability framework.

Changes are also being considered under the UK ETS sustainability criteria to ensure that all forms of biomass combusted at UK ETS installations have a sustainability standard and that any unsustainable biomass will be exposed to the carbon price.

The updated UK ETS sustainability criteria also intends to remove the assumed sustainability status of solid and gaseous biomass to incentivise sourcing of sustainable solid and gaseous biomass.

The sustainability criteria used across government subsidy schemes is undergoing evolution and timelines for implementation are uncertain. As such, the sustainability criteria framework for the ICC business model and the Waste ICC business model may need to be adapted to these changes.

For the Waste ICC business model, it is being considered how this may apply, including potential relevance if auxiliary fuel (fuel used to power the capture plant), is permitted and used, and if it falls subject to sustainability criteria.

Further work will be undertaken to establish an approach to sustainability criteria that balances:

- the core commercial incentives of the business models;
- the need for compatibility with the ICC Contract and Waste ICC Contract;

[17] Other sustainability criteria, such as Renewables Obligation and Contracts for Difference, require waste projects to demonstrate that they meet the relevant criteria for exemption by evidencing that feedstock can be classified as 'waste'.

- the administrative burden for Emitters; and
- the alignment with the government's principles on sourcing biomass.

We will seek to understand the extent to which we can align and minimise the administrative burden for Emitters that are part of multiple government schemes that require sustainability criteria.

Waste ICC business model evolution

This section sets out proposed updates relevant to the Waste ICC business model only.

Biogenic content cap

The Waste ICC business model is targeted towards waste management facilities, where the addition of CCUS would contribute towards the decarbonisation of the residual waste sector. There may be projects using a high proportion of biogenic waste, for which the generation of negative emissions is the main driver for the addition of CCUS. These projects may be more suited to applying for the Greenhouse Gas Removals (GGR) business model (subject to meeting all the relevant eligibility criteria), which is designed to attract investment in projects that deliver net negative emissions as a primary service. Waste ICC projects may therefore need to demonstrate that they meet certain eligibility criteria in relation to their feedstock compositions at the time of applying for support through the Waste ICC business model. For example, as part of the Track-1 expansion HyNet eligibility criteria, applicants need to demonstrate that they plan to process a feedstock composition that will generate less than 90% biogenic CO_2.

We recognise the heterogeneity of waste and the potential need to use different waste compositions for short periods of time, such as for testing new technologies. However, to ensure projects are adhering to the purpose of the different business models on offer throughout the contract term, we may seek to add contractual provisions to the Waste ICC Contract to disincentivise consistent use of a feedstock composition producing 90% biogenic CO_2 or above. It is our minded-to-position that payments under the Waste ICC contract may be adjusted where projects generate 90% biogenic CO_2 or above and we are considering how this will be implemented.

ICC and Waste ICC model evolution

This section relates to potential changes to both the ICC and Waste ICC Contracts for Track-1 expansion and Track-2.

Special Purpose Vehicle (SPV)

The department is minded-to accommodate the use of a separate SPV (if relevant) as the owner of the Capture Plant (this is a change from the approach set out in previous updates, which has required the Capture Plant and the underlying industrial/Waste installation to be owned by the same legal entity) following discussions with industry/projects on the challenges posed by the original requirement. The current indication is that an SPV structure in isolation would be acceptable from a government balance sheet perspective, subject to the risk allocation of the business model remaining broadly unaffected. However, as with all contracts awarded by the government, the final balance sheet classification will not be known until the final structure of the SPV business model is determined, and the department is currently conducting a full review of the ICC/Waste ICC Contracts and related business models to:

- confirm the additional protections that the department requires be included in the ICC/Waste ICC Contracts for the benefit of the ICC/Waste ICC Contract Counterparty;
- understand the contractual adaptions that will be required to reflect that the industrial/waste installation and the capture plant will be owned by different entities; and
- identify any consequential impacts on the wider programme.

This position is being considered for Track-1, Track-1 expansion and Track-2 business models.

Low carbon fuels adaptations

This section is predominantly relevant to waste management projects, however the proposals will be adopted by both the ‘generic’ ICC and Waste ICC business models given the different possible production pathways for low carbon fuels.

Interaction with the low carbon fuels policies including the SAF Mandate

Low carbon fuels can be produced by industrial and waste management facilities, the use of which can deliver greenhouse gas savings compared to fossil fuels. Across many low carbon fuel production pathways, CCUS can be incorporated to capture CO_2 streams released during the production process and reduce the carbon intensity of the resulting fuel.

Low carbon fuels are being produced to aid transport decarbonisation. For example, Advanced Conversion Technology (ACT)/Advanced Thermal Treatment (ATT) technology[18] can be used by the waste management sector to produce low carbon fuels, such as sustainable aviation fuel (SAF), from residual waste. This waste management technology is eligible for support under the Waste ICC business model for Track-1 expansion HyNet. Low carbon fuels can also be produced at industrial facilities, alongside other industrial products. These facilities may be eligible for support under the 'generic' ICC business model, subject to meeting eligibility criteria.

From 2025, government has committed to introducing a SAF mandate[19]. The SAF mandate will require fossil jet fuel suppliers to blend a minimum proportion of SAF into the fuel supply, requiring at least 10% SAF by 2030. The mandate will reward the supply of SAF to UK aviation with certificates, which can either be used to fulfil the obligation or traded with other suppliers for monetary value determined by the market. To encourage supply of the most sustainable SAF, certificates will be rewarded in proportion to the GHG savings achieved by a given SAF consignment. Government also supports low carbon fuel production through the Renewable Transport Fuel Obligation.

If the SAF Mandate rewards GHG savings from CCUS, as has been consulted on, the additional revenue from the mandate is likely to provide a significant incentive for a producer to install CCUS. Therefore, if a SAF plant is subsidised via an ICC business model in combination with the mandate, the plant may receive revenue significantly beyond what is required to incentivise CCUS deployment.

The ICC business models are designed to alleviate the barriers preventing industrial facilities from deploying CCUS independently. Whilst access to the T&S network will still be required by these projects, as the financial barrier to CCUS may be reduced or removed with the introduction of the SAF Mandate, the support required through an ICC business model may be less or, in some cases, no longer needed. Business model support for such projects would therefore need to be adjusted to ensure any such support is proportionate to need and consistent with the subsidy control principles.

As the CCUS sector advances, there may also need to be a route for projects to connect to the T&S network without a business model contract. For Track-1 expansion HyNet, applicants that consider that their project does not require any support from a business model and wish only for connection to the T&S network, can apply as an 'unsupported project'[20]. The position for future allocation rounds, including Track-1 expansion ECC and Track-2, may be different, and will be set out in due course.

Low carbon fuel production is an innovative and expanding sector which may have other revenues, subsidies or support schemes introduced in the future. We are therefore aiming to

[18] ACT/ATT refers to wase management technologies which use gasification or pyrolysis for the conversion of waste into useful energy/products.
[19] The final design of the SAF mandate will be confirmed in the upcoming government response to the second consultation.
[20] More information on 'unsupported projects' can be found in Chapter 3.3 of the CCUS Track-1 expansion: HyNet application guidance

design support which could be adaptable for these various interactions where possible. The section below sets out some possible options for how the ICC and Waste ICC business models may be adapted to account for the interactions with other support, such as the SAF Mandate.

Options for adapting business model support

One approach to offering proportionate support through the ICC business models is for support to be determined through the negotiations process. There would be an expectation that in the open book assessment of the cost and revenue model, an item related to revenues under support schemes like the SAF Mandate would be included. This figure would be scrutinized from both a technical and economic standpoint through due diligence. Negotiations could involve an adjustment to the Opex strike price or T&S payments applicable for that project.

Alternatively, a provision may be added to the contract to make a mechanistic adjustment to business model payments to account for revenues under support schemes like the SAF Mandate. Options for implementing a mechanistic adjustment may include (but are not limited to): a deduction being made based on actual revenues or a SAF market price deduction.

Either of these options may mean that the financial support through the ICC and Waste ICC business models may be very low or zero under usual operations.

As we look to develop these options, we are interested in learning more about facilities' plans for the production of these fuels which may receive revenue under other support schemes and the commercial drivers influencing their decisions. We will be considering the suitability of these options for projects producing multiple fuels and the likelihood of any variability of these fuel proportions. Further consideration is also required to the extent to which contractual protections (including for T&S outages and unavailability) may be required by these facilities.

We plan to engage with projects producing SAF and other low carbon fuels on the interactions between different policy mechanisms and the role of the ICC business models in enabling CCUS deployment this year. We will also be continuing to work closely with the Department for Transport as they develop and deliver the SAF Mandate and other transport decarbonisation support mechanisms, including the potential SAF revenue certainty mechanism.

Next steps

We will continue to develop further the detailed structures and mechanisms of the Track-1 expansion and Track-2 ICC and Waste ICC business models in 2024, with the aim of having core components of the business models in place ahead of the start of meaningful negotiations with the first projects selected for Track-1 expansion negotiations.

We will continue to engage with stakeholders on proposals for changes to the business models and will present on changes to the business model to the ICC and Waste ICC expert groups in due course.

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