



Department for
Energy Security
& Net Zero

Carbon Capture, Usage and Storage: Amendment to Electricity Supplier Obligation Regulations

A consultation on the implementation of the Dispatchable Power Agreement business model

Closing date: 10 April 2024

Please note: We have reopened this consultation for an additional 28 days because the consultation-stage Impact Assessment was omitted when first published. If you responded to the original consultation, you do not need to re-submit your response unless you wish to comment on the consultation-stage Impact Assessment.

March 2024



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

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General information

Why we are consulting

The purpose of this consultation is to seek views on proposed amendments to The Contracts for Difference (Electricity Supplier Obligations) Regulations 2014 that will enable the electricity supplier obligation levy to be charged for payments under the Dispatchable Power Agreement (DPA) that will support deployment of Power Carbon Capture, Usage and Storage (Power CCUS).

Consultation details

Issued: 12 March 2024 (first issued 4 December 2023)

Respond by: 10 April 2024

Enquiries to:

Carbon Capture, Usage and Storage Policy Team
Department for Energy Security and Net Zero
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London
SW1A 2JP
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Consultation reference: Carbon Capture, Usage and Storage – Amendments to Contracts for Difference Electricity Supplier Obligation Regulations Consultation.

Audiences:

DESNZ anticipates this consultation will be of interest to any stakeholder with an interest in the development of CCUS policy. This may include:

- Consumer groups
- Devolved administrations and local government
- Investors and developers involved in potential CCUS projects
- The industrial and energy sectors more widely
- NGOs and other organisations with an interest in climate and energy
- Electricity traders and suppliers

However, any organisation or individual is welcome to respond.

Territorial extent:

The powers to make the existing CfD schemes extend to the whole of the UK but the schemes themselves do not currently apply to generators in Northern Ireland. This consultation therefore applies to Great Britain only.

How to respond

Your response will be most useful if it is framed in direct response to the questions posed, and with evidence in support wherever possible. Further comments and wider evidence are also welcome. When responding, please state whether you are responding as an individual or representing the views of an organisation.

We encourage respondents to make use of the online e-consultation wherever possible when submitting responses as this is the Government's preferred method of receiving responses. However, responses in writing or via email will also be accepted. Should you wish to submit your main response via the e-consultation platform and provide supporting information via hard copy or email, please be clear that this is part of the same consultation response.

Respond online at: <https://energygovuk.citizenspace.com/clean-electricity/amendments-eso-regulations-power-ccus-model>

or

Email to: powerccus@energysecurity.gov.uk

Write to:

Carbon Capture Usage and Storage Policy Team
Department for Energy Security and Net Zero
3-8 Whitehall Place
London
SW1A 2JP

A response form is available on the GOV.UK consultation page:

<https://www.gov.uk/government/consultations/amendments-to-electricity-supplier-obligation-regulations-to-implement-power-ccus-dispatchable-power-agreement-business-model>

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us, but be aware that DESNZ cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

DESNZ will process your personal data in accordance with all applicable data protection laws. See our [privacy policy](#).

DESNZ will summarise all responses and publish this summary on [GOV.UK](#). The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's [consultation principles](#).

If you have any complaints about the way this consultation has been conducted, please email: bru@energysecurity.gov.uk.

Introduction

Carbon Capture, Usage and Storage (CCUS) is an emerging sector that is of central importance to decarbonising the UK's economy and electricity system and meeting our Sixth Carbon Budget pathway commitments. The UK is ideally positioned to lead the global development of CCUS technology and infrastructure, with the wider investment landscape to enable innovation, development and growth across the developing CCUS economy.

The Powering Up Britain¹ publications set out how significant progress has been made in creating this new sector through the development of policies and incentives to encourage investment. The unlocking of CCUS private investment can deliver economic growth and jobs across the UK, crowd-in future private capital and bring investment to our industrial heartlands all while accelerating decarbonisation and supporting our energy security. CCUS represents a significant opportunity for the UK economy with the potential to support up to 50,000 jobs by 2030 and deliver £4.3 billion in Gross Value Added (GVA) by 2050 through exports.

The Energy White Paper² published in December 2020 set out the government's view on how a low cost, net zero consistent electricity system by 2050, which is likely to be composed predominantly of wind and solar generation whilst ensuring the system is also reliable, will be achieved. This means intermittent renewables need to be complemented by technologies which provide power, or reduce demand, when the wind is not blowing, or the sun does not shine. Today this includes nuclear, gas with carbon capture and storage and low carbon hydrogen generation. System flexibility can be provided by increasingly diverse technologies including short-term storage by batteries to longer duration storage technologies such as pumped hydro. Demand side response, interconnectors and short-term dispatchable generation providing peaking capacity which can be flexed as required, also have roles to play in providing greater system flexibility.

Figure 3.2 of the Energy White Paper (December 2020) sets out projected energy demand scenarios up to 2050; analysis indicates demand could double from nearly 300 TWh today up to 670 TWh by 2050 driven by a growth in electrification of transport and heating. To maintain generation capacity to meet existing demand and meet up to a 60%³ increase in demand by 2035, significant levels of new generating capacity is required, which includes Power CCUS to maintain system reliability.

In October 2021, the government's Net Zero Strategy⁴ expanded on the ambition set out in the Energy White Paper and set out a policy that by 2035 the UK would be powered by clean electricity, subject to security of supply, whilst meeting a 40-60% increase in demand. In March 2023, the Powering Up Britain publications built on these objectives by setting out how the economic opportunities can be realised and how our Sixth Carbon Budget can be met.

¹ [Powering Up Britain](#).

² [Energy White Paper](#).

³ [Powering Up Britain: Energy Security Plan](#). (Section 4, A future of Cheap, Clean, British Energy).

⁴ [Net Zero Strategy](#).

The Sixth Carbon Budget⁵ trajectory suggests that we will need to build low carbon electricity generating technologies at, or close to, their maximum technical limit to meet the twin challenge of accelerating decarbonisation and meeting increased demand. Whilst we cannot predict today exactly what the generating mix will look like in 2050, we can be confident that variable renewables, such as wind and solar, will play a key role and that the contribution of variable renewables will continue to grow.

A Power CCUS plant, which is a natural gas-fired power generation plant with carbon capture and storage, can provide non-weather dependent dispatchable low-carbon generation. We consider this to be vital alongside nuclear, demand side response, interconnectors and energy storage to support a primarily renewables-based system in 2035.

Electricity system analysis⁶ shows that a low-cost net zero consistent electricity system is likely to require significant deployment of both gas CCUS and nuclear power. The cost of decarbonising the electricity system is likely to be higher without gas CCUS because the alternative means of providing low-carbon electricity during times of low wind and sun are likely to be more expensive.

Widespread deployment of CCUS will play a key role in meeting the Sixth Carbon Budget (CB6) ambition. This is why in the Powering Up Britain publications, the government recommitted to delivering four CCUS clusters, capturing 20-30 MT CO₂ per year by 2030. Powering Up Britain restated the ambition to implement the Dispatchable Power Agreement (DPA) to support Power CCUS projects and deploy at least one Power CCUS plant by the mid-2020s.

The government set out its proposals for the design of funding models to support Power CCUS in a consultation on potential business models for carbon capture and storage in 2019⁷. Chapter 3 of the 2019 consultation summarised the key considerations for the development of Power CCUS support and this set out that ‘funding models will only be considered where they bring forward projects that are led and financed primarily by the private sector and are consumer funded’. This consultation informed the subsequent development of the DPA⁸.

The DPA is the proposed contractual framework intended to provide financial support to incentivise Power CCUS deployment⁹. It is based on the Contracts for Difference (CfD) standard terms and conditions used in allocation rounds but adapted to enable natural gas fired Power CCUS facilities to play a mid-merit¹⁰ role in meeting electricity demand, displacing unabated thermal generation plants.

It is intended that the Secretary of State will use the powers in Section 10 of the Energy Act 2013 to direct the DPA Counterparty to offer initial DPA contracts to generators that are

⁵ See Chapter 3, point 12 of the [Net Zero Strategy](#).

⁶ [Modelling 2050: Electricity System Analysis](#)

⁷ [Business models for carbon capture, usage and storage: Consultation \(2019\)](#)

⁸ [Business models for carbon capture, usage and storage: government response](#)

⁹ [Dispatchable Power Agreement business model summary \(November 2022\)](#).

¹⁰ The merit order, in the context of electricity generation, is the sequence in which power plants are designated to deliver power, from cheapest to most expensive.

selected through the Cluster Sequencing process¹¹ (a “DPA Supported Generator”). To enter into a DPA, a power DPA Supported Generator must meet the definition of an Eligible Generator, specified in the Contracts for Difference (Definition of Eligible Generator) Regulations 2014¹² and amended by the Contracts for Difference (Miscellaneous Amendments) Regulations 2022, which came into force on 21 June 2022 to enable retrofit CCS projects to be eligible and adapted the definition of Complete CCS System to include non-pipeline transport of CO₂.

Subject to successful negotiations with projects applying to be included in Track 1 Phase 2 of the Cluster Sequencing process, costs relating to the DPA are likely to be applied to consumer bills from 2027/2028. The levy impacts of the first award of any DPA is subject to the Cluster Sequencing process which sets out the negotiation process. Any decision to award support is contingent on the government satisfying itself that it is compliant with relevant value for money and subsidy control requirements.

The DPA provides payments to be made to DPA supported Generators for:

- a. Availability of low carbon electricity generation capacity for dispatch which incorporates carbon capture efficiency.
- b. Proportionate capital cost of a Transport and Storage Provider’s T&S Network capacity requirement, paid by the DPA Generator.
- c. The remaining proportion of a Transport and Storage Provider’s share of allowed revenue, in case of shortfalls, paid by a DPA Generator.
- d. A Variable Payment to incentivise a DPA Generator to dispatch ahead of higher carbon unabated generation plant.

Payments A – C in the DPA expand on existing payments, made under CfD agreements, for electricity generated by generating stations. Payments A – C are provided for in the DPA as the “Availability Payment”. This payment mechanism expands on the existing scope of the levy in The Contracts for Difference (Electricity Supplier Obligations) Regulations 2014¹³ (the ESO Regulations 2014) by contemplating payments to generating stations that are not predicated on the amount of electricity generated alone, but additionally, the amount of low carbon generating capacity made available, but not necessarily generated and the related carbon dioxide transport and storage costs.

The first part of this consultation therefore seeks views on the proposed mechanism to amend the ESO Regulations 2014 to enable payment a) in the DPA; the availability of low carbon generation capacity.

The purpose of the second part of this consultation is to seek views on the proposed amendment to the ESO Regulations 2014 that will enable the levy to cover Availability Payment components b) and c) in the DPA; the capital cost of building the T&S Network

¹¹ [Cluster sequencing for Carbon Capture, Usage and Storage \(CCUS\) Deployment: Phase-2](#)

¹² [Contracts for Difference \(Definition of Eligible Generator Regulations\) 2014](#)

¹³ [ESO Regulations \(2014\)](#)

infrastructure and the proportionate share of any remaining Transport and Storage company's (T&SCo) allowed revenue or shortfall.

As the CO₂ Transport & Storage Network (T&S Network) will be built for decarbonisation of industrial emitters and low carbon energy generators alike, it is proposed that the cost and operation of the Network will be shared between network users. Our ultimate aim is to establish a CCUS sector which is able to operate without a significant continued level of HMG's support.

The purpose of the Variable Payment (payment D) is explained in the next section of the consultation document; but because a levy can already be charged for this payment under the regulations as they are currently drafted, an amendment to the ESO Regulations 2014 is not necessary for this payment.

Purpose of this Consultation

The purpose of this consultation is for the Department for Energy Security and Net Zero ('the department') to gather views on proposed amendments to the ESO Regulations 2014 in order to enable the electricity supplier obligation levy to be charged for payments A - C that will be made to DPA supported Generators.

The electricity supplier obligation levy is a compulsory levy on licensed electricity suppliers to meet the cost of the Contracts for Difference (CfD) scheme, of which the DPA is a type. Obligation payments are collected from suppliers by the Low Carbon Contracts Company¹⁴ (LCCC) in their role as CfD Counterparty in order to make payments to CfD Generators.

The DPA will be based on the CfD Allocation Round 4 Standard Terms and Conditions¹⁵, with several key differences between the DPA and other CfDs awarded. This includes the types of projects that will be eligible and the payment mechanism, which provides an Availability Payment paid per unit of generating capacity made available by a DPA Generator and will reduce proportionally to reflect any reduction in the Availability of Capture or Availability of Generation. In standard CfD contracts with a Strike and Reference Price mechanism, payments are predicated on the amount of electricity generated by a CfD generating station with this being a two-way payment structure with the possibility of generators paying back under the contract as well as receiving support, whereas the DPA is one directional.

In common with the CfD scheme and other electricity market support schemes, it is proposed that the costs of the DPA will be borne by electricity suppliers. Suppliers would be able to pass the costs onto their consumers who use the electricity system, should the suppliers elect to do so. CCUS-enabled power generators will provide power at a lower cost than other gas generators because they will not be exposed to the carbon price (Emissions Trading Scheme)¹⁶. This will enable electricity consumers to benefit from a transition to a low carbon and secure electricity system which is dominated by renewables but backed up by a competitively priced, but also stable and dispatchable source of low carbon generation.

The first part of the consultation proposes amendments to the ESO Regulations 2014. This is to enable the DPA Counterparty to cover its payment requirements made to DPA Supported Generators for the amount of low carbon generation capacity they have made available.

The DPA¹⁷ Availability Payment is linked to the amount of low carbon electricity generation capacity made available by a Power CCUS Facility per settlement unit. It will be reduced proportionally to reflect any reduction to the availability of carbon capture or generation which represents the Facility's capture rate and any loss of availability caused by generation outages.

¹⁴ LCCC is an arms length body owned by the Secretary of State for the Department of Energy Security and Net Zero, with an independent board. It manages the CfD contracts with generators and collects payments from electricity suppliers.

¹⁵ [Contracts for Difference Allocation Round 4 Standard Terms and Conditions](#)

¹⁶ [The Greenhouse Gas Emissions Trading Scheme Order 2020](#)

¹⁷ [Dispatchable Power Agreement Business Model](#).

The payment is designed to incentivise the availability of low carbon, non-weather dependant dispatchable¹⁸ generation capacity. The Availability Payment will be calculated and paid regardless of whether a Power CCUS Facility is dispatching power, and so it will not incentivise facilities to displace lower cost and lower carbon sources of generation such as renewables and nuclear.

To support a Power CCUS Facility to dispatch electricity ahead of higher carbon alternatives, the second part of the DPA payment mechanism is a Variable Payment¹⁹ which accounts for the additional cost of generation faced by a Power CCUS Facility compared to an unabated Reference Plant, which should represent the unabated combustion plant with the highest defined thermal efficiency operating on the GB electricity system. The Variable Payment is informed by comparing the differential costs associated with power generation at a Power CCUS facility relative to the Reference Plant. This aims to incentivise that a Power CCUS facility's short run marginal costs are less than those incurred by the unabated Reference Plant.

The Variable Payment is based on the amount of electricity generated (MW/h) and is already provided for in the ESO Regulations 2014 and we are not proposing amendments to how the regulations operate to implement this.

Existing CfD contracts include a generation payment, which sets out that the CfD counterparty can pay electricity generators for the amount of electricity generated. The ESO Regulations 2014 provide that a levy can be charged to enable the LCCC to pay the generation payment. However, given that the DPA establishes a new Availability Payment, amendments to the ESO Regulations 2014 are necessary to enable the levy to also be charged for this new payment mechanism.

The second part of this consultation seeks to gather views on the proposals to enable the levy to cover a DPA Generators' proportionate T&S Network payments in order to provide DPA Generators with a route to being 'low carbon'.

The DPA will provide, via the Availability Payment, revenue to a Generator to pay for its T&S Network registered capacity payment and a more generalised T&S Network payment which includes mutualisation²⁰. These payments cover the proportionate fixed capital costs, operational costs and other costs including tax and decommissioning of the Generators' associated T&S Network. The addition of mutualisation will occur where the T&S Network is not fully utilised, i.e., there are less users on the T&S Network than the network is designed to accommodate, hence mutualisation is used to cover revenue shortfalls and to protect a T&S Co from revenue risk. Mutualisation amounts will vary yearly and are dependent on numerous factors including, user size and network usage, network size and utilisation, and expected revenue shortfalls. These payments form part of the T&S Regulatory Investment (TRI) model. The amendments proposed to the ESO Regulations 2014 to enable the Availability Payment will incorporate the T&S network payment and the T&S capacity payments, forecasted through

¹⁸ Dispatchable power source is a generator that can adjust its supply to the electricity system on demand.

¹⁹ [Variable Payment calculation is set out on page 25 of the DPA Business Model Summary November 2022.](#)

²⁰ Explained in part 2 of this consultation.

the Interim Levy Rate calculation to enable the DPA Counterparty to provide a DPA Generator with sufficient funding to meet its T&S Network Fees.

The third group of proposed amendments to the ESO Regulations 2014 will enable an accurate determination of the Interim Levy Rate²¹ forecast, utilising information from both CfD and DPA contracts, so that Electricity Suppliers contribute sufficient Interim Payments to allow the CfD / DPA Counterparty to pay Generators. Questions under part 1 of this consultation seek to gather views on the proposed changes to the interim levy rate forecast calculation.

²¹ Rate of payments collected by the CfD Counterparty from energy suppliers to make difference payments to generators of low carbon electricity.

Part 1: Amending the Electricity Supplier Obligation Regulations to enable Availability Payments to DPA Generators

Dispatchable Power Agreement Payment Mechanism: Background

To enable Power CCUS to play a valuable mid-merit role in our electricity generation mix, we have developed the DPA business model which is based on the standard terms and conditions of the Contracts for Difference used in Allocation Rounds.

The DPA is designed to incentivise the availability of low carbon power generation. It will use an Availability Payment calculated based on: availability of generation, availability of CO₂ capture, net dependable generation capacity and an availability payment rate. This means that the payment rewards both availability of electricity generation capacity and availability of CO₂ capture capacity. It expands on the current payment that is based on the amount of electricity generated (MW/h) and which the existing ESO Regulations 2014 supports.

The DPA Availability Payment will also contain the fixed T&S Fee components (capacity charge and network charge) that will be passed onto the respective T&S Network Operator (T&SCo) by the Generator and explained in greater detail below.

Figure 1 provides an overview of the components of both payment mechanisms in the DPA. Definition of terms in the Availability Payment and Variable Payment are provided in tables 4 and 9 of the November 22 DPA Business model summary, see footnote 17.

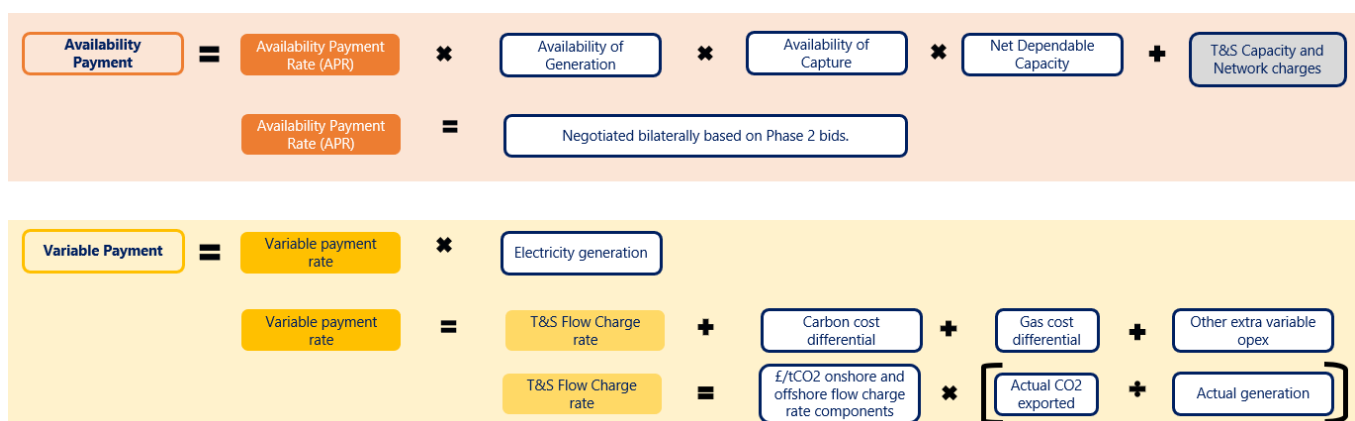


Figure 1: DPA payment mechanism summary.

The cost of operating the T&S Network will be met through T&S Fees paid by users of the Network. The charging structure being similar to that of gas network charges comprising a capacity fee which recovers the fixed capital costs of the T&S Network, a flow charge which recovers the operating variable costs of transporting the captured CO₂ and a network charge

which recovers the remainder of a user's share of the allowed revenue not recovered under the flow charge and capacity charge components. This has been set out in section 5 of the January 2022 T&S Network business model update²² and further detailed in the June 2022 Codes Heads of Terms²³.

For those users of a T&S Network which are DPA Generators, the T&S Capacity Charge and T&S Network Charge are incorporated in to the DPA Availability Payment that is paid to a Generator contributing to its T&S Fee costs. This is to enable the transport of the captured CO₂ for permanent geological storage thereby providing a route to being low carbon electricity generation.

The T&S Flow Charge component, which is intended to recover the operational costs of transporting the CO₂ will be covered by the Variable Payment in the DPA. In circumstances where Power CCUS generation is more expensive relative to an unabated equivalent reference plant because of higher gas costs, the T&S Flow Charge and Other Extra Variable Costs faced by the Power CCUS facility, the Variable Payment would make up the cost differential. Where the Variable Payment is not being triggered, the operational costs of transporting the CO₂ would be met by the Generator.

Part 2 of this consultation sets out the proposals for the T&S Regulatory Investment (TRI) model and the rationale for the ability to draw upon funds from the Electricity Supplier Obligation to enable the levy to be charged for the T&S shortfall payment – a payment for the protection of T&SCo from revenue risk in defined scenarios, namely to manage a scenario where there is an under-utilisation of the T&S Network causing a shortfall in the T&SCo's allowed revenue. To address this, a mutualisation mechanism is proposed across the remaining T&S Network userbase. The T&S Fees for the remaining users would be increased up to a cap to close the revenue gap caused by Utilisation Build-up. Where that user is a DPA supported Power CCUS Facility, the funding for mutualisation is proposed to be drawn from an increase in the Electricity Supplier Obligation levy.

What are the proposed amendments to enable the Levy to be charged in relation to DPA payments?

The ESO Regulations 2014 require every licensed electricity supplier that supplies electricity during a quarterly obligation period to pay a "CfD period contribution" to the CfD Counterparty in respect of that period. This is a levy that enables the CfD Counterparty to pay CfD Generators and is the proposed route to funding the DPA.

Other methods of delivering the DPA have been considered such as the government managing the DPA contracts itself or establishing a new counterparty and legal framework to manage DPA contracts. However, our analysis has shown that amending the ESO Regulations 2014

²² [CCUS Transport and Storage business model update January 2022.](#)

²³ [CCS Network Code – Indicative Heads of Terms \(June 2022\).](#)

with the LCCC as the designated counterparty provides the most cost-effective solution for implementing the business model.

Currently, in Regulation 4 and 5 of the ESO Regulations 2014, a CfD daily contribution is based on a “generation counterparty payment” that is calculated directly by reference to the amount of electricity generated by a generating station. It is proposed that the daily contribution regulations are amended to cover the following payments comprising the Availability Payment;

- (a) the Available Capacity Payment
- (b) the T&S Proportionate Capacity Payment
- (c) the T&S Network Payment

The T&S Network Payment will enable mutualisation of T&S Fees to be realised and paid by the DPA Counterparty in the event of T&S Utilisation Build-Up shortfall²⁴. The T&S Mutualisation payment is a yearly fixed charge, covered via the DPA Availability Payment, and which is re-calculated each year within the charge setting process²⁵. Where no mutualisation is required, the T&S Mutualisation Payment would be zero. The mutualisation process is explained further in part 2 of this consultation.

A separate amendment to Regulation 7 of the ESO Regulations 2014 is proposed to enable the Interim Levy Rate (ILR) to be extended to cover the DPA Availability Payment by expanding the EOC, EOI and EOS estimates. Currently, the ILR payments provide funds to the CfD Counterparty to make the expected ‘difference payments’ to the CfD generators. Electricity suppliers’ liability for CfD payments will be exactly equal to the net CfD payments made to (or by) Generators and an individual supplier’s liability will vary depending on the volume of electricity it supplied as a proportion of total electricity supply on a given generation day. The exact amount owed by a supplier can take up to 28 months to determine due to reconciliation. Therefore, interim payments from electricity suppliers are needed to allow the CfD Counterparty to make payments to Generators. This is done via a forecast of expected CfD costs and total expected supply for the levy period and which is set three months in advance of each quarterly period commencing. The calculation of the ILR is provided in Regulation 6 of the ESO regulations.

ILR Calculation:

$$\frac{EOC - EOI}{EOS}$$

²⁴ Discussed in further detail below in the “Revenue Risk” segment.

²⁵ [Charge setting process set out in section H of the CCS Network Code updated indicative Heads of Terms.](#)

Where;

EOC is the estimated quarterly obligation period payment cost, estimated in accordance with regulation 7(1);

EOI is the estimated quarterly obligation period income, estimated in accordance with regulation 7(3); and

EOS is the estimated quarterly obligation period electricity supply, estimated in accordance with regulation 7(4)

The top half of this equation is essentially the sum of all the difference payments LCCC expects to make in the quarter, where the difference payment is the Strike Price in the contract minus the Market Reference Price. The ILR therefore depends upon a number of key variables for that particular quarterly obligation period, such as:

- 1) The generators that are expected to have CfDs and generate within the quarterly obligation period – their capacity, load factor and strike price;
- 2) The expected reference price against which the contracts are assessed; and
- 3) The expected eligible supply.

We do not propose any change to the calculation of ILR but rather how the EOC, EOI and EOS are derived, which is set out in Regulation 7. It is proposed that regulation 7 is amended so that Availability Payment information from DPA contracts can be used to inform the forecast.

Consultation Questions – Part 1

1. The costs of the DPA shall be borne by Electricity Suppliers through extending a levy under the ESO Regulations 2014. This is because suppliers are the electricity market's only interface with consumers who are the ultimate beneficiary of the transition to a low carbon electricity system. Are there any other relevant considerations we have not taken into account determining this position?
2. Do you have any comments regarding the workability of amending the ESO Regulations 2014 to extend the CfD Daily Contribution calculation to enable the levy to be charged in relation to the new Availability Payment that will be made under the DPA?
3. Do you have any comments on the proposed amendments to how the Interim Levy Rate (ILR) forecast is derived and the ability of it to accurately estimate cost, income, electricity supply and availability of electricity generation supply?

Part 2 – TRI Revenue Model

T&S Regulatory Investment (TRI) model: background

CCUS will be critical in helping the UK meet net zero. To enable this, we are seeking to develop Transport and Storage (T&S) networks acting as the enabling infrastructure for a range of capture projects, including gas power plants, industrial emitters, low carbon hydrogen production, bioenergy, and direct air capture.

The T&S Regulatory Investment (TRI) model is based on a regulated asset value model that seeks to balance the need to provide long term confidence to investors with predictable and stable returns within a broadly bounded range, ensuring affordability and VfM for users, electricity consumers, and taxpayers and meeting subsidy control requirements. The TRI model draws heavily on other regulated asset base models, such as those used for gas and electricity networks.

However, there are aspects of the TRI model which are unique and designed to address demand side risk specific to the initial T&S networks. In particular, there is a need to subsidise network users, including DPA Generators and risk associated with the first of a kind, nascent capture technology. The TRI model provides protection against these risks while the market develops, with the expectation that the network and its users will be subsidy-free in the future.

Objectives of the TRI model:

- **Attracting investment in T&S networks to establish a new CCUS sector**

Establishing a commercial framework that enables and supports stable investment in CO₂ T&S networks that are likely to have long operating lives and provides investors with a clear sight of the long-term revenue model to ensure they can earn a reasonable regulated return on their investment.

- **Enabling low-cost decarbonisation in multiple sectors**

Balancing the need for anticipatory investment to address future demand on the T&S network with the economic attractiveness of the T&S network to near term users. Each T&S network must be able to accommodate multiple and different types of users with varying demand profiles and be sufficiently flexible to adapt to different growth profiles.

- **Developing a market for carbon capture – a long-term vision**

Establishing an Economic Regulatory Regime (ERR) that provides sufficient flexibility to allow for future CO₂ market expansion (including non-pipeline transportation CO₂) whilst ensuring affordability and VfM for the users.

Elements of the TRI model: protecting consumer interests

The proposed TRI model is being designed to attract investment into T&S networks whilst protecting users of the network (and by extension taxpayers and energy consumers that support the funding of T&S networks).²⁶ The three core elements of the TRI Model are:

Economic Regulatory Regime: Under the TRI model, the Economic Regulatory Regime (ERR) determines the level of allowed revenue that a T&S company (T&SCo) operating the Network can earn every year, reflecting its efficiency costs and a reasonable rate of return. Within the ERR, the allowed revenue will be initially set by the department as part of the initial regulatory settlement, and then by the economic regulator (Ofgem) in subsequent regulatory periods. The settlement includes agreement of allowed capital expenditure ("capex"), allowed operating expenditure ("opex") and the allowed rate of return, as well as construction and operational performance targets and associated incentives. These conditions will be set out in the economic licence.

The economic licence is agreed by the Secretary of State for the first regulatory period. The licence is then administered by the economic regulator (Ofgem). Ofgem is then responsible for any amendments to the economic licence, this will include agreeing subsequent regulatory settlements. Ofgem must administer the economic licence pursuant to its statutory duties and principal objectives including protecting the interests of current and future users and the interests of any class of consumers (where relevant), the financial sustainability of the T&S networks, and the need for efficient and economic T&S networks. The powers in the Energy Act 2023 will enable Ofgem to ensure T&SCo comply with their licence conditions and enforce the conditions of the licence.

T&S charges: The TRI model is a user pays model, which means that T&SCo would be entitled to charge its userbase in order to collect its allowed revenue, as set by the conditions of the economic licence. T&S charges will be determined using a methodology initially developed by the government and industry. T&S charges will be proportionate, meaning that charges will reflect a user's impact on the network i.e., if a user injects more carbon onto the network or utilises more of the infrastructure and capacity, their fees will be higher respectively to a user who injects or utilises less. T&S charges will include a flow charge, a capacity charge, and a proportionate network charge (which will include any mutualisation). More information on charges can be found in the December 2022 CCS Network Codes Heads of Terms²⁷. T&S charges will be set annually and there will be an annual reconciliation process to address any over or under recovery of allowed revenue. The allowed revenue will be increased/decreased through the Revenue Adjustment Mechanism (RAM) in order to return any over-recovery/collect any under recovery of revenue two years after the charging year in question. This adjustment will then influence the fees and charges for all users of the network in the

²⁶ We have published a series of updates on the development of the Transport and Storage business model which can be found within this [link](#) and its enabling legislation, found within the Energy Act 2023. The final Transport and Storage business model will be confirmed once the first licenses are awarded.

²⁷ [CCS Network Code Indicative Heads of Terms \(December 2022\)](#).

subsequent year +1 when the adjusted fees apply (they are not directly returned to or collected from specific users).

Revenue model: If T&SCo earns less revenue than the allowed revenue for a charging year from charging its users T&S charges, then it will be exposed to a ‘revenue gap’. The purpose of the revenue model is therefore to mitigate T&SCo’s exposure to revenue gaps. Within the revenue model Risk Mitigation Mechanisms (RMMs), which are primarily user funded including mutualisation,²⁸ are designed to enable T&SCo to recover its allowed revenue.

However, if RMMs are insufficient to achieve this, then we are proposing that T&SCo will be entitled to Revenue Support as a last resort mechanism to enable T&SCo to recover any remaining revenue gap. For T&SCo to receive Revenue Support, we expect T&SCo to enter into a Revenue Support Agreement (RSA) with the RSA Counterparty upon satisfying certain initial conditions precedent. If Revenue Support is triggered, then the RSA Counterparty would draw on funds from HMG to make a direct payment to T&SCo. The following sections will provide further detail on the role of mutualisation to mitigate specified revenue risks.

For further information on the TRI model and RSA please see our latest business model update and draft Heads of Terms for the RSA, published on the gov.uk website²⁹.

This consultation seeks views on the impacts of our proposals to draw upon funds from the Supplier Obligation to enable mutualisation to protect T&SCo from revenue risk in defined scenarios.

We consider the RSA and mutualisation to be important measures for securing the level of investment required to deliver the initial T&S Networks and establishing the CCUS industry in the UK. However, our ultimate aim is to design and develop a CCUS sector which is able to operate without significant HMG support.

Revenue risks

We have set out the proposal to amend the ESO Regulations 2014 to enable funding for the DPA Availability Payment and that mechanism will incorporate the ability for mutualisation for Utilisation Build-Up to be funded from the levy on electricity suppliers, up to a cap.

The next section provides examples of Network Utilisation Build-Up and our proposal to address this risk.

Utilisation Build-Up

A Utilisation Build-up revenue gap will occur if the projected revenues T&SCo could earn from charging its userbase over a charging year are less than the allowed revenue it is entitled to for that year. Reasons for Utilisation Build-up include: the network being rightsized to

²⁸ Mutualisation involves increasing T&S fees across the network userbase in order to enable T&SCo to collect more of its allowed revenue than it would be able to if T&S fees were only charged in proportion to users’ expected utilisation of the network and booked capacity.

²⁹ [CCUS Business Models](#).

accommodate increasing utilisation levels (reducing overall network development costs), users joining the network later than expected or not arriving, and regulator approved network expansion³⁰. In the first instance, a T&SCo should seek to recover the shortfall in allowed revenues from its network users (i.e. increased draws on the supplier levy and taxpayer funding through mutualisation), before calling on tax-payer only funded Revenue Support payments³¹. Mutualised charges will be drawn from all users proportionately, and therefore may result in an increased draw from the Electricity Supplier Obligation levy. This circumstance will only arise if a DPA Generators proportionate network charges are less than the mutualisation cap (see below).

If a revenue gap persists after mutualisation has been exhausted, HMG drawn Revenue Support will address the remaining shortfall. This will ensure that consumers will only provide funds to address Utilisation Build-Up via mutualised fees. Further explanation and reasoning on the principle of mutualisation is provided in the following mutualisation and Utilisation Build-Up sections.

Mutualisation

It is common across regulated networks to use mutualisation to address over and under collection of allowed revenues. Mutualisation is the process of socialising the over or under collection of costs across all network users.

In the case of the CCUS network and Utilisation Build Up, mutualisation is applied when the benefits the user is extracting from the T&S network exceeds their proportionate charges (referred to as qualifying users). This situation arises when the amount of CO₂ injected onto the network multiplied by the market value of that CO₂³² exceeds the user's proportionate charges. The department is working with industry to finalise details of the mutualisation calculation. Within the T&S charging framework, mutualisation will form part of "Network Charge".

Source of mutualised fees

It is anticipated that initial users of the network will be in receipt of government support contracts subsidising T&S fees, including any increase in fee due to mutualisation. The department proposes that DPA supported power users who witness an increase in charges from mutualisation will have this additional funding collected via levies on electricity suppliers through the DPA alongside their non-mutualised charges. As the "network charge" is a fixed charge, this would be included within a DPA user's availability payment. It is intended that the ESO Regulations 2014 are amended to enable the levy to be charged for mutualisation alongside the collection of the T&S Network Payment for recouping the capital costs as discussed in Part 1.

³⁰ T&SCo will be required to present a business case to the economic regulator for network expansion and gain approval before commencing with construction.

³¹ Such arrangements might also be required at the end of the T&S networks life if users leave the network for various business reasons, particularly if the capacity has not been booked.

³² This process for setting the market value of CO₂ will be set out in the CCUS network code.

Timing

Fees and charges are updated annually, with the process concluded in month 8 of the charging year. As part of this process mutualisation will be applied to each users' charges. Where proportionate charges are insufficient to recover the allowed revenues, users may see an increase in their network charges³³. This allows any forecast revenue shortfall to be addressed by user fees in the next charging year. The deadline of month 8 ensures enough time for the CfD counterparty to conduct the necessary administration and notify electricity suppliers of an adjustment to the Interim Levy Rate to collect increased fees from the start of the next charging year. Any shortfall forecast after month 8 of the charging year will be calculated into the next charging process, as detailed in the insolvency section below.

Aims of Mutualisation

We have developed our approach to mutualisation considering key CCUS business model principles. These include for policies to be market based, compatible with existing market frameworks whilst retaining the flexibility to respond to market conditions and public needs as markets and the economy evolve, and to be an investable proposition for both T&SCo and users of the network, attracting new domestic and international entrants to the market with the potential to be subsidy free. By using methods such as mutualisation and allowing the network to work organically, we are able to aid the evolution of these networks away from a reliance on HMG support.

Mutualisation Cap

Considering the above proposal of mutualisation, we are cognisant that users' exposure to increasing mutualised T&S fees should be limited by a cap and are considering the UK carbon price as the basis (denoted in a £/tonne). Using the carbon price provides an appropriate level of protection to users and uses a visible and established external benchmark, while still incentivising utilisation of the network. The above proposal also includes that mutualisation should be available from the beginning of operations to help mitigate the revenue gap the T&SCo may face during periods of Utilisation Build-Up. See Revenue Risks section, above, which explains how a revenue gap could persist in a Utilisation build up scenario where a Mutualisation gap is reached.

DPA user insolvency

In the event of a DPA user becoming insolvent, the T&SCo will face risk to collecting its allowed revenue due to the user no longer being able to pay its obligated network and capacity charges that are due in the present and subsequent years. In order to mitigate this potential shortfall, it is proposed that for an insolvent DPA Generator, the DPA will not be terminated until the end of the charging year suspending all payment obligations except the counterparty's payment of capacity and network fees. This will allow the DPA counterparty to continue to

³³ In such cases that the T&SCo has over collected allowed revenues in the previous year (for example a new user connects earlier than anticipated) the mutualisation process would result in a reduction to the network charge.

collect the user's obligated charges from the supplier levy and pass these charges directly to T&SCo as a third party to the DPA. This proposal is consistent with user charging principles as the user has committed to charges and restricted other users from booking capacity on the network.

If a user becomes insolvent before month 8 of the charging year, their related shortfall will be included in the charge setting process for the following year. This means that once their DPA expires, their obligated fees would be mutualised up to the cap among the remaining userbase (any remaining revenue gap would be recovered via taxpayer funded Revenue Support). However, if a user becomes insolvent after month 8 of the charging year, their fees can only be incorporated into the next charge setting process (month 16) and recovered in the following charging year. To prevent T&SCo from this potential revenue risk, the user's collateral³⁴ (see the CCUS Network Code for further detail)³⁵ and taxpayer funded Revenue Support will address their remaining fees until the shortfall can be mutualised across the remaining userbase.

TRI revenue model proposal for mitigating revenue risks

Utilisation Build-Up risk

Under the current design approach, the T&S network would be sized to take account of future users joining the T&S network where overall costs can benefit from economies of scale. This section outlines how charging recovery for Utilisation Build-Up via mutualisation will share the costs of the network across the userbase to account for users benefitting from being able to sequester carbon and decarbonise. We expect there will be two key influencers on cashflow for T&SCo: users will be scheduled to join the T&S network during the first regulatory period, and, due to the nascent nature of CCS technologies, there is the potential risk for developmental and operational delays associated with when users join the network.

This means that where the network is not fully utilised and users are paying T&S Fees that reflect the proportion of their use of the T&S network, the amount of revenue that T&SCo collects could be less than its total allowed revenue for the network as a whole exposing the T&SCo to a potential revenue gap.

Utilisation Build-Up is a forecastable revenue gap that can be taken into consideration when setting charges ahead of the next year. The quantum will vary based on factors such as: network design and specification, user choice, timeliness of users joining the network, and their size, type and profile of use. We are proposing that in the first instance, mutualisation should be used to address Utilisation Build-Up.

³⁴ Users will be required to post an annual Collateral that amounts to 2 months of their highest forecast network fees to cover fees if they face cashflow or insolvency issues. If Collateral is unused it is returned to the user and recalculated for the following charging year.

³⁵ [CCUS Network Code \(2022\)](#)

It is important here to note that the current proposal aligns charge recovery for Utilisation Build Up with benefits to each individual user of the network i.e., every user will pay their fair share of network usage. This means that mutualisation levels will reflect a user's demand for and impact on the network, so that those who benefit more from CO₂ abatement cost-benefits contribute appropriately. Mutualised fees will be proportionate to a user's network connection size and network usage profile. To protect users from being exposed to excessive mutualisation, the proposal implements a mutualisation cap, which alleviates the risk that network charges rise to financially unsustainable levels for those users.

The increase in charges to address Utilisation Build Up will also provide security for the T&SCo to continue as the network operator and service provider. It is in all users' best interest that T&SCo does not suffer financial instability and risk insolvency. Under this proposal, mutualisation of T&S user fees up to the cap will be the only process through which consumer levies will address a Utilisation Build-Up revenue gap.

This consultation seeks views on the mutualisation proposals, given their potential impact on electricity suppliers.

Please refer to the proposed amendments to ESO Regulation 2014 to enable the levy to fund mutualisation for Utilisation Build-Up below.

Consultation Questions – Part 2

4. In the context of the DPA, do you have any comments on the proposed approach to mutualisation of T&S fees, which is a system wide approach and is proposed to be used across all users and business models, in creating a fair and equitable system of revenue recovery?

5. Do you have any comments on the workability of the proposed approach to mutualisation and Revenue Support under the TRI model?

6. Through the lens of a DPA supported Generator, do you have any wider comments on mutualisation being the most suitable mechanism available to allow the T&SCo to recover its allowed revenue from network users, before calling on funding from Government backed RSA?

7. Any other general comments relating to the integration of the TRI model in to the DPA Business Model?

Next steps

We will use the responses to this consultation to inform our development of the regulatory amendments proposed.

This consultation is available from: www.gov.uk/government/consultations/amendments-to-electricity-supplier-obligation-regulations-to-implement-power-ccus-dispatchable-power-agreement-business-model

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