UNC678/A/B/C/D/E/F/G/H/I/J: Amendments to Gas Transmission Charging Regime: minded to decision and draft impact assessment

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We are consulting on proposed amendments to the Gas Transmission Charging regime. We would like views from people with an interest in gas transmission charging. We particularly welcome responses from gas network users including producers, shippers, and all types of consumers. We would also welcome responses from other stakeholders.

This document outlines the scope, purpose and questions of the consultation and how you can get involved. Once the consultation is closed, we will consider all responses. We want to be transparent in our consultations. We will publish the non-confidential responses we receive alongside a decision on next steps on our website at **Ofgem.gov.uk/consultations**. If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

Contents

Executive summary

1.1. Our energy system is undergoing a radical transformation as the process of decarbonisation accelerates to meet the commitment to achieve net zero greenhouse gas emissions by 2050. In addition to decarbonisation, changes in global gas markets and increased energy efficiency have resulted in significant changes to the use of the gas networks in Great Britain ("GB").

1.2. In 2015, Ofgem completed its review (the "Gas Transmission Charging Review, GTCR") of gas transmission entry charging arrangements. We concluded that fundamental changes to the charging arrangements were required to reflect the changing use of the transmission network. We asked industry to take forward our recommendations for reform alongside implementing the European network code on Gas Tariffs ("TAR NC"). This work culminated in a set of modification proposals (under Uniform Network Code ("UNC") 621). On 20 December 2018, we concluded that none of the UNC621 modifications were compliant with TAR NC, and therefore could not be implemented.

1.3. In May 2019, 11 new modification proposals[1] (under UNC678) were submitted to us for consideration. We are now setting out our minded to decision on these modifications.

1.4. We have concluded that only two of the 11 modifications (UNC678 and UNC678A) are compliant with the relevant legislation (i.e. TAR NC and Gas Regulation 715/2009). We have fully assessed all the modifications against a series of principles[2] (including compliance) and provide that assessment in this document. Fundamentally we cannot accept a non-compliant modification proposal. We have nonetheless applied our principles-based assessment and quantitative assessment across all the modification proposals in this document. Based on those assessments our minded-to decision is between the two compliant modifications and our preference is for proposal **UNC678A.**

[1] The proposals consist of the original Modification Proposal and 10 Alternatives. In this document we refer to them all collectively as "proposals" or "modifications".

[2] As part of our principles-based assessment we examined the following criteria, which derive from different sources (see Appendix 3): (i) Compliance; (ii) Cost-reflectivity; (iii) Promotion of effective competition, avoiding undue discrimination and cross-subsidy; (iv) Network efficiency; (v) Security of supply; (vi) Consumer costs; and (vii) Environmental impacts.

1.5. The Ofgem Impact Assessment is set out in Appendix 2 and should be read alongside this executive summary.

Modifications UNC678 and UNC678A: CWD and PS RPMs

1.6. The decision between the two modifications which are compliant with the TAR NC and Gas Regulation is relatively finely balanced. The only difference between the two compliant modifications is the choice of Reference Price Methodology ("RPM"): UNC678 uses the Capacity Weighted Distance ("CWD") methodology and UNC678A uses the Postage Stamp ("PS") methodology.

1.7. The variation between capacity charges across entry and exit points in GB would fall significantly under both RPMs compared to the status quo (although the level of the capacity charge would increase as it would be set to fully recover NGGT's Transmission Services allowed revenue). Incentives for a party to choose a particular location to benefit from lower transmission charges are therefore likely to be lower under both RPMs compared to the status quo. However, there will be geographic variations, and therefore locational incentives, under the CWD option, while the PS option has no geographic variations so does not provide locational incentives.

1.8. In terms of distributional impacts, we are of the view that the PS approach is fairer and better reflects the characteristics of the GB gas transmission system. As the gas system is largely operating well below capacity and location is not a significant driver of cost, we think that a PS approach to pricing is more appropriate. CWD would send signals to users at relatively distant points to shift or reduce demand but with no, or only marginal, benefits given that the system exists and is largely operating below capacity. We also note that the distances used in the CWD RPM are averaged across all points for the purposes of setting tariffs. These distances may not represent real physical flows in a highly meshed network such as the GB gas transmission system. Shippers book entry and exit capacity independently and nominate flows without specifying specific routes and therefore it is very difficult to determine flows, and to allocate flows to specific assets. This type of treatment of distance is therefore unlikely to generate prices that are accurately reflective of the physical transportation routes actually used. (Although as we consider the charges resulting from the RPMs to be largely functioning as Revenue Recovery Charges, cost-reflectivity is less relevant in any case.)

1.9. We have looked at the dynamic impacts of both RPMs and note that CWD is more likely to benefit Industrial and Commercial ("I&C") consumers who are relatively near gas entry points, while PS is more likely to benefit electricity generators (in terms of gas market impacts) who are relatively more distant from gas entry points. This is however, quite marginal and the impact of the different RPMs, for example, on the likelihood of bypass of the NTS is both small (PS would increase the number of routes that may present a risk of bypass by one compared to CWD) and uncertain. The main determinant of the likelihood of bypass is the existence or not of a short-haul discount. Finally, storage facilities would pay somewhat lower charges under a CWD RPM than a PS RPM.

1.10. There is little difference between the quantitative impacts, with both proposals offering a similar Net Present Value ("NPV") for GB gas consumers. Based on the central modelling scenario – the 2019 FES Two Degrees scenario – the expected benefits to GB gas consumers from the two compliant modifications compared to the status quo are set out below:

Benefits from 2022 - 2031 (NPV £bn, discounted to £18/19) under FES 2019 Two Degrees scenario

	UNC678 (CWD)	UNC678A (Postage Stamp)
Gas domestic consumers	£0.58bn	£0.54bn
Gas non-domestic consumers	£0.40bn	£0.37bn
Gas-fired power generators (gas market impacts only)	-£0.11bn	-£0.09bn
Total gas consumers	**£0.87bn**	**£0.82bn**

1.11. The modelling was carried out by our consultants CEPA, and includes CEPA's estimates of impacts on both gas and electricity consumers. The modelling is summarised in section 5 and Appendix 2 of this document and described in detail in CEPA's technical report.

1.12. As our principles-based analysis shows that PS is preferred and the quantitative, dynamic, and other analyses show that there is relatively little difference between these two RPMs, **our minded to decision is to approve the PS methodology (UNC678A)**. We have fully assessed both compliant modifications (and the non-compliant modifications). This allows us, should the consultation responses bring to light new and significant information, to make a final decision to approve a modification other than UNC678A.

Our minded-to decision

1.13. Our minded-to decision is to approve UNC678A based on the following considerations:

- **Compliance**: UNC678A is compliant with the TAR NC and Gas Regulation.

- **Cost-reflectivity**: UNC678A better facilitates the objective of cost-reflectivity relative to the status quo. In the context of a meshed network largely operating below capacity with declining demand, we consider that the main consideration is the appropriate and fair recovery of costs that is not likely to lead to inefficient behaviour and distortions. On this basis, a PS RPM is likely to be more appropriate than a CWD RPM.
- **Competition, undue discrimination and cross-subsidy**: UNC678A does not include features which, if not properly designed or justified, may be considered to be unduly discriminatory such as discounts or revenue recovery exclusions (other than those required by TAR NC). By avoiding undue discrimination between users, the option is likely to facilitate competition. As UNC678A does not include a distance-based cost driver, it avoids discrimination between entry and exit flows at different parts of the network which are not strongly correlated with network costs. UNC678A does result in a significant increase in the entry tariff for gas storage however, which may negatively impact on revenues for these facilities.
- **Network efficiency**: By avoiding a distance-based cost driver, UNC678A will encourage flows from the cheapest sources of entry regardless of location on the NTS. However, we note that the PS RPM may result in higher tariffs over shorter entry-exit route distances. CEPA's analysis suggests that this may marginally increase the risk of bypass relative to the status quo compared to a CWD RPM but our analysis shows that what largely determines the probability of bypass is not the choice of RPM but the availability or not of a short-haul discounted product.
- **Security of supply**: UNC678A will support security of supply by introducing non-discriminatory, cost-reflective tariff signals for all participants.
- **Consumer costs**: While modelling suggests that the benefits of the PS RPM (UNC678A) to gas consumers may be slightly less than under the CWD RPM (UNC678), the PS RPM produces fairer outcomes in that the transmission charge element of consumer bills will not vary by location.
- **Environmental impacts**: By encouraging an increase in gas usage, carbon emissions may increase slightly, particularly in the longer term. However, these impacts are considered to be marginal and dependent on broader market outcomes (e.g. the electricity mix of neighbouring markets). We note that nascent renewable gas facilities may prefer simple and predictable tariffs which are not related to distance to exit capacity. The UNC678A approach also treats the transmission of gas the same regardless of location which treats CO2 emissions the same irrespective of location.

1.14. In reaching our minded-to decision, we note the three considerations below. We also note that any future modifications on these or any other points would be assessed as usual, including against the relevant UNC code objectives and for compliance with all legislation.

- **The risk of NTS bypass**: CEPA has estimated that UNC678A could result in an increase in the risk of bypass relative to the status quo. In our view, the construction or usage of alternative network infrastructure to the NTS which leads to higher costs overall would not represent an efficient outcome. However, we note that this risk is not driven by the choice of the RPM, but largely by the absence of a short-haul discount. The other compliant modification, UNC678, gives rise to a lower risk of bypass, but the difference is marginal and may not be significant in practice.
- **Storage discount**: CEPA's analysis also demonstrated the potential for UNC678A (and the other compliant modification UNC678, albeit to a marginally lower extent) to impact on the revenues of gas storage facilities. We note some of the arguments that have been put forward by gas storage representatives in relation to the justification of a higher discount, including in relation to security of supply and price stability. We remain open to a storage discount of above 50% where this is well justified and appropriate, including recognition of the costs that the use of storage imposes on the system. However, the only proposals that contain a discount higher than 50% for storage facilities are non-compliant (because of the proposed exclusions from RRCs) so we do not have the option at this stage to accept a higher discount.
- **Governance of the FCC methodology:** This is a less significant issue than the two presented above, but we think that for reasons of consistent governance, the Future Contracted Capacity methodology should be within the UNC. This issue is common to both compliant modifications.

Implementation

1.15. We propose that implementation should take place on 1 October 2020 to coincide with that start of the gas year. This will be dependent on full consideration of responses to this consultation.

1. Introduction

What are we consulting on?

1.1. This consultation document incorporates our draft Impact Assessment which assesses the effect that the Uniform Network Code ("UNC") modification proposals, submitted to us for decision, may have on consumers and industry participants, as well as any environmental impacts. This document also contains our proposed ("minded to") decision on the code modifications. We are seeking views and further evidence on both the draft Impact Assessment and the minded to decision as part of our decision-making process.

1.2. We have been asked to make a decision on proposals[3] to change the UNC. The proposals, discussed later in this document, have been through an industry workgroup process and consultation. As a result of the impact that the changes may have, we have decided to publish a "Minded to Decision" and "Draft Impact Assessment", and to seek views on both.

1.3. We will take responses to this consultation on the draft Impact Assessment into account when making our final decision, as well as the views from all stakeholders and National Regulatory Authorities ("NRAs") of all directly connected Member States[4], the industry, the UNC Panel, and those included in the UNC Final Modification Report ("FMR").

1.4. This is the "final consultation" in accordance with Article 26(1) of Commission Regulation (EU) 2017/460 of 16 March 2017 establishing a network code on harmonised transmission tariff structures for gas ("TAR NC"). Following this consultation, we will make a final decision under Article 27(4) of TAR NC[5], the UNC Code Relevant Objectives and UNC Charging Methodology Objectives, as well as our statutory duties.

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[3] The proposals consist of the original Modification Proposal and 10 Alternatives. In this document we refer to them all collectively as "proposals".
[4] The relevant neighbouring NRAs are: the Belgian Federal Commission for Electricity and Gas Regulation (CREG); the Netherlands Authority for Consumers and Markets (ACM) and the Commission for Regulation of Utilities (CRU) of the Republic of Ireland
[5] Article 26(1) of TAR NC sets out the obligation of the NRA to carry out periodic consultation and states that the final consultation prior to the decision referred to in Article 27(4) shall comply with the requirements set out in Articles 26 and 27. Article 27(4) states that within five months following the end of the final consultation, the NRA, acting in accordance with Article 41(6)(a) of Directive 2009/73/EC, shall take and publish a motivated decision on all items set out in Article 26(1). Upon publication, the NRA shall send to ACER and the European Commission its decision. Moreover, Article 28(1) of TAR

1.5. The draft Impact Assessment contained at Appendix 2 has been produced under section 5A of the Utilities Act 2000. We note that the quantitative modelling included in this draft Impact Assessment is for the purposes of this decision only, and does not constitute an official Ofgem forecast of future network charges, energy costs or any other element. We would welcome views on this work and on any other analysis we should consider.

Ofgem's duties

1.6. Ofgem's principal objective is to protect the interests of existing and future energy consumers. In accordance with our statutory duties, we work to promote value for money, security of supply and sustainability for consumers. We do this through the supervision and development of markets, regulation and the delivery of government schemes.

1.7. The interests of consumers are their interests as a whole, including their interests in the reduction of greenhouse gases, the security of supply of gas and electricity, and the fulfilment of the objectives of the Third Package.[6] In addition, our general duties require us to have regard to the needs of vulnerable consumers and the principles of Better Regulation, as well as the need to contribute to sustainable development (among other things).

1.8. When we make a decision, we must do so in a way that best protects the interests of existing and future consumers. This includes balancing the benefit of any action we take against the cost that may be imposed as a result of those requirements. Impact assessments play an important role in helping us to achieve our statutory duties.

Section 2: Background

1.9. In this section we summarise the background to the proposed modifications, the existing gas charging arrangements and relevant developments in this area which we take into account in making our decision. We also summarise the UNC modification process and governance.

states that at the same time as the final consultation carried out in accordance with Article 26(1), the NRA shall conduct a consultation with the NRAs of all directly connected Member States and the relevant stakeholders on the items specified in this provision.

[6] These are the objectives set out in Article 40(a) to (h) of the Gas Directive and Article 36(a) to (h) of the Electricity Directive.

Section 3: Options available to us

1.10. In this section, we summarise the options that have been presented to us for decision. We summarise each of the characteristics of the modification proposals that are relevant for our consideration.

Section 4: Assessment against decision making criteria

1.11. In this section we set out our decision making criteria before presenting our assessment of the modification characteristics against each criteria.

Section 5: Quantifying potential impacts of reform

1.12. In this section we summarise the analysis carried out by CEPA to support our decision making. We outline the modelling approach that was used and present key findings in terms of impact on tariffs, consumer outcomes and impacts on market participants.

Section 6: Assessment against the applicable UNC objectives

1.13. In this section we set out our assessment of the modification proposals against the relevant UNC objectives. We consider whether the characteristics of the modifications presented to us better facilitate each UNC objective in turn.

Section 7: Conclusion – Minded-to decision

1.14. We present our conclusion and our minded-to decision regarding which of the proposed modifications we intend to accept.

Context and related publications

1.15. This consultation concerns a set of proposals (UNC678/A/B/C/D/E/F/G/H/I/J) to amend the current GB transmission charging arrangements, contained in the UNC, with a view to ensure compliance with TAR NC.

1.16. All materials and analysis related to UNC678/A/B/C/D/E/F/G/H/I/J can be accessed at the following dedicated link on the website of the Joint Office of Gas Transporters: http://www.gasgovernance.co.uk/0678

1.17. Moreover, from 23 April 2019 to 8 May 2019, NGGT carried out a preliminary consultation in accordance with Article 26(1) of TAR NC. All consultation documents and data tables can be accessed at: https://www.nationalgridgas.com/about-us/eu-network-codes-implementation (please select "Closed Consultation" from the menu options).

Consultation stages

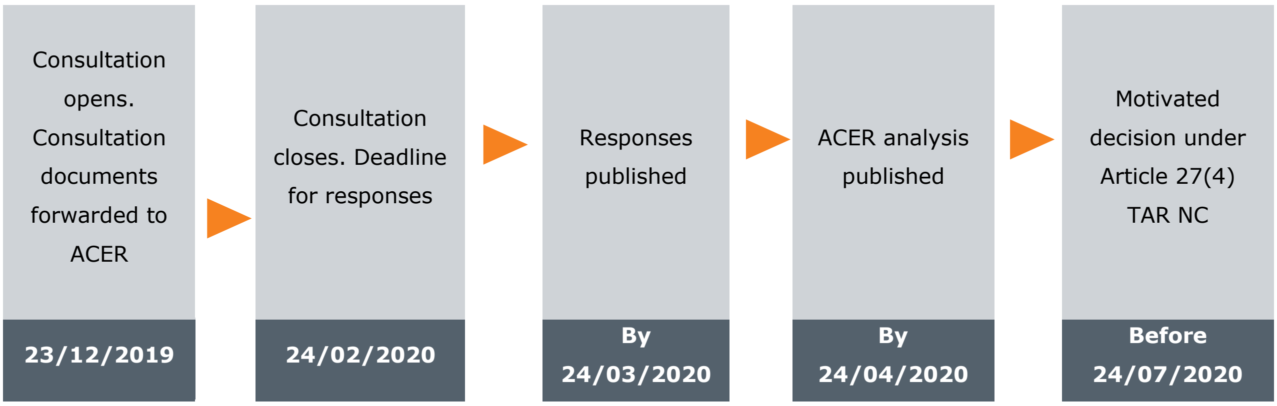
1.18. We are publishing this consultation on **23 December 2019**, in accordance with Article 26(1) of TAR NC. The consultation shall be open for two months as required under Article 26 of TAR NC, so please send your **responses by Monday 24 February 2020**. Upon launching this consultation, we shall forward the consultation documents to the Agency for the Cooperation of Energy Regulators ("ACER").

1.19. Within one month following the end of the consultation, we will publish the consultation responses received and their summary.

1.20. Within two months following the end of the consultation, ACER shall publish and send to Ofgem, and the European Commission the conclusion of its analysis in accordance with Article 27 of TAR NC.[7]

1.21. Within five months following the end of the final consultation, we will take and publish a final ("motivated") decision on all items set out in Article 26(1), acting in accordance with Article 41(6)(a) of Directive 2009/73/EC. Upon publication, Ofgem will send to ACER and the European Commission its decision (Article 27(4) TAR NC).

Figure 1: Consultation stages



[7] Once published, ACER's analysis will become available at: https://acer.europa.eu/en/Gas/Framework%20guidelines_and_network%20codes/Pages/Harmonised-transmission-tariff-structures.aspx

How to respond

1.22. We want to hear from anyone interested in this consultation. As part of this consultation exercise, we have posed a number of questions (listed in **Appendix 1**) to assist consultees in providing representations, information and evidence to us in response to our minded-to decision. These questions are intended to guide responses, but do not prevent consultees raising other matters which are considered to be material to our final decision. Please send your response to the person or team named on this document's front page. Please note that **your response must be accompanied by a summary of no more than 250 words**.

1.23. We have asked for your feedback on questions throughout this document.

1.24. We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations. This is a legal requirement under TAR NC (Article 26(3)).

Your response, data and confidentiality

1.25. You can ask us to keep your response, or parts of your response, confidential. We'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose. If you do want us to keep your response confidential, please clearly mark this on your response and explain why.

1.26. If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you *do* wish to be kept confidential and those that you *do not* wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we'll get in touch with you to discuss which parts of the information in your response should be kept confidential, and which can be published. We might ask for reasons why.

1.27. If the information you give in your response contains personal data under the General Data Protection Regulation 2016/379 (GDPR) and domestic legislation on data protection, the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 8.

1.28. If you wish to respond confidentially, we'll keep your response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We won't link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.

General feedback

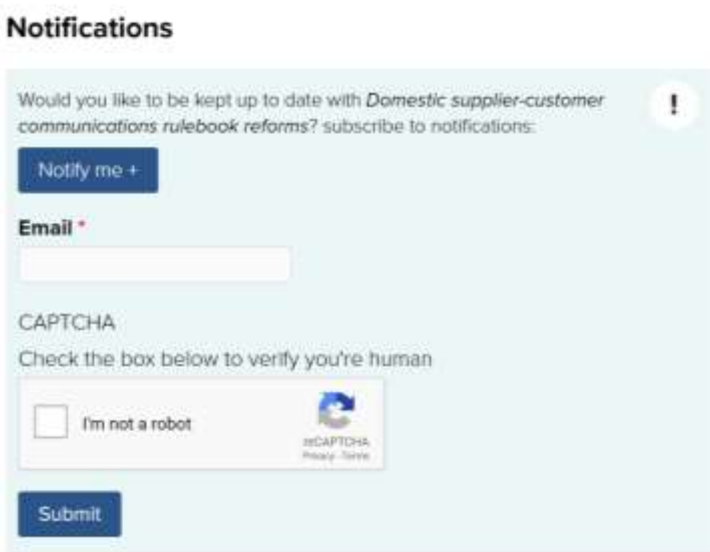
1.29. We believe that consultation is at the heart of good policy development. We welcome any comments about how we've run this consultation. We'd also like to get your answers to these questions:

1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

Please send any general feedback comments to stakeholders@ofgem.gov.uk

How to track the progress of the consultation

You can track the progress of a consultation from upcoming to decision status using the 'notify me' function on a consultation page when published on our website. Ofgem.gov.uk/consultations.



Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:

Upcoming ► Open ► Closed (awaiting decision) ► Closed (with decision)

2. Background

Section summary

This section sets out the context and background for our minded-to decision.

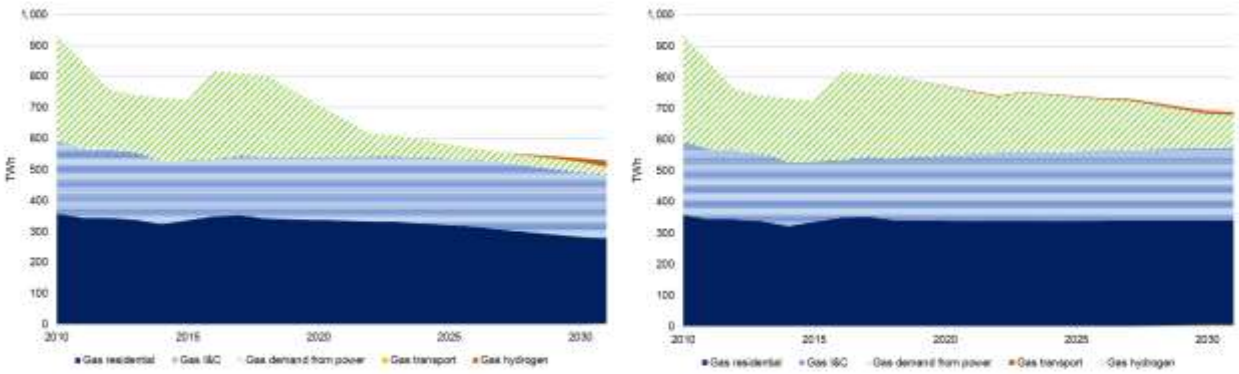
Introduction

2.1. The amount of gas flowing through the GB gas transmission network is falling and is forecast to continue to fall for the period covered in the Impact Assessment (i.e. out to 2030)[8], necessitating a need to reconsider these network charging arrangements to ensure that they facilitate the competitive market needed to deliver the best outcome for consumers. The figure below shows the forecast gas demand under two of the four 2019 National Grid Future Energy Scenarios ("FES")[9]. The "Two Degrees" scenario assumes that Government meets the *previous* commitment of an 80% reduction in greenhouse gas emissions by 2050 (which has now been superseded by a commitment to a 100% reduction by 2050). The Steady Progression scenario assumes that Government fails to meet the previous 80% reduction target by 2050. In light of the Government's decision to adopt a legally binding target of 100% reduction by 2050, we consider that for the purposes of assessing the modifications in front of us, that the Two Degrees scenario should be used as the central scenario for consideration, and welcome views on this approach.

[8] We note that in the case of both the Two Degrees and the Steady Progression scenario, gas demand starts to increase from around 2040.
[9] National Grid FES, July 2019: http://fes.nationalgrid.com/media/1409/fes-2019.pdf

Figure 0.1: Demand forecasts under the 2019 FES Two Degrees and Steady Progression scenarios

Two Degrees *Steady Progression*



Source: *National Grid – FES 2019*

2.2. The gas transmission network is largely operating below capacity due to lower demand, falling domestic production, and increased imports via interconnectors and shipped LNG. The declining gas volumes have a negative impact on National Grid Gas Transmission's ("NGGT") revenue collection, which is made more problematic by the existing capacity allocation and charging arrangements. As a consequence of these arrangements, NGGT recover an increasing proportion of its revenues from commodity-based charges.

The current Gas Transmission Charging Regime

2.3. In Great Britain (GB), NGGT owns and operates the National Transmission System ("NTS"), a network of gas pipelines which convey gas from NTS entry points to NTS exit points. NGGT performs its role under licence from Ofgem, and is subject to transmission owner ("TO") and system operator ("SO") price controls. This means that the amount of revenue that it can recover from those parties that use the NTS is regulated.

2.4. NGGT levies network charges in accordance with the NTS charging methodology contained with the UNC. Under current arrangements, network users pay for the 'right' to flow gas onto (entry) and off (exit) the NTS. Entry and exit rights are purchased separately. These "right to flow" charges are referred to as capacity charges, and are payable regardless of whether a user exercises its right to flow gas. Users also pay separate TO and SO charges for each unit of gas they flow. These charges are referred to as "flow-based" or "commodity charges". Together these charges allow NGGT to recover its allowed revenue, set through the RIIO price controls.

2.5. NGGT's TO allowed revenue is recovered 50% from entry charges and 50% from exit charges. Both entry and exit charges currently comprise a capacity and a commodity element. As the use of the NTS has declined, an increasing proportion of both entry and exit revenues are recovered from the commodity charges. Separately, NGGT's SO allowed revenue is recovered via SO commodity charges.

2.6. Entry capacity rights are purchased via auction in annual, quarterly, monthly, daily and within-day tranches.[10] Auction reserve prices are determined on a point-by-point basis and users bid against these prices. Under the current arrangements, reserve prices are derived from a reference price, which is determined using a long run marginal cost ("LRMC") based reference price methodology ("RPM"). The LRMC methodology is an investment-based approach, which takes into account the hypothetical cost of expanding the network at each entry or exit point, plus other factors including flow scenarios and gas supply merit order. In determining a reserve price from a reference price, specific discounts and adjustments may be applied, subject to UNC provisions.

2.7. TO commodity charges seek to manage the under-/over recovery of NGGT's TO allowed revenue. The amount of revenue recovered by TO commodity charges has grown significantly in recent years, largely as a result of decreasing gas flows on the NTS, and an increasing reliance on short-term capacity products (i.e. daily and within day), which are discounted relative to longer-term products. In 2018/19, approximately 60% of TO revenue was recovered through TO commodity charges. In addition, an Optional Commodity Charge ("OCC") may be payable under certain circumstances.

The Gas Transmission Charging Review ("GTCR") and Gas Charging Review ("GCR")

2.8. In 2015, Ofgem concluded its review (the "Gas Transmission Charging Review, GTCR") of gas transmission entry charging arrangements. We undertook the review in light of significant and ongoing changes to the patterns of gas flows on the NTS and the (at the time) emerging TAR NC. In November 2015, and again in February 2017, we set out our policy views to provide further clarity on the scope of changes to be brought forward as a consequence of the GTCR and TAR NC. We invited NGGT and industry to lead this work via the UNC code modification process. After leading its own review (the Gas Charging Review,

[10] Exit capacity is booked based on administered prices that are re-calculated annually.

"GCR") [11], the industry developed UNC621 and 10 alternative proposals (UNC621, A – L).[12] On 20 December 2018, we concluded that none of the UNC621 modifications were compliant with TAR NC, and therefore could not be implemented.[13] In our decision we noted that "we expect industry to ensure GB is compliant with the requirements of the TAR NC as soon as possible".

Tariff Network Code ("TAR NC")

2.9. TAR NC entered into force on 5 April 2017. Its objectives are to contribute to market integration, to enhance security of supply and to promote interconnection between gas networks. It seeks to increase the transparency of transmission tariff structures and procedures for setting them. Whilst the TAR NC itself entered into force in April 2017, some of its provisions applied from May 2019.

The key features of TAR NC

2.10. TAR NC specifies the format of network charges depending on the 'service' they relate to. The Transmission System Operator ("TSO", which is NGGT in GB) provides services for which they recover their allowed revenues. TAR NC divides these into 'transmission' and 'non transmission services', and specifies the format of charges levied for each. TAR NC specifies that by default, revenues for transmission services are recovered via capacity-based tariffs, and only allows the use of commodity-based tariffs for recovering transmission services revenues by exception. When certain criteria, listed in the TAR NC, are met, commodity-based tariffs may be used for recovering flow-based costs and for managing revenue recovery. Separate 'non-transmission' tariffs may be levied to recover revenue for non-transmission services. TAR NC allows a degree of National Regulatory Authority ("NRA") discretion regarding the format of these tariffs.

2.11. TAR NC requires that transmission tariffs should be **cost-reflective and predictable**. Cost-reflectivity relates to investment and operational costs and to the specific 'cost drivers'.

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[11] Joint Office NTS Charging Methodology Forum (NTS CMF) Gas Charging Review.

[12] Referred to collectively as the 'UNC621 modifications'. UNC621G was withdrawn during the modification development process. There was no UNC621I.

[13] Decision to reject UNC 621/A/B/C/D/E/F/H/J/K/L (20 December 2018): https://www.ofgem.gov.uk/publicationsand-updates/uniform-network-code-unc-621abcdefhjkl-amendments-gas-transmission-charging-regime

TAR NC states that the costs of transmission services are caused by the cost drivers of capacity and distance (Article 4(1)(a)). With regard to these features, the TAR NC requires that a Reference Price Methodology ("RPM") is developed that is consulted on and applied to all entry and exit points. Although TAR NC does not require a specific approach to calculation of the Reference Price, it specifies that any methodology must be compared against a 'Capacity Weighted Distance' ("CWD") counterfactual approach. The TAR NC includes a requirement to implement the RPM by 31 May 2019[14].

2.12. In addition to these general provisions, TAR NC requires *inter alia*:

- the introduction of floating payable prices at Interconnection Points ("IPs");
- the cessation of commodity charges for managing under- and over-recovery of transmission services revenues at IPs;
- setting the price of interruptible capacity at IPs to reflect the probability of interruption;
- placing upper and lower limits on the level of multipliers and seasonal factors which can be applied to non-yearly standard capacity products.

2.13. TAR NC requires a specific discount of at least 50% on the capacity price for transmission to and from storage facilities aimed at 'avoiding double charging'. Discounts may also be offered to entry points from LNG facilities, and from facilities developed for the purpose of ending the isolation of Member States, if such discounts promote security of supply.

2.14. TAR NC grants specific protection for "Existing Contracts", noting that the "levels of transmission tariffs" are not to be affected for contracts concluded prior to 6 April 2017 "…*where such contracts or capacity bookings foresee no change in the levels of the capacity- and/or commodity-based transmission tariffs except for indexation, if any*".

2.15. In GB, the requirements of TAR NC need to be largely implemented through changes to the UNC, as the contractual framework for GB's gas industry.

[14] We have previously noted the urgency of introducing compliant arrangements, for example in our decision on UNC621.

The UNC modification process

2.16. The UNC is subject to an open industry governance process, meaning that in most instances it is changed through an industry-led change management process, with modifications being proposed by industry parties. Proposed modifications are developed within a workgroup process, where relevant.

2.17. Proposals are developed and assessed according to whether, and how well, they further the applicable objectives outlined in the UNC. Importantly, the UNC has separate objectives in respect of Charging Methodologies,[15] which are applicable in respect of UNC678.

2.18. The outcome of the workgroup is then sent for consultation to the wider industry and is then considered by the UNC Panel, who then vote on which proposal or proposals they consider better and best meet the applicable UNC objectives, both against the 'status quo' (also referred to as the 'baseline' or 'do nothing') scenario and against the other proposals. The recommendation of the UNC Panel is then submitted to the Authority for decision as part of the Final Modification Report ("FMR").[16]

UNC678 and alternatives

2.19. On 17 January 2019, NGGT raised UNC678 stating that it seeks to introduce gas transmission charging arrangements that produce stable and predictable transmission charges and ensure compliance with TAR NC. UNC678 aims to deliver compliance with TAR NC by amending the gas transmission charging regime, whilst seeking to better meet the relevant charging objectives.

2.20. In response to the proposer's request, we considered its justification and granted urgent status to modification UNC678 on 25 January 2019[17]. In March 2019, after slower than expected progress of the UNC678 proposals, we provided the UNC678 workgroup with additional time to develop the modifications in order to allow all UNC678 modification

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[15] Listed in paragraph 5 of Standard Special Condition A5 of the Gas Transporters licence
[16] Except if the Modification Proposal is following the Self Governance route
[17] See our decision letter on urgent status here: https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-01/unc0678_-_urgency_decision.pdf

proposers and the UNC678 Workgroup to complete their respective modifications and the Workgroup Report.[18]

2.21. Modification UNC678 was discussed by the UNC678 Workgroup and ten alternative proposals (UNC678A/B/C/D/E/F/G/H/I/J) were raised to accommodate the various points of view of the workgroup members. In all, 11 proposals were developed. A comparison of the different elements of these 11 proposals is available on the website of the Joint Office of Gas Transporters[19].

2.22. UNC678 and its alternatives aim to replace the current charging methodology which is based on the LRMC RPM and commodity charges, and introduce wide-ranging changes to different aspects of the charging methodology as follows:

Reference Price Methodology (determines the auction reserve (i.e. floor) price): proposes to replace the current LRMC-based RPM with a methodology based either on a Capacity Weighted Distance ("CWD") or Postage Stamp ("PS") approach;
Reserve price discounts (temporal discounts on capacity price): proposes to remove existing short-term discounts and equalise the capacity price over all time horizons (save for 'interruptible capacity bookings' which would have a 10% discount relative to firm bookings);
Capacity price discounts (discounts for specific entry/exit points): all options propose a 50% or 80% discount for storage points. Also, one modification (UNC678I) proposes a 95% Ireland Security Discount at Moffat IP Exit Point for nominated supply routes from UK Beach Terminals;
Revenue Recovery Charges (the charge used to reconcile the difference between revenue recovered via capacity charges and NGGT allowed revenues): all proposals convert the current TO commodity-based top up charges to capacity-based charges. Proposals exclude certain types of capacity booking (Existing Contracts and/or Existing/all storage bookings) from revenue recovery charges;
NTS Optional Charge (an optional charge to "discourage inefficient bypass of the NTS"): Some options remove the existing Optional Commodity Charge ("OCC") arrangements without replacement. Other proposals replace the OCC arrangements with an optional capacity charge. In all, there are three different sets of proposed arrangements for how the optional capacity charge would work and these are defined in chapter 3 (see §3.24 – 3.28).

[18] See our decision to extend the UNC678 timetable here: https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-03/UNC0678_-_extension_of_timetable.pdf
[19] http://www.gasgovernance.co.uk/0678/Comparison

2.23. The UNC678 Draft Modification Report was finalised on 12 April 2019[20] and the panel invited representations from interested parties on 15 April 2019. There were 37 responses to the industry consultation.[21]

2.24. Furthermore, between 23 April 2019 and 8 May 2019, NGGT carried out a preliminary consultation in accordance with Article 26(1) of TAR NC.[22] There were two responses received as part of that consultation.

The UNC Panel

2.25. The UNC Panel met on 23 May 2019 and voted on the original proposal and the Alternatives. The Panel recommended that none of the modification proposals should be implemented. The FMR was subsequently sent to Ofgem on 29 May 2019 to make a decision on the proposals.

2.26. The UNC Panel discussed compliance of the original proposal and the Alternatives with TAR NC. The key compliance areas in the Panel's view were:

- The three particular areas discussed in the Ofgem 0621 Decision letter (interim contracts, transition period with commodity charges and structure of the optional commodity charge (referred to as "short-haul"));
- Whether short-haul type charges are compliant with TAR NC
- Article 35 treatment of Existing Contracts.[23]

[20] The Draft Modification Report can be found here: https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-04/Part%20I%20of%20II%20Draft%20Modification%20Report%200678%20v1.0_0.pdf
[21] Representations in response to the Draft Modification Report can be found here: http://www.gasgovernance.co.uk/0678/Reps
[22] All consultation documents and data tables can be accessed at: https://www.nationalgridgas.com/about-us/eu-network-codes-implementation (please select "Closed Consultation" from the menu options). We directed NGGT to carry out an Article 26(1) preliminary consultation on 10 April 2019: https://www.ofgem.gov.uk/publications-and-updates/decision-national-grid-gas-plc-ngg-undertakes-specific-tasks-implement-aspects-regulation-eu-2017460-european-network-code-harmonised-transmission-tariff-structures-gas-tar-nc
[23] UNC678/A/B/C/D/E/F/G/H/I/J Final Modification Report (Part I) page 169.

2.27. In support of the decision-making process, we have completed the Impact Assessment set out in this document and an assessment of compliance of the modification proposals with relevant legislation.

Ofgem decision

2.28. We will make our decision based on an assessment on the modification proposals against the applicable UNC objectives, as well as our wider statutory duties. We will make our final decision on the proposals and evidence within the FMR, and will take the workgroup vote, the UNC Panel vote, and responses to the consultations (Ofgem and industry) into account.

2.29. When making a decision, we can approve any option put forward to the UNC Panel and can go against the UNC Panel recommendations if we feel it better meets the applicable UNC objectives and our statutory duties. In the UNC modification proposal process, we have the following three options:

- **Accept** – We accept one of the options presented to us;
- **Reject** - We reject all of the options presented to us; and
- **Send back** – We can send the modifications back to the UNC Panel if we consider that, for example, further analysis is required to be carried out by the workgroup, and / or we consider we are unable to form an opinion based on the information submitted to us.

2.30. When making a decision, Ofgem does not have the option to make changes to the modifications submitted to us, though some of the modification proposals allow us to consider implementation dates.

3. Options available to us

Section summary

The Authority is required to make a decision to approve or reject UNC678 and its alternatives. In total 11 modification options have been presented to us for consideration. While each modification shares a number of common attributes, they each have some particular characteristics which require careful consideration.

The modification proposals and their components

3.1. In this section we outline the key components of the proposals, focusing on the following:

i) The proposed Reference Price Methodology;
ii) Determination of the Reserve price;
iii) The proposed treatment of additional Revenue Recovery;
iv) The proposed treatment of the NTS Optional Charge;
v) Non-transmission services; and
vi) Additional discounts to the reserve price.

3.2. There are no proposals to change the following elements of the current charging methodology: K-value, seasonal factors (not used in current methodology and not proposed under UNC678 modifications), and the 50:50 entry:exit split. A comparison of the different elements of these 11 proposals is available on the website of the Joint Office of Gas Transporters[24].

The Reference Price Methodology

3.3. UNC678 proposes fundamental change to GB's approach to the RPM. The RPM is currently a 'bottom up' long-run marginal cost ("LRMC") based approach, with top-up commodity charges. Under the UNC678 proposals it will become a 'top-down' model with a floating payable price, which will seek to recover most of NGGT's TO allowed revenue. By comparison, the LRMC approach currently used is only designed to produce capacity Reference Prices that reflect long-run marginal costs. In the context of a network largely

[24] http://www.gasgovernance.co.uk/0678/Comparison

operating below capacity; capacity prices based on the LRMC model in Gas Year 2018/19 recovered approximately 20% of allowed TO revenue on entry, and approximately 60% of allowed TO revenue on exit. This leaves a significant proportion of allowed revenue to be recovered by commodity charges and NGGT use these as additional top up charges to ensure allowed revenues are recovered.

3.4. There are two different RPMs proposed: Capacity-Weighted Distance ("CWD") and Postage Stamp ("PS"):

- CWD is based on the principle that the reference price at each entry (or exit) point should be based on the capacity and distance of each entry point to all exit points where flows may occur (and of each exit point to all entry points where flows may occur). The 'weight' of each entry (or exit) point is measured by its capacity-weighted distance from all exit (or entry) points. This is proposed under all Modification Proposals except UNC678A/C/H/J.
- PS applies the same reference price per unit of capacity at all entry and exit points. It is the simplest RPM and does not include any reference to the distance between entry and exit points. The PS methodology is proposed for UNC678A/C/H/J.

3.5. There are also several variables that impact the final reference prices determined by the RPM. Some are inputs to the model, including the Forecasted Contracted Capacity ("FCC") and the treatment of revenue and capacity associated with "Existing Contracts" in the RPM calculation. There is also a correction mechanism in the model used when it produces values that are zero or undefined. Each of these inputs are described below.

Forecasted Contracted Capacity (FCC)

3.6. In order to allocate NGGT's Transmission Services allowed revenue to derive the capacity reference / reserve prices, a forecast of contracted capacity is used. All UNC678 modification proposals incorporate a methodology to forecast contracted capacity. In all cases, the FCC excludes capacity which is included within Existing Contracts – i.e. those contracts which were agreed before 6 April 2017. In most cases, the methodology would not be included within the UNC with the objective of allowing for the methodology to be adapted more readily as and when required. However, in UNC678 B/C, the methodology would be included in the UNC and in UNC678A it would be referenced within the UNC with a review process defined there also.

3.7. The choice of FCC has a material impact on the amount of revenue that NGGT will recover via capacity charges. Critically, the closer the FCC value is to actual capacity bookings, the less NGGT will rely on subsequent revenue adjustments via the Transmission

Services Revenue Recovery Charges, explained under the subsection "The Revenue Recovery Charge" below.

Treatment of revenue from 'Existing Contracts'

3.8. Article 35 of the TAR NC states that:

"This Regulation shall not affect the levels of transmission tariffs resulting from contracts or capacity bookings concluded before 6 April 2017 where such contracts or capacity bookings foresee no change in the levels of the capacity- and/or commodity-based transmission tariffs except for indexation if any."

3.9. In the context of the GB gas network, there are a number of entry capacity contracts which fall under this definition and should be treated as such within the RPM arrangements (there are no eligible Exit Existing Contracts in GB).

3.10. The FCC value may also be impacted by the treatment of the capacity and revenue amounts associated with these 'Existing Contracts'. All modifications propose to exclude the capacity and revenues associated with Existing Contracts in the target revenue values fed into the RPM.

3.11. UNC678F proposes a "Capacity Surrender Rule" in which "Unprotected Capacity" (i.e. that contracted between February and December of 2018 can be 'surrendered' (in all or in part) by the contract holder where the price of their capacity (the relevant QSEC Reserve Price) increases by more than 5%.

Treatment of zero/undefined reference prices

3.12. The proposed RPMs use a calculation that divides total revenue by capacity to yield a unit capacity price for each entry/exit point. Due to various factors (e.g. points on the network where the FCC may be zero) it is possible that the CWD approach results in an undefined, zero, or negative reference price at certain locations. Where this is the case, all CWD based modifications propose a correction, whereby the reference price at the relevant entry/exit point will be based upon the price for the closest non-zero priced entry/exit point. This correction is not required where PS is used as the RPM since the capacity denominator will be an aggregate figure for the whole system and not on the basis of individual points.

Reserve prices

3.13. Under the TAR NC, discounts can subsequently be applied to the reference price(s). Once applied, the capacity price is referred to as the reserve price. This is effectively the auction floor price for a specific entry/exit point and NTS user. The reserve price is determined based on the reference price, plus any applicable discounts. There are different approaches among the UNC678 proposals with regards to the application of discounts.

3.14. All of the proposals advocate multipliers for firm capacity of 1, i.e. no discounts are applied to firm capacity products. This is a significant departure from current arrangements where day ahead and on the day capacity products are significantly discounted (effectively using multipliers of less than 1).

3.15. All proposed modifications include a capacity discount of 10% for interruptible bookings. This is designed to align with the requirements for interruptible capacity products set out within Article 16 of the TAR NC.

3.16. The Modification Proposals either propose a 50% or 80% discount for exit and entry capacity charges at storage sites. Article 9 of the TAR requires a minimum 50% discount.

3.17. None of the proposals advocate a discount to capacity-based transmission tariffs at entry points from LNG facilities.

3.18. UNC678I proposes a discount of 95% to the Reserve Price at the Moffat IP Exit Point to reflect a discount for the stated purposes of security of supply to Ireland.

The Revenue Recovery Charge (“RRC”)

3.19. The Transmission Services Revenue Recovery Charges (“TSRRCs” or simply “RRCs”) is used to ensure NGGT recover the correct allowed revenue via capacity bookings made at reserve prices. TAR sets out a general requirement that charges are capacity-based, except in exceptional cases. As such, all UNC678 proposals convert the currently commodity-based top up charge, to a capacity-based RRC.

3.20. The amount of revenue to be recovered via the RRC will be dependent on the design of the RPM (and specifically the FCC input).

3.21. There are also variants among the proposals in how the RRC will be levied and on which users which relate to the treatment of storage and Existing Contract holders.

3.22. Modifications UNC678 and UNC678A/B/D/I/J all propose to exclude Existing Contracts from the RRC. Modifications UNC678G/H propose to exclude only Existing Contracts at storage points from the RRC. Modifications UNC678C/E/F propose to exclude all storage contracts from the RRC although UNC678C does not include storage bookings for own use purposes within this exclusion.

3.23. For all options, NGGT would continue to allocate the Transmission Services allowed revenue between entry and exit 50:50, to generate target revenues for each. NGGT would then estimate the revenue from sales of capacity to generate a forecast of under- or over-recovery of target revenues for entry and exit. The RRC would then be calculated based on the forecast of under- or over-recovery for the specific entry/exit point, user, and contract type, and divided by forecast flows (or forecast capacity sales where the RRC is a capacity based charge). The modifications do not propose any significant change to how the under- or over-recovery at the end of the year, i.e. the K-value (which reflects the difference between allowed and collected revenues), is treated.

NTS Optional Charge ("NOC")

3.24. All options propose to remove the existing OCC. Options UNC678 and UNC678A/C/E/F do not propose to replace the OCC. The other options propose to introduce a capacity-based NTS Optional Charge ("NOC") in place of the current OCC.

3.25. There are three different approaches proposed for the NOC. UNC678B proposes a NOC ("**Methodology 1**") which establishes reserve prices with reference to the ratios of the straight-line entry-exit distance to entry and exit CWD values, and the application of a "System Utilisation Factor" ("SUF"). The SUF will be calculated as the sum of the FCC values for all entry and exit points divided by the "obligated capacity levels"[25] for all entry and exit points.

[25] "Obligated capacity" (or "baseline capacity") is the minimum amount of capacity that NGGT must make available at a specific point on the network, under its licence.

3.26. UNC678D/G/H/J all use a 'cost-based' methodology ("**Methodology 2**") which effectively converts the existing commodity charge into a capacity-based charge while adjusting the existing formula for Retail Price Index ("RPI") and introducing an annual Consumer Price Inflation ("CPI") adjustment.

3.27. All proposals under UNC678B/D/G/H/J allow for any entry or exit point to make use of the NOC product should they wish save for storage points and GDN offtakes. UNC678B introduces a minimum distance of 0.1 km into the calculation of the charge in order to ensure that the NOC charges are positive numbers.

3.28. UNC678I proposes a "Wheeling Charge" ("**Methodology 3**") which utilises Methodology 2 but limits eligibility to only those entry and exit points which exist at the same location (i.e. 0 km distance between them).

Non-transmission services charges

3.29. The TAR NC includes a distinction between 'Transmission Services' and 'Non-transmission Services'. Article 4 of the TAR NC sets out criteria that should be met for any service to be considered as a Transmission Service.

3.30. UNC678 and all of the alternatives raised agree on those services which are considered as Transmission Services and are recovered through the Transmission Services tariffs discussed above. The Non-Transmission Services revenue will be recovered through the following charges:

- General Non-Transmission Services Entry and Exit Charges;
- St Fergus Compression Charges;
- NTS Metering Charges;
- DN Pensions Deficit charges;
- Shared Supply Meter Point Administration charges;
- Allocation Charges at Interconnectors.

3.31. It is proposed that revenue due for collection via General Non-Transmission Services Entry and Exit Charges will be equal to the Non-Transmission Services revenue minus the DN Pensions Charges, NTS Meter Maintenance Charges, St. Fergus Compressor Charges, Shared Supply Meter Point Administration Charges and Allocation Charges at Interconnectors.

3.32. The revenue due for collection via General Non-Transmission Services Entry and Exit Charges will be recovered through a flow based charge as a flat unit price for all Entry Points and Exit Points. It is proposed that the St. Fergus Compressor Charges and General Non-Transmission Services Entry and Exit Charge rates may be adjusted at any point within the gas year.

3.33. It is proposed that the General Non-Transmission Services Entry and Exit Charges are applied to all flows excluding storage flows (unless it is flowed as "own use" gas at the storage point). The General Non-Transmission Services charge will be produced in p/kWh.

Multipliers and the Interruptible Discount

3.34. Within the existing charging arrangements, certain capacity products can be priced at a discount to the annual product. The Reserve Prices for these products currently can be priced between a zero and 100% discount relative to the annual product.

3.35. Article 13 of the TAR NC allows for multipliers to be applied to the capacity products available within different timescales relative to the Annual Reference Price so long as these multipliers are maintained within certain limits. All of the modifications proposed under UNC678 set these multipliers at one ("1") for all capacity products. This means that no adjustments would be applied to the Annual Reference Price to determine the Reserve Price for the relevant capacity product.

3.36. Article 16 of the TAR NC sets out the requirements for pricing of any interruptible capacity products. Under the current arrangements, interruptible capacity has a zero Reserve Price and is often purchased for free. Under the TAR NC, the interruptible product must be priced based on the probability of interruption in combination with an adjustment factor which may reflect the 'economic value' of the interruptible product.

3.37. All the UNC678 proposal include an interruptible capacity discount of 10% relative to the Annual Reference Price.

4. Assessment against decision making criteria

Section summary

In this chapter, we set out our decision making criteria and provide our assessment of the proposed modifications against these criteria. Given the common characteristics between modifications, we perform our assessment in relation to the characteristics of the proposed modifications, rather than on the modification proposals themselves. We then assess each modification in chapter 7.

Questions

Please provide evidence and analysis to support your responses.

Question 1: What is your view of our assessment that Postage Stamp is a more appropriate RPM in light of the circumstances of the GB network?
In responding to this question, please address, in particular, the following points in your response: (i) in a meshed network with spare capacity and declining usage, a fair approach to cost recovery would be based on the level of access to the system irrespective of individual location; and (ii) CWD may introduce signals for use of the network which discourage flows at more distant entry and exit points, without improving network efficiency.

Question 2: Do you agree with our assessment that maintaining the FCC methodology in the UNC improves the transparency and consistency of governance compared to maintaining the FCC Methodology outside of the UNC?

Question 3: What is your view on our assessment that the PS RPM would be preferable to the CWD for future green gas market entrants?

Methodology and Approach

Ofgem's decision-making framework

4.1. We are required to consider the merit of any proposed changes, and where appropriate, direct that the modification be made. Before making any decision to direct a modification in relation to gas transmission charging, we must satisfy ourselves that:

- the modification better facilitates the relevant UNC objectives as compared with both the status quo and also any alternative modifications put before us[26]; and
- the modification is consistent with our statutory duties under primary legislation and EU law with specific reference to TAR NC.

4.2. In the following section we undertake a principles-based assessment of the key components of the modification proposals as set out in Chapter 3, against a range of objectives which are set out in various pieces of legislation. We have identified relevant objectives which are included in the UNC (including the UNC Charging Methodology objectives), the TAR NC, the Gas Act 1986, the Gas Directive and the Gas Regulation.[27] We summarise the relevant articles within these documents in Appendix 3.

4.3. Given considerable overlap between these objectives and duties, we have distilled them into the following:

- Compliance, including with European Legislation
- Cost-reflective charging
- Promotion of effective competition, avoiding undue discrimination and cross-subsidy
- Network efficiency
- Security of supply considerations
- Consumer costs
- Environmental considerations

[26] We provide our assessment of the modification characteristics against the UNC objectives in Chapter 6.

[27] Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC ("Gas Directive); and Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005 ("Gas Regulation").

4.4. When undertaking our principles-based assessment, we have compared each component to the status quo to assess whether it is better than the baseline (i.e. better facilitates the objective). Taking both the assessment against the status quo and assessment of compliance, we have then assessed the modifications to consider which proposal(s) are most likely to best facilitate the UNC objectives and be consistent with our Statutory Duties. In considering the PS RPM we also compare it, as required by the TAR NC, to the CWD RPM.[28]

Compliance, including with European legislation

The Reference Price Methodology ("RPM")

4.5. The choice of methodology of the RPM is dealt with under Article 7 TAR NC (which must comply with various policy objectives laid down in Article 7 TAR NC and Article 13 of the Gas Regulation).

4.6. Article 7 TAR NC states that:
"the reference price methodology shall … aim at: (a) enabling network users to reproduce the calculation of reference prices and their accurate forecast; (b) taking into account the actual costs incurred for the provision of transmission services considering the level of complexity of the transmission network; (c) ensuring non-discrimination and prevent undue cross-subsidisation including by taking into account the cost allocation assessments set out in Article 5; (d) ensuring that significant volume risk related particularly to transport across an entry-exit system is not assigned to final customers within that entry-exit system; (e) ensuring that the resulting reference prices do not distort cross-border trade".

4.7. TAR NC does not impose a requirement for selecting a specific RPM. However, where the proposed RPM is not CWD, the proposed RPM must be compared against the CWD RPM as detailed in Article 8 TAR NC (see also Article 26(1)(a)(vi) TAR NC).

4.8. Both RPMs proposed by the UNC678 modifications (CWD and PS) are compliant with Article 7 TAR NC. In Appendix 5, we carry out a detailed assessment of the proposed RPM with the requirements of Article 7 TAR NC. An example of the indicative values produced by

[28] For the comparison of indicative reference prices at each entry point and at each exit point of the proposed RPM and the CWD detailed in Article 8, please see Appendix 6 (Table, item 6[A] and [B]).

CWD and PS for certain tariff years are contained in an illustrative model for UNC678, published by the Joint Office of Gas Transporters.[29]

Specific Capacity Discounts

Discounts at entry points from and exit points to storage facilities

4.9. Modification Proposals either propose a 50% or 80% discount for exit and entry capacity charges at storage sites. Article 9(1) of TAR NC states that:
"A discount of at least 50 % shall be applied to capacity-based transmission tariffs at entry points from and exit points to storage facilities, unless and to the extent a storage facility which is connected to more than one transmission or distribution network is used to compete with an interconnection point". According to Recital 4 of TAR NC, the rationale for this discount is "to avoid double charging for transmission to and from storage facilities".

4.10. Eight modifications[30] propose a 50% discount for storage facilities, whereas three modifications[31] propose an 80% discount. Hence all modifications are compliant with this element of TAR NC. In our UNC621 decision letter we indicated that our thinking at that time was that a 50% discount on transmission tariffs for shippers entering gas from, and exiting gas to, storage facilities could be justified on the basis that, in its absence, these flows would make a contribution to revenue recovery twice. Any discount above 50% would need a clear justification.[32]

Ireland Security Discount

4.11. UNC678I proposes an enduring discount of 95% for qualifying quantities at the Moffat Interconnector UK Exit Point. The Ireland Security Discount would be available for nominated supply routes from Beach Terminals as identified by NGGT. UNC678I states that the Ireland

[29] See file named "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models
[30] UNC678/A/B/D/G/H/I/J.
[31] UNC678C/E/F.
[32] Decision to reject UNC 621/A/B/C/D/E/F/H/J/K/L (20 December 2018) page 17: https://www.ofgem.gov.uk/publications-and-updates/uniform-network-code-unc-621abcdefhjkl-amendments-gas-transmission-charging-regime

Security Discount is proposed for security of supply purposes and to support the economic value of North Sea indigenous production.

4.12. UNC678I states that the proposed discount is consistent with Article 9(2) of TAR NC. This provision states that: "At entry points from LNG facilities, and at entry points from and exit points to infrastructure developed with the purpose of ending the isolation of Member States in respect of their gas transmission systems, a discount may be applied to the respective capacity-based transmission tariffs for the purposes of increasing security of supply".

4.13. This provision imposes a two-part test. As regards the first limb of the test, it is necessary for the infrastructure to have been developed with the "purpose" of ending isolation. As regards the second limb of the test, it is also necessary that a proposed discount must be adopted "for purposes of increasing security of supply".

4.14. The proposed Ireland Security Discount does not serve the purpose of increasing security of supply. Therefore, the test laid down in Article 9(2) of TAR NC is not satisfied.

4.15. Moreover, Article 13(1) of the Gas Regulation[33] provides that transmission charges "shall be applied in a non-discriminatory manner", while "avoiding cross-subsidies between network users". As discussed below (under section "Competition, undue discrimination and cross-subsidy"), the fact that only gas entering into the NTS through Beach terminals would qualify for the Ireland Security Discount is discriminatory. Moreover, the proposed discount of 95%, insofar as it is applicable at one exit point (i.e. Moffat IP), gives rise to an undue cross-subsidy.

4.16. For these reasons, UNC678I does not better facilitate compliance with EU legislation.

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[33] Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005.

Exclusions from Revenue Recovery Charges ("RRCs")

4.17. All modifications propose to introduce capacity-based RRCs to reconcile the difference between revenue recovered via capacity charges and NGGT Allowed Revenues.

4.18. However, the various modifications differ as to the categories of capacity which are exempt from the capacity-based RRC. Three different categories of exemption from the application of the RRC have been proposed:

- All Existing Contracts[34];
- Only Existing Contracts at storage sites[35];
- All contracts (current and new) at storage sites[36].

4.19. Article 35(1) of TAR NC provides:

"This Regulation shall not affect the levels of transmission tariffs resulting from contracts or capacity bookings concluded before 6 April 2017 where such contracts or capacity bookings foresee no change in the levels of the capacity- and/or commodity-based transmission tariffs except for indexation, if any".

4.20. Article 35 requires that contracts or capacity bookings which were 'concluded' before 6 April 2017 and which contained a fixed price element at that point in time, be that capacity-based or commodity-based, are protected in their entirety against TAR NC.

4.21. The phrase "capacity and/or commodity-based transmission tariffs" is important in defining the scope of Article 35. It makes it clear that Article 35 applies in cases where a contract foresees no change in the level of capacity transmission tariff or commodity-based transmission tariff or both. Due to the nature of capacity bookings in GB, for a contract / capacity booking to come within the ambit of Article 35 it must foresee no change in the level of **either** commodity **or** capacity transmission tariffs. Once a contract is within the scope of Article 35, all of the transmission tariffs resulting from that contract are "grandfathered", which is to say protected from the operation of TAR NC.

[34] UNC678; UNC678A; UNC678B; UNC678D; UNC678I; UNC678J.
[35] UNC678G; UNC678H.
[36] UNC678C; UNC678E; UNC678F.

4.22. In other words, the fact that one element of Existing Contracts (i.e. the commodity element) is variable does not result in a loss of protection under Article 35. The opposite interpretation would effectively ignore the use of the term "and/or" in Article 35 as explained above.

4.23. The first suite of modifications (i.e. UNC678, UNC678A, UNC678B, UNC678D, UNC678I, and UNC678J), which proposes to exempt all Existing Contracts from the application of RRCs, is consistent with the operation of Article 35 TAR NC. Therefore, these proposals better facilitate compliance with Article 35 of TAR NC than the other UNC678 proposals.

4.24. The second suite of proposals to exclude only Existing Contracts *at storage sites* from RRCs (UNC678G and UNC678H) are not consistent with Article 35. Article 35 offers no basis for the differential treatment of **only** Existing Contracts at storage sites. Article 35 of TAR NC expressly protects **all** Existing Contracts from increases in the level of transmission tariffs in their entirety. Evidently, application of new RRCs to contracts falling within the scope of Article 35 TAR would "affect the levels of transmission tariffs" in respect of those contracts, contrary to the intention of TAR NC.

4.25. The third suite of modifications (UNC678C, UNC678E, and UNC678F) also fail to give effect to Article 35 for the same reasons highlighted above. These proposals would offer exemption from the application of the RRC to both existing and new contracts at storage sites, whilst requiring all other qualifying Existing Contracts to pay the RRC. Subjecting Existing Contracts to a change in the level of tariffs as a result of revisions to the UNC to implement TAR NC where those contracts fall within the scope of Article 35 contravenes that provision.

4.26. For these reasons, the proposals that exempt all Existing Contracts from the application of RRCs (UNC678, UNC678A, UNC678B, UNC678D, UNC678I, and UNC678J), better facilitate compliance (in accordance with objectives (g) and (e) of the UNC Code Relevant Objectives and UNC Charging Methodology Relevant Objectives respectively) with Article 35 of TAR NC than those that do not.

The NTS Optional Charge ("NOC")

4.27. Six modifications[37] propose to introduce a capacity-based NTS Optional Charge ("NOC"), whereas five modifications[38] propose to remove the existing OCC without replacement.

4.28. Article 7 of TAR NC, which lays down requirements in respect of the choice of an RPM, states that the RPM "shall aim at … prevent[ing] undue cross-subsidisation". The word "undue" implies that the requirement to prevent cross-subsidisation is therefore not absolute under TAR NC. Although Article 13 of the Gas Regulation states that tariffs "shall facilitate efficient gas trade and competition, while at the same time avoiding cross-subsidies" (rather than "undue cross subsidies"), read in context, we do not see this as envisaging a different approach to Article 7 TAR. In fact, the terms of Article 13 implicitly recognise that the objectives of efficient trade and competition as well as cross-subsidisation should be balanced.

4.29. In our UNC636 decision letter, we stated that: "We acknowledge that the benefits of avoiding inefficient bypass of the NTS should be weighed against any detriment to competition arising from a cross subsidy among gas customers. We recognise that this is not straightforward"[39]. We consider inefficient bypass to be the construction and usage of alternative gas transmission pipes, which is mainly or wholly undertaken for the purpose of the avoidance of paying gas transmission charges and which will lead to higher charges for those users remaining connected to the system.

4.30. Based on the above considerations and the quantitative assessment that we undertook, we consider that UNC678B (NOC Methodology 1) fails to deliver compliance with the legal requirement of avoiding undue cross-subsidies, as it would be available to routes that do not pose a credible risk of bypass. As shown in Table 0.1 below, UNC678B would be used for a maximum distance of 164 km (TD, 2030-31). The resulting cross-subsidy would be £95m (Table 0.2). We consider that this cross-subsidy is "undue", as these discounts would increase costs to those not eligible for them in an unjustified manner.

[37] UNC678B/D/G/H/I/J.
[38] UNC678/A/C/E/F.
[39] UNC636/A/B/C/D: Updating the parameters for the National Transmission System (31 July 2018) : https://www.ofgem.gov.uk/publications-and-updates/unc636-b-c-d-updating-parameters-national-transmission-system

4.31. In relation to the proposed NOC under UNC678D/G/H/J (NOC Methodology 2), we note that this proposal would constitute a significant improvement vis-à-vis the status quo and UNC678B (NOC Methodology 1), given that NOC Methodology 2 would significantly reduce both the uptake of NOC and the amount of the cross-subsidy arising therefrom. However, these modifications would still give rise to significant reductions in charges for those eligible for these discounts, which would lead to an increase in tariffs for other (non-NOC availing) users. NOC Methodology 2 would still be available to routes that do not pose a credible risk of bypass (see Figure 0.25). Also, regarding those routes that could pose a credible bypass risk, the level of the discount offered under NOC Methodology 2 would be higher than necessary to disincentivise inefficient bypass of the NTS (see Figure 0.26). As explained under the next subsection, this undue cross-subsidy partly arises from a design flaw of NOC Methodology 2, as the NOC discount is calculated on the basis that users flow gas equal to their Maximum NTS Exit Point Offtake Rate ("MNEPOR")[40] – i.e. load factors are effectively equal to 100%. This assumption leads to an overly generous NOC design, as in practice, we would expect actual load factors to be below 100% and in some cases well below that figure. Therefore, we consider that the proposed NOC under UNC678D/G/H/J (NOC Methodology 1) would give rise to an "undue" cross-subsidy.

4.32. Finally, regarding Wheeling (UNC678I), the proposal adopts the position that the Wheeling charge would only be available across a zero-kilometre distance routes. The arrangement therefore would exclude non-zero kilometre routes. This is not objectively justified so it appears as an arbitrary or unprincipled distinction in light of the fact that the rationale of any NOC tariff is to address the issue of inefficient bypass.

4.33. Wheeling, despite its narrower eligibility, would also lead to a discount which is not well-targeted. We note that the same methodological shortcoming explained above for NOC Methodology 2, also exists within the Wheeling methodology, which assumes load factors of 100%. As evidenced by Figure 0.26, Wheeling has the potential of granting a discount which is significantly higher than what is required to avoid inefficient bypass of the NTS and therefore gives rise to an undue cross-subsidy. We note here that the Wheeling charge is part of UNC678I which is, in any case, a non-compliant modification proposal as it contains the

[40] In respect of an NTS Exit Point the MNEPOR is an amount (where positive) determined as the instantaneous rate of offtake (in kWh/hour) which the Transporter determines to be the maximum instantaneous rate at which it is feasible to make gas available for offtake at the NTS Exit Point.

Ireland Security Discount which does not comply with Article 9(2) of TAR NC and Article 13(1) of the Gas Regulation.

4.34. For the reasons set out above, we consider that the modifications that do not contain a NOC element (UNC678/A/C/E/F) better facilitate compliance with EU law.

Cost Reflectivity

Purpose of cost-reflectivity

4.35. The principle of cost reflectivity is based on the economic rationale that, in general, investment is more likely to be efficient and competition is more likely to be effective if the costs which parties impose on the network are reflected in the charges that they pay. In theory, cost-reflective charges would then lead to these parties factoring the costs that they impose onto the network into their commercial decisions. However, in a declining use network largely operating below capacity, the marginal costs of additional capacity, are, on many parts of the network, close to zero. Hence the benefits and relevance of cost-reflectivity to network charging in this situation are substantially lower.

4.36. The features of the proposals most relevant to cost reflectivity include:

- the choice of RPM;
- adjustments to the RPM including discounts for certain capacity products:
  - multipliers;
  - interruptible discounts; and
  - discounts at storage entry and exit points;
- revenue recovery charges; and
- the potential for an NTS optional charge.

Cost reflectivity and the RPM

4.37. In a growing network, new parties who wish to make use of the network impose a marginal cost on the system, e.g. the need for additional network capacity or costs of managing a constrained system. Therefore, a charging structure which provides signals relating to these additional marginal costs can help to drive economically efficient decision making and enhance competition. The current LRMC charging arrangements were designed with this objective in mind.

4.38. However, in a declining network, the pressures on the system which drive these marginal costs are less prevalent and a charging methodology based on an LRMC model will lead to little recovery of network costs (through the marginal cost component). Under the existing charging methodology, this leads to a declining amount of the revenue being collected through the LRMC based capacity charge and an increasing amount being recovered through the commodity element of the charge. Nevertheless, network companies continue to have fixed and sunk costs of investment which need to be recovered. Key principles that are relevant for charges in this situation are to avoid harmful distortions and to achieve a fair recovery of costs.

4.39. Each of the RPMs proposed adopt a 'top-down' approach to setting capacity prices. They start from a target revenue amount, incorporating current year costs, to be distributed across all entry and exit points based on capacity (in the case of PS), or capacity and distance (in the case of CWD). Under the proposed RPMs, gas transmission charging arrangements would depart from the current marginal cost-based model, to a revenue recovery model based on the allocation of current year network costs on a cost-recovery basis. Such a model would effectively remove 'forward-looking' signals from the charging methodology.

4.40. If there is a need for future expansion of the network, we consider that this can continue to be managed via the rules established for capacity release in the Methodology Statements and signals regarding whether and where investment should take place. Capacity bookings are fundamental to the release of incremental capacity and the capacity substitution methodology and therefore underpin the investment decision process. Efficient prices which are sent through network charges are important in this context. We consider that the proposed changes to the RPM will effectively support the way that market signals are used to determine the need for additional capacity.

Distance as a cost driver

4.41. The choice between the RPMs proposed by the UNC678 modifications relates to different division of costs on a geographic basis. A CWD methodology uses both capacity and distance to determine charges, whereas the PS methodology uses capacity only.

4.42. Given that distance is generally a driver of incremental costs of networks, it could be argued that a CWD methodology is more cost reflective[41]. However, in the context of spare capacity on the system and declining gas demand, expected additional capacity is, on many parts of the network, close to zero. Hence the benefits and relevance of cost-reflectivity to network charging in this situation are substantially lower. To this extent, it is less important that revenue recovery charges send signals or provide incentives to use the network in any particular way (or location). Therefore, the choice of RPM should be made in the context of cost recovery requirements. Key principles that we think are relevant for cost recovery charges are to achieve a fair recovery of costs and to avoid harmful distortions.

4.43. All network users benefit from access to a resilient meshed network with multiple entry and exit points, with a range of routes for gas flows across the country. In a meshed network, it is far from certain that the distance from an entry point to the average of the exit points, or the distance of an exit point to the average of the entry points, represent the likely usage of the network for any particular user. In a distance-dependent model, some entry points would face higher tariffs and contribute more to cost recovery while others face lower entry tariffs and contribute less, without a clear justification based on different cost causation. In a meshed network with spare capacity and declining usage, we think a fair approach to cost recovery would be based on the level of access to the system irrespective of individual location.

4.44. We have explored the impacts of the different RPMs proposed, with specific reference to the redistribution of revenues across GB and use of the network. This is discussed further in Chapter 5. In summary, we note that:

- Network charges based on the CWD RPM are likely to incentivise network users to bring gas onto the NTS at entry points closer to demand centres, without any significant cost savings.
- Users in more distant parts of the network will pay a greater portion of revenue recovery under a CWD RPM, without significantly increasing costs of the network.
- Hence the distance driver is unlikely to be a strong reflection of users' contribution towards costs on the NTS, given the meshed nature of the network and the presence of spare capacity on the NTS.

[41] We note that the distance calculations included within the CWD methodology are theoretical 'point-to-point' distances rather than actual pipeline distances which may therefore reduce cost reflectivity to some extent.

Adjustments to the RPM

4.45. As described in Chapter 3, there are proposed inputs into the RPM, and subsequent adjustments to the reference prices, that may impact on the appropriateness of capacity based charges. These inputs include the forecast contracted capacity ("FCC"); the treatment of capacity revenues associated with "Existing Contracts"; and the correction of non-zero reference prices.

The FCC

4.46. Given the role that the FCC plays in deriving the reference/reserve prices at each Entry/Exit point, it is important that the FCC is designed to be as accurate as possible. While behavioural change and complexities of use of the gas network mean that actual capacity bookings will inevitably differ from the forecast, this difference should be minimised and any systematic trend towards under- or over- forecasting avoided.

4.47. While we agree with using a forecast of contracted capacity for this purpose, we identify a risk that the methodology proposed by NGGT may tend towards over-forecasting of capacity and thus, under recovery of revenues. This is because the arrangements within the proposed FCC take the maximum of a number of values which includes historical (Y-2) capacity bookings and flows. In the context of declining use of the gas network, historical bookings and flows will usually be higher than current bookings and flows, meaning that the tariffs derived will be based on a larger level of bookings/flows relative to actual levels. This would lead to anticipated revenue recovery being spread over a larger level of bookings than are realised, thus leading to under-recovery of revenues.

4.48. Given that this will lead to a reduction in the revenue recovered from the intended RPM and an increase in revenue recovered from the RRC, this could reduce the extent to which the charging structure remains reflective of the intended tariff design. However, based on expectations of relatively small deviations between the FCC and actual bookings, we would not expect the impact of this trend to be significant. We would also expect amendments to the FCC methodology to be made to ensure that lessons learned from forecasting errors are quickly acted on.

Existing Contracts in the FCC

4.49. We consider that excluding the capacity and revenue from Existing Contracts from the calculation of the reference price is more appropriate than including them. This is because the revenue to be recovered from Existing Contracts is already known and fixed at the time of the reference price calculation.

Non-zero adjustments

4.50. With a focus on recovering largely fixed and sunk costs of the network and given the benefits provided to all network users in terms of the ability to make use of that network, we consider it appropriate that all Entry/Exit points contribute towards the costs of the system. It is therefore more appropriate for a non-zero reference price to exist at all points rather than to include certain points which do not contribute towards cost recovery. We therefore consider it appropriate that adjustments are made to introduce such a reference price where the CWD approach would otherwise derive a zero or negative reference price.

Discounts to the reference price at storage Entry/Exit points

4.51. Article 9 of the TAR NC states that gas storage facilities should receive at least a 50% discount to the reserve price at entry and exit in order to avoid 'double charging' of gas upon exit from and entry to the system. The same article allows for, but does not prescribe, further discounts for gas storage facilities above the 50% level.

4.52. When gas enters and exits from the NTS and also enters and exits from a storage facility on route, it could pay entry and exit tariffs for both the NTS and the storage facility. Absent a discount, a fixed amount of gas that uses storage on the NTS could be paying twice as much for cost recovery of the NTS system than the same amount of gas which simply traverses the system. In order to avoid this 'double charging' of gas using storage, we therefore consider a discount of at least 50% for storage entry and exit capacity to be appropriate.

4.53. Three modifications (UNC678 C/E/F) propose an 80% discount for gas storage. Ofgem has previously indicated that any discount above 50% would need to be justified[42].

[42] https://www.ofgem.gov.uk/system/files/docs/2018/12/181220_decision_letter_unc621_reject_final.pdf

4.54. The proposers of UNC678 C/E/F have submitted papers alongside their modification proposals which are intended to support their justification of an 80% discount.[43][44] In summary, they state the following:

- Gas storage should be considered to be 'embedded within the network' rather than entry and exit which makes use of the network.
- Gas storage responds to changes in system demand, injecting from the system at periods of low demand and delivering gas to the system at times of high demand.
- Gas storage provides a similar service to NTS linepack[45] but delivers gas to satisfy local demand.
- Gas storage has already made a contribution to cost recovery when it enters the NTS and before it is injected into storage and subsequently makes a contribution to cost recovery when it exits the NTS after being withdrawn from storage.
- The security of supply benefits provided by gas storage facilities are undervalued by the market.
- Gas storage provides benefits to the system in respect of avoided investment in additional gas transmission capacity.

4.55. We think there is some merit in the arguments made above in relation to a discount of greater than 50% for storage facilities. In particular, we note some of the benefits that gas storage can bring to the system in relation to price stability at times of relative system stress. We consider some of these considerations further when considering our security of supply objective.

Revenue recovery

4.56. All proposed options would introduce a capacity based RRC which is applied to fully adjusted capacity. The amount of revenue which will be recovered under the RRC is

[43] https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-02/WWA%20GSOG%20NTS%20CapacityDiscountsReport270219finaldraftv0%205.pdf

[44] https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-04/GCR%20Gas%20Storage%20Benefits%20Document%20%28provided%20by%20Alex%20Nield%20 03April19%29.pdf

[45] The amount of gas within the system at any time is known as 'linepack'. The acceptable range over which the amount of gas in the network can vary and the ability to further compress and expand this gas is generally referred to as 'linepack flexibility'.

dependent on how well NGGT's FCC methodology reflects actual bookings on the system. However, we would expect the level of revenue recovery to be relatively limited over time.

RRC exclusions

4.57. The options differ in relation to the capacity bookings that would be excluded from the revenue recovery charge as outlined in Section 3.

4.58. We consider it appropriate that all user should contribute to the cost recovery of the NTS, without undue discrimination. One approach that would satisfy this is that all users would pay on the basis of their access to the system, as measured by their capacity booked. However, this must be balanced against the need to maintain appropriate and justified protection for those contracts entered into before any new arrangements could be understood, as required by Article 35 of the TAR NC.

4.59. We note that any revenue recovery exclusion reduces the volume of capacity over which revenue recovery is applied and hence requires other users to pay more for their ability to use the system. This applies to both exclusions of the RRC for Existing Contracts and in relation to alternative proposals for revenue recovery exclusions set out in the modifications. We consider the implications of the proposed RRC exclusions in the context of appropriate and justified protection in the next section.

NTS Optional Charge ("NOC")

4.60. We do not consider the existing OCC to be a justified charge (based on costs savings provided to the system) and hence we support its removal. In addition, we note that the design of the OCC, which did not incorporate adjustment for inflation has allowed it to become increasingly generous to network users over time, leading to higher levels of take up than were originally anticipated and therefore resulting in greater levels of costs recovered from those not eligible for this charge.

4.61. Considering the three methodologies that have been put forward, we note that they differ in the extent of discount and eligibility. In our view, the discounts within NOC Methodology 1 (UNC678B) and to a lesser extent NOC Methodology 2 (UNC678 D/G/H/J) would be too high and available to routes not posing a credible risk of bypass, therefore resulting in high levels of take-up and discounts which are not justified.

4.62. The NOC proposed in UNC678I includes eligibility criteria which restrict its use to entry and exit points separated by very short distances[46].

4.63. We also note that the assumptions which are included in the determination of the NOC may not reflect the actual use of a bypass pipeline in the case that it is built and may therefore result in a discount which is both too high and available to users not posing a genuine risk of bypass. In particular, we note that under NOC Methodology 2 and under the Wheeling methodology, the NOC discount is calculated on the basis that users flow gas equal to their MNEPOR – i.e. load factors are effectively equal to 100%. In practice, we would expect actual load factors to be below 100%, in some cases substantially below. This would lead to the costs of building a bypass pipeline being recovered over a smaller volume of flows, hence making a bypass pipeline less commercially attractive than the design of the methodology assumes.

4.64. We note that other arguments have been made to us in relation to the inclusion of a NOC. For example, it has been suggested that a NOC may be consistent with economic theory, and in particular theory concerning Ramsey pricing which suggests that cost recovery tariffs should be levied in inverse proportion to demand elasticity. It is possible that the reduction of tariffs for those users of the network who are more responsive to price could lead to a reduction in the cost of the marginal unit of gas (or electricity given that users of a NOC may be gas-fired power stations) Where this is the case, this could in turn lead to reductions in the wholesale gas (or electricity price) and benefits to consumers.

4.65. We consider that the intention of a NOC has not been to reflect demand elasticities or Ramsey pricing principles but to avoid the risk of system bypass. The NOC would only be used by certain users of the network and has not been designed to reflect Ramsey pricing principles. Given this, it would be a highly inaccurate substitute for Ramsey pricing in practice, even assuming Ramsey pricing was desirable in practice.

4.66. We are therefore of the view that the merits of a NOC should be considered in the context of the risk of system bypass. This may include whether the level of risk of credible bypass is sufficient to require a NOC and the design of a NOC that is most suitable to

[46] While the methodology states that entry and exit points must be separated by a distance of zero km, in practice there are often short distances between the entry and exit points as measured by NGGT's pipeline book.

minimise this risk without undue discounts for those where there is no credible risk of bypass, with resulting higher charges for ineligible users.

Competition, undue discrimination and cross-subsidy

4.67. In a typical gas network with increasing demand, effective competition depends on the cost reflectivity of charges and the distributional effects they produce (i.e. if competition takes place against the background of non-cost reflective charges, it is unlikely to result in efficient market outcomes). However, in a network with spare capacity and declining demand, cost-reflectivity provides fewer benefits. We have explored cost reflectivity in the section above.

4.68. Effective competition is also facilitated by tariff arrangements which are non-discriminatory and which prevent undue cross-subsidies between market participants. In this section, we assess the following features of the proposals against the principal of promoting competition:

- Treatment of Existing Contracts (including the proposed Capacity Surrender Rule);
- Discounts at gas storage Entry/Exit points;
- Application of revenue recovery charges;
- Removal/replacement of the OCC;
- The proposed Ireland Security Discount; and
- The inclusion of the FCC within the UNC.

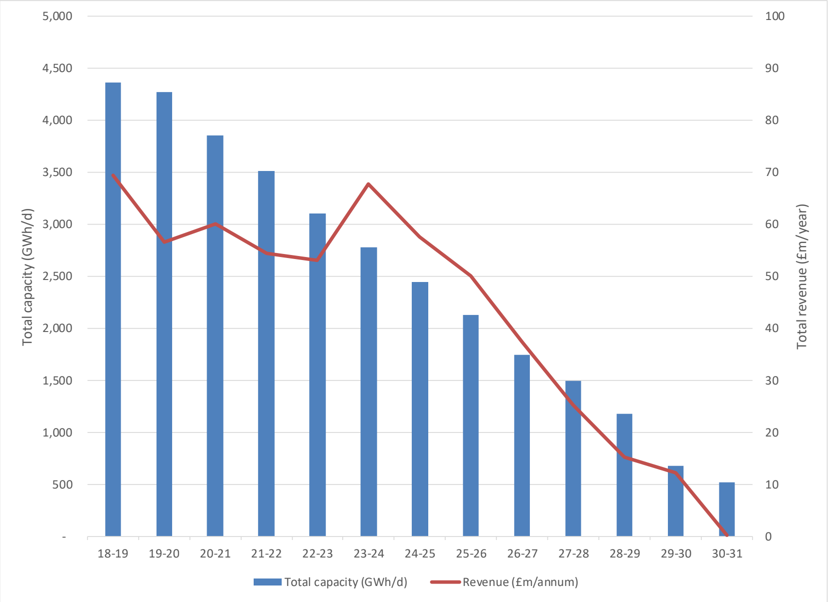
Treatment of Existing Contracts RRC exclusions

4.69. By protecting Existing Contract prices while introducing floating payable prices for all other capacity there are two factors to consider. Existing Contracts will likely face a lower entry capacity price than other contracts, together with the removal of the commodity element of the charge under TAR NC and, under most proposals, exclusion from the revenue recovery charge.

4.70. On the one hand, this could be considered as a market distortion given that Existing Contract holders would benefit from a potentially significant advantage in the price of their gas capacity over other users. On the other hand, price protection for Existing Contracts is designed to provide a degree of protection over changes to the prices of contracts which had already been entered into before the introduction of TAR NC.

4.71. While we consider that protection of Existing Contracts may therefore lead to a 'dual regime', we also consider that this presents a transitional arrangement which provides appropriate price protection for a limited period of time. We note that the volume of Existing Contracts will reduce over time as Existing Contracts come to the end of their contractual period (see Figure 0.2). Therefore, the issues presented will be transitional.

Figure 0.2: Existing contract capacity and revenue recovery implications to 2030-31



4.72. Where proposals are made for revenue recovery exclusions other than those required to give effect to Article 35 of TAR NC, we consider that these represent a discriminatory cross-subsidy between market participants, without justification.

The capacity surrender rule

4.73. The 'capacity surrender rule' presents a particular arrangement for capacity agreements entered into between February and December 2018. It is intended to provide holders of such capacity with the option to surrender all or part of their capacity in the case that the floating reserve price rises by more than 5% for the relevant allocation.

4.74. We consider that the extent of any distortionary impacts should be minimised as it may otherwise have a significant impact on competition. In this respect, special arrangements for capacity entered into before a certain date should only be introduced where this is designed to provide appropriate and justified protection.

4.75. In the case of contracts entered into between February and December 2018, we note that these were made following the period which is defined as Existing Contracts by the TAR NC. In practice, this arrangement represents an option of the relevant contract holders to flow gas without any ongoing obligation to pay capacity charges should they choose to exercise the surrender option. We are of the view that such arrangements would be at odds with the principle of non-discrimination. In addition, approval of such arrangements would introduce an undesirable precedent for retrospective changes to the UNC, inconsistent with Ofgem's principles of effective competition.

4.76. In that regard, in our UNC501V decision we noted that: "The introduction of a modification which includes hand-back would likely lead to increased costs for all shippers flowing gas onto the NTS because NGGT would have to recover the shortfall in payments that would otherwise have been obtained under existing capacity contracts. Further, we consider that it would be inappropriate to approve a modification that introduces rights that are not envisaged in the original capacity contracts, i.e., the ability to hand-back capacity. It is fair for existing capacity holders to be exposed to the risks associated with their decision to buy long term capacity"[47].

4.77. Also of relevance, our UNC621 decision found "that the treatment by the UNC621 modifications of so-called "interim contracts" is not consistent with either a literal or a purposive reading of Article 35 TAR NC, insofar as they are intended to be ring-fenced from the introduction of any new pricing methodology that implements the TAR NC with effect after 31 May 2019." The capacity surrender rule in UNC678F is a method for handing back "interim contracts".

4.78. For the reasons mentioned above, we consider that the capacity surrender rule has a negative impact on the principles of competition and avoidance of undue discrimination and cross-subsidy.

[47] Uniform Network Code (UNC) 0501V, UNC501AV, UNC501BV and UNC501CV: Treatment of Existing Entry Capacity Rights at Bacton (21 July 2015) : https://www.ofgem.gov.uk/publications-and-updates/uniform-network-code-unc-0501v-unc501av-unc501bv-and-unc501cv-treatment-existing-entry-capacity-rights-bacton

Discounts at storage points

4.79. Under current arrangements, gas storage facilities pay the capacity element of the tariff only. They are not required to pay a commodity charge at entry or exit. As revenue recovery from capacity tariffs has declined in recent years while that from commodity charges has grown equivalently, tariffs for entry points from and exit points to storage facilities are currently significantly lower than previously.

4.80. Eight of the 11 modification options proposed under UNC678 include a 50% discount for gas storage facilities as required under the TAR NC. Three of the modifications (UNC678 C/E/F) propose a discount of 80% for entry and exit from storage. We have set out why we consider a discount of at least 50% to be appropriate in the previous section.

4.81. As with other discounts, an 80% storage discount would be recovered from the tariffs at other entry and exit points. To this extent it would represent a cross-subsidy and, in the case that this is not justified, would be discriminatory.

4.82. We recognise that there are some arguments for storage receiving a discount higher than 50% and note that any proposal to provide a higher discount would need to be clearly justified. Given that TAR NC requires a discount of at least 50%, then this level can be accepted with certainty as compliant with the relevant legislation. We note also that the modifications with 80% storage discounts contain other components (the treatment of RRCs, see §4.17 – §4.26) that mean that those modifications are not compliant with the relevant legislation and cannot be accepted in making this decision.

Application of revenue recovery charges

4.83. Based on the explanation of the Article 35 TAR NC treatment of Existing Contracts outlined above (under "Compliance" section), it is not appropriate to apply RRCs to Existing Contracts. However, beyond exclusion of Existing Contracts from RRCs, we consider that any alternative arrangements for revenue recovery exclusions (importantly, which are not mandated by the TAR NC) could act as a form of discrimination.

4.84. Our current view is that the three modification proposals that exclude all storage connection point contracts (whether existing or new) from revenue recovery charges could act as a form of discrimination, unless the removal of these charges is objectively justified.

4.85. In our 13 November 2015 letter[48], we proposed that storage users do not pay the floating element of capacity charges, preserving the existing arrangements whereby they do not pay the commodity charge. This view was expressed before the publication of TAR NC. In our subsequent 21 February 2017 letter[49], we said that due to the introduction of TAR NC it will not be possible to preserve the existing arrangements to avoid double charging for transmission to and from storage facilities. Therefore, we noted the need to review the level of discounts applied at storage, stating that any discount above the minimum 50% level needs to be "duly justified".

Impact of FCC

4.86. We consider that moving to a forecast of contracted capacity will, in general, benefit competition[50]. This should reduce the shortfall which needs to be recovered via the revenue recovery charge so long as NGGT's forecast is sufficiently accurate to more appropriately reflect actual capacity bookings.

4.87. However, we identify one element of the existing FCC methodology which we consider could lead to systematic under-recovery of revenue in the context of declining use of the gas network. The FCC includes reference to historic (Y-2) capacity bookings and flows in the derivation of contracted capacity. Should demand for use of the system continue to fall, we would therefore expect to see a reduction in capacity bookings and flows year-on-year.

4.88. This therefore raises the likelihood that an FCC which is based on historical network use would over-estimate capacity bookings and thus lead to under-recovery of revenues. As revenue recovery charges are smeared across network users rather than being defined by the RPM, this may distort competition to some degree, though this is likely to be relatively limited and we would expect any systemic inaccuracies in the FCC methodology to be addressed as they become apparent.

[48] https://www.ofgem.gov.uk/publications-and-updates/gas-transmission-charging-review-confirmation-policy-view-and-next-steps
[49] https://www.ofgem.gov.uk/publications-and-updates/open-letter-european-union-network-code-harmonised-transmission-tariff-structures-gas-tar-nc
[50] Although we note that it may result in some reduction in the stability of reference prices.

Electricity market competition

4.89. Changes to tariff structures may impact on investment and closure decisions of gas-fired power stations. We note that long term capacity products (e.g. annual) may be treated more like a fixed cost of production whereas the existing commodity charge and shorter term capacity products may have impacts which are closer to a variable cost.

4.90. Comparing the impacts of tariff reform to the levelised costs of electricity of an efficient H-Class CCGT commissioning in 2025, CEPA estimate that the impacts of tariff reform (including gas and electricity wholesale market impacts) are a maximum of 1.3% of levelised costs. We would therefore only expect tariff reform to impact on investment decisions at the margin. Similarly, they only expect impacts on closure decisions at the margin.

4.91. Where tariff options have consequential impacts on the electricity wholesale price, this may affect the revenues of electricity generators. If a lower electricity price reduces generator revenues, they may seek to recover any revenues which are lost from the capacity market.

4.92. The extent to which generators can recover additional revenues from the capacity market will depend on the extent of competition. Nevertheless, under those options in which electricity consumer welfare increases as a result of a lower electricity price, it is possible that some of the benefits may be counterbalanced by higher capacity market costs. While the lack of a capacity market in the modelling may over-estimate the electricity consumer welfare benefits that exist under some options relative to the status quo, the impact is likely to be limited.

4.93. We also note that the change from commodity to capacity based tariffs may impact on the extent to which tariffs are considered as a fixed or variable cost of production. However, we also note that the availability of short term capacity products, product multipliers of one, and spare gas capacity on the NTS may mean that generators can continue to make use of short-term capacity products which are likely to be treated more like a variable cost.

NTS Optional Charge

4.94. The lack of an inflation adjustment has, in our view, led to an excessive uptake of the OCC tariff over time which would impact on competition within the market going forward. This acts as a form of discrimination with short-haul users being subsidised by those who do not use the product. We therefore consider the removal of the current OCC to benefit competition.

4.95. A NOC would provide a discount to certain market participants which is, in turn, recovered from all users of the network. To the extent that this discount does not effectively target those network users who may present a genuine risk of bypass and where the level of the discount is not set accordingly, the NOC would distort competition and act as a form of discrimination. It would favour those who can make commercial use of it at the expense of those who cannot with no corresponding system benefit.

4.96. Assessing the NOC methodologies proposed under the modifications, we consider that the extent of undue cross-subsidy and hence, discrimination, is greatest under NOC Methodology 1 (UNC678B). We believe that likely take-up of the NOC and the effective discount would be significantly higher than needed to reflect the risk of bypass.

4.97. To a lesser extent, we consider that Methodology 2 (UNC678D/G/H/J) may also provide an undue cross-subsidy to a number of network users who our analysis suggests do not present a practical risk of network bypass. In addition, we have previously noted a shortcoming that we observe with the design of the methodology which bases the discount on an expectation of flow volumes at 100% of MNEPOR.

4.98. Despite its narrower eligibility, we note that the same methodological shortcoming also exists within the Wheeling methodology. At the same time, the eligibility criteria, by introducing a distinction between zero-distance and all other routes, are unduly discriminatory as the zero distance criterion is not justified and may mean that routes where there is a risk of bypass are excluded from eligibility based on this arbitrary parameter.

Discounts to the reference price to include an Ireland Security Discount

4.99. The discount proposed under UNC678I for the Moffat exit point is argued by the proposer based on the security of supply benefits for Ireland. However, the proposed discount may have implications for competition in the GB gas network and impact negatively upon GB gas consumers.

4.100. By introducing a significant discount for the Moffat exit point, the proposal could have a distortionary impact on the merit order of gas demand. In particular, this would introduce favourable tariff arrangements for export to the Irish gas market in comparison to exit tariffs at other interconnection points and in comparison to GB gas consumers. In addition, the discount only applies to entry at beach terminals and therefore, introduces undue discrimination between beach terminals and other entry points.

4.101. The discount would create an additional revenue recovery requirement through NGGT's revenue recovery charge. The effective cross-subsidies could impact on flows of gas on the system, resulting in a distortion of the market.

4.102. The significant Ireland Security Discount would reduce the level of cost recovery from exit of gas through the Moffat interconnector. This would act as a form of cross-subsidy from GB consumers to those in the Isle of Man, in Ireland and in Northern Ireland.

4.103. We therefore consider that an Ireland Security Discount would have a negative impact with respect to the principle of competition.

Inclusion of the FCC methodology in the UNC

4.104. Modifications differ in relation to where they would incorporate the FCC methodology. Some modifications propose to include the methodology in the UNC. Others propose to have a separate FCC document with alternative governance around changes to the methodology.

4.105. We identify advantages and disadvantages of both approaches in relation to promotion of competition. We consider that inclusion of the FCC in the UNC would be more transparent and would ensure consistent governance with other elements of the tariff regime. Having a separate methodology would require a new governance framework.

4.106. However, we are also conscious of the importance of keeping the FCC up to date and there is a potential for a need for regular change to the FCC methodology, particularly after the benefit of experience following its introduction.

4.107. On balance, we consider the transparency and consistency of governance benefits arising from including the FCC in the UNC to outweigh those of maintaining an FCC outside of the UNC.

Network efficiency

Choice of RPM

4.108. All RPM proposals, in combination with the introduction of floating payable prices and removal of firm capacity discounts, should remove the incentive to overbook that the current arrangements tend to produce and encourage users to make more efficient commercial decisions. This is because users will face the fully allocated cost of network access (i.e. where revenue recovery requirements are factored into the capacity price). This should strengthen the signal and incentive for users to book the capacity they need, resulting in more efficient capacity bookings. It should also lead to more efficient revenue recovery, and better alignment of bookings to flows which should help NGGT better manage the network.

4.109. In combination, this should drive more efficient use of the network and provide more accurate information to help forecast supply patterns, while the existing auction mechanism will continue to ensure efficient allocation in times of scarcity.

4.110. However, in a small number of cases, the lack of forward-looking cost reflectivity may result in inefficient investment due to the lack of signalling of entry/exit points where additional investment would be required, or where spare capacity exists. This places additional importance on the effective use of NGGT's Planning and Advanced Reservation of Capacity Agreement ("PARCA") and Application to Offer ("A2O") processes. The PARCA process has been in place since 2014 and all requests for additional capacity have been met through substitution of existing capacity rather than through additional network investment. If used effectively, we consider that these processes should allow for appropriate investment signals to be maintained.

4.111. Comparing the CWD and PS methodologies, the CWD may introduce signals for use of the network which discourage flows at more distant entry and exit points. Given spare system capacity, this is unlikely to result in significant savings to system costs and may therefore lead to distortions and be less fair than a PS approach within which all entry and exit points face an equivalent tariff.

4.112. On the other hand, the PS methodology will, on average, result in higher tariffs for entry-exit combinations separated by short distances than CWD. This may increase the incentive for bypass of the gas network for those users who flow gas over a relatively small proportion of the NTS. However, the genuine risk of bypass may be quite limited given the various challenges that must be overcome, though we recognise the scale of these challenges are site specific.

Discounts to the reference price (multipliers)

4.113. The modifications propose setting all multipliers at a value of "1" for firm capacity products. In effect, this removes all discounts to the reference price for capacity purchased in different timescales. Under the current regime, high discounts applied to short-term capacity considerably decrease the contribution of short-term users to revenue recovery via the capacity charge. In the context of spare capacity on the system, this allows some network users to significantly reduce contributions through the capacity charge element, thus shifting a large amount of revenue recovery onto commodity charges.

4.114. Booking capacity on a short-term basis does not lead to any reduction in the costs which are, or have already been, incurred by NGGT. Once a network has been built, the cost to NGGT of accommodating an additional user is close to zero irrespective of whether the user books short or long term capacity. However, since many users have an incentive and ability to make use of short term capacity products, basing the level of discount and charges purely on short run marginal cost is not an efficient approach for recovery of historic investment. The parties who buy short term capacity products, and who are currently able to avoid capacity charges to a significant extent, will no longer be able to do so where multipliers are set at "1". Therefore, in our view, the proposals for multipliers included in all UNC678 modifications are a more efficient form of cost recovery than current charging arrangements.

4.115. For the same reasons, we consider that the proposal to lower interruptible capacity discounts from (effectively) 100% to 10% to reflect NGGT's estimates of the probability of interruption will improve efficiency of revenue recovery. In the context of spare capacity, many network users are able to make use of interruptible capacity without a significant risk of being interrupted. Users who purchase highly discounted interruptible capacity still benefit from use of the network but do not contribute sufficiently towards the revenue recovery of the NTS, resulting in higher charges for other users. Based on NGGT's analysis of the risk of interruption associated with use of an interruptible product, we consider the 10% discount adequately reflects the risk of interruption.

4.116. We consider that NGGT should keep the likelihood of interruption of the product under review. Depending on how the likelihood of interruption changes over time, we may expect to see a change to the interruptible discount at the time of reviewing tariff arrangements.

NTS Optional Charge

4.117. As discussed elsewhere in this document, in the context of decreasing demand on the gas system, the marginal costs of accommodating use of the system are often close to zero and hence, this may suggest that tariff structures should be defined based on cost recovery requirements. Economic theory suggests that one approach to recovering sunk costs is to levy tariffs in inverse proportion to the extent to which users of the network will change their decisions on when and how to use the network.

4.118. Exit points that make use of the OCC are power generators, interconnectors and I&C users. Power generators and interconnectors are likely to be relatively more sensitive to price. Where greater proportions of cost recovery are levied on such users, they may be more likely than other users to respond through their actions. This may include reducing volumes of gas demand below efficient levels and/or building a bypass pipeline and disconnecting from the NTS completely.

4.119. Where bypass does take place, this may have further negative impacts on efficiency of cost recovery. It would lead to a loss of tariff revenue which needs to be recovered from other users, hence increasing tariffs.

4.120. We do not believe that bypass would be a straightforward commercial decision for a network user. In addition to uncertain and potentially significant costs relating to use of land, capital and maintenance costs, bypassing the system could result in long-term disconnection from the NTS[51]. This could introduce significant risk to the user who is bypassing the system, for example in the presence of supply and network constraints.

4.121. To the extent that a NOC is well designed and targeted to restrict commercial benefit to those that may otherwise bypass the system, and where the level of the discount is appropriately designed so that it reduces risk of bypass without providing additional subsidy beyond that required, it may have benefits in terms of efficiency of network use.

4.122. As discussed previously, we do not consider that any of the NOC methodologies proposed strike the appropriate balance to reduce risk of bypass while also minimising the shortfall in NGGT revenue arising from the NOC discount. We consider that Methodologies 1 and 2 may lead to wider take-up than is reflective of bypass risk. On the other hand, we believe that the eligibility criteria within the Wheeling methodology (which is in any case part of UNC678I which includes the non-compliant Ireland Security Discount) are not effectively targeted and could provide a greater discount than is justified to those who are eligible for it (see our analysis in Figure 0.24).

[51] Our view is that it would not be economically viable to maintain a connection that is not intended to be used.

Security of supply

4.123. Transmission tariffs may impact on the commercial decisions of gas market participants. In the short term, capacity booking and flows may be affected by the chosen option. In the longer term, this may, in turn, impact on investment and closure decisions, which could in turn affect security of supply.

4.124. The magnitude of tariffs in proportion to other market forces means that gas transmission tariffs are only likely to affect market participants' decision-making close to the margin. This means that impacts on security of supply, where they exist, are also likely to be relatively marginal.

4.125. We note that BEIS recently concluded the GB market was found to be resilient to almost all significant shocks out to 2035.[52] In combination with the relatively low magnitude of any expected impacts resulting from tariffs in comparison to wider market structure, this suggests that any security of supply impacts are likely to be related to price stability rather than physical security.

Impacts of an 80% storage discount

4.126. Security of supply is supported by retaining a diverse range of different forms of gas supply. The ability to store gas within the system can help to balance supply and demand in the presence of short-term supply or demand shocks. Proposers of UNC678C/E/F which include an 80% storage discount argue that storage 'provides cost effective and reliable insurance against supply disruptions and demand spikes'. While we acknowledge that gas storage may bring security of supply benefits, we note that BEIS has found the GB gas market to be resilient in its recent study[53].

4.127. However, we recognise the potential impact that revised tariff arrangements may have on storage closure, investment and refurbishment decisions. To the extent that a discount above 50% for storage can be justified as appropriate and non-discriminatory, the

[52] See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652085/gas-security-of-supply-review.pdf
[53] See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/652085/gas-security-of-supply-review.pdf

consequential impacts on price stability resulting from the commercial outlook for storage may also be taken into account.

Tariffs at interconnectors

4.128. All modification proposals would remove commodity-based revenue recovery at IPs. As the commodity based charge represents a marginal cost of entry and exit of gas, this can impact on the decisions of shippers on whether to flow gas over IPs. This can reduce flows of gas between regions to sub-optimal levels. Therefore, we consider that removing the commodity element of the charge in accordance with the TAR NC would eliminate a distortion caused by such arrangements with resultant benefits for GB security of supply.

Ireland Security Discount

4.129. An Ireland Security Discount is proposed in order to benefit price security of supply in Ireland, Northern Ireland and the Isle of Man. In this context, we note that the Commission for Regulation of Utilities did not decide to introduce any discount for capacity at entry from Moffat despite the entry tariff being the most expensive in the Irish gas system[54].

4.130. In addition, we note that a discount for exports to the Irish market may have a negative impact on security of supply in GB (and potentially within continental Europe) by distorting market signals for gas demand. By subsidising exports of gas, it could negatively affect GB gas consumers at times of system stress.

Consumer costs

Bill impacts

4.131. In addition to the direct impact of tariff reform on the tariffs at consumer Exit points, changes to the tariff structure may affect consumers through the consequential impacts on gas and electricity supply, particularly where the tariffs affect costs of the marginal unit of gas or electricity. We explore the impacts on consumer bills in Chapter 5.

[54] See: https://www.cru.ie/wp-content/uploads/2019/06/CRU19060-Harmonised-Transmission-Tariff-Methodology-for-Gas-Decision-Paper.pdf

Choice of RPM

4.132. Relative to the existing LRMC methodology, both the CWD and PS RPMs will result in lower levels of tariff dispersion at exit, reducing the extent to which consumers in different parts of GB pay different amounts for use of the gas system to flow gas. The CWD RPM would retain some level of dispersion while the PS RPM would ensure that all consumers pay the same (unit capacity charges) for network costs.

4.133. Given the existing levels of tariff dispersion, both RPMs would result in some increases and decreases in tariffs for consumers in different parts of the country relative to the status quo.

Impact of RPM on electricity consumers

4.134. The choice of RPM may also impact on the electricity market via any impacts on gas-fired power stations. As gas-fired power stations currently often act as the marginal unit of electricity supply, the tariff they pay can flow through to the electricity wholesale price and hence, onto electricity consumers.

Vulnerable consumers

4.135. Proportionate to their gas consumption, the changes to tariff arrangements may impact on the bills of vulnerable gas and electricity consumers (subject to the degree of pass-through of any changes by suppliers). There would be two mechanisms for this. The first is the direct impact on tariffs at GDN exit points which we may expect to be passed through to consumers. A CWD RPM would retain different tariffs at each GDN exit point. Thus, in comparison to a PS RPM, vulnerable consumers in different parts of the country may be more or less affected by changes to the GDN exit tariff.

4.136. The second mechanism is the impact on the wholesale gas and electricity prices as a result of tariff reform. Where tariff reform leads to a reduction in the gas and/or electricity market prices, vulnerable consumers will benefit. Apart from bill impacts, we do not identify the scope for any wider impacts on vulnerable consumers.

Environmental considerations

4.137. The main mechanisms for environmental impacts would be through any changes to gas demand resulting from changes to tariffs and to the wholesale gas price. The relative attractiveness of gas-fired power generation may impact on the amount generated in the wholesale electricity market. In the near term, those options which include more attractive tariff arrangements for some gas fired power generators (e.g. through a NOC) could help to displace coal in the electricity market, thus reducing carbon emissions. In the longer term, cheaper gas fired power generation may dampen electricity wholesale prices, which may have a marginal impact on investment decisions of low carbon power generation. It could also be reflected in small increases in electricity demand or higher levels of electricity export which may impact on carbon emissions. In the case of export, the environmental impacts would depend on the effects this has on the electricity mix of neighbouring markets.

4.138. A future consideration may be the relative attractiveness of green gas. Given that we would expect green gas production to be relatively dispersed around GB, the differences between a PS and CWD methodology are likely to be small. We note that, as an emerging technology, green gas market entrants may prioritise predictable and stable charges[55]. To this extent, the PS RPM may be marginally preferable to the CWD.

[55] This informed the decision of the Commission for the Regulation of Utilities to introduce special arrangements for renewable gas facilities to have a single notional tariff in order to promote stability and predictability of the tariff.

5. Quantifying potential impacts of reform

Section summary

In this section we present the results of modelling undertaken by CEPA to quantify the potential impacts of the modification options put forward by the industry. We consider the impacts on transmission tariffs and on the wider system – for example on wholesale market prices and on producer and consumer welfare. As this decision concerns gas charging, our primary focus is on the impacts on gas consumers, but we have also considered potential impacts on the electricity market and electricity consumers.

Based on the central modelling scenario – the 2019 FES Two Degrees scenario – the expected benefits to gas consumers from the two compliant modifications - UNC678 and UNC678A - compared to the status quo are set out below.

Expected benefits from 2022 - 2031 (NPV £bn, discounted to £18/19) under Two Degrees

	UNC678 (CWD)	UNC678A (Postage Stamp)
Gas domestic consumers	£0.58bn	£0.54bn
Gas non-domestic consumers	£0.40bn	£0.37bn
Gas-fired power generators (gas market impacts only) [56]	-£0.11bn	-£0.09bn
Total gas consumers	**£0.87bn**	**£0.82bn**

Tariff reform is also likely to affect electricity market prices as a result of changes to input prices of gas-fired power generation. CEPA's estimates of potential impacts on electricity consumers are included in its technical report.

[56] We note that this does not include any impacts on the electricity market revenues of gas-fired power generators which we would also expect to be affected.

Questions

Please provide evidence and analysis to support your responses.

Question 4: What are your views on our assessment of the quantitative analysis?

Quantifying potential impacts

5.1. In reviewing the modifications put forward under UNC678, and reaching our minded-to decision, we have conducted a principles-based assessment of the modifications based on, amongst other things set out in Appendix 3, the UNC charging methodology objectives and our statutory duties.

5.2. In addition to our principles-based assessment, we have carried out modelling in order to gain insight into potential mechanisms for the impacts on consumers and gas market participants. This includes consideration of potential savings for the system and for individual consumer and producer groups.

5.3. To quantify these impacts, we have combined analysis of the distributional impacts of tariffs on consumers and producers with systems analysis of aggregated effects. Our distributional analysis allows us to consider how the various options may impact on different types of consumers and depending on their regional location. It also allows us to consider the impacts of tariff arrangements on different types of gas producer. Our systems analysis allows us to consider the potential impacts on market prices and, in turn consumer welfare and producer surplus.

5.4. The quantitative analysis summarised here was undertaken to support our principles-based assessment of the modifications proposed under UNC678. In a number of areas, the modelling is sensitive to actual outcomes in the market, such as the merit order of gas and electricity supply in future years. It should therefore be taken as indicative of the outcomes which may be expected from reform[57].

[57] A full description of the methodology employed for the modelling and the results of analysis are set out within CEPA's UNC678 Analytical Support, published as a subsidiary document to this consultation.

Summary of modelling approach

5.5. The modelling undertaken by CEPA included two stages. In the first stage, the proposed tariff reforms were applied in a tariff model[58] in order to model the direct impact on tariffs.

5.6. Tariffs impact upon network users' operational decision making in relation to flows of gas and capacity bookings. Therefore, in the second stage of modelling, a gas market model was used to consider the changes to behaviours in relation to use of the gas system. The gas market model was coupled with an electricity market model to reflect implications for gas fired power stations in the electricity market and hence evaluate impacts on electricity consumers.

5.7. CEPA's gas market model provides a representation of the gas wholesale market. It uses assumed marginal costs of gas production and a combination of derived supply and demand elasticities with the objective of maximising social welfare. In this context, maximisation of social welfare reflects minimisation of total costs while meeting a number of production, transmission and demand constraints.

5.8. CEPA's electricity market model incorporates all existing generation assets in the North West Europe electricity market region, and assumes market coupling to minimise costs of meeting electricity demand. CEPA used the electricity market model to provide demand elasticities of gas-fired power generators. This model allows CEPA to measure gas-fired power generation in the electricity market and estimate impacts on the electricity market price.

5.9. The tariff and market modelling stages were iterated until convergence was achieved to identify the equilibrium tariff and flow combinations, i.e. after taking account of the behavioural impacts of tariff reform.

5.10. As with any modelling, particularly modelling of a complex nature looking at multi-year impacts, we are conscious of the need to apply caution when drawing conclusions from results. The uncertain nature of some assumptions, such as future gas and electricity demand, technological developments and commodity prices, mean that actual outcomes will

[58] The original tariff model was built by NGGT but was adapted by CEPA in order to consider the full range of tariff reform options

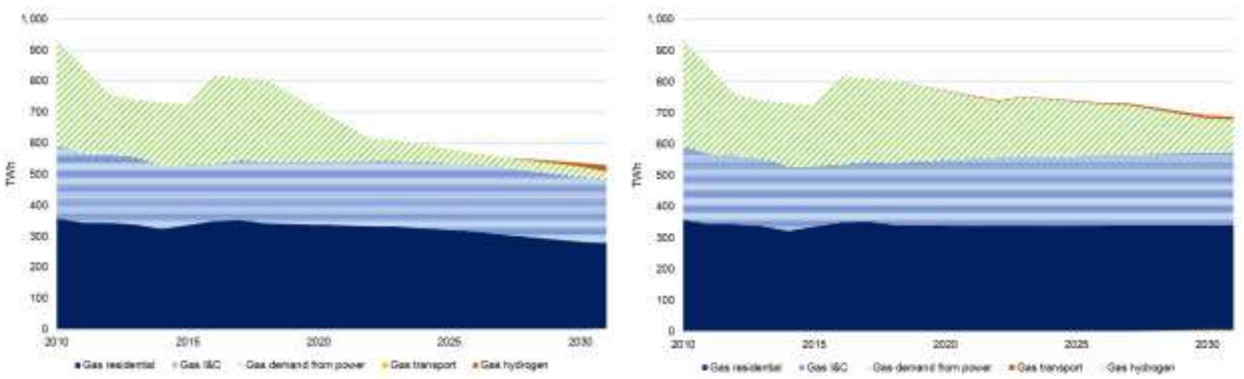
inevitably differ from forecasts and that outcomes identified in the modelling may be sensitive to market trends.

5.11. Due to uncertainty regarding future market trends, CEPA carried out analysis using two scenarios from National Grid's FES 2019 report. These scenarios are used by National Grid and the wider industry to consider what different possible visions of the future might look like and the consequences of changes to the system under these different futures. CEPA used the Two Degrees (TD) and Steady Progression (SP) scenarios as these incorporate high and low levels of gas use respectively. The Two Degrees scenario assumes that Government meets the *previous* commitment of an 80% reduction in greenhouse gas emissions by 2050 (which has now been superseded by a commitment to a 100% reduction by 2050). The Steady Progression scenario assumes that Government fails to meet the previous 80% reduction target by 2050. In light of the Government's decision to adopt a legally binding target of 100% reduction, we consider that for the purposes of assessing the modifications in front of us, the Two Degrees scenario should be used as the central scenario for consideration, and that the Steady Progression scenario provides a sensitivity assessment to this central scenario. National Grid has not yet produced a full scenario which achieves the net zero target.

5.12. In comparison to the Two Degrees scenario, the Steady Progression sensitivity allows us to consider whether there may be any material differences in the impacts under a different set of assumptions. CEPA's Steady Progression scenario has higher levels of demand both within GB and globally. This leads to impacts on global gas prices and hence, can also impact on the merit order. The sensitivity therefore allows us to test impacts on consumers and how these may be affected under different market conditions.

Figure 0.3: Demand forecasts under the FES Two Degrees and Steady Progression scenarios

Two Degrees *Steady Progression*



Source: *National Grid – FES 2019*

5.13. CEPA also carried out analysis over three separate gas years; 2021/22, 2026/27 and 2030/31 to explore the extent of impact in each of these years. Given the interaction between gas demand, flows and tariffs, the key differences between years were driven partly by system demand.

5.14. CEPA's analysis considered the short-term impacts on gas entry and exit flows, gas market prices and producer and consumer surplus. Drawing on these results, they also developed qualitative analysis of potential investment and closure decisions of gas supply sources and of power stations.

5.15. CEPA also modelled the potential for system users to invest in bypass infrastructure which would allow them to avoid use of the National Transmission System (NTS) and the corresponding transmission tariff.

5.16. In general, demand decreases under both the SP and TD scenarios. Under TD, in the gas year 2030/31, demand on the system is the lowest of any of the years and scenarios modelled. The impacts on the transmission tariffs are therefore most significant. Given this, unless otherwise stated, we present the impacts of the modification options for TD 2030/31 throughout. In general, the direction of the results in this case are representative of the full range of gas years and scenarios. However, the magnitude of change is likely to be greater than for other scenarios and gas years given the scale of impacts on tariffs. The full range of results are presented in Appendices A and B of CEPA's analytical report.

5.17. In the remainder of this section we summarise the impacts estimated under CEPA's modelling. We firstly present the impacts of tariff reform on the tariffs at entry and exit points themselves before summarising estimates of wider system impacts, including market prices, consumer and producer welfare and potential longer term impacts on investment and closure.

Options modelled

5.18. In total, 11 modification proposals were submitted to us for consideration. Each modification incorporates several consistent features with only one or two characteristics changing. In order to constrain the modelling to a pragmatic number of options, some options were consolidated. In summary:

- Options UNC678D/G/H/J were consolidated into two options for the purposes of the modelling given the parallels between them. The only difference between UNC078 D and UNC678J is the nature of the revenue recovery exclusions. Only the broadest revenue recovery exclusion option (UNC678D) was included within the modelling. The same applies for UNC678H and UNC678J in which case only UNC678J was modelled. In both cases the options which include narrower revenue recovery exclusions have been considered in our principles-based assessment above.
- UNC678F includes a 'Capacity Surrender Rule' but is otherwise identical to UNC678E. The Capacity Surrender Rule was not modelled but has been considered within our principles-based assessment above.

5.19. We summarise the options modelled in Figure 0.4 below:

Figure 0.4: Options modelled (Source: CEPA)

Option	Label in analysis	RPM	Capacity used for tariff calculation	Storage discount	Revenue recovery exclusions	Optional charge (short-haul)	Mod (with closest alignment)	Also applies to:
Status quo	SQ	LRMC plus commodity charge	Obligated capacity	None	N/A - Existing Contracts are liable for commodity charges	Optional Commodity Charge		
Capacity Weighted Distance (CWD) baseline	CWD	CWD	Forecasted Contracted Capacity (FCC) by National Grid, excluding Existing Contracts.	50%	Existing contracts	None	0678	
Postage stamp (PS)	PS	PS		50%	Existing contracts	None	0678A	
CWD with storage discount	CWD storage	CWD		80%	All storage sites - all other Existing Contracts included	None	0678E	0678F: The 'surrender rule' proposed in 0678F will be considered separately
PS with storage discount	PS storage	PS		80%	All storage sites - all other Existing Contracts included	None	0678C	
CWD with NTS Optional capacity charge (NOC) - Methodology 1	CWD NOC 1	CWD		50%	Existing contracts	NOC: Using 'Methodology 1'	0678B	
CWD with NOC - Methodology 2	CWD NOC 2	CWD		50%	Existing contracts	NOC: Using 'Methodology 2'	0678D	0678G: This mod is identical but only existing storage contracts are excluded from the revenue recovery adjustment
PS with NOC - Methodology 2	PS NOC 2	PS		50%	Existing contracts	NOC: Using 'Methodology 2'	0678J	0678H: This mod is identical but only existing storage contracts are excluded from the revenue recovery adjustment
CWD with Wheeling NOC and Ireland Security Discount	CWD Wheeling	CWD		50% (and 95% Ireland Security Discount)	Existing contracts	NOC: Using 'Wheeling charge'	0678I	

Impacts on tariffs

5.20. CEPA estimated the potential distributional impacts of transmission tariff reform on a range of market participants. In this section, we consider the estimated impacts on gas tariffs, drawing on CEPA's analysis.

5.21. In order to compare like with like, we present the estimated impacts on annual gas tariffs (in p/kWh/day). In the case of the modification options, this allows for consistent comparison and tariff levels apply equally to other capacity product timeframes as multipliers are set equal to one[59]. The only exception is for the interruptible product for which a 10% discount is applied. Given the different proportions of the interruptible capacity product that are used at different entry and exit points, the weighted average tariff at any entry or exit point may be affected to some degree, though this will be limited given the 10% discount.

5.22. The presentation of annual capacity tariffs is of greater relevance under the status quo in which discounts for products within different timescales can be more significant. For example, the reserve price of the interruptible product is set to zero, and allows some users to purchase gas capacity for free.

5.23. Also of relevance to comparison of the status quo and the modification options is the commodity element of the tariff which is included within the status quo. In order to allow for direct comparison of the total costs of flowing gas between the status quo and the modification options, the commodity element of the tariff is included when presenting the status quo results. This form of presentation allows for consistent comparison between the status quo and the modification options where both sets of tariff results effectively represent the cost of flowing a unit of gas and using the annual capacity product to do so.

5.24. CEPA applied the assumption that market participants would book capacity equal to their actual gas flow requirements on the grounds that capacity within all timescales would come at a similar cost under the modification options.

[59] I.e. there is an equivalent tariff for products within all time horizons, from the annual to the daily product.

5.25. The only exception to this assumption is for GDN exit points which CEPA assume book capacity to meet a 1-in-20 supply standard, consistent with their interpretation of their licence.

Choice of RPM

5.26. For a set level of revenue, the impacts of the RPM on tariffs are purely distributional – i.e. the same total amount of revenue is recovered in different proportions from different users. Relative to the PS RPM which applies an equivalent tariff for capacity to all entry points and all exit points respectively, a CWD RPM will increase or decrease the tariff at that point based on the distance between entry and exit capacity. This compares with the LRMC methodology in which the capacity tariff is dependent on estimates of the cost of expansion of capacity at the respective point.

5.27. Therefore, both the CWD and LRMC methodologies derive tariffs which are dependent on the specific characteristics at a particular point. This results in a range of tariffs at entry or exit points of a certain type.

5.28. In evaluating the relative merits of an RPM, we consider both the levels of tariffs and the tariff dispersion across entry and exit points of different types and within entry and exit points of the same type.

5.29. CEPA's analysis shows that the level of the annual entry tariffs generally reduces under the modification options relative to the status quo. This is partly driven by the large entry commodity tariff element, which applies equally to all entry point flows. A large entry commodity tariff results from the way in which the LRMC methodology is applied at entry.[60]

[60] NTS entry capacity prices represent purely locational prices derived from the LRMC or providing transportation of gas from the different entry points. Residual revenue recovery is addressed via the application of the TO entry commodity charge.
This differs from the application of the LRMC methodology at exit: NTS exit capacity prices are administered rates designed to recover 50% of transmission revenues when applied to obligated exit capacity levels, by scaling the raw LRMCs. As such, revenue under-recovery from NTS exit capacity tariffs could only result from under-utilisation of exit capacity, at below obligated levels. This typically means that the exit commodity charge required for residual revenue recovery is lower than the entry commodity charge.
For a detailed description of the methodology, see Uniform Network Code (UNC), Transportation Principal Document (TPD), Section Y.

The commodity tariff is also affected by the extent of revenue which is not recovered from short-term capacity products which are currently priced at significant discounts.

5.30. Tariffs at exit points are relatively consistent between the LRMC methodology and the modification options. The LRMC methodology at exit is applied in a different way than at entry resulting in a lower proportion of revenue being recovered through the commodity charge under CEPA's modelling assumptions.

5.31. The modelling shows that some types of entry and exit points are likely to face a lower capacity weighted tariff under one RPM than the other, with the direction of the impact dependent on relative proximity of entry to exit capacity for each point.

5.32. At entry, all types of points other than beach terminals face a lower tariff under the CWD than the PS on average. The proportion of capacity bookings at beach terminals mean that even a relatively small increase in the tariff under CWD relative to PS is reflected in a lower tariff at other entry point types.

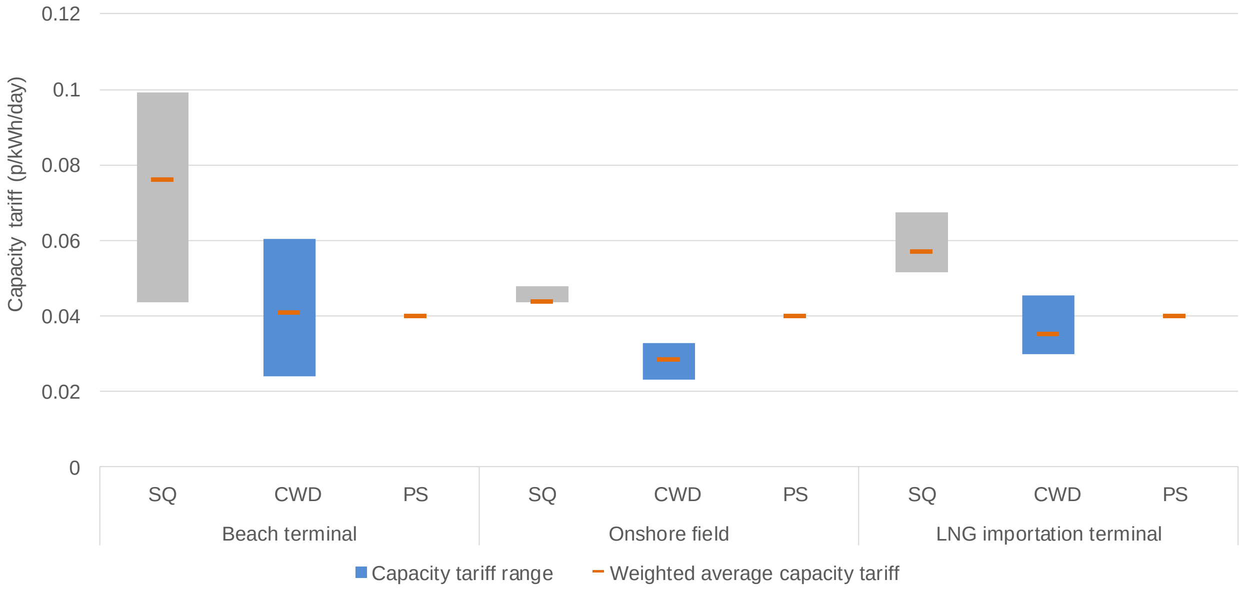
5.33. At exit, the effect is more muted as a result of broader locational dispersion. Industrial and commercial (I&C) consumers and interconnector exit points face a slightly lower tariff under the CWD methodology on average while for power stations and storage exit points, the tariff is slightly higher on average.

5.34. There is no tariff dispersion under the PS methodology by design[61]. Tariff dispersion for exit points decreases under the CWD methodology relative to the status quo while tariff dispersion is similar under the status quo and the CWD methodology for entry points.

5.35. Note that in the following charts, coloured columns are used to represent different modification options. For example, the grey column represents the tariff range under the status quo (SQ), blue columns (of different shades and patterns) represent the range of tariffs within options which use a CWD RPM and green columns (of different shades and patterns) represent the range of tariffs within options using a PS RPM. The same colour coding applies when considering wider systems impacts.

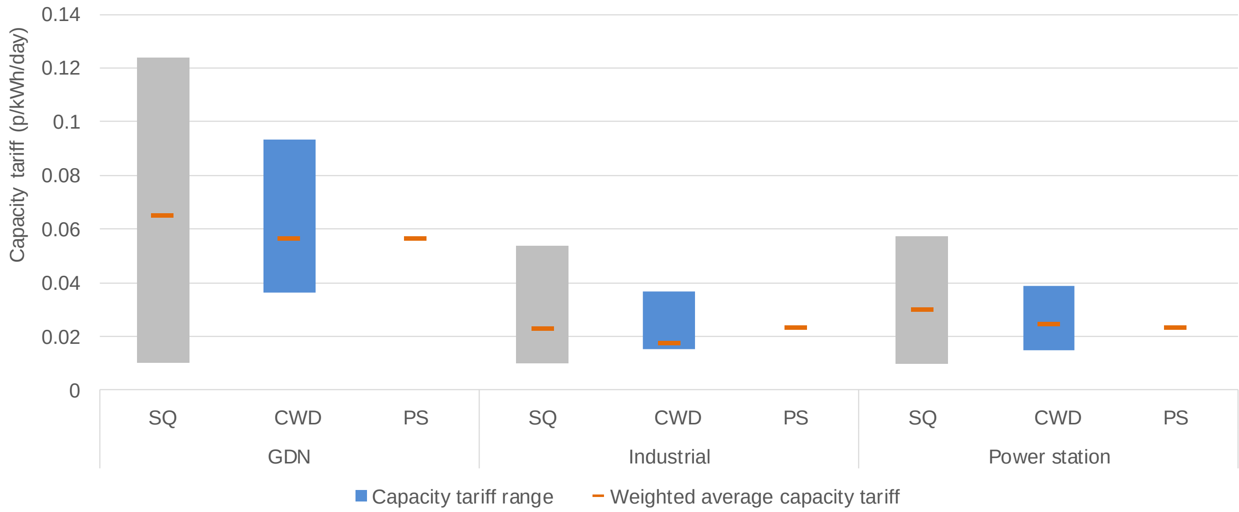
[61] The only exception is for GDN exit points given the assumption that they 'overbook' capacity to meet their licence interpretation.

Figure 0.5: Annual weighted average tariffs at entry points under each option (TD, 2030-31, £18/19)[62]



Source: CEPA

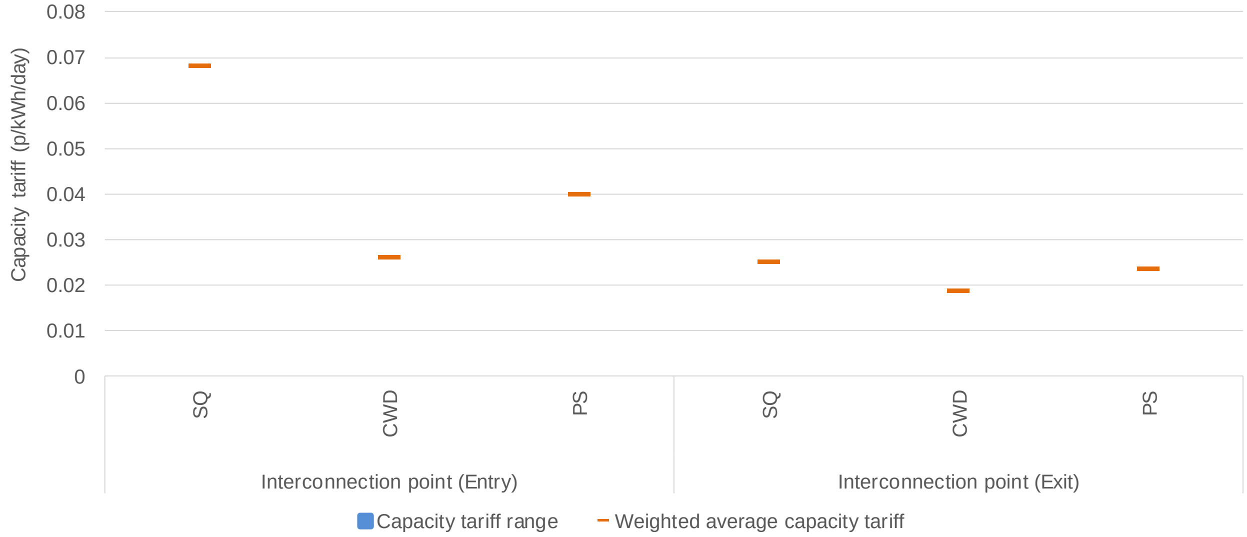
Figure 0.6: Annual weighted average tariffs at exit points under each option (TD, 2030-31, £18/19)



Source: CEPA

[62] As mentioned previously, we include the effects of the TO commodity tariff within the status quo estimates in all tariff charts.

Figure 0.7: Annual weighted average tariffs at interconnector entry and exit points under each option (TD, 2030-31, £18/19)[63]



Source: CEPA

Gas storage

5.36. CEPA's modelling suggests that gas storage would face an increase in the entry tariff relative to the status quo but a reduction in the exit tariff under the modification options. Under the existing arrangements, storage is exempt from the commodity charge and a number of storage facilities face a relatively low capacity charge.

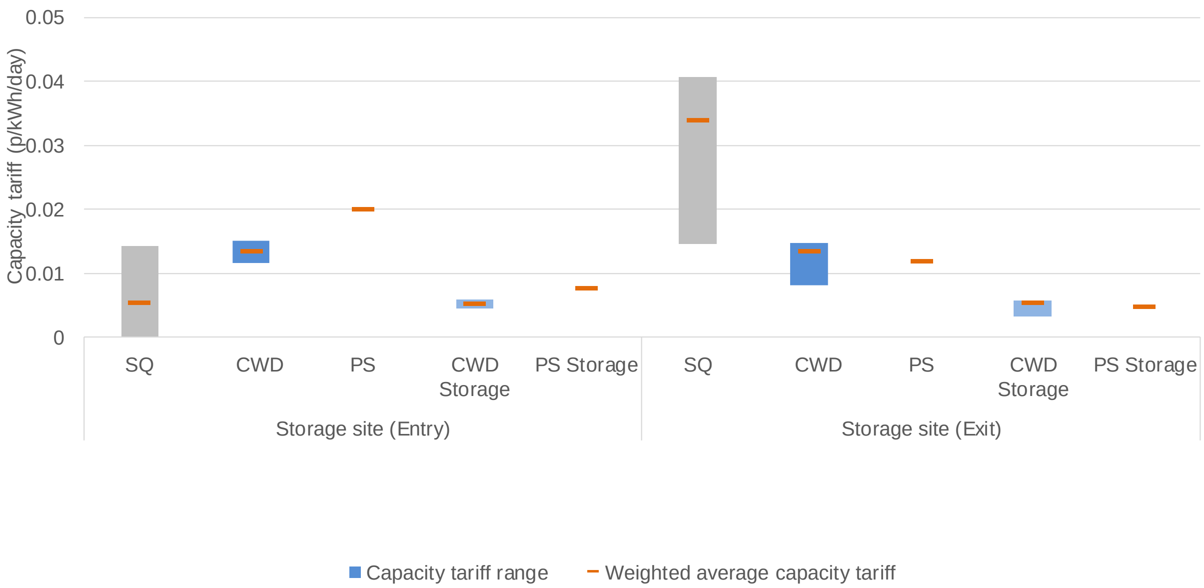
5.37. CEPA note that their results for the tariff at storage exit points partly results from modelling outcomes which suggest that some storage facilities do not inject gas into store (i.e. exit from the NTS) over the course of the modelled year. In addition, we note that more than 70% of capacity at storage exit points was booked using the heavily discounted interruptible product under the current arrangements. In combination, this results in an overestimate of the weighted average exit tariff which may be expected to be lower under the status quo arrangements in practice.

[63] Note that there is only one interconnector entry point (Bacton) and so we do not observe any tariff dispersion. The tariff shown is for the Moffat exit point. Based on price differentials between the continent and GB in the TD scenario in 2030-31 (and noting the deterministic nature of the modelling), we do not observe exit flows to the continent.

5.38. Comparing CWD and PS, we can observe that the tariff at entry is higher under the PS RPM while the tariff at exit is higher under the CWD RPM. The difference in the entry tariff between the RPMs is estimated to be larger than that at exit.

5.39. The reduction in the tariffs in the presence of an 80% storage discount (as proposed under UNC678C/E/F) can also be observed. Given the small proportion of cost recovery which is contributed by storage facility entry and exit bookings, CEPA find that the additional revenue recovery requirements resulting from an 80% discount only lead to a marginal change in the tariffs at other entry and exit points on the system.

Figure 0.8: Annual weighted average tariffs at storage entry and exit points depending on choice of RPM and storage discount (TD, 2030-31, £18/19)[64]



Source: CEPA

NOC options

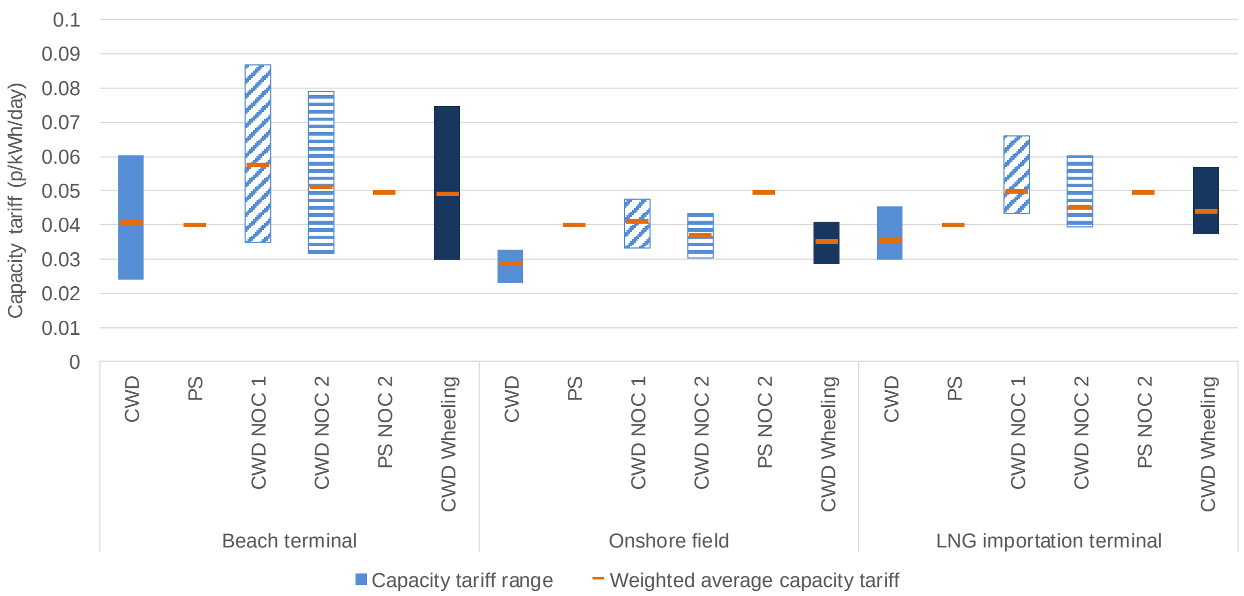
5.40. CEPA's modelling also shows the impact of the introduction of a NOC. All three NOC methodologies are considered with PS and CWD variants of the methodology proposed in UNC678D/G/H/J captured.

[64] As explained above, we expect the capacity tariff at storage exit points under the status quo to represent an over-estimate relative to what we would expect to see in practice.

5.41. The analysis presented in Figures 0.5 – 0.8 shows the annual standard capacity tariff (not including any NOC discounts). A NOC would lead to additional revenue recovery requirements and would generally raise the tariff for capacity which did not make use of the NOC. The increase in tariffs would apply equally to storage and interconnector entry and exit points.

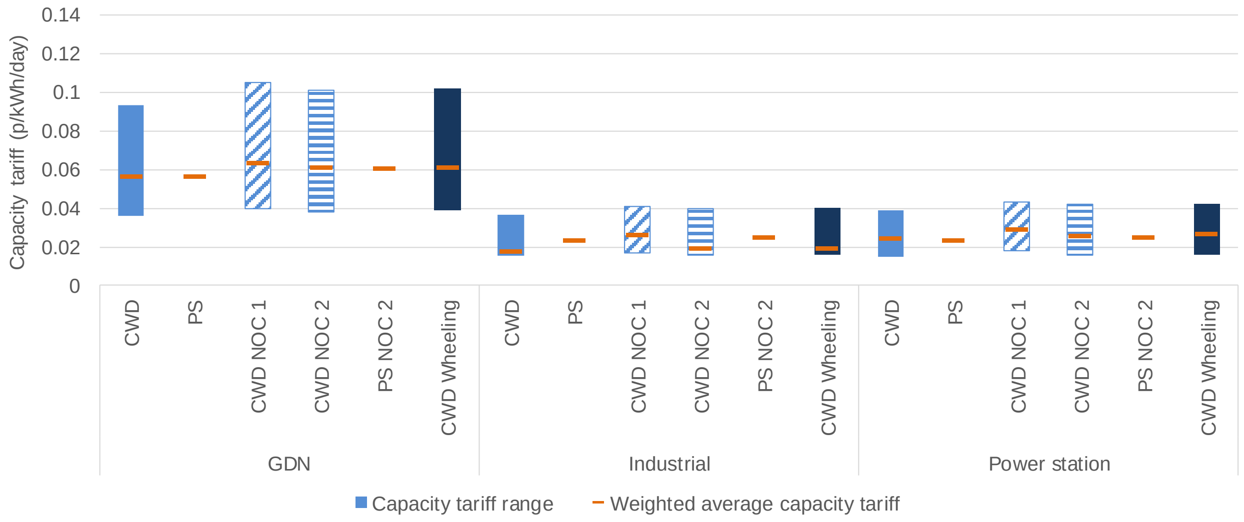
5.42. The NOC methodology proposed in UNC678B (Methodology 1) leads to the greatest increase in the tariff in most cases, with the relative impact of the methodology proposed under UNC678D/G/H/J (Methodology 2) depending on whether the PS or CWD methodology is more favourable at the relevant entry or exit point type. The Wheeling methodology (UNC678J) generally results in the smallest additional revenue recovery requirements across other entry and exit points.

Figure 0.9: Impact of NOC proposals on annual weighted average tariffs at entry (TD, 2030-31, £18/19)



Source: CEPA

Figure 0.10: Impact of NOC proposals on annual weighted average tariffs at exit (TD, 2030-31, £18/19)

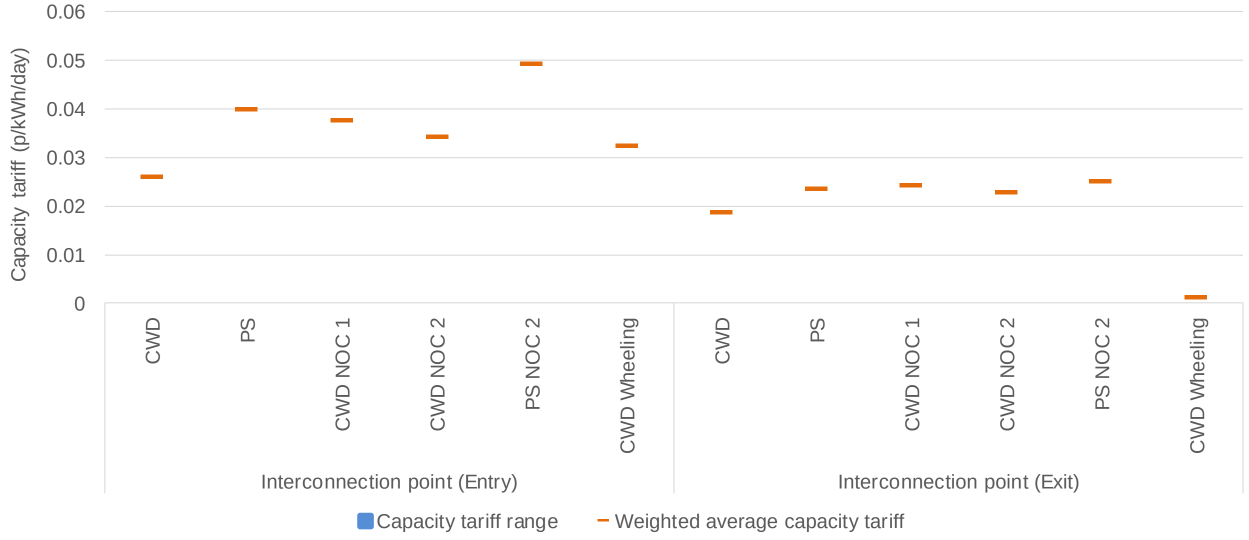


Source: CEPA

5.43. Alongside the Wheeling charge, UNC678I proposes a 95% discount for exit flows over the Moffat interconnector.

5.44. The impact of the 95% Ireland Security discount on interconnector tariffs is shown in Figure 0.11. As with storage facilities, the revenue that is lost under an Ireland Security Discount would be recovered from other exit points. Given that the discount is only included at one exit point, the impact on other tariffs is muted.

Figure 0.11: Impact of the NOC and Ireland security discount on weighted average standard annual tariffs (TD, 2030-31, £18/19)



Source: CEPA

Take-up of the NOC

5.45. The relative increase in tariffs at other entry and exit points resulting from the NOC depends on the extent of take-up of the NOC and the scale of the discount which it provides to NOC users. CEPA has carried out analysis of the likelihood of take-up of each NOC product and the corresponding implications for revenue recovery[65]. Tables 0.1 and 0.2 show the results.

5.46. The results show that all NOC methodologies result in less take-up and lower flows than under the status quo. However, in the case of NOC Methodology 1, the number of routes that use the NOC is similar to the status quo although with slightly lower flow volumes.

5.47. Methodology 2 results in lower take-up. While the number of routes that use the NOC and the volume of flows is similar under the PS and CWD methodologies, it is slightly lower for CWD than for PS. In both cases, the maximum distance of routes that make use of the

[65] Only the 48 routes that made use of the OCC product in 2017-18 have been included within the modelling as 'eligible routes'. Therefore, this places an upper bound on the routes and flows that would use a NOC product.

NOC is around 25 km with an average route distance of 5.8 km for the CWD methodology and 10.2 km for the PS methodology.

5.48. As the Wheeling methodology is restricted to routes with a maximum route distance of 0 km, eligibility is significantly lower with only nine of the 48 routes that CEPA modelled considered as eligible under this arrangement. Within those eligibility constraints, CEPA estimate take-up to be relatively high, with six of the nine routes and 56% of eligible flows making use of the Wheeling product.

5.49. CEPA also estimated the amount of 'lost revenue' that would have been recovered under the relevant RPM without a NOC in place (e.g. under CWD or PS). Not surprisingly, the lost revenue aligns relatively well with take-up of the NOC but is also linked to the magnitude of discount available under each option and the tariff that would have applied in the absence of a NOC (e.g. CWD or PS). Lost revenue under Methodology 1 is significant at almost £100 million. This compares to an estimated annual revenue recovery requirement of just over £700 million.

5.50. CEPA also estimated the amount of revenue recovered per unit of flow of gas which provides an indication of the amount contributed to revenue recovery by users of the NOC product. The analysis suggests that less revenue is recovered per unit of gas that uses the NOC under Methodology 1 than under the status quo. More than double the amount of revenue that is recovered per unit of flow under the status quo is recovered when a PS RPM is combined with NOC Methodology 2.

Table 0.1: Take-up of the NOC (TD, 2030-31)

RPM	Modelled eligible routes	Number of routes that use short-haul	Total volume of short-haul flows (TWh/year)	Percentage of modelled eligible flows that use short-haul	Largest distance of route that uses short-haul (km)	Simple average route distance (km)
Status quo	48	35	167	45%	274[66]	67.1
CWD, Method 1	48	30	138	37%	164	37.6
CWD, Method 2	48	14	52	14%	24	5.8
PS, Method 2	48	18	72	20%	27	10.2
CWD Wheeling	9	6	22	56%[67]	1[68]	0.3

Source: CEPA

Table 0.2: Revenue recovered from NOC users (TD, 2030-31)

Tariff option	Total volume of short-haul flows (TWh/year)	Amount of revenue from NOC (£18/19m)	Average 'shadow' tariff per unit of flow (p/kWh) (£18/19)	Lost revenue that would be recovered from NOC users with standard tariff (£18/19m)[69]
Status quo	167	55[70]	0.0330	90
CWD, Method 1	138	26	0.0191	95
CWD, Method 2	52	18	0.0344	38
PS, Method 2	72	32	0.0447	52
CWD Wheeling	22	7	0.0323	17

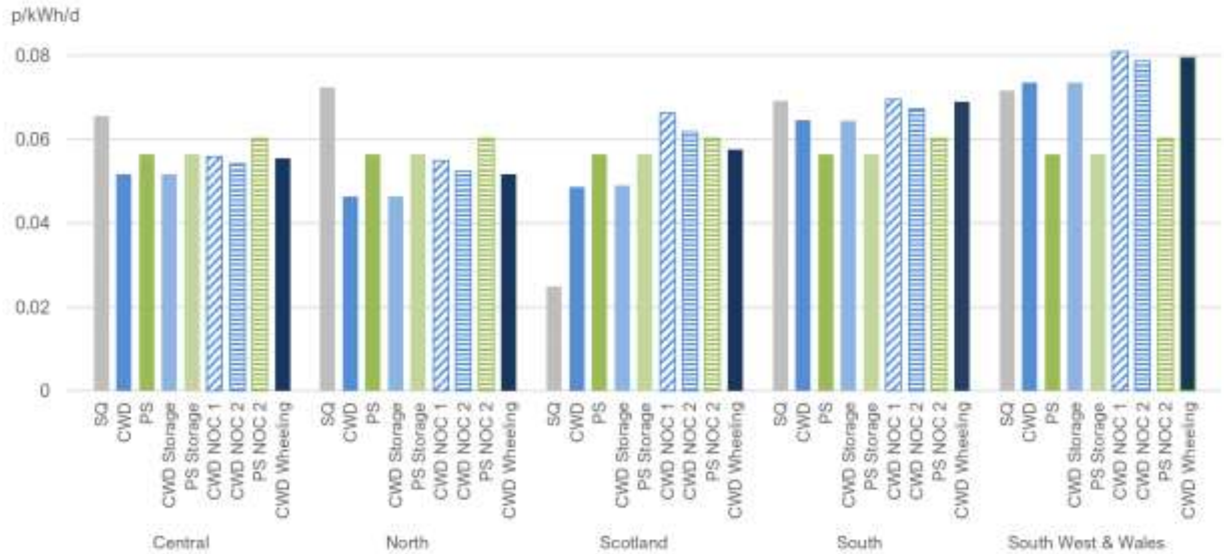
[66] This represents the largest distance of route that NGGT identify made use of the OCC under existing arrangements in the gas year 2017-18. The modelling suggests that routes of an even greater distance may have commercial benefits in making use of the OCC product. See: https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-04/Optional%20Charge%20Analysis%20%28with%20changes%20tracked%29%20%28National%20Gri

Regional variation of tariffs

5.51. Where regional dispersion is present within the tariff methodology, this is indicated by the range of tariffs which are set out in the analysis presented above. Given that the exit tariffs paid by shippers at GDN exit points are likely to represent a direct impact on the bills of consumers who are connected at that GDN, we consider in Figure 0.12 the impacts of the tariff options on GDN exit tariffs in each region.

5.52. This shows that all options are likely to reduce the regional dispersion of GDN tariffs relative to the status quo. The most significant reductions in tariffs are for Northern and Central GDN exit points whereas the most significant increase is observed for GDN exit points in Scotland. Options which include a CWD RPM retain some tariff dispersion and result in tariffs at some exit points going up while others are reduced relative to the status quo. PS options result in constant tariffs across all GDN exit points.

Figure 0.12: GDN annual exit tariffs by region (TD, 2030/31, £18-19)



d%29%20v1.3.pdf

67 This represents the percentage of the nine modelled routes rather than the 48 that are modelled under other NOC options. In comparison to the full 48 routes, the percentage of modelled flows that use shorthaul would be 6%.

68 While the Wheeling charge is restricted to entry and exit points separated by a 0km distance, the methodology used to calculate this distance can differ slightly from the pipeline distances registered by NGGT within its pipeline book. Therefore, it is possible for the registered physical distance to be slightly greater than 0km.

69 Note that this does not account for the potential for any network user decisions to bypass the NTS.

70 Note that under the status quo, this figure includes both capacity and OCC revenue from users that take up the OCC. This has no impact on the lost revenue, which continues to represent what would have been recovered if OCC users were liable for the standard entry and exit commodity tariffs.

Wider systems impacts

5.53. As noted by CEPA in their modelling report, it is important to consider the mechanism for changes in consumer welfare arising from the modelling of changes to transmission tariffs. As they explain, changes to consumer welfare may result not only from the direct tariff impacts but also from the resulting changes in the gas wholesale market prices.

5.54. Wholesale gas prices are affected by the marginal price setting supply source and the effect that the tariff has on the costs of entry capacity at that source. Where tariff reform leads to an increase in the tariff of the marginal supply source, and where that marginal source is not replaced by another which becomes cheaper, then the wholesale market price will increase. On the other hand, where the tariff is lower for the marginal supply source, this would result in a decrease in the wholesale price.

5.55. In that context, CEPA note that abstraction of the real world required for modelling should be taken into account in interpreting modelling results. In practice, the dynamics of supply and demand may differ from that modelled, leading to differences in the marginal source, which may impact on welfare estimates. We note that the Steady Progression sensitivity helps to test the impacts of reform under a different set of supply and demand assumptions.

5.56. CEPA also note that there are wider considerations beyond short-term consumer welfare which should be taken into account in protecting the ongoing interests of gas consumers. For example, to the extent that producer surplus is reduced, this may have some impact on investment and closure decisions of market participants.

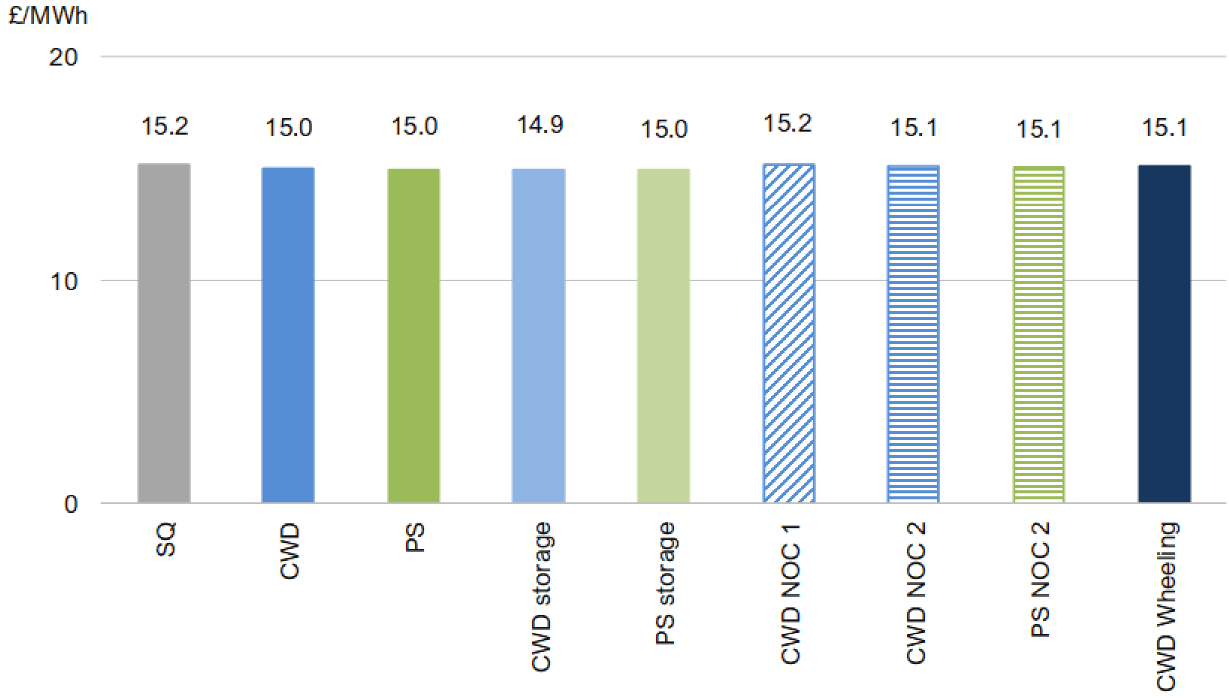
5.57. In this section, we firstly summarise CEPA's estimates of the impacts on the gas market price before summarising their consumer welfare results. We then present CEPA's estimated bill impacts for some key consumer types before summarising the impacts on gas producers, interconnectors, storage facilities and gas fired power stations.

Impacts on gas market prices

5.58. Given the scale of the transmission tariff in proportion to other elements of the wholesale gas price, CEPA estimates relatively small changes in the wholesale gas price (see Figure 0.13).

5.59. CEPA's modelling estimates that the wholesale gas price will be lower for all modifications apart from CWD NOC 1 than that observed under the status quo. Figure 0.13 below shows the modelled change in gas wholesale market prices for each option under the Two Degrees scenario.

Figure 0.13: Estimated gas wholesale market price impacts under each option ((TD, 2030-31, £18/19))



Source: CEPA

Consumer welfare estimates

5.60. Although the differences in the wholesale gas price is relatively small, the impacts on consumers are magnified by the quantity of demand. CEPA estimate that gas demand in 2030-31 is approximately 750 TWh per year. Therefore, even a reduction in the wholesale gas price of £0.1/MWh leads to a consumer welfare benefit of approximately £75 million.

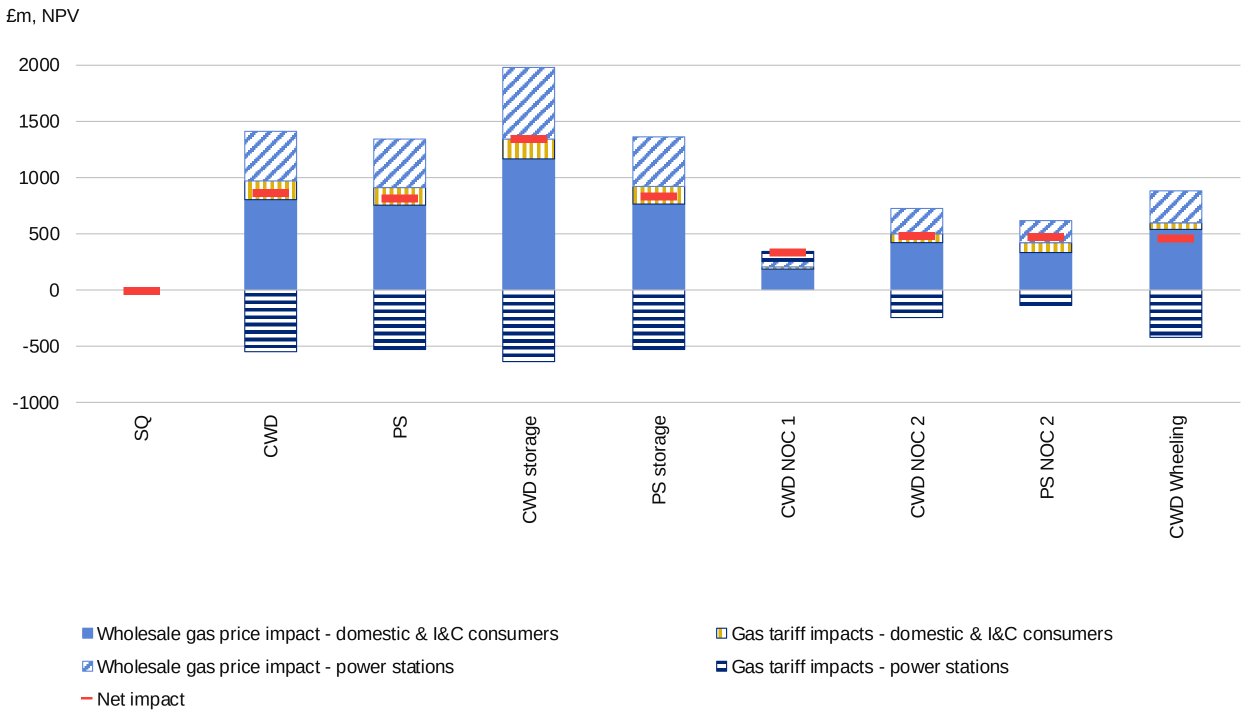
5.61. In addition to the benefits resulting from changes to the gas wholesale price, consumer welfare will also be affected directly by the tariff at GDN exit points which we assume is passed onto domestic consumers directly. We presented the impacts on GDN tariffs in general in Figure 0.12. In addition to tariffs paid by NTS-connected consumers, we include the impact of the GDN tariff in our estimates of total consumer welfare.

5.62. In practice we observe the magnitude of consumer welfare benefits of the change to the market prices significantly outweighing the direct benefits of the transmission tariff.

5.63. We present consumer welfare relative to the status quo resulting from gas market impacts in Figure 0.14. The consumer welfare estimates reflect the market price impacts that we observed in the section above. Where the gas price is lower, we observe higher consumer welfare and vice versa.

5.64. All options lead to higher consumer welfare than the status quo, with marginally higher welfare observed under the CWD than PS RPM. Welfare is further increased where the CWD RPM is coupled with an 80% storage discount. In general, those options which do not include a NOC result in a higher level of welfare than those that do. However, we note from CEPA's modelling that this result is more muted under the SP scenario.

Figure 0.14: Consumer welfare impacts resulting from gas market (TD, NPV, 2022-31, discounted to £18-19)



Source: CEPA

Benefits from 2022 - 2031 (NPV £bn, discounted to £18/19) under Two Degrees

	UNC678 (CWD)	UNC678A (Postage Stamp)
Gas domestic consumers	£0.58bn	£0.54bn
Gas non-domestic consumers	£0.40bn	£0.37bn
Gas-fired power generators (gas market impacts only)	-£0.11bn	-£0.09bn
Total gas consumers	**£0.87bn**	**£0.82bn**

Source: CEPA

Bill impacts for specific consumer types

5.65. CEPA estimated the impact on annual gas and electricity bills for a range of consumers with different assumed levels of consumption. Here, we present the estimated bill impacts for a representative domestic consumer with the median level of gas consumption. We also show the bill impact for an LDZ connected non-domestic consumer with median gas consumption and an NTS connected non-domestic consumer.

5.66. Given that that the wholesale gas price affects each type of consumer in the same way, proportionate to their volume of gas consumption, we observe the same trend for the wholesale gas price impact for each consumer type. For LDZ connected consumers, the same applies to the impact of changes to tariffs at GDN exit points.

5.67. However, the impact on bills resulting from changes to tariffs is different for NTS connected consumers who, on average, face lower bills under a CWD RPM and benefit from a NOC option, depending on the extent to which they can take-up the product with commercial benefit.

5.68. The following figures show the total bill impacts on a range of consumers resulting from the modification options. We show both the impacts resulting from change to the wholesale gas price and the change to the tariff at the relevant exit point. These two impacts combine to give the total impact on bills.

Figure 0.15: Estimated bill impact for median consumption domestic gas consumers (TD, 2030-31, £18/19)

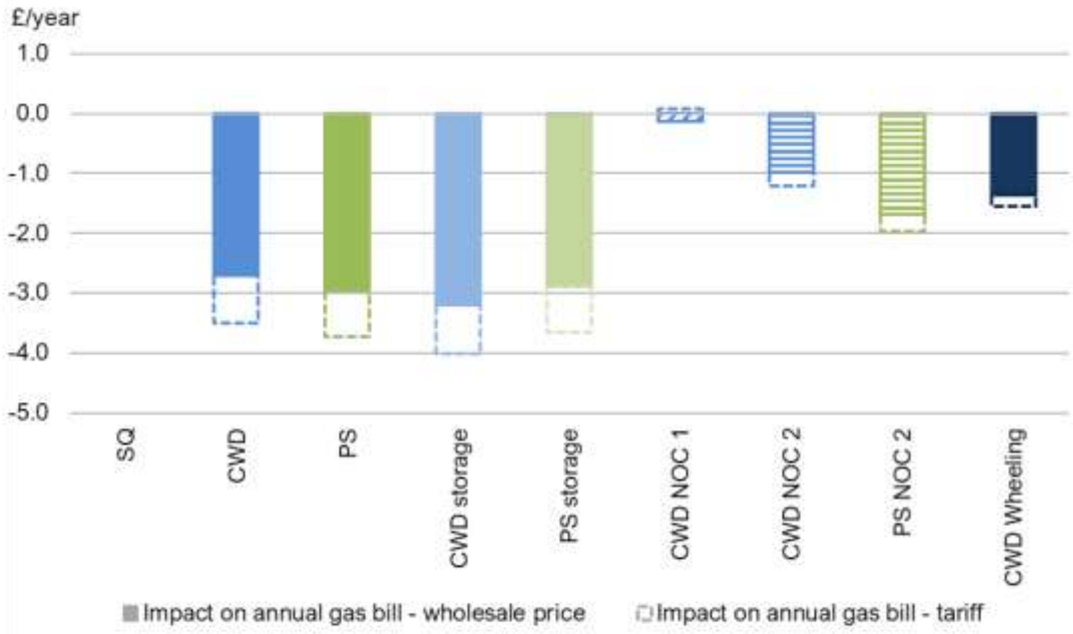
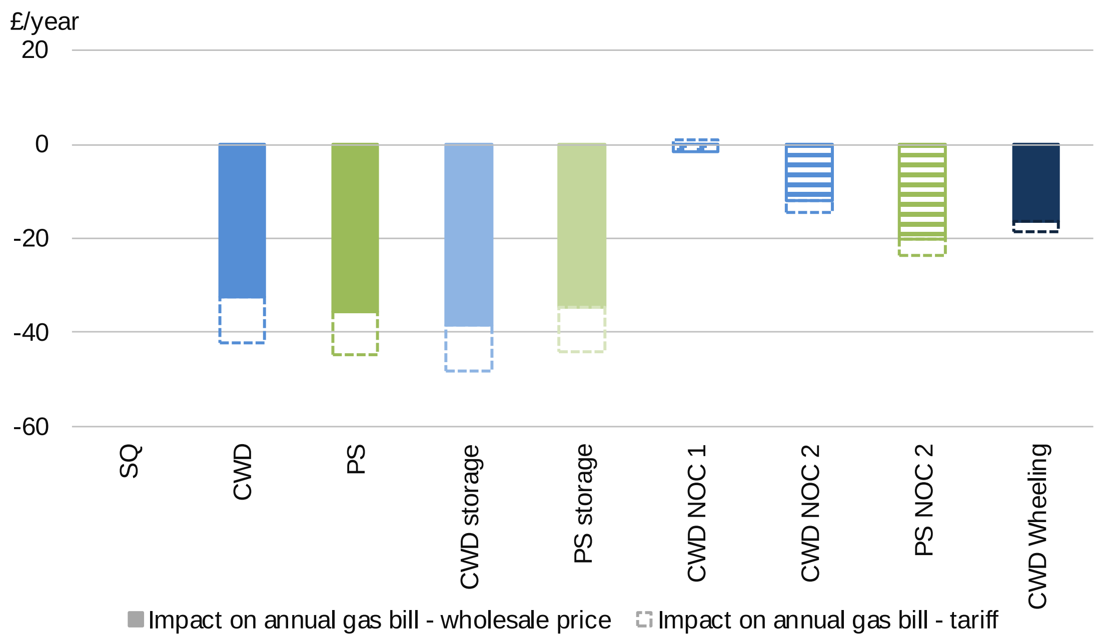
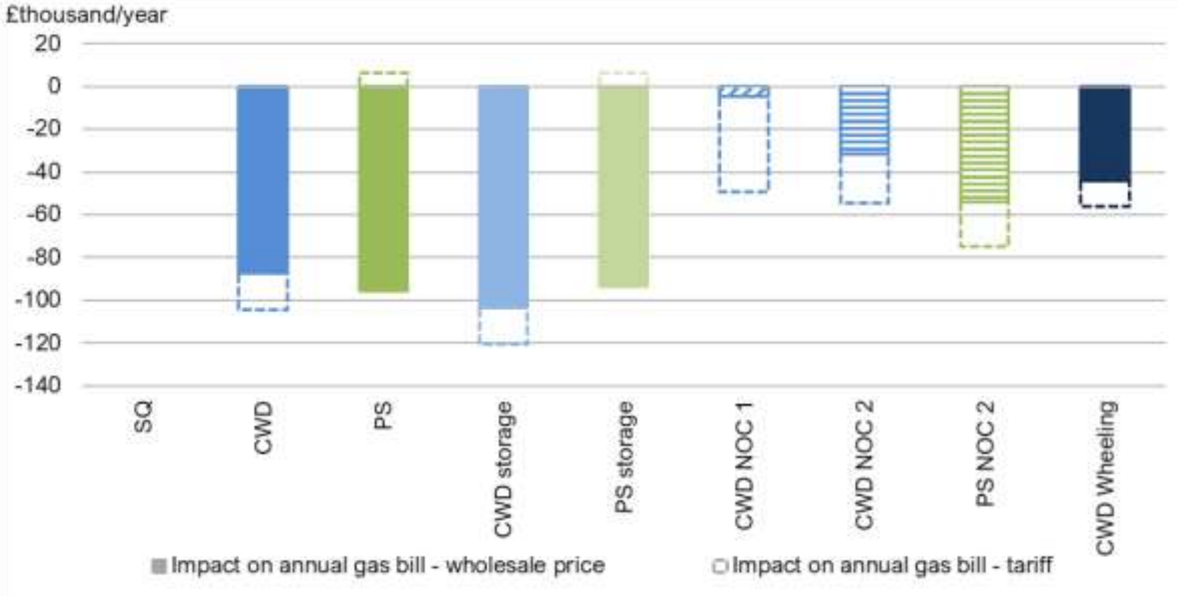


Figure 0.16: Estimated bill impact for the median non-domestic consumer connected to the LDZ gas network (TD, 2030-31, £18/19)



Source: CEPA

Figure 0.17: Estimated bill impact (gas only) for the median non-domestic consumer connected to the NTS (TD, 2030-31, £18/19)



Source: CEPA

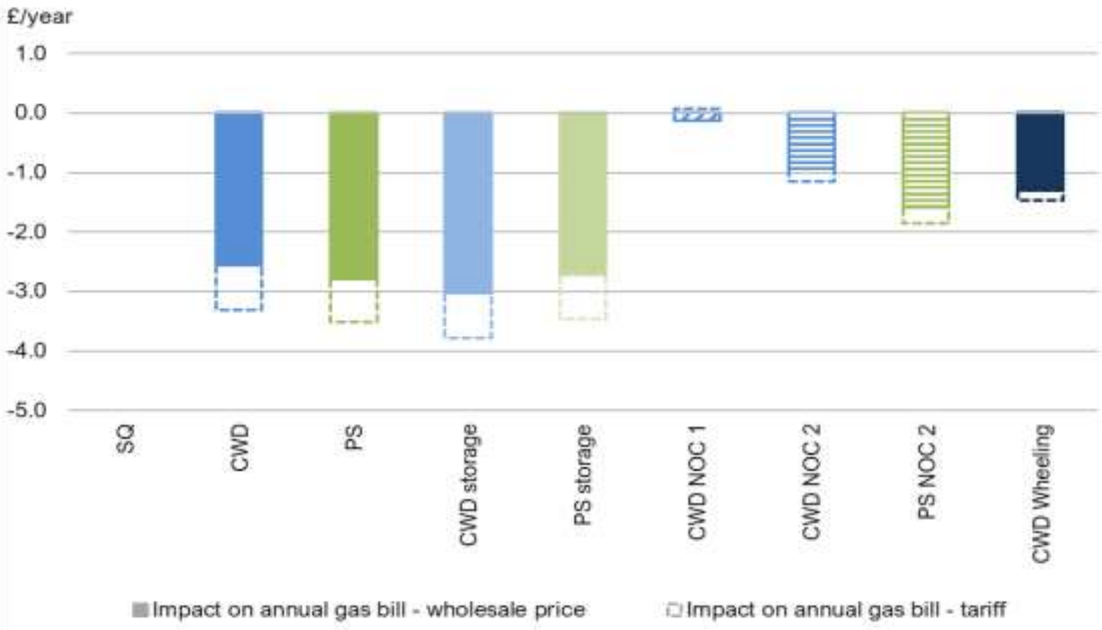
Impacts on vulnerable consumers

5.69. In the context of vulnerability, CEPA focussed on the potential impacts on fuel poor consumers. They measured the impact on annual gas bills for the most fuel-poor quintile domestic gas consumers drawing on BEIS National Energy Efficiency Data-Framework (NEED) statistics.

5.70. CEPA also considered the regional variation of impacts which may result from the dispersion of GDN exit tariffs as shown in Figure 0.12. This may result in variation of the tariff portion of the impact, though we note that this is smaller than the wholesale gas price impact.

5.71. Figure 0.18 shows the combined impacts on the most fuel poor quintile of domestic gas consumers resulting from the change to the wholesale gas price and to the GDN exit tariff. These impacts combine to give the total impact on the most fuel poor quintile domestic consumer. In all cases tariff reform is expected to lead to a decrease in the level of the gas bill.

Figure 0.18: Estimated bill impact for the most fuel poor quintile domestic gas consumers (TD, 2030-31, £18/19)



Source: CEPA

Impacts on market participants

5.72. In addition to the impacts on consumers, CEPA estimated the effects on the revenues of market participants. Given a lack of accurate cost information, CEPA noted that their estimates are based on a number of assumptions and so, should be considered indicative.

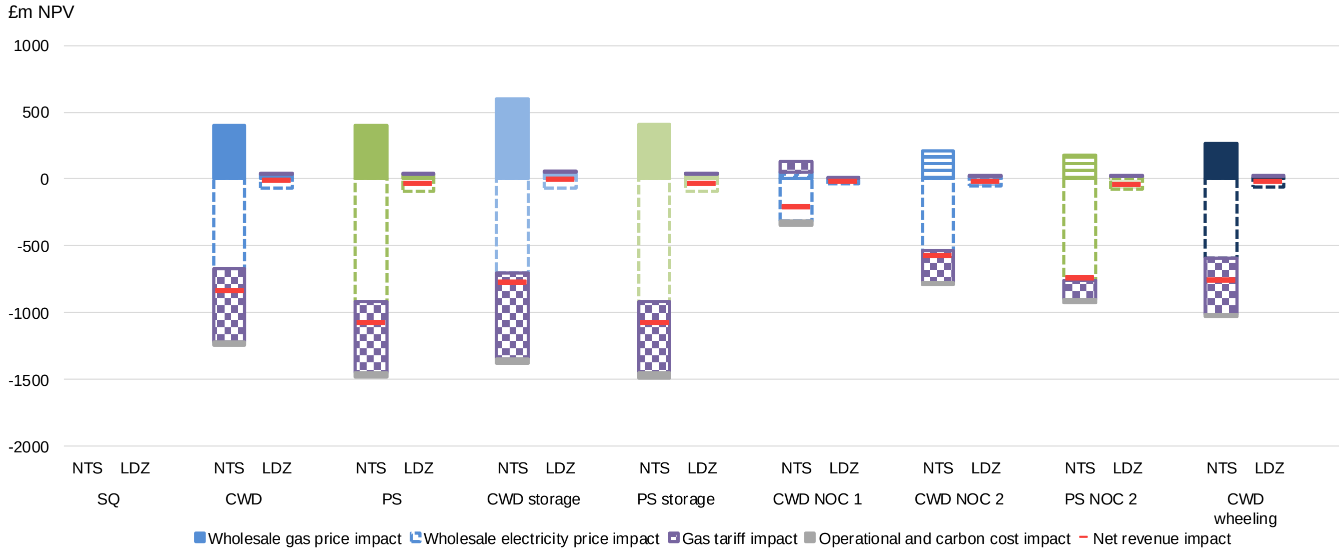
Impacts on gas-fired power stations

5.73. CEPA analysed the impacts of the options on NTS and LDZ connected gas-fired power stations. Their results are shown in Figure 0.19.

5.74. In addition to the direct impact of any changes to the exit tariff, power stations are affected by both the reduction in the gas market price (positive revenue impact) and the reduction in the wholesale electricity price (negative revenue impact). CEPA discussed the fact that the net effect of both impacts depends on the level of tariff dispersion which results from the tariff methodology. Where the level of dispersion is high, inframarginal generators can benefit from larger revenues based on the wider differential in the gas costs between the marginal and inframarginal units. The upwards pressure on the electricity price allows inframarginal generators to make greater inframarginal rents. A low dispersion of tariffs results in less of a differential in the costs between marginal and inframarginal units and hence a greater reduction in revenues for power stations as a whole.

5.75. This explains the expected reduction in revenues relative to the status quo (in which tariff dispersion is greatest) and that the most significant reduction in power station revenues is observed where a PS RPM is used.

Figure 0.19: Estimated impacts of modification options on gas-fired power stations



Source: CEPA

Impacts on gas producers

5.76. CEPA estimated the gross revenues of beach terminals, onshore fields and LNG terminals under each option. For the analysis of these forms of supply, any reduction in flows is priced at the NBP with no operational costs included in calculations. Importantly, neither do CEPA value the option of selling gas to other markets (where relevant) or the value of gas held in store. [71]

5.77. The results suggest that beach terminal surplus is likely to reduce under most options given the reduction in the wholesale gas price. CEPA found that revenues reduce to a greater

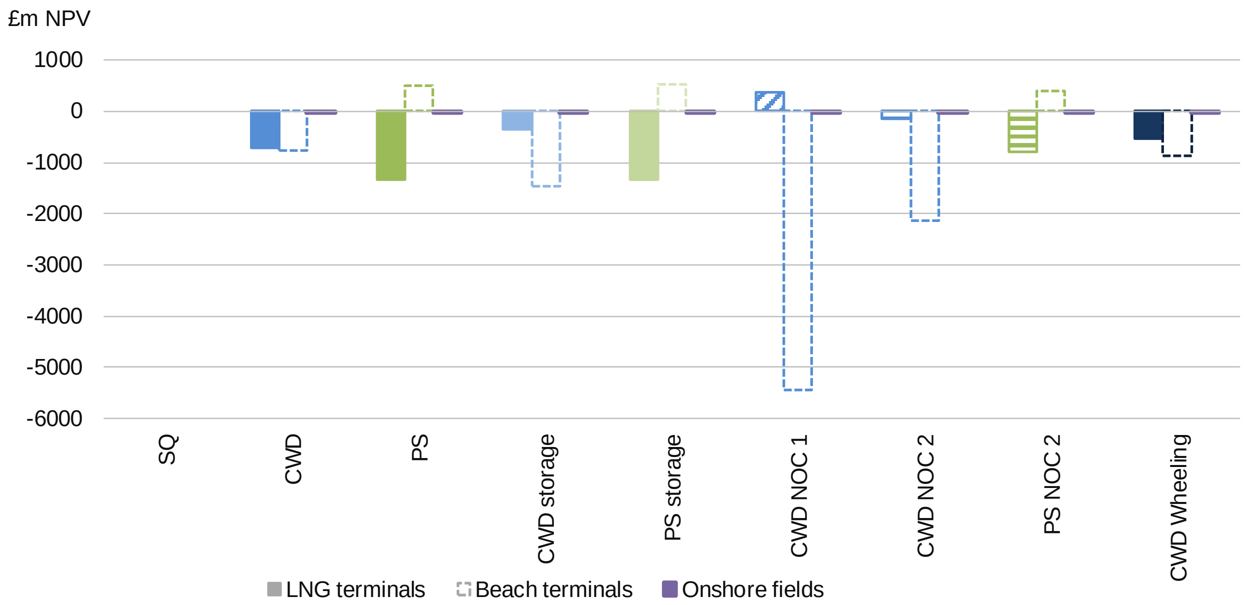
[71] I.e. analysis of impacts on revenues only consider the internal GB market rather than the global gas market, and within the period 2022-31 only.

degree within those options which include a CWD RPM as a result of the higher tariff faced by beach terminals relative to other entry points.

5.78. The results also show that the revenues of beach terminals are particularly affected by the combination of the CWD RPM with the CWD NOC Methodology 1 in which some flows from beach terminals are substituted by entry flows from interconnectors (see Figure 0.21).

5.79. LNG revenues are also affected by the lower gas price but the reduction in revenues is less under the CWD options than with a PS RPM. In combination with NOC Methodology 1, LNG terminals make higher revenues than under the status quo despite the reduction in the wholesale price.

Figure 0.20: Impacts on revenues of LNG terminals, beach terminals and onshore fields (NPV, 2022-2030, £2018/19)



Source: CEPA

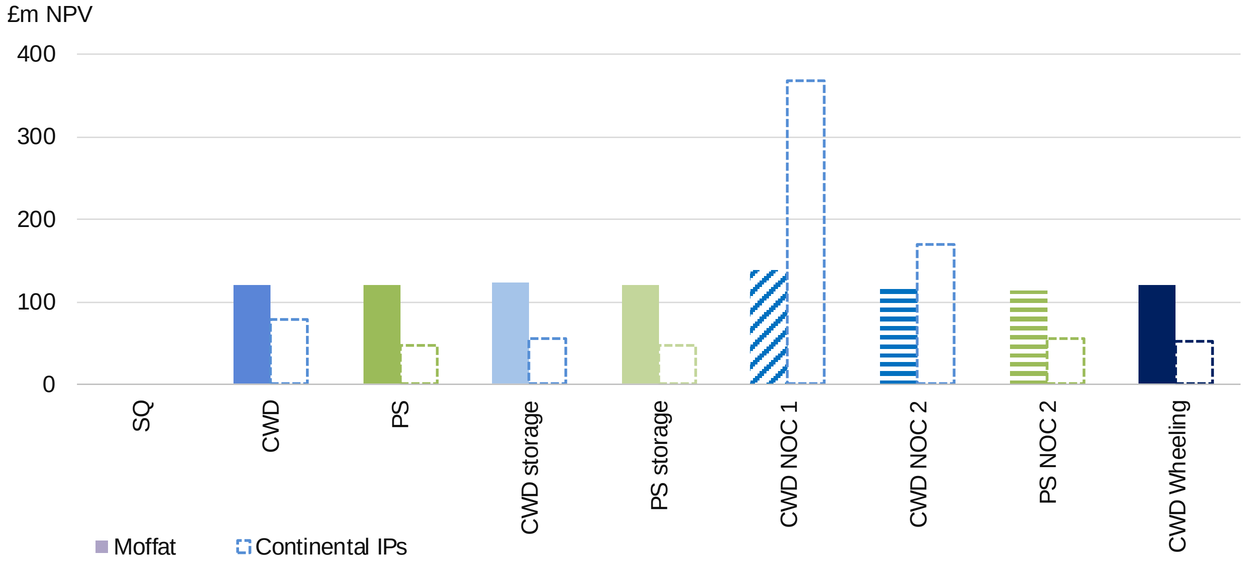
Impacts on interconnectors and cross-border gas flows

5.80. CEPA estimated revenues for gas interconnectors based on the price spread between GB and neighbouring countries and after discounting entry and exit tariffs. They found that flows and hence revenues for Moffat are relatively constant across options while revenues for the bidirectional interconnectors are affected by the wholesale gas price, the entry and exit tariffs at Bacton and the impact of tariffs on gas market flows.

5.81. Bidirectional interconnector revenues therefore increase under the CWD options and, in particular, where NOC Methodology 1 or, to a lesser extent, NOC Methodology 2 is included.

5.82. The change in Moffat revenues is equivalent across all options as it is assumed Moffat passes on any discount in tariffs to Irish gas consumers. For example, the Irish security discount reduces the Moffat exit tariff by 95%. However, rather than resulting in additional Moffat revenues, this benefit, it is assumed, is passed onto Irish gas consumers through a lower Irish gas price[72].

Figure 0.21: Impacts on revenues of gas interconnectors (NPV, 2022-2030, £2018/19)



Source: CEPA

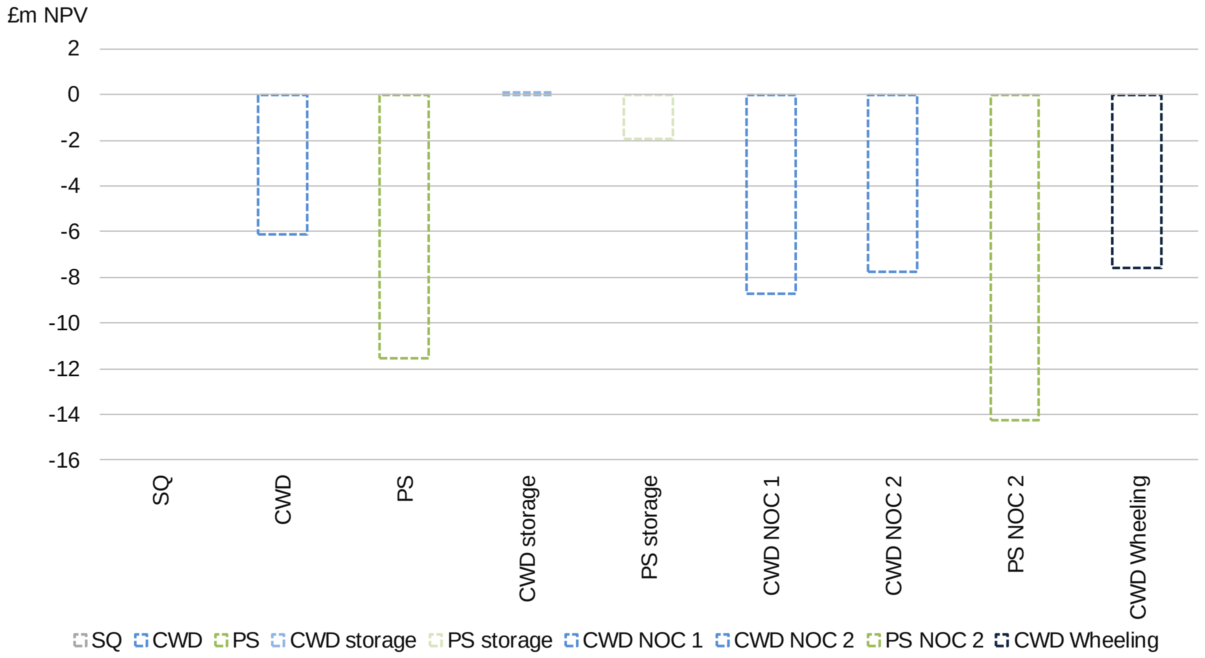
Impacts on storage operators

5.83. As gas is both injected and withdrawn from storage, the revenues associated with the change in the wholesale price are likely to be more sensitive to assumptions which impact on entry and exit gas flows than for other points. CEPA therefore focussed primarily on the direct impact of the tariff on gas storage revenues.

[72] However, in the case of the status quo, CEPA found that the existing OCC may have the effect of reducing the price differential between GB and Ireland, thus impacting negatively on Moffat revenues. We note that in practice, this could introduce inefficient gas flows across the interconnector.

5.84. Their analysis shows that storage operator revenues may be significantly affected by changes to the tariff arrangements. Reductions in revenues are lower where a CWD RPM is used. The impact of tariff reform on storage revenues is significantly smaller where an 80% storage discount is included.

Figure 0.22: Impacts of tariff arrangements on storage operator revenues (NPV, 2022-2031, discounted to £18/19)



Source: CEPA

Potential impacts on investment and closure decisions

5.85. Based on their analysis of the impacts on market participant revenues, CEPA considered the potential for tariff reform to affect investment and closure decision making.

5.86. For power stations, CEPA developed estimates of the levelised impact on revenues in order to compare these with BEIS estimates of the levelised cost of electricity ("LCOE")[73]. They found that even under the option with the greatest potential impact on revenues of gas-

73 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/566567/BEIS_Electricity_Generation_Cost_Report.pdf

fired power station, the impact on revenues would be approximately 1.3% of the LCOE for a power station commissioning in 2025, suggesting that this would only impact on investment decisions at the margin. Considering the operational costs of a plant only, they estimated that the impact may rise to approximately 1.8% of LCOE, but that this would represent an over-estimate. Therefore, the did not expect tariff reform to have a significant impact on closure.

5.87. CEPA considered whether there may be an impact on plant location by comparing the impact of tariff options with locational TNUoS charges. They suggested that the reduction in tariff dispersion as a result of a move away from the status quo could reach a maximum of approximately 29% of the dispersion of TNUoS charges for an LDZ-connected power station and 12% of TNUoS charges for an NTS-connected power station under the PS RPM. There may be some impact of tariff reform on location but CEPA expect this to be relatively small in comparison to the TNUoS charge.

5.88. Given that all options result in positive revenue impacts for gas interconnectors, their analysis suggests that tariff reform is unlikely to result in early closure of gas interconnectors whom they would expect to be able to continue to recover operating costs. However, they note that the choice of RPM could have an impact on investment and refurbishment decisions at the margin[74].

5.89. CEPA do identify the potential for the choice of tariff option to contribute to storage investment and closure decisions. The nature of tariff arrangements that are in place at storage entry and exit points under the status quo means that almost all options are likely to lead to an increase in transmission tariffs at storage points (potentially with the exception of the CWD RPM coupled with an 80% storage discount). This could have the knock on impact of reducing flows of gas into and out of gas storage facilities impacting on revenues.

5.90. After deducting the costs of gas at the wholesale price and estimates of operational costs, they note that based on their NPV estimates of storage surplus, the impacts of the tariff could be significant, representing a reduction in surplus of up to 76%.

[74] For example, they note the potential for this to impact on the investment case for bidirectional flow capability for BBL.

Table 0.3: Percentage change in total storage revenues as a result of changes to tariffs (tariff impact only – no wholesale gas price impact included) (TD, NPV, 2022-31)

Option	Percentage change in revenues of gas storage facilities as a direct result of changes to entry and exit tariffs
SQ	N/A
CWD	-33%
PS	-61%
CWD storage	1%
PS storage	-10%
CWD NOC 1	-46%
CWD NOC 2	-41%
PS NOC 2	-76%
CWD Wheeling	-40%

Source: CEPA

Potential for bypass of the NTS

5.91. CEPA also performed analysis of the risk of profitable bypass of the NTS. Drawing on NGGT estimates of the costs of building gas pipelines, they compared the NPV of the costs associated with a bypass pipeline with the NPV of the savings results from avoiding NTS tariffs.

5.92. CEPA noted that a number of cost areas are very difficult to establish. For example, they did not include costs relating to use of land, legal costs, or risks associated with supply or network constraints over the gas pipeline. Hence, they consider that their results of the extent of possible bypass are indicative and represent an over-estimate. We note also that we have received confidential representations from several stakeholders that indicate the actual likelihood of bypass is likely to be highly site-specific.

5.93. CEPA carried out analysis assuming a five-year payback time requirement for those considering NTS bypass. We consider this time horizon to be broadly consistent with commercial timeframes of market participants.

Table 0.4: Indicative number of routes and volume of flows additional to the status quo that may present a credible risk of bypass of the NTS (TD, 2030-31, five year payback time)

Tariff option	Number of routes additional to the status quo that may present a credible risk of bypass[75]	Modelled eligible flows additional to the status quo that may present credible bypass risk (TWh/year)	Potential additional lost transmission revenue if all additional credible bypass routes choose to bypass the NTS (TD, 2030-31, £m 18/19)[76]
CWD	2	12	32
PS	3	25	36
CWD storage	2	12	32
PS storage	3	25	36
CWD NOC Method 1	0	0	0
CWD NOC Method 2	0	0	0
PS NOC Method 2	0	0	0
CWD Wheeling	1	7	19

5.94. CEPA's analysis suggests that the number of routes that present a credible bypass risk may increase in the absence of a NOC. Depending on whether the CWD or PS RPM is used, the volume of flows additional to the status quo which may present a risk of bypass is either 12 or 25 TWh/year. As a result of the counterfactual tariff that would have been paid for bookings in relation to these flows under the counterfactual RPM, estimates of the difference between lost revenue under the CWD and PS are smaller than the differences in the volume of bypass flows.

5.95. The eligibility criteria applied within the Wheeling methodology leads to the potential for one additional route posing a bypass risk relative to the status quo. Under all other NOC methodologies, the credible risk of bypass is no higher than under the status quo.

[75] There is a total of 48 eligible routes that made use of the OCC in the gas year 2017-18. These are the routes that we have modelled as 'eligible' within the bypass modelling.
[76] Note that the relationship between the volume of flows that might bypass the NTS and the amount of lost revenue is not linear. Instead, this depends on the revenue contributions associated with the bypass route in the presence of the relevant tariff arrangements (e.g. they would be different depending on whether a CWD or PS RPM was used).

Appropriate design of NOC products

5.96. Combining their analysis of the take-up of the NOC and risk of bypass of the NTS, CEPA also considered whether the design of each NOC methodology proposed was appropriately targeted and with an appropriate level of discount. They considered two separate questions in relation to the NOC:

1) Is the NOC methodology appropriately *targeted* so that it is only available to those routes that present a credible risk of bypass in the absence of a NOC?

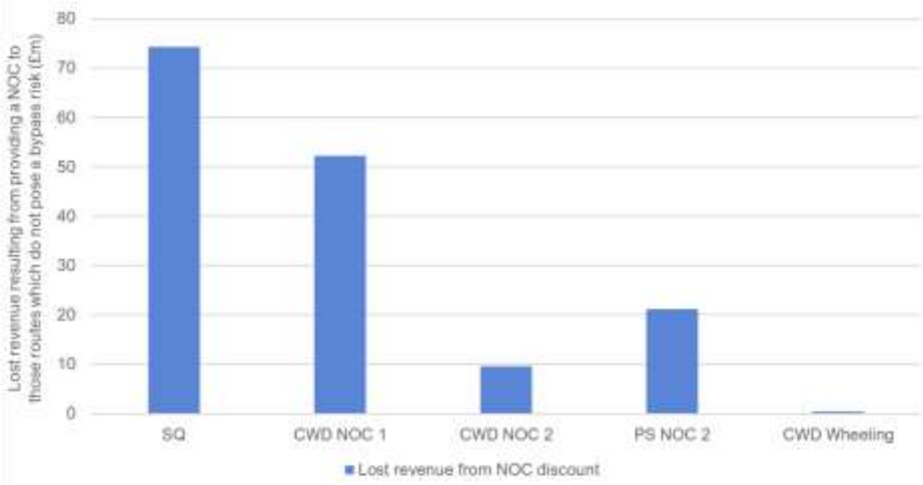
2) For those routes that do present a credible risk of bypass, is the *level* of NOC appropriate so that it achieves the optimal balance between avoiding bypass and avoiding lost revenue due to the level of the discount?

5.97. In the context of question 2, CEPA noted that their analysis could allow for consideration of the level of the NOC in the *aggregate* but that the appropriate level of the NOC for each individual route would be dependent on its particular characteristics.

5.98. We present CEPA's estimates of lost revenue as a result of inappropriate targeting (question 1) in Figure 0.23. This suggests that the existing OCC and NOC Methodology 1 are inappropriately targeted in that they provide a NOC discount to a number of routes that do not present a credible bypass risk.

5.99. The appropriateness of targeting under NOC Methodology 2 partly depends on the risk of bypass under the counterfactual RPM (i.e. CWD or PS). Given the eligibility restrictions, the level of lost revenue due to inappropriate targeting is low for the Wheeling methodology.

Figure 0.23: Annual lost revenue by providing the NOC to routes that do not present a risk of profitable bypass of the NTS (2030-31, £18-19, assuming required payback time of five years for bypass to be commercially attractive)



5.100. We present CEPA's analysis of the appropriate level of the discount (i.e. question 2) in Figure 0.24. The dark blue column shows the total amount of revenue that may be lost as a result of bypass of the NTS. The diagonal striped column shows the amount of revenue which is lost as a result of the discount provided to those routes that present a risk of bypass without a NOC but no longer bypass once the NOC is introduced.

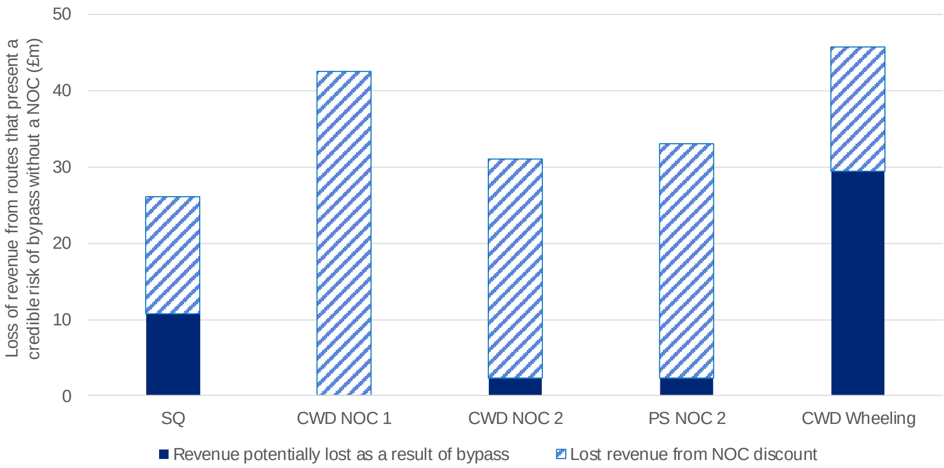
5.101. CEPA note that the theoretical optimum is to reduce the dark blue bar to zero so that there are no routes which continue to present a credible bypass risk, while minimising the amount of discount which is provided to achieve this (the diagonal striped bar). The latter cannot be reduced to zero as some discount will always be required to prevent bypass, resulting in lost revenue.

5.102. CEPA's analysis shows that, for those routes that do present a bypass risk, NOC Methodology 1 may provide a more significant discount than is needed to prevent bypass. On the other hand, the CWD Wheeling methodology may not sufficiently capture those routes that present a bypass risk, suggesting potential for lost tariff revenue as a result.

5.103. CEPA note that this analysis helps to show the appropriateness of the level of the revenue in the aggregate but does not consider the distribution of the NOC discount. For example, while a small amount of revenue is lost from bypass under NOC Methodology 2 (both CWD and PS), a significant amount of revenue is lost from the level of the discount. It *may* therefore be possible to design a more effective NOC discount which eliminates bypass risk but is more efficiently distributed to network users, relative to the levelised cost of bypass of individual route combinations.

5.104. As noted in paragraph 5.92, CEPA noted a number of cost areas that are not included within analysis which lead them to conclude that their analysis over-estimates the credible risk of bypass. This is demonstrated in the figure below which shows that some risk of bypass is present within the status quo. We do not believe that this likelihood is high with the present design of the OCC, particularly given the observed actual rate of bypass.

Figure 0.24: Annual lost revenue from those routes that present a credible bypass risk in the absence of the NOC (dark blue = revenue lost as a result of bypass, diagonal stripes = revenue lost as a result of the NOC discount from those presenting risk of bypass, TD, 2030-31, £18-19)



Impacts on the environment

5.105. A reduction in the wholesale gas price could lead to an increase in demand for gas, and thus to increased carbon emissions. CEPA's modelling assumes that residential and I&C consumers have inflexible demand in response to price (other than some demand side response at very high gas prices), so this impact is only modelled for gas-fired power stations. CEPA estimates that there would be a relatively small increase in carbon emissions from power generation as a result of the options under consideration. Given the small increment of change to the wholesale gas price, we would expect the overall impact on gas demand and hence on emissions also to be small.

6. Assessment against the applicable UNC objectives

Section summary

In this section, we present our assessment of the proposed modifications against the applicable UNC objectives. Primarily focussing on our 'principles-based' assessment of the modification option characteristics, we also draw on the quantitative analysis presented in Section 5.

Questions

Please provide evidence and analysis to support your responses.

Question 5: What are your views on our assessment of the modification options presented to us against the applicable UNC objectives?

Question 6: What are your views on our conclusion that only two modifications - UNC678 and UNC678A - are compliant with the relevant legislation? If you disagree, please provide a fully reasoned explanation.

6.1. We set out our principles-based assessment of the key attributes of the modification proposals in Chapter 4. In Chapter 5, we summarised the quantitative impacts of the modification options, drawing on CEPA's modelling of the options available.

6.2. In this section, we combine the two to assess the modifications against the applicable UNC objectives: the UNC Relevant Code Objectives and UNC Charging Methodology Relevant Objectives ("CMRO"). As there are similarities between the two sets of objectives we assess them in tandem.

Objective (a) Efficient and economic operation of the pipe-line system and CMRO Objective (b) that, so far as is consistent with sub-paragraph (a), the charging methodology properly takes account of developments in the transportation business

6.3. We consider that all modification options will better facilitate the efficient and economic operation of the NTS relative to the status quo. The LRMC methodology developed under the status quo is no longer sending efficient signals for use of the network. Both the PS and CWD methodologies are more suitable for recovery of cost in a system characterised by significant spare capacity than the current methodology.

6.4. We consider that the signals sent by the PS RPM are marginally more effective in facilitating efficient operation of the pipeline system given that this methodology does not introduce signals related to distance. We think that distance-based signals are less appropriate given the meshed nature of the gas transmission network and the primary function of these charges as cost recovery. The CWD methodology may send inappropriate signals for use of the system at system entry and exit points which are more remote.

6.5. We consider that where tariff arrangements lead to bypass of the NTS, this would not represent an efficient outcome. In this context, we note that the locational element of the CWD methodology may help to reflect those entry and exit points which are separated by a small distance thus deterring bypass; however, our quantitative assessment suggests this is a marginal effect. CEPA's analysis demonstrates a slightly lower rate of take-up of the NOC and of NTS bypass under the CWD than PS methodology, however the real difference in the risk of bypass may in fact be low or non-existent.

6.6. In general, we do consider that the additional revenue recovery requirements that would result from the introduction of a NOC would support efficient use of the NTS. CEPA's analysis suggested that the NOC methodologies are generally not targeted effectively at those routes that pose a risk of bypass. While the Wheeling methodology does not lead to inefficient provision of NOC discounts to routes that do not present a bypass risk, CEPA identify at least one additional route that may present a credible bypass risk. We are also not satisfied that the level of discount to those that are eligible is appropriate.

6.7. However, to the extent that a NOC is well targeted at network users who present a credible risk of bypass and provides a proportionate discount, we believe that the benefits for network efficiency could outweigh the disbenefits.

Objective (b) Coordinated, economic and efficient operation of combined pipeline system

6.8. CEPA estimated the tariffs at GDN exit points that would result from the tariff options. This showed that dispersion of tariffs would generally decrease under the tariff options relative to the status quo. Some dispersion would remain under the CWD methodology but under the PS methodology, all GDN exit points would face the same exit tariff.

6.9. As stated above, in the context of a meshed network and with the primary purpose of cost recovery, we do not consider that the distance element of the CWD RPM to provide an appropriate signal. Given the reduction in dispersion of GDN exit tariffs, we consider that all options better facilitate the relevant objective relative to the status quo. We consider that the PS RPM better facilities the relevant objective in comparison to the CWD.

Objective (c) Efficient discharge of the licensees' obligations and CMRO Objective (a) save in so far as paragraphs (aa) or (d) apply, that compliance with the charging methodology results in charges which reflect the costs incurred by the licensee in its transportation business

6.10. In the context of this decision, the licensee has an obligation to achieve certain objectives including cost reflectivity and non-discrimination.

6.11. For the reasons set out in Chapter 4, we believe that all options would better facilitate the relevant objective in relation to cost reflectivity relative to the status quo. They would achieve this by replacing the LRMC methodology with one which is more suited to cost recovery for a network characterised by significant spare capacity and in the presence of declining gas use.

6.12. In general, we do not consider discounts to the RPM to be appropriate except where they can be properly justified based on the costs which network users introduce or save in relation to the NTS or where they can be justified based on other relevant objectives.

6.13. The proposed 'capacity surrender rule' and the exclusion of storage from the revenue recovery charge would introduce a dual regime without due justification. We do not consider these arrangements are justified or appropriate and hence do not believe that these attributes of the proposed modifications would better facilitate the relevant objective.

6.14. Unless duly justified we consider that any form of discount on the reference price would be discriminatory. This applies to storage discounts, the Ireland security discount and the NOC methodologies that have been put forward.

6.15. In the case of storage discounts above 50%, we recognise that arguments in favour of discounts above 50% are not without merit. In the case of the NOC, we acknowledge that the benefits of avoiding inefficient bypass of the NTS should be weighed against any detriment to competition arising from a cross subsidy among gas consumers.

6.16. In the case of the Ireland security discount, we believe that this would discriminate in favour of consumers in Ireland, Northern Ireland and the Isle of Man at the expense of GB consumers. We also consider the fact that the discount is only available to entry flows from beach terminals to be discriminatory.

Objective (d) Securing of effective competition and CMRO Objective (c) that, so far as is consistent with sub-paragraphs (a) and (b), compliance with the charging methodology facilitates effective competition between gas shippers and between gas suppliers, and CMRO Objective (aa) that, in so far as prices in respect of transportation arrangements are established by auction, either: (i) no reserve price is applied, or (ii) that reserve price is set at a level: (I) best calculated to promote efficiency and avoid undue preference in the supply of transportation services; and (II) best calculated to promote competition between gas suppliers and between gas shippers

6.17. In general, competition is best facilitated by tariff arrangements which are cost-reflective and non-discriminatory. However, in a network characterised by spare capacity and declining usage, cost-reflectivity is less relevant than other considerations. For the same reasons as given above, we consider that all modification proposals would better reflect the relevant objectives but that those options which introduce some form of dual regime (i.e. the modifications that propose unjustified exclusions from RRCs (UNC678C/E/F/G/H) or the capacity surrender rule (UNC678F)) or which introduce inappropriately targeted discounts to reference prices (i.e. UNC678I which proposes an Ireland Security Discount or the modifications that contain a NOC element (UNC678B/D/G/H/I/J) would reflect the relevant objective to a lesser degree than those two options (UNC678/A) which do not include such features.

CMRO Objective (d) that the charging methodology reflects any alternative arrangements put in place in accordance with a determination made by the Secretary of State under paragraph 2A(a) of Standard Special Condition A27 (Disposal of Assets)

6.18. We do not consider CMRO Objective (d) relevant to any of the modification proposals.

Objective (e) Achievement of domestic security of supply standards

6.19. In general, we consider that cost-reflective and non-discriminatory tariff arrangements support security of supply. In line with the reasons given above, we believe that all proposed modifications would better facilitate the relevant objective than the status quo. However, those options which include inappropriately targeted discounts to reference prices would facilitate the relevant objective to a lesser extent.

6.20. We consider that, in theory, gas storage facilities may bring price security of supply benefits to the system such as helping to dampen price spikes while reducing price volatility more generally. CEPA's analysis suggested that the change to tariff arrangements could introduce the potential for erosion of storage revenues which could affect closure decisions. We therefore consider that the inclusion of a storage discount of greater than 50% could help to better reflect this relevant objective.

Objective (f) Promotion of efficiency in the implementation and administration of the code

6.21. We consider the impacts of the proposed modifications on the efficiency of implementation and administration of the code to be small in comparison to the wider impacts set out in this report.

6.22. In respect of the location of the FCC methodology, we believe that placing the FCC methodology within the UNC has advantages and disadvantages in respect of code administration. On balance, we consider that the merits of maintaining a consistent industry change process within the UNC outweigh the risk of this resulting in multiple change requirements.

6.23. We therefore consider that those modification proposals which include the FCC methodology within the UNC would better facilitate the relevant objective in comparison to those which do not. We also note that FCC governance is a relatively discrete, minor part of the 11 modifications.

Objective (g) Compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators and CMRO Objective (e) compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators

6.24. Overall, we consider that UNC678 and UNC678A are compliant with the TAR NC and the Gas Regulation and therefore 'better facilitate' Objective (g). Bearing in mind what we have said above on legal compliance and further to what we have said immediately below, all the other modifications contain elements that are not compliant with the TAR NC and / or the Gas Regulation and therefore cannot be approved by us.

6.25. UNC678B fails to deliver compliance with TAR NC and the Gas Regulation, as it contains a NOC which would give rise to an "undue" cross-subsidy (NOC Methodology 1). Specifically, the proposed NOC would be available to routes that do not pose a credible risk of bypass, as evidenced by the fact that the maximum distance would be 164 km. In addition, the resulting cross subsidy in one year (TD, 2030/31) would amount to £95m.

6.26. UNC678C fails to give full effect to Article 35 TAR NC. This modification would exempt storage contracts (new and existing, with the exception of storage booked for own-use purposes) from the application of RRCs. All other Existing Contracts would be subject to RRCs. This proposal, therefore, contravenes the interpretation of Article 35 of TAR NC (set out in chapter 4).

6.27. UNC678D (NOC Methodology 2) would provide an undue cross-subsidy to a number of network users for whom our analysis suggests do not present a practical risk of network bypass.

6.28. UNC678E/F fail to give full effect to Article 35 TAR NC. These modifications would exempt storage contracts (new and existing) from the application of RRCs. All other Existing Contracts would be subject to RRCs. These proposals, therefore, contravene the interpretation of Article 35 of TAR NC (set out in chapter 4).

6.29. UNC678G/H fail to give full effect to Article 35 TAR NC. These modifications would exempt Existing Contracts at storage facilities from the application of RRCs. All other Existing Contracts would be subject to RRCs. These proposals, therefore, contravene the interpretation of Article 35 of TAR NC (set out in chapter 4). In addition, UNC678G/H (NOC Methodology 2) would provide an undue cross-subsidy to a number of network users for whom our analysis suggests do not present a practical risk of network bypass.

6.30. UNC678I proposes an enduring discount of 95% for qualifying quantities at Moffat IP ("Ireland Security Discount"). This discount does not satisfy the requirements of Article 9(2) of TAR NC. Also, the discount is discriminatory and gives rise to an "undue" cross subsidy. Furthermore, the proposed Wheeling charge gives rise to an "undue" cross subsidy and is discriminatory.

6.31. UNC678J (NOC Methodology 2) would provide an undue cross-subsidy to a number of network users for whom our analysis suggests do not present a practical risk of network bypass.

7. Conclusion – Minded-to decision

Section summary

In this section, we present our minded-to decision and rationale based on the principles-based assessment and quantitative analysis presented in previous sections. We also summarise the next steps, including our expectations surrounding implementation of the final decision.

Questions

Please provide evidence and analysis to support your responses.

Question 7

a) Given our conclusion that only two modifications are compliant with the relevant legislation, what are your views on our minded-to decision to approve UNC678A rather than UNC678?

b) Do you consider our minded-to decision to appropriately reflect the principles-based assessment and quantitative analysis presented in this report?

c) Do you agee it best facilitates the relevant objectives?

Please fully justify your response.

Question 8: What are your views on our assessment that the proposed RPM (PS under UNC678A) achieves, inter alia, the following objectives:

a) **enables network users to reproduce the calculation of reference prices and their accurate forecast;**
b) **presents a better option than CWD for the recovery of the costs of the gas transmission system in the presence of a meshed network characterised by spare capacity and declining usage, and where cost-reflectivity is less relevant;**
c) **ensures non-discrimination and prevents undue cross-subsidisation (you may refer to the results of NGGT's Cost Allocation Assessment ("CAA") published as a subsidiary document to this consultation);**

d) ensures that significant volume risk related particularly to transports across an entry-exit system is not assigned to final customers within that entry-exit system;

e) ensures that the resulting reference prices do not distort cross-border trade?

Question 9: What are your views on our minded-to decision that implementation should take place from 1 October 2020 to coincide with the start of that gas year?

Question 10: Are there any other matters, whether or not addressed in our analysis or minded-to findings, which you think we should take into account in reaching our final determination?

Minded-to decision

7.1. We have considered all 11 modification options presented to us for decision. Our principles-based assessment has been supported by quantitative analysis carried out by CEPA and we have considered the elements of each option against a range of objectives - including the UNC Standard Relevant Objectives and UNC Charging Methodology Relevant Objectives. We have taken into account the full range of information that has been made available to us. This includes the industry consultation under the UNC678 process and the associated workgroup materials. It also includes materials provided to us directly by various stakeholders, including some commercially confidential material, as well as information that we have sought out to assist us in making this decision.

7.2. Our assessment concludes that only two of the 11 modifications (UNC678 and UNC678A) are compliant with the relevant legislation. We have fully assessed all the modifications and set that assessment out in this document. This allows us to make a fully informed minded-to decision. We cannot accept a non-compliant modification proposal. Thus, while we have fully assessed all the modifications, our decision must be between the two compliant modifications.

7.3. In terms of the 11 modifications we note that:

Modification UNC678B: CWD with NOC Methodology 1

7.4. This modification is unacceptable on the basis that the NOC offers discounts to a large number of routes, including routes in excess of 150km. As such, it fails to deliver compliance with the legal requirement of avoiding undue cross-subsidies, as it would be too widely available to routes that do not pose a credible risk of bypass. It goes well beyond trying to prevent inefficient bypass of the NTS and represents an undue cross-subsidy. Our impact analysis also shows that there are no countervailing benefits from this modification to off-set the serious disadvantages.

Modifications UNC678F/G/H: Exclusion of storage contracts from RRC and Capacity Surrender Option (UNC678F)

7.5. These three modifications contain unacceptable aspects: the option to surrender certain capacity contracts (UNC678F), and the proposed treatment of Existing Contracts in terms of RRCs (UNC678F/G/H). The capacity surrender proposal is not consistent with the principle of effective competition, for the reasons set out in section 4, and the proposed treatment of Existing Contracts (i.e. to subject them to the RRC) is not compliant with Article 35 of TAR NC. Given that these proposals contain elements which are incompatible with TAR NC, they cannot be accepted. In addition, we do not consider there to be countervailing benefits arising from these incompatible elements and so we would not be minded to accept them in any event.

Modification UNC678I: CWD with wheeling and Ireland Security Discount

7.6. The Ireland security discount is not compliant with Article 9(2) TAR NC, and moreover is discriminatory, in light of the fact that only gas entering into the NTS through Beach terminals would qualify for the Ireland Security Discount. Furthermore, we also note that the Wheeling tariff is discriminatory, as UNC678I draws an arbitrary or unprincipled distinction between zero-distance and other routes which are not zero-distance. We note that under the Wheeling methodology, the discount is calculated on the basis that users flow gas equal to their MNEPOR, which leads to an overly generous discount. Given that this proposal contains elements which are incompatible with TAR NC, it cannot be accepted. In addition, we do not consider there to be countervailing benefits arising from these incompatible elements and so we would not be minded to accept it in any event.

Modifications UNC678C/E: 80% storage discount with CWD or PS RPMs

7.7. Both of these modifications fail to give complete effect to Article 35 TAR NC. UNC678C/E would offer exemption to both existing and new contracts at storage sites; though UNC678C proposes that own-use gas should not benefit from this exemption. These modifications propose to subject all other (non-storage) Existing Contracts to the RRC. Subjecting Existing Contracts to a change in the level of tariffs as a result of revisions to the UNC to implement TAR NC where those contracts fall within the scope of Article 35 contravenes that provision.

7.8. Our Impact Assessment shows that both of these modifications deliver a positive NPV. The analysis also finds that the 80% discount will protect (other things being equal) storage revenues at near to status quo levels which is likely to influence future storage investment decisions.

7.9. We recognise that discounts for storage facilities above 50% may be justified and the TAR NC allows higher discounts than 50%. We said in our UNC621 decision letter that we think the 50% discount on transmission tariffs for shippers entering gas from, and exiting gas to, storage facilities can be justified on the basis that, in its absence, these flows would make a contribution to revenue recovery twice. Any proposal for a higher discount, such as 80%, should explain how that discount would make the charge for storage operators more appropriate in the context of cost recovery and any additional costs that storage use imposes on the NTS.

7.10. However, our assessment of these modifications has led us to conclude they are unacceptable on the basis that they contain a non-compliant element.

Modifications UNC678D/J: Short-haul discount with CWD or PS RPM

7.11. UNC678D/J propose different RPMs (CWD and PS, respectively) but are otherwise identical, in particular they both contain the same version of short haul (NOC Methodology 2).

7.12. Our minded-to decision, based on our principle-based and quantitative assessment, is that these modifications are not acceptable as the design of the proposed NOC would offer a discount on routes where there is no demonstrable risk of bypass. As such, these two modifications fail to deliver compliance with the legal requirement of avoiding undue cross-subsidies, as the short-haul discount would be too widely available to routes that do not pose a credible risk of bypass.

7.13. The uptake of the proposed NOC at routes that do not pose a credible risk of bypass, would give rise to an undue cross-subsidy. The rationale of a short-haul discount is to target routes where there is a genuine risk of construction or use of a competing pipeline that could increase the level of charges for remaining consumers. If a discount is allowed on routes that do not pose a genuine risk of bypass, the NOC-availing users would receive an undue cross-subsidy from non-NOC availing users.

7.14. Our quantitative assessment demonstrates the extent of the cross-subsidy arising from NOC Methodology 2 (under CWD and Postage Stamp). Part of the reason for this cross-subsidy arises from design flaws, as the assumptions which are included in the determination of the NOC may not reflect the actual use of a bypass pipeline, thereby resulting in an overly generous tariff. In particular, under NOC Methodology 2, the NOC discount is calculated on the basis that users flow gas equal to their MNEPOR – i.e. load factors are effectively equal to 100%. In practice, we would expect actual load factors to be below 100%, in some cases substantially below.

7.15. We are aware in practice it may be challenging to design a precise version of short-haul, in part because the real risk of bypass in many cases will be a private commercial decision. Any version of short-haul will give rise to a risk of false-positives (those that should not get a discount getting a discount) and false negatives (those that should get a discount not getting a discount). We recognise that should the risk of bypass materialise, the reduction in the use of the NTS would have a negative impact on network efficiency and could have the effect of increasing network tariffs for all remaining users. However, this risk needs to be balanced against the cross-subsidy that would arise from the overly generous design of NOC Methodology 2. For the reasons set out above, we do not think NOC Methodology 2 is sufficiently well-developed to properly balance these risks, as it would be available to users not posing a genuine risk of bypass and furthermore the level of the discount provided would be higher than necessary to disincentivise inefficient bypass of the NTS.

Modifications UNC678 and UNC678A: CWD and PS RPMs

7.16. The decision between these two modifications which are compliant with the TAR NC and Gas Regulation is relatively finely balanced. There is little difference between the quantitative impacts, with both offering a similar Net Present Value for GB gas consumers.

7.17. The variation between capacity charges across entry and exit points in GB would fall significantly under both RPMs compared to the status quo (although the level of the capacity charge would increase as it would be set to fully recover NGGT's allowed revenue). Incentives for a party to choose a particular location to benefit from lower transmission charges are therefore likely to be lower under both RPMs compared to the status quo. However, there will be geographic variations, and therefore locational incentives, under the CWD option, while the PS option has no geographic variations and so does not provide locational incentives.

7.18. In terms of distributional impacts, we are of the view that the PS approach is fairer and better reflects the characteristics of the GB gas transmission system. As the gas system is largely operating well below capacity and location is not a significant driver of cost, we think that a PS approach to pricing is more appropriate. CWD would send signals to users at relatively distant points to shift or reduce demand but with no, or only marginal, benefits given that the system exists and is largely operating below capacity. We also note that the distances used in the CWD RPM are averaged across all points for the purposes of setting tariffs. These distances may not represent real physical flows in a highly meshed network such as the GB gas transmission system. Shippers book entry and exit capacity independently and nominate flows without specifying specific routes and therefore it is very difficult to determine flows, and to allocate flows to specific assets. This type of treatment of distance is therefore unlikely to generate prices that are accurately reflective of the physical transportation routes actually used. (Although as we consider the charges resulting from the RPMs to be largely functioning as Revenue Recovery Charges, cost-reflectivity is less relevant in any case.)

7.19. We have looked at the dynamic impacts of both RPMs and note that CWD is more likely to benefit I&C consumers who are relatively near gas entry points, while PS is more likely to benefit electricity generators (in terms of gas market impacts) who are who are relatively more distant from gas entry points. This is however quite marginal and the impact of the different RPMs, for example, on the likelihood of bypass is both small (PS would increase the number of routes that may present a risk of bypass by one compared to CWD; see Table 0.4) and uncertain. The main determinant of the likelihood of bypass is the existence or not of a short-haul discount. Finally, storage facilities would pay somewhat lower charges under a CWD RPM than a PS RPM.

7.20. As our principles-based analysis shows that PS is preferred and the quantitative, dynamic, and other analyses show that there is relatively little difference between these two RPMs, **our minded to decision is to approve the PS methodology (UNC678A)**. We have fully assessed both compliant modifications (and the non-compliant modifications). This allows us, should the consultation responses bring to light new and significant information, to make a final decision to approve a modification other than UNC678A.

7.21. In reaching our minded-to decision, we note the three considerations below. Any future modifications on these or any other points would be assessed as usual, including against the relevant UNC code objectives and for compliance with all legislation.

- **The risk of NTS bypass**: CEPA has estimated that UNC678A could result in an increase in the risk of bypass relative to the status quo. In our view, the construction or usage of alternative network infrastructure to the NTS which leads to higher costs overall would not represent an efficient outcome. However, we note that this risk is not driven by the choice of the RPM, but largely by the absence of a short-haul discount. The other compliant modification, UNC678, gives rise to a lower risk of bypass, but the difference is marginal and may not be significant in practice.
- **Storage discount**: CEPA's analysis also demonstrated the potential for UNC678A (and the other compliant modification UNC678, albeit to a marginally lower extent) to impact on the revenues of gas storage facilities. We note some of the arguments that have been put forward by gas storage representatives in relation to the justification of a higher discount, including in relation to security of supply and price stability. We remain open to a storage discount of above 50% where this is well justified and appropriate, including recognition of the costs that the use of storage imposes on the system. However, the only proposals that contain a discount higher than 50% for storage facilities are non-compliant (because of the proposed exclusions from RRCs) so we do not have the option at this stage to accept a higher discount.
- **Governance of the FCC methodology:** This is a less significant issue than the two presented above, but as set out earlier, we think that for reasons of consistent governance, the FCC methodology should be within the UNC. This issue is common to both compliant modifications.

Our minded-to decision

7.22. Our minded-to decision is to approve UNC678A based on the following considerations:

- **Compliance**: UNC678A is compliant with the TAR NC and Gas Regulation.
- **Cost-reflectivity**: UNC678A better facilitates the objective of cost-reflectivity relative to the status quo. In the context of a meshed network largely operating below capacity with declining demand, we consider that the main consideration is the appropriate and fair recovery of costs that is not likely to lead to inefficient behaviour and distortions. On this basis, a PS RPM is likely to be more appropriate than a CWD RPM.

- **Competition, undue discrimination and cross-subsidy**: UNC678A does not include features which, if not properly designed or justified, may be considered to be unduly discriminatory such as discounts or revenue recovery exclusions (other than those required by TAR NC). By avoiding undue discrimination between users, the option is likely to facilitate competition. As UNC678A does not include a distance-based cost driver, it avoids discrimination between entry and exit flows at different parts of the network which are not strongly correlated with network costs. UNC678A does result in a significant increase in the entry tariff for gas storage however, which may negatively impact on revenues for these facilities.
- **Network efficiency**: By avoiding a distance-based cost driver, UNC678A will encourage flows from the cheapest sources of entry regardless of location on the NTS. However, we note that the PS RPM may result in higher tariffs over shorter entry-exit route distances. CEPA's analysis suggests that this may marginally increase the risk of bypass relative to the status quo compared to a CWD RPM but our analysis shows that what largely determines the probability of bypass is not the choice of RPM but the availability or not of a short-haul discounted product.
- **Security of supply**: UNC678A will support security of supply by introducing non-discriminatory, cost-reflective tariff signals for all participants.
- **Consumer costs**: While modelling suggests that the benefits of the PS RPM (UNC678A) to gas consumers may be slightly less than under the CWD RPM (UNC678), it produces fairer outcomes in that the transmission charge element of consumer bills will not vary by location.
- **Environmental impacts**: By encouraging an increase in gas usage, carbon emissions may increase slightly, particularly in the longer term. However, these impacts are considered to be marginal and dependent on broader market outcomes (e.g. the electricity mix of neighbouring markets). We note that nascent renewable gas facilities may prefer simple and predictable tariffs which are not related to distance to exit capacity. The UNC678A approach also treats the transmission of gas the same regardless of location which treats CO2 emissions the same irrespective of location.

Implementation

7.23. We propose that implementation should take place on 1 October 2020 to coincide with that start of the gas year. This will be dependent on consideration of responses to this consultation.

Appendices

Index

Appendix 1: Questions on which we are consulting

We want to hear from anyone interested in this consultation. As part of this consultation exercise, we have posed a number of questions below, to assist consultees in providing representations, information and evidence to us in response to our minded-to decision. These questions are intended to guide responses, but do not prevent consultees raising other matters which are considered to be material to our final decision.

Please send your response to the email address on this document's front page.
Please note that **each response must be accompanied by a brief summary of no more than 250 words**.

Questions

Please provide evidence and analysis to support your responses.

Question 1: What is your view of our assessment that Postage Stamp is a more appropriate RPM in light of the circumstances of the GB network?

In responding to this question, please address, in particular, the following points in your response: (i) in a meshed network with spare capacity and declining usage, a fair approach to cost recovery would be based on the level of access to the system irrespective of individual location; and (ii) CWD may introduce signals for use of the network which discourage flows at more distant entry and exit points, without improving network efficiency.

Question 2: Do you agree with our assessment that maintaining the FCC methodology in the UNC improves the transparency and consistency of governance compared to maintaining the FCC Methodology outside of the UNC?

Question 3: What is your view on our assessment that the PS RPM would be preferable to the CWD for future green gas market entrants?

Question 4: What are your views on our assessment of the quantitative analysis?

Question 5: What are your views on our assessment of the modification options presented to us against the applicable UNC objectives?

Question 6: What are your views on our conclusion that only two modifications - UNC678 and UNC678A - are compliant with the relevant legislation? If you disagree, please provide a fully reasoned explanation.

Question 7

a) Given our conclusion that only two modifications are compliant with the relevant legislation, what are your views on our minded-to decision to approve UNC678A rather than UNC678?

b) Do you consider our minded-to decision to appropriately reflect the principles-based assessment and quantitative analysis presented in this report?

c) Do you agee it best facilitates the relevant objectives?

Please fully justify your response.

Question 8: What are your views on our assessment that the proposed RPM (PS under UNC678A) achieves, inter alia, the following objectives:

- **a) enables network users to reproduce the calculation of reference prices and their accurate forecast;**
- **b) presents a better option than CWD for the recovery of the costs of the gas transmission system in the presence of a meshed network characterised by spare capacity and declining usage, and where cost-reflectivity is less relevant;**
- **c) ensures non-discrimination and prevents undue cross-subsidisation (you may refer to the results of NGGT's Cost Allocation Assessment ("CAA") published as a subsidiary document to this consultation);**
- **d) ensures that significant volume risk related particularly to transports across an entry-exit system is not assigned to final customers within that entry-exit system;**
- **e) ensures that the resulting reference prices do not distort cross-border trade?**

Question 9: What are your views on our minded-to decision that implementation should take place from 1 October 2020 to coincide with the start of that gas year?

Question 10: Are there any other matters, whether or not addressed in our analysis or minded-to findings, which you think we should take into account in reaching our final determination?

Appendix 2: Ofgem impact assessment

0678/A/B/C/D/E/F/G/H/I/J - Amendments to Gas Transmission Charging Regime			
Division:	Systems and Networks	**Type of measure:**	Gas Transmission Charging
Team:	Gas Systems	**Type of IA:**	Qualified under Section 5A UA 2000
Associated documents:	CEPA analytical report published alongside this document	**Contact for enquiries:**	Gas.TransmissionResponse@ofgem.gov.uk

Summary: Intervention and Options

We have been asked to make a decision on proposals[77] to change the UNC relating to the GB gas transmission charging arrangements. The proposals have been through an industry workgroup process and consultation. As a result of the impact that the changes may have, we have decided to publish a 'Minded to Decision' and 'Draft Impact Assessment'.

What is the problem under consideration? Why is Ofgem intervention necessary?

The network is largely operating below capacity due to lower demand, falling domestic production, and increased imports via interconnectors and shipped LNG. Declining gas volumes have a negative impact on National Grid Gas Transmission's ("NGGT") revenue collection, which is made more problematic by the existing capacity allocation and charging

[77] The proposals consist of the original Modification Proposal and 10 Alternatives. In this document we refer to them all collectively as "proposals".

arrangements. As a consequence of these arrangements, NGGT recover an increasing proportion of their revenues from commodity-based charges.

Changes to the gas transmission charging regime are also necessary to implement the European network code on Gas Tariffs ("TAR NC").

What are the policy objectives and intended effects including the effect on Ofgem's Strategic Outcomes

By making a policy decision on the proposed modifications, we intend to respond to these significant and ongoing structural changes in the GB gas market, and to ensure compliance with EU legislation (Regulation (EU) 2017/460 ("the European Network Code on harmonised transmission tariff structures for gas") (TAR NC)).

What are the policy options that have been considered, including any alternatives to regulation? Please justify the preferred option (further details in Evidence Base)

We have considered UNC678 and the full range of alternative modification proposals put forward to us (11 modifications in total). The modifications share a number of features but differ in respect of several characteristics which are set out in the main document.

Preferred option: Monetised Impacts (£m)

Preferred option	**UNC678A Postage Stamp (PS)**
Business Impact Target Qualifying Provision	N/A
Business Impact Target (EANDCB)	N/A
Net Benefit to GB gas consumers	Central case (Two Degrees): £822 million (TD, NPV, 2022-31, £18/19) Sensitivity (Steady Progression): £1,075 million (SP, NPV, 2022-31, £18/19)

Explain how was the Net Benefit monetised

Costs and benefits have been modelled for the gas years 2022/23, 2026/27 and 2030 (gas years from 1st October). These have then been interpolated (straight line) between the three modelled years for the period 2022-2031. We use 2018-19 prices and we apply the standard discount rate of 3.5%.

These benefits are limited to the gas market and do not include the effects that changes in tariffs and in the wholesale gas price may have on electricity consumers. CEPA has estimated potential electricity market impacts in its technical report.

Preferred option: Hard to Monetise Impacts

Describe any hard to monetise impacts, including mid-term strategic and long-term sustainability factors following Ofgem IA guidance

By enhancing competition and removing distortions from the tariff arrangements, the chosen option should facilitate effective competition and an efficient supply mix. This should support medium and long term security of supply objectives.

Where tariff reform leads to a reduction in the wholesale gas price (compared to the status quo counterfactual), as our modelling suggests, this may lead to an increase in gas demand from domestic consumers and from I&Cs. This may lead to an increase in carbon emissions. We would expect the impact to be small, given typically low elasticity of demand for gas for domestic heating, and the small magnitude of the change to the wholesale gas price. CEPA's modelling assumes that domestic and I&C gas demand is inflexible and so the impact of an increase in gas demand on carbon emissions in all sectors other than the power sector are not modelled.

As our analysis has suggested, tariff reform may impact on the revenues of gas producers, gas storage, interconnectors, I&C consumers, and gas-fired power generators. In most cases, we would only expect impacts of the magnitude that we have identified to impact on the investment or closure decisions of these market participants at the margin. The exception is for gas storage facilities where we do identify the potential for more significant impacts on revenues.

We expect the preferred option to have some distributional impacts across regions and across different groups of consumers. CEPA's report outlines some of the potential distributional impacts, for instance on fuel-poor households.

The modelling undertaken by CEPA indicates that there may also be benefits to electricity consumers from this decision, as set out in CEPA's Analytical Support document. *We would welcome comments on this modelling, including on the assumptions used.*

We have based our minded to decision on the impacts on gas consumers.

Key Assumptions/sensitivities/risks

A number of assumptions have been made within the modelling that are set out in full in the consultants' analytical report.

The benefits for consumers are likely to be very sensitive to supply and demand fundamentals which are observed in practice. Given that different options may have quite different impacts depending on the effect that they have on the marginal unit of gas or electricity supply, where the marginal unit differs from that modelled, the consumer welfare impacts may change from that estimated.

The reductions in the electricity wholesale price may reduce the revenues of electricity generators. If they seek to recover any revenues which are lost from the capacity market, some of the benefits may be counterbalanced by higher capacity market costs. We think the impact is likely to be limited.

Will the policy be reviewed? Yes	**If applicable, set review date: As required by the TAR NC and ad-hoc in response to changes in the gas market**

Is this proposal in scope of the Public Sector Equality Duty? **Yes**

Appendix 3: Principles-based assessment criteria

In order to carry out our principles-based review, we distilled the relevant objectives from a number of sources into those criteria which we set out in Chapter 4. We set out the full range of sources for these criteria in the table below:

Relevant principle	Source
Cost reflectivity	UNC CM Objective (a)
	Gas Regulation Art. 13(1)
Effective competition (avoiding undue cross-subsidy, non-discrimination and facilitating market entry)	UNC CM Objective (a)(aa)
	UNC CM Objective (c)
	UNC Code Objective (d)
	Gas Regulation Art. 13(1)
	Gas Act 1986
	Gas Directive Art. 40(a)
	Gas Directive Art. 40(b)
	Gas Directive Art. 40(g)
	Gas Directive Art. 40(e)
	Gas Act 1986

Network efficiency	UNC Code Objective (a)
	UNC CM Objective (b)
	UNC Code Objective (c)
	UNC Code Objective (f)
	Gas Act 1986
	Gas Directive Art. 40(d)
	Gas Directive Art. 40(h)
Compliance with EU law	UNC CM Objective (e)
	UNC Code Objective (g)
	Gas Act 1986
	TAR NC
	Gas Regulation Art. 13(1)
Security of supply (including cross-border trade)	Gas Regulation Art. 13(1)
	Gas Regulation Art. 13(2)
	Gas Directive Art. 40(a)
	Gas Directive Art. 40(b)

	Gas Directive Art. 40(c)
	Gas Directive Art. 40(f)
	UNC Code Objective (e)
	Gas Act 1986
Consumer protection (in particular vulnerable consumers)	Gas Act 1986
	Gas Directive Art. 40(g)
	Gas Directive Art. 40(h)
Environmental considerations	Gas Act 1986
	Gas Directive Art. 40(a)
	Gas Directive Art. 40(d)
	Gas Directive Art. 40(e)

Appendix 4: Structural representation of the gas transmission network

The following high-level figure is contained in the "Gas Ten Year Statement 2019" ("GTYS 2019") prepared by NGGT: https://www.nationalgridgas.com/insight-and-innovation/gas-ten-year-statement-gtys

The GTYS 2019 includes additional maps of the NTS that provide a representation of the current network in more detail (see Appendix 1 of the GTYS 2019).

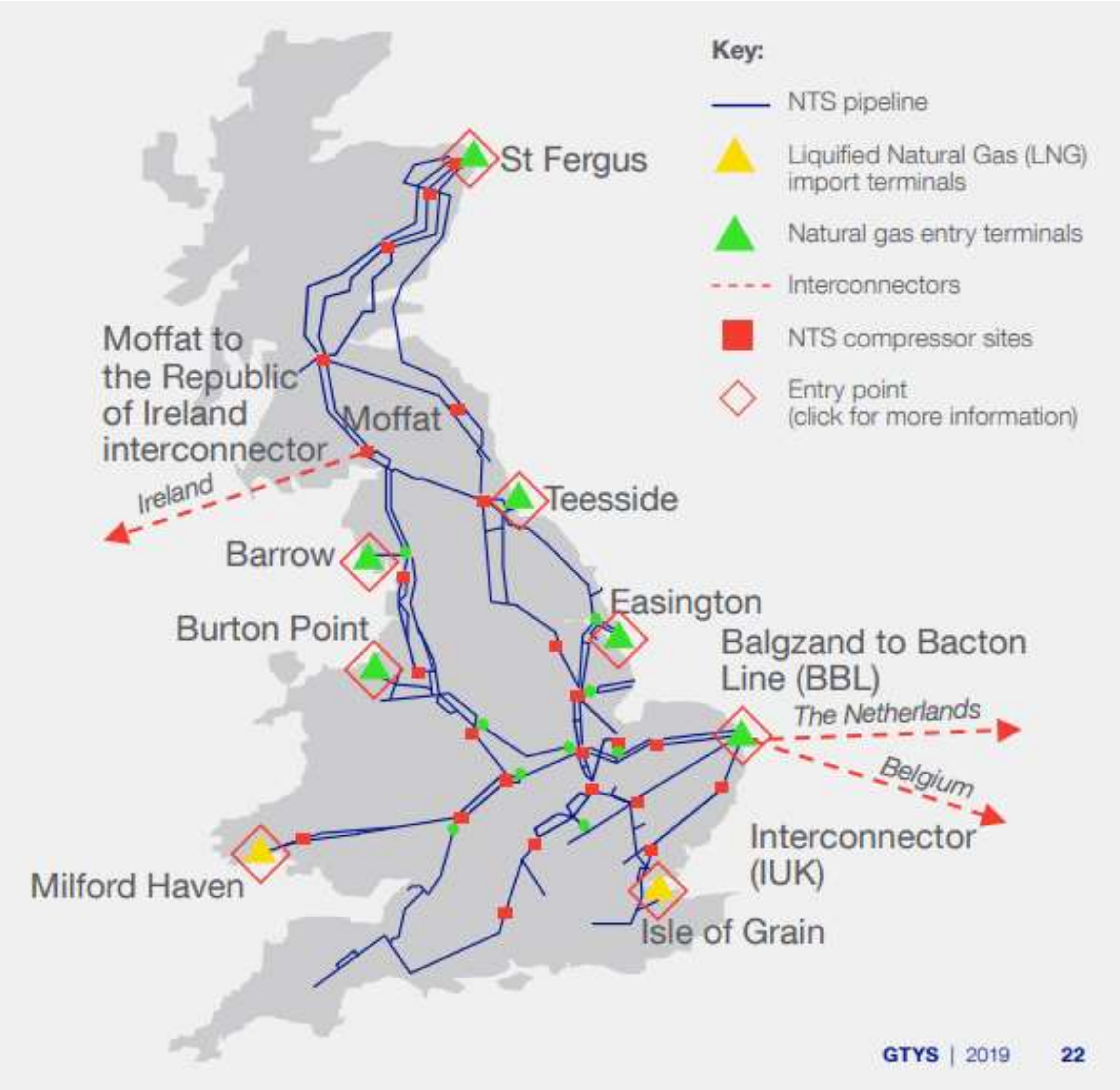


Figure 25 - Structural representation of the gas transmission network

Appendix 5: Assessment of proposed RPM (UNC678A) against Article 7(a)-(e) of TAR NC

We note that the proposed PS RPM (UNC678A) complies with the requirements of Article 7(a)-(e) of TAR NC, namely:

- **enabling network users to reproduce the calculation of reference prices and their accurate forecast:** the proposed PS RPM applies the same reference price for the same unit of capacity at all entry points and at all exit points. It is the simplest RPM, as it does not include any reference to the distance between entry and exit points, and therefore enables network users to reproduce the calculation of reference prices and their accurate forecast. We note that an example of the indicative values produced by CWD and PS for certain tariff years are contained in an illustrative model, published by the Joint Office of Gas Transporters.[78]
- **taking into account the actual costs incurred for the provision of transmission services considering the level of complexity of the transmission network:** As stated in chapter 7, the proposed PS RPM is likely to be a more appropriate option in the presence of a meshed network characterised by surplus capacity and declining usage than CWD.
- **ensuring non-discrimination and prevent undue cross-subsidisation including by taking into account the cost allocation assessments set out in Article 5:** As stated in chapter 7, the preferred PS RPM does not include features which are considered to be discriminatory such as discounts or special treatment of revenue recovery exclusions (other than those required by TAR NC). By avoiding discrimination between users, the option is likely to facilitate competition. As the proposed RPM does not include a distance-based cost driver, it avoids discrimination between entry and exit flows at different parts of the network which are not strongly correlated with network costs. Regarding the cost allocation assessments set out in Article 5, we note that in April 2019 we directed NGGT to perform the cost allocation assessments and publish them as part of the preliminary Article 26(1) consultation that took place between 23 April 2019 to 8 May 2019.[79] We are publishing the cost allocation

[78] See file named "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models
[79] See Decision that National Grid Gas plc undertakes specific tasks to implement aspects of Regulation (EU) 2017/460, the European Network Code on harmonised transmission tariff structures for gas (10 April 2019): https://www.ofgem.gov.uk/publications-and-updates/decision-national-grid-gas-plc-ngg-

assessments as a subsidiary document to this consultation document. In relation to the proposed PS RPM (UNC678A), we note that the results of the capacity cost allocation comparison indexes do not exceed 10 percent.

- **ensuring that significant volume risk related particularly to transports across an entry-exit system is not assigned to final customers within that entry-exit system:** we consider that the proposed PS RPM achieves the objective of ensuring that significant volume risk related particularly to transports across an entry-exit system is not assigned to final customers within that entry-exit system. Our modelling work shows that the proposed PS RPM will only have a small impact on entry flows at IPs. In addition, we consider that the proposed RPM, by avoiding discrimination between users, is likely to facilitate competition without unduly affecting the merit order of gas supply.
- **ensuring that the resulting reference prices do not distort cross-border trade:** The proposed PS RPM does not include features which may be considered to be discriminatory such as discounts or special treatment of revenue recovery exclusions (other than those required by TAR NC). By avoiding discrimination between users, the option is likely to facilitate cross-border trade.

undertakes-specific-tasks-implement-aspects-regulation-eu-2017460-european-network-code-harmonised-transmission-tariff-structures-gas-tar-nc

Appendix 6: Article 26 of TAR NC Consultation Requirements

7.24. Article 26 of TAR NC states that the final consultation shall include the information contained in this provision. These requirements are presented below[80]:

[A] ART. 26(1)(A):PROPOSED REFERENCE PRICE METHODOLOGY		
[1] Information on the parameters used in the proposed RPM related to technical characteristics of the transmission system [Art. 26(1)(a)(i), Art. 30.(1)(a)]:		
Requirement	**Description**	**Ofgem comments**
[A] Description of the proposed reference price methodology: Article 26(1)(a)	For instance: (i) Choice of RPM: (ii) Cost drivers of the RPM; (iii) Locational signals in E/E points resulting of the RPM; (iv) Entry/exit split. Cost reflectivity and application to the RPM; (v) Capacity/commodity split. Cost reflectivity and application to the RPM; (vi) Intra-system/cross-system split. Cost reflectivity and application to the RPM; (vii) Adjustments (benchmarking, equalisation and rescaling); and (viii) Use	PS requires two main inputs: (i) The target revenue required to be recovered from Transmission Services, split between Entry and Exit; and (ii) The Forecasted Contracted Capacity ("FCC"). The PS RPM will produce a unit price that will be the same for all Entry points and a separate unit price that will be the same for all Exit points. The FCC will be subject to the Forecasted Contracted Capacity Methodology. The PS RPM will produce Annual Reference prices and, subject to specific adjustments, Reserve Prices for the applicable capacity auctions and allocation processes. The RPM will be used to recover the Transmission Services Revenue, achieving 100% capacity basis for recovery of Transmission Services revenue.

[80] This Table mirrors the structure of the checklist provided by the "ACER Consultation Template Tariff NC Article 26(5)", available at: https://acer.europa.eu/Official_documents/Public_consultations/Pages/ACER-Consultation-Template.-Tariff-NC-Article-26%285%29.aspx

	of inter-TSO compensation mechanism. Brief note on the application of the RPM in multi-TSO E/E system and reference to the inter-TSO compensation mechanism consultation. Only if applicable.	A 50/50 split will be applied between Entry and Exit as a feature of the RPM. The calculations for the Cost Allocation Assessment ("CAA") can be found in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation. The specific calculations are accessible in the worksheet "A.4 – CAA". No adjustments (benchmarking, equalisation and rescaling) are proposed. More information about the proposed RPM is available at the UNC678A FMR (15 May 2019) - Section 5 (Solution): https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-05/Part%20II%20Final%20Modification%20Report%200678A%20%28Mod%200678A%20v3.0%29.pdf
[B] Justification of the parameters used that are related to the technical characteristics of the system: Articles 26(1)(a)(i) and 30(1)(a)(i-v)	Justify the selection and use of the parameters listed in Art. 30(1)(a)(i-v) that are and input to the RPM, in view of the level of complexity of the transmission network related to the technical characteristics of the transmission system.	The PS RPM for calculating Entry and Exit Capacity Reference Prices requires two main inputs: (i) Target Entry or Exit Transmission Services Revenue; and (ii) Forecasted Contracted Capacity ("FCC"). The FCC Methodology will take account of a range of inputs to inform a forecast for the gas year for which tariffs are to be generated (the relevant gas year). These inputs will take account of both historical and forecast data such as, and not limited to, be linked to a forecast of GB demand, historical sold capacity, historical flows on the NTS applicable to each Entry and Exit point. More information about the proposed FCC Methodology is available at the UNC678A FMR (15 May 2019) - Section 5 (Solution): https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-05/Part%20II%20Final%20Modification%20Report%200678A%20%28Mod%200678A%20v3.0%29.pdf For a structural representation of the transmission network see Appendix 4 of this consultation document.

[C] Technical capacity at entry and exit points. Values: Articles 26(1)(a)(i) and 30(1)(a)(i)	Provide information when the parameter is an input to the RPM	N/A
[D] Forecasted contracted capacity at entry and exit points. Values: Articles 26(1)(a)(i) and 30(1)(a)(ii)	Provide information when the parameter is an input to the RPM	The FCC will be a forecast of capacity bookings. The values will be determined in accordance with a methodology (the "FCC Methodology") which is available on the page http://www.gasgovernance.co.uk/0678 under the title "Forecasted Contracted Capacity Methodology (15 March 2019)" and at https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-03/Forecasted%20Contracted%20Capacity%20v1.0_0.pdf (direct link). FCC values for Gas Year 2019/20 are presented in Appendix 7 of this consultation document. An example of the indicative values for additional tariff years are contained in this published illustrative model for UNC678 available as file named "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models The data for FCC can be seen in the Entry Prices or Entry Prices tabs when modelling the specific year. Data has been produced as indicatives for the tariff years for illustration for 19/20 to 22/23 inclusive. Data can also be seen by un-hiding the relevant FCC sheet in the sensitivity model. Each tariff year runs from 01 October to 30 September. The values use the FCC methodology outlined earlier in this document. The data used to populate these indicative FCC values can be found in the spreadsheet called "Modification 0678 FCC Data Summary for Workgroup (21 March 2019)" available on the page https://www.gasgovernance.co.uk/0678/Models
[E] The quantity and the direction of the gas flow for entry and exit points. Values: Articles	Provide information when the parameter is an input to the RPM	N/A

26(1)(a)(i) and 30(1)(a)(iii)		
[F] Structural representation of the transmission network with an appropriate level of detail: Articles 26(1)(a)(i) and 30(1)(a)(iv)	The representation should include an image of a simplified network depicting the transmission network and distinguishing the elements defined in Art. 2(1)(1) of the Regulation (EC) No 715/2009 The representation should include the transmission network elements included in the regulatory asset base.	A structural representation of the transmission network is provided in Appendix 4 of this consultation document. A list of NTS Entry and Exit Points can be viewed in this published illustrative model for UNC678 (see worksheets "Entry Prices" and "Exit Prices") available as file named "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models To see the Distance Matrix (used in the CWD model), please unhide the sheet "Distance Matrix" in the excel spreadsheet.
[G] Additional technical information about the transmission network, such as: the length and the diameter of pipelines and the power of compressor stations: Articles 26(1)(a)(i) and 30(1)(a)(v)	Provide pipeline pressure levels if available.	N/A
[2] The value of the proposed adjustments for capacity-based transmission tariffs pursuant to Article 9 [Art. 26(1)(a)(ii)]:		
Requirement	**Description**	**Ofgem comments**
[A] Proposed discount(s) at entry points from and exit points to storage		50%

facilities: Articles 26(1)(a)(ii) and 9(1)		
[B] Proposed discount(s) at entry points from LNG facilities: Articles 26(1)(a)(ii) and 9(2)		No (It should be noted that a discount is allowed but is set to 0%)
[C] Proposed discount(s) at entry points from and exit points to infrastructure developed with the purpose of ending the isolation of Member States: Articles 26(1)(a)(ii) and 9(2)		No.
[3] Indicative reference prices subject to consultation [Art. 26(1)(a)(iii)]:		
Requirement	**Description**	**Ofgem comments**
[A] Indicative reference prices at each entry and at each exit point: Article 26(1)(a)(iii)		See Appendix 7 of this consultation document for indicative reference prices at each entry and exit point for Gas Year 2019/20. Indicative values for additional tariff years are contained in this published illustrative model for UNC678 available as file named "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models (Please note that the PS Base Reference Price Model must be selected from the worksheet "User Inputs"). In addition, illustrative charges are available in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation. The specific worksheets in the spreadsheet are "A.3 Entry Data" and "A.3 Exit Data".

[4] Cost allocation assessment [Art. 26(1)(a)(iv), Art.5]:		
Requirement	**Description**	**Ofgem comments**
[A] Results of the cost allocation assessment: Articles 26(1)(a)(iv) and 5	Capacity / Commodity cost allocation assessment	The calculations for the Cost Allocation Assessment ("CAA") can be found in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation. The specific calculations are accessible in the worksheet "A.4 – CAA".
[B] Components of the cost allocation assessment: Articles 26(1)(a)(iv) and 5	Capacity / Commodity cost allocation assessment	The calculations for the Cost Allocation Assessment ("CAA") can be found in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation. The specific calculations are accessible in the worksheet "A.4 – CAA".
[C] Details of components of the cost allocation assessment: Articles 26(1)(a)(iv) and 5	Capacity / Commodity cost allocation assessment	The calculations for the Cost Allocation Assessment ("CAA") can be found in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation. The specific calculations are accessible in the worksheet "A.4 – CAA". The proposed modification (UNC678A), being predicated on a Postage Stamp RPM, produces Capacity CAA values smaller than 10% due to the same unit prices for Entry and Exit being applied. The Commodity CAA is 0% as commodity charges are not proposed to be used.
[5] Assessment of the proposed reference price methodology in accordance to Art.7 and Art. 13 of the Regulation (EC) No 715/2009 [Art. 26(1)(a)(v)]:		
Requirement	**Description**	**Ofgem comments**

[A] The RPM should: enable network users to reproduce the calculation of reference prices and their accurate forecast: Articles 26(1)(a)(v) and 7 TAR NC and Article 13 Gas Regulation (715/2009)	The description of the RPM, together with the rest of elements listed in this template should be instrumental to allow replicating the calculation of reference prices. Provide the manner and the order in which these elements are used for the calculation of the RPM.	See Appendix 5 of the consultation document
[B] The RPM shall into account the actual costs incurred for the provision of transmission services considering the level of complexity of the transmission network: Articles 26(1)(a)(v) and 7 TAR NC and Article 13 Gas Regulation (715/2009)	Evaluate the cost reflectivity of the RPM related to the level of complexity and the technical characteristics of the transmission network.	See Appendix 5 of the consultation document
[C] The RPM shall ensure non-discrimination and shall prevent undue cross-subsidisation including by taking into account the cost allocation assessments set out in Article 5: Articles 26(1)(a)(v) and 7 TAR NC and Article 13 Gas Regulation (715/2009)	Evidence for the assessment should take into account the cost allocation assessment, which checks the non-discrimination between two predefined groups of network users. Other means can be used to check non-discrimination between other groups of network users.	See Appendix 5 of the consultation document
[D] The RPM shall ensure that significant volume risk related particularly	Explain how the variation in transit flows affects	See Appendix 5 of the consultation document

to transports across an entry-exit system is not assigned to final customers within that entry-exit system: Articles 26(1)(a)(v) and 7 TAR NC and Article 13 Gas Regulation (715/2009)	reference prices for final consumers.	
[E] The RPM shall ensure that the resulting reference prices do not distort cross-border trade: Articles 26(1)(a)(v) and 7 TAR NC and Article 13 Gas Regulation (715/2009)	Refer, at least, to the effect of the E/E split on cross-border trade	See Appendix 5 of the consultation document
[6] Comparison with the CWD methodology (Art. 8) Accompanied by the indicative reference prices subject to consultation set out in Art.26(1)(a)(iii):		
Requirement	**Description**	**Ofgem comments**
[A] Where the proposed reference price methodology is other than the capacity weighted distance reference price methodology detailed in Article 8, a comparison between both methodologies should be performed: Article 26(1)(a)(vi) and Article 8	The comparison should be performed with an appropriate level of detail and should enable stakeholders to identify the main differences, advantages and disadvantages of the compared methodologies.	See Sections 3 ("Options available to us") and 5 ("Quantifying potential impacts of reform") of the consultation document. Also, to provide illustrative charges for each of the proposals and to compare to the counterfactual, NGGT has produced a set of these and these are available in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation. The specific worksheets in the spreadsheet are "A.3 Entry Data" and "A.3 Exit Data" for indicative prices and "A.6 Entry Counterfactual" and "A.6 Exit Counterfactual" for the counterfactual prices.

[B] Comparison of indicative reference prices at each entry point and at each exit point of the proposed RPM and the CWD detailed in Article 8: Article 26(1)(a)(vi) and Article 8		See Sections 3 ("Options available to us") and 5 ("Quantifying potential impacts of reform") of the consultation document. Also, to provide illustrative charges for each of the proposals and to compare to the counterfactual, NGGT has produced a set of these and these are available in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation. The specific worksheets in the spreadsheet are "A.3 Entry Data" and "A.3 Exit Data" for indicative prices and "A.6 Entry Counterfactual" and "A.6 Exit Counterfactual" for the counterfactual prices.
[B] ALLOWED OR TARGET REVENUE OF THE TSO [ART. 26(1)(B)]		
[7] Indicative information set out in Article 30(1)(b)(i), (iv), (v):		
Requirement	**Description**	**Ofgem comments**
[A] Allowed or target revenue, or both, of the transmission system operator: Articles 26(1)(b) and 30(1)(b)(i)		The Postage Stamp Model for calculating Entry and Exit Capacity Base Reference Prices requires Target Entry or Exit Transmission Services Revenue - Revenue which is Allowed Revenue net of known Existing Contracts revenue. More information about the Transmission Services Revenue is available at the UNC678A FMR (15 May 2019) - Section 5 (Solution): https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-05/Part%20II%20Final%20Modification%20Report%200678A%20%28Mod%200678A%20v3.0%29.pdf
[B] Transmission services revenue: Articles 26(1)(b) and 30(1)(b)(iv)		An example of the revenue values and how these are used for any tariff years are contained in this published illustrative model for UNC678 available as file named "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models

		The data for FCC can be seen in the Entry Prices or Entry Prices tabs when modelling the specific year. Units are in £ and p (and will be displayed accordingly for the particular step in the calculation) and the tariff year runs from 1 October to 30 September, inclusive. Revenue values in this example model are shown in the "User Inputs" worksheet, Cell C10. The linked sheet can be unhidden if required.
[C] Capacity-commodity split of the transmission services revenue. Breakdown between the revenue from capacity-based transmission tariffs and the revenue from commodity-based transmission tariff: Articles 26(1)(b) and 30(1)(b)(v)(1)		There are no proposed commodity charges (100% capacity-based recovery of Transmission Services revenue).
[D] Entry-exit split of the transmission services revenue. Breakdown between the revenue from capacity-based transmission tariffs at all entry points and the revenue from capacity-based transmission tariffs at all exit points: Articles 26(1)(b) and 30(1)(b)(v)(2)		50:50 entry-exit split.
[E] Intra-system/cross-border split of the transmission services revenue. Breakdown between the revenue from domestic network users at both entry		The revenue from domestic network users can be identified within the Cost Allocation Assessment worksheet from the individual models with the results available in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation.

points and exit points and the revenue from cross-border network users at both entry points and exit points calculated as set out in Article 5: Articles 26(1)(b) and 30(1)(b)(v)(3)		
[C] INFORMATION ON COMMODITY BASED AND NON-TRANSMISSION TARIFFS [ART. 26(1)(C)]		
[8] Flow based charge. Information on commodity-based transmission tariffs referred to in Article 4(3):		
Requirement	**Description**	**Ofgem comments**
[A] The manner in which they are set: Articles 26(1)(c)(i)(1) and 4(3)(a)	(i) Description, rationale and extent to which the flow based charge is used; (ii) Formula with cost drivers for monetary terms / in kind; (iii) Reference used for the calculation (historical flows, forecasted flows or both); (iv) Confirm that the flow based charge is set in such a way that it is the same at all entry points and the same at all exit points.	N/A
[B] The share of the allowed or target revenue forecasted to be recovered from such tariffs: Articles		N/A

26(1)(c)(i)(2) and 4(3)(a)		
[C] The indicative flow-based charge: Articles 26(1)(c)(i)(3) and 4(3)(a)		N/A
[9] Complementary revenue recovery charge: Information on commodity-based transmission tariffs referred to in Article 4(3):		
Requirement	**Description**	**Ofgem comments**
[A] The manner in which they are set: Articles 26(1)(c)(i)(1) and 4(3)(b)	Description, rationale and the extent to which the complementary revenue recovery charge is used.	N/A
[B] The share of the allowed or target revenue forecasted to be recovered from such tariffs: Articles 26(1)(c)(i)(2) and 4(3)(b)		N/A
[C] The indicative complementary revenue recovery charge: Articles 26(1)(c)(i)(3) and 4(3)(b)		N/A
[10] Information on non-transmission services provided to network users:		

Requirement	Description	Ofgem comments
[A] Non-transmission service tariff methodologies: Articles 26(1)(c)(ii)(1) and 4(1)	(i) List of services considered as non-transmission service on the basis of the criteria laid out in Art. 4(1); (ii) Users to which each of the non-transmission services applies. Indicate if it is not possible to identify the beneficiary of the non-transmission service; (iii) Explanation of the non-transmission tariff methodology provided per service.	The proposed Non-Transmission Services Revenue charges are listed in Section 3 of the consultation document (§3.29 – 3.33).
[B] Share of the allowed or target revenue forecasted to be recovered from such tariffs: Article 26(1)(c)(ii)(2)	Provide, if possible, details per type of non-transmission service.	- 2019/20: £224.3m (24% of allowed revenue) - 2020/21: £212.5m (21% of allowed revenue) - 2021/22: £219.4m (21% of allowed revenue) - 2022/23: £227.6m (21% of allowed revenue) See different year sheets within non-transmission services model: https://www.gasgovernance.co.uk/0678/models and specifically "Sensitivity Tool (Model) 0678 V3 Non Transmission Services (15 March 2019)" provides illustrative charges for Non Transmission Services.
[C] The manner in which the associated non-transmission services revenue is reconciled as referred to in Article 17(3): Articles 26(1)(c)(ii)(3) and 17(3)	Provide details about how is the reconciliation done including the use of a regulatory account, the split of regulatory accounts into sub-	Non-Transmission Services Entry and Exit Charges are reconciled within a single account. This includes the revenue from the DN Pensions Charges, NTS Meter Maintenance Charges, St. Fergus Compressor Charges, Shared Supply Meter Point Administration Charges and Allocation Charges at Interconnectors.

	accounts and the use of separate accounts.	The proposed Non-Transmission Services Revenue charges are listed in Section 3 of the consultation document (§3.29 – 3.33).
[D] Indicative non-transmission tariffs for non-transmission services to network users: Article 26(1)(c)(ii)(4)	Provide formula and description if used.	Indicative illustrative Values for the General Non-Transmission Services charge (the most significant of the Non-Transmission Services charges) can be found across the proposals for the tariff years 19/20 to 22/23 in the spreadsheet ("Article 26 Consultation Data Tables") published as a subsidiary document to this consultation, in the worksheet named "C.10 Non-Tx Services". All values are in p/kWh. The values for the proposed modification (UNC678A) are replicated below: - 2019/20: 0.014 - 2020/21: 0.0138 - 2021/22: 0.0146 - 2022/23: 0.0153 See different year sheets within non-transmission services model: https://www.gasgovernance.co.uk/0678/models and specifically "Sensitivity Tool (Model) 0678 V3 Non Transmission Services (15 March 2019)" provides illustrative charges for Non Transmission Services.
[D] COMPARED TARIFFS AND TARIFF MODEL [ART. 26(1)(D)]		
[11] The indicative information set out in Article 30(2)		
Requirement	**Description**	**Ofgem comments**

[A] Comparison between transmission tariffs applicable for: (i) prevailing tariff period; and for (ii) tariff period for which the information is published. Explain the difference between the level of transmission tariffs: Articles 26(1)(d) and 30(2)(a)(i)	The comparison should be based on transmission tariffs.	In terms of indicative illustrative values, NGGT provided a number of years indicative values for tariff years 19/20 to 22/23 available in the spreadsheet "Modification 0678 Data Tables for Workgroup (21 March 2019)" on the page https://www.gasgovernance.co.uk/0678/Models for a range of scenarios to show the sensitives against specific assumptions. This includes a comparison to prevailing tariffs. Also, NGGT has produced a set of these and these are published as a subsidiary document to this consultation. The specific worksheets in the spreadsheet are "A.3 Entry Data" and "A.3 Exit Data". This includes a comparison to prevailing tariffs.
[B] Comparison between transmission tariffs applicable for: (i) tariff period for which the information is published, and for (ii) each tariff period within the remainder of the regulatory period. Estimated difference in the level of transmission tariffs: Articles 26(1)(d) and 30(2)(a)(ii)	The comparison should be based on transmission tariffs.	See cell above (D.11.A.). Regulatory period ends on 31 March 2021.
[C] At least a simplified tariff model, updated regularly, enabling network users to calculate the transmission tariffs applicable for the prevailing tariff period and to estimate their possible evolution beyond such tariff	The simplified tariff model should serve for the calculation of tariffs. If the information on multipliers and seasonality is not available at the time of the publication of the consultation on the RPM, it should be indicated. By the time this information is published, the simplified tariff model	This information is available in this published illustrative model for UNC678 available as file named "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models Please note that the "PS" Base Reference Price Model should be selected through the "User Inputs" worksheet.

period: Articles 26(1)(d) and 30(2)(b)	should be updated to include information on tariffs.	
[D] Explanation of how to use the simplified tariff model: Articles 26(1)(d) and 30(2)(b)		Detailed instructions are contained in the worksheet "Model Use & Assumptions". Please note that the "PS" Base Reference Price Model should be selected through the "User Inputs" worksheet.
[E] FIXED PAYABLE PRICE UNDER PRICE CAP REGIME [ART. 26(1)(E)]		
[12] Where the fixed payable price referred to in Art.24(b) is offered under a price cap regime for existing capacity		
Requirement	**Description**	**Ofgem comments**
[A] Provide proposed index: Article 26(1)(e)(i)	Provide index, components of the index if used.	N/A
[B] Provide proposed calculation for the risk premium: Article 26(1)(e)(ii)	Calculation of the index if used.	N/A
[C] How is the revenue derived from the risk premium used? : Article 26(1)(e)(ii)		N/A
[D] At which IPs is such approach is proposed? : Article 26(1)(e)(iii)	Provide IP name and ID if used.	N/A

[E] For which tariff period(s) is such approach proposed? : Article 26(1)(e)(iii)		N/A
[F] The process of offering capacity at an IPs where both fixed and floating payable price approaches referred to in Article 24 are proposed: Article 26(1)(e)(iv)	Provide details on the offering process if used.	N/A

Appendix 7: Indicative reference prices and FCC values under Postage Stamp RPM (UNC678A)

The following tables provide indicative reference prices and FCC values for all entry and exit points under the proposed Postage Stamp RPM (UNC678A), for the Gas Year 2019/20 based on the "Sensitivity Tool (Model) 0678 V3.1 CWD Transmission Services (21 March 2019)" available as downloadable Excel file on the page https://www.gasgovernance.co.uk/0678/Models in worksheets "Entry Prices Summary" and "Exit Prices Summary". Please note that the "PS" Base Reference Price Model should be selected through the "User Inputs" worksheet.

These values are provided as Article 26(1)(a)(iii) of TAR NC which requires that the final consultation prior to the decision referred to in Article 27(4) shall include "the indicative reference prices subject to consultation".

The values below represent NGGT's 'best view' of reference prices under UNC678A. These values are not related to the analysis conducted by CEPA and referenced in the main body of this consultation. In particular, we note that NGGT did not conduct this analysis using a single scenario. Instead NGGT's 'best view' is informed by the average of all FES. In addition, reference prices are derived only by running the tariff model. There is no interaction with a market model which would otherwise capture the interaction between tariffs and gas flows. Because of these differences, the reference prices included in this Appendix should not be compared directly with reference prices derived in the main body of this report.

Table 5 - Indicative prices and FCC values for Entry Points (GY 2019/20, adjusted)

Entry Point	Entry Point Type	Forecasted Contracted Capacity (CAP_En) kWh/d	Historical contracts kWh/d	Anticipated Bookings (Firm) kWh/d	Anticipated Bookings (Interruptible) kWh/d	Reference Prices p/kWh/a	Firm Capacity Reserve Prices p/kWh/d	Interruptible Capacity Reserve Prices p/kWh/d
Avonmouth	STORAGE SITE	-	-	-	-	14.6813	0.0201	0.0181
Bacton IP	INTERCONNECTION POINT	242,349,238	89,015,042	90,665,505	62,668,691	14.6813	0.0401	0.0361

Bacton UKCS	BEACH TERMINAL	674,940,457	238,685,647	309,845,127	126,409,683	14.6813	0.0401	0.0361
Burton Point	ONSHORE FIELD	31,388,848	11,513,832	18,825,287	1,049,729	14.6813	0.0401	0.0361
Barrow	BEACH TERMINAL	83,866,774	44,993,175	27,609,541	11,264,057	14.6813	0.0401	0.0361
Barton Stacey	STORAGE SITE	90,000,000	90,000,000	-	-	14.6813	0.0201	0.0181
Canonbie	ONSHORE FIELD	-	-	-	-	14.6813	0.0401	0.0361
Cheshire	STORAGE SITE	514,110,000	514,110,000	-	-	14.6813	0.0201	0.0181
Caythorpe	STORAGE SITE	90,000,000	90,000,000	-	-	14.6813	0.0201	0.0181
Dynevor Arms	STORAGE SITE	-	-	-	-	14.6813	0.0201	0.0181
Easington	BEACH TERMINAL	923,976,213	705,187,763	155,392,064	63,396,387	14.6813	0.0401	0.0361
Fleetwood	STORAGE SITE	-	-	-	-	14.6813	0.0201	0.0181
Glenmavis	STORAGE SITE	-	-	-	-	14.6813	0.0201	0.0181
Garton	STORAGE SITE	420,000,000	420,000,000	-	-	14.6813	0.0201	0.0181
Hole House Farm	STORAGE SITE	283,440,000	283,440,000	-	-	14.6813	0.0201	0.0181
Hatfield Moor (onshore)	ONSHORE FIELD	-	-	-	-	14.6813	0.0401	0.0361
Hornsea	STORAGE SITE	108,866,575	51,166,366	53,324,766	4,375,443	14.6813	0.0201	0.0181
Hatfield Moor (storage)	STORAGE SITE	5,469,945	5,469,945	-	-	14.6813	0.0201	0.0181
Isle of Grain	LNG IMPORTATION TERMINAL	643,612,054	643,450,000	134,008	28,046	14.6813	0.0401	0.0361

Milford Haven	LNG IMPORTATION TERMINAL	926,500,000	926,500,000	-	-	14.6813	0.0401	0.0361
Partington	STORAGE SITE	-	-	-	-	14.6813	0.0201	0.0181
Moffat (Irish Interconnector)	INTERCONNECTI ON POINT	5,969	-	3,529	2,440	14.6813	0.0401	0.0361
Murrow	BIOMETHANE PLANT	-	-	-	-	14.6813	0.0401	0.0361
St Fergus	BEACH TERMINAL	845,897,745	71,403,827	550,075,692	224,418,226	14.6813	0.0401	0.0361
Teesside	BEACH TERMINAL	349,329,734	81,570,526	190,173,000	77,586,208	14.6813	0.0401	0.0361
Theddlethorpe	BEACH TERMINAL	43,243,984	8,550,000	24,641,016	10,052,968	14.6813	0.0401	0.0361
Wytch Farm	ONSHORE FIELD	-	-	-	-	14.6813	0.0401	0.0361

Table 6 - Indicative prices and FCC values for Exit Points (GY 2019/20, adjusted)

Exit Points	Exit Point Type	Forecasting Contracted Capacity (CAP_Ex) kWh/d	Anticipated Bookings (Firm) kWh/d	Anticipated Bookings (Interruptible) kWh/d	Bookings that can incur the RRC (Firm & Interruptible & EC if applicable) kWh/d	Reference Prices p/kWh/a	Firm Capacity Reserve Prices p/kWh/d	Interruptible Capacity Reserve Prices p/kWh/d
Aberdeen	GDN (SC)	21,639,348	20,552,565	1,086,783	21,639,348	5.6864	0.0155	0.0140
Abson (Seabank Power Station phase I)	POWER STATION	27,843,800	13,479,161	14,364,639	27,843,800	5.6864	0.0155	0.0140
Alrewas (EM)	GDN (EM)	59,229,584	56,254,924	2,974,660	59,229,584	5.6864	0.0155	0.0140
Alrewas (WM)	GDN (WM)	72,462,290	68,823,050	3,639,240	72,462,290	5.6864	0.0155	0.0140

Apache (Sage Black Start)	INDUSTRIAL	9,074	8,400	674	9,074	5.6864	0.0155	0.0140
Armadale	GDN (SC)	7,519,525	7,141,875	377,650	7,519,525	5.6864	0.0155	0.0140
Aspley	GDN (WM)	50,894,176	48,338,142	2,556,034	50,894,176	5.6864	0.0155	0.0140
Asselby	GDN (NE)	3,586,201	3,406,093	180,108	3,586,201	5.6864	0.0155	0.0140
Audley (NW)	GDN (NW)	8,037,574	7,633,907	403,667	8,037,574	5.6864	0.0155	0.0140
Audley (WM)	GDN (WM)	13,572,412	12,890,771	681,641	13,572,412	5.6864	0.0155	0.0140
Austrey	GDN (WM)	59,601,211	56,607,887	2,993,324	59,601,211	5.6864	0.0155	0.0140
Avonmouth Max Refill	STORAGE SITE	661	194	467	661	5.6864	0.0078	0.0070
Aylesbeare	GDN (SW)	19,128,874	18,168,173	960,701	19,128,874	5.6864	0.0155	0.0140
Bacton	GDN (EA)	2,844,268	2,701,422	142,846	2,844,268	5.6864	0.0155	0.0140
Bacton (Baird)	STORAGE SITE	-	-	-	-	5.6864	0.0078	0.0070
Bacton (BBL)	INTERCONNECTOR	-	-	-	-	5.6864	0.0155	0.0140
Bacton (Great Yarmouth)	POWER STATION	20,000,000	9,681,984	10,318,016	20,000,000	5.6864	0.0155	0.0140
Bacton (IUK)	INTERCONNECTOR	185,430,316	68,052,582	117,377,735	185,430,316	5.6864	0.0155	0.0140
Baldersby	GDN (NE)	1,126,642	1,070,059	56,583	1,126,642	5.6864	0.0155	0.0140
Balgray	GDN (SC)	15,057,981	14,301,731	756,250	15,057,981	5.6864	0.0155	0.0140
Barking (Horndon)	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Barrow (Bains)	STORAGE SITE	-	-	-	-	5.6864	0.0078	0.0070

Barrow (Black Start)	INDUSTRIAL	1,001,370	927,004	74,366	1,001,370	5.6864	0.0155	0.0140
Barrow (Gateway)	STORAGE SITE	-	-	-	-	5.6864	0.0078	0.0070
Barton Stacey Max Refill (Humbly Grove)	STORAGE SITE	10,181,400	2,986,461	7,194,939	10,181,400	5.6864	0.0078	0.0070
Bathgate	GDN (SC)	21,081,766	20,022,986	1,058,780	21,081,766	5.6864	0.0155	0.0140
Billingham ICI (Terra Billingham)	INDUSTRIAL	33,644,543	31,145,967	2,498,576	33,644,543	5.6864	0.0155	0.0140
Bishop Auckland	GDN (NO)	56,287,977	53,461,052	2,826,925	56,287,977	5.6864	0.0155	0.0140
Bishop Auckland (test facility)	INDUSTRIAL	781,914	723,846	58,068	781,914	5.6864	0.0155	0.0140
Blaby	GDN (EM)	9,867,513	9,371,941	495,572	9,867,513	5.6864	0.0155	0.0140
Blackness (BP Grangemouth)	INDUSTRIAL	27,290,000	25,263,337	2,026,663	27,290,000	5.6864	0.0155	0.0140
Blackrod	GDN (NW)	123,939,267	117,714,723	6,224,544	123,939,267	5.6864	0.0155	0.0140
Blyborough	GDN (EM)	55,825,856	53,022,140	2,803,716	55,825,856	5.6864	0.0155	0.0140
Blyborough (Brigg)	POWER STATION	1,600,000	774,559	825,441	1,600,000	5.6864	0.0155	0.0140
Blyborough (Cottam)	POWER STATION	12,767,839	6,180,900	6,586,938	12,767,839	5.6864	0.0155	0.0140
Braishfield A	GDN (SO)	84,161,130	79,934,345	4,226,785	84,161,130	5.6864	0.0155	0.0140
Braishfield B	GDN (SO)	64,947,171	61,685,360	3,261,811	64,947,171	5.6864	0.0155	0.0140
Brine Field (Teesside) Power Station	POWER STATION	50,817	24,600	26,217	50,817	5.6864	0.0155	0.0140
Brisley	GDN (EA)	2,077,837	1,973,483	104,354	2,077,837	5.6864	0.0155	0.0140

Broxburn	GDN (SC)	56,250,554	53,425,509	2,825,045	56,250,554	5.6864	0.0155	0.0140
Burley Bank	GDN (NE)	13,868,151	13,171,657	696,494	13,868,151	5.6864	0.0155	0.0140
Burnhervie	GDN (SC)	22,372,861	21,249,239	1,123,622	22,372,861	5.6864	0.0155	0.0140
Burton Point (Connahs Quay)	POWER STATION	12,329,187	5,968,550	6,360,638	12,329,187	5.6864	0.0155	0.0140
Caldecott	GDN (EM)	8,977,861	8,526,970	450,891	8,977,861	5.6864	0.0155	0.0140
Caldecott (Corby Power Station)	POWER STATION	663,937	321,411	342,526	663,937	5.6864	0.0155	0.0140
Cambridge	GDN (EA)	-	-	-	-	5.6864	0.0155	0.0140
Careston	GDN (SC)	4,112,924	3,906,363	206,561	4,112,924	5.6864	0.0155	0.0140
Carrington (Partington) Power Station	POWER STATION	26,438,121	12,798,673	13,639,448	26,438,121	5.6864	0.0155	0.0140
Caythorpe	STORAGE SITE	-	-	-	-	5.6864	0.0078	0.0070
Centrax Industrial	INDUSTRIAL	85,000	78,688	6,312	85,000	5.6864	0.0155	0.0140
Cirencester	GDN (SW)	7,417,140	7,044,632	372,508	7,417,140	5.6864	0.0155	0.0140
Cockenzie Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Coffinswell	GDN (SW)	5,150,000	4,891,354	258,646	5,150,000	5.6864	0.0155	0.0140
Coldstream	GDN (NO)	2,848,927	2,705,847	143,080	2,848,927	5.6864	0.0155	0.0140
Corbridge	GDN (NO)	57,846	54,941	2,905	57,846	5.6864	0.0155	0.0140
Coryton 2 (Thames Haven) Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140

Cowpen Bewley	GDN (NO)	38,498,554	36,565,059	1,933,495	38,498,554	5.6864	0.0155	0.0140
Crawley Down	GDN (SO)	-	-	-	-	5.6864	0.0155	0.0140
Deborah Storage (Bacton)	STORAGE SITE	-	-	-	-	5.6864	0.0078	0.0070
Deeside	POWER STATION	4,448,282	2,153,410	2,294,872	4,448,282	5.6864	0.0155	0.0140
Didcot	POWER STATION	33,674,184	16,301,646	17,372,539	33,674,184	5.6864	0.0155	0.0140
Dowlais	GDN (WS)	91,369,207	86,780,414	4,588,793	91,369,207	5.6864	0.0155	0.0140
Drakelow Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Drointon	GDN (EM)	54,670,979	51,925,264	2,745,715	54,670,979	5.6864	0.0155	0.0140
Drum	GDN (SC)	66,956,781	63,594,042	3,362,739	66,956,781	5.6864	0.0155	0.0140
Dyffryn Clydach	GDN (WS)	40,231,974	38,211,422	2,020,552	40,231,974	5.6864	0.0155	0.0140
Dynevor Max Refill	STORAGE SITE	23,931	7,020	16,911	23,931	5.6864	0.0078	0.0070
Eastoft (Keadby Blackstart)	POWER STATION	1,457,215	705,437	751,778	1,457,215	5.6864	0.0155	0.0140
Eastoft (Keadby)	POWER STATION	16,099,880	7,793,939	8,305,941	16,099,880	5.6864	0.0155	0.0140
Easton Grey	GDN (SW)	27,391,725	26,016,043	1,375,682	27,391,725	5.6864	0.0155	0.0140
Ecclestone	GDN (NW)	16,370,887	15,548,700	822,187	16,370,887	5.6864	0.0155	0.0140
Elton	GDN (NO)	52,818,145	50,165,484	2,652,661	52,818,145	5.6864	0.0155	0.0140
Enron Billingham	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140

Epping Green (Enfield Energy, aka Brimsdown)	POWER STATION	9,323,288	4,513,396	4,809,892	9,323,288	5.6864	0.0155	0.0140
Evesham	GDN (SW)	6,441,859	6,118,333	323,526	6,441,859	5.6864	0.0155	0.0140
Farningham	GDN (SE)	89,921,069	85,405,005	4,516,064	89,921,069	5.6864	0.0155	0.0140
Farningham B	GDN (SE)	94,634,400	89,881,621	4,752,779	94,634,400	5.6864	0.0155	0.0140
Ferny Knoll (AM Paper)	INDUSTRIAL	-	-	-	-	5.6864	0.0155	0.0140
Fiddington	GDN (SW)	21,293,234	20,223,834	1,069,400	21,293,234	5.6864	0.0155	0.0140
Ganstead	GDN (NE)	16,610,330	15,776,117	834,213	16,610,330	5.6864	0.0155	0.0140
Garton Max Refill (Aldbrough)	STORAGE SITE	325,510,000	95,480,276	230,029,724	325,510,000	5.6864	0.0078	0.0070
Gilwern	GDN (WS)	75,404,154	71,617,166	3,786,988	75,404,154	5.6864	0.0155	0.0140
Glenmavis	GDN (SC)	128,262,344	121,820,684	6,441,660	128,262,344	5.6864	0.0155	0.0140
Glenmavis Max Refill	STORAGE SITE	128,720	37,757	90,963	128,720	5.6864	0.0078	0.0070
Goole (Guardian Glass)	INDUSTRIAL	1,700,000	1,573,751	126,249	1,700,000	5.6864	0.0155	0.0140
Gosberton	GDN (EM)	12,321,120	11,702,322	618,798	12,321,120	5.6864	0.0155	0.0140
Gowkhall (Longannet)	POWER STATION	43,320,000	20,971,177	22,348,823	43,320,000	5.6864	0.0155	0.0140
Grain Power Station	POWER STATION	48,815,174	23,631,387	25,183,788	48,815,174	5.6864	0.0155	0.0140
Great Wilbraham	GDN (EA)	23,677,521	22,488,376	1,189,145	23,677,521	5.6864	0.0155	0.0140
Guyzance	GDN (NO)	1,806,988	1,716,236	90,752	1,806,988	5.6864	0.0155	0.0140

Hardwick	GDN (SO)	103,540,577	98,340,507	5,200,070	103,540,577	5.6864	0.0155	0.0140
Harwarden (Shotton, aka Shotton Paper)	INDUSTRIAL	-	-	-	-	5.6864	0.0155	0.0140
Hatfield Moor Max Refill	STORAGE SITE	30,210,000	8,861,353	21,348,647	30,210,000	5.6864	0.0078	0.0070
Hatfield Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Hill Top Farm (Hole House Farm)	STORAGE SITE	4,588,175	1,345,827	3,242,348	4,588,175	5.6864	0.0078	0.0070
Hole House Max Refill	STORAGE SITE	684,999	200,928	484,072	684,999	5.6864	0.0078	0.0070
Holford	STORAGE SITE	41,731,255	12,240,827	29,490,427	41,731,255	5.6864	0.0078	0.0070
Hollingsgreen (Hays Chemicals)	INDUSTRIAL	555,000	513,784	41,216	555,000	5.6864	0.0155	0.0140
Holmes Chapel	GDN (NW)	21,678,773	20,590,010	1,088,763	21,678,773	5.6864	0.0155	0.0140
Horndon	GDN (NT)	33,307,669	31,634,873	1,672,796	33,307,669	5.6864	0.0155	0.0140
Hornsea Max Refill	STORAGE SITE	40,337,921	11,832,127	28,505,794	40,337,921	5.6864	0.0078	0.0070
Humbleton	GDN (NO)	148,471	141,014	7,457	148,471	5.6864	0.0155	0.0140
Hume	GDN (SC)	1,684,385	1,599,791	84,594	1,684,385	5.6864	0.0155	0.0140
Ilchester	GDN (SW)	31,408,565	29,831,147	1,577,418	31,408,565	5.6864	0.0155	0.0140
Ipsden	GDN (SO)	5,760,836	5,471,512	289,324	5,760,836	5.6864	0.0155	0.0140
Ipsden 2	GDN (SO)	7,429,155	7,056,044	373,111	7,429,155	5.6864	0.0155	0.0140
Keld	GDN (NO)	1,424,555	1,353,010	71,545	1,424,555	5.6864	0.0155	0.0140

Kenn	GDN (SW)	14,000,883	13,297,723	703,160	14,000,883	5.6864	0.0155	0.0140
Kinknockie	GDN (SC)	3,068,392	2,914,290	154,102	3,068,392	5.6864	0.0155	0.0140
Kirkstead	GDN (EM)	858,703	815,577	43,126	858,703	5.6864	0.0155	0.0140
Langage Power Station	POWER STATION	31,708,219	15,349,923	16,358,296	31,708,219	5.6864	0.0155	0.0140
Langholm	GDN (SC)	255,319	242,496	12,823	255,319	5.6864	0.0155	0.0140
Lauderhill	GDN (SC)	-	-	-	-	5.6864	0.0155	0.0140
Leamington	GDN (WM)	3,634,748	3,452,202	182,546	3,634,748	5.6864	0.0155	0.0140
Little Burdon	GDN (NO)	20,919,521	19,868,890	1,050,631	20,919,521	5.6864	0.0155	0.0140
Littleton Drew	GDN (SW)	2,299,463	2,183,978	115,485	2,299,463	5.6864	0.0155	0.0140
Lockerbie	GDN (SC)	7,131,838	6,773,659	358,179	7,131,838	5.6864	0.0155	0.0140
Lower Quinton	GDN (WM)	29,910,000	28,407,844	1,502,156	29,910,000	5.6864	0.0155	0.0140
Lupton	GDN (NW)	19,815,980	18,820,771	995,209	19,815,980	5.6864	0.0155	0.0140
Luxborough Lane	GDN (NT)	76,147,689	72,323,359	3,824,330	76,147,689	5.6864	0.0155	0.0140
Lyneham (Choakford)	GDN (SW)	40,420,636	38,390,609	2,030,027	40,420,636	5.6864	0.0155	0.0140
Maelor	GDN (WN)	49,258,990	46,785,079	2,473,911	49,258,990	5.6864	0.0155	0.0140
Malpas	GDN (NW)	685,222	650,808	34,414	685,222	5.6864	0.0155	0.0140
Mappowder	GDN (SO)	23,569,309	22,385,599	1,183,710	23,569,309	5.6864	0.0155	0.0140
Marchwood Power Station	POWER STATION	39,840,000	19,286,512	20,553,488	39,840,000	5.6864	0.0155	0.0140

Market Harborough	GDN (EM)	6,965,982	6,616,133	349,849	6,965,982	5.6864	0.0155	0.0140
Matching Green	GDN (EA)	50,470,504	47,935,747	2,534,757	50,470,504	5.6864	0.0155	0.0140
Medway (aka Isle of Grain Power Station, NOT Grain Power)	POWER STATION	32,771,084	15,864,455	16,906,629	32,771,084	5.6864	0.0155	0.0140
Melkinthorpe	GDN (NO)	2,432,914	2,310,727	122,187	2,432,914	5.6864	0.0155	0.0140
Mickle Trafford	GDN (NW)	29,209,411	27,742,440	1,466,971	29,209,411	5.6864	0.0155	0.0140
Middle Stoke (Damhead Creek, aka Kingsnorth Power Station)	POWER STATION	95,336,184	46,152,170	49,184,014	95,336,184	5.6864	0.0155	0.0140
Milwich	GDN (WM)	18,949,988	17,998,272	951,716	18,949,988	5.6864	0.0155	0.0140
Moffat (Irish Interconnector)	INTERCONNECTO R	212,920,231	78,141,329	134,778,902	212,920,231	5.6864	0.0155	0.0140
Netherhowcleug h	GDN (SC)	322,112	305,935	16,177	322,112	5.6864	0.0155	0.0140
Pannal	GDN (NE)	120,179,959	114,144,217	6,035,742	120,179,959	5.6864	0.0155	0.0140
Partington	GDN (NW)	43,675,148	41,481,671	2,193,477	43,675,148	5.6864	0.0155	0.0140
Partington Max Refill	STORAGE SITE	-	-	-	-	5.6864	0.0078	0.0070
Paull	GDN (NE)	46,858,561	44,505,205	2,353,356	46,858,561	5.6864	0.0155	0.0140
Pembroke Power Station	POWER STATION	121,200,000	58,672,823	62,527,177	121,200,000	5.6864	0.0155	0.0140
Peterborough (Peterborough Power Station)	POWER STATION	2,800,000	1,355,478	1,444,522	2,800,000	5.6864	0.0155	0.0140

Peterborough Eye (Tee)	GDN (EA)	20,325,523	19,304,724	1,020,799	20,325,523	5.6864	0.0155	0.0140
Peters Green	GDN (NT)	111,963,144	106,340,071	5,623,073	111,963,144	5.6864	0.0155	0.0140
Peters Green South Mimms	GDN (NT)	164,876,045	156,595,552	8,280,493	164,876,045	5.6864	0.0155	0.0140
Phillips Petroleum, Teesside	INDUSTRIAL	3,690,000	3,415,966	274,034	3,690,000	5.6864	0.0155	0.0140
Pickering	GDN (NE)	8,332,710	7,914,220	418,490	8,332,710	5.6864	0.0155	0.0140
Pickmere (Winnington Power, aka Brunner Mond)	INDUSTRIAL	8,000,000	7,405,889	594,111	8,000,000	5.6864	0.0155	0.0140
Pitcairngreen	GDN (SC)	1,915,791	1,819,575	96,216	1,915,791	5.6864	0.0155	0.0140
Pucklechurch	GDN (SW)	23,885,892	22,686,282	1,199,610	23,885,892	5.6864	0.0155	0.0140
Rawcliffe	GDN (NE)	3,229,202	3,067,023	162,179	3,229,202	5.6864	0.0155	0.0140
Rollswood Kintore	INDUSTRIAL	-	-	-	-	5.6864	0.0155	0.0140
Roosecote Power Station (Barrow)	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Rosehill (Saltend Power Station)	POWER STATION	57,830,000	27,995,457	29,834,543	57,830,000	5.6864	0.0155	0.0140
Ross (SW)	GDN (SW)	4,023,357	3,821,294	202,063	4,023,357	5.6864	0.0155	0.0140
Ross (WM)	GDN (WM)	9,937,704	9,438,607	499,097	9,937,704	5.6864	0.0155	0.0140
Roudham Heath	GDN (EA)	20,129,094	19,118,160	1,010,934	20,129,094	5.6864	0.0155	0.0140
Royston	GDN (EA)	2,367,780	2,248,864	118,916	2,367,780	5.6864	0.0155	0.0140

Rugby	GDN (WM)	60,380,901	57,348,419	3,032,482	60,380,901	5.6864	0.0155	0.0140
Ryehouse	POWER STATION	38,660,000	18,715,275	19,944,725	38,660,000	5.6864	0.0155	0.0140
Saddle Bow (Kings Lynn)	POWER STATION	14,500,000	7,019,438	7,480,562	14,500,000	5.6864	0.0155	0.0140
Saltend BPHP (BP Saltend HP)	INDUSTRIAL	9,055,895	8,383,369	672,526	9,055,895	5.6864	0.0155	0.0140
Saltfleetby Storage (Theddlethorpe)	STORAGE SITE	-	-	-	-	5.6864	0.0078	0.0070
Saltwick Pressure Controlled	GDN (NO)	-	-	-	-	5.6864	0.0155	0.0140
Saltwick Volumetric Controlled	GDN (NO)	40,011,158	38,001,696	2,009,462	40,011,158	5.6864	0.0155	0.0140
Samlesbury	GDN (NW)	99,858,652	94,843,498	5,015,154	99,858,652	5.6864	0.0155	0.0140
Sandy Lane (Blackburn CHP, aka Sappi Paper Mill)	INDUSTRIAL	3,433,103	3,178,147	254,956	3,433,103	5.6864	0.0155	0.0140
Seabank (DN)	GDN (SW)	50,365,514	47,836,030	2,529,484	50,365,514	5.6864	0.0155	0.0140
Seabank (Seabank Power Station phase II)	POWER STATION	18,316,938	8,867,215	9,449,723	18,316,938	5.6864	0.0155	0.0140
Seal Sands TGPP	INDUSTRIAL	46,488	43,036	3,452	46,488	5.6864	0.0155	0.0140
Sellafield Power Station	POWER STATION	12,349,999	5,978,625	6,371,374	12,349,999	5.6864	0.0155	0.0140
Shellstar (aka Kemira, not Kemira CHP)	INDUSTRIAL	11,732,444	10,861,147	871,297	11,732,444	5.6864	0.0155	0.0140
Shorne	GDN (SE)	19,826,107	18,830,390	995,717	19,826,107	5.6864	0.0155	0.0140

Shotwick (Bridgewater Paper)	INDUSTRIAL	310,479	287,422	23,057	310,479	5.6864	0.0155	0.0140
Shustoke	GDN (WM)	100,000	94,978	5,022	100,000	5.6864	0.0155	0.0140
Silk Willoughby	GDN (EM)	2,203,090	2,092,445	110,645	2,203,090	5.6864	0.0155	0.0140
Soutra	GDN (SC)	10,726,995	10,188,258	538,737	10,726,995	5.6864	0.0155	0.0140
Spalding 2 (South Holland) Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
St Fergus	GDN (SC)	1,267,112	1,203,474	63,638	1,267,112	5.6864	0.0155	0.0140
St. Fergus (Peterhead)	POWER STATION	73,267,750	35,468,859	37,798,891	73,267,750	5.6864	0.0155	0.0140
St. Fergus (Shell Blackstart)	INDUSTRIAL	2,583,336	2,391,487	191,849	2,583,336	5.6864	0.0155	0.0140
St. Neots (Little Barford)	POWER STATION	26,775,065	12,961,788	13,813,278	26,775,065	5.6864	0.0155	0.0140
Stallingborough	POWER STATION	52,700,000	25,512,028	27,187,972	52,700,000	5.6864	0.0155	0.0140
Stanford Le Hope (Coryton)	POWER STATION	8,267,936	4,002,501	4,265,435	8,267,936	5.6864	0.0155	0.0140
Staythorpe	POWER STATION	41,505,935	20,092,990	21,412,945	41,505,935	5.6864	0.0155	0.0140
Stranraer	GDN (SC)	886,809	842,271	44,538	886,809	5.6864	0.0155	0.0140
Stratford-upon-Avon	GDN (WM)	3,735,040	3,547,457	187,583	3,735,040	5.6864	0.0155	0.0140
Stublach (Cheshire)	STORAGE SITE	30,343,940	8,900,641	21,443,299	30,343,940	5.6864	0.0078	0.0070
Sutton Bridge	GDN (EM)	1,079,269	1,025,065	54,204	1,079,269	5.6864	0.0155	0.0140
Sutton Bridge Power Station	POWER STATION	42,637,000	20,640,537	21,996,463	42,637,000	5.6864	0.0155	0.0140

Tatsfield	GDN (SE)	213,058,400	202,358,067	10,700,333	213,058,400	5.6864	0.0155	0.0140
Teesside (BASF, aka BASF Teesside)	INDUSTRIAL	9,750,000	9,025,927	724,073	9,750,000	5.6864	0.0155	0.0140
Teesside Hydrogen	INDUSTRIAL	13,276,800	12,290,813	985,987	13,276,800	5.6864	0.0155	0.0140
Terra Nitrogen (aka ICI, Terra Severnside)	INDUSTRIAL	-	-	-	-	5.6864	0.0155	0.0140
Thornton Curtis (DN)	GDN (EM)	118,190,411	112,254,589	5,935,822	118,190,411	5.6864	0.0155	0.0140
Thornton Curtis (Humber Refinery, aka Immingham)	INDUSTRIAL	67,000,000	62,024,317	4,975,683	67,000,000	5.6864	0.0155	0.0140
Thornton Curtis (Killingholme)	POWER STATION	48,268,493	23,366,739	24,901,754	48,268,493	5.6864	0.0155	0.0140
Thrintoft	GDN (NO)	6,921,484	6,573,870	347,614	6,921,484	5.6864	0.0155	0.0140
Tilbury Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Tonna (Baglan Bay)	POWER STATION	26,750,000	12,949,654	13,800,346	26,750,000	5.6864	0.0155	0.0140
Towlaw	GDN (NO)	572,053	543,323	28,730	572,053	5.6864	0.0155	0.0140
Towton	GDN (NE)	59,564,671	56,573,182	2,991,489	59,564,671	5.6864	0.0155	0.0140
Trafford Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Tur Langton	GDN (EM)	69,970,779	66,456,669	3,514,110	69,970,779	5.6864	0.0155	0.0140
Upper Neeston (Milford Haven Refinery)	INDUSTRIAL	8,300,000	7,683,609	616,391	8,300,000	5.6864	0.0155	0.0140

Walesby	GDN (EM)	652,640	619,863	32,777	652,640	5.6864	0.0155	0.0140
Warburton	GDN (NW)	96,138,093	91,309,794	4,828,299	96,138,093	5.6864	0.0155	0.0140
West Burton Power Station	POWER STATION	37,864,776	18,330,308	19,534,468	37,864,776	5.6864	0.0155	0.0140
West Winch	GDN (EA)	10,086,940	9,580,348	506,592	10,086,940	5.6864	0.0155	0.0140
Weston Point	GDN (NW)	6,156,504	5,847,309	309,195	6,156,504	5.6864	0.0155	0.0140
Weston Point (Castner Kelner, aka ICI Runcorn)	INDUSTRIAL	690,136	638,884	51,252	690,136	5.6864	0.0155	0.0140
Weston Point (Rocksavage)	POWER STATION	18,770,159	9,086,619	9,683,540	18,770,159	5.6864	0.0155	0.0140
Wetheral	GDN (NO)	15,724,001	14,934,302	789,699	15,724,001	5.6864	0.0155	0.0140
Whitwell	GDN (EA)	106,647,786	101,291,664	5,356,122	106,647,786	5.6864	0.0155	0.0140
Willington Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Winkfield (NT)	GDN (NT)	100,000	94,978	5,022	100,000	5.6864	0.0155	0.0140
Winkfield (SE)	GDN (SE)	44,856,640	42,603,826	2,252,814	44,856,640	5.6864	0.0155	0.0140
Winkfield (SO)	GDN (SO)	36,499,431	34,666,337	1,833,094	36,499,431	5.6864	0.0155	0.0140
Wragg Marsh (Spalding)	POWER STATION	23,353,608	11,305,463	12,048,145	23,353,608	5.6864	0.0155	0.0140
Wyre Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Yelverton	GDN (EA)	72,938,900	69,275,724	3,663,176	72,938,900	5.6864	0.0155	0.0140
Zeneca (ICI Avecia, aka 'Zenica')	INDUSTRIAL	188,701	174,688	14,014	188,701	5.6864	0.0155	0.0140

Air_Products (Teesside)	INDUSTRIAL	-	-	-	-	5.6864	0.0155	0.0140
Fordoun CNG Station	INDUSTRIAL	400,000	370,294	29,706	400,000	5.6864	0.0155	0.0140
Palm_Paper	POWER STATION	3,835,258	1,856,645	1,978,613	3,835,258	5.6864	0.0155	0.0140
St_Fergus_Segal	INDUSTRIAL	-	-	-	-	5.6864	0.0155	0.0140
Kinneil CHP	INDUSTRIAL	-	-	-	-	5.6864	0.0155	0.0140
Knottingley PS	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Eggborough_PS	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
KEADBY_2 PS	POWER STATION	19,888,075	9,627,801	10,260,274	19,888,075	5.6864	0.0155	0.0140
Hirwaun Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Ferrybridge D Power Station	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140
Rough Max Refill	STORAGE SITE	6,566,819	1,926,213	4,640,606	6,566,819	5.6864	0.0078	0.0070
Drax	POWER STATION	-	-	-	-	5.6864	0.0155	0.0140

Appendix 8: Privacy notice on consultations

Personal data

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation ("GDPR").

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally), not the content of your response to the consultation.

1. The identity of the controller and contact details of our Data Protection Officer

The Gas and Electricity Markets Authority is the controller (for ease of reference, "Ofgem"). The Data Protection Officer can be contacted at dpo@ofgem.gov.uk

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

3. Our legal basis for processing your personal data

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest. i.e. a consultation.

4. With whom we will be sharing your personal data

We are not intending to share your personal data with other organisations. We are intending to publish non-confidential consultation responses, including any personal data that may be contained within them.

5. For how long we will keep your personal data, or criteria used to determine the retention period

Your personal data will be held for six months after the consultation closes.

6. Your rights

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete
- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data
- object to certain ways we use your data
- tell us if we can share your information with 3rd parties
- tell us your preferred frequency, content and format of our communications with you
- lodge a complaint with the independent Information Commissioner ("ICO") if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at https://ico.org.uk/ , or telephone 030 3123 1113.

7. Your personal data will not be sent overseas

8. Your personal data will not be used for any automated decision making

9. Your personal data will be stored in a secure government IT system

10. More information

For more information on how Ofgem processes your data, click on the link to our "Ofgem privacy promise": https://www.ofgem.gov.uk/privacy-policy