UNC Modification	At what stage is this document in the process?

UNC 0728 (Urgent):

Introduction of a Conditional Discount for Avoiding Inefficient Bypass of the NTS

Purpose of Modification:

The revised NTS Charging Methodology (in place from 01 October 2020) does not incorporate a mechanism to dis-incentivise inefficient bypass of the NTS.

This Modification seeks to introduce a new Conditional Discount to the Charging Framework so that a product to manage potential inefficient bypass will be in place as soon as possible on or after the changes introduced from UNC0678A, which become effective from 01 October 2020.

	The Proposer recommends that this modification should be: • treated as urgent and should proceed as such under a timetable agreed with the Authority
	High Impact: All parties that pay NTS Transportation Charges and / or have a connection to the NTS, and National Grid NTS.
	Medium Impact: N/A
	Low Impact: N/A

Contents

Timetable

The Proposer recommends the following timetable:

Modification sent to Ofgem	09 June 2020
Ofgem Decision on Urgency	12 June 2020
Draft Modification Report issued for consultation	15 June 2020
Consultation Close-out for representations	26 June 2020
Final Modification Report available for Panel	02 July 2020
Modification Panel recommendation	03 July 2020
Final Modification Report issued to Ofgem	03 July 2020
Proposed Implementation date (subject to Ofgem's decision)	01 October 2020

Any questions?

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1 Summary

What

The revised NTS Charging Methodology (the 'revised Methodology') which takes effect from 01 October 2020 does not include a bespoke provision for directly connected NTS Users located at or near Entry Points, where construction of a pipeline to bypass the NTS may be a viable commercial option.

This Modification seeks to implement a more cost reflective charging arrangement for such points when compared with the charges which would be generated via the new Capacity Charging Methodology.

This Modification takes into account the Impact Assessment and the decision Ofgem has made regarding Modification 0678[1] and its Alternatives, published on 23 December 2019 and addresses the areas of compliance identified in this decision to ensure compliance with EU Tariff Code (Regulation 2017/460)[2].

This Proposal, and the justification for Urgency, is based on the revised Methodology which takes effect from 01 October 2020.

Why

The revised Methodology aligns the overall GB Transmission Charging Methodology to the new charging structures compliant with the EU Tariff Code. It moves the GB Charging Methodology from a 'Capacity and Commodity' Charge structure to a purely capacity-based methodology for Transmission Services. This delivers compliance with the EU Tariff Code.

The EU Tariff Code does not require there to be a charging arrangement specific to manage potential inefficient bypass. Whilst the revised Methodology does not include such a product, it sets the expectation for one to be developed separately and implemented under a new Modification, ideally with the same effective date.

Through Request Modification 0670R - *Review of the charging methodology to avoid the inefficient bypass of the NTS* (Request 0670R) the industry has taken the opportunity to reassess the original intent of the NTS Optional Commodity Charge (OCC) and develop a new charging mechanism which is compliant with the EU Tariff Code and one that provides an alternative charge to the appropriate Users, being those where bypassing the grid is a commercially viable option.

How

A new charging arrangement is proposed specifically for directly connected NTS Users located at, or near, Entry Points where construction of a pipeline to bypass the NTS may be a commercially viable option.

Through applying a generic methodology, incorporating a view of expected costs of bypass, an assessment compared to likely charges in conjunction with key principles of delivering a **simple**, **targeted** and **proportionate** product, this will better facilitate understanding of a genuine bypass risk, and thus eligibility for the *Conditional Product.*

The *Conditional Product* is informed by the costs and benefits associated with remaining connected to the NTS. These criteria and the formula for calculating the product rates will be reviewed periodically, to ensure its suitability and application. This will include the relevance of the product as part of the overall Charging

[1] https://www.gasgovernance.co.uk/0678

[2] EU Tariff Code (Regulation 2017/460): https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017R0460

Methodology including, and not limited to, the levels of cross subsidy delivered from the uptake of the conditional arrangement.

Changes are proposed to the Charging Methodology contained within UNC TPD Section Y. It is also likely that changes to other sections of the UNC TPD (Sections B and G) and the Transition Document will be required.

2 Governance

Justification for Urgency

This Modification should be treated as an Urgent Modification and should proceed under a timetable approved by the Authority. A proposed timeline is provided in the timetable section of this Modification.

Urgent status is sought on the basis that the need to introduce the mechanism proposed in this Modification is driven by an imminent date related issue, this being the removal of the existing arrangement (the NTS Optional Commodity Charge or NTS OCC) which is to take effect from 01 October 2020.

There is now a short period of time until the 'go-live' date for the revised Methodology (01 October 2020) which is not sufficient enough to deliver a timely decision in respect of this Modification were it to follow standard governance procedures.

If this is not urgently addressed, this would result in a significant commercial impact for certain UNC parties and consumers given that existing bespoke arrangements for the relevant points would cease, meaning they would be subject to 'standard' charges (from October 2020). This would result in a significant commercial impact to certain Users and is likely, in turn, to materially impact the reciprocal charges levied to customers, dependent on how those Users recover transportation costs.

Justification for Authority Direction

This Modification is recommended to be sent to the Authority for direction as it is likely to have a material effect on commercial activities relating to the shipping, transportation and supply of gas because, if implemented, it is likely this Modification will have a material impact on the allocation of charges across NTS networks Users.

Failing to develop a replacement for the NTS OCC would have a significant impact on those Users and consumers currently using, or potentially benefitting, from the NTS OCC. It would also increase the likelihood of a party bypassing the NTS or considering a bypass of the NTS.

Analysis based on the period 2020/21 using the Postage Stamp (PS) Reference Price Methodology (RPM) and applying the prevailing NTS OCC product suggests that this could potentially lead to thirty-seven of the currently active routes potentially bypassing the NTS. These represent those parties who could avail of the NTS OCC based on the usage of the product in place within the Gas Year October 2019 – September 2020.

In total, these routes have a combined 'impact' on Transportation Charges of approximately £184.2m (calculated on the basis of the current methodology in place for Gas Year 2019/20 using the known nominated routes at this time). Modelling using the revised Methodology for Gas Year 2020/21 shows this would be made up of £28.7m of NTS OCC contributions and £155.5m of socialisation based on a Transmission Owner and System Operator revenues which equates to approximately 20% of Maximum Allowed Revenue for that period. If all these Users did bypass the NTS then £28.7m extra would also be socialised.

Whilst this level of bypass may be unlikely, due to some of these distances involved, it would be realistic to suggest some would more actively consider a bypass if there were no specific product within the charging framework.

Requested Next Steps

This Modification should:

- be treated as Urgent and should proceed under a timetable agreed with the Authority.

The topic of managing inefficient bypass as part of the Transportation Charging Methodology has been extensively discussed during the development of Modifications 0621 - *Amendments to Gas Transmission Charging Regime* (and alternatives), 0678 - *Amendments to Gas Transmission Charging Regime* (and alternatives), 0636 - *Updating the parameters for the NTS Optional Commodity Charge* and 0653 - *Updating the parameters for the NTS Optional Commodity Charge – Introducing the NTS Optional Capacity Charge*. A more targeted review has been undertaken under the remit of Request 0670R with further discussions taking place in the NTS Charging Methodology Forum (NTSCMF). Pre-Modification discussions have been tabled at Request 0670R and/or the NTSCMF.

3 Why Change?

Background

3.1. The topic of managing inefficient bypass as part of the Transportation Charging Methodology has been extensively discussed during the development of Modifications 0621 (and alternatives), 0678 (and alternatives), 0636 and 0653.

3.2. A more targeted review has been undertaken under the remit of Request 0670R with further discussions taking place in the NTS Charging Methodology Forum (NTSCMF). Pre-Modification discussions have taken place at Request 0670R and/or the NTSCMF.

3.3. This Modification is proposing to include a charging product to the revised methodology to be effective from 01 October 2020 where there is no such product for managing inefficient bypass. Where any relevant comparisons are made to the methodology (the prevailing NTS OCC) that is in place up to and including Gas Year 2019/20 (i.e. Prior to the revised Methodology) this is referenced in the appropriate section.

Consequences if Not Addressed

3.4. If the Charging Methodology does not incorporate measures to address potential bypass of the NTS in the circumstances described, there will likely be more active consideration of bypass of the NTS.
In some instances, doing so could reduce transportation charges significantly for selected Users, resulting in large savings over a relatively short period of time for such points.

3.5. Should the relevant consumers elect to bypass the NTS, large volumes could be lost from the NTS whilst the Maximum Allowed Revenue (MAR) nevertheless remains unchanged. This could create a significant increase in charge rates for all remaining Users of the NTS, with no contribution towards this revenue from those electing to bypass.

Analysis shows that this could mean socialisation of up to a combined 24.4% of Transmission Operator (TO) costs and System Operator (SO) costs based on the prevailing NTS OCC (prior to the revised methodology), spread over both Entry and Exit Users:

	Prevailing NTS OCC
OCC Contribution	£28,695,987.33
Potential TO Socialisation	£97,559,664.09
SO Socialisation	£57,983,030.86
Total as % of MAR	24.4%
Routes Considered	37
Max Effective Rate Discount	99.3%
Longest Route Considered	244.0

3.6. Details of these calculations can be found in the Appendix, paragraph 1106 onwards.

3.7. Incentivising those points genuinely at risk of bypassing to continue to use the NTS would create some additional costs for other Users, but these should be less than the figures possible should there be no incentive put in place and this demand be 'lost' from the NTS along with contributions towards Allowed Revenue collection.

3.8. With any arrangement that results in a discounted treatment for some Users, the amount of the 'discount' or benefits realised will adjust other charges. This can often be referred to as a cross subsidy, given it results in an amount not paid by some, and picked up by others. As a result, the level of this redistribution should also play a part in the assessment of the Modification. The level of redistribution should always be kept under review and should it become necessary to update any element of the method outlined in this Modification, it would be via a UNC change at the appropriate time.

Impacts and Considerations

3.9. Ultimately a network User's primary driver, as to whether to remain on the NTS or bypass the network entirely, will be based on which option is more cost effective for their business. This decision will take in to account the up-front capital expenditure for construction and/or commissioning of a pipeline, potentially lengthy planning and construction times, cost of use of the NTS during that period, and long-term operational expenses including upkeep and maintenance of the asset. This would be compared with the Transportation Charges related to alternatively accessing and using the NTS. This decision would likely consider the less easily quantifiable advantages inherent in remaining connected to the NTS such as security of supply and access to the National Balancing Point (NBP).

3.10. In practice, bypassing the network requires a single pipeline from Entry point to Exit point, the planning, development and construction of which could take months or years in some instances. As an indication of timescales, the current Planning and Advanced Reservation of Capacity Agreement (PARCA) process sets timescales between 12 and 90 months (between 1 and 7.5 years).

3.11. It should be noted that any access to the proposed conditional discount would be immediate with immediate benefits, where eligibility and accessibility permits. This is also an advantage in remaining connected to the NTS compared to the process that would lead up to and include building and commissioning and operating a bypass pipeline.

3.12. Those Modification 0678 alternatives which proposed a new charge to avoid the inefficient bypass of the NTS were considered non-compliant with the EU Tariff Code as outlined in Ofgem's minded to decision on Modification 0678 and suite of alternatives.

3.13. One concern highlighted was, amongst other points, Users potentially being able to take advantage of some preferential charges, regardless of whether a genuine consideration is bypass of the NTS. Under the NTS OCC this issue is also seen whereby, the uptake of the product, in combination with the impacts and interactions in the Charging Methodology results in a disproportionate use over its intended usage and resulting in unrealistic distances for a potential bypass.

3.14. Therefore, National Grid proposes that both the charge rate, and more importantly eligibility for a new product, must be more informed by the risk of bypass. National Grid is of the view that distance between exit and entry point, as well as forecasted volumes, must be accounted for in calculating the potential costs or savings available to those looking to bypass the network. Whilst difficult to quantify, Users should also be aware of the additional benefits described above.

3.15. Industry must also be aware that a reduced rate for some Users does result in an increase to the costs for others. As described above, not replacing the NTS OCC, and affected Users choosing to bypass, would generate significant shortfall in the revenue recovered and so charge rates would increase. Therefore, the methodology for this product must balance the potential loss of demand from the NTS (and the resultant increase in revenue recovery from those remaining connected) with the potential level of cross subsidy due to discounts being provided to those at risk of bypassing the system.

3.16. National Grid acknowledges that some level of socialisation is required to suitably incentivise Users to remain connected to the NTS and avoid the potentially larger costs associated with the loss of large volumes of demand from the NTS. Nonetheless, National Grid also recognises the need to target only those points where a risk is clear and present, in particular those Users who have situated their businesses near an Entry point.

3.17. Socialisation of some costs and charges can typically be a feature of a regime with multiple Users and specific access arrangements. Where discounts or alternative charges are a feature (e.g. the Storage discount to Transmission Services (TS) capacity reserve prices in the revised Methodology, Storage exemption from General Non-Transmission Services (Gen Non-TS) Commodity charges or the Interruptible Discount to TS capacity reserve prices) they result in amounts effectively not levied on some Users and paid for by others. Providing these further the relevant objectives these can be viewed as positive when applied in the overall methodology.

Recent Developments

3.18. A critique of the previous NTS Charging Methodology undertaken as part of the Gas Transmission Charging Review identified that it is too volatile, unpredictable and does not provide stability of charges for Users. The revised Methodology produces stable and predictable transportation charging and is compliant with EU Tariff Code (Regulation 2017/460). Under the revised Methodology the NTS OCC will cease with effect from 01 October 2020.

3.19. Despite the absence of a mechanism to dis-incentivise inefficient bypass of the NTS in the revised Methodology, National Grid NTS recognises that there remains an enduring need for the prospective Charging Methodology to include bespoke charging arrangements to ensure the efficient use of the network, in this case to avoid inefficient bypass of the NTS by large consumers located close to points of entry to the NTS. To facilitate this aspiration, National Grid initiated the review under Request 0670R

to provide a suitable forum to discuss and consider outside of the main charging developments under Modification 0678.

3.20. Through Request 0670R several options have been discussed. Following the minded to position from Ofgem on Modification 0678 and alternatives on 23 December 2019, National Grid discussed a new conditional discount proposal for managing inefficient bypass through the Charging Framework at workgroups held in the first quarter of 2020. This sought to address issues presented in this minded to position in addition to the issues highlighted above.

3.21. This Modification proposes to change the UNC that will be effective from 01 October 2020.

Overview of the Proposed Solution

Conditional Discount for Firm Utilised Capacity

3.22. This Modification, raised following development within Request 0670R, is designed against the baseline of the revised Methodology which will take effect from 01 October 2020.

3.23. For the Eligible Quantity (EQ) (which will have an Eligible Entry Quantity and an Eligible Exit Quantity), over a qualifying nominated route (an Entry point and an Exit point), as per the Licence, there will be a discount to Transmission Services Entry and Exit Capacity reserve prices. The level of discount will vary dependent on distance, reducing as distances increase up to a maximum distance. A maximum and minimum discount have been developed along with eligibility and access criteria. Any capacity or flow above the Eligible Quantity will pay the standard charges.

3.24. Transmission Services Entry and Exit Revenue Recovery Charges on capacity bookings remain payable and General Non-Transmission Services Entry and Exit charges remain payable on flows.

3.25. Further details on the specific components are outlined later in this Section 3.

Justification for Aspects of the Solution

Eligibility

3.26. In determining eligibility for the discount, several factors have been considered:

- This product is designed to reduce the risk of bypass for directly connected NTS Users only, therefore Distribution Networks and connections to Distribution Networks are not eligible to use this product. For connections to Distribution Networks, a bypass from an NTS Entry Point to the end DN offtake would therefore bypass both the Transmission and Distribution Networks which is unlikely to be considered. If it were the optimal infrastructure, it could be reasonably assumed it would be part of the DN network (and represented into its funding and regulated revenues) and therefore a bypass to the NTS is not likely to be an active consideration.

  It should also be noted that when considering the party responsible for capacity and flows when it comes to DN offtakes to the NTS, they are different Users. It is not expected these would therefore be able to comparatively assess bypassing the NTS as the DN is responsible for capacity and the Shipper for the flows.

- Storage Sites are, purposefully, embedded within the NTS and so by design, it would be impossible to bypass the NTS. They are therefore not eligible to use this product.

Determining a Discount Curve

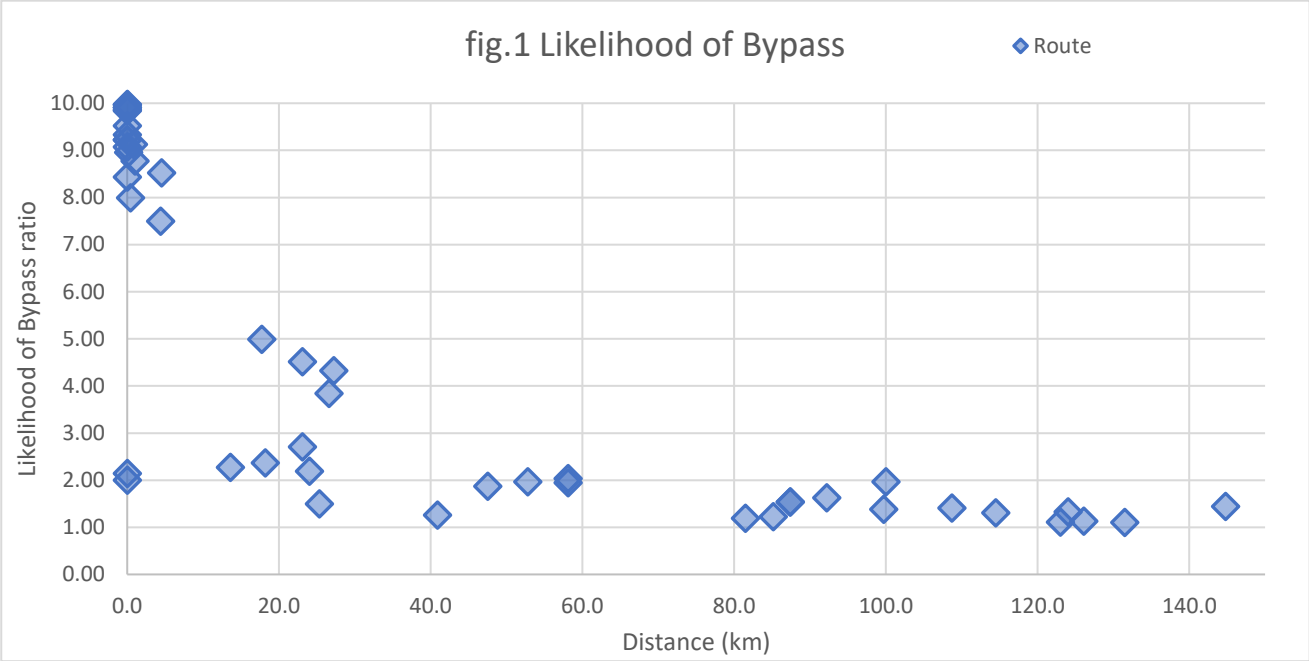
3.27. To attempt to assess the likelihood of bypass National Grid has calculated, for each route combination a set of costs. Using the General Flow Equation; with constants taken from TPD Section Y 2.5.2 in effect up to 30 September 2020, current MNEPOR values, and a combination of straight-line (where available) and pipeline distances taken from the National Grid pipeline data-book, a Pipe Diameter for all potential routes was calculated. The steps taken are detailed in paragraph 1122 onwards of the Analysis and Methodology document included in the Appendix to this Modification.

3.28. Using a formula published by the Council of European Energy Regulators in paper "PROJECT CEER-TCB18 -Pan-European cost-efficiency benchmark for gas transmission system operators – 17.07.2019"[3], timescales inferred from the PARCA process and the costs of using the NTS during construction period under Modification 0678A (where no NTS OCC product exists) a ratio of annualised bypass construction costs vs. NTS costs was calculated. The costs include the costs that would most likely go into the preparation and building of an alternative pipeline. The design of the product is generic in its nature and application and may not consider every possible specific scenario.

3.29. National Grid have not included the operational costs as the NTS operational charges (made predominantly via General Non-Transmission Services Entry and Exit Commodity Charges) are considered to be a good proxy for operational charges for operating a pipeline. This also is consistent with the generic nature of the product and ambitions to keep it simple and proportionate for all those accessing and using the NTS.

3.30. The graph below (fig.1) plots these ratios determined as a measure of build costs versus NTS Charges against the distance between Entry and Exit points to inform the likelihood of bypass. Each marker on the graph represents a route from an Eligible Entry Point to an Eligible Exit Point

[3] https://www.ceer.eu/1767



3.31. The graph demonstrates a curve and suggests a correlation between distance and likelihood of bypass. The highest calculated ratio of bypass costs against NTS usage costs is at 0km, the ratio at that point is 9.973:1, this implies the most likely bypass User, over a ten-year period could achieve an 89.97% reduction on NTS Transmission costs. National Grid has rounded this up to the nearest whole % value, 90%, to inform the Maximum Discount offered under the new proposed arrangement.

3.32. Using a curve, the discount level is scaled down dependent on distance from the Entry point to a minimum of 10% discount. This limit of 10% discount is also informed by the likelihood of bypass, the ratios suggest that no User beyond 17.7km would consider investing the time, effort and capital required to bypass when the benefits over 10 years are not significant.

3.33. The curve used to calculate the discount is an inverse exponential, starting at 90%, the calculated discount without any limitation would run to 0% eventually, but it is proposed to limit the discount to 10%. Below this point (i.e. less than 10% discount), a larger discount is available via the regular interruptible auction and so all Users could find equal or better value outside of the offered bypass avoidance product. It is assumed that the most economic decision would be made by the relevant party to access the lower priced capacity. This therefore informs a 'cut-off' for the distance over which this product is available.

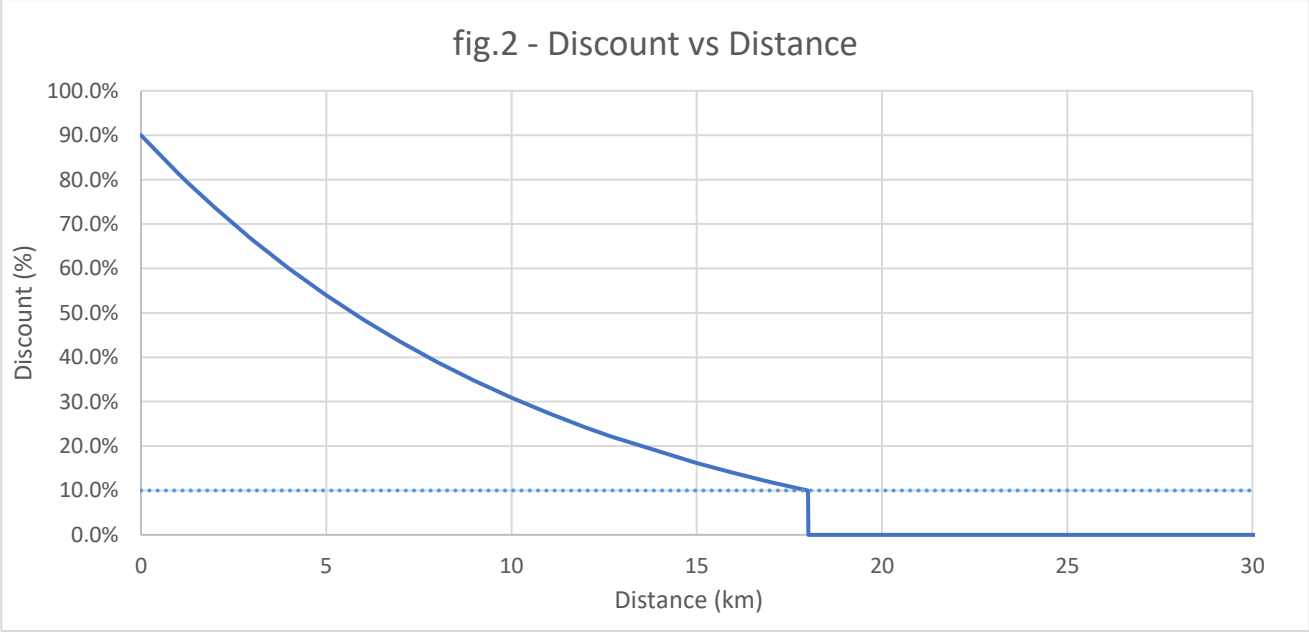
3.34. The maximum distance, or due cross subsidy limitation, is therefore 17.7km. National Grid is proposing to round this up to the nearest whole km, 18km. In order to determine the specific discount, it is proposed to use a curve that matches the inverse exponential curve that provides a higher discount over a small distance. The maximum discount will be 90% as outlined above. As the distance increases, the discount reduces until it reaches 10%. Beyond the maximum distance permitted of 18km, any nomination would be ineligible for the conditional discount.

Applying the discount curve - Route Specific Discount

3.35. The scaling of the Route Specific Discount at any point between 0km and the Due Cross Subsidy Limitation is based on a curve. The curve is designed to peak at 0km with a discount of 90%, and meet the calculated distance cap at 10%. Immediately after this point the discount drops to zero.

$$PCD_r = \left(\left(\frac{1}{IFERROR\left(e^{\left(\frac{1.6094}{CSL}\right)}, 1\right)}\right)^{SLDr}\right) - \left(1 - \left(\frac{MDA}{100}\right)\right)$$

3.36. Using the established guidance points; 90% Max Discount Available (MDA), 10% Minimum Discount Available (which informs the constant: 1.6094) and a distance limitation of 18km, this plots a curve as demonstrated in fig.2 below:



3.37. The Cross Subsidy Limitation (CSL) of 18km could translate to an approximate socialisation of 7.2% of Transmission Services Revenue. This level of socialisation in addition to the distance limitation, will be kept under review over time so that there remains an attractive option for those more likely to consider a bypass and also does not unduly levy too high an impact (i.e. increase) in charges to other Users.

A comparison of the levels of socialisation under the current NTS OCC methodology (if applied to 2020/21 prices) and the socialisation based on the National Grid proposal applied alongside the revised Methodology for the year 2020/21 is provided below:

	Prevailing OCC
OCC Contribution	£28,695,987.33
Potential TO Socialisation	£97,559,664.09
TO Socialisation as % of MAR	12.9%
SO Socialisation	£57,983,030.86
SO Socialisation as % of MAR	7.7%
Total Socialisation as % of MAR	20.6%
Routes Considered	37
Max TS Discount	N/A
Max Gen Non-TS Discount	N/A
Max Effective Rate Discount	99.3%
Longest Route Considered	244.0 km

	NG Discount Proposal
OCC Contribution	£12,599,653.97
Potential TS Socialisation	£54,825,410.84
TS Socialisation as % of MAR	7.2%
Gen Non-TS Socialisation	£0.00
Gen Non-TS Socialisation as	0.0%
Total Socialisation as % of	7.2%
Routes Considered	17
Max TS Discount	90.0%
Max Gen Non-TS Discount	0.0%
Max Effective Rate Discount	61.7%
Longest Route Considered	17.7 km

Details of the 17 routes considered, and those within the limitation which haven't been considered are detailed in the Appendix paragraph 1118.

Eligible Quantity

3.38. The Route Specific Discount will only be applicable in respect of the Eligible Quantity

3.39. The Eligible Quantity (EQ) calculation is fully defined in the Business Rules (Section E) and examples are provided in paragraph 115 of the Analysis & Methodology document in the Appendix. There is potential for a different value for Entry EQ and Exit EQ in the same nominated route.

3.40. In summary, this is based on the minimum of four values (associated to the route requested and the User):

- the Firm* Capacity at Entry
- the Firm* Capacity at Exit
- the Flow at Entry
- the Flow at Exit.

*Firm Capacity includes Obligated and Non-Obligated Firm Capacity

(Appendix Paragraph 1160. Example 1 provides a step through of a basic scenario.)

3.41. It will be assumed that at an Entry Point, Existing Contracts (EC) will be flowed against first, and therefore as Existing Contracts are a fixed price which cannot be changed, any discount will not be applied to Existing Contracts. Only flows above the level of Existing Contracts will become Eligible, providing that there is also enough Firm Capacity in excess of the Existing Contract to match the flows. (See Appendix Paragraph 1160. Example 2)

3.42. Capacity acquired via secondary transfers will not be considered for a discount, this is due to the liability for traded capacity remaining with the initial purchaser rather than transferring to the new holder making it impossible to discount under current trading rules. (See Appendix Paragraph 1160. Example 3)

3.43. For Entry, Capacity acquired via secondary transfers and Existing Contracts under the revised Methodology, whilst ineligible for a discount on the Entry Reserve prices, can be used to calculate a discount to Exit Reserve Prices.

3.44. For Exit, Capacity acquired via secondary transfers, whilst ineligible for a discount on the Exit Reserve prices, can be used to calculate a discount to Entry Reserve Prices.

3.45. Capacity sold via secondary transfers will also adjust the amount available for discount. Should there be transfers out equivalent to firm capacity purchased by that Shipper (as primary capacity, bought directly from National Grid Gas), then these two values offset each-other and no discount is available.

3.46. Where a Shipper has two eligible routes which start at the same Entry Point, the capacity and flow recorded at the Entry Point, will be split between the eligible Exit Points, proportional to the Exit capacity and Exit flows. Existing Contracts will also be apportioned between the two routes to ensure neither routes are disproportionately impacted. (See Appendix Paragraph 1159. Examples 4 and 5)

3.47. For any volumes in excess of the Eligible Quantities, these will pay the standard charges applicable (i.e. non-discounted Transmission Services capacity reserve charges, and any other Transmission Services and Non-Transmission Services Charges).

Application and Disapplication

3.48. Once applied for, a nomination is considered to be enduring and will roll over for each Gas Year unless there is a disapplication.

3.49. A nomination is only valid should it be for a route permitted in the rules for eligibility.

3.50. Should a User wish to change the nominated route they can change the Entry Point flowing to an Exit point for example but cannot revert to the original nominated route within a Gas Year.

3.51. Once a route has been dis-applied for then a User can't nominate that route again in that Gas Year.

3.52. Once on the route, the payable price, for Eligible Quantities will always be the lower of the discounted rate or the "standard" rates.

Review

3.53. It is proposed that the distance established for the purposes of this Modification as the maximum distance eligible, will remain in place until a suitable time for review. National Grid will consider it prudent to continually monitor the uptake and impacts of this *Conditional Product* and propose amendments should it be considered necessary via normal UNC change processes. Examples of what may drive a review may include and not be limited to, assessing the level of cross subsidisation, uptake, any other related modification that may require a change. Any change would follow UNC governance for changes.

3.54. Applications for new routes will be assessed based on the same criteria.

Implementation

3.55. Proposed arrangements need to refer to the effective date as given by any Ofgem direction.

Incorporation / Impacts on other charges

3.56. Where possible, any anticipated Shortfall in revenues as a result of applying this conditional discount will be accommodated into the Reference Price Methodology in determining the reference prices to apply for the tariff year.

3.57. Transmission Services Revenue Recovery Charges, when set or updated, will also take into account the anticipated and actual recovery of revenues from the conditional discount product.

Revenues

3.58. Transmission Services Allowed Entry and Exit Revenues will be calculated as per the revised Methodology. The revenue collected from the conditional discount will go towards the Transmission Services Entry or Exit collection. As the charges for eligible quantities will be discounted capacity charges, they remain capacity revenue to be collected as part of the Transmission Services Revenues.

4 Code Specific Matters

Reference Documents

UNC Request 0670R: https://www.gasgovernance.co.uk/0670

EU Tariff Code (Regulation 2017/460): https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017R0460

UNC Modification Proposal 0678 and Alternatives: https://www.gasgovernance.co.uk/0678

NTS Optional Commodity Charge (NTS OCC) Methodology (Part A1 of UNC TPD Y) effective to 30 September 2020: https://www.gasgovernance.co.uk/TPD

Gas Transmission Charging Review (GTCR) and associated update letters: https://www.ofgem.gov.uk/gas/transmission-networks/gas-transmission-charging-review

Customer and Stakeholder Objectives developed within NTSCMF: http://www.gasgovernance.co.uk/ntscmf/060916

Knowledge/Skills

An understanding of Request 0670R, Modification 0678 (and alternatives), UNC TPD Section Y Part A, the EU Tariff Code, Gas Transmission Charging Review (GTCR) documentation and the customer / stakeholder objectives developed within NTSCMF would be beneficial.

5 Solution

A. Introduction

1. These Business Rules describe the scope of, eligibility for, and calculation of, a Conditional Discount for Avoiding Inefficient Bypass of the NTS, which incorporates within the NTS Charging Methodology a conditional discount as a means of dis-incentivising inefficient bypass of the NTS.

2. These rules have been developed to form the solution for UNC Modification Proposal '*Introduction of a Conditional Discount for Avoiding Inefficient Bypass of the NTS*' (version 1.0). These rules do not constitute legal text.

B. Definitions

3. '**CDSP**' means the Central Data Services Provider;

4. '**Direct Connect**' or '**DC**' means an Exit Point from the National Transmission System (NTS) which does not comprise a Storage Connection Point or an Offtake to a Distribution Network;

5. '**Distance Matrix**' means the document owned and maintained by National Grid that specifies the straight-line distances in km (to an accuracy of one decimal place) between Entry Points and Exit Points on the National Transmission System;

6. '**Entry Point**' means an Aggregate System Entry Point as defined in the Uniform Network Code;

7. '**Exit Point**' means NTS Exit Point as defined in the Uniform Network Code;

8. '**Existing Contracts**' means capacity procured (for an Entry Point) prior to 6th April 2017 (for the avoidance of doubt, the capacity purchased may apply in respect of a day or days following this specified date). In respect of adjustments (including trades) to available Entry Capacity, where the adjustment is executed:

   8.1. up to and including 5th April 2017, the Capacity will be treated as Entry Capacity procured via Existing Contracts; or

   8.2. subsequent to the 5th April 2017, the Capacity will not be treated as Entry Capacity procured via Existing Contracts.

9. '**Firm Entitlement**' means, in the context of Entry capacity or Exit capacity, all Firm capacity (including any Existing Contracts) prior to adjustments for all Secondary Transactions;

10. '**Forecasted Contracted Capacity**' or '**FCC**' means the forecast capacity booked at an Entry Point or and Exit Point (for the forthcoming gas year) excluding Existing Contracts. The FCC for an Entry Point or an Exit Point will be equal to a forecast value determined by National Grid taking account of capacity booking trends observed at respective Entry Points and Exit Points as specified in the FCC Methodology.

11. '**Net Firm Entitlement**' means, Firm Entitlement adjusted for all Secondary Transactions and, for the avoidance of doubt, excluding all Interruptible Capacity;

12. '**PARCA**' means a Planning and Advanced Reservation of Capacity Agreement;

13. '**Premium Price**' means the difference between the allocated (final) price and the Reserve Price in the relevant auction or as specified in the relevant PARCA agreement;

14. '**Reserve Price**' means the price for a capacity product (p/kWh/d) following the application of any adjustments;

15. '**Secondary Transactions**' means:

   15.1. 'acquiring' and 'disposing' capacity trades (System Capacity Transfer as per UNC TPD section 5.1);

   15.2. long term use it or lose it (withdrawal of capacity by National Grid as per UNC EID section B8);

   15.3. Congestion Management Procedure (CMP) surrender (Surrender as per UNC EID section B7);

   15.4. rolling monthly surrender (Surrendered NTS Entry Capacity as per UNC TPD section B2.3); and

   15.5. buybacks (Surrender of NTS Entry Capacity as per UNC TPD Section B2.10).

For the avoidance of doubt, Secondary Transactions do not include assignments (Capacity Assignment as per UNC TPD Section B6) nor EAFLEC decreases (Reduction of Enduring Annual NTS Exit (Flat) Capacity as per UNC TPD section B3.2).

16. '**Transmission Services Target Revenue**' means Transmission Owner (TO) revenue (as determined in the National Grid's Transporter Licence) minus revenue due in respect of NTS Metering activities and DN Pensions Deficit costs and including those charges in respect of NTS Capacity (but not including Overrun Charges) or the surrender of NTS Capacity classified as a component of SO allowed revenue. The Transmission Services Target Revenue will also be reduced by any known revenue associated to Existing Contracts.

C. Product Description and Alternative Charges

17. The Conditional Discount for Avoiding Inefficient Bypass of the NTS ('**Conditional Discount**') is available, in respect of Firm Capacity only, for the relevant routes to derive a discount that will be applied to the standard Transmission Services Capacity Reserve Prices for Entry and Exit (the '**Discounted Reserve Price**'). A route comprises the combination of an Entry Point, an Exit Point and a User. Where the User elects to incur the Discounted Reserve Price, this will be payable in respect of the Entry Eligible Quantity (determined as per paragraph 35) and Exit Eligible Quantity (determined as per paragraph 36) of Transmission Service Entry Capacity and Exit Capacity respectively for the route.

18. The standard Transmission Services Capacity Reserve Prices for:

    18.1. the relevant Entry Point will be payable for any Entry Capacity registered at the Entry Point in excess of the Entry Eligible Quantity; and

    18.2. the relevant Exit Point will be payable for any Exit Capacity registered at the Exit Point in excess of the Exit Eligible Quantity.

19. The Discounted Reserve Price in respect of Entry Capacity (DRP_{En}) is determined using the following formula:

$$DRP_{En} = RP_{En} \times \frac{100 - CD_r}{100}$$

where:

RP_{En} means the standard Reserve Price for firm Entry Capacity (in respect of the relevant Eligible Entry Capacity Tranche as defined in paragraph 35.3) as determined pursuant to the Charging Methodology.

CD_r means the percentage value of the Conditional Discount (rounded to the nearest whole number) for the relevant route determined as per paragraph 34.

20. The Discounted Reserve Price in respect of Exit Capacity (DRP_{Ex}) is determined using the following formula:

$$DRP_{Ex} = RP_{Ex} \times \frac{100 - CD_r}{100}$$

where:

RP_{Ex} means the standard Reserve Price for firm Exit Capacity (in respect of the relevant Eligible Exit Capacity Tranche as defined in paragraph 36.3) as determined pursuant to the NTS Charging Methodology.

CD_r means the percentage value of the Conditional Discount (rounded to the nearest whole number) for the relevant route determined as per paragraph 34.

21. The values DRP_{En} and DRP_{Ex} will be rounded to 10 decimal places where the relevant point is an Interconnection Point and 6 decimal places where the relevant point is not an Interconnection Point.

22. As the Conditional Discount represents a discount only to the Transmission Services Reserve Price for capacity, any Premium Price remains payable in full.

23. For the avoidance of doubt:

    23.1. any capacity overrun charges will be calculated using the standard Transmission Services Capacity Reserve Prices for the relevant Entry Point or Exit Point; and

    23.2. all other charges (where relevant) will remain payable including the General Non-Transmission Services Charges and any Transmission Services Revenue Recovery Charges.

Duration

24. The election to incur the Discounted Reserve Price (as a consequence of the application of the Conditional Discount) will be enduring until:

    24.1. the relevant User makes a valid Dis-application in accordance with paragraph 46; or

    24.2. the point at which the relevant User is no longer a Registered User at the specified Exit Point; or

    24.3. a Periodic Review (undertaken as per paragraph 51) or recalculation undertaken as per paragraph 52 determines that the Conditional Discount (CD_r) for the relevant route is 0%.

Interaction with Charging Methodology

25. National Grid will forecast the extent of all Users elections to incur the Discounted Reserve Price for the forthcoming Gas Year. The net impact (of this forecast) on the aggregate amounts of Transmission Services Revenue which National Grid NTS estimates would be earned in the Gas Year will be taken into account (where practicable) as follows:

    25.1. (except for the Gas Year Commencing 1st October 2020) when assessing the Entry Revenue Scaling Factor and Exit Revenue Scaling Factor for the relevant Gas Year; otherwise

    25.2. will be taken into account in the determination of Transmission Services Revenue Recovery Charges for the relevant Gas Year.

D. Route Eligibility

26. Whereas one Eligible Entry Point (see paragraph 27) can be associated with more than one Eligible Exit Point (see paragraph 28), it is not permitted for a single User to associate more than one Eligible Entry Point to an individual Eligible Exit Point.

Entry Points

27. The following Entry Point types (as listed in National Grid's Transporter Licence, Special Condition 5F.27, Table 4B) are '**Eligible Entry Points**':

    27.1. Beach Terminal;

    27.2. Biomethane Plant;

    27.3. Interconnection Point;

    27.4. LNG Importation Terminal; and

    27.5. Onshore Field

Exit Points

28. The following Exit Point types (as listed in National Grid's Transporter Licence, Special Condition 5G.31, Table 8) are '**Eligible Exit Points**':

    28.1. DC ('Direct Connect'); and

28.2. Interconnector.

E. Determination of Discount

29. The sequential steps detailed below are applied in order to derive the percentage point value of the Conditional Discount (the term CD_r as applied in paragraphs 19 and 20) for the relevant route.

Minimum and Maximum Allowed Discount

30. The minimum discount available at the Due Cross Subsidy Limitation (see paragraph 32) is 10%.

31. The Maximum Discount Available (MDA) for a straight-line distance of zero is 90%.

Due Cross Subsidy Limitation

32. The value, CSL, will be set at 18km. This figure will be reviewed in line with paragraph 51 to ensure it remains appropriate over time.

Route Specific Discount

33. The Provisional Conditional Discount (PCD_r) for the relevant route will be determined by application of the following formula:

$$PCD_r = \left(\left(\frac{1}{IFERROR\left(e^{\left(\frac{1.6094}{CSL}\right)}, 1\right)} \right) \wedge SLDr \right) - \left(1 - \left(\frac{MDA}{100}\right)\right)$$

where:

CSL means the Due Cross Subsidy Limitation determined in accordance with paragraph 32; and

MDA means the Maximum Discount Available determined in accordance with paragraph 31;

SLD_r means the Route Straight-line Distance.

34. The Conditional Discount (CD_r) for the relevant route will be equal to the Provisional Conditional Discount (PCD_r) unless the Provisional Conditional Discount is less than 10% in which case the Conditional Discount will be equal to zero.

Eligible Quantities

35. The Entry Eligible Quantity (EQ_{En}) for which the Discounted Reserve Price applies will be determined per route, in respect of each day as follows:

$$EQ_{En} = Min(IEQ_{En}, AQ_{En})$$

where:

IEQ_{En} means the Initial Eligible Quantity at Entry determined in accordance with paragraph 35.1; and

AQ_{En} means the Apportionment Quantity at Entry determined in accordance with paragraph 35.2;

35.1. The Initial Eligible Quantity at Entry (IEQ_{En}) will be determined each day as follows:

$$IEQ_{En} = Max\big(0, (Min(CAP_{En}, CAP_{Ex}, A_{En}, A_{Ex}) - EC_{En})\big)$$

CAP_{En} means in respect of Entry capacity, the greater of zero (0) and the User's Net Firm Entitlement on the day at the Eligible Entry Point;

CAP_{Ex} means in respect of Exit capacity, the greater of zero (0) and the User's Net Firm Entitlement on the day at the Eligible Exit Point;

A_{En} means the User's gas flow entry allocation on the day at the Eligible Entry Point; and

A_{Ex} means the User's gas flow exit allocation on the day at the Eligible Exit Point; and

EC_{En} means the quantity of Entry Capacity procured via an Existing Contract.

35.2. The Apportionment Quantity at Entry (AQ_{En}) will be determined each day as follows:

$$AQ_{En} = \sum CTQ_{En}$$

where:

$\sum$ means the sum of; and

CTQ_{En} means the quantity of capacity in an Eligible Entry Capacity Tranche at Quantity Holder level as defined in paragraph 35.3.

35.3. An Eligible Entry Capacity Tranche means an Entry Capacity allocation procured or assigned in a single event at a known, uniform price that is not interruptible capacity nor Existing Contract Capacity and is not transacted via Secondary Transactions.

36. The Exit Eligible Quantity (EQ_{Ex}) for which the Discounted Reserve Price applies will be determined in respect of each day as follows:

$$EQ_{Ex} = Min(IEQ_{Ex}, AQ_{Ex})$$

where:

IEQ_{Ex} means the Initial Eligible Quantity at Exit determined in accordance with paragraph 36.1; and

AQ_{Ex} means the Apportionment Quantity at Exit determined in accordance with paragraph 36.2.

36.1. The Initial Eligible Quantity at Exit (IEQ_{Ex}) will be determined each day as follows:

$$IEQ_{Ex} = Min(CAP_{En}, CAP_{Ex}, A_{En}, A_{Ex})$$

CAP_{En} means in respect of Entry capacity, the greater of zero (0) and the User's Net Firm Entitlement on the day at the Eligible Entry Point;

CAP_{Ex} means in respect of Exit capacity, the greater of zero (0) and the User's Net Firm Entitlement on the day at the Eligible Exit Point;

A_{En} means the User's gas flow entry allocation on the day at the Eligible Entry Point; and

A_{Ex} means the User's gas flow exit allocation on the day at the Eligible Exit Point.

36.2. The Apportionment Quantity at Exit (AQ_{Ex}) will be determined each day as follows:

$$AQ_{Ex} = \sum CTQ_{Ex}$$

where:

$\sum$ means the sum of; and

CTQ_{Ex} means the quantity of capacity in an Eligible Exit Capacity Tranche at Quantity Holder level as defined in paragraph 36.3.

36.3. An Eligible Exit Capacity Tranche means Exit Capacity allocation procured or assigned in a single event at a known, uniform price that is not interruptible capacity and is not transacted via Secondary Transactions.

37. Where a User specifies a single Entry Point as the relevant Entry Point for more than one route (i.e. in respect of more than one Exit Point):

37.1. the Entry Capacity (CAP_{En}) for the relevant route will be equal to the User's Entry Capacity at the ASEP pro-rated on the basis of the Exit Capacity quantity as a proportion of the aggregate of the Exit Capacity quantities (for which the Entry Point is the relevant Entry Point for the nominated routes);

37.2. the quantity of Entry Capacity procured via an Existing Contract (EC_{En}) for the relevant route will be the equal to the User's Entry Capacity procured via an Existing Contract at the ASEP pro-rated on the basis of the Exit Capacity quantity as a proportion of the aggregate of the Exit Capacity quantities (for which the Entry Point is the relevant Entry Point for the nominated routes);

37.3. the Entry Allocation (A_{En}) for the relevant route will be the equal to the User's Entry Allocation at the ASEP pro-rated on the basis of the Exit Allocation quantity as a proportion of the aggregate of the Exit Allocation quantities (for which the Entry Point is the relevant Entry Point for the nominated routes);

37.4. the Apportionment Quantity (AQ_{En}) for the relevant route will be the equal to the User's Apportionment Quantity pro-rated on the basis of the Exit Capacity quantity as a proportion of the aggregate of the Exit Capacity quantities (for which the Entry Point is the relevant Entry Point for the nominated routes);

38. For the purposes of determining the apportionment of:

38.1. Entry Eligible Quantity between Eligible Entry Capacity Tranches, the Eligible Entry Quantity will be pro-rated on the basis of the Eligible Entry Capacity Tranche capacity quantity as a proportion of the aggregate of the Eligible Entry Capacity Tranche capacity quantities; and

38.2. Exit Eligible Quantity between Eligible Exit Capacity Tranches (that may have been procured at different unit rates i.e. p/kWh/d), the Eligible Exit Quantity will be pro-rated on the basis of the Eligible Exit Capacity Tranche capacity quantity as a proportion of the aggregate of the Eligible Exit Capacity Tranche capacity quantities.

F. Application and Dis-application Process

39. A User can elect to incur the Discounted Reserve Price by making a valid Application to the CDSP via the Supply Point Nomination and Confirmation process or Supply Point Amendment process (or the equivalent notification for Interconnection Points).

40. A valid Application in respect of a route must:

40.1. specify one Eligible Entry Point and one Eligible Exit Point;

40.2. have a Route Straight-line Distance (SLD_r) that is within the Due Cross Subsidy Limitation (as per paragraph 32);

40.3. not specify a route already elected by the applicant User previously within the Gas Year; and

40.4. not specify an alternate Entry Point where the Exit Point has already had a valid Application within the Gas Year from that applicant User.

41. The Application will be validated against the criteria in paragraph 40 and a response will be issued to the User by the CDSP within two Supply Point Systems Business Days of receipt of the Application. This response will either be:

41.1. rejection of the Application (specifying a reason); or

41.2. notice of referral of the Application to National Grid; or

41.3. a Conditional Discount offer (or the equivalent notification for Interconnection Points) quoting a Conditional Discount value for the relevant route which will be valid for a period of six-months from the date of the Conditional Discount offer.

42. Where a valid Application is referred to National Grid (as per paragraph 41.2), a response will be issued to the User by the CDSP following the CDSP's receipt of the response to the referral from National Grid. This response will be that specified in either paragraph 41.1 or paragraph 41.3.

43. The User is entitled to dispute the Route Straight-line Distance utilised by National Grid to determine the Conditional Discount by submitting a new Application with an alternative six-figure grid reference for the Eligible Exit Point with supporting evidence. The CDSP will respond accordingly in line with paragraph 41**Error! No bookmark name given.**.

44. User acceptance of a Conditional Discount offer (or the equivalent notification for Interconnection Points) issued in response to a valid Application must be confirmed (or the equivalent notification for Interconnection Points) by the User. It must specify a requested Effective Date which is between five and thirty Supply Point Systems Business Days after the date of receipt of the Conditional Discount offer (or the equivalent notification for Interconnection Points).

45. Once a confirmation (or the equivalent notification for Interconnection Points) has been accepted, the Conditional Discount becomes active on the Effective Date.

46. A User which has elected to incur the Discounted Reserve Price may withdraw this election by making a valid Dis-application to the CDSP via the Supply Point Nomination, Confirmation or Supply Point Amendment process (or the equivalent notification for Interconnection Points). From the effective date of this withdrawal, the standard Transmission Services Capacity Reserve Price will become payable.

47. A valid Dis-application must specify a requested withdrawal date which is between five and thirty Supply Point Systems Business Days following the date of receipt the Dis-application.

48. In making a Dis-application, the User acknowledges and accepts that withdrawal of the election for the relevant route will prevent (within the same Gas Year):

48.1. re-application for the same route; and

48.2. an application for a new route based on the same Exit Point with an alternative Entry Point.

49. The Dis-application will be validated against the criteria in paragraph 47 and a response will be issued to the User by the CDSP within two Supply Point Systems Business Days of receipt of the Dis-application. This response will either be rejection of the Dis-application (specifying a reason) or confirmation of the withdrawal date.

50. For the avoidance of doubt, a route, the combination of Entry Point, Exit Point and User, can only be elected once per Gas Year. A User may apply, and withdraw within-year, but would not be permitted to reapply for the same route unless the requested effective date is in the following Gas Year.

G. Periodic Review and Price Change Notification

51. National Grid will undertake a Periodic Review of the Conditional Discount mechanism to:

    51.1. assess all new and existing Entry Points and Exit Points based on updated information, point classifications, new points and updated FCC values;

    51.2. assess whether any Entry Points or Exit Points are no longer Eligible due to changes in site type or status;

    51.3. assess the suitability of the Due Cross Subsidy Limitation (CSL_y)

52. National Grid will recalculate Conditional Discounts annually and issue a Price Change Notification to the relevant Users (by 01 August) specifying the updated Conditional Discount value and, where appropriate, advise Users of routes which no longer qualify for a Conditional Discount. In respect of the latter, the relevant Users election for the Conditional Discount will be automatically removed with effect from 1st October (with a notice to this effect issued to the User by the second Supply Point Systems Business Day prior to this date).

53. The recalculation referred to in paragraph 52 will take place prior to 1st May each year.

54. The CDSP will issue an annual reminder to the relevant Users that the Conditional Discount will continue to apply in following Gas Year unless a valid Dis-application is submitted by the User.

H. Implementation (including transition)

55. The first day from which the Discounted Reserve Price can be levied is the first day from which new charges (applied pursuant to implementation of the revised Methodology and subject to direction to implement this Modification) are applied (the '**Earliest Charge Commencement Date**').

56. Implementation of the new UNC rules regarding the Conditional Discount will take effect in time to allow for the following to be completed ahead of the Earliest Charge Commencement Date:

    56.1. the processing of Applications for the Discounted Reserve Price (providing sufficient notice for the Discounted Reserve Price to be levied from the Earliest Charge Commencement Date).

I. Invoicing

57. Capacity Charges levied at the Discounted Reserve Price will be invoiced and payable in accordance with UNC TPD Section S.

6 Impacts & Other Considerations

Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

None

There could be some topics of discussion which may be discussed under Request 0705R[4] - The Capacity Access Review, based on the outcome of this modification.

Consumer Impacts

There is likely to be impact on different consumer groups (e.g. those directly connected to the NTS who may not be a Shipper, Shippers, Distribution Networks, and ultimately end consumers). Due to the nature of potential bypass, in some circumstances it may not be a Shipper who would bypass and the charging relationship for capacity (and the responsibility to nominate for the conditional discount) remains with the Shipper.

It should be noted that the allowed revenue collected by National Grid NTS will not change, only the parties that pay and in what quantity. The Gas Transportation Charges recover a set amount of monies from Users of the NTS and these allowed revenues are determined in line with National Grid's Licence. This Modification is proposing a set of changes whereby it places the most appropriate levels of charges on those accessing and using the NTS, this Modification also considers those where it may be more likely to bypass the NTS.

This Modification provides a discounted transportation charge for relevant Users at a subset of Exit points (fulfilling the relevant criteria) that will essentially require the value of the discount to be recovered from Users at those points *not* electing to or not in a position to incur the Conditional Discount. This will seek to ensure that in a given Formula Year, the actual revenue recovered by National Grid is as close as possible to its allowed revenue by appropriate adjustments to the Scaling Factor, thereby minimising the value of any Revenue Recovery Charges.

The precise nature of how the User recovers the transportation charges it pays to National Grid NTS is dependent upon the downstream contractual arrangements Users have in place with their various counterparties. This may vary between individual Users.

Due to the complex arrangements highlighted above, it is prudent from National Grid's perspective to highlight the general picture for the impacts. This high-level impact is highlighted in Section 3 and the analysis contained in the Appendix (paragraph 22). If any changes proposed impact the commercial arrangements between parties this will be for them to consider and how charges are ultimately levied to their customers.

Cross Code Impacts

None

EU Code Impacts

EU Tariff Code compliance (in respect of the proposed Conditional Discount) is considered as part of this Modification. Please see Section 7 Relevant Objectives.

Central Systems Impacts

There will be impacts on Gemini and UK Link invoicing systems. These impacts are being assessed.

[4] https://www.gasgovernance.co.uk/0705

7 Relevant Objectives

Impact of the modification on the Relevant Objectives:

Relevant Objective	Identified impact
a) Efficient and economic operation of the pipe-line system.	None
b) Coordinated, efficient and economic operation of (i) the combined pipe-line system, and/ or (ii) the pipe-line system of one or more other relevant gas transporters.	None
c) Efficient discharge of the licensee's obligations.	Positive
d) Securing of effective competition: (i) between relevant shippers; (ii) between relevant suppliers; and/or (iii) between DN operators (who have entered into transportation arrangements with other relevant gas transporters) and relevant shippers.	Positive
e) Provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards… are satisfied as respects the availability of gas to their domestic customers.	None
f) Promotion of efficiency in the implementation and administration of the Code.	None
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.	None

Demonstration of how the Relevant Objectives are furthered:

c) Efficient discharge of the licensee's obligations.

The proposed changes to the UNC support the implementation of the new NTS Conditional Discount. Standard Special Condition A5(5) of the NTS Licence sets outs the relevant methodology objectives and National Grid NTS believes that these objectives are better facilitated for the reasons detailed below (Relevant Charging Methodology Objectives: Demonstration of how the Relevant Objectives are furthered)

d) Securing of effective competition between relevant Shippers;

The proposed changes to the UNC support the implementation of the new NTS Conditional Discount. To the extent that this charge is expected to provide an incentive for large consumers located close to NTS points of entry to utilise (or continue to utilise) the NTS, thereby enhancing effective competition.

Impact of the modification on the Relevant Charging Methodology Objectives:	
Relevant Objective	Identified impact
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;	Positive
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;	Positive
b) That, so far as is consistent with sub-paragraph (a), the Charging Methodology properly takes account of developments in the transportation business;	Positive
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	Positive
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).	None
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.	Positive

This Modification proposal does not conflict with:

(i) Paragraphs 8, 9, 10 and 11 of Standard Condition 4B of the Transporter's Licence; or

(ii) Paragraphs 2, 2A and 3 of Standard Special Condition A4 of the Transporter's Licence;

as the charges will be changed at the required times and to the required notice periods.

Demonstration of how the Relevant Objectives are furthered:

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;

The discussions under Request 0670R identified that it would be beneficial to have a product that helps manage potential inefficient bypass through the charging framework. Request 0670R is not closed at the time of this Modification. However, National Grid expects this Modification will form the basis of further discussions on managing inefficient bypass via charging through industry discussions into the future.

Relevant Charging Methodology objective (a) is furthered by the introduction of a product that assists in providing an option to those more likely to consider a bypass of the NTS. This therefore provides a Charging Framework that is to the benefit of all Users by providing the infrastructure to access and use, maximising its use for all parties, limiting any additional costs (i.e. bypass costs) passing into the market and ultimately on to consumers. It also minimises the levels of charges associated to revenues that would still be charged via Transportation Charges for any potential underutilised parts of the network (as a result of bypass). Therefore, this is more 'cost-reflective' as it does provide an option over a bypass thereby, should parties continue to use the NTS, they contribute towards the NTS Costs and therefore do not result in the whole amount (i.e. If they did bypass and not contribute to the NTS at all, all costs would be socialised) being levied on other Users.

b) That, so far as is consistent with sub-paragraph (a), the Charging Methodology properly takes account of developments in the transportation business;

The proposed methodology relating to Transmission Services considers developments which have taken place in the transportation business, in particular that the network is no longer expanding.

The product proposed uses more up to date costing assessments from a recent CEER review and publication. It also takes on board elements from PARCA timelines to help inform the build period.

In putting this product in place, with more up to date costs and that provides an even level of access, this considers the updated Charging Framework to be delivered under the revised Methodology and also how the network is accessed and used. This provides an alternative to bypass for those within a specific distance informed by several factors, where it is economic to do so.

This, National Grid believes takes into account the changing nature of how Users wish to access the NTS, and a desire to make the NTS an attractive option for those who may be more likely to consider a bypass, to use the existing NTS infrastructure.

Given the nature of cross subsidies inherent with any methodology that affords some discounts or alternative treatment (e.g. exemptions) this is also a factor that needs to be reflected on. Any amount, effectively not charged on one User, will be borne by another. In the case of the conditional discount the amount of the discount is by default levied on those ineligible (save for the use of Non-Transmission Charges, where applicable). By limiting the level of this amount, this provides a well-used NTS, competition amongst Users and avoids potential costs being levied. These could include charges to recover the revenues associated to the potentially underutilised part of the network (in the event of a bypass) onto those who will pay NTS Transportation Charges. It could also include any costs of a bypass that, would in some way be charged to a set of consumers in the wider market. By striking the balance with the application of the conditional discount this minimises any undue levels of charging levied onto those ineligible for this product.

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

This Modification recognises the different Users of the NTS. Some Users, particularly those with direct or indirect links to the direct connections to the NTS that are near to an Entry Point, may actively consider a bypass to the NTS if it is, all things considered, economic and commercially preferable to do so. This Modification, which builds on the UNC baseline, would put in place a methodology for those Users who are considered more likely to bypass the NTS and provide an option to use the NTS in place of a bypass pipeline.

This option is available for them to factor into decision-making processes as it would not be the only consideration in a bypass decision. This Modification therefore furthers this objective as it provides an option for those Users who are more likely to consider a bypass based on costs and payback periods versus Transportation charges. It will therefore provide effective competition on access and use of the NTS. This Modification assumes that any discount does make its way to the end consumer, who may pay for access to the NTS via a Shipper.

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.

National Grid believes that this Modification is also compliant with EU Tariff Code Article 4 (2) which states “Transmission tariffs may be set in a manner as to take into account the conditions for firm capacity products.”. This product represents a Transmission Service and the conditional discount is on utilised firm capacity only. Any unutilised firm and any non-firm capacity is ineligible for a discount. This also does not

create any undue cross subsidy for other Users with the use of limiting factors such as the accessibility and eligibility of the product and that if the capacity is not utilised then there is no discount.

8 Implementation

Implementation dates will ideally be such as to maintain an appropriate mechanism within the NTS Charging Methodology to dis-incentivise bypass of the NTS, in practice this will be achieved by a seamless transition between the existing NTS Optional Commodity Rate and the Conditional Capacity Charge Discount advocated by this Modification. Implementation is proposed to therefore take effect concurrent with the introduction of the revised Methodology, i.e. 01 October 2020, however implementation will be in line with any Ofgem direction.

9 Legal Text

Text Commentary

Legal text commentary is provided by National Grid and is to be published alongside this Modification.

Text

Legal Text is provided by National Grid and is to be published alongside this Modification. The Proposer has considered the Legal Text and is satisfied that it meets the intent of the Solution.

Legal text provided here: https://www.gasgovernance.co.uk/0728/text

The Proposer has undertaken that the Legal Text will be available and published in time for the beginning of consultation or before.

10 Recommendations

Proposer's Recommendation to the Authority

The Authority is asked to:

- Agree this Modification should be treated as Urgent and should proceed as such under a timetable agreed by the Authority.

11 Appendix

Introduction

1. The following analysis has been completed by National Grid in support of Modification 0728[5]. It is intended to provide additional information regarding analysis and figures quoted in the Modification text.

2. Due to the commercially sensitive nature of NTS Optional Commodity Charge (NTS OCC) data, this analysis could only be undertaken by National Grid. All data corresponding to the existing NTS OCC and any subsequent charges arising from the analysis will be presented at an aggregated level.

3. Where relevant, the analysis uses the Modification 0678 V3.1 CWD Transmission Services - Sensitivity Model[6]. This is an illustrative model and should always be considered as such. It provides support to Modification 0678A and is a sensitivity tool to demonstrate the way in which charges under Modification 0678A would be calculated, and as a result the same consideration should be taken when reviewing this Optional Charge analysis.

4. This analysis is structured in the following way:

   (a) Description of the assumptions that have been made in order to carry out a consistent method of analysis

   (b) Some non-Modification specific analysis, related to actions raised in Review Modification 0670R Workgroup.

   (c) Analysis of optional charge proposed, which consists of:

      i. an assessment of the number of routes applicable

      ii. the potential under recovery of transmission services revenue the specified charges could generate

      iii. the indicative impact this could have on reference and reserve prices for the relevant Reference Price Methodology (RPM) and the same approach on non-transmission charges.

Assumptions

5. In order to carry out the analysis on the prevailing NTS OCC, “Methodology 2” as described in Modifications 0678H/J and the proposal raised in 0728 in a consistent manner, the following assumptions or limitations have been made:

[5] https://www.gasgovernance.co.uk/livemods
[6] https://www.gasgovernance.co.uk/index.php/0678/Models

(a) Users and routes based on NTS OCC historical flows and revenues from October 2017 to September 2018 (Gas Year 2017/18), replicating Gas Year format of the sensitivity tool.

(b) Assessment is undertaken at NTS OCC route level basis, not shipper level.

(c) Assessment is undertaken against Modification 0678A as a base case.

(d) No behavioural changes are assumed. All NTS OCC routes and flows used during Gas Year 2017/18 are considered to use any new optional charge proposed, on the condition the charge is less than the prevailing firm RPM entry and exit prices.

(e) No consideration is given between Users of the proposed optional charges and Users that hold Existing Contracts. Where reference prices are referred to, these are prices from the Sensitivity Model, set to the parameters defined in Modification 0678A and calculated based on Gas Year 2020/21, with any over or under recovery recycled until the initial Revenue Recovery Charge (RRC) is set at zero.

(f) For the purpose of this assessment, the Forecasted Contracted Capacity (FCC) as defined in the FCC Methodology Statement[7] is considered to be 100% accurate.

(g) For the purpose of calculating adjustments within the sensitivity model, perfect foresight of applicable quantities for the optional charge is assumed in order to give indicative reserve price increases to account for optional charge under recovery.

(h) Any further modification specific sensitivity analysis or assumptions are stated where necessary

[7] https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-03/Forecasted%20Contracted%20Capacity%20v1.0.pdf

Comparison of Prevailing and Alternative Products

6. Rates were first calculated by the Sensitivity Tool using parameters defined by Modification 0678A for the gas year October 2020 – September 2021. On this baseline, several scenarios were then run.

7. First, we assessed the impact if all Users of the current NTS Optional Commodity Charge (NTS OCC) bypassed the NTS entirely. While this scenario is not supported by the likelihood of bypass analysis carried out it gives us a useful set of data to validate against.

	Prevailing NTS OCC
OCC Contribution	£28,695,987.33
Potential TO Socialisation	£97,559,664.09
TO Socialisation as % of MAR	12.9%
SO Socialisation	£57,983,030.86
SO Socialisation as % of MAR	7.7%
Total Socialisation as % of MAR	24.4%
Routes Considered	37
Max Effective Rate Discount	99.3%
Longest Route Considered	244.0

8. The 24.4% quoted in the Modification text relates to the total contribution loss of those sites currently using the prevailing NTS OCC, i.e. the total of their contribution under the NTS OCC and the difference between their NTS OCC contributions and the figures they would be paying if no such product existed.

9. Under Modification 0678 and alternatives a number of options for a new Optional Capacity Charge were proposed. Methodology 1 was dismissed as too generous. Methodology 3 was dismissed as too restrictive. Methodology 2 offered a solution which Ofgem described as too generous, but the Minded to Position also offered a potential change to the formula.

10. When discussed by the 0670 Review group it was proposed that the impact on standard Users of the NTS based on Methodology 2 should be compared to an adjusted formula which used FCC rather than MNEPOR.

11. The analysis assumed no changes in behaviour, i.e. only current NTS OCC Users would take up the product, they would not make any significant adjustments to their portfolio to shift capacity or flow between existing Entry or Exit Points.

12. Methodology 2 acts as an alternative charge to both the Transmission and General Non-Transmission charges. It also introduces a Minimum Fee for Users of a route.

13. NTS costs were calculated for all routes based on the Entry and Exit FCCs along with current NTS OCC Throughput, using the Reserve Prices calculated by the Sensitivity tool and General Non-Transmission Charges. It was assumed that Revenue Recovery Charges would be zero.

14. Using the Same FCC and flow values, the charges incurred under the Alternative Charge and Minimum Fee were also calculated.

15. Where the Alternative Charge costs were lower than the standard costs it was assumed that the User would opt for the cheaper of these and use the Optional Capacity Charge.

16. These calculations were repeated based on the adjustment to the formula proposed by the Review group which transplanted FCC for MNEPOR in to stage one of the calculation.

	Prevailing NTS OCC
OCC Contribution	£28,695,987.33
Potential TO Socialisation	£97,559,664.09
TO Socialisation as % of MAR	12.9%
SO Socialisation	£57,983,030.86
SO Socialisation as % of MAR	7.7%
Total Socialisation as % of MAR	24.4%
Routes Considered	37
Max Effective Rate Discount	99.3%
Longest Route Considered	244.0

	0678H/J Baseline	FCC into Stage 1
OCC Contribution	£16,993,934.00	£13,612,172.74
Potential Socialisation (£)	£65,207,293.37	£60,920,174.44
TS Socialisation as % of MAR	8.6%	8.1%
Gen Non-TS Socialisation	£42,648,739.22	£39,072,506.45
Gen Non-TS Socialisation as % of MAR	5.6%	5.2%
Total as % of MAR	14.3%	13.2%
Routes Considered	14	12
Max Effective Rate Discount	97.6%	95.7%
Longest Route Considered	53.0	27.0

17. This Modification sets a distance cap at 18km based on the likelihood of bypass analysis detailed below. The Maximum Discount applied to be applied to Transmission charges will be 90% at 0km. We do not propose to discount General Non-Transmission charges.

	Prevailing NTS OCC
OCC Contribution	£28,695,987.33
Potential TO Socialisation	£97,559,664.09
TO Socialisation as % of MAR	12.9%
SO Socialisation	£57,983,030.86
SO Socialisation as % of MAR	7.7%
Total Socialisation as % of MAR	24.4%
Routes Considered	37
Max TS Discount	
Max Gen Non-TS Discount	
Max Effective Rate Discount	99.3%
Longest Route Considered	244.0

	0678H/J Baseline	NG Discount Proposal
OCC Contribution	£16,993,934.00	£12,599,653.97
Potential TS Socialisation	£65,207,293.37	£54,825,410.84
TS Socialisation as % of MAR	8.6%	7.2%
Gen Non-TS Socialisation	£42,648,739.22	£0.00
Gen Non-TS Socialisation as % of MAR	5.6%	0.0%
Total Socialisation as % of MAR	14.3%	7.2%
Routes Considered	14	17
Max TS Discount		90.0%
Max Gen Non-TS Discount		0.0%
Max Effective Rate Discount	97.6%	61.7%
Longest Route Considered	53.0	17.7

18. Based on this Modification, a distance cut-off at 18km, the routes which fall within the distance are as follows:

Entry Point	Exit Point	Straight-Line Distance (km)	Calculated Discount
Bacton IP	Bacton (BBL)	0.0	90%
Bacton IP	Bacton (Great Yarmouth)	0.0	90%
Bacton IP	Bacton (IUK)	0.0	90%
Bacton UKCS	Bacton (BBL)	0.0	90%
Bacton UKCS	Bacton (Great Yarmouth)	0.0	90%
Bacton UKCS	Bacton (IUK)	0.0	90%
Barrow	Barrow (Black Start)	0.0	90%
Barrow	Roosecote Power Station (Barrow)	0.0	90%
Burton Point	Burton Point (Connahs Quay)	0.0	90%
Hatfield Moor (onshore)	Hatfield Power Station	0.0	90%
Isle of Grain	Grain Power Station	0.0	90%
Moffat (Irish Interconnector)	Moffat (Irish Interconnector)	0.0	90%
St Fergus	Apache (Sage Black Start)	0.0	90%
St Fergus	St. Fergus (Peterhead)	0.0	90%
St Fergus	St. Fergus (Shell Blackstart)	0.0	90%
St Fergus	St_Fergus_Segal	0.0	90%
Teesside	Air_Products (Teesside)	0.0	90%
Teesside	Brine Field (Teesside) Power Station	0.0	90%
Teesside	Phillips Petroleum, Teesside	0.0	90%
Teesside	Seal Sands TGPP	0.0	90%
Teesside	Teesside Hydrogen	0.0	90%
Teesside	Teesside (BASF, aka BASF Teesside)	0.0	90%
Milford Haven	Upper Neeston (Milford Haven Refinery)	0.2	89%
Burton Point	Deeside	0.4	87%
Milford Haven	Pembroke Power Station	0.8	83%
Isle of Grain	Medway (aka Isle of Grain Power Station, NOT Grain Power)	1.0	81%
Burton Point	Harwarden (Shotton, aka Shotton Paper)	1.3	79%
Teesside	Billingham ICI (Terra Billingham)	4.4	58%
Teesside	Enron Billingham	4.4	58%
Teesside	Zeneca (ICI Avecia, aka 'Zenica')	4.4	58%
Isle of Grain	Middle Stoke (Damhead Creek, aka Kingsnorth Power Station)	4.5	57%
Burton Point	Shotwick (Bridgewater Paper)	4.9	55%
Hatfield Moor (onshore)	Eastoft (Keadby Blackstart)	6.7	45%
Hatfield Moor (onshore)	Eastoft (Keadby)	6.7	45%
Hatfield Moor (onshore)	KEADBY_2 PS	10.2	30%
Isle of Grain	Stanford Le Hope (Coryton)	13.6	20%
Hatfield Moor (onshore)	West Burton Power Station	17.7	11%
Easington	Stallingborough	17.7	11%

19. Of these, seventeen routes are considered in this analysis. The other routes which fall within this distance limitation have a zero figure in either Entry Firm FCC, Exit Firm FCC, MNEPOR or current Throughput which will mean the route is not considered in the analysis as no discount would be applicable.

20. The Cross Subsidy figures for considered routes which fall within the distance splits below are as follows:

Distance	Cross Subsidy	% MAR	Cumulative	% MAR
<= 1km	£52,000,208.26	6.87%	£52,000,208.26	6.87%
1km - 5km	£2,414,467.73	0.32%	£54,414,675.99	7.19%
5km - 18km	£441,435.17	0.06%	£54,856,111.15	7.25%

21. The presence of Existing Contracts at Entry, or traded capacity are both Entry and Exit is not considered in this analysis. These volumes can be used to enable discounts at the opposing end of the route they relate to, but will not be considered for Discount themselves, as detailed in the Modification text. As a result, the figures quoted are “worst case”. Over time, the expiry of Existing Contracts and changes to booking and trading behaviours is expected to bring the figures closer to expectation.

22. The impact each of these scenarios could potentially have on the Postage Stamp rates calculated under Modification 0678A is detailed below.

	0678A		Prevailing NTS OCC		0678H/J		FCC Adjustment		Current Proposal	
	Entry	Exit	Entry	Exit	Entry	Exit	Entry	Exit	Entry	Exit
Rate Increase	0.0%		+14.8%		+9.4%		+8.8%		+8.7%	

Likelihood of Bypass

23. In assessing the routes which posed a genuine threat of bypass we have used a set of data published by the Council of European Energy Regulators.[8]

24. From this report, we have taken the formula below as the option presented which "defines better the costs at both ends of the graph, so for small diameters and large diameters":

Pipeline Construction Cost (€/km) = 642.985 D² (") + 2,464.295 D (") + 398,135.326

Where D is the pipe diameter in inches.

25. To calculate the pipe diameter for a range of routes we have used the General Flow Equation as below:

$$D = \left(\frac{10^4}{7.574} * \frac{Q\sqrt{K}}{E}\right)^{0.4} * \left(\frac{Ps}{Ts}\right)^{0.4} * \left(\frac{S * L * Z * T}{P1^2 - P2^2}\right)^{0.2}$$

Where:

D is the pipe diameter in mm (to be converted to inches)

Q is the Flow in mscmd, National Grid has used the current MNEPOR as at 31 January 2020

K is the Friction Factor

E is the Efficiency of the pipe (assumed to be 1.0 for a new, perfectly efficient pipe)

P_s is Standard Pressure

T_s is Pipe Average Temperature

S is the Specific Gravity of Gas

L is the Length of Pipe taken from the Distance Matrix as described below

Z is the Compressibility of Gas

T is Temperature

P_1 is the Inlet Pressure

P_2 is the Outlet Pressure

All constants are taken from the UNC TPD Section Y 2.5.2 - The Expansion Constant, effective to 30 September 2020. The section references the Long Run Marginal Costs and is removed from the UNC as part of the implementation of Modification 0678A.

[8] https://www.ceer.eu/1767

26. This calculation uses two sets of distances. As part of Modification 0678 a Pipeline Distance Matrix was produced, providing point to point distances for all Entry and Exit Points using the NTS. The prevailing NTS Optional Commodity Charge uses a Matrix of Straight-line Distances created for any Entry and Exit Point currently opting to use the NTS OCC product. The use of Straight-line Distance is proposed in Modification 0728 but these distances are not currently available for all sites. In this calculation, we have used the minimum of the distances currently available for each route.

27. For each potential route a pipe diameter in mm was calculated based on the General Flow Equation, the constants held in Section Y prior to implementation of Modification 0678A, the MNEPOR and the Distance as described above.

28. Each calculated diameter has been scaled up to the next available standard pipe diameter as the minimum size of pipe required to supply the Exit Point at the Maximum Daily Offtake Rate.

29. These diameters have been converted from millimetres to inches by dividing by 25.4.

30. This Diameter has been fed in to the CEER equation to produce a cost in EUR for each route.

31. The EUR cost has been divided by 1.1748 to give a cost in GBP based on the currency conversion rate[9] at the time this analysis was produced in January 2020.

32. Separate to this, based on the timescales cited in the PARCA process, approximate construction timescales were calculated for each route based on the distance and the pipe size. The minimum time scale quoted, 12 months, has been attributed to a 0km distance for the smallest standard pipe diameter, 50mm. The longest time scale quoted, 90 months, has been attributed to a 50km section of the largest standard diameter of pipe, 1220mm. Timescales for distances and pipe sizes between these extremes have been scaled accordingly.

33. A construction timescale figure, in whole months, has been calculated for each route.

34. Based on the MNEPOR, Entry & Exit Reserve Prices and construction timescale, a cost of using the NTS during the period the User is constructing their hypothetical bypass pipeline has been calculated.

35. The Pipeline Construction Costs and Interim NTS Usage Costs have been combined to give a figure for the route. Assuming a simple ten-year repayment period this figure has been divided by 10 to give an annual cost.

36. Using the MNEPOR and Entry & Exit Reserve Prices, an Annual NTS Cost has been calculated.

37. The ratio of these two figures defines the likelihood of a User choosing to bypass the NTS.

38. The highest ratio recorded was approximately 10:1, suggesting that the User with the highest likelihood of bypass, over ten years, would achieve a 90% reduction in transmission costs.

39. It is assumed that a ratio below 1:1 would never consider bypass as the repayment term would exceed 10 years.

[9] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/855436/exrates-monthly-0120.csv/preview

40. Even above this ratio a User would have to consider the high levels of upfront capital cost, the long-term commitment to operational costs associated with the asset and the loss of access to the NTS increasing the uncertainty around supply security.

41. In addition to this, the longer the distance, the increased level of uncertainty when constructing a pipeline. The increased possibility of delays and additional costs cannot be accounted for but mean a route becomes less attractive as risk levels increase.

42. A subset of likely routes, once identified, was used to generate an Average Cost Driver linked to Surface Features and Special Construction requirements as detailed in Section 3.5 of the CEER.

43. Using grid references, each route was measured and using aerial photographs, significant surface features were identified and the cost factors detailed in “Table 3-2” were applied for the appropriate proportion of the distance.

44. An average factor for these routes, weighted by distance, was generated and fed back in to the calculation to ensure the most reflective set of construction costs possible was produced.

45. It is important to highlight that while the CEER document provides a significant level of detail, as per section 3.9 - “Factors for associated costs”, it does not account for costs associated with any land purchases to enable the pipeline to be constructed.

Derivation of the Discount Curve

46. The likelihood of bypass, calculated using the CEER pipeline cost equation, provides us with a maximum discount level of 90%. It also suggests the shape of the discount provided, an inverse exponential curve.

47. Given that a 10% discount is available to all Users via the interruptible capacity option, a cut-off is proposed where the curve meets a 10% discount. Users can achieve a greater discount via an alternative method, so the product becomes irrelevant below 10%.

48. Based on Maximum Discount, an adjustment is made to the starting point of the curve

49. A constant, 1.6094, is fed into the equation to ensure that the Discount Curve meets the 10% lower threshold at the distance cap.

50. The likelihood of bypass analysis also suggests that it is more likely for Users within 17.7km to consider bypass, while Users beyond that point would be less likely to consider bypass. It should be recognised that the design of the product is generic in its nature and application and may not consider every possible specific scenario and can only assume that a new pipeline is necessary for each potential combination.

51. Based on this analysis a distance cap of 18km is proposed, being the longest distance likely to consider bypass, rounded up to the nearest whole kilometre.

Reassessment of the Distance Cap

52. As part of National Grids periodic review, we may look to assess the level of socialisation generated by the product and how variations in the Distance Cap may affect levels of socialisation based on the latest Charging and FCC data.

53. We will monitor the cross subsidy generated by the Distance Cap, this assessment requires the following inputs:

    i) confirmation of the Maximum Discount. Expected to remain as 90% in line with the Likelihood of Bypass analysis

    ii) confirmation of the Minimum Discount. Expected to remain 10% in line with the Interruptible Discount

    iii) updated Maximum Allowed Revenue figure

    iv) updates to the Entry & Exit FCC values based on latest calculated figure

    v) updates to the Entry & Exit Reserve Prices for the Gas Year ahead

    vi) the latest Optional Capacity Charges

    vii) the Optional Capacity Charge associated Distance Matrix

54. From the updated Entry & Exit FCCs and the updated Optional Capacity Charge Throughput, an updated Forecasted Eligible Quantity is created.

55. Based on a set range of distances, 5km increments from 5km to 75km, an estimated monetary Socialisation figure is calculated.

56. A graph and trendline can be plotted based on the data calculated

57. From these figures the current Socialisation can be calculated

58. Based on a change in the cross subsidy figure a request for a formal review may be triggered and, alongside industry input, the product will be reassessed for future viability.

Eligible Quantity Calculations

59. The Eligible Quantity Calculation is detailed in the Business Rules. Below are a number of examples stepping through possible scenarios using the Business Rules.

Example 1 - Simple

Entry Point A

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	105,000
		Entry Flow	90,000

Exit Point 1

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	100,000
		Exit Flow	95,000

When considering Route A1, in accordance with BR35.1 we calculate the Initial Entry EQ as follows:

$$IEQEn = Max\big(0, (Min(CAPEn, CAPEx, AEn, AEx) - ECEn)\big)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEn = Max\big(0, (Min(105000,100000,90000,95000) - 0)\big)$$

$$IEQEn = 90{,}000\ kWh$$

The AQ_{En} in this scenario, as defined in BR35.2 is 105,000 kWh and so, in accordance with BR35, the EQ_{En} is calculated as below:

$$EQEn = Min(IEQEn, AQEn)$$

$$EQEn = Min(90000,105000)$$

$$\boldsymbol{EQEn = 90{,}000\ kWh}$$

When considering Route A1, in accordance with BR36.1 we calculate the Initial Exit EQ as follows:

$$IEQEx = Min(CAPEn, CAPEx, AEn, AEx)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEx = Min(105000,100000,90000,95000)$$

$$IEQEx = 90{,}000\ kWh$$

The AQ_{Ex} in this scenario, as defined in BR36.2 is 100,000 kWh and so, in accordance with BR36 the EQ_{Ex} is calculated as below:

$$EQEx = Min(IEQEx, AQEx)$$

$$EQEx = Min(90000,100000)$$

$$\boldsymbol{EQEx = 90{,}000\ kWh}$$

Example 2 – Existing Contract at Entry

Entry Point C

Date Booked	Source	Type	kWh
01/04/2017	Auction	Existing	105,000
		Entry Flow	90,000

Exit Point 1

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	100,000
		Exit Flow	95,000

When considering Route C1, in accordance with BR35.1 we calculate the Initial Entry EQ as follows:

$$IEQEn = Max\big(0, (Min(CAPEn, CAPEx, AEn, AEx) - ECEn)\big)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEn = Max\big(0, (Min(105000,100000,90000,95000) - 105000)\big)$$

$$IEQEn = 0\ kWh$$

The AQ_{En} in this scenario, as defined in BR35.2 is 0 kWh and so, in accordance with BR35 the EQ_{En} is calculated as below:

$$EQEn = Min(IEQEn, AQEn)$$

$$EQEn = Min(0,0)$$

$$\boldsymbol{EQEn = 0\ kWh}$$

When considering Route C1, in accordance with BR36.1 we calculate the Initial Exit EQ as follows:

$$IEQEx = Min(CAPEn, CAPEx, AEn, AEx)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEx = Min(105000,100000,90000,95000)$$

$$IEQEx = 90{,}000\ kWh$$

The AQ_{Ex} in this scenario, as defined in BR36.2 is 100,000 kWh and so, in accordance with BR36 the EQ_{Ex} is calculated as below:

$$EQEx = Min(IEQEx, AQEx)$$

$$EQEx = Min(90000,100000)$$

$$\boldsymbol{EQEx = 90{,}000\ kWh}$$

Example 3 – Traded Capacity at Entry

Entry Point B

Date Booked	Source	Type	kWh
01/01/2020	Trade	Firm	105,000
		Entry Flow	90,000

Exit Point 1

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	100,000
		Exit Flow	95,000

When considering Route B1, in accordance with BR35.1 we calculate the Initial Entry EQ as follows:

$$IEQEn = Max\big(0, (Min(CAPEn, CAPEx, AEn, AEx) - ECEn)\big)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEn = Max\big(0, (Min(105000,100000,90000,95000) - 0)\big)$$

$$IEQEn = 90{,}000\ kWh$$

The AQ_{En} in this scenario, as defined in BR35.2 is 0 kWh and so, in accordance with BR35 the EQ_{En} is calculated as below:

$$EQEn = Min(IEQEn, AQEn)$$

$$EQEn = Min(90{,}000, 0)$$

$$\boldsymbol{EQEn = 0\ kWh}$$

When considering Route B1, in accordance with BR36.1 we calculate the Initial Exit EQ as follows:

$$IEQEx = Min(CAPEn, CAPEx, AEn, AEx)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEx = Min(105000,100000,90000,95000)$$

$$IEQEx = 90{,}000\ kWh$$

The AQ_{Ex} in this scenario, as defined in BR36.2 is 100,000 kWh and so, in accordance with BR36 the EQ_{Ex} is calculated as below:

$$EQEx = Min(IEQEx, AQEx)$$

$$EQEx = Min(90000,100000)$$

$$\boldsymbol{EQEx = 90{,}000\ kWh}$$

Example 4 – Multiple Exit Points

Entry Point D

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	105,000
		Entry Flow	90,000

Exit Point 1

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	45,000
		Exit Flow	40,000

Exit Point 2

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	55,000
		Exit Flow	45,000

In accordance with BR37, where a User nominates two routes, to different Exit Points, but originating from the same Entry Point, we apportion the Entry Capacities (CAP_{En}) and Flows (A_{En})based on the ratio of Exit Capacities and Flows, i.e.

37.1 $CAPEn1 = \frac{CAPEn}{CAPEx1 + CAPEx2} * CAPEx1$ & $CAPEn2 = \frac{CAPEn}{CAPEx1 + CAPEx2} * CAPEx2$

37.4 $AQEn1 = \frac{AQEn}{CAPEx1 + CAPEx2} * CAPEx1$ & $AQEn2 = \frac{AQEn}{CAPEx1 + CAPEx2} * CAPEx2$

37.3 $AEn1 = \frac{AEn}{AEx1 + AEx2} * AEx1$ & $AEn2 = \frac{AEn}{AEx1 + AEx2} * AEx2$

Entry Point D to Exit Point 1

Type	kWh
CAP_{En1}	47,250
AQ_{En1}	47,250
A_{En1}	42,353

Entry Point D to Exit Point 2

Type	kWh
CAP_{En2}	57,750
AQ_{En2}	57,750
A_{En2}	47,647

Exit Point 1

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	45,000
		Exit Flow	40,000

Exit Point 2

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	55,000
		Exit Flow	45,000

Example 4 (cont.)

When considering Route D1, in accordance with BR35.1 we calculate the Initial Entry EQ as follows:

$$IEQEn = Max\big(0, (Min(CAPEn, CAPEx, AEn, AEx) - ECEn)\big)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEn = Max\big(0, (Min(47250,45000,42353,40000) - 0)\big)$$

$$IEQEn = 40{,}000\ kWh$$

The AQ_{En} in this scenario, as defined in BR35.2 is 105,000 kWh (Firm Entitlement excluding Existing Contracts) once apportioned in-line with 37.4 the AQEn for the route is 47,250. In accordance with BR35 the EQ_{En} is calculated as below:

$$EQEn = Min(IEQEn, AQEn)$$

$$EQEn = Min(40000,47250)$$

$$\boldsymbol{EQEn = 40{,}000\ kWh}$$

When considering Route D1, in accordance with BR36.1 we calculate the Initial Exit EQ as follows:

$$IEQEx = Min(CAPEn, CAPEx, AEn, AEx)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEx = Min(47250,45000,42353,40000)$$

$$IEQEx = 40{,}000\ kWh$$

The AQ_{Ex} in this scenario, as defined in BR36.2 is 45,000 kWh and so, in accordance with BR36 the EQ_{Ex} is calculated as below:

$$EQEx = Min(IEQEx, AQEx)$$

$$EQEx = Min(40000,45000)$$

$$\boldsymbol{EQEx = 40{,}000\ kWh}$$

Example 4 (cont.)

When considering Route D2, in accordance with BR35.1 we calculate the Initial Entry EQ as follows:

$$IEQEn = Max\big(0, (Min(CAPEn, CAPEx, AEn, AEx) - ECEn)\big)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEn = Max\big(0, (Min(57750,55000,47647,45000) - 0)\big)$$

$$IEQEn = 45{,}000\ kWh$$

The AQ_{En} in this scenario, as defined in BR35.2 is 105,000 kWh (Firm Entitlement excluding Existing Contracts) once apportioned in-line with 37.4 the AQEn for the route is 57,750. In accordance with BR35 the EQ_{En} is calculated as below:

$$EQEn = Min(IEQEn, AQEn)$$

$$EQEn = Min(45000,57750)$$

$$\boldsymbol{EQEn = 45{,}000\ kWh}$$

When considering Route D2, in accordance with BR36.1 we calculate the Initial Exit EQ as follows:

$$IEQEx = Min(CAPEn, CAPEx, AEn, AEx)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEx = Min(57750,55000,47647,45000)$$

$$IEQEx = 45{,}000\ kWh$$

The AQ_{Ex} in this scenario, as defined in BR36.2 is 55,000 kWh and so, in accordance with BR36 the EQ_{Ex} is calculated as below:

$$EQEx = Min(IEQEx, AQEx)$$

$$EQEx = Min(45000,55000)$$

$$\boldsymbol{EQEx = 45{,}000\ kWh}$$

Example 5 – Complex

Entry Point E

Date Booked	Source	Type	kWh
01/04/2017	Existing	Firm	100,000
01/01/2020	Auction	Firm	50,000
01/04/2020	Auction	Interruptible	50,000
01/07/2020	Trade	Firm	-20,000
		Entry Flow	170,000

Exit Point 1

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	50,000
01/04/2020	Auction	Interruptible	20,000
01/07/2020	Trade	Firm	-10,000
		Exit Flow	55,000

Exit Point 2

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	60,000
01/04/2020	Auction	Interruptible	30,000
01/07/2020	Trade	Firm	15,000
		Exit Flow	110,000

Example 5 (cont.)

In accordance with BR37, where a User nominates two routes, to different Exit Points, but originating from the same Entry Point, we apportion the Entry Capacities and Flows based on the ratio of Exit Capacities (CAP_{Ex}) and Flows (A_{Ex}).

37.1 $CAPEn1 = \frac{CAPEn}{CAPEx1 + CAPEx2} * CAPEx1$ & $CAPEn2 = \frac{CAPEn}{CAPEx1 + CAPEx2} * CAPEx2$

37.2 $ECPEn1 = \frac{ECEn}{CAPEx1 + CAPEx2} * ECEx1$ & $ECEn2 = \frac{ECEn}{CAPEx1 + CAPEx2} * ECEx2$

37.4 $AQEn1 = \frac{AQEn}{CAPEx1 + CAPEx2} * CAPEx1$ & $AQEn2 = \frac{AQEn}{CAPEx1 + CAPEx2} * CAPEx2$

37.3 $AEn1 = \frac{AEn}{AEx1 + AEx2} * AEx1$ & $AEn2 = \frac{AEn}{AEx1 + AEx2} * AEx2$

Entry Point E to Exit Point 1

Type	kWh
CAP_{En1}	45,217
EC_{En1}	34,783
AQ_{En1}	17,391
A_{En1}	56,667

Entry Point E to Exit Point 2

Type	kWh
CAP_{En2}	84,783
EC_{En2}	65,217
AQ_{En2}	32,609
A_{En2}	113,333

Exit Point 1

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	50,000
01/04/2020	Auction	Interruptible	20,000
01/07/2020	Trade	Firm	-10,000
		Exit Flow	55,000

Exit Point 2

Date Booked	Source	Type	kWh
01/01/2020	Auction	Firm	60,000
01/04/2020	Auction	Interruptible	30,000
01/07/2020	Trade	Firm	15,000
		Exit Flow	110,000

Example 5 (cont.)

When considering Route E1, in accordance with BR35.1 we calculate the Initial Entry EQ as follows:

$$IEQEn = Max\big(0, (Min(CAPEn, CAPEx, AEn, AEx) - ECEn)\big)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEn = Max\big(0, (Min(45217, 40000, 56667, 55000) - 34783)\big)$$

$$IEQEn = 5{,}217\ kWh$$

The AQ_{En} in this scenario, as defined in BR35.2 is 50,000 kWh (Firm Entitlement excluding Existing Contracts) once apportioned in-line with 37.4 the AQEn for the route is 17,391. In accordance with BR35 the EQ_{En} is calculated as below:

$$EQEn = Min(IEQEn, AQEn)$$

$$EQEn = Min(5217, 17391)$$

$$\boldsymbol{EQEn = 5{,}217\ kWh}$$

When considering Route E1, in accordance with BR36.1 we calculate the Initial Exit EQ as follows:

$$IEQEx = Min(CAPEn, CAPEx, AEn, AEx)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEx = Min(45217, 40000, 56667, 550000)$$

$$IEQEx = 40{,}000\ kWh$$

The AQ_{Ex} in this scenario, as defined in BR36.2 is 50,000 kWh and so, in accordance with BR36 the EQ_{Ex} is calculated as below:

$$EQEx = Min(IEQEx, AQEx)$$

$$EQEx = Min(40000, 50000)$$

$$\boldsymbol{EQEx = 40{,}000\ kWh}$$

Example 5 (cont.)

When considering Route E2, in accordance with BR35.1 we calculate the Initial Entry EQ as follows:

$$IEQEn = Max\big(0, (Min(CAPEn, CAPEx, AEn, AEx) - ECEn)\big)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEn = Max\big(0, (Min(84783,75000,113333,110000) - 65217)\big)$$

$$IEQEn = 9{,}783\ kWh$$

The AQ_{En} in this scenario, as defined in BR35.2 is 50.000 kWh (Firm Entitlement excluding Existing Contracts) once apportioned in-line with 37.4 the AQEn for the route is 32,609 kWh. In accordance with BR35 the EQ_{En} is calculated as below:

$$EQEn = Min(IEQEn, AQEn)$$

$$EQEn = Min(9783,32609)$$

$$\boldsymbol{EQEn = 9{,}783\ kWh}$$

When considering Route E2, in accordance with BR36.1 we calculate the Initial Exit EQ as follows:

$$IEQEx = Min(CAPEn, CAPEx, AEn, AEx)$$

Substituting in the figures quoted the equation is as follows:

$$IEQEx = Min(84783,75000,113333,110000)$$

$$IEQEx = 75{,}000\ kWh$$

The AQ_{Ex} in this scenario, as defined in BR36.2 is 60,000 kWh and so, in accordance with BR36 the EQ_{Ex} is calculated as below:

$$EQEx = Min(IEQEx, AQEx)$$

$$EQEx = Min(75000,60000)$$

$$\boldsymbol{EQEx = 60{,}000\ kWh}$$