

















UNC Final Modification Report	At what stage is this document in the process?
<h1>UNC 0621D:</h1> <h2>Amendments to Gas Transmission Charging Regime</h2>	<div>01 Modification</div> <div>02 Workgroup Report</div> <div>03 Draft Modification Report</div> <div>04 Final Modification Report</div>
<p>Purpose of Modification:</p> <p>The purpose of this modification proposal is to amend the Gas Transmission Charging regime in order to better meet the relevant charging objectives and customer/stakeholder provided objectives for Gas Transmission Transportation charges and to deliver compliance with relevant EU codes (notably the EU Tariff Code).</p> <p>This alternative differs from Modification 0621 in the following ways:</p> <p>Using the square root of distance rather than distance in calculating Average Distance Storage discount of 86% rather than 50% Removal of the National Transmission Service (NTS) optional charge (short haul tariff) from October 2019 rather than October 2021 Requiring NTS to provide quarterly forecasts of Maximum Allowed Revenue.</p>	
	<p>PLEASE NOTE THIS FORMS PART OF A SUITE OF DOCUMENTS:</p> <p>Part I is the overarching Workgroup Report containing all the key material relating to Modification 0621 and the ten Alternative Modifications (0621A, 0621B, 0621C, 0621D, 0621E, 0621F, 0621H, 0621J, 0621K and 0621L).</p> <p>Part II provides an individual Workgroup Report for each Modification containing all the information specific to that Modification. (THIS DOCUMENT is Part II pertaining to Modification 0621D)</p>
	<p>High Impact:</p> <p>All parties that pay NTS Transportation Charges including NTS direct connects and DN connected and / or have a connection to the NTS, and National Grid NTS</p>
	<p>Medium Impact:</p>
	<p>Low Impact:</p>

Contents		 Any questions?
1	Summary	3
2	Governance	4
3	Why Change?	4
4	Code Specific Matters	12
5	Solution	15
6	Analysis	25
7	Relevant Objectives	32
8	Legal Text	35
Timetable		
The Proposer recommends the following timetable:		 0121 288 2107
Initial consideration by Workgroup	20 February 2018	
Workgroup Report presented to Panel	17 May 2018	 029 2027 8552 or 07812 973337
Draft Modification Report issued for consultation	18 May 2018	
Consultation Close-out for representations	22 June 2018	
Final Modification Report available for Panel	02 July 2018	
Modification Panel decision	19 July 2018	
		
		
		

1 Summary

What

This modification proposes to introduce a new Gas Transmission Charging regime that produces stable and predictable transportation charging and is compliant with the forthcoming EU Tariff Code (Regulation 2017/460).

Why

The Transportation Charging Methodology currently in place for the calculation of Gas Transmission charges, and the methodology to recover Transmission Owner (TO) and System Operator (SO) revenue through Entry and Exit charges, have been in place for a number of years. Whilst there have been some changes in the last ten years, the basic approach to calculating Entry and Exit Capacity charges and the approach to revenue recovery has not substantially changed.

A critique of the current Long Run Marginal Cost (LRMC) methodology has identified that it is too volatile, unpredictable and does not provide stability of charges for Users. For example, Exit Capacity charges at Gilwern Offtake went from 0.001 in October 2015 to 0.0142 in October 2016, an increase of 14200%. This results in significant volatility for the end consumer, and challenges in effective cash flow management for those on whom such charges are levied.

How

This modification proposes to introduce changes to the charging framework by way of making changes to Uniform Network Code Transportation Document (UNC TPD) Section Y. It will also be necessary to make changes to the Transition Document and update other sections of the UNC TPD (Sections B, E and G) and EID Section B).

This modification proposes to move from a Reference Price Methodology (RPM) that calculates the capacity prices using the LRMC method to one that is based on a Capacity Weighted Distance (CWD) approach. It also proposes to review other aspects of the charging framework to consider if change is necessary to better meet the required objectives.

It introduces some terminology from the EU Tariff Code, specifically 'Transmission Services Revenue' and 'Non-Transmission Services Revenue'. The revenues will map across to TO and SO revenues thereby not changing the total revenue to be collected through Transportation charges. The more material change will be the amendments to the charging methodologies in calculating the charges that will be applied to recover the allowed revenues from NTS network Users through the Transportation charges.

This proposal also introduces, for some aspects of this methodology change, some transitional arrangements and mechanisms to review and refine components of the charging framework over time so they continue to better facilitate the relevant methodology objectives¹ and support the development of the GB charging regime.

¹ As described in Standard Special Condition A5: 'Obligations as Regard Charging Methodology' of the NTS Licence, paragraph 5.

2 Governance

Justification for Authority Direction

This modification proposal 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 to have a material impact on the allocation of charges across NTS networks Users.

Requested Next Steps

This modification should:

- be assessed by a Workgroup.

3 Why Change?

Drivers

- 3.1. The methodology which is currently in place for the calculation of Gas Transmission Transportation charges, and the methodology to recover TO and SO revenue through Entry and Exit charges, has been in place for a number of years. Whilst there have been some changes in the last ten years, the basic approach to calculating NTS Entry and Exit Capacity charges and the approach to revenue recovery arrangements have not substantially changed. What has been seen is change in the patterns of capacity booking behaviours, and the impact on the charges as a result due to the interactivity inherent within the methodology, that were not anticipated. Additional regulatory drivers for changes to the charging framework are:

3.1.1. The EU Tariff Code²;

3.1.2. Ofgem's Gas Transmission Charging Review³

- 3.2. As a result of changing behaviours, such as increased uptake in short term zero-priced capacity, there is an increase in reliance on commodity charges to recover TO revenue. Zero priced capacity has arguably resulted in overbooking of capacity, surplus to User's requirements. The high TO commodity charges, driven largely by the zero priced capacity can also result in unstable and unpredictable charges. Other charges, such as the NTS Optional Commodity charge (also referred to as "Shorthaul"), have also seen a significant increase in its use which has impacted on other charges in a way that was not originally envisaged.

Mapping Revenues

- 3.3. Within the collection of revenue there are some changes to the terminology used to assign the revenue for the purposes of ultimately calculating charges. These changes are required by the EU Tariff Code. This relates to mapping TO Revenue and SO Revenue to Transmission

² <http://www.gasgovernance.co.uk/sites/default/files/EU%20Tariff%20Code%20-%20final%20clean.pdf>

³ <https://www.ofgem.gov.uk/gas/transmission-networks/gas-transmission-charging-review>

Services Revenue and Non-Transmission Services Revenue. This does not affect the actual allowed revenue National Grid will be required to recover through the charges.

- 3.4. There are a number of targeted charges in the current methodology and it is necessary to consider which revenue they will contribute towards:
- 3.4.1. The Distribution Network (DN) Pensions Deficit Charge and NTS Meter Maintenance Charge, under the EU Tariff Code (Article 4), do not fall into the specific criteria for Transmission Services. This modification proposes that these will be classified as Non-Transmission Services charges thereby contributing towards Non-Transmission Services Revenue.
 - 3.4.2. The St. Fergus Compression charge will be a Non-Transmission Services charge. The methodology used to calculate the St. Fergus Compression Charge is not proposed to be reviewed at this stage.
 - 3.4.3. The methodologies to calculate these charges (DN Pensions Deficit, NTS Meter Maintenance and St. Fergus Compression) are not proposed to be reviewed at this time. Whilst these could be considered as either Transmission Services or Non-Transmission Services, providing it is approved by the National Regulatory Authority (NRA), it is proposed this is a pragmatic way to charge for these items.

Pricing Methodology

- 3.5. The current RPM (including the adjustments applied in order to calculate capacity charges) produces charges that are volatile and unpredictable. This causes challenges for investment decisions and in predicting operational costs for connected parties year on year and as such, is a key area to be addressed. These costs changes can result in cash flow impacts of tens of millions of £GB a year.
- 3.6. Through an assessment of RPM's⁴, the main alternative considered from the current method was the CWD model. By design this approach is generally more predictable, less volatile and more stable in nature and is more suited to a system that is about use and revenue recovery associated to use rather than linked to investment (marginal pricing).
- 3.7. The proposed use of CWD in the RPM resolves this issue by narrowing the range of prices and as such making them more predictable; however, the change to the methodology will result in substantial changes in charges for some LDZs, for example Scotland. The use of CWD in the RPM more relevant to how the NTS is used and expected to be used. It would better suit the current and future expectations for the NTS and maximising its use (driven through market behaviour) rather than using a RPM built on the foundation of continued expansion whilst continuing to provide some locational diversity in charges through the use of locational capacity and the average distances applied under the CWD approach.

⁴ See <https://www.gasgovernance.co.uk/ntscmf/subg1model>

- 3.8. The CWD proposed in 0621 is principally a revenue recovery model and the nature of the GB network results in areas that are relatively remote from most entry points having higher charges than those that are generally closer to most. Some workgroup participants have stated that the Optional Charge is required to correct these problems with the CWD model. This is clearly untrue as the Optional Charge is only available to a few very large directly connected customers and does nothing, for example for customers connected to DN networks. The proposer believes that it is better to fix the problems with the CWD rather than using an arbitrary fix which the proposer believes is not compliant with both Gas Act and NTS licence (this is covered later) Therefore an amended version of the CWD model. This amended model is proposed which uses the square root of distance ($\sqrt{\text{Distance}}$) in the Distance element of the CWD rather than the actual distance. By doing so, the relative weight given to entry points that are further from the exit point is reduced.

For example, consider two a simple system with two exit points A and B with the same capacity of 5 fed by two Entry Points 1 and 2 which also have capacities of 5. The table below shows the Average Distances⁵. Relative to Exit Point A, Exit point B is close to entry point 2 but a long way from exit point 1.

Distance	Entry Point 1	Entry Point 2		$AD_{Ex,CWD}$	$AD_{Ex} \text{ CWSqrootD}$
Exit Point A	9	4	Exit Point A	$5*9+5*4/(5+5)=6.5$	$5*3+5*2(5+5)=2.5$
Exit Point B	16	2	Exit Point B	$5*16+5*2/(5+5)=9$	$5*4+5*\sqrt{2}/(5+5)=2.7$
Ratio B/A				1.38	1.08

In this example Exit Point B is close to Entry Point 2 but relatively a long way from Entry Point 1 whereas Exit Point A is further from Exit Point 2 but closer to Exit Point 1. The CWD with square root reduces the influence of the distance from Exit Point B to Entry Point 1, while not removing it. Comparing the ratios of the two calculations shows that in both cases the Average Distance for Exit Point B is higher than the Average distance for Exit Point 1 but the amount is much lower for the square root versions proposed by this modification. This reflects the practical reality that Exit Point B is much more likely to be supplied by Entry Point 2 than Entry Point 1. However, it does allow for some supply to come from Entry Point 1 and does not simply assume that all the supply comes from the nearest Entry Point with sufficient capacity.

The square root approach gives more weight to those Entry Points that are relatively closer to the Exit Point which reflects the practical realities of how the gas will actually flow. It results in charges that are less extreme for those exit points that are remote from most entry points but close to one or two from which gas will generally flow to them. Thus, affording all customers

⁵ Draft text for TPD Y 2.8.2 The Weighted Average Distance (in kilometres) for an Exit Point (Ex) for a Gas Year is determined as follows:

$$AD_{Ex,y} = \sum_{En} (CAP_{En,y} * D_{En}) / \sum_{En} CAP_{En,y}$$

where

\sum_{En} is the sum over all Entry Points

and where for the Gas Year and for each Entry Point

$CAP_{En,y}$ is the Forecast Contracted Capacity

D_{En} is the distance (in kilometres) from the Exit Point (Ex) to that Entry Point.

located close to entry points to benefit from this proximity, as opposed to using the NTS optional commodity tariff which only benefits some customers.

- 3.9. As a result of changing the RPM, any adjustments, discounts and other charges must be reviewed in order to avoid unintended consequences and to ensure that a clear impact assessment (including any Ofgem Impact Assessment) can be carried out on the total impact of these adjustments, discounts and other charges to NTS customers and to the end consumer.
- 3.10. This proposal considers EU compliance with the EU Tariff Code which has a deadline to implement the changes of 31 May 2019. Price changes would apply from 01 October 2019.
- 3.11. This proposal also seeks to establish a framework for review and update of key inputs to the newly established RPM which will further the objectives of the RPM.
- 3.12. This proposal aims to simplify the charging methodology, limiting aspects of the methodology whereby some charges can materially impact other charges and also eliminating the influence between Transmission and Non-Transmission Services.

Forecasted Contracted Capacity (FCC)

- 3.13. The proposed changes to the charging regime may result in changes to commercial behaviours in the procurement of capacity rights. Given this uncertainty, a transitional approach for the period commencing 01 October 2019 is proposed based on capacity values documented in the National Grid Licence.
- 3.14. Beyond 30 September 2021, National Grid proposes an approach that ensures FCC is reviewed annually and updates considered and updated in the appropriate transportation charging statement and charging models. This review of FCC values will, at an appropriate point, take account of any behavioural changes in capacity procurement observed under the revised charging regime with the aim of aligning the FCC closer to actual bookings. At the same time the FCC is reviewed and updated, beyond 30 September 2021, there will be an additional adjustment to the reserve prices in order to account for the anticipated under collection driven by the application of any discounts (e.g. interruptible and specific capacity discounts).

Multipliers

- 3.15. Adjustments or separate charges can be applied in the calculation of the Entry and Exit Capacity Reserve Prices. These can serve a number of functions such as to acknowledge any potential risk associated with the type of Entry or Exit Capacity, to facilitate the recovery of revenues where relevant or beneficial to do so, and to encourage behaviours along with ensuring National Grid fulfils any relevant obligations.
- 3.16. Multipliers are applied to the Reference Price to produce the Reserve Price. Under the EU Tariff code (Article 13), the Multipliers for Interconnection Point (IP) quarterly standard capacity products and for IP monthly standard capacity products should be no less than 1 and no more than 1.5. For IP daily standard capacity products and IP within-day standard capacity products, the Multipliers should be no less than 1 and no more than 3. For the IP daily standard capacity products and IP within-day standard capacity products, the multipliers may be less than 1 but higher than 0 or higher than 3, where duly justified.

- 3.17. Beyond 30 September 2020, Multipliers for IPs need to be consulted on each year (as per Article 28 of the EU Tariff code).

Discounts

- 3.18. The pricing of Interruptible (Entry) / off-peak (Exit) capacity will change from the current pricing approach. It will be consistent with the EU Tariff Code Article 16 and applied to all points. The changes proposed permit an adjustment to the relevant firm entry or exit Reserve Price in the calculation of a non-zero Reserve Price and the calculation of that Reserve Price for interruptible products.
- 3.19. The adjustment applied will be proportional to the probability of interruption and will be forward looking based upon an expectation of interruption over the coming year. An adjustment factor ('A' factor) may also be applied to reflect the estimated economic value of the product which will be factored into the assessment. Together, the probability of interruption and the 'A' factor make up the adjustment to be applied to the Reserve Price of the equivalent standard firm capacity product.
- 3.20. Within the EU Tariff Code there are requirements to apply further discounts for storage capacity, where that discount must be at least 50%. This minimum discount is specific to storage in order to avoid double charging and in recognition of the general contribution to system flexibility and security of supply of such infrastructure. This proposal includes an enduring storage discount value of 86% and recognises that EU Tariff Code requirements for the charging regime to be reviewed, as a whole, at least every 5 years.
- 3.21. This proposal considers 86% a more appropriate discount given that entry and exit costs will be incurred in duplicate for storage sites. This is consistent with Ofgem's recommendation set out in its GTCR Confirmation of Policy Letter, where it states: "Gas storage users don't pay the commodity charge. Storage gas circles around the system. It enters the NTS and exits to reach the storage facility; and then enters and exits the system again to meet demand. This means that gas going into storage has already paid an entry commodity charge and will pay an exit commodity charge when it ultimately exits the system to meet demand. Storage gas has therefore made its contribution to historical cost recovery.". However, there will be a marginal cost to the NTS of operating and managing storage flows and connections which it would be correct to charge through a capacity charge. It is unlikely that the cost is significant therefore a higher discount than 50% could be justified. Analysis performed through workgroup considered that an appropriate discount would be 86%.

Any specific 'site type' discounts contemplated by the EU Tariff Code (Article 9) are applied to the Reserve Price to produce a final Reserve Price for the particular Firm Entry or Exit Capacity product at that particular point. The adjustment for Entry Points and Exit Points will be based on the values specified in the Transportation Statement.

Revenue Recovery

- 3.22. National Grid's proposals incorporate a mechanism to manage the consequence of under or over recovery of revenues from Transmission Services Capacity Charges. The approach advocated is an initial period where these Revenue Recovery charges are applied at most points as a flow based (commodity) charge which then transitions to a capacity based charge on an enduring basis.

- 3.23. Whilst National Grid recognises that use of commodity (as opposed to capacity) charges must be the exception within the overall charging proposals to be compliant with the EU Tariff Code, National Grid believes this approach is appropriate in this case. This is on the basis that it is beneficial to managing the under or over recovery of Transmission Services revenue until such time as National Grid, and industry, can have confidence in the production and use of a capacity forecast that can be used both for the purposes of setting capacity reserve prices and for managing revenue recovery, where needed.
- 3.24. National Grid believes that the proposed transition is as short as practicable and provides a means to mitigate the risks associated with Transmission Services revenue being wholly capacity based from October 2019. Without evidence of the change in behaviours for capacity bookings under the new regime and given National Grid's experience to date in the use of commodity to manage revenue recovery, the temporary use of commodity as revenue recovery charge will be an effective way to manage the revenue under / over recovery in compliance with Article 17(1) of the EU Tariff Code. It will also afford National Grid time to develop a capacity booking forecast capability learning from any changing capacity booking behaviours in the market.
- 3.25. From October 2021, the charging framework moves away from the commodity charge to a greater dependency on a capacity forecast and a significantly reduced revenue recovery charge that would be capacity based achieving 100% capacity basis for recovery of Transmission Services revenue.
- 3.25.1. From October 2021, the calculation of the capacity prices will, at the time of calculation, take into account the revenue shortfall from any discounts referred to in paragraphs 3.17 to 3.20 of Section 3) in order to adjust the reserve prices such that the amount forecast to be under collected as a result of these discounts is reduced. For the avoidance of doubt, the calculation of capacity charges from 1 October 2019 to 30 September 2021 will not have this additional step.
- 3.25.2. The approach in 3.24.1, applicable from October 2021, means that less revenue will be required to be collected from the Transmission Services Revenue Recovery charges than if it were not carried out. It is most relevant to do this step from October 2021 at the same time as the FCC is updated.

NTS Optional Charge

- 3.26. This proposal removes the current provision within UNC for connections to be able to choose the existing NTS Optional Commodity ('NTS Shorthaul'). The general principle to retain an incentive to utilise the NTS rather than construct a dedicated pipeline to exit points cannot be justified for the following reasons:
- 3.26.1. Section 9 of the Gas Act is in reference to the Transporter's system and imposes a general obligation to develop an efficient and economical pipe-line system for the conveyance of gas. The Gas Act makes no reference to any wider GB system of gas transportation. Once a decision has been made by a customer to connect to the NTS system the obligation is to consider the whole of the Transporters system, no more and no less. The Act does not provide for considering the impact on or impact of other Gas Transporter's system or any other gas pipeline any more than it considers the effect of

or effect on an electricity transmission or distribution system. It is therefore not clear that the Optional Charge is efficient in terms of the NTS system.

- 3.26.2. Licence condition A5, which National Grid should comply with refers to prices being set that are reflective of costs incurred (by the licensee). The licensee will not incur a cost for a by-passing pipeline so using these costs as a justification for a charge is not consistent with its licence. The logical extension of considering whether a by-passing pipeline could be built would be to consider whether the customer could get a cheaper supply of energy from an electricity connection or importing coal and offering a discount to discourage this.
- 3.27. Notwithstanding the Gas Act and Licence arguments, the argument for the Optional Charge is flawed for the following reasons:
- 3.27.1. The argument for the Optional Charge is that the discounts given to those customers that use the Optional Charge (which are paid for by other customers including those on DN networks) are less than the revenue that would be lost if the Optional Charge did not exist and all those customers paid the standard charges and then some built a by-passing pipeline at some point in the future. The proposer is not privy to the customers that currently use the Optional Charge so cannot model this effect and finds it hard to believe that the current benefit enjoyed by the current beneficiaries of £146M a year is less than would be lost by customers building a by-passing pipeline (with a revenue contribution in 2016/17 of only £38.8m⁶). The Optional Charge is supported by some arguing that it is a good idea to avoid inefficient bypass but no evidence is forthcoming that it actually benefits the generality of customers. Absent this evidence one has to infer that the argument for the Optional Charge is invalid and in fact it imposes significant detriment on other directly connected NTS customers and also those on downstream DNO and IGT networks.
- 3.27.2. The shortcomings of the optional tariff with regards to cost reflectivity are further exemplified by the protection it provides its customers from movements in allowance of National Grid. Under MOD0621 the formula would inflate by RPI annually (until its removal). This would result in allowed expenditure (or incentive income) in any given price control be levied on the remaining customer base as these allowances would be outside the general increase in inflation. Given that all customers will benefit from the entire system to which they are connected, it would be appropriate to share such costs. The clearest example of this during RIIO GD1 being the costs incurred in enhancing physical site security at entry and exit points. The costs associated with these activities is not levied on 'shorthaul' customers, however all customers would benefit.
- 3.27.3. Even if the Gas Act and Licence challenges are discounted the derivation of the charge itself is woefully simplistic. It uses a straight-line distance from the entry point to exit point that takes no account of the actual line that may be taken by any by-passing

⁶ <https://www.gasgovernance.co.uk/ntscharges/LTrevenue>

pipeline. The straight line route could go through built up areas or cross difficult obstacles such as rivers or mountains. Therefore, it would likely provide too great a discount to those whose bypass would pose greater engineering challenge and ultimately cost. The proposer accepts that establishing a feasible route would probably be expensive and difficult to do but this is no reason to base the charge on assumptions that understate the cost of a by-passing pipeline. This would also be similar to assessments made for new connections under the Economic Test models used by all networks.

- 3.27.4. The application of the charge is also flawed as the Shipper can opt in or out of the charge at will. Were a by-passing pipeline to be built the customer would be committed to this option. Therefore, it would be entirely reasonable to require the Shipper not to be able to un-elect a choice to use the Optional Charge once it elected to use it. This is clearly difficult or impossible to do. It is unreasonable to give Shippers that use the Optional Charge the benefits of flexibility and security of supply which would not be open to them should they build a by-passing pipeline. Given that it is not possible to tie Shippers to a long-term commitment the proposer does not believe that they should enjoy the benefit of a reduced transportation charge when they enjoy all the benefits of being connected to the NTS system. One example of the benefit from being connected to the NTS is the work done by NTS on enhanced site security, this was allowed through a cost reopener and although users of the Optional Charge benefit from this they are not contributing to the cost.

Therefore, for a variety of reasons the proposer believes that there should be no Optional Charge from 1st October 2019.

Existing Contracts and Interim Contracts (Collectively referred to as Historical Contracts)

- 3.28. National Grid proposes provisions to apply for Entry Capacity (for 01 October 2019 or beyond) allocated up to the Effective Date

3.28.1. This will include Existing Contracts, as outlined in Article 35 in EU Tariff Code where the *“contract or capacity booking concluded before the entry into force of the EU Tariff Code – 6 April 2017, such contracts or capacity bookings foresee no change in the levels of capacity and/or commodity based transmission tariffs except for indexation, if any”*.

3.28.2. This will also include Interim Contracts, as defined in this proposal. Beyond the Effective Date sufficient clarity of the charging regime to apply from 01 October 2019 is apparent and therefore no specific treatment (for capacity subsequently booked) is proposed.

3.28.3. The capacity procured under these contracts impact the application of the CWD charging model (specifically when determining Reference Prices at Entry Points) and calculation of Transmission Services Revenue Recovery Charges.

Maximum Allowed Revenue forecasts

- 3.28.4. National Grid will be required to provide quarterly forecasts of Maximum Allowed Revenue for prior year, current year and 5 future years. This is to provide all users with information to enable them to forecast their own charges.

Aspects of the GB Charging Regime where there are no proposals for change:

The following is a list of items for which changes are not being proposed at this time but could be the next steps in the evolution of the GB charging regime.

- Auction Structure – All timings for auctions will be as per prevailing terms (including any changes implemented to comply with CAM).
- Entry/Exit Split – No change is proposed to the current 50:50 split.
- Gas Year/Formula Year – the Formula Year (April to March) and Gas Year (October to September) will be retained.
- DN Pensions Deficit Charge – No change to the calculation or the application of the charge.
- St. Fergus Compression Charge – No change is proposed to the calculation or the application of the charge.
- NTS Metering Charge - No change is proposed to the calculation or the application of the charge
- Shared Supply Meter Point Administration Charges - No change is proposed to the calculation or the application of the charge.
- Allocation Charges at Interconnectors - No change is proposed to the calculation or the application of the charge.
- Categorisation of Entry and Exit Points – Maintain the link to the Licence for categorisation.
- Seasonal Factors – Not used in current methodology and propose not to introduce.
- Fixed Pricing – As per Modification 0611, Amendments to the firm capacity payable price at IPs.
- Allowed Revenue – No change as per the Licence.
- Principles and application of Interruptible – As per prevailing terms. In respect of IPs, the terms implemented pursuant to Modification 0500, EU Capacity Regulations - Capacity Allocation Mechanisms with Congestion Management Procedures.

4 Code Specific Matters

Reference Documents

There are summary documents available on each of the topics (mentioned in the solution section of the modification proposal) which have been discussed at NTSCMF and sub-groups related to the gas charging review, which are available at: <http://www.gasgovernance.co.uk/ntscmf/subg1page> and <http://www.gasgovernance.co.uk/ntscmf/subg1model>.

A CWD Model and User Guide have been produced which can be found at:

<http://www.gasgovernance.co.uk/ntscmf>.

A Postage Stamp model is also available to be able to do a comparison of the prices in each of these models (found at the same location).

A Non-Transmission Services model has been produced which can be found at:

<http://www.gasgovernance.co.uk/ntscmf>

Uniform Network Code (UNC) Section Y:

http://www.gasgovernance.co.uk/sites/default/files/TPD%20Section%20Y%20-%20Charging%20Methodologies_29.pdf

UNC European Interconnection Document (EID):

<http://www.gasgovernance.co.uk/EID>

EU Tariff Code:

<http://www.gasgovernance.co.uk/sites/default/files/EU%20Tariff%20Code%20-%20final%20clean.pdf>

Implementation Document for the Network Code on Harmonised Transmission Tariff Structures for Gas (Second Edition)

https://www.entsog.eu/public/uploads/files/publications/Tariffs/2017/TAR1000_170928_2nd%20Implementation%20Document_Low-Res.pdf

Uniform Network Code (UNC) Section B:

http://www.gasgovernance.co.uk/sites/default/files/TPD%20Section%20B%20-%20System%20Use%20&%20Capacity_55.pdf

NTS Transportation Statements:

<http://www.gasgovernance.co.uk/ntschargingstatements>

Customer and Stakeholder Objectives:

<http://www.gasgovernance.co.uk/sites/default/files/NTS%20Charging%20Review%20Objectives%2006Sep16%20v1.0.pdf>

Gas Transmission Charging Review (GTCR) and associated update letters:

<https://www.ofgem.gov.uk/gas/transmission-networks/gas-transmission-charging-review>

Knowledge/Skills

An understanding of the Section Y Part A within the UNC, NTS Transportation Statements, the EID within the UNC, Section B within the UNC, the EU Tariff code, GTCR documentation and the customer / stakeholder objectives developed within NTSCMF would be beneficial.

Definitions

Term (Abbreviation)	Description
Capacity Weighted Distance (CWD) Model	<p>The CWD approach fundamentally requires three main inputs:</p> <ul style="list-style-type: none"> • A revenue value is required, which will be the target revenue required to be recovered from Transmission Services; • A sqrt (distance) matrix for the average connecting distances on the NTS; and • A capacity value for each Entry and Exit point that will be the Forecasted Contracted Capacity (FCC) (which is mentioned later in this section). <p>The CWD model produces the Transmission Services Reference Prices and with additional adjustments produces the Transmission Services Reserve Prices.</p>
Effective Date	The earlier of:

	<ul style="list-style-type: none"> the last day of the month in which Ofgem issues its letter directing implementation of this proposal; and 31 May 2019
Existing Contracts (ECs) (for the purposes of this modification)	Arrangements relating to Long Term Entry capacity allocated before 6 April 2017 (Entry into Force of EU Tariff Code)
Forecasted Contracted Capacity (FCC)	The capacity input to the RPM that will be used in the Transmission Services capacity charges calculation that will be determined via a CWD methodology. An FCC value is required for every Entry and Exit point.
Historical Contracts (HCs)	The combination of Existing Contracts (ECs) (for the purposes of this modification) and Interim Contracts (ICs) and in relation to Transmission Services Revenue Recovery Charges at Storage includes adjustments to available capacity (including transfers) executed up to and including the Effective Date.
Interim Contracts (ICs)	Arrangements relating to Long Term Entry capacity allocated between 6 April 2017 and the Effective Date excluding Interconnection Point Entry Capacity.
Long Run Marginal Costs (LRMC) Model	The current underlying RPM used in the calculation of the Entry and Exit Capacity Prices. Whilst there are different approaches in Entry and Exit as to how secondary adjustments are applied, the underlying LRMC principles are there in both. The LRMC approach is an investment focused methodology where the intention is to have strong locational signals to facilitate decision making. More information is available in TPD Section Y of the UNC.
Multipliers	The factor applied to the respective proportion (runtime) of the Base Reference Price in order to calculate the Reference Price for non-yearly standard capacity product
Network Distances (for the purposes of modelling in the RPM)	A matrix of distances used in the RPM that are the pipeline distances on the NTS. This will be the square root of the distances ($\sqrt{\text{distance}}$)
Non-Transmission Services	The regulated services other than transmission services and other than services regulated by Regulation (EU) No 312/2014 that are provided by the transmission system operator;
Non-Transmission Services Revenue	The part of the allowed or target revenue which is recovered by Non-Transmission tariffs
Reference Price	Price for a capacity product for firm capacity with a duration of one year, which is applicable at entry and exit points and which is used to set capacity based transmission tariffs. This will be produced in p/kWh/a (pence per kWh per annum).

Reference Price Methodology (RPM)	<p>The methodology applied to the part of the transmission service revenue to be recovered from capacity based transmission tariffs with the aim of deriving Reference Prices. Applied to all entry and exit points in a system.</p> <p>The RPM therefore is the framework to spread certain costs / revenues (relevant to the methodology in place) to the Entry and Exit points and thereby on to network users.</p>
Reserve Price	<p>Reserve Price for Yearly standard capacity = the Reference Price</p> <p>Reserve Price for Non- yearly standard capacity is calculated by applying any Multipliers (if applicable).</p> <p>This will be produced in p/kWh/d (pence per kWh per day).</p>
Target Revenue	<p>This is the revenue required to be recovered from a particular set of charges.</p>
Transmission Services	<p>The regulated services that are provided by the transmission system operator within the entry-exit system for the purpose of transmission.</p>
Transmission Services Revenue	<p>The part of the allowed or target revenue which is recovered by transmission tariffs.</p>
Transportation Statement	<p>The Transportation Statement containing the Gas Transmission Transportation Charges</p>

5 Solution

This modification proposal seeks to amend TPD Section Y, Part A (The Gas Transmission Transportation Charging Methodology) of the UNC, by changing the methodology for the calculation of gas transmission transportation charges. Changes to the Transition Document, TPD Sections B (System Use and Capacity), E (Daily Quantities, Imbalances and Reconciliation), G (Supply Points) and European Interconnection Document (EID) Section B (Capacity) are also required.

Mapping of the revenue to Transmission Services revenue and Non-Transmission Services revenue (see paras 3.3 and 3.4 in section 3)

Transmission Services Charges

It is proposed that Transmission Services charges will be collected via:

- Transmission Services Capacity charges made up of;
 - Transmission Entry Capacity charges (including NTS Transmission Services Entry Capacity Retention Charge);
 - Transmission Exit Capacity charges;
- Transmission Services Entry Revenue Recovery charges;
- Transmission Services Exit Revenue Recovery charges; and

- NTS Transmission Services Entry Charge Rebate.

Non-Transmission Services Charges

It is proposed that Non-Transmission Services charges will be collected via:

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

Transmission Services Charges

Reference Price Methodology (see paras 3.5 to 3.11 in section 3)

It is proposed that a CWD approach is used in the RPM.

One RPM will be used for the calculation of Reference Prices for all Entry Points and Exit Points on the system. The RPM produces Entry and Exit Capacity Reference Prices for the applicable gas year which in turn through the relevant adjustments and calculation steps will determine the Entry and Exit Capacity Reserve Prices.

Final Reference Prices

It is proposed that the calculation of the final Reference Price for a given Entry Point or Exit point cannot be zero. If application of the CWD methodology derives a zero price as a result of the FCC value or the Existing Contracts (EC) influencing the CWD calculation (see below), then the Reference Price to be used for such points will be based upon the price for the closest (in terms of Weighted Average Distance (using $\sqrt{\text{distance}}$) as opposed to geographically) non-zero priced Entry Point (for an Entry Point) or the closest non-zero priced Exit Point (for an Exit Point).

The price for the relevant Entry Point or Exit Point will equal to the Reference Price for the closest relevant Entry Point or (respectively) Exit Point adjusted in line with pro-rata relationship between the two Weighted Average Distances (using $\sqrt{\text{distance}}$).

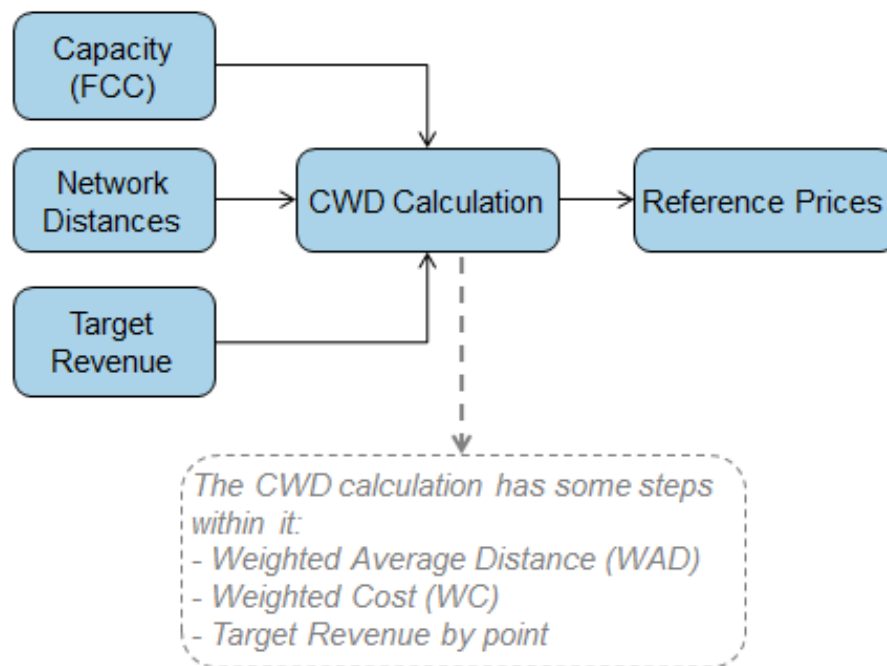
$\sqrt{\text{Distance}}$ means the SQUARE ROOT of the corresponding Distance.

Calculations within the CWD Model

Proposed CWD Model for calculating Entry and Exit Capacity Base Reference Prices:

The proposed CWD approach fundamentally requires three main inputs:

- Target Entry or Exit Transmission Services Revenue - Revenue which is Allowed Revenue net of known Existing Contracts (EC) revenue and Interim Contracts (IC) revenue.
- Network Distances – derived from a distance matrix for the average connecting distances on the NTS
- Capacity (FCC) - FCC (by point) net of Existing Contracts (EC) capacity and Interim Contracts (IC) capacity booked to recover the target Entry or Exit Transmission Services revenue.



The use of the square root of distance provides a greater relevance to nearer entry points than a Vanilla CWD model. The proposer believes that this alteration is beneficial as it:

1. Is more reflective of the GB system where specific exit points are likely to be supplied by specific entry points given the realities of flow directions; and
2. Addresses the potentially incorrect investment signals as a result of higher prices in areas with greatest current capacity.

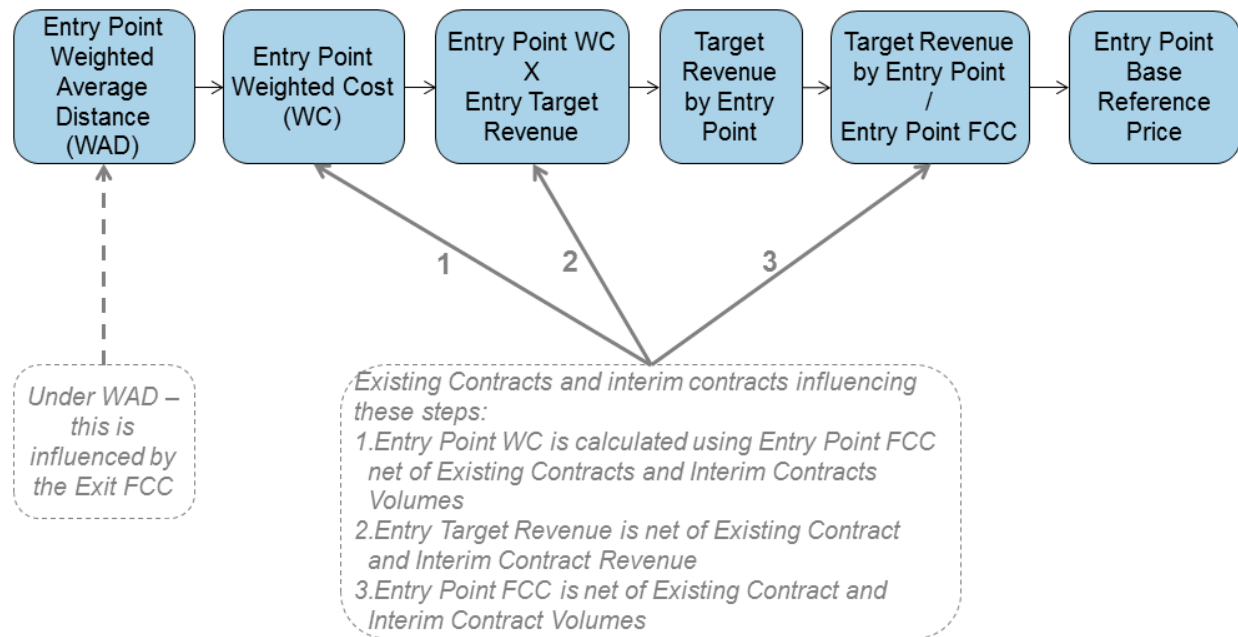
Key steps in the CWD calculations:

	Entry Capacity Calculation	Exit Capacity Calculation
Weighted Average Distance (WAD)	$\frac{\text{Sumproduct Exit Point FCC} \times \sqrt{\text{Distance to Entry Point}}}{\text{Sum Exit Point FCC}}$	$\frac{\text{Sumproduct Entry Point FCC}^{\#} \times \sqrt{\text{Distance to Exit Point}}}{\text{Sum Entry Point FCC}^{\#}}$
Weighted Cost (WC)	$\frac{\text{Entry Point FCC}^* \times \text{WAD}}{(\text{Sumproduct Entry Point FCC}^* \times \text{WAD})}$	$\frac{\text{Exit Point FCC} \times \text{WAD}}{(\text{Sumproduct Exit Point FCC} \times \text{WAD})}$
Target Revenue by point (TRP)	Entry Target Revenue x WC	Exit Target Revenue x WC
Reference Price (RefP)	Entry TRP / Entry Point FCC*	Exit TRP / Exit Point FCC

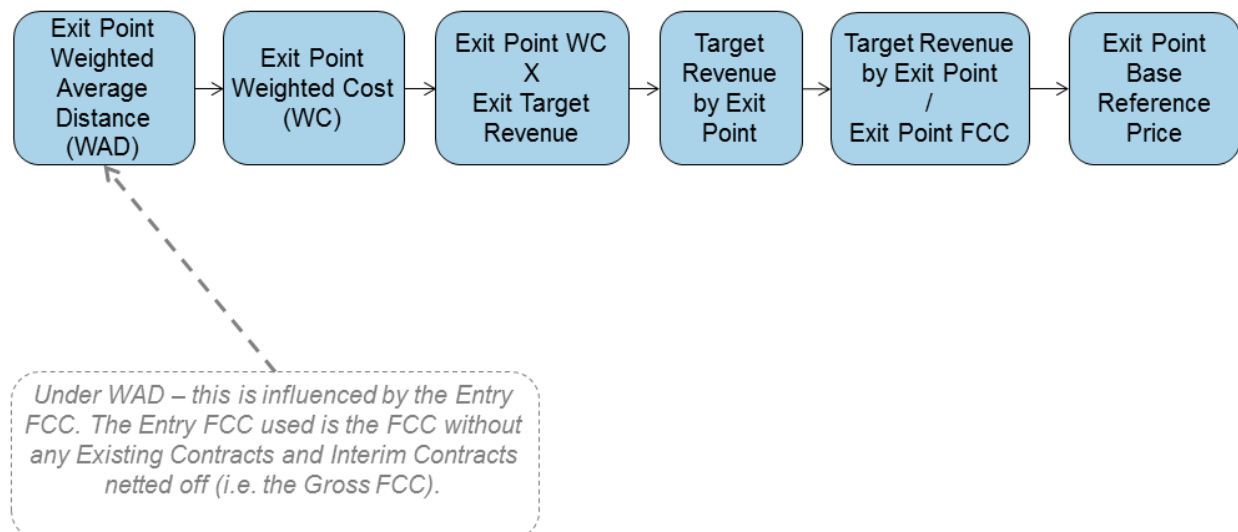
[#]Entry Point FCC – this is Gross Entry Point FCC (not reduced by capacity associated with Existing Contracts and Interim Contracts)

^{*}Entry Point FCC – this is the Entry Point FCC net of capacity associated with Existing Contracts and Interim Contracts.

Entry Point Reference Prices are calculated in the following steps in the CWD model:



Exit Point Reference Prices are calculated in the following steps in the CWD model:



Forecasted Contracted Capacity (FCC) (see paras 3.12 and 3.13 in section 3)

It is proposed that:

- For the period commencing 01 October 2019 until 30 September 2021 (inclusive), the FCC for an Entry Point or an Exit Point will be equal to the 'Baseline capacity' specified within National Grid's Licence (Special Condition 5F Table 4B for Entry Points, and Special Condition 5G Table 8 for Exit Points) for the relevant Entry Point or Exit Point; and
- For the period commencing 01 October 2021 onwards, 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 from 1st October 2019. The approach to determine a capacity forecast will be developed and shared with industry and the intention is

that it be transparent and to keep the approach flexible to develop the best possible forecast to be applied to the relevant year from 2021 onwards in the calculation of the capacity charges.

Reserve Prices produced from Reference Prices (see paras 3.14 to 3.16 in Section 3)

It is proposed that Reserve Prices for capacity will be produced in p/kWh/d. The Reserve Prices will be calculated each year based on the latest available set of inputs and once published, these will be the Reserve Prices applicable for the relevant gas year regardless of when the capacity product is procured. For example, capacity procured in 2019 for a period in October 2025 will be subject to the Reserve Prices determined for gas year 2025/26 plus, where applicable, any auction premium (the difference between the allocated price and Reserve Price in the relevant auction) initially contracted for.

It is proposed that the Reserve Price for Firm capacity at an Entry Point or an Exit Point is determined by application of any applicable Multipliers to the relevant Reference Price.

It is proposed that Multipliers

- shall not be zero for any capacity type or product;
- are not to be used for the purposes of managing revenue recovery;
- shall be calculated on an ex-ante basis ahead of the applicable year.

It is proposed that for the period commencing 01 October 2019 the Multiplier applied to the Reference Prices for all Entry Point and Exit Points in order to determine the Reserve Price will be 1.

Interruptible (Entry) and Off-Peak(Exit) Capacity (see paras 3.17 to 3.18 in Section 3)

It is proposed that the Reserve Price for Interruptible Capacity at an Entry Point and Off-PeakCapacity at an Exit Point is derived by application of an ex-ante discount to the Reserve Prices for the corresponding Firm capacity products (the day ahead firm price at the relevant Entry Point and the daily firm price at the relevant Exit Point).

It is proposed that when determining the level of discount applied in respect of Interruptible and Off-PeakCapacity from 01 October 2019, the likelihood of interruption and the estimated economic value of the Interruptible or Off-Peakcapacity products are used to determine a discount value (as per Article 16 of EU Regulation 2017/460). It is further proposed to adopt a 'banding approach' for the period commencing 01 October 2019 and for subsequent years, such that the proposed discount value will be rounded up to the nearest 10%:

It is proposed that for the period commencing 01 October 2019 the discount applied in respect of Interruptible and Off-PeakCapacity:

- at Entry Points is 10%; and
- at Exit Points is 10%.

Specific Capacity Discounts (see paras 3.19 to 3.20 in section 3)

It is proposed that Specific Capacity Discounts will be applied to the Reserve Prices in respect of Firm and Interruptible/Off-PeakCapacity at the Points detailed below.

It is proposed that in respect of **storage sites**, (locations where the type of Entry point/Offtake is designated as a 'Storage Site' in National Grid's Licence (Special Condition 5F Table 4B for Entry Points, and Special

Condition 5G Table 8 for Exit Points) the applicable Specific Capacity Discount for a given gas year will be equal to 86%.

It is proposed that in respect of **Liquefied Natural Gas (LNG) sites**, (locations where the type of Entry point is designated as a 'LNG Importation Terminal' in National Grid's Licence (Special Condition 5F Table 4B)) for the period commencing 01 October 2019, the applicable Specific Capacity Discount for a given gas year will be equal to 0%.

It is proposed that no other Specific Capacity Discounts are applied.

Additional Calculation Step under CWD for Reference / Reserve Prices applicable from 01 October 2021 (see para 3.24 in section 3)

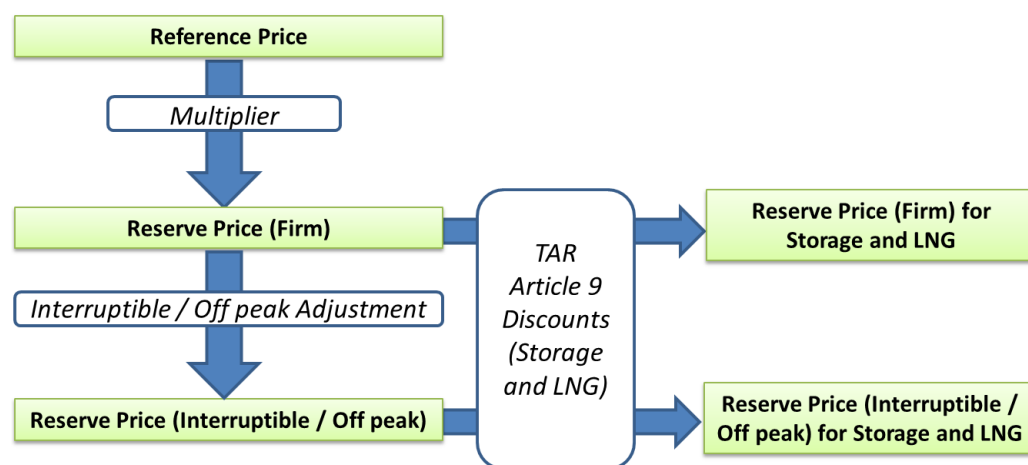
It is proposed that the following step is only applicable for Capacity Reference Prices from October 2021 (on an enduring basis) concurrent with when the FCC determination approach is updated to be based on a more informed forecast. Once the Reserve Prices have been calculated taking into account all the required Multipliers, Specific Capacity Discounts and Interruptible / Off-Peak adjustment there will be an under recovery driven by the levels of discounts or adjustments (e.g. Interruptible / Off-Peak adjustment and Specific Capacity Discounts). This anticipated under recovery will result in the need for an adjustment to be applied to the CWD calculation in order to recalculate Reference Prices, and therefore Reserve Prices, such that the under recovery is estimated to be zero or close to zero. This will minimise the size of the Transmission Services Entry and Exit Revenue Recovery charges. This will be applied to the Entry and Exit Capacity calculations to recalculate the Entry and Exit Capacity Reference Prices and Reserve Prices for all Entry and Exit points.

Minimum Reserve Price

It is proposed that Reserve Prices for Firm and Interruptible / Off-Peak capacity (determined following the application of any relevant Multipliers, Specific Capacity Discounts, or Interruptible / Off-Peak adjustments) will be subject to a minimum value (collar) of 0.0001p/kWh/d.

Summary of Reserve Price Derivation

The following diagram summarises the proposed approach to the derivation of Reserve Prices (from the applicable Reference Price) for both Firm and Interruptible / Off-Peak Capacity products (including Capacity at Storage and LNG sites).



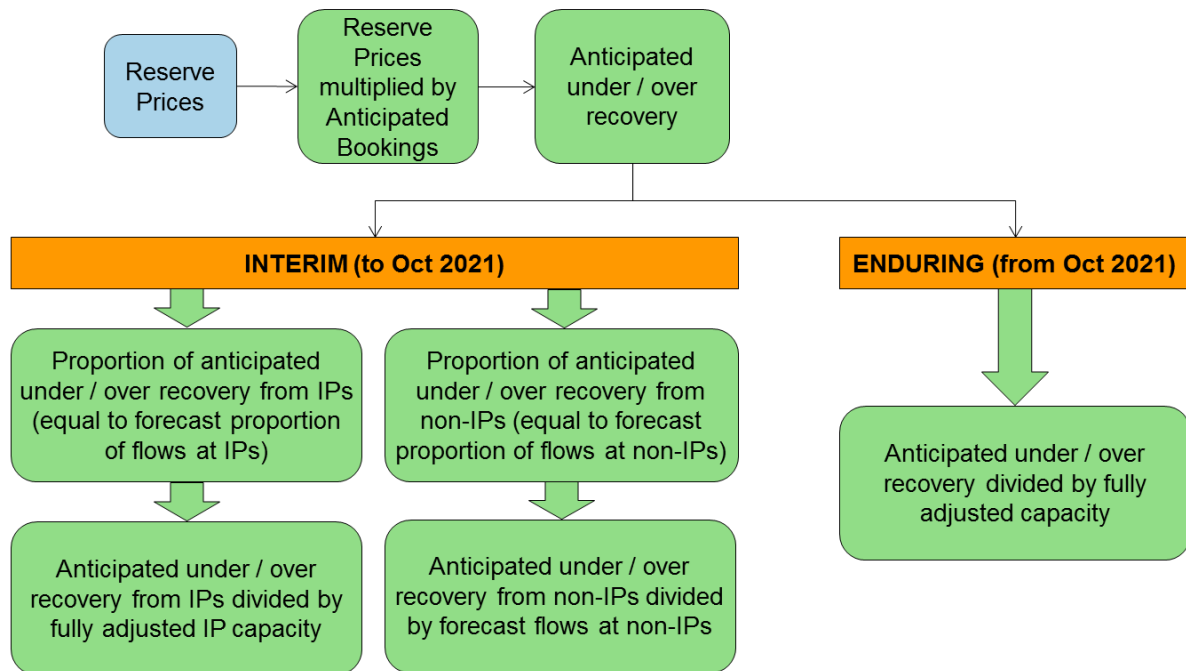
Capacity Step Prices

For the purposes of capacity step prices used in the QSEC Auction, these will be an additional 5% of the applicable Reserve Price or 0.0001 p/kWh/Day, whichever is the greatest, per step.

Transmission Services Revenue Recovery Charges (see paras 3.21 to 3.24 in section 3)

It is proposed that where a proportion of revenue could be under/over recovered (i.e. compared to the target Transmission Services revenues) as a consequence of application of Reserve Prices applicable for the following gas year, a revenue recovery mechanism is applied.

The Transmission Services Revenue Recovery charges (Transmission Services Entry Revenue Recovery charge and Transmission Services Exit Revenue Recovery charge) will be calculated after the Reserve Prices have been determined and will be calculated as follows for Entry and Exit in the same way:



It is proposed that the 'Anticipated Bookings' value will be based on National Grid's forecast of capacity bookings and therefore used to forecast the anticipated under or over recovery. It is proposed that the Transmission Services Revenue Recovery charge rate may be adjusted at any point within the gas year.

For the avoidance of doubt, such change would be subject to the existing notice requirements for variation of Transportation Charge rates.

It is proposed that for the period commencing 01 October 2019 until 30 September 2021 (inclusive) the Transmission Services revenue recovery mechanism is calculated in a number of steps and applied differently at Interconnection Points and Non-Interconnection Points:

- The required revenue to be applied to the Transmission Services revenue recovery mechanism will be determined in the same manner for Entry and for Exit in the steps highlighted above. The steps below apply independently to both Entry and to Exit to produce Transmission Services Entry Revenue Recovery charges and Transmission Services Exit Revenue Recovery charges.
- The total anticipated flows on the NTS (excluding Storage flows unless it is flowed as "own use" gas at the Storage point) will be used as the main denominator.
 - For Non-Interconnection points, the anticipated Non-Interconnection Point flows as a proportion of the total anticipated flows on the NTS will be applied to the required revenue

from the Transmission Services revenue recovery mechanism to determine the revenue to be collected from Non-Interconnection points. This amount divided by the applicable Non-Interconnection Point flows shall determine the Transmission Services Entry and Exit revenue recovery charges for Non-Interconnection Points for the relevant period. This charge shall be applied to all Non-Interconnection Point flows except Storage flows not considered “own use” gas at the storage point. The Transmission Services Entry and Exit revenue recovery charges for Non-Interconnection Points will be produced in p/kWh.

- For Interconnection points, the anticipated Interconnection Point flows as a proportion of the total anticipated flows on the NTS will be applied to the required revenue from the Transmission Services revenue recovery mechanism to determine the revenue to be collected from Interconnection Points. This amount divided by an aggregate forecast of fully adjusted capacity at Interconnection points shall determine the Transmission Services Entry and Exit revenue recovery charges for Interconnection Points for the relevant period. This charge shall be applied to all Interconnection Point fully adjusted capacity. The Transmission Services Entry and Exit revenue recovery charges at Interconnection Points for this period will be produced in p/kWh/d.

It is proposed for the period commencing 01 October 2021 onwards, the Transmission Services revenue recovery mechanism is capacity based and applied as additional capacity charges to all fully adjusted capacity except Historical Contracts for Storage. The Transmission Services Entry and Exit revenue recovery charges for this period will be produced in p/kWh/d. For the avoidance of doubt, any Entry Capacity (except Historical Contracts for Storage) or Exit Capacity booked for the applicable year (irrespective of when this capacity was procured from National Grid) would be subject to Revenue Recovery charges.

It is proposed that in respect of adjustments to available Entry Capacity at Storage, where the adjustment is executed:

- Up to and including the Effective Date, the Capacity will be treated as Entry Capacity procured via Historical Contracts; or
- Subsequent to the Effective Date, the Capacity will not be treated as Entry Capacity procured via Historical Contracts.

NTS Optional Charge (see paras 3.25 to 3.28 in Section 3)

The NTS Optional Charge will cease from 1st October 2019.

The arrangements peculiar to Bacton introduced by Modification UNC0534 may need to be removed⁷.

NTS Transmission Services Entry Charge Rebate

The charge mechanism reduces any Transmission Services entry over recovery. The process may be triggered at the end of the formula year. It is proposed that this will be applied as a Transmission Services entry capacity credit.

⁷ UNC Modification 0534 'Maintaining the efficacy of the NTS Optional Commodity ('shorthaul') tariff at Bacton entry points' which was implemented with effect from 01 August 2016.

NTS Transmission Services Entry Capacity Retention Charge

NTS Entry Capacity Substitution is where National Grid moves unsold non-incremental Obligated Entry Capacity from one (donor) ASEP to meet the demand for incremental Obligated Entry Capacity at a different (recipient) ASEP. It is proposed that where a User elects to exclude capacity at potential donor ASEPs from being treated as substitutable capacity without having to buy and be allocated the capacity it is required to take out a “retainer”.

The retainer is valid for one year, covering all QSEC auctions (including ad-hoc auctions) held in this period. National Grid will exclude the relevant quantity from the substitution process, but the retainer will not create any rights to the User to be allocated or to use the capacity. The retainer will not prevent Users (including the User taking out the retainer) from buying that capacity at the ASEP in question in the period covered by the retainer.

The retainer is subject to a one-off charge which is payable via an ad hoc invoice raised within 2 months of the QSEC auction allocations being confirmed. If a User wishes to protect capacity for more than one year then a further retainer must be obtained each year and a charge will be payable each year for which a retainer is taken out.

Where any capacity covered by a retainer is allocated, a refund of the retention fee may be made; for example, for a retainer taken out for Gas Year 2013/14 in January 2010, a refund can be triggered by an allocation at the relevant ASEP made during a QSEC auction in 2010, 2011 and 2012, and an AMSEC auction in 2013 and 2014.

NTS Entry Capacity Retention Charges, in regard to non-incremental Obligated Entry Capacity, are calculated based on the minimal capacity charge rate of 0.0001 pence per kWh per day applying over a time period of 32 quarters; this equates to 0.2922 p/kWh of Entry Capacity retained.

NTS Entry Capacity Retention Charges and refunds in regard to non-incremental Obligated Entry Capacity are treated as Transmission Services.

Non-Transmission Services Charging

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

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

It is proposed that this is applied to all flows excluding eligible flows (in respect of the NTS Optional Charge) and Storage flows unless it is flowed as “own use” gas at the Storage point.

The General Non-Transmission Services charge will be produced in p/kWh.

Treatment of under/over recovery (K) – after each formula year

It is proposed that a separate under or over revenue recovery (otherwise known as the “K” value) will be calculated for Transmission Services and Non-Transmission Services for the formula year. This will be different to the TO and SO “K” values however the principle of reconciling Transmission Entry and Exit revenues separately will remain.

It is proposed that the approach and calculation will be specified in the UNC, to be approved by Ofgem. In addition to Transmission and Non-Transmission being reconciled this modification also proposes to have reconciliation between Entry and Exit under Transmission Services.

Transmission Services Revenue:

It is proposed to maintain 50/50 split between Entry and Exit (for the purposes of allocating revenues to the charges to recover Transmission Services Entry and Exit Revenues). It is also proposed to maintain the reconciliation of Entry and Exit for Transmission Services, as per the current approach for TO charges. This would continue to mean that Entry and Exit, under Transmission Services, when reconciled would not result in Entry impacting Exit or vice versa.

The applicable years Transmission Service Revenue will be split 50:50 between revenue to collect on Entry Capacity charges and revenue to collect on Exit Capacity charges. This value will then be added to any under/over recovery (Transmission Services K value) which was calculated in y-2 (two years ago) and split between Entry and Exit in the correct proportion, to make the applicable revenue which will be used in the CWD model to calculate the capacity charges.

Non-Transmission Services Revenue:

It is proposed that all those charges in respect of Non-Transmission Services shall contribute towards Non-Transmission Services revenue recovery. All charges are set on an ex-ante basis.

It is proposed that any under or over recovery attributed to the charges other than the Non-Transmission Services Entry and Exit Charge shall not be subject to reconciliation with any K value (Non-Transmission Services K value) adjusting the Non-Transmission Services Revenue recovery charge. Non-Transmission Services revenue charge will be added to the Non-Transmission Services K value which was calculated in y-2 (two years ago) which will be used to calculate the applicable years Non-Transmission Services Revenue which will be used for calculation of the Non-Transmission Services Charges.

Transportation Charges: Information Publication

It is proposed that information in respect of Transportation Charges will be published in accordance with the following table:

	Data Item	Publication	Issued by*:
Transmission Services	Forecasted Contracted Capacity	Charging Model	01 August
	CWD Distances	Charging Model	01 August
	Capacity Reference Prices	Transportation Statement	01 August
	Multipliers	Transportation Statement	01 August
	Capacity Reserve Prices	Transportation Statement	01 August
	Interruptible Adjustment (Entry)	Transportation Statement	01 August
	Interruptible Adjustment (Exit)	Transportation Statement	01 August

	Specific Capacity Discounts (Storage)	Transportation Statement	01 August
	Specific Capacity Discounts (LNG)	Transportation Statement	01 August
	Revenue Recovery Charge (Entry)	Transportation Statement	01 August
	Revenue Recovery Charge (Exit)	Transportation Statement	01 August
	NTS Optional Charge Formula	Transportation Statement	01 August
Non-Transmission Services	Non-Transmission Services Charges	Transportation Statement	01 August
	DN Pension Deficit Charges	Transportation Statement	01 August
	NTS Metering Charges	Transportation Statement	01 August
	St Fergus Compression Charges	Transportation Statement	01 August
	SSMP Administration Charges	Transportation Statement	01 August
	Allocation Charges at Interconnectors	Transportation Statement	01 August
Maximum Allowed Revenue	Forecast for current and next 5 years (Q1)	NTS Long Term Forecast Revenue Reports	31 March
	Forecast for, prior year current and next 5 years (Q2)	NTS Long Term Forecast Revenue Reports	31 July
	Forecast for current and next 5 years (Q1)	NTS Long Term Forecast Revenue Reports	31 October
	Forecast for current and next 5 years (Q1)	NTS Long Term Forecast Revenue Reports	31 December

*Issued by means the date by which the listed information will be consolidated and published in the relevant publication. The information in this table will be published and made available in steps via the relevant notice and supporting material which may be before the date listed.

6 Analysis

Key differences compared to UNC0621

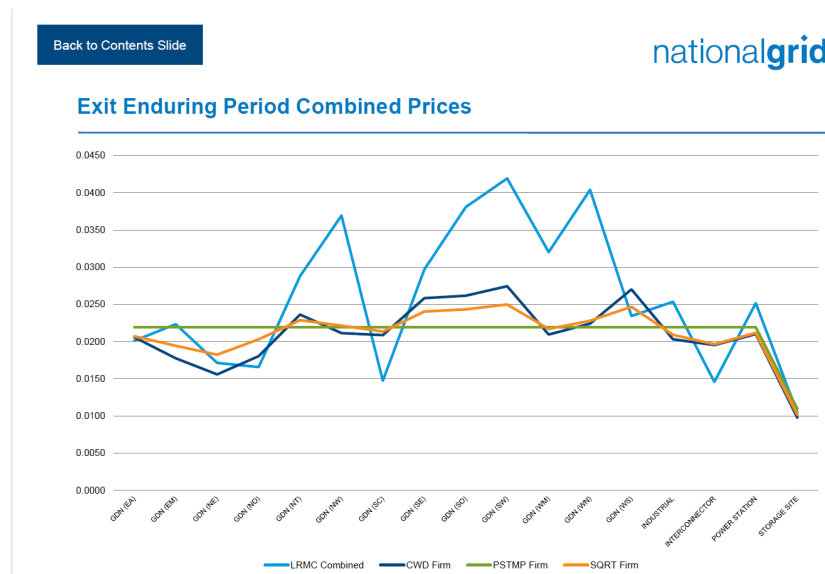
- Using the square root of distance rather than distance in calculating Average Distance.
- Removal of the NTS Optional Charge ('shorthaul' tariff) from October 2019 rather than October 2021.
- Storage discount of 86% rather than 50% (as for UNC0621A).
- Requiring NTS to provide quarterly forecasts of Maximum Allowed Revenue (MAR).

CWD with Square root of distance

The graph below shows analysis provided by National Grid which compares the variability of Exit prices in the enduring period with:

1. The current LRMC model;
2. CWD as proposed by UNC0621;
3. CWD with the square root of distance rather than distance, as proposed by UNC0621D; and
4. The postage stamp model proposed by UNC0621J.

As can be seen, the square root version results in prices with less variation than using distance alone but have more variation than the unvarying prices from the postage stamp model.



Source: Page 13 <https://www.gasgovernance.co.uk/sites/default/files/ggf/book/2018-03/WebEx%20-%20LRMC%20CWD%20Postage%20Stamp%20Comparisons%200621.pdf>

Concern was expressed in the Workgroup that the CWD model resulted in prices that were too high in LDZs more distant from the entry points. The square root model addresses this by increasing charges in the east and reducing charges in the south compared to the CWD model in UNC0621. Prices in the north and west are largely unaffected.

The effect of using the square root of distance rather than distance alone can be seen by putting figures in the model and noting the results, this shows that as DEn increases then the average distance increases but not in proportion to the increase in DEn. This reflects the practical reality that the further an exit point is from an entry point, the less likely it is to receive gas from that entry point.

The three models proposed under UNC0621 and its alternatives are special cases of:

$$ADE_{x,y} = \sum_{En} (CAPE_{En,y} * DEn^r) / \sum_{En} CAPE_{En,y}$$

where

\sum_{En} is the sum over all Entry Points

and where for the Gas Year and for each Entry Point

$CAPE_{En,y}$ is the Forecast Contracted Capacity

DEn is the distance (in kilometres) from the Exit Point (Ex) to that Entry Point.

Setting $r = 1$ gives CWD in UNC0621

$\frac{1}{2}$ gives CWsqrtD in UNC0621D

0 gives postage stamp in UNC0621J (note $DEn^0 = 1$)

Clearly when $r = 0$ in the postage stamp model $ADE_{x,y} = 1$ for all x and y

Partially differentiating $ADE_{x,y}$ with respect to DEn gives

$$\frac{\partial ADE_{x,y}}{\partial Den} \propto r DEn^{r-1}$$

∂Den

This shows that for UNC0621 where $r = 1$ then $r DEn^{r-1} = 1$ and changes in DEn will result in a directly proportional change in $ADE_{x,y}$;

for UNC0621D where $r = \frac{1}{2}$ there will be a less than proportionate change in $ADE_{x,y}$;

and for UNC0621J, where $r = 0$, there will be no change in $ADE_{x,y}$.

Optional Charge removal from October 2019

The impact of the removal of the Optional Charge in the transition and enduring periods is the same at a high level in that those Users previously on the Optional Charge will pay more and consequently others will pay less, but the precise impacts on the benefitting Shippers will differ.

Transition period

- 1) Removal of Optional charge will mean that all Shippers (excluding those shipping to storage sites) pay Entry TO, Entry SO, Exit TO and Exit SO charges.
- 2) To compensate the Entry TO, Entry SO, Exit TO and Exit SO charges would fall to Shippers.
- 3) WWU as proposer of UNC0621D assumes that Shippers will pass on the reduction in commodity charges to customers, both to NTS direct connects and those on DN networks.

It is difficult to estimate the precise financial impact but based on National Grid figures provided to NTSCMF on 26th September 2017, the Shippers using the Optional Charge contribute £48.5 million but, in doing so avoid paying nearly £195 million in standard commodity charges. This represents a potential 're-distribution' to those OCC Users of about £146 million per annum at the expense of those sites which are unable to benefit from the option of the OCC. Assuming that the impact is split equally between exit and entry means that approximately £73M would not need to be recovered from each of exit SO and TO and entry SO and TO commodity charges. These charges are charged by Shippers and hence included in the total charge to customers, however it is useful to look at the effect relative to transportation charges made by DN networks. £73M is approximately 75% of SO exit commodity revenue, so for illustrative purposes the effect on end customers can be seen by setting this to 25% of its current value and then doubling the effect assuming that this reasonably reflects the entry benefit. The effect of this on DN customers will vary by size, for example a domestic customer will benefit by nearly £2 or about 1.6% of the total exit transportation charges attributed to them whereas a Very Large Daily Metered Customer (VLDMC) connected to a DN network could see a reduction equivalent to 16% of the total exit transportation charges attributed to them. The reason for this difference between domestic and very large industrial customers is primarily because larger customers pay a higher proportion of their charges to NTS than do domestic customers and they also pay a significant amount in commodity charges.

UNC0621 restricts the Optional Charge to 60km (the distance cap) and therefore the cross subsidy under 0621 will be reduced but it is still likely to be substantial. Work by National Grid presented at 0621

Workgroup on 12 April 2018⁸ suggests that the Optional Charge would recover about £15M in the transition period. Based on the volumes provided the revenues that would be received if the Optional Charge did not exist can be calculated and hence the 're-distribution'.

The non-IP flows provided were:

	GWh (from NG)	Price (non OC) (from 621 model) ⁹	Rev if not OC £M	Rev if OC (from NG)	're-distribution' £M
Exit	102,698	0.0185	18.999	7.254	11.745
Entry	150,673	0.0301	45.353	7.352	38.001
Total					49.746

The 're-distribution' under UNC0621 is therefore £50M. This means that UNC0621 reduces the Optional Charge 're-distribution' by about two thirds compared to UNC0621D which removes it entirely.

Enduring period

- 1) All revenue is recovered from capacity charges.
- 2) Entry and Exit capacity charges are lower than they would otherwise be (assuming NTS Shippers do not change behaviours).
- 3) The benefit will be proportional to NTS capacity, the effect on DN customers will be related to the amount of NTS exit capacity they are charged by the DN.

For UNC0621D the size of the financial benefit impact compared to the current position will be the same as in the transition period; however, the effect will differ as in the enduring period all revenue will be connected from capacity charges. Based on TO exit revenue of approximately £400M¹⁰, then £73M equates to approximately 18%. Doubling this to reflect the entry benefit as well would result in a 36% reduction in Exit Capacity Charges compared to current values. The benefit is equivalent to approximately 1% for a domestic customer and nearly 10% for a VLDMC customer.

In the enduring period the Optional Charge ceases in UNC0621 so UNC0621D and UNC0621 have the same effect.

Summary of benefits

The table below shows the effects of removing the Optional Charge compared to the current charges in the UNC and against the estimated effects of UNC0621. The comparisons are based on customers in Wales South WA2 exit zone, however as TO and SO exit and TO and SO entry commodity charges are the same throughout GB, the effect in the transition period will be broadly the same throughout GB. The proposer of UNC0621D has illustrated the effects in the enduring period using the WA2 exit zone, as broadly speaking,

⁸ See page 13 of <https://www.gasgovernance.co.uk/sites/default/files/ggf/book/2018-04/0621%20Analysis%20Slides%20120418.pdf>

⁹ Mean used. Revenue recovery charges Entry 0.0291 Exit 0.0180 Oct 2019, Entry 0.0311 Exit 0.0191 Oct 2020.

¹⁰ TO exit revenue £324.5M 18/19, £397.2M 19/20 and £411.6M in 20/21

the forecast enduring exit capacity charges for WA2 are similar to the current charges. In some LDZs the new model (CWD for UNC0621 and CWSqrTD for UNC0621D) will result in substantial changes in Exit Capacity Charges and in some LDZs the increase will far exceed the benefit from the removal of the Optional Charge 're-distribution' and therefore may not be obvious when looking at the aggregate effects of UNC0621D. Nevertheless, although the changes might be relatively small for individual customers, it is important to remember that all DN connected customers will benefit from this change and without the removal of the Optional Charge they would all be paying more.

The DN charges calculator is available on the Joint Office website for those who wish to perform their own calculations¹¹.

Estimate of the reduction in charges resulting from changes to NTS charges

compared to DN transportation charges Exit Zone WA2 April 2018 charging model

	Transition		Enduring
	621D transition compared to current	621D transition compared to 621 transition	621D and enduring compared to current
Domestic	-1.6%	-0.5%	-1.2%
Primary school	-1.7%	-0.5%	-1.9%
Large secondary school	-2.1%	-0.6%	-2.4%
Indicative VLDMC sized customer	-15.8%	-4.7%	-9.4%

Example domestic customer with AQ 12500kWh and peak day capacity (SOQ) of 109kWh/day. Putting these figures into the DN charging calculator gives the following table.

GAS TRANSMISSION CHARGES				
CHARGE TYPE	BASIS	RATE (APR - SEP)	RATE (OCT - MAR)	ANNUAL CHARGE
TO ENTRY COMMODITY	PENCE PER KWH	0	0	0
SO ENTRY COMMODITY	PENCE PER KWH	0	0	0
TO EXIT COMMODITY	PENCE PER KWH	0.0202	0.0202	2.53
SO EXIT COMMODITY	PENCE PER KWH	0.0101	0.0101	1.26
TO EXIT CAPACITY	PENCE PER KWH PER DAY	0	0	0

¹¹ <https://www.gasgovernance.co.uk/DNcharges>

TOTAL ANNUAL CHARGE (EXCL TO ENTRY CAPACITY)					3.79
GAS DISTRIBUTION CHARGES					
CHARGE TYPE	BASIS		RATE (APR - SEP)	RATE (OCT - MAR)	ANNUAL CHARGE
LDZ SYSTEM COMMODITY CHARGES	PENCE PER KWH		0.0276	0.0276	3.95
LDZ SYSTEM CAPACITY CHARGES	PENCE PER PEAK DAY KWH PER DAY		0.1616	0.1616	74.12
LDZ CUSTOMER CAPACITY CHARGES	PENCE PER PEAK DAY KWH PER DAY		0.0039	0.0039	39.55
LDZ CUSTOMER FIXED CHARGES	PENCE PER DAY		32.8954	32.8954	0
CSEP ADMINISTRATION CHARGE	PENCE PER SUPPLY POINT PER DAY		0	0	0
ECN CHARGE	PENCE PER PEAK DAY KWH PER DAY		0.01	0.01	3.98
TOTAL ANNUAL CHARGE					121.6
For transition UNC0621D compared to current, WWU as proposers of UNC0621D assumes the saving is equal to the SO charge being reduced by 75%					
and for the exit benefit and then doubling this for the entry benefit					
this gives a saving of $£1.26 \times .75 \times 2 = £1.89$ or 1.6%					
For enduring the calculation is a 36% saving on the current exit capacity charge or $3.98 \times .36 = £1.43$ or 1.2%					

Note that the above effects are estimates of the effect of the removal of the Optional Charge in isolation.

There will clearly be a negative impact on those sites that benefit from the Optional Charge. The identities of these sites are regarded as confidential but WWU as proposers of UNC0621D understand that they include the Irish Interconnector and power generators. There is no justification for GB consumers to 'cross subsidise' customers benefiting from the Irish interconnector. Although charges will increase to power generators connected to the NTS and on the Optional Charge, they will reduce to power generators connected to the NTS and not on the Optional Charge and those connected to DN networks so it is impossible to be definite about any effect on electricity prices. What is clear is that it will remove one distortion between charges to NTS connected generation and DN connected generation.

Storage discount of 86% rather than 50% (as for UNC0621A)

The justification is as for Modification 0621A.

NTS forecasts of Maximum Allowed Revenue

Para 5.12 of TPDV requires NTS to publish monthly revenue collection and para 5.13 of TPDV requires a quarterly revenue forecast to be provided in the months ending November, February, May and August).

The reality currently is that such forecasts are provided twice a year¹² and are not aligned to the given deadline.

Under the new arrangements price volatility with respect to allowed revenue movements will continue to occur. Under GD1 NTS revenue has moved annually by up to 16%¹³. A 16% increase/(decrease) in allowed revenue year on year would have an equal 16% increase/(decrease) in NTS unit rates year on year, all other things being equal. Given this volatility it is important that all users are provided relevant and accurate revenue forecasts. These forecasts should be at sufficient granularity so as to allow Shippers to perform sensitivity analysis over the forecasts, so as to factor in appropriate risk premiums into their contracts. Such details also allow all customers to more accurately forecast cash flows and understand the rationale behind future price changes.

The proposer believes that this change will be beneficial because it will:

1. Clarify the reporting timelines which benefits all customers through certainty of information flow, and benefits from reducing administration costs which result updating systems and processes on an ad hoc basis.
2. Reduce the current monthly requirement which is not adhered to for a more reasonable quarterly provision which in reality results in a greater frequency than is currently provided.
3. Amend the timetable to align to key outturn points in the regulatory calendar. For example, a current revenue forecast made in May is unlikely to reflect the full regulatory year outturn and therefore contains more assumptions than would a report provided after Revenue Reporting Pack (RRP) submission. The same point can be made around Ofgem directions made each year in November. These changes would increase the accuracy of the forecasts. In addition to the provision of these formal forecasts, it is acknowledged that for price notifications which occur, there will continue to be a need for NTS to further set out the allowance to that its tariffs seek to recover. This is in addition and does not constitute an alternative to the requirement to provide a quarterly revenue reforecast.

Workgroup Statement
<p>Workgroup has reviewed material very similar to this in the context of UNC0621A (which is extremely similar). Statements from the Workgroup regarding this material would have been captured if further time had been available.</p> <p>The Model for this Modification and supporting analysis spreadsheet can be found at: https://www.gasgovernance.co.uk/0621/Models</p> <p>A guide to using the model will be made available here: https://www.gasgovernance.co.uk/0621/Models.</p>

¹² <https://www.gasgovernance.co.uk/ntscharges/LTrevenue> shows forecasts provide in Oct 2015, May 2016, Nov 2016, May 2017, Nov 2017

¹³ <https://www.gasgovernance.co.uk/sites/default/files/ggf/page/2017-12/LT%20MAR%20Forecasts%20at%20Nov%2017.xlsx> demonstrates that TO maximum allowed revenue between 2017/18 and 2018/19 move from £712.5m to £828.5m, 16%.

An Analysis Results Summary can be found at:
<https://www.gasgovernance.co.uk/0621/Analysis>

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.	Positive
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.	Positive

Demonstration of how the Standard Relevant Objectives are furthered:

c) Efficient discharge of the licensee's obligations.

The proposed changes to TPD B, EID B and Transition Document (where applicable) support the implementation of the new charging methodology and arrangements. Standard Special Condition A5(5) of the NTS Licence sets out the relevant methodology objectives and National Grid believes that these objectives are better facilitated for the reasons detailed below ('Impact of the modification on the Relevant Charging Methodology Objectives'). WWU believes that the removal of the Optional Charge from October 2019 better facilitates A5(5).

d) Securing of effective competition between relevant shippers and between DN operators and relevant Shippers

The proposed changes to TPD B, EID B and Transition Document (where applicable) support the implementation of the new charging methodology and arrangements. To the extent that the application of a new Reference Price Methodology is expected to provide a more stable and predictable price setting regime, Shippers will have a greater level of confidence in their forecasts of prospective use of network costs and therefore set their own service costs more accurately (potentially with a lower risk margin) thereby enhancing effective competition.

The removal of the Optional Charge better facilitates competition between DN operators and relevant Shippers because it removes a cross subsidy in favour of large gas consumers directly connected to the NTS. This is a considerable disincentive to connect to DN networks.

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.

The proposed changes to TPD B, EID B and Transition Document (where applicable) support the implementation of the new charging methodology and arrangements including those elements required to comply with the EU Tariff Code.

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: <ul style="list-style-type: none"> (i) no reserve price is applied, or (ii) that reserve price is set at a level - <ul style="list-style-type: none"> (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 Charging 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;**
- 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; and**
- 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**

National Grid believes that the proposed utilisation of a new Reference Price Methodology which re-distributes National Grid's costs on a geographic basis, weighted by capacity, will enhance cost reflectivity and competition between gas suppliers and between gas shippers when compared to the current application of a Long Run Marginal Cost Methodology (LRMC). The proposed model is better suited to the current and expected future usage of the NTS and the current model is more suitable for an expanding network requiring an investment based RPM.

A sub-group of the NTS Charging Methodology Forum identified that as the inputs into the LRMC model are varied the resulting price changes are not intuitive and the changes can cause unpredictable results, and the changes to prices can be volatile. As a result, similar offtake points (in terms of offtake volumes and distances from points of entry) may incur materially different charges. Use of a methodology which delivers more comparable costs would better facilitate these objectives.

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

The update to the Transmission Services methodology proposal takes into account developments which have taken place in the transportation business, in particular that the network is no longer expanding. WWU believes that this premise will require National Grid to make changes to its policy on the availability of flexible capacity and its reinforcement policy otherwise there is an inconsistency between a charging methodology that assumes an unconstrained network and policies on flexible capacity and reinforcement that assert that capacity is constrained.

- 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**

The EU Tariff Code compliance is taken into account in this modification proposal. Accordingly, implementation of this proposal would ensure that the GB arrangements are compliant with the EU Tariff Code.¹⁴

8 Legal Text

Text Commentary

Explanatory Tables for the legal text for Modification 0621 and all ten Alternatives is provided in here:

<https://www.gasgovernance.co.uk/0621/text>

Text

Legal Text for Modification 0621 and all ten Alternatives is provided here:

<https://www.gasgovernance.co.uk/0621/text>

¹⁴ WWU accepts National Grid's statement but understands that not all the proposals in 0621 are required for EU Tariff Code compliance and that a clear statement of which parts are required would be helpful. This would be particularly useful if the Authority decided to direct implementation of those provisions required for EU Tariff Code compliance