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

UNC 0678E:

Amendments to Gas Transmission Charging Regime – Treatment of Storage

01 Modification
02 Workgroup Report
03 Draft Modification Report
04 Final Modification Report

Purpose of Modification:

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).

	The Proposer recommends that this Modification should be treated as an Alternative to Modification 0678 and therefore it should proceed as such under the same timetable as that agreed with the Authority for Modification 0678 as far as practicable.
	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 same timetable as set for proposal 0678 is adhered to as far as practicable:

Workgroup 1 - "Approach. Compliance"	29 January 2019
Workgroup 2 - "Integration of RPM, FCC, Revenue Recovery and existing contracts"	31 January 2019
Workgroup 3 - "Multipliers and Discounts. 'Shorthaul' approach" (part of NTSCMF)	05 February 2019
Workgroup 4 - "Compliance. FCC"	11 February 2019
Workgroup 5 - "Non-transmission charges. Final overview"	13 February 2019
Workgroup 6 - "Workgroup Report"	14 February 2019
Workgroup 7 - "Workgroup Report"	18 February 2019
Workgroup 7a - "Assessment of Alternative solutions"	20 February 2019
Workgroup 8 - "Workgroup Report"	25 February 2019
Workgroup 9 - "Workgroup Report"	27 February 2019
Workgroup 9a - "Assessment of Alternative solutions"	28 February 2019
Workgroup 10 - "Workgroup Report. Compliance"	04 March 2019
Workgroup 10a - "Assessment of Alternative solutions" (part of NTSCMF)	05 March 2019
Workgroup 11 – "Finalise Workgroup Report"	06 March 2019
Draft Modification Report issued for consultation	08 March 2019
Consultation Close-out for representations	05 April 2019
Final Modification Report available for Panel	12 April 2019
Modification Panel decision	18 April 2019

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Final Modification Report issued to Ofgem	23 April 2019	

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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). This Modification also takes into account the decision to reject UNC0621[1] and its Alternatives citing areas of non-compliance. This Proposal addresses the areas of compliance identified in this decision.

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.

[1] See https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/page/2018-12/Ofgem%20Decision%20Letter%200621.pdf

A critique of the current Long Run Marginal Cost (LRMC) methodology (undertaken by the NTSCMF – concluding in January 2017[2] – with updated analysis presented during development of UNC Modification Proposal 0621 in April 2018[3]) identified that it is too volatile, unpredictable and does not provide stability of charges for Users.

How

This Modification 0678E proposes to introduce changes to the charging framework by way of making changes to UNC TPD Section Y. It will also be necessary to make changes to other sections of the UNC TPD (Sections B, E and G) and EID Section B).

At its core, this Modification proposes to move from a Reference Price Methodology (RPM) that calculates the capacity prices using the Long Run Marginal Cost (LRMC) method to one that is based on a Capacity Weighted Distance (CWD) approach. It also proposes an updated approach with changes to capacity pricing multipliers, capacity discounts and interruptible pricing review 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, UNC mechanisms to review and refine components of the charging framework, notably the Forecasted Contracted Capacity (FCC), capacity pricing multipliers and interruptible pricing, over time so they continue to better facilitate the relevant methodology objectives[4] and support the evolution of the GB charging regime.

This Proposal differs from National Grid's 0678 Modification and is requesting that it should be treated as an Alternative as it differs in the following key areas:

- A higher discount of [80%] for storage capacity.
- The exclusion of all storage capacity from the application of the Transmission Services Revenue (capacity) Recovery Charge.

2 Governance

Justification for Consideration as an Alternative to Modification 0678

This Modification addresses the same issues that have been raised under Modification 0678; if either Modification were to be implemented then it would result in major changes to Section Y of the UNC, effectively introducing a new charging methodology for gas transmission. This Modification has many

[2] Material at https://www.gasgovernance.co.uk/ntscmf/subg1page

[3] Material at https://www.gasgovernance.co.uk/0621/200418

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

common features to Modification 0678 but the Proposer believes it improves on the solution being proposed by National Grid's 0678. In many respects, this Modification 0678E is to Modification 0678 what Modification 0621A was to Modification 0621.

The timetable that has been set for finalising the Workgroup Report for Modification 0678 has been approved by Ofgem under a request for urgency. Being conscious of the need for urgency and the arguments in support of urgency contained within Modification 0678, this Modification should as far as possible follow the same timetable as Modification 0678 so that both proposals can be considered by Panel, industry and Ofgem at the same time, making for an efficient governance process. It is the view of the Proposer that raising this Modification as a new Modification, which may or may not be granted urgent status, would result in a different timetable, would require separate workgroup meetings, be consulted on separately, be considered by Panel separately and would therefore make for an unnecessarily complex and inefficient process. This could severely impact the intentions behind the urgency that has been granted for Modification 0678.

In summary, this Modification has been raised as a valid alternative solution to the one being proposed under Modification 0678.

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 treated as an Alternative to Modification 0678. It should proceed as such under the same timetable as agreed with the Authority for Modification 0678 as far as practicable.

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 Code[5];

[5] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.072.01.0029.01.ENG&toc=OJ:L:2017:072:FULL

3.1.2. Ofgem's Gas Transmission Charging Review[6] and decision on UNC0621 and its Alternatives[7]. In addressing the decision letter to reject UNC0621 and its Alternatives the Proposer is proposing changes outlined in this Modification and summarised in the comparison table provided on the JO website. This table highlights for awareness a comparison between UNC0621 and this Modification and where specific areas of compliance need to be addressed. Addressing these areas of compliance further Relevant Objective (g) and Relevant Charging Methodology Objective (e) as outlined in Section 7 of this Modification proposal.

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 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.

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-

[6] https://www.ofgem.gov.uk/gas/transmission-networks/gas-transmission-charging-review

[7] https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/page/2018-12/Ofgem%20Decision%20Letter%200621.pdf

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.

3.6. Through an assessment of RPMs[8], 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. This makes 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 an 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.

3.8. 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.

3.9. 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 or as soon as possible after this date in line with a decision to implement.

3.10. 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.

3.11. 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.

[8] See https://www.gasgovernance.co.uk/ntscmf/subg1model

Forecasted Contracted Capacity (FCC)

3.12. The proposed changes to the charging regime may result in changes to commercial behaviours in the procurement of capacity rights. The proposal for a forecast of contractual capacity (FCC) will be a key input into the reference price calculation.

3.13. The Proposer proposes the FCC to be a forecast of capacity bookings at each Entry and Exit Point. The value will be determined in accordance with a methodology statement that will be referenced in the UNC and will not form part of Section Y of the UNC. The methodology is proposed to be linked to a forecast of GB demand on the NTS for the tariff year for which reference prices are being produced. It will also review the historical capacity bookings (where capacity has been allocated at a price greater than zero at each Entry and Exit Point, and forecast flow levels, to determine a value that will inform the proportion of capacity bookings for each specific Entry and Exit Point. The initial methodology will be discussed as part of the workgroups and NTSCMF.

3.14. The Proposer proposes an approach that ensures FCC is reviewed annually and updates considered in line with a methodology, 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 to actual bookings, in line with the methodology statement. At the same time the FCC is reviewed and updated, 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).

3.15. The FCC will be reviewed ahead of each tariff year and updates will be communicated to industry as part of the publication of charges. The methodology contained within the statement will be kept under review as part of these updates and for any changes to the methodology would be subject to a review process to include consultation with industry.

Multipliers

3.16. 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.

3.17. 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.

3.18. Beyond 30 September 2020, or in line with the implementation of this Modification, Multipliers for IPs need to be consulted on each year (as per Article 28 of the EU Tariff code). Multipliers applicable to all Entry and Exit Points from implementation of this Modification are provided in the relevant part of section 5 (Reserve Prices produced from Reference Prices).

Discounts

3.19. 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.

3.20. 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. The interruptible adjustment applicable to all Entry and Exit Points from implementation of this Modification are provided in the relevant part of section 5 (Interruptible (Entry) and Off-peak (Exit) Capacity).

3.21. 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. The Proposer proposes an enduring storage discount value of [80%] but recognises that EU Tariff Code requirements for the charging regime to be reviewed, as a whole, at least every 5 years.

3.22. 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. The specific capacity discount applicable to all Entry and Exit Storage Points from implementation of this Modification are provided in the relevant part of section 5 (Specific Capacity Discounts).

Revenue Recovery

3.23. The Proposer'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 a capacity based charge on an enduring basis.

3.24. From implementation the charging framework would be expected to move towards 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.

3.24.1. 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.

3.24.2. The approach in 3.22 means that less revenue will be required to be collected from the Transmission Services Revenue Recovery charges than if it were not carried out.

Managing inefficient bypass of the NTS (known as "Shorthaul")

3.25. The Proposer does not, as part of this Proposal, propose to retain a charge that discourages inefficient bypass of the NTS. National Grid has initiated a review under UNC governance (Request Group 0670R 'Review of the charging methodology to avoid the inefficient bypass of the NTS'[9]) and The Proposer believes that it is inappropriate at this point to include provision for such under this Proposal and thereby pre-empt the outcome of this work. A comprehensive assessment of any charging arrangements to manage discouraging inefficient bypass of the NTS within the charging framework, including compliance with EU Codes and the charges that would be in place as part of this Modification will be a feature of UNC 0670R any subsequent Modification.

Existing Contracts

3.26. The Proposer proposes provisions to apply for Entry Capacity (for 01 October 2019 or from the effective date of this Modification, whichever is later) allocated up to 06 April 2017. For the avoidance of doubt, these provisions will apply to Entry Capacity transferred up to 06 April 2017.

3.26.1. 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 – 06 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*".

3.26.2. 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.

[9] http://www.gasgovernance.co.uk/0670

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.

Uniform Network Code (UNC) Section Y:

https://www.gasgovernance.co.uk/TPD

UNC European Interconnection Document (EID):

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

EU Tariff Code:

http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.072.01.0029.01.ENG&toc=OJ:L:2017:072:FULL

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:

https://www.gasgovernance.co.uk/TPD

NTS Transportation Statements:

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

Customer and Stakeholder Objectives:

http://www.gasgovernance.co.uk/ntscmf/060916

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

Table 1 gives a definition of terms used in this Modification.

Table 1: Definitions used in the Modification

Term (Abbreviation)	Description
Capacity Weighted Distance (CWD) Model	The CWD approach fundamentally requires three main inputs: • A revenue value is required, which will be the target revenue required to be recovered from Transmission Services; • A 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). The CWD model produces the Transmission Services Reference Prices and with additional adjustments produces the Transmission Services Reserve Prices.
Effective Date	The later of: • 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 06 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.
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.
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 produced in p/kWh/a (pence per kWh per annum).
Reference Price Methodology (RPM)	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. 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.
Reserve Price	**Reserve Price for Yearly standard capacity** = the Reference Price **Reserve Price for Non- yearly standard capacity** is calculated by applying any Multipliers (if applicable). This will be produced in p/kWh/d (pence per kWh per day).

Target Revenue	This is the revenue required to be recovered from a particular set of charges.
Transmission Services	The regulated services that are provided by the transmission system operator within the entry-exit system for the purpose of transmission.
Transmission Services Revenue	The part of the allowed or target revenue which is recovered by transmission tariffs.
Transportation Statement	The Transportation Statement containing the Gas Transmission Transportation Charges

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 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, or negative 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 as opposed to geographically) non-zero priced Entry Point (for an Entry Point) or the closest (in terms of Weighted Average Distance as opposed to geographically) 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 (in terms of Weighted Average Distance as opposed to geographically) relevant Entry Point or (respectively) Exit Point adjusted in line with pro-rata relationship between the two Weighted Average Distances.

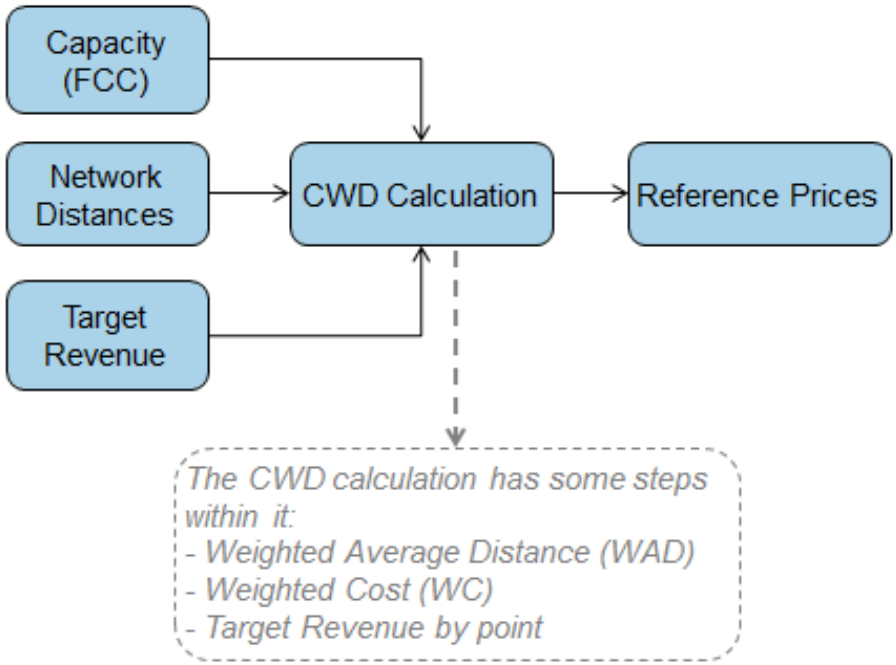
Calculations within the CWD Model

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

The proposed CWD approach fundamentally requires three main inputs (see Figure 1):

- Target Entry or Exit Transmission Services Revenue - Revenue which is Allowed Revenue net of known Existing Contracts (EC) 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 booked to recover the target Entry or Exit Transmission Services revenue.

Figure 1: Proposed CWD Model for calculation of Entry and Exit Capacity Base Reference Prices



Key steps in the CWD calculations, see Table 2.

Table 2: Key steps in the CWD calculations

	Entry Capacity Calculation	Exit Capacity Calculation
Weighted Average Distance (WAD)	(Sumproduct Exit Point FCC x Distance to Entry Point) / Sum Exit Point FCC	(Sumproduct Entry Point FCC[#] x Distance to Exit Point) / Sum Entry Point FCC[#]
Weighted Cost (WC)	Entry Point FCC* x WAD / (Sumproduct Entry Point FCC* x WAD)	Exit Point FCC x WAD / (Sumproduct Exit Point FCC x 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)

*Entry Point FCC – this is the Entry Point FCC net of capacity associated with Existing Contracts.

Entry Point Reference Prices are calculated in the following steps in the CWD model, see figure 2

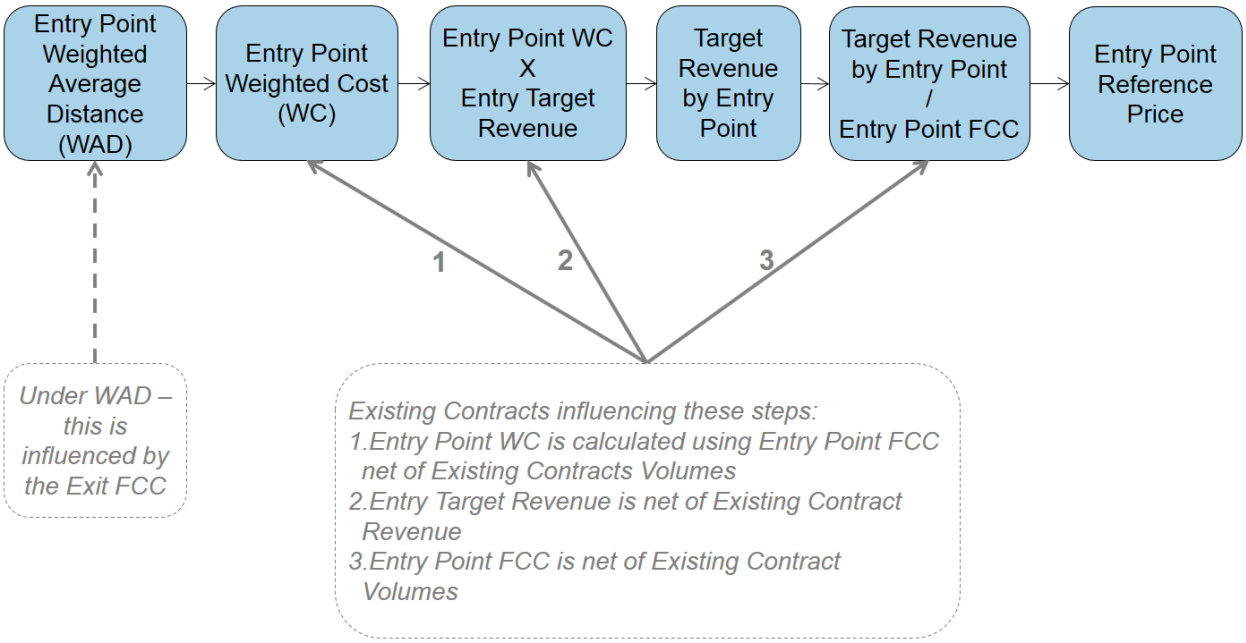
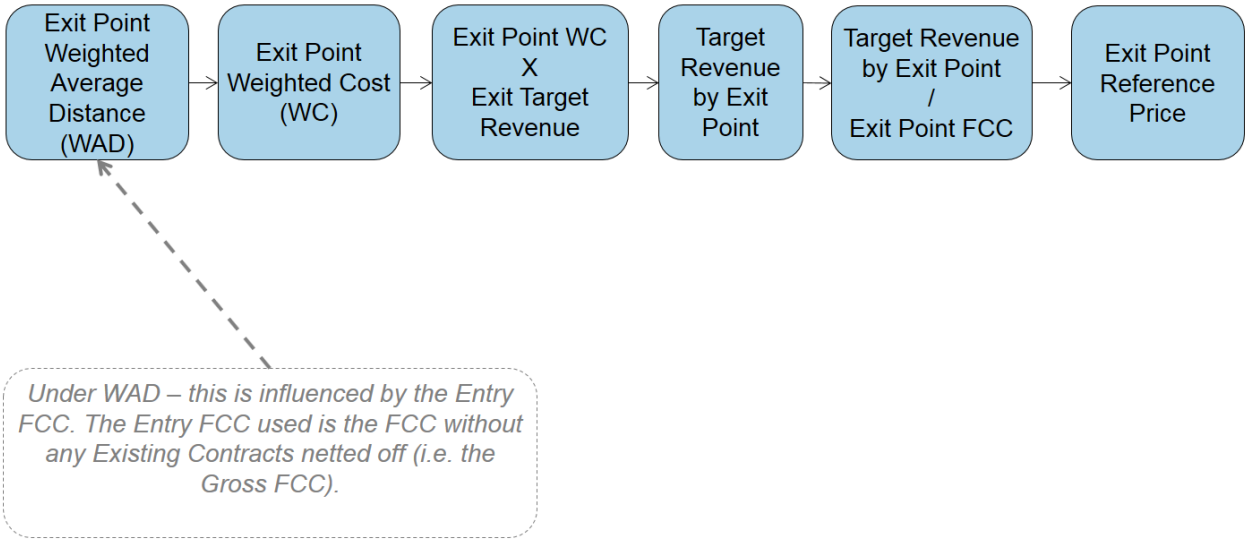


Figure 2: Entry Point Reference Prices calculation model

Exit Point Reference Prices are calculated in the following steps in the CWD model, see Figure 3:

Figure 3: Exit Point Reference Prices calculation model



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

It is proposed that the FCC for an Entry Point or an Exit Point will be equal to a forecasted value determined by National Grid, in line with a new methodology statement for the FCC. The methodology 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 to facilitate calculation of the capacity charges. The methodology will be part of a methodology statement, for which the methodology will be subject to some development as part of this Modification development. The FCC will be reviewed ahead of each tariff year and updates will be communicated to industry as part of the publication of charges. The methodology contained within the statement will be kept under review as part of these updates and for any changes to the methodology would be subject to a review process to include consultation with industry.

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, the price payable for capacity procured in 2019 for a period in October 2025 will be the Reserve Price determined for gas year 2025/26 plus, where applicable, any premium payable. This premium will be equal to either:

- The difference between the allocated price and Reserve Price in the relevant auction when the capacity was initially contracted for ('*auction premium*'); or
- The amount specified in respect of entry capacity allocated via a PARCA Application as described in TPD B1.14 and the Entry Capacity Release Methodology Statement ('*PARCA premium*').

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, or from implementation of this proposal should it be after this date, the Multiplier applied to the Reference Prices for all Entry Point and Exit Points in order to determine the Reserve Price will be 1 (one).

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-peak Capacity 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-peak Capacity from 01 October 2019 or implementation date of this Modification should it be after, the likelihood of interruption and the estimated economic value of the Interruptible or Off-peak capacity 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 or implementation date should it be after 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, or the implementation date of this Modification should it be after, the discount applied in respect of Interruptible and Off-peak Capacity:

- 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-peak Capacity 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 [80%].

In its decision letter to reject UNC0621 and its Alternatives, Ofgem recognised the deleterious impact on storage facilites' net revenues of moving away from the current charging methodology. Based on the analysis carried out by Baringa[10] net revenues would likely decrease by between 3% and 31% depending on whether the storage discount is set at 50% or 86%.

Further, Ofgem stated that any discount above 50% would need a clear justification. The derivation of the [80%] is based on analysis carried out by WWA as set out in its report to the Gas Storage Operators Group [the paper will be provided separately and as soon as possible after National Grid has published the revised Modification 0678 sensitivity tool, scheduled for 22 February 2019], which the Proposer contends provides sufficient evidence to justify the proposed level of discount.

In addition to providing a quantitative basis for establishing a discount of [80%] the report sets out numerous benefits of storage which reinforce the case for a discount, which when considered in aggregate, might reasonably result in a level greater than [80%]. In summary, these benefits include:

- Storage flows are highly correlated to demand, or changes in demand. The main driver for this is that demand is the primary driver of price (again a very high correlation exists between these variables) and Users employing storage to capture the intrinsic value associated with market price spreads over various durations (commonly known as time shifting the value of gas). Both National Grid and customers benefit from this interaction between storage flows and demand/price as it provides assistance in balancing the network while dampening price volatility and delivering positive externalities, or societal benefits, by reducing price spreads across a range of time periods.
- Storage delivers transmission benefits in terms of avoided investment in additional capacity. The fact that it is embedded in the network, close to demand, and operates in harmony with changes in demand means that storage delivers significant cost savings to the NTS and ultimately customers.

10 https://www.ofgem.gov.uk/system/files/docs/2019/01/ofgem_gas_charging_review_baringa_report_final.pdf

- Security of supply is enhanced by gas storage. Gas stored in the facilities provides cost effective and reliable insurance against supply disruptions and demand spikes. The benefits will be twofold: delivering gas to the market in which it is located; and dampening the price of gas by adding volume to the available supply.

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 or implementation date of this Modification should it be later, 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 (see para 3.22 in section 3)

It is proposed that the following step is applicable for Capacity Reference Prices on an enduring basis. 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 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 and in doing so will minimise the size of the Transmission Services Entry and Exit Revenue Recovery charges.

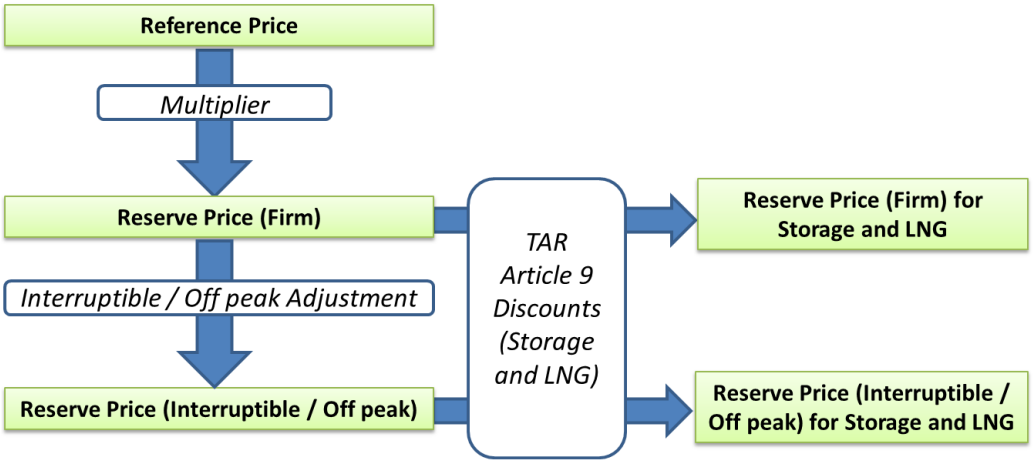
Minimum Reserve Price

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 (see Figure 4) 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).

Figure 4: Reserve Price derivation



Capacity Step Prices

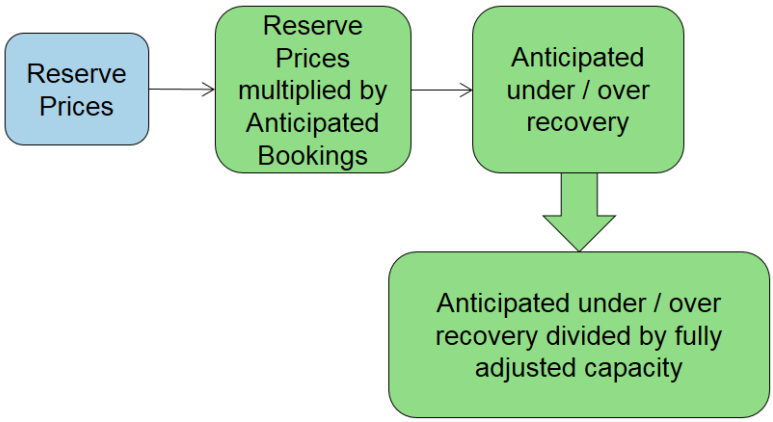
For the purposes of capacity step prices used in the QSEC Auction, these will be an additional 5% of the applicable Reserve Price or 0.0001 p/kWh/Day, whichever is the greatest, per step.

Transmission Services Revenue Recovery Charges (see para 3.21 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 (see Figure 5) for Entry and Exit in the same way:

Figure 5: Transmission Services Revenue Recovery Mechanism



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 the Transmission Services revenue recovery mechanism is capacity based and applied as additional capacity charges to all fully adjusted capacity except capacity booked at Storage points, which has not been booked for "own use gas" purposes (for the avoidance of doubt, this includes relevant Existing Contracts for Storage and all subsequent capacity bookings 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, or Exit Capacity booked for the applicable year, except capacity booked at Storage points which has not been booked for "own use gas" purposes, (irrespective of when this capacity was procured from National Grid) would be subject to Revenue Recovery charges.

The exclusion of capacity booked at Storage points which has not been booked for "own use gas" purposes is consistent with the findings of Ofgem in its Gas Transmission Charging Review[11] on the basis that flows to and from storage (or capacity booked at an entry to deliver gas to, or an exit point to ultimately offtake from) have already made a contribution to historical cost recovery.

Further, this exclusion ensures the charging structure accommodates common practice of storage operators in relation to the acquisition and subsequent release of entry capacity to Users of their facilities. In a number of cases, entry capacity at storage facilities will have been acquired by a nominated shipper user, often to trigger National Grid investment to build and release the required volume of capacity. The sale of storage services by operators is often bundled with the transfer of entry capacity from the nominated shipper holder of entry capacity to the entity acquiring storage services. If a Revenue Recovery Charge is applied to Existing Capacity transferred at any time after the 7th April 2017 "cut-off date" then, in the case of UNC 0678, the acquiring User would be subject to a Revenue Recovery, on the basis that it is not the original holder of the Existing Capacity. This approach will result in the additional costs being incurred by the storage operator and is, quite clearly discriminatory. The charging arrangements should not differentiate between Users, using the same product, but acquiring indirectly via a third party, nominated User instructed to purchase the capacity by virtue, of for example, the storage operator not being a UNC registered User.

In short, the exclusion of Revenue Recovery Charges on adjusted Capacity at Storage will ensure that storage owners are able to offer storage services to the third party Users on an equivalent basis to Users who acquired capacity prior to and including 05 April 2017.

NTS Optional Charge (see para 3.23 in Section 3)

It is proposed that the existing NTS Optional Commodity Rate (OCR) is removed.

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.

NTS Transmission Services Entry Capacity Retention Charge

11

https://www.ofgem.gov.uk/sites/default/files/docs/2015/11/gtcr_confirmation_of_policy_view_and_next_steps.pdf

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 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 table 3 below.

Table 3: Publication dates for Transportation Charges

	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
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

*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. The publication dates may also be changed depending on the implementation of this Modification.

6 Impacts & Other Considerations

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

N/A

Consumer Impacts

There will be impact on different consumer groups but the allowed revenue collected by National Grid NTS will not change.

Cross Code Impacts

None

EU Code Impacts

EU Tariff Code compliance is considered as part of this Proposal.

Central Systems Impacts

There will be impacts on Gemini and UK Link invoicing systems. These impacts are being assessed. The CDSP, Xoserve, has been consulted on all stages of development of this project and this will continue going forward.

7 Relevant Objectives

Table 4: Impact of the Modification on the 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.	Positive
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 Relevant Objectives are furthered:

a) Efficient and economic operation of the pipe-line system

Based on analysis carried out by Storengy and WWA there is a clear relationship between the physical operation of storage facilities and the pipe-line system.[12] The strong, positive correlation between aggregate gas demand and storage withdrawals/injections means that National Grid, in its role as SO, benefits from gas storage, at no cost. The flexibility provided by gas storage provides direct support to National Grid in its role as system balancer through; contributing to linepack management and reduced activity and costs associated with National Grid's participation in the balancing market (OCM) or any other contractual arrangements it may choose to enter into as part of its network balancing toolbox.

By setting that storage discount at the minimum permissible level of 50%, analysis performed by the proposer and WWA indicates that in the absence of any other changes to the determination of NTS charges that the aggregate costs incurred by storage owners would escalate significantly, as shown in Table 5 below.

Table 5: Costs to storage of alternative discounts

Scenario	Entry Cap (firm) £/a	Exit Cap (Int) £/a	Total £/a
LRMC 18/19	1,315,980	0	1,315,980
Modification 0678	7,857,843	3,119,141	10,976,984
Modification 0678A	10,912,195	3,407,526	14,319,720
[80%] discount	3,140,157	1,249,377	4,389,534

The impact of these cost increases will lead to reduced storage cycling as the variable costs incurred by storage owners will diminish opportunities for capturing value in shorter term spreads. In turn, system balancing costs will increase, as storage will less frequently make a positive contribution to the overall balance of the network and limit access to an essential balancing tool for shippers and National Grid as the balancer of last resort. The impact on storage profitability is highlighted in the Ofgem UNC 0621 letter and the accompanying Baringa analytical report, which states

"*Although the largest share of costs of storage facilities relate to CAPEX and is therefore sunk, a reduction in net revenues of 20-30% or more would significantly impact the profitability of storage facilities. If operating costs are sufficiently low, storage facilities are likely to remain open but revenues may not be sufficiently high to justifyany significant further investment, including refurbishment costs .Hence, under a number of alternative tariff methodologies, storage facilities may encounter challenges in continuing operations in the medium-to longer-run*."

In addition, Baringa understands that any changes to tariffs will be considered differently to shifts in market conditions and as a result will be "burdened" by the storage operator in terms of service offerings

[12] WWA and Storengy papers to be sent to Joint Office shortly following publication of National Grid's sensitivity tool version 2

"*The impact of changes in the tariff methodology would be seen as permanent and would therefore not be assessed in the same way*."

The level of discount should be consistent with the contribution to system flexibility (EU Tariff Code) and the proposer believes that the application of the minimum permissible discount does not fulfil this requirement. The minimum, according to the EU Tariff Code simply avoids storage users being "double charged" for the use of the system, reflecting the "parking service" unique to storage located within a national network. On this basis, the proposer contends that a discount of [80%] not only better reflects the contribution made by storage facilities in relation to the efficient and economic operation of the pipe-line system, but also preserves the ability for gas storage to provide an economic means for balancing the pipeline system. The additional costs imposed on storage users through the application of the minimum discount, and in particular the related significant escalation in the cost of off peak capacity, would result in undesirable market impacts, such as increased between day and within day price volatility. These market impacts conflict with this objective by inflating the costs associated with balancing the system.

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

Storage provides support to the entire network. Its proximity to demand and flow response to changes in aggregate demand levels ensures that overall system pressures are supported, benefiting the NTS and connected networks. In the absence of storage, marginal gas supplies would be more distant from demand which in turn may result in operational issues for DNs, in the absence of additional investment in the NTS.

c) Efficient discharge of the licensee's obligations.

The proposed changes to TPD B and EID B (where applicable) support the implementation of the new charging methodology and arrangements. Standard Special Condition A5(5) of the NTS Licence sets outs the relevant methodology objectives and The Proposer believes that these objectives are better facilitated for the reasons detailed below in Table 5 ('Impact of the Modification on the Relevant Charging Methodology Objectives').

d) Securing of effective competition between relevant shippers;

The proposed changes to TPD B and EID B (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. Where the treatment of storage better reflects the costs/benefits of it on the system, it improves the overall cost reflectivity of charges and as such better facilitates competition through diminished cross-subsidisation.

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 and EID B (where applicable) support the implementation of the new charging methodology and arrangements including those elements required to comply with the EU Tariff Code. The decision to reject UNC0621 and its Alternatives highlighted three areas of compliance that

needed to be addressed (Interim Contracts, Transition Period and Shorthaul). This Modification proposes changes that will address these.

A comparison table is published (here: http://www.gasgovernance.co.uk/0678/) which gives a comparison between Modification 0621 and this new Modification 0678E, highlighting steps taken to address compliance in line with Ofgem's 0621 Rejection Letter. In order to provide a compliant proposal to address these areas, The Proposer is proposing:

- Not to propose the creation of Interim Contracts;
- Not to use a transition period for the introduction of the methodology changes;
- The removal of the charge to manage avoidance of inefficient bypass (as highlighted in this proposal, National Grid has raised a separate review group (UNC0670R) to address this aspect of charging in the longer term); and
- Appropriate treatment of storage with a discount more properly reflecting the contribution to system flexibility and security of supply of such infrastructure. In addition, the exclusion of capacity booked at Storage points which has not been booked for "own use gas" purposes from the Revenue Recovery Charge is consistent with the requirement of EU TAR Article 9 to avoid double charging at Storage Points, as confirmed by Ofgem in its GTCR Confirmation of policy view.

It should be noted that in other Member States; Belgium will apply a discount of 50% on capacity held at storage Entry points and a 100% discount on associated Exit capacity; Germany will apply a 75% discount on all storage related capacity products and France currently applies a discount at an average level of 85%.

Table 6: Impact of the Modification on the Relevant Charging Methodology Objectives

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 Proposer believes that the proposal better reflects the costs incurred by the licensee. In particular, in relation to gas storage the application of an [80%] discount combined with the non-application of Revenue Recovery Charges, better facilitates this objective. The requirement for a minimum 50% discount for storage related capacity in the EU Tariff Code insulates storage users from double charging and nothing more, however, given that storage facilities are embedded in the network its application fails to appreciate the relative costs of delivering gas directly to offtakes compared to those incurred by routing gas via storage.

As set out in the WWA paper (see footnote to be provided) the fact that flows to and from offtakes located close to storage facilities are cheaper, in terms of transportation costs, than the cost of flowing gas to the same offtakes, but via storage (including a 50% discount), suggests that a 50% discount is not cost reflective. The application of an [80%] discount ensures that the costs incurred under these two flow scenarios are equivalent, and that the costs of transporting gas to and from storage are as cost reflective as the costs of transporting gas directly between non-storage entry points and non-storage exit points.

Further, the application of an [80%] discount ensures that the benefits, or negative costs which are delivered by storage in terms of investment savings attributable to the transmission owner are to some degree represented in the cost of using storage (see WWA and Storengy reports - to be provided).

The fact that the benefits of embedded entry points located within DN networks receive discounted DN transportation costs, or even credits, suggests that a discount which is set to singularly remove double charging is inconsistent with the approach taken in other pipeline networks. The additional level of discount provides a mechanism for recognising the benefits afforded by embedded entry points (and exit points) and is in line with the cost reflective charging methodologies approved and employed at the DN level

Finally, in relation to the application of Revenue Recovery Charges, the proposal recommends that no charges are applied to storage (note that Modification 0678 proposes that such charges should be applied to non-Existing Capacity holdings on a capacity top-up basis). Currently, storage flows are exempt from the application of TO Commodity Charges (the mechanism employed to recover revenues not recovered from the sale of capacity products). On the basis that it is accepted that storage flows and indeed storage related capacity bookings should not be double charged then it must be the case that whatever Revenue Recovery Charge mechanism is employed that storage users should be exempt from its application. This approach is consistent with the findings of Ofgem in its Gas Transmission Charging Review on the basis that flows to and from storage (or capacity booked at an entry to deliver gas to, or an exit point to

ultimately offtake from) have already made a contribution to historical cost recovery (see WWA report to be provided).

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

The Proposer believes that the proposed utilisation of a new Reference Price Methodology which re-distributes National Grid's costs on a geographical 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

The application of an [80%] discount and exemption from Revenue Recovery Charges for storage users better achieves this objective. Firstly, as described in the Storengy and WWA reports (footnote to be provided) gas storage provides shippers with access to physical flexibility to manage any physical portfolio imbalances which occur for a variety of reasons. Gas storage is an essential tool for a large number of shippers which contract directly with storage operators, but also provides wider benefits to all shippers as a result of enhanced security of supply and well-understood, significant positive externalities. These wider benefits dampen price volatility and reduce the likelihood of network constraints, gas deficit issues and cost escalation (see WWA and Storengy reports, footnote to be provided).

In terms of cost distribution, analysis carried out by WWA the impact on charges of applying an [80%] discount is marginal. In isolation the move from a 50% to an [80%] discount would reduce revenue recovery by [£13.4m] across all entry and exit points in 2019/20. To put this into perspective this accounts for [1.6%] of total allowed revenue. In relation to the removal of the Capacity Revenue Charge, again the wider impacts on non-storage users would be immaterial.

Based on the outputs from the draft UNC 0678 model published on 09 February 2019, an [80%] discount would result in Revenue Input Adjustments of [£31.3m] at Entry and [£27.3m] at Exit. On average, including non-Existing storage capacity the cost per kWh of capacity booked of these adjustments would be [0.507p/kWh/d] at entry and [0.446 p/kWh/d] at exit. Where **all** storage bookings are excluded from the application of the Revenue Recovery Charge (including storage capacity used for own-use) the unit charge to all other non-storage users of funding the adjustment

would be [0.513 p/kWh/d] at entry and [0.483 p/kWh/d] at exit. In aggregate, the overall impact of all storage capacity from the application of a Revenue Recovery Charge would result non-storage users contributing [£147k] per annum at entry and [£1m] per annum at exit. Note that the actual figures would be lower as own-use storage capacity would incur a proportion of these costs.

In summary the combined impact of setting a storage discount at [80%] and the exclusion of storage capacity from the Revenue Recovery charge would equate to around [£14.5m] in 2019/20 or [1.8%] of total allowed revenue being recovered from non-storage users.

On this basis, there is no cross-subsidy between storage and non-storage users, beyond perhaps that as a result of the security of supply and broader societal benefits (externalities) non-storage Users are net beneficiaries of the [80%] discount.

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. Considering the lead time required for the development of such assets, assumptions on storage flows for the modelling of the impact of a discount of [80%] on the Revenue Recovery capacity top up charges are robust for 5 years, at the very minimum.

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. The decision to reject UNC0621 and its Alternatives highlighted three areas of compliance that needed to be addressed (Interim Contracts, Transition Period and 'Shorthaul'). This Modification proposes changes that will address these. In order to provide a compliant proposal to address these areas, The Proposer is proposing:

- Not to propose the creation of Interim Contracts;
- Not to use a transition period for the introduction of the methodology changes;
- The removal of the charge to manage avoidance of inefficient bypass (as highlighted in this proposal, National Grid has raised a separate review group (UNC0670R) to address this aspect of charging in the longer term; and
- Appropriate treatment of storage with a discount more properly reflecting the contribution to system flexibility and security of supply of such infrastructure. In addition, the exclusion of capacity booked at Storage points which has not been booked for "own use gas" purposes from the Revenue Recovery Charge is consistent with the requirement of EU TAR Article 9 to avoid double charging at Storage Points, as confirmed by Ofgem in its GTCR Confirmation of policy view.

Additional considerations

Consistency with the Ofgem Electricity TCR principles

Ofgem has set out three principles to guide their work in the Electricity Targeted Charging Review. It would be reasonable to assume that the same principles will apply in its consideration of any wholesale

changes to the gas transmission charging regime. To this end, the Proposer recommends that this proposal is consistent with these principles, as follows:

1. Reducing harmful distortions

The replacement of the TO commodity charge with a capacity-based charging regime is consistent with EU TAR and ensures a fairer distribution of costs across Users and customers. A capacity-based approach reduces any distortions caused by excessive residual charges. In relation to storage, without adequate recognition of the costs imposed by the operation of storage facilities and the myriad of benefits which storage provides to the system operator, the users of the network, and ultimately customers, harmful distortions would be created which will manifest in the form of net societal costs. The treatment of storage related capacity in this proposal goes some way to removing these distortions.

2. Fairness

The proposal results in a fairer allocation of network charges, more closely aligned to the costs and benefits which can be reasonably targeted at storage. The charge, in the form of a discount to standard charges, combined with an exemption from the application of a Revenue Recovery charge is simplistic, transparent, and predictable and we believe wholly justified by the analysis carried out to support, in particular, the level of the discount. The low-cost of supporting the charging arrangements for storage users also ensures that the impact on non-storage users and customers is minimal, in fact, the Proposer would argue it is far lower than the benefits which are generated by the existence and operation of storage.

3. Proportionality and practical considerations

Overall the proposal is straightforward to implement and will have minimal impacts on central or User systems, however, it should be understood that market processes, in particular contracting for gas storage occurs within a Gas Year (the Storage Year runs from May) could be unduly impacted. In order for the market to respond to and accommodate any changes to the underlying transmission charging regime, sufficient notice must be provided prior to the commencement of the offering of storage services. Ideally, the implementation of any significant changes to charges, in particular capacity-related charges, should take place at the beginning of a Gas Year

8 Implementation

Implementation of this Modification is proposed to be in line with an Ofgem decision. It should be by 31 May 2019 or as soon as possible after this date.

This Modification and the resulting methodology change will take effect for prices from 01 October 2019 or any other date in line with the Ofgem decision, in order to achieve compliance with the EU Tariff Code (or the relevant Statutory Instrument) as soon as possible.

9 Legal Text

Text Commentary

To be provided later

Text

To be provided later

10 Recommendations

Proposer's Recommendation

The Proposer recommends that this Modification should be treated as an Alternative to Modification 0678 and therefore it should proceed as such under the same timetable as that agreed with the Authority for Modification 0678 as far as practicable.