

UNC Modification	At what stage is this document in the process?
<h1>UNC 0621C:</h1> <h2>Amendments to Gas Transmission Charging Regime</h2>	<p>01 Modification</p> <p>02 Workgroup Report</p> <p>03 Draft Modification Report</p> <p>04 Final Modification Report</p>
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 assessed by a Workgroup
	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

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1 Summary	3	
2 Governance	4	
3 Why Change?	4	
4 Code Specific Matters	9	
5 Solution	12	
6 Impacts & Other Considerations	28	
7 Relevant Objectives	29	
8 Implementation	34	
9 Legal Text	34	
10 Recommendations	34	

Timetable

The Proposer recommends the following timetable:

Initial consideration by Workgroup	20 February 2018
Workgroup Report presented to Panel	17 May 2018
Draft Modification Report issued for consultation	18 May 2018
Consultation Close-out for representations	25 June 2018
Final Modification Report available for Panel	9 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 charges 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.

How

This modification 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 the Transition Document and update other sections of the UNC TPD (Sections B, E and G and EID Section B) and these will be accommodated as necessary.

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 evolution 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 Users' 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 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>

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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.
- 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. 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 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.
- 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

⁴ See <https://www.gasgovernance.co.uk/ntscmf/subq1model>

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of these adjustments, discounts and other charges to NTS customers and to the end consumer. In particular, the CWD approach by itself is unlikely to promote the efficient and economic utilisation and operation of the pipeline system (being a key element of the Relevant Objectives) unless it is accompanied by an appropriate short-haul pricing arrangement, both in the transitional period and on an enduring basis thereafter. This is because a CWD approach by itself would create unduly great incentives for NTS by-pass pipelines, especially over shorter distances. (The same could be said for other possible charging approaches, such as Postage Stamp.) This key point is covered in more detail in the relevant objectives section. It is generally recognised that the current level of short-haul discounts has become distorted by its structural link to increasing TO Commodity charges. This Proposal is designed to address both issues – i.e. developing a more coherent short-haul pricing structure (aligned to CWD) and at the same time reducing the overall level of available short-haul discounts.

- 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.
- 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.

Forecasted Contractual Capacity (FCC)

- 3.12. 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.
- 3.13. For charges that will apply after 30 September 2021, it is proposed that FCC is reviewed annually by National Grid and updated 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

- 3.14. 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.
- 3.15. 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

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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.

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

Discounts

- 3.17. 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 entry and exit 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.
- 3.18. 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.
- 3.19. 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. An enduring storage discount value is proposed but it is recognised that the EU Tariff Code requires the charging regime to be reviewed, as a whole, at least every 5 years.
- 3.20. 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 and will be subject to the required annual consultation.

Revenue Recovery

- 3.21. The proposal incorporates a mechanism to manage the consequence of under or over recovery of revenues from Transmission Services Capacity Charges. The general approach advocated for most system points is an initial, or transitional, period where these Revenue Recovery charges are applied as a flow-based (commodity) charge which then transitions to a capacity-based charge on an enduring basis. However, different treatments are required for Interconnection Points during the initial period to ensure EU Tariff code compliance and for existing capacity contracts in respect of the capacity-based charges.
- 3.22. The proposed transitional period should be of sufficient length to provide a means to mitigate the risks associated with Transmission Services revenue being wholly capacity based from October 2019 and to provide National Grid with sufficient time and data to develop a capacity forecasting model for use in the enduring period. Without evidence of the change in behaviours for capacity bookings under the new regime, and given National Grid's experience

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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.

3.23. From October 2021, the charging framework in respect of Transmission Services revenue moves away from a reliance on commodity charges: a greater dependency on a capacity forecasts for FCC, resulting in a significantly reduced revenue recovery charge that will be capacity-based, will provide a 100% capacity basis for the recovery of Transmission Services revenue.

3.23.1. 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.

3.23.2. The approach in 3.23.1, 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 Charges

3.24. The proposal will introduce a new approach to NTS optional charging that will enable National Grid to continue to offer transportation services that result in the efficient use of its gas network. The new method is a natural extension of the capacity weighted distance methodology. It provides a solution that can be applied at all system entry and exit points during both the transitional and enduring periods.

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

3.25. Provisions will apply for Entry Capacity (for 01 October 2019 or beyond) allocated up to the Effective Date.

3.25.1. 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*".

3.25.2. 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.

3.25.3. 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].

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 application of the charge
- Allocation Charges at Interconnectors – no change is proposed to the calculation or 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.
- No changes are proposed to the Non-Transmission Services/ System Operator (SO) charging methodology, nor to the associated NTS Optional charges (short-haul discounts). This is because the EU Tariff Code permits commodity charges to recover the throughput-related costs of operating a transmission pipeline system, whilst the associated short-haul transportation discounts should continue to reflect the avoided costs of system operation.

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>.

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

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

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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>

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Uniform Network Code (UNC) Section Y:

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

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UNC European Interconnection Document (EID):

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

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EU Tariff Code:

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

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

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

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Uniform Network Code (UNC) Section B:

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

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NTS Transportation Statements:

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

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Customer and Stakeholder Objectives:

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

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

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

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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	The CWD approach fundamentally requires three main inputs: <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 distance matrix for the average connecting distances on the NTS; andA capacity value for each Entry and Exit point that will be the Forecasted Contracted Capacity (FCC) (which is mentioned later in this section).

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	The CWD model produces the Transmission Services Reference Prices and with additional adjustments produces the Transmission Services Reserve Prices.
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).
Interim Contracts (ICs)	Arrangements relating to Long Term Entry capacity allocated between 6 April 2017 and the Effective Date, excluding Interconnection Point 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.
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

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Transmission Services Revenue Recovery Charges at Storage
includes adjustments to available capacity (including transfers)
executed up to and including the Effective Date.

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	to set capacity based transmission tariffs. This will be 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 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:

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- 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 Optional 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; and
- 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 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.

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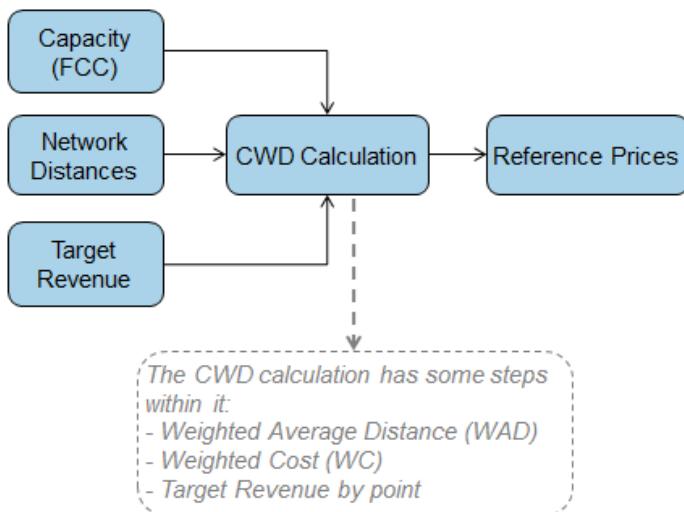
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Calculations within the CWD Model

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) and Interim Contracts (IC) capacity booked to recover the target Entry or Exit Transmission Services revenue.



Key steps in the CWD calculations:

	Entry Capacity Calculation	Exit Capacity Calculation
Weighted Average Distance (WAD)	$\frac{(\text{Sumproduct Exit Point FCC} \times \text{Distance to Entry Point})}{\text{Sum Exit Point FCC}}$	$\frac{(\text{Sumproduct Entry Point FCC} \times \text{Distance to Exit Point})}{\text{Sum Entry Point FCC}^{\#}}$
Weighted Cost (WC)	$\frac{\text{Entry Point FCC}^* \times \text{WAD}}{(\text{Sumproduct Entry Point FCC}^* \times \text{WAD})}$	$\frac{\text{Exit Point FCC} \times \text{WAD}}{(\text{Sumproduct Exit Point FCC} \times \text{WAD})}$

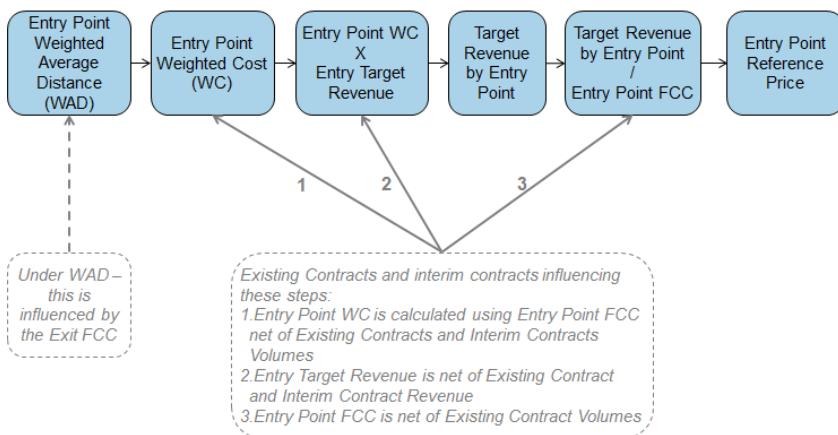
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Target Revenue by point (TRP)	Entry Target Revenue x WC	Exit Target Revenue x WC
Reference Price (RefP)	Entry TRP / Entry Point FCC*	Exit TRP / Exit Point FCC

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

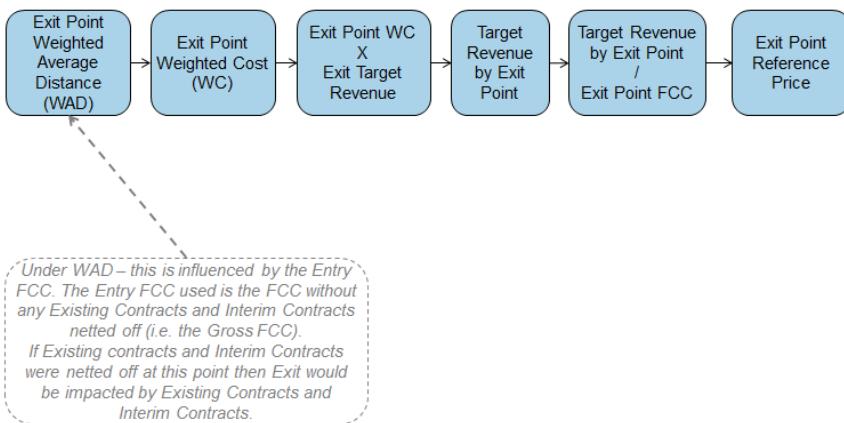
*Entry Point FCC – this is the Entry Point FCC net of capacity associated with Existing Contracts and Interim Contracts.

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:

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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 by National Grid and shared with industry. It will be transparent and sufficiently flexible to allow the best possible forecast to be applied to the relevant year from 2021 onwards in the calculation of the capacity charges.

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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 (with the exception of Existing Capacity and Interim Capacity). 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.

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It is proposed that 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 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, 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 and for subsequent years, such that the proposed discount value will be rounded up to the nearest 10%:

- It is proposed that 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/Oftake 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)) 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

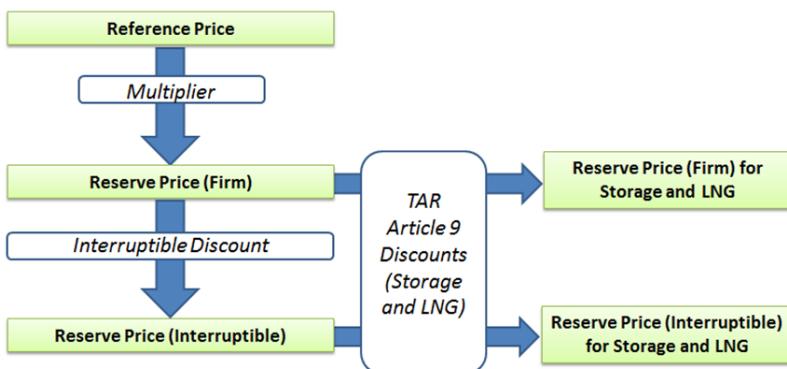
It is proposed that the following step is only applicable for Capacity Reference Prices from October 2021 (on an enduring basis) concurrent with the time when the FCC is updated to be based on a more informed forecast. Once the Reserve Prices have been calculated taking into account all the required Multipliers and Discounts there will be an under recovery driven by the levels of discounts (e.g. interruptible and specific capacity discounts). This anticipated under recovery will result in need for an adjustment to be applied to the CWD calculation in order to recalculate Reference Prices, and therefore Reserve Prices, so that the under-recovery is estimated to be zero or close to zero to 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

With the exception of Optional Capacity Charges, it is proposed that payable charges for Firm and Interruptible / Offpeak capacity (determined following the application of any relevant Multipliers, Specific Capacity Discounts, or Interruptible / Offpeak adjustments) will be subject to a minimum value (collar) of 0.0001p/kWh/d. The treatment of Optional Capacity Prices is described in the NTS Optional Charges section below.

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 (which includes Off Peak) Capacity products (including Capacity at Storage and LNG sites).



Capacity Price Steps

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

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

[The following table summarises the type of Revenue Recovery Charge \(RRC\) that will apply:](#)

		Transitional Period (1 Oct'19 - 30 Sep'21)		Enduring Period (from 1 Oct'21)	
		Non-IP	IP	Non-IP	IP
Entry	Existing Contract	Commodity	Commodity	Commodity	Commodity
	Interim Contract	Commodity	n/a	Commodity	n/a
	Non-Historical Contract	Commodity	Capacity	Capacity	Capacity
Exit	All contracts	Commodity	Capacity	Capacity	Capacity

Notes:

- 1 By definition, Interim contracts will only exist at non-IPs
- 2 In the above, non-IPs exclude Storage Facilities
- 3 For Storage Facilities, there is no RRC except a commodity charge for own use gas during the Transitional Period

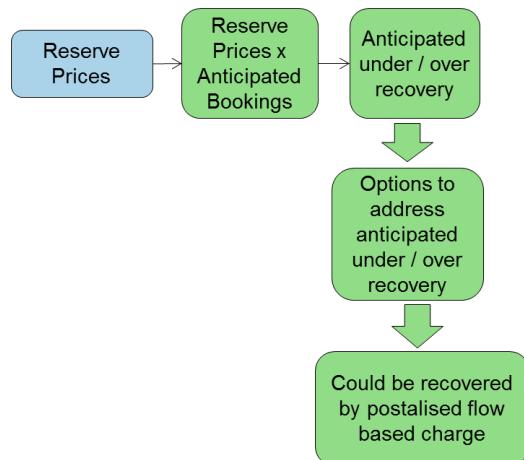
Transmission Services Entry Revenue Recovery Charges for (a) Existing Contracts at all entry points, and (b) Interim Contracts at non-Interconnection Point entry points will be commodity-based, not capacity-based.

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Transmission Services Revenue Recovery Charges will not apply to Storage Facilities except where the charges are flow-based during the Transitional Period and the flows are for own use gas.

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 in the following broad manner for Entry and Exit in the same way:



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The above assessment will include the revenues expected to be collected from Historical Contracts where the capacity prices and capacity quantities are known.

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. Transmission Services Revenue Recovery charges will not be adjusted more than once within the gas year.

It is proposed that for the Transitional Period, i.e. 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 to 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 to both Entry and to Exit to produce Transmission Services Entry Revenue Recovery charges and to produce 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 following calculations will be used to determine Transmission Services Revenue Recovery Charges for a specified revenue recovery period:

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Exit Transmission Services Revenue Recovery Charge (p/kWh/day) =

Target Revenue/ forecast of aggregate ~~v~~ Interconnection Point exit capacity booked

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Where Target Revenue =

Forecasted Total Exit Transmission Services Revenue Recovery requirement x

Forecasted Interconnection Point Exit Flows /

Forecasted Total relevant NTS exit flows.

Non-~~Existing Contract~~ Entry Capacity Transmission Services Revenue Recovery Charge (p/kWh/day) =

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Where Target Revenue =

Forecasted Total Entry Transmission Services Revenue Recovery requirement x

Forecasted Interconnection Point Entry Flows against non-Existing Contracts /

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Forecasted Total relevant NTS entry flows.

Existing Contract Entry Capacity Transmission Services Revenue Recovery Charge (p/kWh) =

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Target Revenue/ forecast of Existing Capacity Interconnection Point entry flows

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Where Target Revenue =

Forecasted Total Entry Transmission Services Revenue Recovery requirement x

Forecasted Interconnection Point Entry Flows against Existing Contracts /

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Forecasted Total relevant NTS entry flows.

In the determination of the above and in the levying of charges, it is assumed that at Interconnection Points the forecast or actual gas entry flows will utilise Existing Contract entry capacity before non-Existing Contract entry capacity.

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It is proposed for the Enduring Period, i.e. 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 for (a) Existing Contracts held as primary, or registered, capacity at all entry points in which case a commodity charge will apply, (b) Interim Contracts held as primary, or registered, capacity at non-Interconnection Point entry points in which case a commodity charge will apply and (c) Storage Facilities in which case no charge will apply. The method described above for determining these charges at Interconnection Points during the Transitional Period will be retained and extended to non-Interconnection Points.

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Where a User holds both Historical and non-Historical primary entry capacity at the same ASEP, gas flows will be deemed to utilise Historical capacity before non-Historical capacity.

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Deleted: The aforementioned capacity-based 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 for Historical Contracts and Storage Facilities) or Exit Capacity (except for Storage Facilities) booked for the applicable year (irrespective of when this capacity was procured from National Grid) would be subject to Revenue Recovery charges.

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NTS Optional Charges

The new method will provide for reduced entry and exit capacity reserve charges at applicable entry and exit system points, replacing the need to derive an Optional Commodity Charge. Consistent with the current code rules, Non-Transmission Services (SO) commodity charges will not be payable on qualifying gas entry or exit flows. Transmission Services Revenue Recovery (TO) charges will be payable so that all gas flows (or relevant capacity entitlements) make a contribution to Transmission Services Revenue under-recovery. This recognises that cost savings would not be made by profiling the use of capacity on an alternative pipeline, i.e. that the rental for such a pipeline would likely include some form of minimum bill payment.

The NTS Optional Capacity Reserve Charges will apply to an Applicable Quantity (Q) calculated on each gas day:

$$Q = \text{MIN} \{ \text{CAPen}, \text{CAPex}, \text{FLOWen}, \text{FLOWex} \} \text{ where}$$

CAPen = User's entry capacity entitlement on the day at the applicable ASEP,

CAPex = User's exit capacity entitlement on the day at the applicable exit point,

FLOWen = User's gas flow entry allocation on the day at the applicable ASEP, and

FLOWex = User's gas flow exit allocation on the day at the applicable exit point.

For an applicable entry and exit point combination requested by a User, the NTS Optional Capacity Reserve Charges to be levied on the Applicable Quantity are calculated as follows:

NTS Optional Entry Capacity Charge = $D / \text{CWDen} \times \text{RPen} / \text{RRF}$ and

NTS Optional Exit Capacity Charge = $D / \text{CWDex} \times \text{RPex} / \text{RRF}$ where

D is the straight-line distance between the entry and exit point,

CWDen is the capacity weighted distance for the entry point,

CWDex is the capacity weighted distance for the exit point,

RPen is the prevailing capacity reserve price for the entry point,

RPex is the prevailing capacity reserve price for the exit point, and

RRF is a Revenue Rebalance Factor.

The Revenue Rebalance Factor (RRF) acknowledges that capacity reserve prices during the Transitional Period will be relatively low but Transmission Services Revenue Recovery charges (mainly commodity-based) will be relatively high. However, in the Enduring Period the reverse can be expected, i.e. the capacity reserve prices will be relatively high while the Transmission Services Revenue Recovery charges will be low. The purpose of the RRF is to provide a smooth transition to the Enduring Period to avoid any significant overall change to Optional Charge revenues, all other things being equal.

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For the Transitional Period the RRF will have a value of 1.0000 (one).

For the Enduring Period, National Grid will establish the RRF by calculating, for the 2019/20 Gas Year, the proportion of allowed (entry plus exit) revenue recovered via capacity charges (excluding any capacity-based Transmission Services Revenue Recovery charges, e.g. at IPs). So, for example, if 40% of the entry and exit revenues were recovered from normal capacity charges in Gas Year 2019/20, the RRF for the Enduring Period will be 0.4000 (i.e., the payable Optional Capacity Charges would be increased by 150%). After the conclusion of the 2019/20 Gas Year, National Grid will be required to set out in detail how the RRF has been calculated using 2019/20 Gas Year data. The RRF value will be accurate to 4 (four) decimal places. The RRF will therefore help to ensure there is no significant change to Optional Charge impacts when moving from the Transitional Period to the Enduring Period.

The Optional capacity charges therefore reflect that proportion of the costs, allocated by the capacity weighted distances at the relevant entry and exit points, that would be attributed to a dedicated pipeline bypassing the NTS.

Non-Transmission Services charges will not be levied on the Applicable Quantity (Q).

Normal Transmission Services charges or Non-Transmission Services charges will apply, as appropriate, to those capacities or gas flows not covered by the Applicable Quantity (Q):

Where CAPen > Q, normal entry capacity charges will apply to (CAPen – Q) units of the User's entry capacity entitlement.

Where CAPex > Q, normal exit capacity charges will apply to (CAPex – Q) units of the User's exit capacity entitlement.

Where FLOWen > Q, the normal entry commodity charges will apply to (FLOWen – Q) units of the User's entry allocation.

Where FLOWex > Q, the normal exit commodity charges will apply to (FLOWex – Q) units of the User's exit allocation.

NTS Optional Charges will not apply where either the entry or exit point is a gas storage facility. Also, an exit point can be associated with only one entry point/ASEP for the purpose of attracting NTS Optional Charges.

Where an entry point is combined with 2 or more exit points for the purpose of attracting Optional charges then for the sole purpose of calculating the Applicable Quantities:

- (a) If the sum of the exit allocations exceeds the entry flow allocation, then the FLOWex values will be proportionately scaled down so that their sum is equal to the entry flow allocation, and/ or
- (b) If the sum of the exit capacity entitlements exceeds the entry point capacity entitlement, the exit capacity entitlement values will be proportionately scaled down so that their sum is equal to the entry point capacity entitlement.

It is proposed that at the Bacton ASEPs only, the input flow at the ASEP will be equal to the sum of the UKCS ASEP and the IP ASEP. In order to determine the proportion of NTS Optional Flow which is subject to application in respect of non-Interconnection Points and which is subject to application in

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respect of Interconnection Points, the NTS Optional Flow shall be apportioned between the UKCS ASEP and the IP ASEP in pro rata proportion to the input flow (i.e. in proportions equivalent to the input flow at the UKCS ASEP and the IP ASEP). The approach advocated is consistent with the principles introduced by 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.

It is appropriate that all gas using the NTS attracts a charge for doing so. It is therefore reasonable to apply a minimum distance limitation such that D is no less than 0.1km to ensure that the NTS Optional capacity charges are positive numbers.

National Grid NTS will notify relevant shipper Users of the applicable NTS Optional capacity charges, and the date from which they are to apply, as they would for the normal set of transportation charges.

Optional Capacity Charges will be quoted to an accuracy of 6 (six) decimal places. and quotations will also include the value of each variable in the relevant Optional Capacity Charge formula described above.

In the determination of invoice amounts, the values of each variable in the relevant Optional Capacity Charge formula will be used, not the quoted Optional Capacity Charge. This will circumvent any restrictions on Optional Capacity Charges that may be imposed by information systems limitations, e.g. limiting charges to 4 decimal places or by imposing a minimum charge of 0.0001 p/kWh/day.

Example - Optional Entry Capacity Charge for 1 day.

D	30 km
CWDen	270 km
RPen	0.0002 p
RRF	0.5
Actual OCC (=D/CWDen*RPen/RRF)	0.000044 p (rounded)
Minimum Charge (systems limitation)	0.000100 p
Applicable Quantity	30,000,000 kWh
Invoice using Actual OCC	£13.33
Invoice using Minimum Charge	£30.00

The invoiced amount will therefore be £13.33

Implementation steps will include the following:

- (a) Existing Optional Commodity Contracts will be deemed to have been withdrawn (or cancelled) by relevant shippers with effect from 05:00 hours on 1 October 2019;
- (b) Contracts under (a) will be deemed to have been replaced with new Optional Capacity contracts from 05:00 hours on 1 October 2019 (i.e. steps a and b provide for a deemed renomination);
- (c) Any Supply Point Offers, in respect of Optional Commodity rates, that have an expiry date after 30 September 2019 will expire on the 30th September 2019;

Nothing in the above will restrict a User from actively renominating a supply point.

Existing Contracts (EC) and Interim Contracts (IC)

It is proposed that before the Base Reference Prices are calculated, in respect of Existing Contracts [and Interim Contracts]:

- the Entry Capacity booked will be removed from the Entry Capacity input into the CWD model; and
- the Entry Revenue will be removed from the Entry Target Revenue input into the CWD model

Existing Contracts and Interim Contracts will not be subject to a Transmission Services Revenue Recovery Charge where such a charge is capacity-based.

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

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, with 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

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time period of 32 quarters; this equates to 0.2922 p/kWh of Entry Capacity retained.

NTS Entry Capacity Retention Charges and refunds with 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.

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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

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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

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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.

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
Non Transmission Services	NTS Optional Charge Formula	Transportation Statement	01 August
	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

The "Issued by" date in the above table 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 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 impacts 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.

7 Relevant Objectives

Impact of the modification on the Relevant Objectives:

	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

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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
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

Relevant Objectives - Commentary

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

The whole charging package contained in this proposal has been designed to encourage fair and efficient access to the pipe-line system. The expected more stable and predictable charges compared with what is generated from the current methodology should encourage more stable and predictable use of the system by shippers -something that should in turn help National Grid generate accurate capacity usage forecasts for setting charges in future. The removal of free capacity products is an important aspect of the proposal as is the inclusion of a meaningful and sustainable solution for the Optional Charge (or short-haul). Without short-haul there will likely be an increased incentive for the use of some system bypass pipelines because some of the charges being generated by CWD produce counter-intuitive outcomes – high exit charges for large sites located close to entry points (the same argument could be made had the reference price methodology been Postage Stamp.) By improving the predictability of the use of the system National Grid should be better placed and better prepared to operate it in a more

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Joint Office of Gas Transporters

efficient manner. By encouraging efficient use of the system by shippers (e.g. by avoiding inefficient bypass) National Grid will ensure that its operations can be economically optimised so that costs are kept as low as possible on a pence/ kWh flowed basis.

At the same time, this Proposal recognises that the current level of short-haul discounts applied to Transmission Owner (TO) charging has become distorted in recent years by their structural link to the rising level of TO Commodity charges. The Proposal is therefore designed to promote efficiency and economy in the use of the NTS pipeline system by reducing the level of discounts to a more appropriate level, whilst addressing the underlying structural design of the short-haul charging methodology and thus providing a robust, enduring basis for dis-incentivising inefficient NTS by-pass.

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c) Efficient discharge of the licensee's obligations

The proposal will ensure that necessary enhancements and changes are made to the charging methodology holistically, enabling Users to comprehend the implications for the whole suite of gas transmission charging. This is much more preferred and efficient than had the changes been made in a fragmented or incomplete manner.

d) Securing of effective competition

The proposal is expected to result in more stable and predictable capacity charges which will be conducive to enhancing competition in gas shipping and gas supply. This is further helped by not applying capacity-based Transmission Services revenue recovery charges to Historical capacity (except for Interim Contracts at Interconnection Points), providing shippers with confidence that once a contract for capacity has been struck it will as far as legal requirements permit, be honoured. The discount to capacity charges for gas storage has been set to help keep these important facilities economically viable and available to shippers.

Our Optional Charge/ short-haul solution will allow shippers to compete more effectively at proximate offtakes, including power stations, without having to build their own (inefficient) by-pass pipelines. The solution will provide for this during both the transitional and enduring periods.

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

A key driver for change is the requirement to fully implement the EU Tariff network code by 31 May 2019 and this proposal will ensure that the obligation is fulfilled.

Relevant Charging Methodology Objectives - Commentary

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 Capacity Weighted Distance (CWD) basis for allocating costs and setting reference prices is expected to provide a platform for more stable and predictable capacity reserve prices compared with the current Long Run Marginal Cost methodology. Some shortcomings with the CWD approach have been identified, in particular the production of some relatively high exit capacity prices close to some entry points. However, the inclusion of optional charging (or short-haul) arrangements in this proposal provide

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Joint Office of Gas Transporters

a means of correcting such anomalies and provide a more intuitively correct outcome when considering the cost-reflectivity of the charges.

The current Long Run Marginal Cost (LRMC) reference price methodology was designed to provide economic signals on where it would be economic for customers to acquire capacity on the NTS, i.e. it provided locational price signals. This approach was relevant during the period when the network was expected to expand so that informed and efficient network usage would be encouraged. Today, however, expansion of the network is likely to be limited and gas demand has been following a generally downward trend in most recent years. Therefore, an LRMC approach is not best suited to the current usage and requirements of the NTS and will not provide such a relevant, cost-reflective approach to charging as it has in the past.

A new approach to paying for these costs, reflecting how the NTS is now used, is therefore required; a methodology that more fairly distributes costs among the users of the system and that recognises that historical decisions on how the network was developed over many years should not in future unduly dictate how charges are set in future. A Postage Stamp methodology has its appeal – it's simple and generally equalises entry and exit charges for users. However, a Postage Stamp method could be considered a relatively extreme departure from an LRMC approach and would be a step too far at this point in time because there will remain some additional use of the NTS in future (witness the number of PARCA windows being opened) for which an element of locational price signal would remain relevant and cost-reflective.

A Capacity Weighted Distance (CWD) charging methodology sits somewhere between LRMC and Postage Stamp. It significantly flattens capacity charges across the range of entry points and range of exit points whilst still maintaining a degree of locational price signal. A CWD reference price methodology has therefore been adopted in this proposal to provide a balanced cost-allocation approach, one which recognises the changing use of the NTS yet one that retains some locational price signals. It is the view of the Proposer that CWD provides a more reasonable basis for setting cost-reflective reference prices during this phase of the NTS's life but it requires and relies on the addition of an Optional Charge (or short-haul) solution to make it work.

The inclusion of a workable Optional Charge (or short-haul) solution is critical to ensuring the cost-reflectivity of either a CWD or Postage Stamp methodology. Both of these Reference Price Methodologies would produce counter-intuitive capacity charges for some combinations of entry and exit points, e.g. high entry and exit charges when the exit point is in close proximity to the entry point, such as St Fergus and Peterhead power station or Bacton UKCS and the IUK exit point. It is therefore essential to incorporate a meaningful and enduring Optional Charge solution to resolve such anomalies in order to provide a holistic solution that results in cost-reflective charges. This modification proposal provides such a solution with a new Optional Charge approach that is based on the cost allocation principles contained in the CWD reference price methodology. The result is a consistent, holistic solution that works for both the transitional period and, critically, for the enduring period without resort to any artificial restrictions such as short-haul distance caps.

The proposed discount for storage facilities should act to equalise the cost of transporting gas from an entry point to an exit point via a storage facility with the cost of transporting the gas directly from the entry point to the exit point. The effect is to remove any spurious transportation cost because gas is temporarily held in storage. This can be likened to storing gas as linepack in the NTS.

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- aa) That, in so far as prices in respect of transportation arrangements are established by auction, either:**
 - (iii) no reserve price is applied, or
 - (iv) 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;

The proposed changes to the balance of reserve prices among capacity products of different durations will ensure that a much fairer price is paid by shippers generally compared with the current situation where short-term entry and exit capacity can be readily purchased free of charge. This will help to significantly reduce the situation where parties that choose, or for business reasons are required, to purchase capacity on a long-term basis are disadvantaged and who, because of revenue under-recovery provisions such as has been witnessed with TO commodity charges, end up paying well in excess of their fair share of transmission costs. This rebalancing of charges and fairer allocation of costs is conducive to better promoting competition between gas suppliers and between gas shippers.

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

From a legal and regulatory perspective, the new methodology will ensure that the requirements of EU network codes can be fully adhered to, thus ensuring that the required transportation developments, especially, at Interconnection Points, are realised. From an operational perspective, the transportation business will need to change to meet changing demand patterns and changing sources of gas supply, presenting it with a challenge for the long-term transportation of gas to consumers and with a need to provide more flexibility to meet more unpredictable within-day changes to supply and demand patterns. The new charging approach under this proposal provides a significantly more balanced suite of capacity purchase options that will lead to more predictable costs for shippers and more appropriate payments in respect of the use of the day to day and within-day use of the system.

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 expected greater predictability and stability of charges will help gas shippers to better plan their future deliveries of gas to the market, will lead to less uncertainty for new entrants and generally provide a better basis for promoting competition in gas shipping and gas supply. The proposed discount for storage facilities will help to ensure that these important assets can remain economically viable and provide gas shippers with options for efficiently attracting and delivering gas to the market. The retention of these facilities will also help to encourage competition.

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 proposed new charging methodology has been derived by taking account of the various provisions of the EU Tariff network code to ensure compliance with it. It strikes an appropriate balance between those code provisions whilst also ensuring that the transition from the current to the new charging regime can be effected in a way that provides users with some time to adjust to the new charging arrangements before the full suite of enduring provisions come into force. The proposed methodology adequately protects existing contractual rights and obligations, especially in respect of H

8 Implementation

No implementation timescales proposed, these will be discussed within the workgroups.

This modification and the resulting methodology change will take effect for prices from October 2019, in order to achieve compliance with the EU Tariff Code.

9 Legal Text

Text Commentary

To be provided later

Text

To be provided later

10 Recommendations

Proposer's Recommendation to Panel

Panel is asked to:

- Agree that Authority Direction should apply
- Refer this proposal to a Workgroup for assessment.

Appendix 1: Impacts of Proposal on NTS Capacity Auctions

Acronym	Full name	Dir.	Class	Product	Transition		Calculation and Publication*			Published Price (at time of auction)	Payable Price				
					Last 'Old Rules' Auction	First 'New Rules' Auction	Last Old Calculation	Last Old Publication	First New Calculation						
INTERCONNECTION POINTS															
IPAY	Interconnection Point Annual Yearly	Y	Jul 2018	Jul 2019	Oct 2017	May 2018	Oct 2018	May 2019	Y1: actual Y2-15: indicative	Prevailing price plus premium					
IPAQ	Interconnection Point Annual Quarterly	Y	May 2019	Aug 2019	Oct 2017	May 2018	Oct 2018	Jan 2019	actual	Prevailing price plus premium					
		Y			Mar 2019	May 2019	Feb 2019	May 2019							
IPRM	Interconnection Point Rolling Monthly	Y	Aug 2019	Sep 2019	Jun 2018	1 Jul 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					
		Y			Mar 2019	May 2018									
IPDA	Interconnection Point Day Ahead	Y	29 Sep 2019 (F: 15:30, I: 16:30)	30 Sep 2019 (F: 15:30, I: 16:30)	Jun 2018	Jul 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					
		Y			Mar 2019	May 2018									
IPWD	Interconnection Point Within Day	Y	30 Sep 2019 (00:00 - 00:30)	30 Sep 2019 (18:00 - 01:30)	Jun 2018	Jul 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					
		Y			Mar 2019	May 2018									
NON-INTERCONNECTION POINTS															
QSEC	Quarterly System Entry Capacity	Y	Mar to May 2019	Mar to May 2020	Oct 2018	Jan 2019	Oct 2019	Jan 2020	indicative	Prevailing price plus premium					
MSEC	Monthly System Entry Capacity	Y	Feb 2019	Feb 2020	Jul 2018	31 Jul 2018	Feb 2019	May 2019	M1-6: actual M7-18: indicative	Prevailing price plus premium					
RMTTSEC	Rolling Monthly Transfer System Entry Capacity	Y	Aug 2019	Sep 2019	Jun 2018	1 Jul 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					
DADSEC	Day Ahead Daily System Entry Capacity	Y	29 Sep 2019	30 Sep 2019	Jun 2018	Jul 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					
WDDSEC	Within Day Daily System Entry Capacity	Y	30 Sep 2019	1 Oct 2019	Jun 2018	Jul 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					
EAFLEC	Enduring Annual Flat Exit Capacity	Y	Enduring, sold Annually	Jul 2018	Jul 2019	Mar 2018	May 2018	Feb 2019	May 2019	Y4+ indicative	Prevailing				
AFLEC	Annual Flat Exit Capacity	Y	Jul 2018	Jul 2019	Mar 2018	May 2018	Feb 2019	May 2019	Y1: actual Y2-3: indicative	Prevailing					
DADNEK	Day Ahead Daily NTS Exit Capacity	Y	29 Sep 2019	30 Sep 2019	Mar 2018	May 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					
WDDNEK	Within Day Daily NTS Exit Capacity	Y	30 Sep 2019	1 Oct 2019	Mar 2018	May 2018	Feb 2019	May 2019	actual	Prevailing price plus premium					

F - Firm I - Interruptible * these dates are starting points for the respective calculation and publication processes