

0517/A/B:

Review of the Supply Matching Merit Order in Setting Capacity Charges

A – with Timing of Resultant Price Changes

B – with Rolling Average to Reduce Volatility in Annual Charges



This modification seeks to amend the current Merit Order which is specified in UNC TPD Section Y so that it aligns to the current utilisation of the supply.

It is proposed to combine the supply which is against MRS and LNG into one group within the Merit Order and prorate as currently specified in the methodology.

Small changes in inputs to the Transmission model can result in large changes to charges. Alternative A proposes to delay the implementation of the change by two years. Alternative B proposes to adopt a three-years rolling average using historic charges.



The Workgroup recommends that this modification should now proceed to consultation



High Impact:



Medium Impact:
Gas Distribution Network Operators,
Shippers and Suppliers



Low Impact:
National Grid Transmission

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About this document:

This report will be presented to the panel on [17 September 2015]

The panel will consider whether the modification should proceed to consultation or be returned to the workgroup for further assessment.

| | |
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| The Workgroup recommends the following timetable (backstop dates shown): | |
| Initial consideration by Workgroup | 31 October 2014 |
| Amended Modification considered by Workgroup | n/a |
| Workgroup Report presented to Panel | 17 September 2015 |
| Draft Modification Report issued for consultation | 17 September 2015 |
| Consultation Close-out for representations | 16 October 2015 |
| Final Modification Report presented to Panel | 19 October 2015 |
| UNC Modification Panel decision | 19 November 2015 |

Throughout this report, text in black is common to the original Modification 0517 plus the two alternatives, unless accompanied by coloured text as follows:

Blue text refers to Modification 0517A

Red text refers to Modification 0517B



Any questions?

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1 Summary

Is this a Self-Governance Modification?

Self-Governance does not apply as this modification is likely to impact commercial activities connected with the shipping, transportation or supply of gas conveyed through pipes.

Is this a Fast Track Self-Governance Modification?

Fast Track Self-Governance does not apply as it is not properly a house keeping modification.

Why Change?

The Merit Order within the Transportation Model was implemented as part of GCM16 in 2009. At the time the Merit Order reflected the utilisation of supply. National Grid must keep the charging methodology under review as part of its Licence conditions. Therefore the ordering of the supply source groups should be kept under review to reflect further developments in supplies and be consistent with what happens on the network.

In recent years there has been a change in selective utilisation of Liquefied Natural Gas (LNG) and Mid Range Storage (MRS). We have seen an increase in the use of MRS and a decrease in the amount of LNG that is being utilised. Both these sources have been utilised on any cold day in recent years.

Solution

It is proposed to amend the current Merit Order which is specified in UNC TPD Section Y so that it aligns to the current utilisation of the supplies in the current years.

This modification proposes to amend the Merit Order to combine the supply which is against MRS and LNG into one group within the Merit Order and prorate as currently specified in the methodology.

To implement for both NTS Entry Capacity charges and NTS Exit Capacity charges in a reasonable timeframe, the implementation of the change to the Merit Order for use in calculating NTS Entry Capacity Reserve Prices and NTS Exit Capacity charges should be subject to a notice period.

Then to reduce large year on year changes to charges on an enduring basis, it is proposed to use the rolling average of three most recent years of charges, where available, to set charges for the current charging year.

Relevant Objectives

Implementation of this Modification Proposal would facilitate Relevant Charging Objectives a), aa), b) and c).

Implementation

No implementation timescales are suggested at this time. The different implementation timescales are shown in section 5 below. The Workgroup believes that this modification should be implemented at its earliest opportunity.

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

This does not affect any other industry change.

2 Why Change?

The Transportation Model calculates the Entry and Exit Capacity reserve prices. Within the Transportation model there is a specific Merit Order to scale the supplies to meet demand. For the Transportation Model to run the supplies must equal the demand. This Merit Order should reflect supply utilisation and the merit order to use supply types is specified within TPD UNC Section Y – Section 2.5.1(c).

The Merit Order used within the Transportation Model was implemented as part of GCM 16 which was implemented in 2009. At the time the Merit Order which is currently specified within Section Y and the Transportation Model reflected the supply utilisation.

The current Merit Order within the UNC and Transportation Model is specified as below and the adjustment shall be carried out by reducing supplies in the following order to the point at which supplies equal the forecast demand:

- (i) short range Storage Facilities;
- (ii) mid range Storage Facilities;
- (iii) LNG Importation Facilities;
- (iv) long range Storage Facilities;
- (v) pipeline interconnectors; and
- (vi) beach terminals.

In recent years the utilisation of supply on a highest demand day data based on the percentage of supplies has changed. There has been an increase in MRS and a decrease in LNG utilised over recent years.

| Financial Year | LNG | MRS |
|----------------|--------|--------|
| 2010/2011 | 17.36% | 3.77% |
| 2011/2012 | 18.70% | 12.12% |
| 2012/2013 | 7.70% | 16.79% |
| 2013/2014 | 2.47% | 13.24% |

The data above shows a change in the amount of LNG and MRS supply used on the cold day in the applicable year. With the reductions in LNG over these years being representative of the general trend in use of LNG as a supply source, the value for 2013/14 may be lower than it would otherwise have been due to additional global factors at the time such as the use of LNG in Japan.

LNG and MRS have both been used during cold days over the past 4 years therefore an amendment to the Merit Order within the Transportation Model is proposed.

The utilisation at entry points has changed since GCM16 was implemented in 2009 and it is recognised that this could change in the future and therefore the merit order will need to continue to be reviewed as and when it may be required to be consistent with what happens on the network.

The proposed change will have a material effect on NTS exit capacity charges in some LDZs including Wales South, South West and South East and may have a material effect on the viability of NTS directly connected sites as well as on the cash flows of Gas Distribution Networks. For this reason the implications of the implementation of this Modification Proposal need to be well understood before they are made.

Transparency

In 2007/8 Gas Distribution Networks (GDNs) introduced the 'Mod 186' report which is presented to members of the Distribution Charging Methodology Forum (DCMF) on a quarterly basis: Jan/Apr/July/Oct. The report provides Shippers, principally, with a detailed analysis of the Allowed Revenues and potential changes to transportation prices for the current year and the next four years, separately identifying Distribution Exit Capacity and Non-Exit Capacity revenues. The report is designed to give Shippers an indication of how transportation prices may move during the four years following the current year.

This does not exist for NTS, although we recognise that NTS are considering introducing something similar. The material impact of the proposed changes in this Modification Proposal highlights the need for a similar process for NTS pricing.

NTS Exit Charging Regime & RIIO

From October 2012, as a result of exit reform, Gas Distribution Networks are now charged by NTS for NTS exit capacity. Previously this charge was paid by Shippers directly. Gas Distribution Networks are now exposed to changes in NTS charges.

The new RIIO GD1 Special Condition 1D of the Gas Distribution Licence states

"The difference between exit capacity charges from NTS and the exit capacity allowance ('true up') is adjusted in formula year T+2"

This means that if charges from NTS exceeded the Exit Capacity allowance for 2015/16 the difference cannot be recovered from Shippers connected to the Gas Distribution Network until 2017/18. Sites directly connected to the NTS would incur the revised NTS exit capacity charges immediately.

Charging Impact of Modification 517

For WWU the increase in costs resulting from Modification Proposal 0517, compared to the latest indicative Exit Capacity prices from October 2015, would be approximately £1.0m each month from October 2015.

In the formula year 2015/16 this would amount to an increase in charges over a 6 month period from the NTS of £6m. (£23m to £30m).

Comparing the latest indicative Exit Capacity prices from October 2016 to similar Exit Capacity prices under Modification Proposal 0517, the costs for the formula year 2016/17 would increase by £12m (from £25m to £35m).

In terms of charges to Shippers, if we assume similar Exit Capacity prices were used from October 2016 the price adjustment to WWU Exit Capacity Charges in 2017/18 and 2018/19, following the two year lag, would be +41% and +17% respectively. This compares to price adjustments in 2017/18 and 2018/19 of 4% and 11% using the latest indicative Exit Capacity prices from NTS which reflect the current Merit Order

If Exit Capacity allowances were adjusted to match the increased costs from 2017/18 then the corresponding price adjustments to WWU Exit Capacity Charges would be 15% in 2017/18; and 16% in 2018/19.

The much larger increase in 2017/18 for 0517 compared to 0517A is due to the effect of the 'true up' arising from the difference between the Exit Capacity allowances and costs in 2015/16 feeding through.

RIIO GD1 requirements & Principles

Ofgem's "Decision in relation to measures to mitigate network charging volatility arising from the price control settlement" included the following statements:

"We also noted in our consultation that stability of charges would also help improve the efficiency of

energy markets by reducing administration costs, eg the costs of suppliers notifying customers of changes in charges.” (Paragraph 1.11)

“The majority of respondents agreed that improving the predictability of charges should be the primary objective, however some also noted the importance of stable charges particularly for those consumers on non fixed price contracts, where any change in network charges may be passed on to them by their supplier.” (Paragraph 1.12)

<https://www.ofgem.gov.uk/publications-and-updates/decision-measures-mitigate-network-charging-volatility-arising-price-control-settlement>

Gas Distribution Networks and NTS both operate under the same Gas Act obligation to develop “an economic and efficient network”. Therefore the conclusion that stability of charges would help improve the efficiency of energy markets also applies to the NTS and the conclusions of Ofgem’s decision document should also apply to NTS charges

We believe that as Modification Proposal 0517 would result in material rebalancing of NTS charges (but not to the total NTS revenue) it should follow a similar time frame to that which applies to changes to Gas Distribution Networks Exit Capacity allowances. This will facilitate relevant objective (b) “reflecting changes in the transportation business” to a greater extent than Modification Proposal 0517 as it also reflects changes in approaches to charging in transportation businesses.

We accept that the NTS charges need to be cost reflective but this change has material impacts on both Shippers and Gas Distribution Networks, therefore the impact of this proposed change needs to be understood and delaying the implementation date and the introduction of a NTS ‘Mod 186’ process will enable these steps to be undertaken. Although this means that NTS charges will be less cost reflective in the period up to October 2017 we believe that this consideration is outweighed by the effects on competition and on the stability of Gas Distribution Network charges in the affected LDZs. This competition issue has arisen owing to a combination of Exit Reform and the changes to Gas Distribution Network charging described above.

If Gas Distribution Networks wish to apply to Ofgem for an increase in their NTS Exit Capacity allowances they have to apply by 31 July 2015 in order to be able collect the additional revenue during the 2017/18 formula year onwards. This means that the information that they require to support the application needs to be available in advance of 31 July 2015 to allow sufficient time to prepare the application. This in turn means that forward looking NTS prices need to be provided and the implementation of the change to the Transportation Model needs to be delayed so that prices do not change until 1st October 2017. We believe that this will both avoid adverse impact on Gas Distribution Networks and ensure that there is no adverse effect on competition between sites that are directly connected to the NTS and those that are connected to Gas Distribution Networks.

Apparent small changes to inputs to the Transportation Model can result in large changes to charges. This is illustrated in appendix 1 where changes of up to 8000 % have been calculated. The changes proposed by 0517 and 0517A would give rise to changes to charges of thousands of percent for some exit and entry points. This volatility in charges is not helpful for business planning and making investment decisions. To reduce this volatility it is proposed to calculate the rolling average of three years of charges to set charges for the current charging year.

By introducing more stability in charges shippers and suppliers will be better able to predict costs and this will better facilitate competition. In addition, because the proposal is for a permanent change, it has the benefit of reducing volatility of charges on an on-going basis.

3 Solution

It is proposed to amend UNC TPD Section Y – Section 2.5.1 (c) to ensure that the Merit Order specified in the UNC is reflective of how supplies are currently utilised.

This proposal seeks to amend the Merit Order to combine MRS and LNG into one group within the Merit Order and prorate the supplies (i.e. use an equal % of each group to achieve the supply and demand match required) when matching demand in accordance with the process specified in the methodology.

It is proposed that the NTS pricing methodology in Section Y regarding the merit order is effective from a future date to allow the GDN Exit Cost Allowances to be amended. Given the process for Gas Distribution Networks to apply for a change to NTS Exit Capacity allowances, the resulting changes to the model and resultant indicative charges need to be published by NTS by 30 June in any given year ([see Implementation section for indicative dates](#)).

This modification has been raised to introduce stability to charges by applying a three year rolling average to the prices shippers and ultimately customers are charged. This will reduce the impact of the large step change introduced by the change in the supply merit order as proposed in the original 0517. In addition, because the proposal is for a permanent change, it has the benefit of reducing volatility of charges on an on-going basis.

0517 and 0517A impact charges for both entry and exit capacity. It is proposed that 0517B applies to both entry and exit capacity too. It might be unduly discriminatory to apply 0517B to only exit or entry charges, although there is a precedent of different calculation methodologies for entry and exit prices in the Transportation Model. For clarity, the averaging process is to apply to capacity charges only and not to commodity charges.

To reduce volatility in charges it is proposed to calculate and use the rolling average of three years of charges to set charges for the current charging year. For clarity, the methodology introduced by 0517 will be used to calculate the annual tariffs in this alternative. By way of example, to set the actual charges for 2015/16; the average of the historic charges from 2013/14 and 2014/15 and those forecast for 2015/16, as calculated by the charging methodology, will be added together and then divided by three to create an arithmetic average.

- This calculation will be carried out on a rolling average basis for future years as:

$$\text{Applicable Charge year } \gamma = (\text{model output Charge-year } \gamma + \text{model output Charge-year } \gamma_{-1} + \text{model output Charge-year } \gamma_{-2})/3$$

For clarity, the model output year includes all adjustments made to enable recovery of allowed revenue. Calculation of new Exit and Entry reserve point charges where historical charging data is limited. Where there are less than two years of historical charging data available to calculate a rolling average, then the following formulae will be used to calculate the applicable charge year. This approach will retain the locational cost reflectivity of either the new exit or entry point.

- Where only 1 year of historical data exists, the following formula will be used:

$$\text{Applicable Charge year } \gamma = (\text{model output year } \gamma + \text{model output year } \gamma_{-1})/2$$

- Where no historical data exists, the following formula will be used:

$$\text{Applicable Charge year } \gamma = \text{model output year } \gamma$$

Calculation of indicative User Commitment costs for exit

No change is proposed to the User Commitment for new exit points, it will be based on the prevailing methodology. To calculate the exit price on which to base the User Commitment, it is proposed to use the rolling average of up to three years of exit prices. The charges of the individual years would be calculated using the charging methodology, added together and then divided by three to create an arithmetic average.

- This calculation will be carried out on a rolling average basis as:

$$\text{Applicable Charge year } \gamma = (\text{model output year } \gamma + \text{model output year } \gamma_{-1} + \text{model output year } \gamma_{-2})/3$$

Where the model output year value includes adjustment to meet allowed revenue.

Where there are less than two years of historical charging data available to calculate a rolling average, then the following formulae will be used to calculate the applicable charge year:

- Where only 1 year of historical data exists, the following formula will be used:

$$\text{Applicable Charge year } \gamma = (\text{model output year } \gamma + \text{model output year } \gamma_{-1})/2$$

- Where no historical data exists, the following formula will be used:

$$\text{Applicable Charge year } \gamma = \text{model output year } \gamma$$

Calculation of incremental Entry Price Steps

To calculate Incremental Entry Price Steps, it is proposed to use the rolling average of up to three years of QSEC step prices for the year the average prices are applicable for. The charges of the individual years would be calculated using the charging methodology, added together and then divided by three to create an arithmetic average for each of the incremental price steps.

- This calculation will be carried out on a rolling average as:

$$\text{Applicable price step year } Y = (\text{Price step charge year } Y + \text{Price step charge year } Y-1 + \text{Price step charge year } Y-2)/3$$

The approach to calculate incremental price steps would use the following methodology when considering sites where three years of prices are not available:

- Where only 1 year of historical data exists, the following formula will be used:

$$\text{Applicable price step Charge-year } \gamma = (\text{Price step charge model-output-year } \gamma + \text{Price step charge model-output-year } \gamma_{-1})/2$$

- Where no historical data exists, the following formula will be used:

$$\text{Applicable price step Charge-year } \gamma = \text{Price step charge model-output-year } \gamma$$

| User Pays | |
|---|---|
| Classification of the modification as User Pays, or not, and the justification for such classification. | No User Pays service would be created or amended by implementation of this modification and it is not, therefore, classified as a User Pays Modification. |
| Identification of Users of the service, the proposed split of the recovery between Gas Transporters and | Not applicable |

| | |
|--|----------------|
| Users for User Pays costs and the justification for such view. | |
| Proposed charge(s) for application of User Pays charges to Shippers. | Not applicable |
| Proposed charge for inclusion in the Agency Charging Statement (ACS) – to be completed upon receipt of a cost estimate from Xoserve. | Not applicable |

4 Relevant 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; | Impacted Impacted Impacted |
| 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; | Impacted Impacted Impacted |
| b) That, so far as is consistent with sub-paragraph (a), the charging methodology properly takes account of developments in the transportation business; | Impacted Impacted Impacted |
| 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 Positive 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. | None |

Relevant Charging Objectives a) and aa)

The Proposers consider that implementation of either Modification 0517/A/B would, in using the same Solution with respect to the Merit Order, align to the current supply source utilisation and ensure that the Entry and Exit reserve prices are cost reflective and consistent with what happens on the network, furthering both Relevant Charging Objectives a) and aa).

Workgroup participants understand that it has not been defined in the UNC or other industry documents what cost reflective means with respect to charges, making assessment on this basis subjective. The current charging methodology can be split into two elements, the underlying location driven LRM component and the secondary adjustments applied to derive Entry and Exit charges that has been in place for a number of years and . This is the approved methodology that has been in place for some

years. The use of the secondary adjustments, whilst serving a purpose to maintain the 50:50 split on Entry and Exit charging in specific ways arguably do make the charges less cost reflective. For example, the existing Transportation model is arguably not cost reflective because an adjustment is made to recover allowed revenue that distorts the locational LRM prices calculated by the Transport model. Looking to the future, participants believe that Ofgem's Gas Transmission Charging Review could is likely to impact on cost reflectivity further with, for example, because of the application of a uniform floating top up element to recover allowed revenue that dilutes the locational element of LRMCs. For example, Ofgem's analysis has shown a floating top up cost of between 0.04 and 0.06 p/Kwh [https://www.ofgem.gov.uk/ofgem-publications/92784/gtcria-final3.pdf] which is greater than all entry reserve charges, with the exception of St Fergus. However it is acknowledged this may not necessarily be the end solution and could be subject to change.

0517 and 0517A use data in their calculation relevant to the specific year to which the charges relate. 0517B has the potential to reduce the reflectivity given from using only the relevant years' data by taking averages of previous years' data.

Notwithstanding this, the use of an average of three years of charges to recover allowed revenue may not be as cost reflective as using charges based on supply and demand assumptions from a single year.

For clarity, these modifications will enable all allowed revenue for a Charging Year to be collected in that Charging Year, providing that there is a commodity charge to allow for revenue recovery.

With regards to Relevant Objective aa), the reserve prices in an auction will be impacted by this methodology because it calculates the reserve price. However, no undue preference exposure and competition will be promoted as the same rules apply to all.

Relevant Charging Objective b)

Some participants consider that implementation of either Modification 0517/A/B would take into account changes in usage that have taken place since the current Merit Order was introduced as part of GCM16 in 2009. This would have a positive impact on Relevant Charging Objective b) as it reflects developments (changes) in the transportation business.

One Workgroup participant maintained that none of the proposals have considered the likely supply (merit) order should a 1-in-20 peak day be experienced. This participant understands that National Grid's charging methodology is predicated on modelling 1-in-20 peak day demand conditions and it should therefore be expected that a reasoned supply merit order be established to reflect this, whereas these proposals are based on recent actual supply history with the focus being on LNG versus mid-range storage. He considers that this can in no way be regarded as being representative of how gas would be sourced on a peak demand day.

Wales and West Utilities believe that Modification 0517A also reflects developments in thinking about charging predictability, short term -and volatility of DN pricing and the interaction of NTS and DN Charging. Wales and West Utilities also believe that implementing 0517A better Deferring the implementation of any changes in charges resulting from the change to the Transportation Model until after the notice period reflects Ofgem's earlier decisions on the volatility and predictability of network charges.

With regards to implementation dates it should be noted that the European Tariff Network Code (EU TAR NC) and Ofgem's Gas Transmission Charging review currently have an expected implementation of October 2017.

Relevant Charging Objective c)

Participants consider that implementation of either Modification 0517/A/B would better facilitate effective competition between Shippers as, by aligning the Merit Order with the costs incurred in operating the

system, cost reflectivity is improved.

Wales and West Utilities believe that Modification 0517A will result in changes to NTS exit capacity charges being reflected in prices charged to sites directly connected to the NTS at the same time as the charges are reflected in prices charged to sites connected to Gas Distribution Networks.

SSE believes that this modification will introduce more stability in charges and as a result shippers and suppliers will be better able to predict costs and this will better facilitate competition because it may help lower barriers to entry. Volatility in charges is not helpful for business planning and making investment decisions. It makes budgeting; choosing when to give a User Commitment signal for exit capacity and contracting with end customers all more challenging than could be the case. Volatile charges ultimately have a negative impact on competition because they create uncertainty and could discourage investment.

This modification 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;

Workgroup Assessment

Introduction

National Grid NTS has an obligation, amongst the suite of Licence and code obligations and objectives, to keep the Charging Methodology under review. The charging methodology is in Section Y of the UNC and with respect to setting entry capacity reserve prices and exit capacity charges, a key element is the Transportation Model, which comprises the Transport Model (ie the model that determines the initial Long Run Marginal Costs) and the Tariff Model (ie that converts LRMCs into prices). The Transportation Model optimises the use of the NTS in matching supplies to 1 in 20 Peak Day Demand ('Demand') in order to calculate location based capacity charges that reflect where gas enters and exits the NTS and how much of the system the gas is deemed to use. Demand values are taken from the Ten Year Statement and, in order for the model to run supplies must equal demand. Typically total supply exceeds demand. As such supplies need to be reduced to ensure that demand is met and to do this, there is a merit order of supply matching that was put in place to reflect previous and expected patterns of supply utilisation on the NTS. This has not been reviewed for many years and, if the underlying principle of the merit order used in section Y is to reflect a more realistic use of supplies, then there is a rationale to say that it should be updated.

National Grid has proposed the Merit order of supplies used in the Transportation Model and the methodology behind it should be reviewed to bring it more in line with trends seen over recent years. It is not proposed to fundamentally revise the merit order principles however the merit order will be kept under review to ensure that any changes in supplies on the NTS can be discussed with industry and any potential modifications raised.

At the NTS Charging Methodology Forum some participants believed that the supplies used in the merit order should be closer to the supplies that have been observed in recent years. There was some discussion about whether it should be based on forecast or historical information. Other participants believed that recent history may not reflect the supply pattern that would be seen should there be a 1 in 20 Peak Day. The proposal is based on historical trends as the use of these trends can be used to show how the use of the different supply sources have been utilised in meeting demand on the NTS.

Drivers behind the change

As the review of the supplies in recent years show usage different to that in the existing merit order it is timely that consideration should be given to updating the merit order of supplies such that they more closely represent how supply sources are used on the NTS in meeting demand.

Updating the merit order, as proposed in UNC Modification [0517](#), within the charging methodology at the earliest opportunity would result in the merit order being more reflective of supply patterns on the NTS. This would also result in applicable capacity charges in-keeping with the supply flow patterns.

This review retains the existing supply groupings as per UNC Section Y. Without a change to bring the merit order to be up to date with supply patterns the scenario where those who currently have lower prices than they would be under a change to update the merit order would continue until such time as a modification to the supply matching merit order was implemented. The reverse would be the case for those whose charges are higher than they would otherwise be. National Grid also has an obligation to minimise cross subsidies through the charging framework. To update the merit order where there is evidence to support the supplies to be used and to update in a reasonable timeframe would reduce the cross subsidies between these two groups.

Evidence

[A suite of evidence and analysis supporting 0517/A/B can be found throughout the Appendices of this workgroup report \(See Appendix 1\). Here we outline the relevant analysis to 0517/A/B illustrating the](#)

potential impacts on the relevant charges. The sections below highlight the key areas that have been reviewed in assessing the potential impacts of 0517/A/B.

Impact on prices

Analysis to show the impact on NTS Entry Capacity Reserve Prices and the sensitivities of the changes as a result of the proposal for 0517 can be seen in ~~Exit capacity prices is shown in~~ Appendixes 1 and 2.

Analysis to show the impact on NTS Exit (Flat) Capacity Prices and the sensitivities of the changes as a result of the proposal for 0517 can be seen in Appendix 2.

~~The detailed Changes to Entry and Exit prices and the sensitivities of the changes as a result of the proposal for 0517 can be seen in Appendix 1.~~

~~[Words to be inserted for Appendix 1 and Appendix 2]~~

~~The geographical Impact of the proposal in UNC 0517 can also be seen in Appendix 1.~~

This change will result in Exit and Entry capacity charges increasing and/or decreasing depending on the size of supply flows at each Entry point assumed in the Merit Order. This change would impact all NTS customers at the same time, however it has been noted by a Distribution Network (DN) that, where the charges exceed the NTS Exit Capacity cost allowance in their DN Licence, then there will be a delay in the ability to reflect such an increase in their charges to DN connected customers. Conversely should the NTS Exit Capacity charge be less than the allowance then there will also be a delay in the DN's ability to pass on the reduction. 0517 does not address this. This is a feature of the DN price control and not an aspect of the NTS charging framework. DNs can choose to make a request to change their NTS Exit Capacity Cost Allowance should charges be higher or lower than their allowance, there is no obligation to do so.

0517A does address this impact. If 0517A was implemented DN networks where the charges resulted in costs larger or lower than the NTS exit capacity allowances in the RIIO GD1 price control could apply to Ofgem for a change in their allowances to mitigate the effects on their cash flow. If 0517 was implemented then there would be an adverse impact on cash flow over the price control period for WWU of ~~£13.15-5m~~, peaking in 2016/17 where the adverse impact reaches ~~£167.1m~~. If 0517 was implemented and WWU applied for and was granted a change to its allowances (which is the more realistic scenario) it could recover this shortfall after two years although this would cause much more volatile prices. No other DN has voiced concern to the workgroup on the implications of the proposed Merit Order change.

In addition the two year lag in changing DN charges it means that customers connect to the NTS and those connected to DN networks will see the effect of changes in the NTS exit capacity charges at different times, which is the current situation. – Directly connected customers would see the change immediately but those connected to a DN network would only see the change after two years, a graphical representation of this can be seen in Appendix 2. This could affect competition between two power stations that are geographically close together but one is connected to the NTS and one connected to a DN network. This is a short term issue and over time the impacts are considered broadly neutral and are an issue of timing.

0517A addresses both these issues by delaying the implementation of the changed merit order until DN networks can apply for ~~and have implemented a~~ changes to their NTS exit capacity allowances should they choose to. This will result in less volatile prices as there will be no “catch up” of the unrecovered revenue and will mean that customers experience the impact of changes to the NTS exit capacity charges at the same time whether they are directly connected to the NTS or to a DN network. There will be differing magnitudes of change due to the NTS Point specific charging methodology being different to the DN zonal pricing charging methodology. The downside of 0517A is that changes to the merit order are

delayed by two years thereby meaning that the model is less cost reflective for a two years longer than would be the case with 0517. To be consistent between entry and exit, changes to NTS entry capacity charges will be subject to the same timing as NTS exit capacity charges.

It should be noted that at the workgroup there was much discussion about why NTS exit capacity charges in Wales South LDZ were increasing when the data published by NG NTS showed that in the Transport Model the assumption was that at peak more gas was entering the NTS at Milford Haven than was taken out at the five NTS offtakes in Wales South (two directly connected offtakes and three feeding the Wales South LDZ). Given that prices are set on the basis of long run marginal cost this at first sight seems counter-intuitive. —It may be considered illogical to implement 0517/A/B on the basis that the revised merit order is more cost reflective when some Users may have concerns over how the model works in a world where gas flows can reverse depending on the sources of supply. ~~0517A, with its delay to the implementation of the revised merit order, would provide a window for all parties to understand how the NTS Transport model and Tariff models work before the revised merit order comes into effect.~~

For changes to charges National Grid has, as its obligations with respect to notice periods, to provide 150 days' notice for indicative changes charges and two months' notice for changes to actual charges. This is also the same for Distribution charges. As part of exit reform, with regard to exit capacity charges National Grid now provides 150 days' notice for final charges i.e. around the beginning of May each year ahead of implementation from the following October. This was to allow final charges to be known ahead of the July window.

The DNs have a specific arrangement when it comes to being able to pass on changes to Exit capacity charges from the National Grid NTS. Under RII0 there is an allowance and should the charges be less or more than this allowance, then there is reconciliation in $y_{t+1}+2$. (where t represents the relevant revenue year or financial year running from 1st April to 31st March).

0517A provides a mechanism to implement the modification and provide sufficient time for DNs to apply for a change to NTS exit capacity allowances before the revised merit order comes into effect such that the change to the methodology aligns with the earliest date to change the allowance (where applicable) should it be chosen to do so.

Volatility

0517B has been raised to introduce stability to charges by applying a three-years rolling average to the prices shippers and ultimately customers are charged. This will reduce the impact of any the large year on year change, to some charges, introduced by the change in the supply merit order as proposed in 0517. In addition, because the proposal is for a permanent change, it has the benefit of reducing volatility of charges on an on-going basis.

~~Volatility is a concern for shippers, suppliers and end customers. The volatility in charges shown in Appendix 1 gives examples of changes of up to 8000% for individual years for some exit points. Appendix 3 lists the indicative exit charges until 2017. The benefits of reducing volatility and smoothing prices can be demonstrated by picking one example at Baglan Bay; Exit prices increase from 0.0002 to 0.0055 to 0.0101 and then 0.0099 from 2014 to 2017 as a result of 0517. 0517B would result in charges of 0.0002, 0.0019, 0.0053 then 0.0085 in the same time period, significantly damping the rate of price increase.~~

Volatility is a concern for shippers, suppliers and end customers. The volatility in charges shown in Appendix 1 gives examples of changes of up to 8000% for individual years for some exit points. The benefits of reducing volatility and smoothing prices can be demonstrated by comparing exit prices for 0517B with 0517 by way of example for Baglan Bay.

| | October 2012 (Final) Exit Price (p/kWh/day) | October 2013 (Final) Exit Price (p/kWh/day) | October 2014 (Final) Exit Price (p/kWh/day) | October 2015 (Final) Exit Price (p/kWh/day) | October 2016 (Indicative) Exit Price (p/kWh/day) | October 2017 (Indicative) Exit Price (p/kWh/day) | October 2018 (Indicative) Exit Price (p/kWh/day) |
|---------------------|---|---|---|---|--|--|--|
| BAGLAN BAY PG 0517 | 0.0010 | 0.0001 | 0.0002 | 0.0044 | 0.0119 | 0.0073 | 0.0124 |
| BAGLAN BAY PG 0517B | 0.0010 | 0.0001 | 0.0002 | 0.0016 | 0.0055 | 0.0079 | 0.0105 |

It would have been preferable to compare future prices for 0517B with the other alternates beyond 2017 to demonstrate the effects of the averaging process, but data beyond 2017 is not available. There are other sources of volatility other than the merit order and there also may be other ways to address wider volatility in charges. However, it is clear from statistical theory that a rolling average will always produce a less variable time series of data than the individual price points from which it calculates, as a rolling average is used to smooth data.

Volatility in shipping costs makes budgeting; choosing when to give a User Commitment signal for exit capacity and contracting with end customers all more challenging than could be the case. Such volatile charges ultimately have a negative impact on competition because they could discourage investment and create uncertainty.

It has not been demonstrated if the averaging of capacity charges will lead to a material change in commodity charges or not. All else being equal, should the averaging of charges result in lower charges than would otherwise be calculated any commodity charges used to reconcile revenue recovery would be higher. Conversely should the averaging of charges result in higher charges than would otherwise be calculated any commodity charges used to reconcile revenue recovery would be lower. Capacity charging trends at individual points of either decreasing or increasing prices will last for longer, but across the network these could cancel each other out. In the event that there is an under recovery, this will be collected using the existing methodology. However, one of the biggest uncertainties driving the level of commodity charge is the level of gas throughput. This is turn is driven by demand for heating and competing sources of generation from coal and renewables.

Potential Effect on ~~Very~~ Large Sites

Appendix 4 sets out a comparison of ~~the 0517/A/B series~~ for a series of indicative ~~very~~ large sites across the five exit zones in the Wales and West. The comparison demonstrates the effect each of the 0517/A/B ~~series~~ would have on these indicative ~~very~~ large sites if: connected directly to the NTS (over a four year horizon to 2018/19); and to the Distribution Network (over a six year horizon to 2020/21). The analyses shows how each of the 0517 series will have a different magnitude and impact timing of price changes, and therefore total bill for customers within that exit zone.

For those sites connected directly to the NTS, 0517 will result in an immediate increase/(decrease) in price in correlation to the increase/(Decrease) in Exit Capacity prices. 0517A meanwhile delays any potential increase/(decrease) until T+2 when prices would be set at the same rate as 0517. 0517B passes through only a proportion 4/3 of the price change in year T, therefore results in a higher/(lower) price than 0517A in T, and T+1 and a lower/(higher) price than 0517. Should prices remain constant for a period of three years, then 0517B would converge in T+3.

~~The 0517/A/B series~~ seeks to redistribute costs amongst all exit points, therefore has an overall nil effect on the NTS in relation to the under/over collection of their allowed revenue. For each of the DNs, a net increase/(decrease) in costs will result in an under/(over collection) in revenue in years T and T+1. In the analysis it is assumed that each DN would request amended allowances (up or down) in T+2 so that allowance would equal costs going forward (allowances cannot be modified until the period T+2 under the Gas Transporter Licence) however there is no obligation for the DNs to do so. The result of this

under/(over collection) on future prices means that there is a compound effect in the year T+2 where consumers are faced with both the updated prices, and the catch up from the under/(over collection) in T. Accordingly, 0517 presents higher volatility over a four year period with a higher peak/trough in T+2 before converging with the prices which would be set under 0517A (and should prices remain constant 0517B in T+3). As 0517A delays implementation of the price change until T+2, allowing each DN to request to change their allowances accordingly, the compound catch up is not present, hence the reduction in cost/benefit passed through prices in T+2.

The rebalancing of prices which 0517 sets out to achieve has, on average, a greater negative effect on the customers within the Wales and West Region (and to a lesser extent SGN South) compared to the net neutral or positive effect which is shared amongst a greater number of customers in the remaining networks, it is for this reason that Appendix 4 considers the five exit zones within the Wales and West Network.

Modelling the Merit Order using Historical Data vs Peak Days

Placeholder for NTS Analysis

The data below shows the percentage of LNG and MRS supply used on the cold day in the applicable year based on the total volume used (mcm) on the actual peak day for the given year.

LNG and MRS have both been used during cold days over the past 4 years therefore we are proposing an amendment to the Merit Order within the Transportation Model.

| <u>Financial Year</u> | <u>Forecasted Peak Day Volume (mcm) Exit Models produced May for applicable October charges</u> | <u>Actual Peak Day Volume Used (mcm)</u> | <u>LNG used as a percentage of actual peak day volume used</u> | <u>MRS used as a percentage of actual peak day volume used</u> |
|-----------------------|---|--|--|--|
| <u>2010/2011</u> | <u>520.17</u> | <u>438.35</u> | <u>17.36%</u> | <u>3.77%</u> |
| <u>2011/2012</u> | <u>560.72</u> | <u>414.04</u> | <u>18.70%</u> | <u>12.12%</u> |
| <u>2012/2013</u> | <u>589.08</u> | <u>391.74</u> | <u>7.70%</u> | <u>16.79%</u> |
| <u>2013/2014</u> | <u>591.07</u> | <u>326.66</u> | <u>2.47%</u> | <u>13.24%</u> |
| <u>2014/2015</u> | <u>575.24</u> | <u>364.06</u> | <u>10.71%</u> | <u>6.61%</u> |

On average over the last 5 years 11.39% of the total supply used was from LNG and 10.51% of the total supply used was from MRS.

5 Implementation

The Workgroup has not proposed a timescale for implementation of this modification, but would suggest that it is implemented at the earliest practical opportunity.

No implementation costs are anticipated.

Question for consultation – ask for respondents views on implementation timescales?

Y = Gas Year from 01 October to 30 September

| Ofgem Decision Date | Auction | Prices Produced | Applicable From | |
|---|---------|--|---|-------------------------------------|
| | | | 0517 and 0517B <i>(note 0517B is enduring)</i> | 0517A |
| Between 01 October in gas year Y and 31 March in gas year Y | Exit | May gas year Y | 01 October of gas year Y+1 | 01 October of gas year Y+3 |
| | MSEC | June gas year Y | 01 October of gas year Y+1 | 01 October of gas year Y+3 |
| | QSEC | January gas year Y+1 Auction March gas year Y+1 | 01 October of gas year Y+3 | 01 October of gas year Y+ <u>54</u> |
| Between 01 April in gas year Y and 30 September in gas year Y | QSEC | January gas year Y+1 Auction March gas year Y+1 | 01 October of gas year Y+3 | 01 October of gas year Y+ <u>54</u> |
| | Exit | May gas year Y+1 | 01 October of gas year Y+2 | 01 October of gas year Y+ <u>43</u> |
| | MSEC | June gas year Y+1 | 01 October of gas year Y+2 | 01 October of gas year Y+ <u>43</u> |

Example:

Gas year Y = 01 October 2015 – 30 September 2016

Gas year Y+1 = 01 October 2016 – 30 September 2017

Gas year Y+2 = 01 October 2017 – 30 September 2018

Gas year Y+3 = 01 October 2018 – 30 September 2019

[Gas year Y+4 = 01 October 2019 – 30 September 2020](#)

[Gas year Y+5 = 01 October 2020 – 30 September 2021](#)

| Ofgem Decision Date | Auction | Prices Produced | Applicable From 0517 and 0517B | Applicable From 0517A |
|---|---------|------------------------------------|---|---------------------------------------|
| Between 01 October 2015 and 31 March 2016 | Exit | May 2016 | 01 October 201 <u>6</u> 8 | 01 October 2018 |
| | MSEC | June 2016 | 01 October 201 <u>6</u> 8 | 01 October 2018 |
| | QSEC | January 2017 Auction March 2017 | 01 October 201 <u>8</u> 20 | 01 October 2020 |
| Between 01 April 2016 and | QSEC | January 2017 Auction March 2017 | 01 October 201 <u>8</u> 20 | 01 October 2020 |

| | | | | |
|-------------------|------|-----------|-------------------------------|---------------------------------|
| 30 September 2016 | Exit | May 2017 | 01 October 2017 49 | 01 October 2019 |
| | MSEC | June 2017 | 01 October 2017 49 | 01 October 2019 |

6 Impacts

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

No other industry change is impacted.

7 Legal Text

Legal Text and Commentary

Individual Legal Text (inc. Commentary) has been produced for each Modification (published alongside this report).

8 Recommendation

The Workgroup invites the Panel to:

- AGREE that this modification should be submitted for consultation.

9 Appendix

Appendix 1 – NTS Entry Capacity Reserve Prices – 0517

Appendix 1 sets out a comparison of what the NTS Entry Capacity Reserve Prices would be under both the current Merit Order and the proposed 0517 Merit Order and shows what the differences would be between the charges under the current merit order and under 0517 proposed merit order.

NTS Entry Capacity Reserve Prices - MOD517

Supporting information for 0517 can be seen below which shows the NTS Entry Capacity Reserve Prices for the current Merit Order and the NTS Entry Capacity Reserve Prices for the proposed change to the Merit Order. The percentage change difference between the prices can be seen in the table below.

QSEC 2015 capacity price data

| QSEC 2015 | | | |
|--------------------------|---|--|-------------------|
| Entry Point | Entry Price (p/kWh/day) - Original TM - QSEC 2015 | Entry Price (p/kWh/day) - QSEC 2015 - 0517 | Percentage Change |
| AVONMOUTH LNG | 0.0001 | 0.0001 | 0% |
| BACTON TERMINAL | 0.0089 | 0.0097 | 9% |
| BARROW TERMINAL | 0.0006 | 0.0097 | 1517% |
| BARTON STACEY (MRS) | 0.0001 | 0.0001 | 0% |
| BURTON POINT TERMINAL | 0.0001 | 0.0001 | 0% |
| CANONBIE TERMINAL | 0.0025 | 0.006 | 140% |
| CAYTHORPE (MRS) | 0.0128 | 0.0138 | 8% |
| CHESHIRE (MRS) | 0.0001 | 0.0001 | 0% |
| DYNEVOR ARMS LNG | 0.0078 | 0.0001 | -99% |
| EASINGTON&ROUGH TERMINAL | 0.0122 | 0.0128 | 5% |
| FLEETWOOD (MRS) | 0.0008 | 0.0078 | 875% |
| GARTON (MRS) | 0.0122 | 0.0125 | 2% |
| GLENMAVIS LNG | 0.0131 | 0.018 | 37% |
| HATFIELD MOOR (MRS) | 0.0036 | 0.004 | 11% |
| HOLEHOUSE FARM (MRS) | 0.0001 | 0.0001 | 0% |
| HORNSEA (MRS) | 0.0125 | 0.0132 | 6% |
| ISLE OF GRAIN TERMINAL | 0.0001 | 0.0017 | 1600% |
| MILFORD HAVEN TERMINAL | 0.0216 | 0.0229 | 6% |
| MOFFAT | 0.0059 | 0.0095 | 61% |
| PARTINGTON LNG | 0.0001 | 0.0001 | 0% |
| ST FERGUS TERMINAL | 0.0451 | 0.0497 | 10% |
| TEESSIDE TERMINAL | 0.0082 | 0.0119 | 45% |
| THEDDLETHORPE TERMINAL | 0.0118 | 0.0127 | 8% |
| WYTCH FARM TERMINAL | 0.0001 | 0.0001 | 0% |

The supply data which was used to match the supply and demand data within the Transportation Model can be seen in the table below. This shows the differences between the supply data used to create the NTS Entry Capacity Reserve Prices for QSEC 2015 auction and what the supply data would have looked like if the Merit Order was amended as per 0517 to produce the supply and demand data within the same Transportation Model – the only change is the Merit Order, everything else within the Transportation Model and inputs into the Transportation Model have not been changed.

NTS Entry Capacity Reserve Prices for QSEC 2015 Auction - supply data

| QSEC 2015 | | |
|------------------------|--|--------------------------|
| Supply Point | Supply flow (GWh) - Original - QSEC 2015 | Supply flow (GWh) - 0517 |
| ALBURY (MRS) | 0.00 | 0.00 |
| AVONMOUTH LNG | 0.00 | 0.00 |
| BACTON TERMINAL | 393.87 | 393.87 |
| BBL | 517.57 | 517.57 |
| IUK | 810.80 | 810.80 |
| BARROW BAINS (MRS) | 0.00 | 0.00 |
| BARROW TERMINAL | 73.75 | 73.75 |
| BARTON STACEY (MRS) | 0.00 | 35.70 |
| BURTON POINT TERMINAL | 0.00 | 0.00 |
| CAYTHORPE (MRS) | 0.00 | 0.00 |
| CHESHIRE (MRS) | 0.00 | 234.08 |
| EASINGTON | 854.04 | 854.04 |
| ROUGH | 485.00 | 485.00 |
| FLEETWOOD (MRS) | 0.00 | 0.00 |
| GARTON (MRS) | 0.00 | 189.79 |
| GLENMAVIS LNG | 0.00 | 0.00 |
| HATFIELD MOOR (MRS) | 0.00 | 9.49 |
| HOLEHOUSE FARM (MRS) | 0.00 | 133.67 |
| HORNSEA (MRS) | 0.00 | 88.12 |
| ISLE OF GRAIN TERMINAL | 574.39 | 293.73 |
| MILFORD HAVEN TERMINAL | 839.49 | 429.30 |
| PARTINGTON LNG | 0.00 | 0.00 |
| PORTLAND (MRS) | 0.00 | 0.00 |
| SALTFLEETBY (MRS) | 0.00 | 0.00 |
| ST FERGUS TERMINAL | 1135.42 | 1135.42 |
| TEESSIDE TERMINAL | 427.78 | 427.78 |
| THEDDLETHORPE TERMINAL | 76.21 | 76.21 |
| WYTCH FARM TERMINAL | 0.00 | 0.00 |

Appendix 2 – NTS Exit (Flat) Capacity Prices – 0517

Appendix 2 sets out a comparison of what the NTS Exit (Flat) Capacity Charges would be under both the current Merit Order and the proposed 0517 Merit Order and shows what the differences would be between the charges under the current merit order and under 0517 proposed merit order.

NTS Exit (Flat) Capacity Prices - 0517

Supporting information for 0517 can be seen below which shows the NTS Exit (Flat) Capacity Charges applicable from October 2015 for the current Merit Order and the NTS Exit (Flat) Capacity Charges applicable from October 2015 for the proposed change to the Merit Order. The difference between the charges and the percentage change difference between the prices can be seen in the table below.

NTS Exit (Flat) Capacity Charges applicable from October 2015 capacity price data

| Exit – Final Prices for October 2015 | | | | |
|--------------------------------------|-----------------------------------|---------------------------------|------------|-------------------|
| Exit Point | Exit Price (p/kWh/day) - original | Exit Price (p/kWh/day) - MOD517 | Difference | Percentage Change |
| ABERDEEN | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| ALREWAS_EM | 0.0159 | 0.0143 | -0.0016 | -10.06% |
| ALREWAS_WM | 0.0159 | 0.0143 | -0.0016 | -10.06% |
| ARMADALE | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| ASPLEY | 0.0193 | 0.0177 | -0.0016 | -8.29% |
| ASSELBY | 0.0009 | 0.0001 | -0.0008 | -88.89% |
| AUDLEY_NW | 0.0211 | 0.0186 | -0.0025 | -11.85% |
| AUDLEY_WM | 0.0211 | 0.0186 | -0.0025 | -11.85% |
| AUSTREY | 0.0152 | 0.0136 | -0.0016 | -10.53% |
| AVONMOUTH LNG | 0.0155 | 0.0240 | 0.0085 | 54.84% |
| AYLESBEARE | 0.0230 | 0.0315 | 0.0085 | 36.96% |
| BACTON BAIRD | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BACTONINT | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BACTONBBLINT | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BACTON_OT | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BAGLAN_BAY_PG | 0.0001 | 0.0044 | 0.0043 | 4300.00% |
| BALDERSBY | 0.0025 | 0.0002 | -0.0023 | -92.00% |
| BALGRAY | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BARKING_PG | 0.0089 | 0.0103 | 0.0014 | 15.73% |
| BARROW_BS | 0.0074 | 0.0051 | -0.0023 | -31.08% |
| BARROW_BAINS | 0.0074 | 0.0051 | -0.0023 | -31.08% |
| BARROW_GATEWAY | 0.0074 | 0.0051 | -0.0023 | -31.08% |
| BATHGATE | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BILLINGHAM ICI | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BISHOP_AUCKLAND | 0.0003 | 0.0001 | -0.0002 | -66.67% |
| BISHOP_AUCKLAND_TEST FACILITY | 0.0003 | 0.0001 | -0.0002 | -66.67% |
| BLABY | 0.0120 | 0.0104 | -0.0016 | -13.33% |
| BLACKROD | 0.0179 | 0.0155 | -0.0024 | -13.41% |
| BLYBOROUGH | 0.0029 | 0.0013 | -0.0016 | -55.17% |
| BP_GRANGEMOUTH | 0.0001 | 0.0001 | 0.0000 | 0.00% |

| | | | | |
|--------------------------|--------|--------|---------|----------|
| BP SALTEND HP | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BRAISHFIELD A | 0.0248 | 0.0236 | -0.0012 | -4.84% |
| BRAISHFIELD B | 0.0248 | 0.0236 | -0.0012 | -4.84% |
| BRIDGEWATER PAPER | 0.0256 | 0.0210 | -0.0046 | -17.97% |
| BRIGG PG | 0.0040 | 0.0024 | -0.0016 | -40.00% |
| BRIMSDOWN PG | 0.0120 | 0.0108 | -0.0012 | -10.00% |
| BRINE FIELD PS | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BRISLEY | 0.0003 | 0.0001 | -0.0002 | -66.67% |
| BROXBURN | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BRUNNER MOND | 0.0217 | 0.0176 | -0.0041 | -18.89% |
| BURLEY BANK | 0.0048 | 0.0025 | -0.0023 | -47.92% |
| CALDECOTT | 0.0093 | 0.0077 | -0.0016 | -17.20% |
| CAMBRIDGE | 0.0074 | 0.0062 | -0.0012 | -16.22% |
| CARESTON | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| CARRINGTON PS | 0.0211 | 0.0187 | -0.0024 | -11.37% |
| CAYTHORPE (MRS) | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| CHESHIRE (MRS) | 0.0224 | 0.0168 | -0.0056 | -25.00% |
| CIRENCESTER | 0.0111 | 0.0196 | 0.0085 | 76.58% |
| COFFINSWELL | 0.0260 | 0.0345 | 0.0085 | 32.69% |
| COLDSTREAM | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| CONNAHS QUAY PS | 0.0260 | 0.0214 | -0.0046 | -17.69% |
| CORBRIDGE | 0.0010 | 0.0001 | -0.0009 | -90.00% |
| CORBY PS | 0.0097 | 0.0081 | -0.0016 | -16.49% |
| CORYTON PG | 0.0086 | 0.0106 | 0.0020 | 23.26% |
| CORYTON PG 2 | 0.0086 | 0.0106 | 0.0020 | 23.26% |
| COTTAM PG | 0.0029 | 0.0013 | -0.0016 | -55.17% |
| COWPEN BEWLEY | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| CRAWLEY DOWN | 0.0233 | 0.0221 | -0.0012 | -5.15% |
| DAMHEAD CREEK | 0.0064 | 0.0098 | 0.0034 | 53.13% |
| DEESIDE PS | 0.0260 | 0.0214 | -0.0046 | -17.69% |
| DIDCOT PS | 0.0188 | 0.0177 | -0.0011 | -5.85% |
| DOWLAIS | 0.0001 | 0.0070 | 0.0069 | 6900.00% |
| DRAKELOW PS | 0.0154 | 0.0138 | -0.0016 | -10.39% |
| DROINTON OT | 0.0172 | 0.0156 | -0.0016 | -9.30% |
| DRUM | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| DYFFRYN CLYDACH | 0.0001 | 0.0044 | 0.0043 | 4300.00% |
| DYNEVOR ARMS LNG | 0.0001 | 0.0064 | 0.0063 | 6300.00% |
| EASINGTON&ROUGH TERMINAL | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| EASTON GREY | 0.0117 | 0.0202 | 0.0085 | 72.65% |
| ECCLESTON | 0.0248 | 0.0208 | -0.0040 | -16.13% |
| ELTON | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| ENRON (BILLINGHAM) | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| EVESHAM | 0.0078 | 0.0156 | 0.0078 | 100.00% |
| EYE | 0.0063 | 0.0051 | -0.0012 | -19.05% |
| FARNINGHAM | 0.0090 | 0.0124 | 0.0034 | 37.78% |
| FARNINGHAM B | 0.0090 | 0.0124 | 0.0034 | 37.78% |
| FIDDINGTON | 0.0064 | 0.0148 | 0.0084 | 131.25% |
| GANSTEAD | 0.0001 | 0.0001 | 0.0000 | 0.00% |

| | | | | |
|----------------------|--------|--------|---------|----------|
| GARTON (MRS) | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| GILWERN | 0.0001 | 0.0083 | 0.0082 | 8200.00% |
| GLENMAVIS | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| GLENMAVIS LNG | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| GOOLE GLASS | 0.0015 | 0.0001 | -0.0014 | -93.33% |
| GOSBERTON | 0.0041 | 0.0025 | -0.0016 | -39.02% |
| GRAIN GAS | 0.0064 | 0.0098 | 0.0034 | 53.13% |
| GREAT WILBRAHAM | 0.0063 | 0.0052 | -0.0011 | -17.46% |
| GREAT YARMOUTH | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| GUYZANCE | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| HARDWICK | 0.0149 | 0.0137 | -0.0012 | -8.05% |
| HATFIELD MOOR (MRS) | 0.0020 | 0.0001 | -0.0019 | -95.00% |
| HAYS CHEMICALS | 0.0224 | 0.0175 | -0.0049 | -21.88% |
| HOLEHOUSE FARM (MRS) | 0.0223 | 0.0177 | -0.0046 | -20.63% |
| HOLMES CHAPEL | 0.0225 | 0.0200 | -0.0025 | -11.11% |
| HORNDON | 0.0089 | 0.0103 | 0.0014 | 15.73% |
| HORNSEA (MRS) | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| HUMBLETON | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BARTON STACEY (MRS) | 0.0230 | 0.0219 | -0.0011 | -4.78% |
| HUME | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| ICI RUNCORN | 0.0257 | 0.0211 | -0.0046 | -17.90% |
| ILCHESTER | 0.0182 | 0.0267 | 0.0085 | 46.70% |
| IMMINGHAM PG | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| IPSDEN | 0.0185 | 0.0174 | -0.0011 | -5.95% |
| IPSDEN 2 | 0.0185 | 0.0174 | -0.0011 | -5.95% |
| KEADBY BS | 0.0028 | 0.0004 | -0.0024 | -85.71% |
| KEADBY PS | 0.0028 | 0.0004 | -0.0024 | -85.71% |
| KELD | 0.0085 | 0.0062 | -0.0023 | -27.06% |
| KEMIRAINCE CHP | 0.0253 | 0.0207 | -0.0046 | -18.18% |
| KENN | 0.0242 | 0.0327 | 0.0085 | 35.12% |
| KINGS LYNN PS | 0.0033 | 0.0021 | -0.0012 | -36.36% |
| KINKNOCKIE | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| KIRKSTEAD | 0.0018 | 0.0002 | -0.0016 | -88.89% |
| LANGAGE PG | 0.0291 | 0.0376 | 0.0085 | 29.21% |
| LANGHOLM | 0.0021 | 0.0001 | -0.0020 | -95.24% |
| LAUDERHILL | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| LEAMINGTON SPA | 0.0107 | 0.0127 | 0.0020 | 18.69% |
| LITTLE BARFORD PS | 0.0106 | 0.0095 | -0.0011 | -10.38% |
| LITTLE BURDON | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| LITTLETON DREW | 0.0126 | 0.0211 | 0.0085 | 67.46% |
| LOCKERBIE | 0.0011 | 0.0001 | -0.0010 | -90.91% |
| LONGANNET | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| LOWER QUINTON | 0.0090 | 0.0147 | 0.0057 | 63.33% |
| LUPTON | 0.0114 | 0.0090 | -0.0024 | -21.05% |
| LUXBOROUGH LANE | 0.0117 | 0.0105 | -0.0012 | -10.26% |
| MAELOR | 0.0242 | 0.0217 | -0.0025 | -10.33% |
| MALPAS | 0.0233 | 0.0208 | -0.0025 | -10.73% |
| MAPPOWDER | 0.0206 | 0.0291 | 0.0085 | 41.26% |

| | | | | |
|--------------------------|--------|--------|---------|---------|
| MARCHWOOD | 0.0250 | 0.0239 | -0.0011 | -4.40% |
| MARKET HARBOROUGH | 0.0106 | 0.0090 | -0.0016 | -15.09% |
| MATCHING GREEN | 0.0109 | 0.0098 | -0.0011 | -10.09% |
| MEDWAY PS | 0.0065 | 0.0099 | 0.0034 | 52.31% |
| MELKINTHORPE | 0.0077 | 0.0053 | -0.0024 | -31.17% |
| MICKLE TRAFFORD | 0.0246 | 0.0201 | -0.0045 | -18.29% |
| MILFORD HAVEN REFINERY | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| MILWICH | 0.0179 | 0.0163 | -0.0016 | -8.94% |
| MOFFAT | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| BURNHERVIE | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| NETHER_HOWCLEUGH | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| PANNAL | 0.0053 | 0.0029 | -0.0024 | -45.28% |
| PARTINGTON | 0.0211 | 0.0187 | -0.0024 | -11.37% |
| PARTINGTON LNG | 0.0211 | 0.0187 | -0.0024 | -11.37% |
| PAULL | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| PEMBROKE PG | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| PETERBOROUGH PS | 0.0067 | 0.0055 | -0.0012 | -17.91% |
| PETERHEAD PG | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| PETERS GREEN | 0.0110 | 0.0099 | -0.0011 | -10.00% |
| PETERS GREEN SOUTH MIMMS | 0.0110 | 0.0099 | -0.0011 | -10.00% |
| PHILLIPS SEAL SANDS | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| PICKERING | 0.0021 | 0.0001 | -0.0020 | -95.24% |
| PITCAIRNGREEN | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| PUCKLECHURCH | 0.0135 | 0.0220 | 0.0085 | 62.96% |
| RAWCLIFFE | 0.0011 | 0.0001 | -0.0010 | -90.91% |
| ROCKSAVAGE PG | 0.0257 | 0.0211 | -0.0046 | -17.90% |
| ROOSECOTE PS | 0.0074 | 0.0051 | -0.0023 | -31.08% |
| ROSS SW | 0.0032 | 0.0116 | 0.0084 | 262.50% |
| ROSS WM | 0.0032 | 0.0116 | 0.0084 | 262.50% |
| ROUDHAM HEATH | 0.0021 | 0.0010 | -0.0011 | -52.38% |
| ROYSTON | 0.0084 | 0.0072 | -0.0012 | -14.29% |
| RUGBY | 0.0119 | 0.0115 | -0.0004 | -3.36% |
| RYE HOUSE PS | 0.0125 | 0.0113 | -0.0012 | -9.60% |
| SALTEND | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| SALTWICK PC | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| SALTWICK VC | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| SAMLESBURY | 0.0163 | 0.0139 | -0.0024 | -14.72% |
| SAPPIPAPERMILLCHP | 0.0167 | 0.0144 | -0.0023 | -13.77% |
| SEABANK LDZ | 0.0157 | 0.0242 | 0.0085 | 54.14% |
| SEABANK POWER phase1 | 0.0135 | 0.0220 | 0.0085 | 62.96% |
| SEABANK POWER phase II | 0.0155 | 0.0240 | 0.0085 | 54.84% |
| SELLAFIELD PS | 0.0120 | 0.0096 | -0.0024 | -20.00% |
| SHORNE | 0.0079 | 0.0113 | 0.0034 | 43.04% |
| SHOTTON PAPER | 0.0259 | 0.0213 | -0.0046 | -17.76% |
| SHUSTOKE | 0.0165 | 0.0149 | -0.0016 | -9.70% |
| SILK WILLOUGHBY | 0.0032 | 0.0016 | -0.0016 | -50.00% |
| SOUTRA | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| SPALDING PG | 0.0045 | 0.0029 | -0.0016 | -35.56% |

| | | | | |
|--------------------------------|--------|--------|---------|---------|
| SPALDING PG 2 | 0.0045 | 0.0029 | -0.0016 | -35.56% |
| STAYTHORPE | 0.0062 | 0.0046 | -0.0016 | -25.81% |
| ST FERGUS BS | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| ST FERGUS OT | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| STALLINGBOROUGH | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| STRANRAER | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| STRATFORD UPON AVON | 0.0092 | 0.0142 | 0.0050 | 54.35% |
| STUBLACH | 0.0224 | 0.0168 | -0.0056 | -25.00% |
| SUTTON BRIDGE | 0.0050 | 0.0038 | -0.0012 | -24.00% |
| SUTTON BRIDGE PS | 0.0048 | 0.0037 | -0.0011 | -22.92% |
| TATSFIELD | 0.0110 | 0.0143 | 0.0033 | 30.00% |
| TEESSIDE BASF | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| TEESSIDE HYDROGEN | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| THORNTON CURTIS LDZ | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| THORNTON CURTIS (KILLINGHOLME) | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| THRINTOFT | 0.0018 | 0.0001 | -0.0017 | -94.44% |
| TOW LAW | 0.0025 | 0.0002 | -0.0023 | -92.00% |
| TOWTON | 0.0033 | 0.0010 | -0.0023 | -69.70% |
| TUR LANGTON | 0.0108 | 0.0092 | -0.0016 | -14.81% |
| WALESBY | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| WARBURTON | 0.0208 | 0.0185 | -0.0023 | -11.06% |
| WEST WINCH | 0.0030 | 0.0018 | -0.0012 | -40.00% |
| WESTON POINT | 0.0257 | 0.0211 | -0.0046 | -17.90% |
| WETHERAL | 0.0048 | 0.0025 | -0.0023 | -47.92% |
| WHITWELL | 0.0106 | 0.0094 | -0.0012 | -11.32% |
| WINKFIELD NT | 0.0208 | 0.0196 | -0.0012 | -5.77% |
| WINKFIELD SE | 0.0208 | 0.0196 | -0.0012 | -5.77% |
| WINKFIELD SO | 0.0208 | 0.0196 | -0.0012 | -5.77% |
| WYRE PS | 0.0155 | 0.0132 | -0.0023 | -14.84% |
| YELVERTON | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| ZENECA | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| CENTRAX | 0.0258 | 0.0343 | 0.0085 | 32.95% |
| CHOAKFORD | 0.0291 | 0.0376 | 0.0085 | 29.21% |
| WEST BURTON PS | 0.0030 | 0.0014 | -0.0016 | -53.33% |
| HATFIELD POWER STATION | 0.0011 | 0.0001 | -0.0010 | -90.91% |
| AM PAPER | 0.0181 | 0.0157 | -0.0024 | -13.26% |
| SEVERNSIDE ICI | 0.0154 | 0.0239 | 0.0085 | 55.19% |
| SALTFLEETBY | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| TILBURY PS | 0.0082 | 0.0110 | 0.0028 | 34.15% |
| BACTON Deborah | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| COCKENZIE PS | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| HILLTOP FARM | 0.0223 | 0.0177 | -0.0046 | -20.63% |
| WILLINGTON PS | 0.0170 | 0.0154 | -0.0016 | -9.41% |
| Glasqforest | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| Pembroke CHP (South Hook CHP) | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| TRAFFORD PS | 0.0211 | 0.0187 | -0.0024 | -11.37% |
| APACHE | 0.0001 | 0.0001 | 0.0000 | 0.00% |
| SEAL SANDS TGPP | 0.0001 | 0.0001 | 0.0000 | 0.00% |

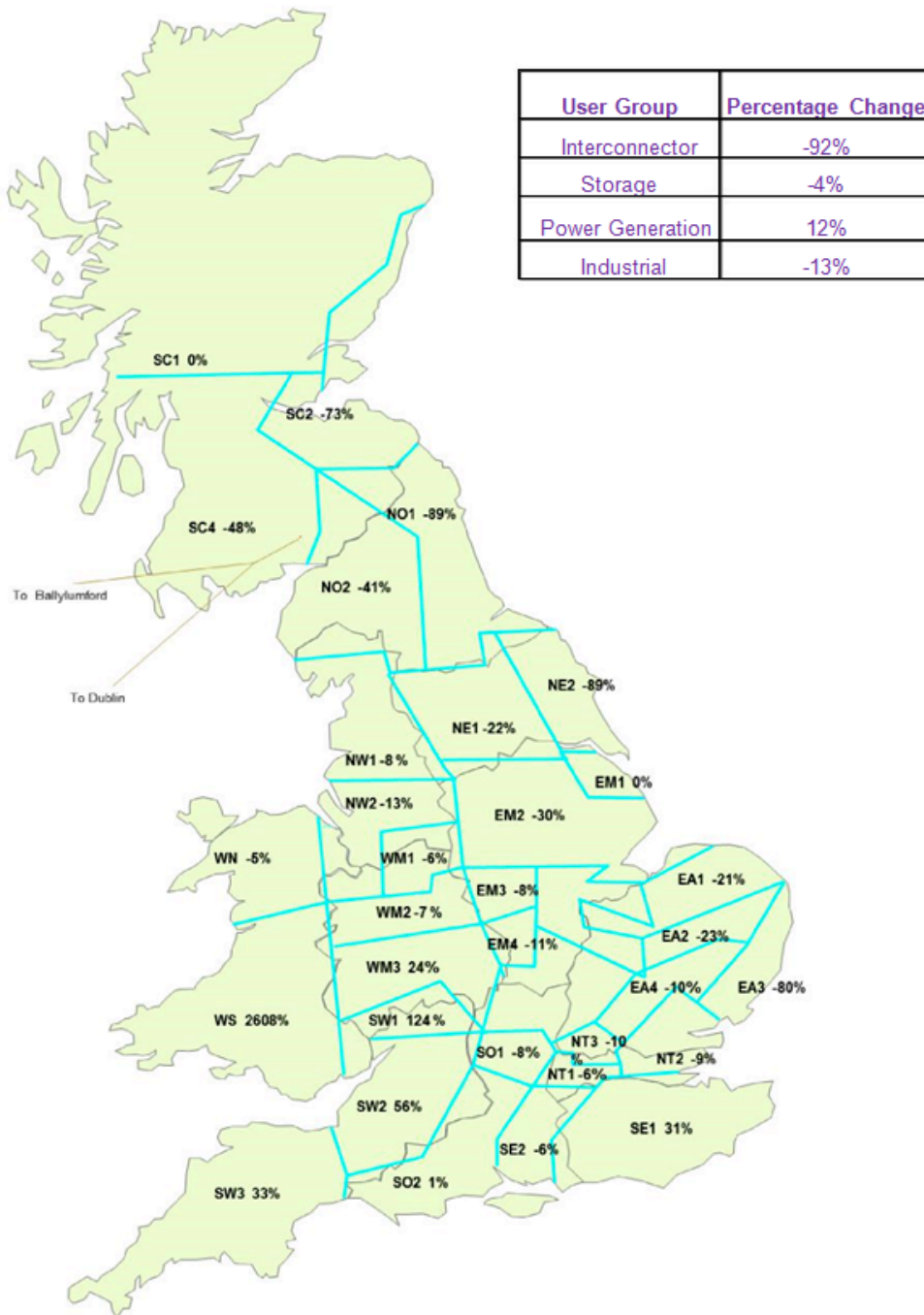
The supply data which was used to match the supply and demand data within the Transportation Model can be seen in the table below. This shows the differences between the supply data used to create the NTS Exit (Flat) Capacity Charges applicable from October 2015 and what the supply data would have looked like if the Merit Order was amended as per MOD517 to produce the supply and demand data within the same Transportation Model – the only change is the Merit Order, everything else within the Transportation Model and inputs into the Transportation Model have not been changed.

NTS Exit (Flat) Capacity Charges applicable from October 2015 supply data

| Exit – Final price for October 2015 | | |
|-------------------------------------|--|----------------------------|
| Supply Point | Supply flow (GWh) - Original – Exit Final October 2015 | Supply flow (GWh) - MOD517 |
| ALBURY (MRS) | 0.00 | 0.00 |
| AVONMOUTH LNG | 0.00 | 0.00 |
| BACTON TERMINAL | 354.29 | 354.29 |
| BBL | 517.57 | 517.57 |
| IUK | 810.80 | 810.80 |
| BARROW BAINS (MRS) | 0.00 | 0.00 |
| BARROW TERMINAL | 85.95 | 85.95 |
| BARTON STACEY (MRS) | 0.00 | 38.38 |
| BURTON POINT TERMINAL | 0.00 | 0.00 |
| CAYTHORPE (MRS) | 0.00 | 0.00 |
| CHESHIRE (MRS) | 0.00 | 198.20 |
| EASINGTON | 848.54 | 848.54 |
| ROUGH | 485.00 | 485.00 |
| FLEETWOOD (MRS) | 0.00 | 0.00 |
| GARTON (MRS) | 0.00 | 204.02 |
| GLENMAVIS LNG | 0.00 | 0.00 |
| HATFIELD MOOR (MRS) | 0.00 | 10.20 |
| HOLEHOUSE FARM (MRS) | 0.00 | 143.69 |
| HORNSEA (MRS) | 0.00 | 94.73 |
| ISLE OF GRAIN TERMINAL | 595.75 | 315.75 |
| MILFORD HAVEN TERMINAL | 870.71 | 461.48 |
| PARTINGTON LNG | 0.00 | 0.00 |
| PORTLAND (MRS) | 0.00 | 0.00 |
| ST FERGUS TERMINAL | 1079.99 | 1079.99 |
| TEESSIDE TERMINAL | 419.19 | 419.19 |
| Theddlethorpe TERMINAL | 98.36 | 98.36 |
| WYTCH FARM TERMINAL | 0.00 | 0.00 |

Below is the graphical representation of the changes in NTS Exit (Flat) Capacity Charges which is applicable from 01 October 2013 to 30 September 2014. It shows the percentage change between the original average prices per exit zone and NTS Exit (Flat) Capacity Charges applicable from October 2013 with amended Merit Order under MOD517 average prices per exit zone. There is also a user group comparison for the sites showing the percentage change between the original average prices and NTS Exit (Flat) Capacity Charges applicable from October 2013 with amended Merit Order under MOD517 average prices.

Changes in NTS Exit (Flat) Capacity Charges which is applicable from 01 October 2013 to 30 September 2014.



Appendix 3 - Impact on large customers from the 0517 series

Background

This paper has been produced in response to 0517 and its alternatives in order to present the impact the change would have on a large unique site across the Wales and West Utilities (WWU) region. WWU has been selected as it has been shown to be significantly impacted by the proposals within MOD517. Additionally, for comparison two further zones have been selected.

For each of the five exit zones within the WWU region (namely SW1, SW2, SW3, WA1 and WA2) a site reflective of sites connected to the NTS within that zone has been selected and modelled against each of the scenarios:

1. Original prices set by NTS, in the absence of MOD0517, as published 1st May 2015;
2. Prices set under MOD0517, assuming that implementation occurs in October 2015 and allowances can be adjusted for from 2017/18 onwards
3. Prices set under MOD0517A, assuming that implementation occurs in October 2017 and allowances can be adjusted from 2017/18 onwards
4. Prices set under MOD0517B, assuming that implementation occurs in October 2015 and allowances can be adjusted from 2017/18 onwards

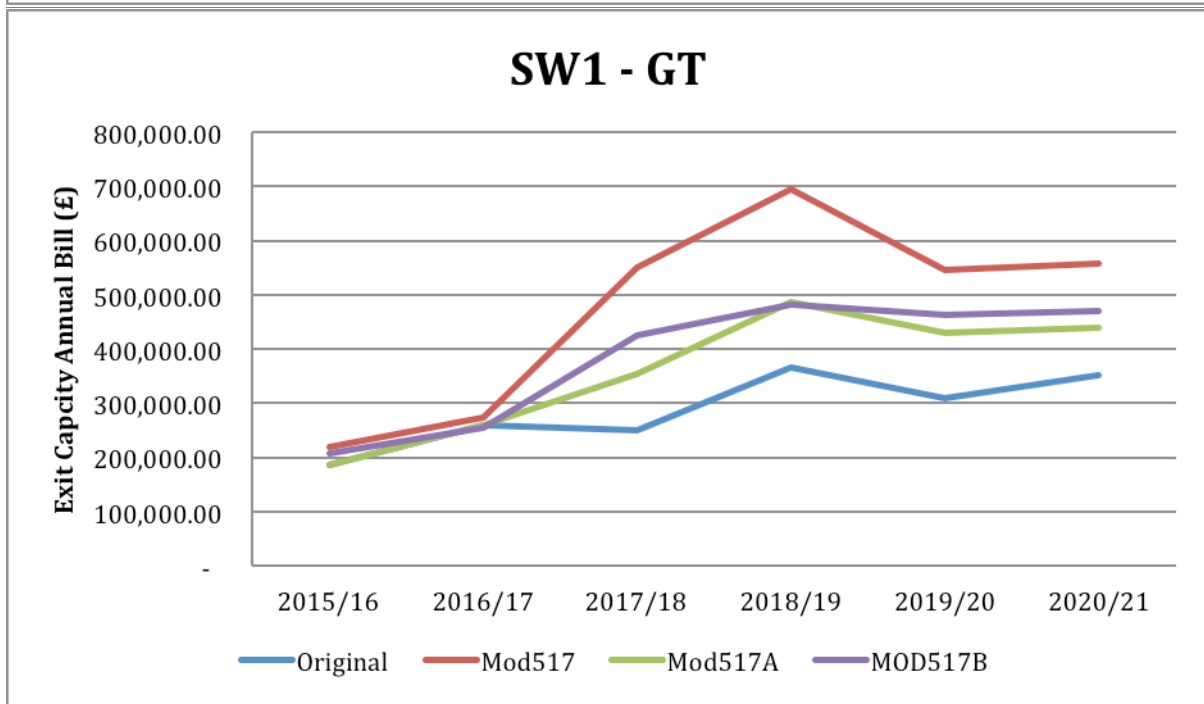
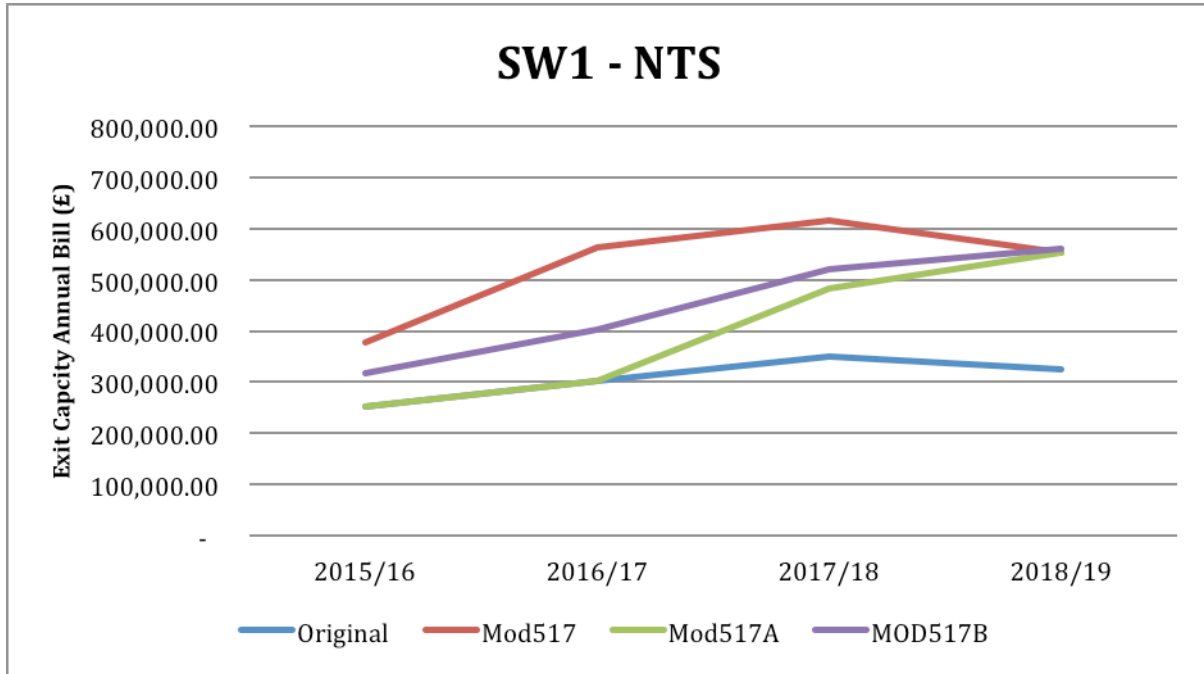
Pricing principals differ for those customers connected directly to the NTS to those in transmission, therefore analyses has been performed separately for a supply with the same SOQ within the same zone for both NTS and the Gas Distributor (WWU). A summary of these differences is as follows:

| NTS Methodology | Gas Transporter Methodology under RIIO |
|---|---|
| Specific for the relevant Exit Point in the Gas Year incurred (i.e. prices change in October annually). | Zonal price set by considering the price and demand across all exit points within a zone. This price is then inflated/deflated based on a comparison with the Allowed Revenue for that year. Allowed revenue is based on the allowance set by Ofgem for that year (year T) trued up for any under/over recovery in T-2 and for any variation in cost vs allowed cost in T-2. Prices are set annually, effective from April, in line with the regulatory year (note this is also applicable for NTX, however the resulting change of 517 seeks to redistribute costs and not exceed allowed revenue).. |

The impact of the T-2 adjustment results in the need to consider WWU prices through to 2020/21 with prices ultimately peaking in 18/19 where the cost true up and increased costs are impacting prices, thereafter prices are impacted by only the increased costs as it is assumed that allowances are adjusted to prevent the significant under recovery against cost thereafter. This effect also has the result of delaying the impact of the increased costs on customers in 2015/16 and 2016/17 as none of the additional cost can be passed through in these years.

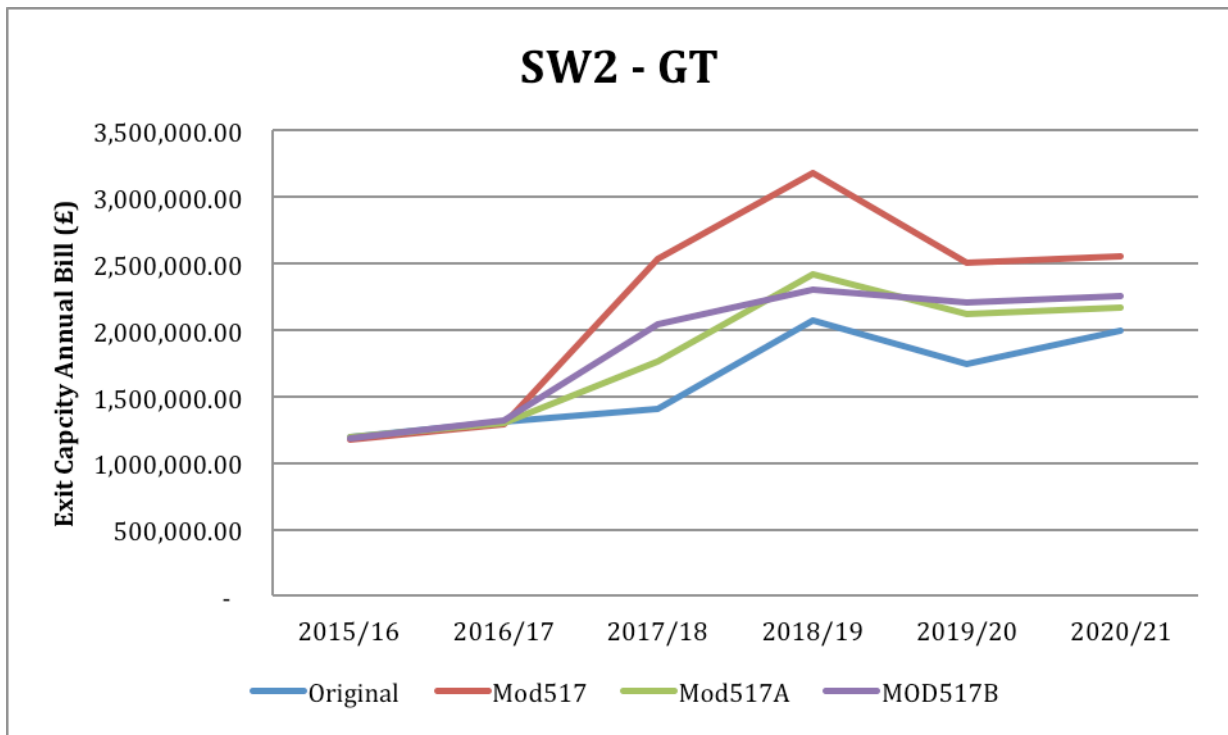
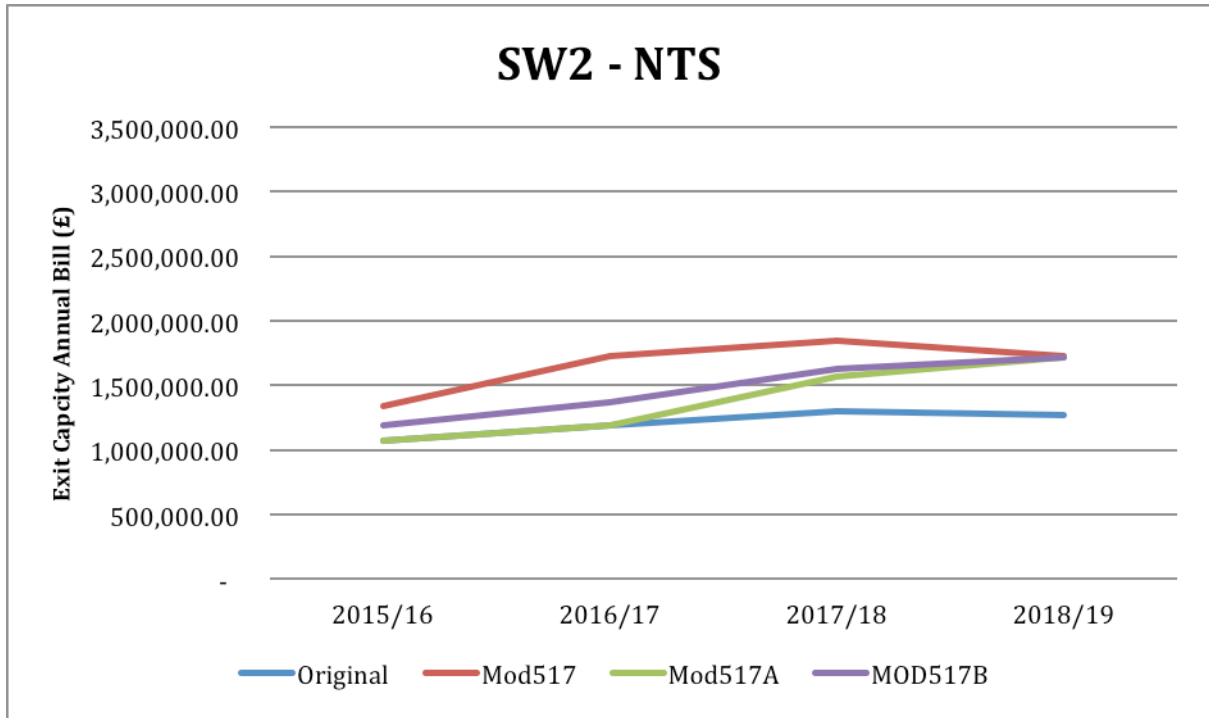
Impact of the Mod 517 series on a large site within SW1

| Exit Zone | SOQ assumption |
|-----------|----------------|
| SW1 | 30,159,984 |



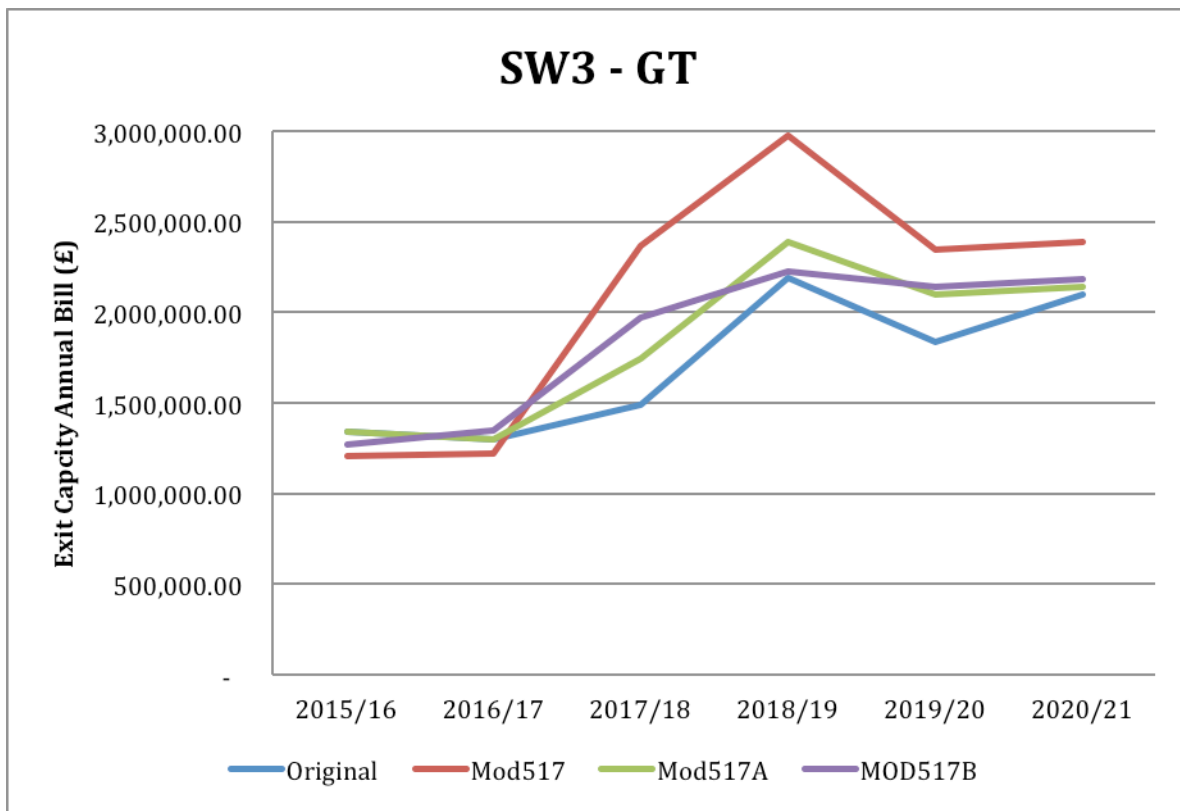
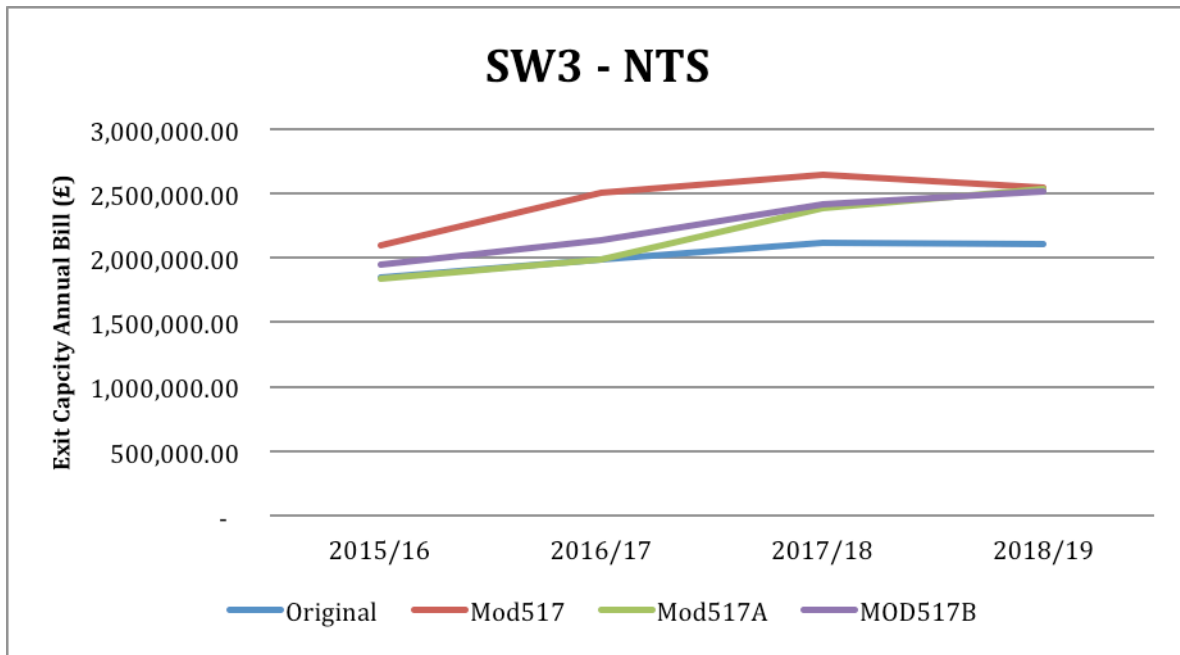
Impact of the Mod 517 series on a large site within SW2

| Exit Zone | SOQ assumption |
|-----------|----------------|
| SW2 | 61,104,000 |



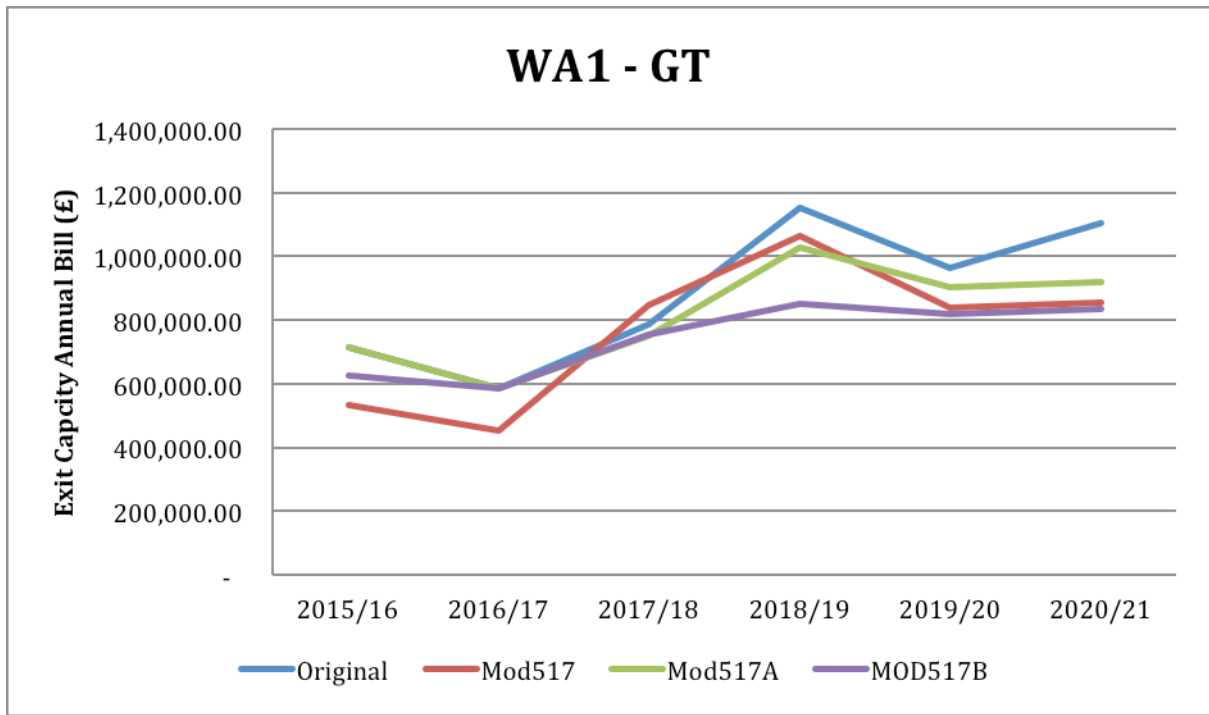
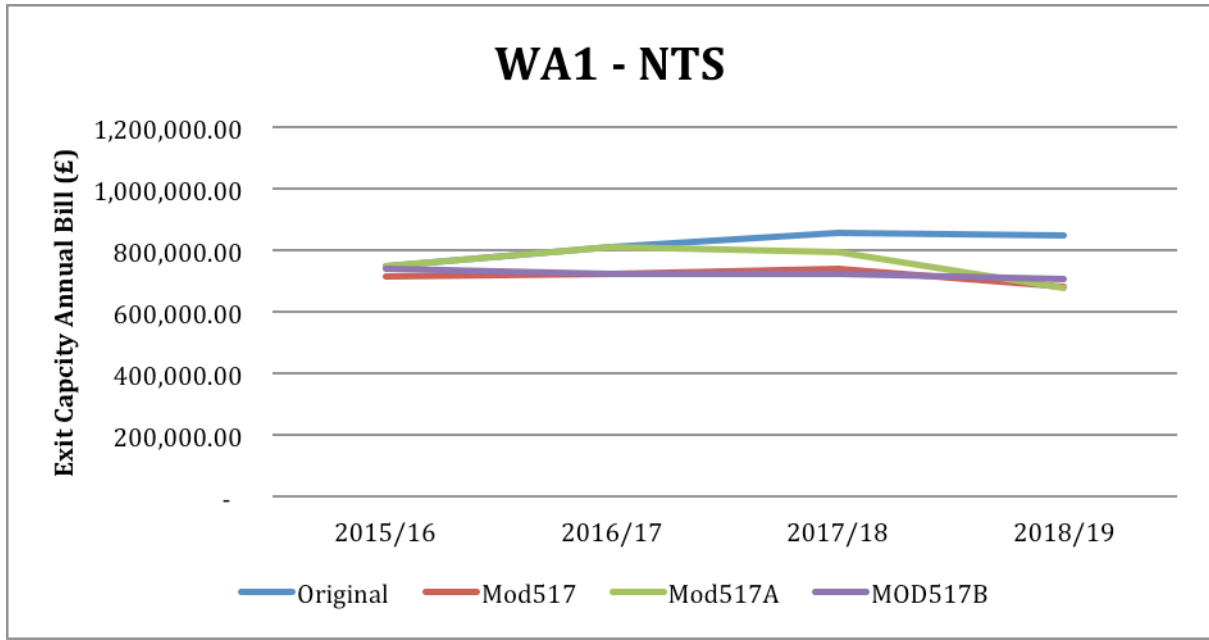
Impact of the Mod 517 series on a large site within SW3

| Exit Zone | SOQ assumption |
|-----------|----------------|
| SW3 | 60,000,000 |



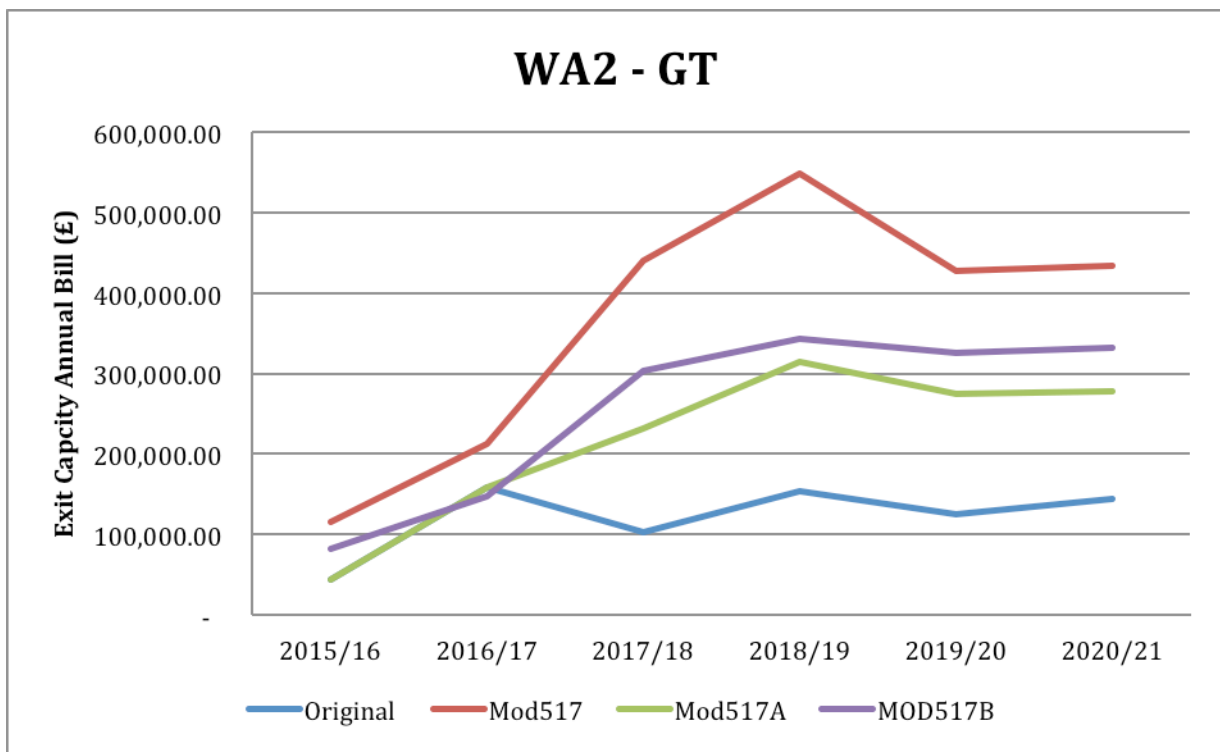
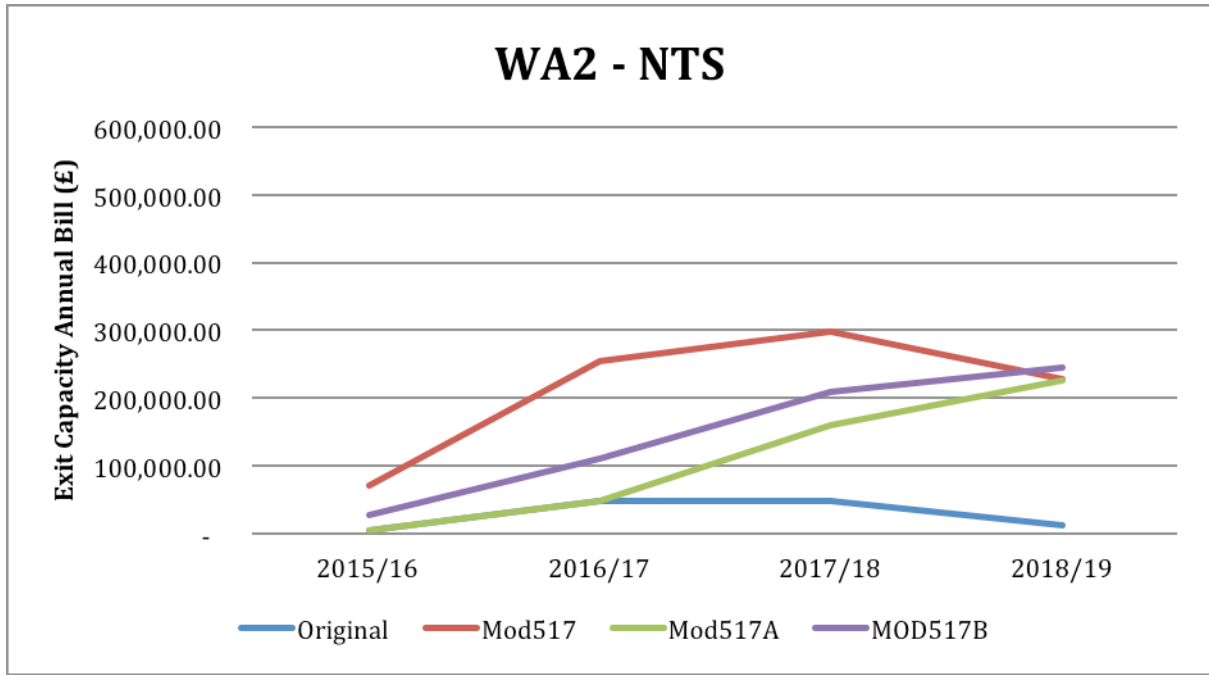
Impact of the Mod 517 series on a large site within WA1

| Exit Zone | SOQ assumption |
|-----------|----------------|
| WA1 | 29,568,000 |



Impact of the Mod 517 series on a large site within WA2

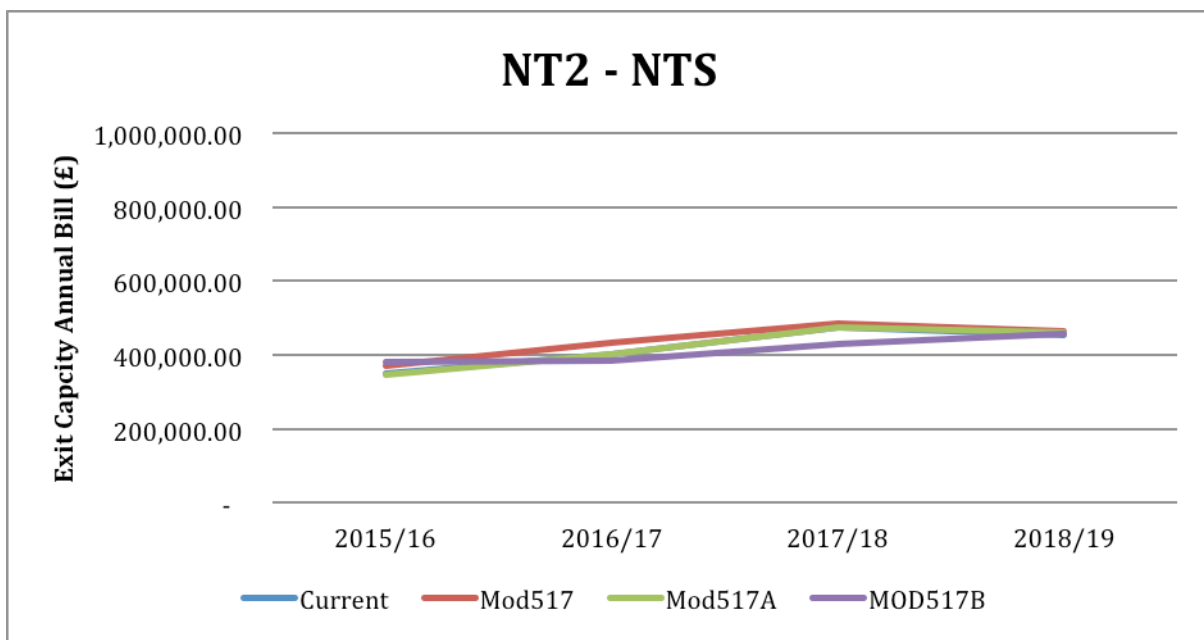
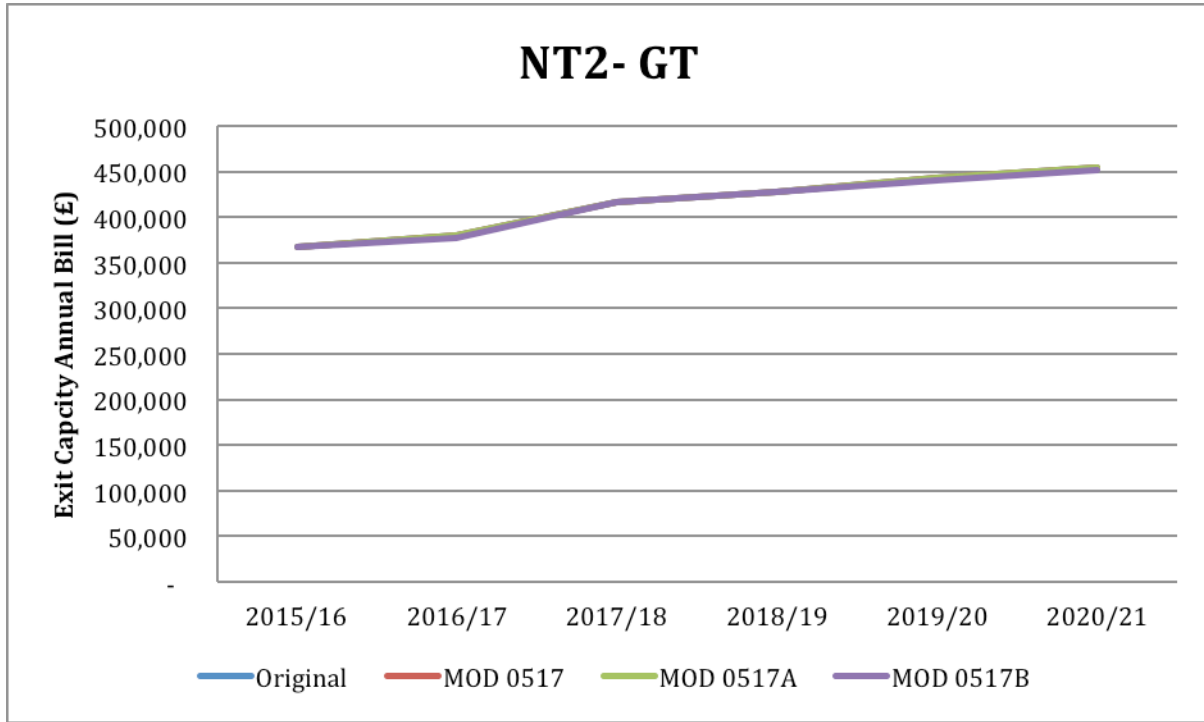
| Exit Zone | SOQ assumption |
|-----------|----------------|
| WA2 | 31,200,000 |



Impact of the Mod 517 series on a large site within NT2

The following exit zone was selected by National Grid to represent a site where prices will remain broadly in line with current prices.

| Exit Zone | SOQ assumption |
|-----------|----------------|
| NT2 | 30,159,984 |



Impact of the Mod 517 series on a large site within NW2

The following exit zone was selected by National Grid to represent a site where prices will fall compared to current prices.

| Exit Zone | SOQ assumption |
|-----------|----------------|
| NW2 | 30,159,984 |

