





UNC Draft Modification Report		At what stage is this document in the process?
<h1>UNC 0716/0716A:</h1> <h2>Revision of Overrun Charge Multiplier</h2>		<div style="display: flex; flex-direction: column; gap: 10px;"> <div style="border: 1px solid #ccc; padding: 5px; display: flex; align-items: center; gap: 10px;"> 01 Modification </div> <div style="border: 1px solid #ccc; padding: 5px; display: flex; align-items: center; gap: 10px;"> 02 Workgroup Report </div> <div style="border: 1px solid #ccc; padding: 5px; display: flex; align-items: center; gap: 10px;"> 03 Draft Modification Report </div> <div style="border: 1px solid #ccc; padding: 5px; display: flex; align-items: center; gap: 10px;"> 04 Final Modification Report </div> </div>
<p>Purpose of Modification:</p> <p>Modification 0716 and 0716A Proposal seeks to amend the multiplier in the Overrun Charge calculation at NTS Entry and Exit points.</p>		
	<p>This Draft Modification Report is issued for consultation responses at the request of the Panel. All parties are invited to consider whether they wish to submit views regarding this modification.</p> <p>The close-out date for responses is 09 July 2020, which should be sent to enquiries@gasgovernance.co.uk. A response template, which you may wish to use, is at: www.gasgovernance.co.uk/0716/</p> <p>The Panel will consider the responses and agree whether or not this modification should be made.</p>	
	<p>High Impact:</p> <p>UNC 0716 and 0716A</p> <p>None identified</p>	
	<p>Medium Impact:</p> <p>UNC 0716 and 0716A</p> <p>All parties that pay NTS Transportation Charges and/or have a connection to the NTS, and National Grid NTS</p>	
	<p>Low Impact:</p> <p>UNC 0716 and 0716A</p> <p>None identified</p>	

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UNC 0716:	
Pre-Modification presented to Workgroup	06 February 2020
Amended Modification considered by Workgroup	02 April 2020
Draft Modification Report issued for consultation	18 June 2020
Consultation Close-out for representations	09 July 2020
Final Modification Report available for Panel	13 July 2020
Modification Panel decision	20 August 2020
UNC 0716A:	
Proposer recommends follows 0716 Timetable	
Pre-Modification presented to Workgroup	02 April 2020
Presented to Panel for determination on Alternative Status	21 May 2020
Draft Modification Report issued for Consultation	18 June 2020
Consultation Close-out for representations	09 July 2020
Final Modification Report available for Panel	13 July 2020
Modification Panel decision	20 August 2020

 Any questions?

Contact:
Joint Office of Gas Transporters

 enquiries@gasgovernance.co.uk

 0121 288 2107

Proposer:
UNC 0716
Anna Stankiewicz
UNC 0716A
Benoit Enault,
Storengy UK
Limited

 **UNC 0716**
Anna.Stankiewicz@nationalgrid.com

UNC 0716A
benoit.enault@storengy.co.uk

 **UNC 0716**
07866 8884818

UNC 0716A
07741 311950

Transporter:
National Grid

 **As above**

 **As Above**

Systems Provider:
Xoserve

 UKLink@xoserve.com

Other **UNC 0716A**
07900 055144
nick@waterswye.co.uk

1 Summary

What

UNC 0716

Overrun Charges incentivise shippers to book the capacity required to match their gas flows. This supports the 'ticket to ride' principle that underpins the capacity regime in GB.

At Entry points, Overrun Charges are applied to any one User if that User flows more gas than capacity that they have booked. At Exit points capacity is aggregated, therefore Overrun Charges are only applied to flows over and above the total exit capacity booked by all parties at an exit point (i.e. irrespectively of which parties have booked the capacity).

This proposal seeks to amend the multiplier used in calculating Overrun Charges at both Entry and Exit points.

UNC 0716A

This proposal seeks to amend the multiplier used in calculating Overrun Charges at both Entry and Exit points.

Overrun Charges are intended to incentivise Users to book capacity to match anticipated flows, while not being overly penal as to lead to excessive over-booking of capacity and not encumbering Users with disproportionate costs.

At Entry Points, Overrun Charges are applied to any one User where that User's flows exceed their capacity holdings. At Exit Points, Overrun Charges are applied to an equivalent volume of flow, where the aggregate flow exceeds aggregate capacity holdings.

This proposal seeks to amend the multiplier (eight) used in the determination of Overrun Charges at Entry and Exit Points

Why

UNC 0716

An outcome of the Charging Review is that a higher proportion of revenue will be recovered through capacity charges than previously. Ofgem's minded to position is to implement UNC Modification 0678A, which results in a Postage Stamp methodology (it would introduce one price for all Entry and one price for all Exit points). As a result, capacity reserve prices will increase at some entry and exit points and decrease at others. Industry discussions suggest that a consequence of this could result in a significant increase in the **average** Overrun Charge for both Entry and Exit. This is due to the methodology for calculation of Overrun Charges being set at a multiple (x 8) of the bid or application prices already accepted for parties / users acquiring capacity. As capacity reserve prices increase, these prices would increase accordingly, meaning that Overrun Charges will also increase.

Furthermore, the industry felt that with bookings potentially being made closer to flows in the future it is anticipated that more accurate FCC (Forecasted Contracted Capacity) will be produced. Increased Overrun Charges could potentially make Users book more capacity than they require (for the fear of over-running and incurring penalties), which as a consequence might negatively affect accurate FCC predictions.

UNC 0716A

The NTS Capacity Access Review initiated through Modification 0705R is intended to establish a long-term strategy for the NTS capacity access regime. The Review separated out short-term problems from long-term ambitions, with overrun charges being identified as a short-term problem worthy of immediate attention. The

driver behind its classification was a combination of the expected change to the NTS charging regime in October 2020, following the anticipated implementation of Modification 0678A, but also the fact that overrun multipliers had not been reviewed since their inception, over 20 years ago. In summary, the review of overrun multipliers was intended to consider whether they had been set at levels which were appropriate historically and for the future.

To this end, the Proposer has developed a set of Principles which it recommends are adhered to when assessing the validity of the current Overrun Multipliers as well as providing an “acid test” against which any changes to them should be measured.

Furthermore, the industry felt that with bookings potentially being made closer to flows in the future, it is anticipated that more accurate FCC’s (Forecasted Contracted Capacity) should be produced. High Overrun Charges work against this by encouraging Users to book more capacity than they require (for the fear of over-running and incurring exceptionally high penalties).

The analysis carried out by the Proposer concludes that the current multipliers are inconsistent with the Principles.

How

UNC 0716

The proposer recognises that the increased Overrun Charges are likely to be incurred because of the new proposed charging methodology and believes that maintaining an appropriate incentive (by way of financial penalty) for shippers to book capacity is required. The aim of the proposal is to find a multiplier which would maintain the status quo; keep the Overrun Charge and incentive to book capacity at the same level as it is today. Revenue is used as a measure of shipper’s performance of booking capacity to measure flows and therefore as a method of maintaining that status quo. It was assumed capacity booking behaviour will not worsen if revenue remains similar as in previous years.

The new charging regime will have an impact on capacity booking behaviours. While we know that the behaviour could change, we don’t know to what extent. We have based this proposal on historic quantifiable data of capacity bookings against flows (revenue from historic Overrun Charges) rather than future uncertain predictions of behaviours. The principle of keeping the Overrun incentive at similar historic levels post implementation of the charging review can be achieved by reduction of the Entry Overrun x 8 multiplier (referred to in UNC B2.12.3 (a)) to x 3 and reduction of the Exit Overrun x 8 multiplier (referred to in UNC B3.13.3 (a) and (c)) to x 6. By changing the multiplier as proposed, the **overall** charges should not be increased.

This proposal does not seek amendments to the Overrun methodology in other instances.

The proposer recognises that it is not plausible to predetermine a uniquely appropriate level of the Overrun multiplier. Although the historic reason for implementing x8 multiplier is unclear, the proposer believes that the level of **overall** incentive (administered through the existing UNC mechanism) should be maintained going forward and therefore the multiplier should have quantifiable justification behind it. The impacts of the implementation of UNC Modification 0678A, Ofgem’s minded to decision is not confirmed, and will not occur until October 2020, may lead to a change in Users capacity booking behaviour which at this stage is unknown. Once the new patterns are known, the proposer deems it necessary to re-assess Overrun Charges to establish whether they still meet their primary objective. The proposed change outlined in this modification is to maintain the status quo in the interim period in terms of financial exposure to Users, assuming no change in behaviour.

UNC 0716A

The Proposer has carried out analysis to examine recent patterns in User NTS Capacity bookings. The results show that while short-term products remain plentiful and broadly zero-priced, Users have engaged in a strategy

of over-booking capacity when compared to anticipated flows. DNs are an exception to this rule, as they are subject to specific Licence Conditions to meet peak demand levels on their networks,

On the basis that there is no commercial or strategic advantage to be gained through capacity overruns, given the extremely penal nature of the charges, it is reasonable to conclude that historical overruns are the result of User error.

With the expected implementation of Modification 0678A in the short-term, it is anticipated that Users will modify capacity booking strategies and place greater emphasis on minimising capacity costs by purchasing short term capacity products to match flows. This shift in booking behaviour will reduce the “margin for error” and likely result in a greater number of overrun events in future.

The Proposer identified three key conclusions from its analysis:

Conclusion 1: Users have made little attempt to match capacity bookings with anticipated flows, and instead bulk buy surplus capacity at zero or significantly lower costs to safely satisfy their daily needs and avoid overruns.

Conclusion 2: The predictable change in booking behaviour as a result of a change to the Charging Methodology focused on capacity-based charging, with limited or no discounts for short-term capacity products, renders historical booking behaviours irrelevant to informing future booking behaviours.

Conclusion 3: There is no commercial or strategic advantage to be obtained from capacity overruns with extreme penalties, therefore, it must be concluded that such events are a result of User error.

In light of these findings and with the intention of adhering to the Principles outlined in the Modification, it is proposed that the Overrun Multiplier is reduced to 1.1. This level of Overrun Multiplier is consistent with the multiplier already established in the UNC on the occasion that National Grid takes a Constraint Management Action.

2 Governance

Justification for Authority Direction

UNC 0716

As the proposal has a material cost impact on the transportation arrangements for Shippers and relevant consumers, it should be subject to Authority Direction.

UNC 0716A

The Modification addresses the same issues that have been raised under Modification 0716 but offers an improved solution by setting Overrun Multipliers at levels better aligned with the core principles of overrun charges than those proposed under Modification 0716.

As the proposal contains features common to Modification 0716 the Proposer believes that this Modification should be deemed to be Alternative to Modification 0716.

As with Modification 0716, the proposal has a material cost impact on the transportation arrangements for Shippers and relevant consumers and should be subject to Authority Direction.

Requested Next Steps

UNC 0716

This Modification should:

- be considered a material change and not subject to self-governance
- be assessed by a Workgroup

UNC 0716A believes that this modification should:

be deemed to be Alternative to Modification 0716, and as such should

- be considered a material change and not subject to self-governance
- be subject to the same timetable as Modification 0716

3 Why Change?

UNC 0716

As a result of the proposed changes related to the allowed transported revenue being recovered through capacity charges from 1st October 2020, some Overrun Charges will see a substantial change with the average impact being a significant increase of exposure. This proposal seeks to maintain the status quo and safeguard Users by moderating Overrun Charges caused by an unintended consequence of the implementation of UNC Modification 0678A. At the same time, the proposer recognises that it is imperative to keep an appropriate level of Overrun Charges to maintain the incentive on shippers to book capacity on the NTS. The proposer believes that the proposed solution seeks to strike an accurate balance between the magnitude of Overrun Charges and the incentive to book the capacity for the gas flows required.

Given the change to the reserve price methodology likely to be implemented by UNC Modification 0678A, as per Ofgem's minded to position, ("Minded to Letter - Modification 0678") analysis has been conducted to ensure that the potential revenue collection from Overrun Charges are forecast to remain, on average, at a consistent level as it has been in the past years in order to maintain the same incentive / penalty on Users to match capacity bookings and flows. This proposal recognises that there will be differences in the increase/decrease of reserve prices at individual entry and exit points. The entry points average reserve price increase, on average, will be greater than exit points.

This proposal has taken a holistic view of all entry and all exit points. By changing the multiplier as proposed, the overall level of Overrun Charges will remain the same and it has been assumed that for that reason the capacity booking behaviour will not worsen (Overruns will not occur more often once the new charging regime is implemented).

Entry Overrun Charge

The table below demonstrates how revenue collected from Entry Overrun Charges will potentially increase after implementation of Modification 678A if booking behaviour remains as current. *For the purpose of the calculation, the following was taken into account:*

**Expected changes to the NTS charging methodology will recover a greater proportion of transporter allowed revenue from capacity fees. The average reserve price will increase significantly. For the purpose of this calculation Actual daily bid prices paid and Postage Stamp Reserve price of 0.0412p/kWh/d were taken into account.*

Furthermore, currently there is no reserve price for within day allocation. However, should 0678A be implemented, postage stamp reserve prices will be applicable for within day allocations. Furthermore, closer to flow auction bookings may considerably increase as may competition, which may increase charges via auction bidding in the new regime. Charges reflected in this column are the minimum charges the fees would potentially increase to.

Based on the figures presented, for Entry the currently collected actual revenue would maintain at approximately the same level if we reduce the multiplier to x 3 (e.g. actual revenue collected in 18/19 with x 8 multiplier = £391,142 which is close to potential collected revenue based on Reserved Prices for Daily standard Capacity in Postage Stamp Methodology x 3 = £427,069.65).

Multiplier	Actual charges Year 18/19	*Charges 18/19 updated with Reserved Prices for Daily Standard Capacity (Postage Stamp)
x8	391,142.29	1,138,852.40
x6		854,139.30
x4		562,426.20
x3		427,069.65
x2		284,713.10

Multiplier	Actual charges Year 17/18	*Charges 17/18 updated with Reserved Prices for Daily Standard Capacity (Postage Stamp)
x8	2,229,116.00	7,298,673.19
x6		5,474,004.90
x4		3,649,336.60
x3		2,737,002.45
x2		1,824,668.30

Exit Overrun Charges

The table below demonstrates how revenue collected from Exit Overrun Charges would potentially increase after implementation of UNC Modification 0678A if booking behaviour remains as current. Based on the figures presented, for Exit the currently collected actual revenue will remain most like current levels if we reduce the multiplier to x 6. In 18/19 the actual revenue collected with x 8 multiplier was = £561,791.94 and in 17/18 the actual revenue collected with x 8 multiplier was = £675,682.12. Across 17/18 and 18/19 a x 6 multiplier would over-recover by a total of £98,952.85 whereas a x 5 multiplier would under-recover by a total of £123,784.94. Therefore, a x 6 multiplier is the closest whole number multiplier which overall recovers the level of revenue most akin to actual charges for those years.

Multiplier	Actual charges (£s) Year 18/19	*Charges (£s) 18/19 updated with Reserved Prices for Daily Standard Capacity (Postage Stamp)
x8	561,791.94	863,265.67
x7		755,357.46

x6		647,449.25
x5		539,541.04
x4		431,632.83
x2		215,816.42

Multiplier	Actual charges (£s) Year 17/18	*Charges (£s) 17/18 updated with Reserved Prices for Daily Standard Capacity (Postage Stamp)
x8	675,682.12	918,636.87
x7		803,807.27
x6		688,977.66
x5		574,148.05
x4		459,318.44
x2		229,659.22

UNC 0716A

The NTS Capacity Access Review initiated through Modification 0705R is intended to establish a long-term strategy for the NTS capacity access regime. The Review separated out short-term problems from long-term ambitions, with overrun charges being identified as a short-term problem worthy of immediate attention. The driver behind its classification was a combination of the expected change to the NTS charging regime in October 2020, following the anticipated implementation of Modification 0678A, but also the fact that overrun multipliers had not been reviewed since their inception, over 20 years ago. In summary, the review of overrun multipliers was intended to consider whether they had been set at levels which were appropriate historically and for the future.

This proposal looks to build on evidence from the recent past, as a basis for assessing the effectiveness of the current overrun multipliers, as well as look to the changing landscape going forward. In the very short-term, the anticipated implementation of Modification 0678A will mean that the shift towards capacity-based charges, coupled with the removal of, or significant reduction in discounts for short term capacity products, will inflate the price of capacity and alter the way in which Users acquire it. Users will endeavour to reduce overall capacity costs from over-booking through profiling capacity purchases to better reflect flows meaning that the risk of accidental overrun is likely to increase accordingly.

Without a reduction in multipliers in the short-term, Users will face increases in overrun penalties, in absolute terms, as well as skew capacity purchasing behaviours to the detriment of all Users, National Grid NTS and consumers.

4 Code Specific Matters

Reference Documents

UNC 0716

None

Knowledge/Skills

UNC 0716

None

UNC 0716A

An understanding of the NTS Capacity Overrun regime

5 Solution

UNC 0716

The proposer recognises that, if Modification 678A is implemented, the reserve prices will increase at some entry and exit points and decrease at others. However, as demonstrated above, on average the potential postage stamp reserve price will cause Overrun Charges to double at entry points and significantly increase at exit points. The proposer believes that the proposed reduction in the multiplier, based on historic behaviour results, and the impact of the implementation of the UNC Modification 0678A minded to position is not leading to, on average, any significant greater financial risk from Overruns to Users.

The analysis conducted show that by reducing the multiplier to x 3 for Entry and x 6 for Exit, on average, a similar amount of revenue will be collected from Overrun Charges and therefore a similar level of incentive would be provided as prior to the introduction of the UNC Modification 0678A changes.

	Actual charges (£s) Year 17/18 & 18/19	*Charges (£s) 17/18 & 18/19 updated with Reserved Prices for Daily Standard Capacity (Postage Stamp) x 3 Entry / x 6 Exit
Entry Overrun Charges	2,690,258.42	3,164,072.10
Exit Overrun Charges	1,237,474.06	1,336,426.91
TOTAL	3,927,732.48	4,500,499.01

For the changes to be implemented the following would need to be amended in UNC:

- UNC B2.12.3 (a)) number change from x 8 to x 3
- UNC B3.13.3 (a) and (c)) number change from x 8 to x 6

It is worth noting that the revenue collected from Entry Overrun Charges is credited to Neutrality monthly and returned to Users. Neutrality is shared out based on each User's end of the day firm capacity (as a percentage of the total system end of the day firm capacity for all Users). Revenue collected does not, therefore, contribute to the NTS Transporter Allowed Revenue. Revenue from Exit Overrun Charges is deducted from SO Commodity in Y+2 in the instance of over-recovery of Transporter Allowed Revenue.

UNC 0716A

Purpose of overrun multipliers

Overrun multipliers have formed part of the UNC since market opening in 1996. They were established to provide an incentive on Users to purchase sufficient volumes of capacity, at both NTS Entry and NTS Exit Points, to satisfy expected supplies/demand. A multiplier of 8 was introduced primarily, as it was proposed at the time, as

being representative of a reasonable incentive, however, there is no suggestion that this was settled upon as a result of any meaningful analysis. It should also be recognised that at the time the overrun multiplier of 8 was set, the GB gas market was in a period of growth (during the “dash for gas”); capacity was invariably constrained in some locations; and the NTS was expanding to accommodate market demand. Therefore, at that time, a higher incentive and penalty may have been more justified.

While other incentives, such as balancing, have been changed to reflect the changes in the gas market, overrun multipliers have been retained at their original levels without being subject to review. The solution put forward in this modification, endeavours to assess the effectiveness of the current overrun multiplier as well as investigate how the changes in the gas market, both physically and commercially might be reflected upon in the derivation of future overrun multipliers.

Principles underpinning overrun multipliers

In order to determine what would constitute an appropriate multiplier, a set of base principles should be established.

Proposer’s recommended base principles;

1. Any incentive should be set at a level to encourage capacity bookings that are more reflective of “need”
 - a. Overbooking to insure against overrun will create false scarcity and potentially mislead NGG where capacity bookings are used as an indication of flow
 - b. Where capacity reserve prices are set as a basis for recovering revenue. excess bookings will increase TO revenue which in turn will require balancing via k factor or Revenue Recovery Charge. This creates uncertainty and unpredictability in capacity costs for Users and end consumers and runs contrary to the objectives which underpinned the NTS Charging Review
2. Overrun charges should not be dis-proportionate
 - a. Provide an incentive to book required capacity, but not be unduly penal. Revenues raised from overruns are allocated to shippers via capacity neutrality, resulting in a windfall benefit as a result of shipper error, where shipper error is the cause of an overrun
 - b. When the network (the NTS) is “unconstrained”, meaning there is generally surplus of capacity, the provision of additional “unbooked” capacity via overruns is at no cost to NGG and does not disadvantage or undermine the market
 - c. Where the NTS is constrained, overruns could be priced at levels greater than the default multiplier (currently 8) multiplied by the auction price. The alternative overrun charges will better reflect the cost of managing the NTS during a constraint.

Capacity booking behaviour in the recent past

An examination of booking patterns over the last 12 months provides a useful indicator of User booking behaviour in respect of the current capacity charging regime. Section 11 of this Modification provides a summary of the analysis carried out by the Proposer to support the observations and conclusions set out below.

During this period, NTS capacity has been broadly unconstrained, with Users able to access relatively cheap, or even free Entry Capacity. At exit, competition for capacity is generally restricted as at most Exit Points the Exit Capacity is provided to support an individual offtake. Further to this, on the Exit side at NTS/DN interconnections, DN’s are subject to regulatory obligations to meet peak levels of network demand, meaning that commercial drivers to minimise Exit capacity costs are greatly diminished. For shippers, where they are required to acquire Exit capacity, the ability to pass on these charges to customers is more prevalent, when compared to entry charges, which again diminishes the incentive to actively manage and minimise associated costs.

Booking behaviour at Entry Points

Entry Capacity can be acquired directly from National Grid via a series of term auctions, ranging from quarterly firm to within day interruptible. For capacity bought ahead of the day a positive reserve price is set, while for within day products (firm and interruptible) the reserve price is zero. To understand how the unconstrained properties of the NTS combined with the variance in reserve prices impacts User booking behaviour, the Proposer has elected to investigate two Entry Points, Bacton UKCS and St Fergus. Based on our wider examination of Entry Capacity booking behaviour these Entry Points provide a good benchmark, reflecting similar behaviours to other Entry Points.¹

The results of the analysis (Section 11, part 1) clearly show a strong demand for short-term capacity products, both within day firm and interruptible, which reflects the confidence in the market that capacity is plentiful with negligible probability of not being made available, allowing it to be acquired at zero, or close to zero cost. Further, as all of the short-term capacity made available is acquired, usually in excess of actual flows, it is reasonable to assume that Users make little attempt to match capacity bookings with anticipated flows, rather bulk buying surplus capacity at zero cost to more than satisfy their daily needs.

Booking behaviour at Exit Points

Exit capacity can be acquired directly from National Grid via a series of term auctions, ranging from annual firm to off-peak capacity. For firm capacity a positive reserve price is set, while for the off-peak product the reserve price is zero.

The booking of Exit Capacity varies depending on the nature of the offtake, with varying emphases placed on managing costs versus ensuring capacity is acquired, as described above.

To understand how the unconstrained status of the NTS combined with the variance in reserve prices impacts User booking behaviour, the Proposer has elected to investigate three Entry Points, Stublach (storage), Rocksavage (power station) and Bacton IUK (interconnector). The Proposer elected not to investigate NTS/DN Exit Points as capacity booking is dictated by licence requirements.

The Proposer believes that the data from the three Exit Points (Section 11, part 2) provides a good indicator of User booking where there is a commercial incentive to minimise costs.

As with Entry Capacity, at the three Exit Points examined, there has been a high level of demand for off-peak capacity, with available capacity often sold out. Again, it is reasonable to assume that as the product can be acquired at zero cost, Users make little attempt to match capacity bookings with anticipated flows, again over-booking capacity to more than meet their needs.

Conclusion 1: Users have made little attempt to match capacity bookings with anticipated flows, and instead bulk buy surplus capacity at zero or significantly lower cost to safely satisfy their daily needs and avoid overruns

Impact of anticipated changes to the NTS Charging Methodology

In order to comply with the EU Tariff Code, Modification 0678 (and alternatives) were developed by industry and are currently under consideration by Ofgem. The Modifications all propose a move towards capacity-based NTS charges and a change to the underlying charging methodology, replacing the current LRMC approach with either

¹ Those Entry Points which acquired significant volumes of QSEC capacity in order to fulfil incremental investment User commitment obligations show moderately different results.

Postage Stamp or Capacity Weighted Distance methodologies. In its minded to decision² Ofgem has stated a preference for Modification 0678A which proposes a Postage Stamp methodology. Further, it includes: the removal of discounts for firm capacity products; a 10% discount for interruptible products and the replacement of TO Commodity Charges with Revenue Recovery Charges.

On the basis that Modification 0678A is implemented by Ofgem, this will change the reserve prices for all capacity products at all NTS Entry and Exit Points.

The analysis in Section 11, parts 3 and 4, shows that, on average and in absolute terms, reserve prices for NTS Entry Capacity and NTS Exit Capacity will be 76 times and 57 times higher, respectively, as a result of Modification 0678A. Clearly, given the current significant reliance on short-term, zero-priced capacity products as highlighted above, it is reasonable to expect Users' capacity booking strategies to evolve, with an emphasis being placed on minimising capacity costs. This will require that Users move away from "bulk buying" excess volumes of zero-price capacity to more pro-active, profiling of short-term capacity products to closely match anticipated flows. It is also likely that Users will defer booking until as late as possible as end of day flow information becomes more reliable.

Conclusion 2: This predictable change in booking behaviour as a result of a change to the Charging Methodology focused on capacity-based charging, with limited or no discounts for short-term capacity products, renders historical booking behaviours irrelevant for informing future booking behaviours.

Why overrun?

Accepting the conclusion made above regarding booking behaviours this can be extended to the treatment of overrun multipliers.

Data provided by National Grid at the March 2020 Modification 0716 workgroup meeting³ summarised overrun incidents during 2017/18 and 2018/19. Although the data is useful in order to understand the magnitude and dispersion of the overrun charges, no attempt was made to investigate the underlying reasons as to why the overruns occurred.

The Proposer recommends that based on our analysis, the relatively "hands off" approach to capacity booking observed by Users, as shown by the preference for short-term, zero-cost capacity products, coupled with the extremely penal cost associated with incurring overrun penalties (multiplier of 8) that the primary, if not sole reason for overruns is User error. It is evident that there is no commercial or strategic advantage to overrun, as the cost of doing so will be subsumed entirely by the User and undermine the tradeable value of the gas commodity. This assertion is reinforced by the observation that overruns appear to have been spread across multiple System Points and multiple Users, rather than any trend to consistently overrun at certain points

Conclusion 3: There is no commercial or strategic advantage to be obtained from capacity overruns with extreme penalties, therefore, it must be concluded that such events are a result of User error.

Setting the overrun multiplier

In order to understand the impact of overrun multipliers, the Proposer has compared the costs of applying a multiplier of 8, using current firm reserve prices, with the multipliers of 3 and 6 at NTS Entry and Exit Points

² <https://www.ofgem.gov.uk/publications-and-updates/amendments-gas-transmission-charging-regime-minded-decision-and-draft-impact-assessment>

³ https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2020-03/Mod%200716%20Tx%20WG%20050320_0.pdf?BSR7TUIlqNTN4HZ6w68FEsayotlzYG24=

respectively, using forecast October 2020 Postage Stamp reserve prices. The full results are shown in Section 11, parts 5 and 6.

On average, in absolute terms, at entry, overrun costs would increase by a multiple of 28 and at exit by a multiple of 43. In both cases, the impacts are wide-ranging with at entry, multiples ranging from 0.3 to 80 and at exit between 0.23 and 129, however, it should be noted that in all cases this equates to an effective uplift in the price of capacity by 0.1287 p/kwh, (0.06345 p/kwh for storage) at entry and 0.1032 p/kwh, (0.0516 p/kwh at storage).⁴ With gas trading at around 1p kwh for Gas Year 2020/21, these levels of overrun charges remain extraordinarily penal and any commercial motivation to overrun is not evident.

In determining an appropriate level for an overrun multiplier, in parallel with fulfilling the Relevant Objectives, it should:

- be consistent with the Principles set out in the Modification;
- only use historical evidence where it is valid to do so;
- be forward looking, reflecting the outlook for the UK gas market and accommodate any anticipated regulatory/contractual changes;

In respect of the above, it is proposed that the overrun multiplier is reduced from 8 set to 1.1.

This represents a 10% uplift to capacity charges, translating to 0.00429 p/kwh (0.00215 p/kwh at storage) for entry and 0.00172 p/kwh (0.00086 p/kwh at storage).

A multiplier of 1.1 is consistent with the level applied where National Grid has taken Constraint Management Actions at either entry or exit.

6 Impacts & Other Considerations

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

UNC 0716

None

UNC 0716A

Modification Panel participants agreed in May that this Modification does not have a SCR impact

Consumer Impacts

UNC 0716

Improved safety & liability: Overrun Charges embed the ticket to ride principle whereby a shipper should hold one unit of capacity to flow one unit of energy onto or off the system. Receiving accurate capacity booking information supports the efficient and safe commercial operation and management of the system. Reduction of the multiplier will have a positive impact on accurate booking behaviour (i.e. by maintaining the status quo of incentive through financial penalty, there should not be a greater fear of overrunning than current as the

⁴ Were the multiples derived on the basis of interruptible, off-peak reserve or entry within-day firm prices they would be infinite.

aggregate charges remains the same), meaning that capacity bookings are reflective of flows and not inflated due to risk of incurring a high Overrun Charge.

Lower bills than would otherwise be the case: The reduction in multiplier will reduce the potential higher User exposure to increased charges because of implementation of Modification 678A. Assuming that the industry as a whole passes through charges to end consumers as a principle, by extension, lowering the multiplier would have the effect of maintaining the level of aggregate charges, ensuring that any increase in capacity unit rates has a neutral effect on consumer bills

Reduced environmental damage: As new technology and new sources of gas enter the market as the industry evolves to meet decarbonisation targets, the risk of high Overrun Charges being passed on, to potentially small customers may be a blocker to their entry and continued operation.

Improved quality of service: National Grid's stakeholders have identified the impact of UNC Modification 0678A on Overrun Charges. By raising this modification, National Grid aims to provide a good quality of service which will ultimately benefit consumers.

UNC 0716A

Improved safety and liability. Accurate capacity booking information supports the efficient and safe commercial operation and management of the system. In the current regime, capacity is not booked in any meaningful way, with Users booking excessive volumes of Entry and Exit Capacity, primarily on a short-term basis, as it is zero-priced and plentiful. Current overruns can only be explained as a result of User error, as commercially Users will always incur financial penalties for over-running. Where the charging regime favours capacity-based charges, a commercial incentive will endure, resulting in Users placing a greater emphasis on capacity booking strategies and processes. Reducing the multiplier to a level which balances an incentive to book without unfairly penalising User error will result in Users booking capacity representative of actual need, providing valuable information for the purposes of system operation. Where multipliers are too high, Users will tend to overbook capacity, degrading the value of capacity booking information in respect of system operation.

Lower bills than would otherwise be the case. The reduction in the multiplier will reduce User exposure to increased charges as a result of a change to the charging methodology, while also removing disproportionate penalties as a result of User error. Overrun charges are unlikely to be passed directly through to consumers, however, consumer bills will directly be reduced by the resultant profiling of capacity booking by Users to more closely match anticipated flows. Were the overrun multiplier set at a higher level, Users are likely to "overbook" capacity, to mitigate against overly penal overrun risk, and pass the additional capacity costs directly onto consumers

Reduce environmental impacts Reduced Overrun Charges will help facilitate the new technology and new sources of gas, by eradicating penal charges, caused by User Error and ensuring excess volumes of capacity need not be purchased to mitigate against the risk of incurring excessive charges.

Cross Code Impacts

UNC 0716 and UNC 0716A

None identified

EU Code Impacts

UNC 0716 and UNC 0716A

None identified

Central Systems Impacts

UNC 0716

None, there will be no charge for the system implementation of this change. Testing will be required to ensure system calculation of charges is accurate.

UNC 0716A

None identified

Workgroup Impact Assessment

UNC 0716 (Discussions between March and May Transmission Workgroup Meetings)

Transmission Workgroup has discussed Modification 0716 Review of 'Overrun Charge Multipliers' since March 2020. The aim is to amend the Overrun Multiplier used for calculating NTS Entry and Exit Points Overrun charges as a result of Modification 0678A Amendments to Gas Transmission Charging Regime which will become effective following implementation on 1st October 2020; whereby the reserve prices could increase significantly resulting in higher Overrun charges. Therefore by raising this modification, would safeguard Users of these impending costs.

UNC Panel raised the following two questions for the Workgroup to discuss :-

1. The Consumer impacts and;
2. The materiality of the proposal in terms of governance of the Modification.

In order to satisfy the above, National Grid, the proposer provided the workgroup with analysis of the current volumes of overruns during (2017/2018 & 2018/2019 (<https://www.gasgovernance.co.uk/0716/050320>) to highlight the revenue incurred from the overrun charges. The following questions were raised by the workgroup.

- What the rationale was on the current multiplier x8 being used?
- Situations where overruns have caused a constraint on the network, what was the associated cost?
- Current contractual arrangements to determine to what extent existing contracts with a close to zero reserve price could lead to zero Overrun Charges?

The proposer advised workgroup that the current multiplier has been in place for many years in the current regime and as far as the proposer is aware, was not based on anything specific. Some workgroup participants felt that the multiplier was excessively high. One workgroup participant challenged why the exit multiplier is twice as large as the entry multiplier in the proposal. The proposer explained that the change is dictated by the difference between the potential entry and exit price increase (entry reserve prices will increase significantly more than exit following implementation of Modification 0678A on 1st October 2020), therefore in order to maintain the status quo (collect the same amount of revenue from Overrun charges with effect from 1st October 2020) the multiplier will need to be different.

The proposer believes that maintaining status quo will see similar numbers of overruns on the system as seen historically; too severe reduction of the multiplier might not incentivise Users to book the capacity required. A number of workgroup participants questioned the relevance of linking overrun revenues with the level of overrun multipliers. Where a change in the charging methodology will necessarily result in significant changes in behaviour i.e. a shift from low, or no cost capacity overbooking to "close to flow" booking, renders any such approach to be disingenuous.

National Grid provided further data for the workgroup to analyse; analysis of correlation between overruns and constraints show no direct link. The proposer stressed that where constraints on the system happen, a multiplier of 1.1 is used for the purpose of overrun calculation and such instances are not a subject of this proposal.

Furthermore, the proposer highlighted that the purpose of the charges is to incentivise capacity booking behaviour and link to constraints/ recovery of costs incurred, is not their objective.

National Grid stressed that this proposal (0716) is a temporary solution which will shield users from excessive charges from 1st October 2020 and was of an opinion that any change put forward should be quantifiable and that another review could take place once capacity booking behaviour is available after Mod 678A is implemented. At that time different options, including tolerance, could be considered.

Several workgroup participants noted that UNC 705R NTS Capacity Access Review was intended to provide a vehicle for more strategic changes to be made to the capacity regime, providing short-term “wins” while future-proofing the arrangements. Following the implementation of UNC 678A the risks and costs of overrun at a large number of entry and exit points will increase substantially and as a result more radical changes are needed to be made in the short term.

The proposer provided an amended modification (V2) which incorporated some of the Workgroup concerns. TO Commodity was taken out of the presented analysis and actual revenue from Overrun charges 2017/18 and 2018/19 were compared with their potential equivalent in Postage Stamp methodology. This resulted in the reduction of the Entry multiplier from the original 4x to 3x but analysis demonstrated in the Proposers view that the Exit Capacity should remain at the original solution at 6x. This however was not the view of all workgroup.

The Proposer reviewed the consumer impacts to provide clarification for panel and workgroup and stated that the, revised multiplier could have a positive impact on consumers. Furthermore, they believe that if the change is not made the increased penalties or overruns charges may be passed to end consumers.

Several workgroup participants felt that it would have a negative impact as from 1 October 2020 as Users would be more inclined to overbook capacity when faced with such penal overrun charges; the costs of which would be passed directly onto consumers.

The Proposer felt very strongly that Overrun Charges should provide an incentive on Shippers to book NTS Entry and Exit Capacity. A workgroup participant believed that the levels should encourage Capacity to be booked close to flows e.g.: that the penalty should be proportional to the detriment and would be raising an alternative modification to address these concerns, as the solution in this Modification was not addressing this issue. Workgroup participants also agreed that the current solution in this modification was not logical.

Ofgem did highlight during the discussion during the May Workgroup when the Pre-Modification was discussed, that any evidence should be well substantiated, if it is to be considered by them in the outcome of this modification. The original proposer of 0716 noted that the current multiplier drives capacity booking behaviour and the assumption has been made that if revenue from overruns remains the same that booking behaviour will not worsen after 0678A implementation. Some workgroup participants noted that it is not reasonable to compare booking behaviours under the current charging regime with those we expect to see post-October 2020.

The Workgroup participant who would be raising the alternative modification (0716A) advised that they would not be looking at changing the proposed multiplier after 12 months and advised Workgroup that the solution in their modification would not be a transitional change. It also noted that UNC 0716 was not proposed as a transitional change and could be modified at any point in the future. The proposer of 0716 recognised that the future capacity booking behaviour will change, but it is not known to what extent – hence the need for a further review once the new booking behaviour patterns are known.

Further Development of the Workgroup Report had been discussed in April and May Transmission Workgroups capturing comments of Workgroup.

May Workgroup discussions

UNC 0716 and 0716A (Pre-Panel determination discussions)

The following discussions were held in May Workgroup to review both of the Modification solutions and seek feedback from Workgroup prior to 0716A determination by Panel

NG the proposer of 0716 does not believe that 1.1 multiplier has been determined as an appropriate multiplier to be used in the overrun calculation. The comparison of average increase in reserve prices does not give a true indication of the price change on the network overall. While it has been demonstrated that the average entry firm reserve price increase at entry points will be x76, it also demonstrates that at majority entry points (9 out of 15), the increase will be on average x 3.05. At the same time, the exit data clearly shows that in many instances the average price will decrease. Industrial sites and Power stations where reserve price was set at 0.0001 create an ambiguous picture of x57 average increase. Looking at the details, 77 out of 104 exit points listed will have an increase no greater than x 4 (out of these in 31 instances the average reserve price will actually be reduced).

The Proposer Of 716A believed that although the average increase is impacted by a number of more extreme increases in reserve prices, a large number of individual entry and exit points are exposed to significant increases in the costs of acquiring capacity. The increase is particularly marked where, as shown in the charts displaying booking behaviour, (Appendix 11) there is a growing reliance on zero-cost, within day and interruptible products. Any attempt to weight the increases in reserve prices would be more misleading as it is not possible to predict at which system points overruns will occur. Given, the Proposer of 0716A has endeavoured to show that, historically, overruns are a result of User error, it should not be the case that Users at any entry or exit point face even greater overrun penalties going forward. The Proposer of 0716A also maintains that as Users will alter their booking behaviours in response to escalating capacity costs, the propensity to overrun will be far greater than is currently the case and that this should be balanced with a more proportionate overrun penalty regime

Some workgroup participants concurred with the views of the proposer of 0716A.

NG's view is that a quantifiable method has not been used to justify the drastic change (x 8 to 1.1) and, if the proposal is implemented, it creates a risk of decreasing Users' incentive to book adequate capacity and therefore will diminish the primary objective which the Overrun charge is set to achieve. Overrun charges regardless of whether they are a result of User error or otherwise, are to encourage to book relevant capacity and to implement processes which will ensure Overruns don't occur. The proposer of 0716 does not believe that 10% charge is likely to adequately support that objective.

The Proposer of 0716A contends that given the x8 multiplier was not derived on the basis of any quantitative assessment, then there is little justification to require that any alternative multiplier should be subject to more stringent examination. The Proposer also notes that the change in the charging methodology and subsequent predictable change in booking behaviours requires a more strategic change to overrun multipliers beyond attempting to simply extend the current levels of overrun revenue. The x1.1 multiplier is consistent with the multiplier set down in the UNC for overrun charges during periods of constraint. Some workgroup participants agreed with this statement.

Some workgroup participants maintain that evidence produced in UNC 0716A is more wide-reaching than that produced in UNC 0716, It provides data to support the assertion that overruns are a product of User error and reasonably forecasts how User booking behaviour will change in response to the implementation of UNC 678A. In combination with the changing physical nature of the NTS, moving from a period of growth and constraints to one of surplus capacity, a more radical approach to multipliers is justified.

Modification 0716A Determination

An alternative Modification was discussed at the May UNC Modification Panel meeting and panel determined that 0716A had been determined to be an alternative Modification to UNC 0716.

Modification 0716/716A Discussions

It was agreed following determination from Panel during the May Workgroup, that both Proposers would review the first draft of the Workgroup Report once Modification 0716 and 0716A had been combined with **both** Modification and proposed solutions.

During the June Workgroup, a full review of the workgroup report was conducted. A workgroup participant noted that on the decision of 0678A it is particularly justified given that Ofgem have noted NTS is a meshed network with largely operating below Capacity with expected declining demand.

The Proposer of 0716, stressed that making the change based on uncertain predictions might lead to weakening the incentive Overruns that are supposed to maintain. Although it is not clear how the multiplier of 8 was determined – its impact is tried and tested. If status quo is maintained and similar booking behavior remains, it can be assumed that the impact of Overruns on NTS is manageable. Also, recognising that there is likely to be changes in booking behaviours, but at this stage, do not know the extent and cannot be quantified. The review suggested after 0678A implementation would ensure that any future change is based on new established behavioral patterns.

Both proposers of 0716 and 0716A noted that system testing is required to ensure that the change to the multiplier is robust and tested advising that this will be carried out by CDSP and will require adequate time to carry this out prior to any implementation.

Next Steps for Modification 0716/0716A

Both Proposers of Modification 0716 and 0716A wanted to advise UNC Panel that these Modifications were drafted before a decision on 0678 was issued, Ofgem decision has been determined to implement 0678A on 1st October 2020.

Workgroup recommends that Modification 0716 and 0716A should:-

- proceed to Consultation at the June 2020 Modification Panel
- should be considered a material change and not subject to self-governance;

7 Relevant Objectives

Impact of the modification on the Relevant Objectives:	
Relevant Objective	Identified impact
a) Efficient and economic operation of the pipe-line system.	Positive / 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 / None
c) Efficient discharge of the licensee's obligations.	None / None
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 / 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 / None
f) Promotion of efficiency in the implementation and administration of the Code.	None / None
g) Compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.	None / None

UNC 0716

Incentivising Users to book capacity reflecting their flows of gas will enable National Grid NTS to commercially plan, operate and manage the NTS accordingly, and therefore facilitate efficient and economic operation of the system.

Expected changes to the NTS charging methodology will recover a greater proportion of transporter allowed revenue from capacity compared to the current regime. As capacity charges will be set at a level to recover this higher proportion, the financial impact of a User incurring an Overrun Charge may materially increase compared to such a charge being incurred under the current framework. If no change is made to the Overrun regime, and as a consequence of the implementation of UNC Modification 0678A, the costs of an Overrun materially increases as described above, it is arguably detrimental to competition. Accordingly, implementation of this proposal would better facilitate objective (d) by adjusting the Overrun multiplier in order to, as far as possible, match the financial impact (in proportion terms) and therefore drive the same behaviours as the existing Overrun regime.

Furthermore, significant increase to Overrun Charges could create additional barrier to new market entrants, which would go against the desire of creating effective competition.

UNC 0716A

Incentivising Users to book capacity reflecting their flows and not overbook capacity for fear of incurring excessively penal Overrun Charges will enable National Grid NTS to commercially plan, operate and manage the NTS accordingly thereby facilitating the efficient and economic operation of the system. Furthermore, ensuring the Overrun Charge is proportionate, will ensure that use of the unconstrained network is optimised and capacity is not sterilised, by risk-management motivated overbooking.

The changes to the NTS charging methodology, in order to comply with the EU Tariff Code will place a greater emphasis on capacity charges as a vehicle for collecting Transmission Operator allowed revenue. Users will give increased prominence to capacity booking, continuing to focus on short term products, but profiling purchases to more closely match flows, thereby reducing costs. In practice, Users will have an incentive to delay capacity booking until as late as possible within day, as end of day flow volumes become clearer. The changes in booking behaviour will exacerbate the potential for User errors, as surplus holdings will no longer be retained. A reduction in the multiplier to properly balance an incentive to book capacity, while discouraging excessive overbooking with a “penalty” which reflects the unconstrained status of the NTS will ensure costs are more effectively generated and allocated to the Users of the NTS. This will better facilitate effective competition between all Users of the network.

Furthermore, a multiplier which does not reflect the changing nature of the capacity regime, both in terms of the level of charges and subsequent User booking behaviour will unfairly penalise Users for errors and create a barrier to entry to new market entrants.

8 Implementation

UNC 0716

This modification was raised due to a consequential impact of UNC Modification 0678A and implementation should be on concurrent timescales (i.e. 1st October 2020). This proposal should be considered now to ensure delivery of a solution is achievable within those timescales.

UNC 0716A

This modification is raised as an Alternative to Modification 0716. It has been raised to properly reflect the objective of Modification 0705R “Capacity Access Review” to review the performance of the current Overrun regime and set appropriate Overrun Multipliers to reflect short-term changes to the charging regime, as a result of implementation of Modification 0678A, while also be “fit for purpose” over the longer term.

This proposal should be considered for implementation on concurrent timescales with the implementation of Modification 0678A.

9 Legal Text

The Workgroup agreed that Legal Text will be provided by National Grid and will be published alongside the Workgroup Report and were satisfied that the changes will be minimal and will only change the multiplier number and no other changes are required. Workgroup were therefore satisfied that it meets the intent of the Solution.

Text Commentary

None Provided

Text

Text is published alongside the Workgroup Report dated 09 June

10 Recommendations

Panel's Recommendation to Interested Parties

The Panel have recommended that this report is issued to consultation and all parties should consider whether they wish to submit views regarding this modification.

11 Supporting Analysis

UNC 0716A

Supporting Analysis below:-

Part 1. Entry Capacity booking behaviour

Bacton UKCS

Figure 1 shows the pattern of short-term capacity booked (within day firm and interruptible) over the period 1 April 2019 to 1 April 2020. It can be seen that the volumes of short-term capacity acquired during this period were close to, or exceeded the total monthly release obligated volumes, and on the majority of days exceeded flows.

Figure 1 Bacton UKCS short-term entry capacity bookings (Apr19-Apr20)

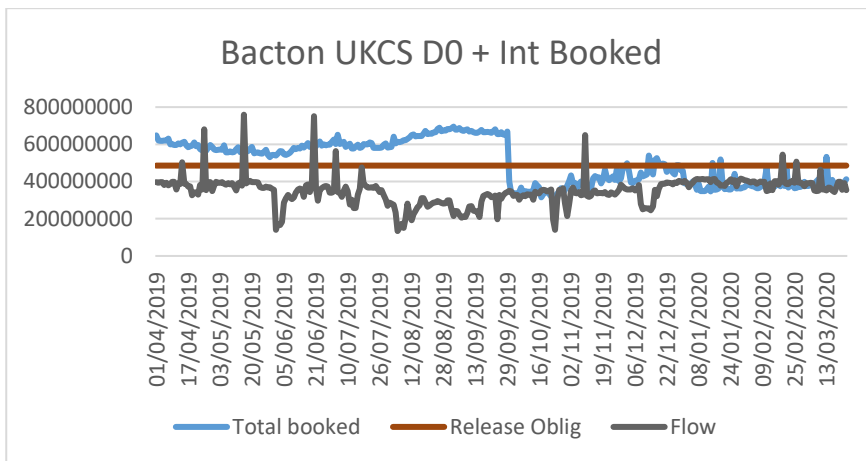
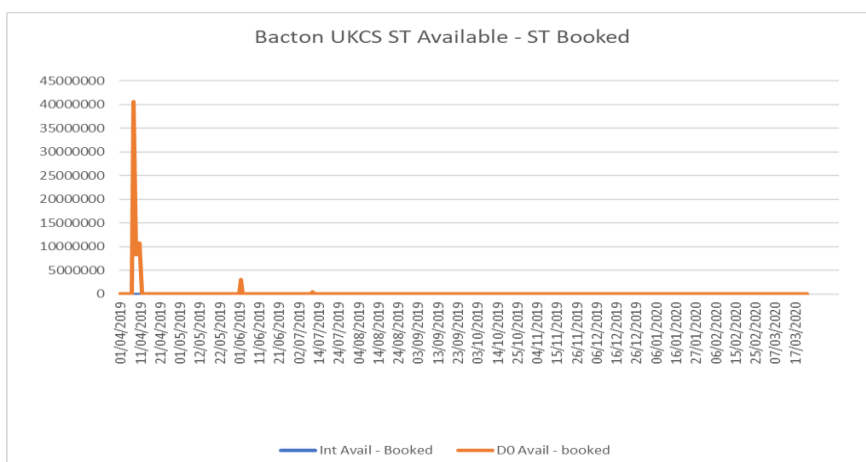


Figure 2 shows the the volume of within day firm and interruptible capacity bought compared to the volumes made available. It can be observed that on nearly every day all capacity made available on a short-term basis was booked by Users.

Figure 2 Bacton UKCS short-term capacity bookings v capacity made available



St Fergus

Figure 3 shows the same information as figure 1. The results at St Fergus are similar to Bacton, with significant volumes of short-term capacity acquired, exceeding flows throughout the period.

Figure 3 St Fergus short-term entry capacity bookings (Apr19-Apr20)

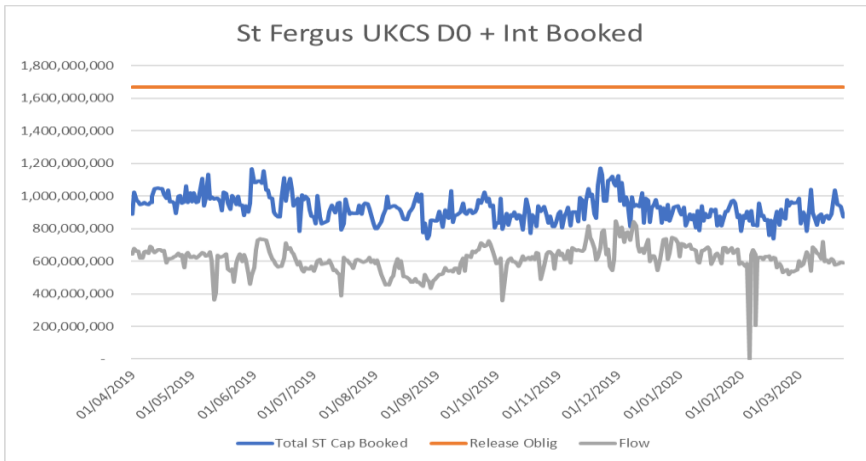
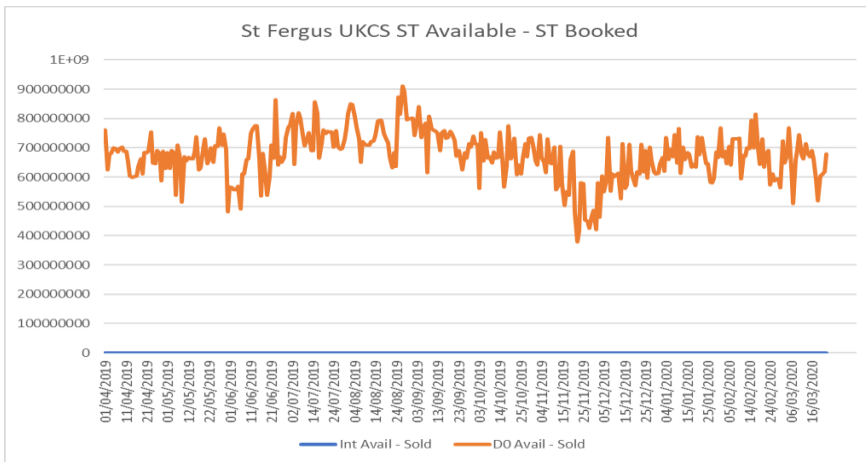


Figure 4 shows the the volume of within day firm and interruptible capacity bought compared to the volumes made available. The results are a little different to Bacton, with less bookings of within day firm, compared to available capacity, however, all interruptible capacity made available was booked.

Figure 4 St Fergus short-term capacity bookings v capacity made available

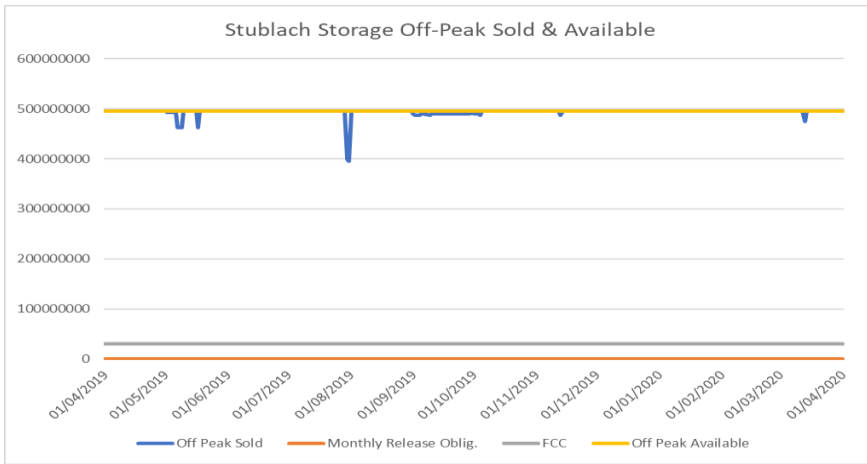


Part 2. Exit Capacity booking behaviour

Stublach (storage)

Figure 5 shows the pattern of off-peak capacity booked over the period 1 April 2019 to 1 April 2020. The maximum volumes of available off-peak capacity were acquired almost every day.

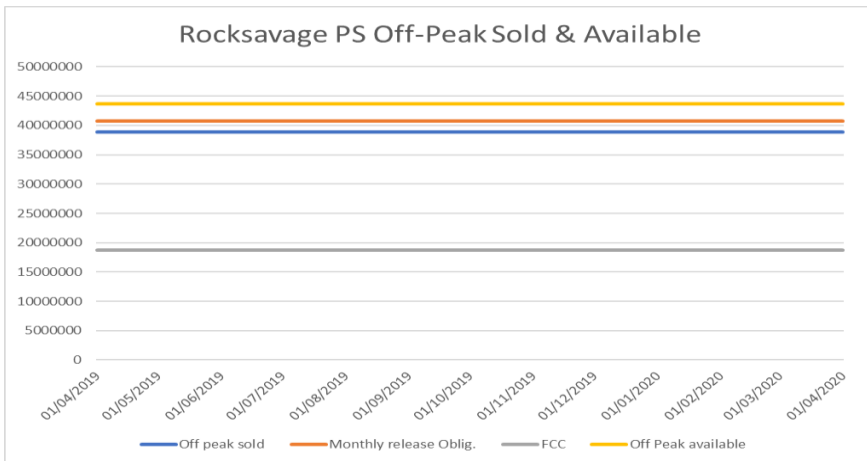
Figure 5 Stublach, Off-peak capacity bookings



Rocksavage (power station)

Similar patterns off-peak bookings occurred at Rocksavage, as shown in figure 6, with sales of off-peak capacity being close to available volumes throughout the period

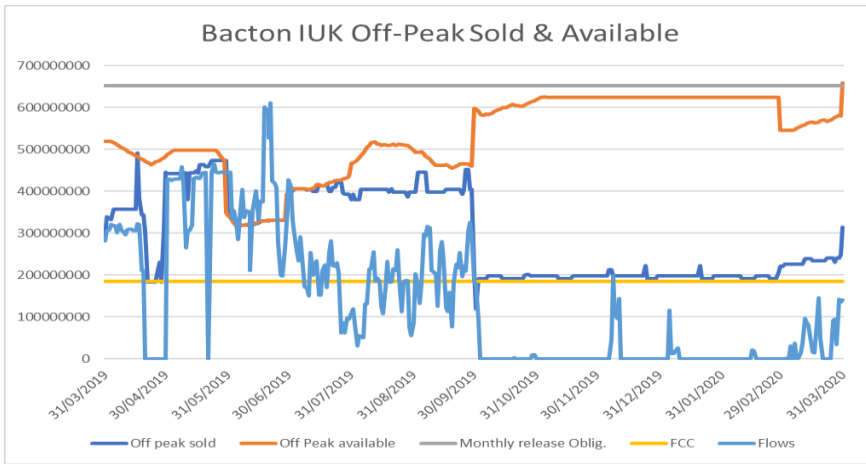
Figure 6 Rocksavage, Off-peak capacity bookings



Bacton IUK (interconnector)

Figure 7 shows a clear change in booking strategies over the period. From April to October, off-peak bookings are high, reducing from October onwards. This can be explained by the reduction in flows, however, it is worth noting that off-peak bookings are significantly higher than flows during this latter period.

Figure 7 Bacton IUK, Off-peak capacity bookings



Part 3. Impact of Modification 0678A on Entry Capacity firm reserve prices

Figure 8 shows that, on average and in absolute terms, reserve prices at NTS Entry Points will increase by a multiple of 76

Figure 8 Comparison of firm entry reserve prices

Entry Point	MSEC Oct 20	PS Oct 20	Multiple Increase
Bacton	0.0095	0.0429	4.52
Barow	0.0015	0.0429	28.60
Easington	0.0149	0.0429	2.88
Isle of Grain	0.0001	0.0429	429.00
Milford Haven	0.0235	0.0429	1.83
St Fergus	0.0532	0.0429	0.81
Teesside	0.0087	0.0429	4.93
Theddlethorpe	0.0134	0.0429	3.20
Hatfield Moor	0.0035	0.0429	12.26
Barton Stacey	0.0001	0.02145	214.50
Cheshire	0.0001	0.02145	214.50
Garton	0.013	0.02145	1.65
Hole House	0.0001	0.02145	214.50
Hornsea	0.014	0.02145	1.53
Hatfield Moor Store	0.0035	0.02145	6.13
Average	0.0106	0.5148	76.06

Part 4. Impact of Modification 0678A on Exit Capacity firm reserve prices

Figure 9 shows that, on average and in absolute terms, reserve prices at NTS Exit Points will increase by a multiple of 57.

Figure 9 Comparison of firm exit reserve prices

Exit Point	Offtake	19/20 prices	PS Oct 20	Multiple Increase
Apache (Sage Black Start)	INDUSTRIAL	0.0001	0.0172	172.00

Barrow (Black Start)	INDUSTRIAL	0.0102	0.0172	1.69
Billingham ICI (Terra Billingham)	INDUSTRIAL	0.0001	0.0172	172.00
Bishop Auckland (test facility)	INDUSTRIAL	0.0023	0.0172	7.48
Blackness (BP Grangemouth)	INDUSTRIAL	0.0001	0.0172	172.00
Centrax Industrial	INDUSTRIAL	0.0309	0.0172	0.56
Ferny Knoll (AM Paper)	INDUSTRIAL	0.0222	0.0172	0.77
Goole (Guardian Glass)	INDUSTRIAL	0.0036	0.0172	4.78
Harwarden (Shotton, aka Shotton Paper)	INDUSTRIAL	0.031	0.0172	0.55
Hollingsgreen (Hays Chemicals)	INDUSTRIAL	0.0271	0.0172	0.63
Phillips Petroleum, Teesside	INDUSTRIAL	0.0001	0.0172	172.00
Pickmere (Winnington Power, aka Brunner Mond)	INDUSTRIAL	0.0262	0.0172	0.66
Rollswood Kintore	INDUSTRIAL	0.0001	0.0172	172.00
Saltend BPHP (BP Saltend HP)	INDUSTRIAL	0.0001	0.0172	172.00
Sandy Lane (Blackburn CHP, aka Sappi Paper Mill)	INDUSTRIAL	0.0207	0.0172	0.83
Seal Sands TGPP	INDUSTRIAL	0.0001	0.0172	172.00
Shellstar (aka Kemira, not Kemira CHP)	INDUSTRIAL	0.0303	0.0172	0.57
Shotwick (Bridgewater Paper)	INDUSTRIAL	0.0307	0.0172	0.56
St. Fergus (Shell Blackstart)	INDUSTRIAL	0.0001	0.0172	172.00
Teesside (BASF, aka BASF Teesside)	INDUSTRIAL	0.0001	0.0172	172.00
Teesside Hydrogen	INDUSTRIAL	0.0001	0.0172	172.00

Terra Nitrogen (aka ICI, Terra Severnside)	INDUSTRIAL	0.0193	0.0172	0.89
Thornton Curtis (Humber Refinery, aka Immingham)	INDUSTRIAL	0.0001	0.0172	172.00
Upper Neeston (Milford Haven Refinery)	INDUSTRIAL	0.0001	0.0172	172.00
Weston Point (Castner Kelner, aka ICI Runcorn)	INDUSTRIAL	0.0308	0.0172	0.56
Zeneca (ICI Avecia, aka 'Zenica')	INDUSTRIAL	0.0001	0.0172	172.00
Air_Products (Teesside)	INDUSTRIAL	0.0001	0.0172	172.00
Fordoun CNG Station	INDUSTRIAL	0.0001	0.0172	172.00
St_Fergus_Segal	INDUSTRIAL	0.0001	0.0172	172.00
Kinneil CHP	INDUSTRIAL	0.0001	0.0172	172.00
Bacton (BBL)	INTERCONNECTOR	0.0001	0.0172	172.00
Bacton (IUK)	INTERCONNECTOR	0.0001	0.0172	172.00
Moffat (Irish Interconnector)	INTERCONNECTOR	0.0017	0.0172	10.12
Abson (Seabank Power Station phase I)	POWER STATION	0.0172	0.0172	1.00
Bacton (Great Yarmouth)	POWER STATION	0.0001	0.0172	172.00
Barking (Horndon)	POWER STATION	0.012	0.0172	1.43
Blyborough (Brigg)	POWER STATION	0.0064	0.0172	2.69
Blyborough (Cottam)	POWER STATION	0.0052	0.0172	3.31
Brine Field (Teesside) Power Station	POWER STATION	0.0001	0.0172	172.00
Burton Point (Connahs Quay)	POWER STATION	0.0311	0.0172	0.55
Caldecott (Corby Power Station)	POWER STATION	0.0129	0.0172	1.33
Carrington (Partington) Power Station	POWER STATION	0.0255	0.0172	0.67
Cockenzie Power Station	POWER STATION	0.0001	0.0172	172.00

Coryton 2 (Thames Haven) Power Station	POWER STATION	0.0116	0.0172	1.48
Deeside	POWER STATION	0.0311	0.0172	0.55
Didcot	POWER STATION	0.0231	0.0172	0.74
Drakelow Power Station	POWER STATION	0.0231	0.0172	0.74
Eastoft (Keadby Blackstart)	POWER STATION	0.0051	0.0172	3.37
Eastoft (Keadby)	POWER STATION	0.0051	0.0172	3.37
Enron Billingham	POWER STATION	0.0001	0.0172	172.00
Epping Green (Enfield Energy, aka Brimsdown)	POWER STATION	0.0154	0.0172	1.12
Gowkhall (Longannet)	POWER STATION	0.0001	0.0172	172.00
Grain Power Station	POWER STATION	0.0092	0.0172	1.87
Hatfield Power Station	POWER STATION	0.0032	0.0172	5.38
Langage Power Station	POWER STATION	0.0346	0.0172	0.50
Marchwood Power Station	POWER STATION	0.0301	0.0172	0.57
Medway (aka Isle of Grain Power Station, NOT Grain Power)	POWER STATION	0.0093	0.0172	1.85
Middle Stoke (Damhead Creek, aka Kingsnorth Power Station)	POWER STATION	0.0092	0.0172	1.87
Pembroke Power Station	POWER STATION	0.0001	0.0172	172.00
Peterborough (Peterborough Power Station)	POWER STATION	0.0095	0.0172	1.81
Roosecote Power Station (Barrow)	POWER STATION	0.0102	0.0172	1.69
Rosehill (Saltend Power Station)	POWER STATION	0.0001	0.0172	172.00
Ryehouse	POWER STATION	0.016	0.0172	1.08
Saddle Bow (Kings Lynn)	POWER STATION	0.0056	0.0172	3.07

Seabank (Seabank Power Station phase II)	POWER STATION	0.0194	0.0172	0.89
Sellafield Power Station	POWER STATION	0.0153	0.0172	1.12
Spalding 2 (South Holland) Power Station	POWER STATION	0.007	0.0172	2.46
St. Fergus (Peterhead)	POWER STATION	0.0001	0.0172	172.00
St. Neots (Little Barford)	POWER STATION	0.0139	0.0172	1.24
Stallingborough	POWER STATION	0.0001	0.0172	172.00
Stanford Le Hope (Coryton)	POWER STATION	0.0116	0.0172	1.48
Staythorpe	POWER STATION	0.0089	0.0172	1.93
Sutton Bridge Power Station	POWER STATION	0.0074	0.0172	2.32
Thornton Curtis (Killingholme)	POWER STATION	0.0001	0.0172	172.00
Tilbury Power Station	POWER STATION	0.0112	0.0172	1.54
Tonna (Baglan Bay)	POWER STATION	0.0001	0.0172	172.00
Trafford Power Station	POWER STATION	0.0255	0.0172	0.67
West Burton Power Station	POWER STATION	0.0053	0.0172	3.25
Weston Point (Rocksavage)	POWER STATION	0.0308	0.0172	0.56
Willington Power Station	POWER STATION	0.021	0.0172	0.82
Wragg Marsh (Spalding)	POWER STATION	0.007	0.0172	2.46
Wyre Power Station	POWER STATION	0.0193	0.0172	0.89
Palm_Paper	POWER STATION	0.0057	0.0172	3.02
Eggborough_PS	POWER STATION	0.0044	0.0172	3.91
KEADBY_2 PS	POWER STATION	0.0051	0.0172	3.37
Avonmouth Max Refill	STORAGE SITE	0.0194	0.0086	0.44
Bacton (Baird)	STORAGE SITE	0.0001	0.0086	86.00
Barrow (Bains)	STORAGE SITE	0.0102	0.0086	0.84
Barrow (Gateway)	STORAGE SITE	0.0102	0.0086	0.84
Barton Stacey Max Refill (Humbly Grove)	STORAGE SITE	0.0278	0.0086	0.31
Caythorpe	STORAGE SITE	0.0009	0.0086	9.56
Deborah Storage (Bacton)	STORAGE SITE	0.0001	0.0086	86.00

Dynevor Max Refill	STORAGE SITE	0.0001	0.0086	86.00
Garton Max Refill (Aldbrough)	STORAGE SITE	0.0001	0.0086	86.00
Glenmavis Max Refill	STORAGE SITE	0.0001	0.0086	86.00
Hatfield Moor Max Refill	STORAGE SITE	0.0042	0.0086	2.05
Hill Top Farm (Hole House Farm)	STORAGE SITE	0.027	0.0086	0.32
Hole House Max Refill	STORAGE SITE	0.027	0.0086	0.32
Holford	STORAGE SITE	0.0263	0.0086	0.33
Hornsea Max Refill	STORAGE SITE	0.0001	0.0086	86.00
Partington Max Refill	STORAGE SITE	0.0255	0.0086	0.34
Saltfleetby Storage (Theddlethorpe)	STORAGE SITE	0.0001	0.0086	86.00
Stublach (Cheshire)	STORAGE SITE	0.0263	0.0086	0.33
Rough Max Refill	STORAGE SITE	0.0001	0.0086	86.00
Average		0.01034712	0.015629	57.39

Part 5. Impact of alternative entry multipliers

Figure 10 shows the impact of applying an overrun multiplier of 3 based on forecast reserve prices generated by Modification 0678. In comparison to the current arrangements, Overrun Charges increase by a multiple of 28

Figure 10 Impact of alternative entry multipliers

Entry Point	8x MSEC	3x PS	Multiple Increase
Bacton	0.076	0.1287	1.693421053
Barow	0.012	0.1287	10.725
Easington	0.1192	0.1287	1.079697987
Isle of Grain	0.0008	0.1287	160.875
Milford Haven	0.188	0.1287	0.684574468
St Fergus	0.4256	0.1287	0.302396617
Teesside	0.0696	0.1287	1.849137931
Theddlethorpe	0.1072	0.1287	1.200559701
Hatfield Moor	0.028	0.1287	4.596428571
Barton Stacey	0.0008	0.06435	80.4375
Cheshire	0.0008	0.06435	80.4375
Garton	0.104	0.06435	0.61875
Hole House	0.0008	0.06435	80.4375
Hornsea	0.112	0.06435	0.574553571

Hatfield Moor Store	0.028	0.06435	2.298214286
Average	0.084853	0.10296	28.52068228

Part 6. Impact of alternative exit multipliers

Figure 11 shows the impact of applying an overrun multiplier of 6 based on forecast reserve prices generated by Modification 0678. In comparison to the current arrangements, Overrun Charges increase by a multiple of 43.

Figure 11 Impact of alternative exit multipliers

Exit Point	Offtake	8x MSEC	6x PS	Multiple Increase
Apache (Sage Black Start)	INDUSTRIAL	0.0008	0.1032	129
Barrow (Black Start)	INDUSTRIAL	0.0816	0.1032	1.264705882
Billingham ICI (Terra Billingham)	INDUSTRIAL	0.0008	0.1032	129
Bishop Auckland (test facility)	INDUSTRIAL	0.0184	0.1032	5.608695652
Blackness (BP Grangemouth)	INDUSTRIAL	0.0008	0.1032	129
Centrax Industrial	INDUSTRIAL	0.2472	0.1032	0.417475728
Ferny Knoll (AM Paper)	INDUSTRIAL	0.1776	0.1032	0.581081081
Goole (Guardian Glass)	INDUSTRIAL	0.0288	0.1032	3.583333333
Harwarden (Shotton, aka Shotton Paper)	INDUSTRIAL	0.248	0.1032	0.416129032
Hollingsgreen (Hays Chemicals)	INDUSTRIAL	0.2168	0.1032	0.47601476
Phillips Petroleum, Teesside	INDUSTRIAL	0.0008	0.1032	129
Pickmere (Winnington Power, aka Brunner Mond)	INDUSTRIAL	0.2096	0.1032	0.492366412
Rollswood Kintore	INDUSTRIAL	0.0008	0.1032	129
Saltend BPHP (BP Saltend HP)	INDUSTRIAL	0.0008	0.1032	129
Sandy Lane (Blackburn CHP, aka Sappi Paper Mill)	INDUSTRIAL	0.1656	0.1032	0.623188406
Seal Sands TGPP	INDUSTRIAL	0.0008	0.1032	129
Shellstar (aka Kemira, not Kemira CHP)	INDUSTRIAL	0.2424	0.1032	0.425742574
Shotwick (Bridgewater Paper)	INDUSTRIAL	0.2456	0.1032	0.42019544
St. Fergus (Shell Blackstart)	INDUSTRIAL	0.0008	0.1032	129
Teesside (BASF, aka BASF Teesside)	INDUSTRIAL	0.0008	0.1032	129
Teesside Hydrogen	INDUSTRIAL	0.0008	0.1032	129
Terra Nitrogen (aka ICI, Terra Severnside)	INDUSTRIAL	0.1544	0.1032	0.668393782
Thornton Curtis (Humber Refinery, aka Immingham)	INDUSTRIAL	0.0008	0.1032	129
Upper Neeston (Milford Haven Refinery)	INDUSTRIAL	0.0008	0.1032	129
Weston Point (Castner Kelner, aka ICI Runcorn)	INDUSTRIAL	0.2464	0.1032	0.418831169
Zeneca (ICI Avecia, aka 'Zenica')	INDUSTRIAL	0.0008	0.1032	129
Air_Products (Teesside)	INDUSTRIAL	0.0008	0.1032	129
Fordoun CNG Station	INDUSTRIAL	0.0008	0.1032	129
St_Fergus_Segal	INDUSTRIAL	0.0008	0.1032	129
Kinneil CHP	INDUSTRIAL	0.0008	0.1032	129
Bacton (BBL)	INTERCONNECTOR	0.0008	0.1032	129
Bacton (IUK)	INTERCONNECTOR	0.0008	0.1032	129

Moffat (Irish Interconnector)	INTERCONNECTOR	0.0136	0.1032	7.588235294
Abson (Seabank Power Station phase I)	POWER STATION	0.1376	0.1032	0.75
Bacton (Great Yarmouth)	POWER STATION	0.0008	0.1032	129
Barking (Horndon)	POWER STATION	0.096	0.1032	1.075
Blyborough (Brigg)	POWER STATION	0.0512	0.1032	2.015625
Blyborough (Cottam)	POWER STATION	0.0416	0.1032	2.480769231
Brine Field (Teesside) Power Station	POWER STATION	0.0008	0.1032	129
Burton Point (Connahs Quay)	POWER STATION	0.2488	0.1032	0.414790997
Caldecott (Corby Power Station)	POWER STATION	0.1032	0.1032	1
Carrington (Partington) Power Station	POWER STATION	0.204	0.1032	0.505882353
Cockenzie Power Station	POWER STATION	0.0008	0.1032	129
Coryton 2 (Thames Haven) Power Station	POWER STATION	0.0928	0.1032	1.112068966
Deeside	POWER STATION	0.2488	0.1032	0.414790997
Didcot	POWER STATION	0.1848	0.1032	0.558441558
Drakelow Power Station	POWER STATION	0.1848	0.1032	0.558441558
Eastoft (Keadby Blackstart)	POWER STATION	0.0408	0.1032	2.529411765
Eastoft (Keadby)	POWER STATION	0.0408	0.1032	2.529411765
Enron Billingham	POWER STATION	0.0008	0.1032	129
Epping Green (Enfield Energy, aka Brimsdown)	POWER STATION	0.1232	0.1032	0.837662338
Gowkhall (Longannet)	POWER STATION	0.0008	0.1032	129
Grain Power Station	POWER STATION	0.0736	0.1032	1.402173913
Hatfield Power Station	POWER STATION	0.0256	0.1032	4.03125
Langage Power Station	POWER STATION	0.2768	0.1032	0.37283237
Marchwood Power Station	POWER STATION	0.2408	0.1032	0.428571429
Medway (aka Isle of Grain Power Station, NOT Grain Power)	POWER STATION	0.0744	0.1032	1.387096774
Middle Stoke (Damhead Creek, aka Kingsnorth Power Station)	POWER STATION	0.0736	0.1032	1.402173913
Pembroke Power Station	POWER STATION	0.0008	0.1032	129
Peterborough (Peterborough Power Station)	POWER STATION	0.076	0.1032	1.357894737
Roosecote Power Station (Barrow)	POWER STATION	0.0816	0.1032	1.264705882
Rosehill (Saltend Power Station)	POWER STATION	0.0008	0.1032	129
Ryehouse	POWER STATION	0.128	0.1032	0.80625
Saddle Bow (Kings Lynn)	POWER STATION	0.0448	0.1032	2.303571429
Seabank (Seabank Power Station phase II)	POWER STATION	0.1552	0.1032	0.664948454
Sellafield Power Station	POWER STATION	0.1224	0.1032	0.843137255
Spalding 2 (South Holland) Power Station	POWER STATION	0.056	0.1032	1.842857143
St. Fergus (Peterhead)	POWER STATION	0.0008	0.1032	129
St. Neots (Little Barford)	POWER STATION	0.1112	0.1032	0.928057554
Stallingborough	POWER STATION	0.0008	0.1032	129
Stanford Le Hope (Coryton)	POWER STATION	0.0928	0.1032	1.112068966
Staythorpe	POWER STATION	0.0712	0.1032	1.449438202
Sutton Bridge Power Station	POWER STATION	0.0592	0.1032	1.743243243
Thornton Curtis (Killingholme)	POWER STATION	0.0008	0.1032	129
Tilbury Power Station	POWER STATION	0.0896	0.1032	1.151785714
Tonna (Baglan Bay)	POWER STATION	0.0008	0.1032	129

Trafford Power Station	POWER STATION	0.204	0.1032	0.505882353
West Burton Power Station	POWER STATION	0.0424	0.1032	2.433962264
Weston Point (Rocksavage)	POWER STATION	0.2464	0.1032	0.418831169
Willington Power Station	POWER STATION	0.168	0.1032	0.614285714
Wragg Marsh (Spalding)	POWER STATION	0.056	0.1032	1.842857143
Wyre Power Station	POWER STATION	0.1544	0.1032	0.668393782
Palm_Paper	POWER STATION	0.0456	0.1032	2.263157895
Eggborough_PS	POWER STATION	0.0352	0.1032	2.931818182
KEADBY_2 PS	POWER STATION	0.0408	0.1032	2.529411765
Avonmouth Max Refill	STORAGE SITE	0.1552	0.0516	0.332474227
Bacton (Baird)	STORAGE SITE	0.0008	0.0516	64.5
Barrow (Bains)	STORAGE SITE	0.0816	0.0516	0.632352941
Barrow (Gateway)	STORAGE SITE	0.0816	0.0516	0.632352941
Barton Stacey Max Refill (Humbly Grove)	STORAGE SITE	0.2224	0.0516	0.232014388
Caythorpe	STORAGE SITE	0.0072	0.0516	7.166666667
Deborah Storage (Bacton)	STORAGE SITE	0.0008	0.0516	64.5
Dynevor Max Refill	STORAGE SITE	0.0008	0.0516	64.5
Garton Max Refill (Aldbrough)	STORAGE SITE	0.0008	0.0516	64.5
Glenmavis Max Refill	STORAGE SITE	0.0008	0.0516	64.5
Hatfield Moor Max Refill	STORAGE SITE	0.0336	0.0516	1.535714286
Hill Top Farm (Hole House Farm)	STORAGE SITE	0.216	0.0516	0.238888889
Hole House Max Refill	STORAGE SITE	0.216	0.0516	0.238888889
Holford	STORAGE SITE	0.2104	0.0516	0.245247148
Hornsea Max Refill	STORAGE SITE	0.0008	0.0516	64.5
Partington Max Refill	STORAGE SITE	0.204	0.0516	0.252941176
Saltfleetby Storage (Theddlethorpe)	STORAGE SITE	0.0008	0.0516	64.5
Stublach (Cheshire)	STORAGE SITE	0.2104	0.0516	0.245247148
Rough Max Refill	STORAGE SITE	0.0008	0.0516	64.5
Average		0.082777	0.093773	43.04057818