

# 0541/A/B:

Removal of uncontrollable UNC charges at ASEPs which include sub-terminals operating on a 06:00 to 06:00 Gas Day via:

0541: WITHDRAWN (15 December 2015)

0541A: setting charges which arise solely as a result of the different Gas Day timings to zero

0541B: ex-post credits to a second category of capacity and accounts balancing neutrality

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

These modifications propose to achieve the removal of uncontrollable UNC charges incurred by shippers allocated 05:00 to 05:00 Gas Day User Daily Quantity Inputs at ASEPs which include sub-terminals operating on a 06:00 to 06:00 Gas Day.



The Workgroup recommends that these modifications should now proceed to Consultation.













High Impact: Shippers



Medium Impact: None



Low Impact: None

Contents		 Any questions?												
1	Summary	3												
2	Why Change?	4												
3	Solution	5												
4	Relevant Objectives	9												
5	Implementation	23												
6	Impacts	23												
7	Legal Text	23												
8	Recommendation	23												
9	Appendices	24												
<b>About this document:</b>														
<p>This report will be presented to the Panel on 19 November 2015.</p> <p>The Panel will consider whether these modifications should proceed to Consultation or be returned to the Workgroup for further assessment.</p>		<p>Contact: <b>Code Administrator</b></p> <p> <a href="mailto:enquiries@gasgovernance.co.uk">enquiries@gasgovernance.co.uk</a></p> <p> 0121 288 2107</p> <p>Proposers: <b>0541A – Andrew Pearce, BP</b> <b>0541B – Francisco Gonçalves, Gazprom</b></p> <p> <b>0541A – <a href="mailto:andrew.pearce2@uk.bp.com">andrew.pearce2@uk.bp.com</a></b> <b>0541B – <a href="mailto:francisco.goncalves@gazprom-mt.com">francisco.goncalves@gazprom-mt.com</a></b></p> <p> <b>0541A: 020 7948 4027</b> <b>0541B: 0207 756 0244</b></p> <p>Transporter: <b>National Grid NTS</b></p> <p> <a href="mailto:phil.lucas@nationalgrid.com">phil.lucas@nationalgrid.com</a></p> <p> <b>01926 653546</b></p> <p>Systems Provider: <b>Xoserve</b></p> <p> <a href="mailto:commercial.enquiries@xoserve.com">commercial.enquiries@xoserve.com</a></p> <p>Additional contact: <b>Nick Wye</b></p> <p> <a href="mailto:nick@waterswe.co.uk">nick@waterswe.co.uk</a></p> <p> <b>01789 266811</b></p>												
<p>The Workgroup recommends the following timetable:</p> <table border="1"> <tbody> <tr> <td>Initial consideration by Workgroup</td> <td>06 August 2015</td> </tr> <tr> <td>Workgroup Report presented to Panel</td> <td>18 February 2016</td> </tr> <tr> <td>Draft Modification Report issued for consultation</td> <td>18 February 2016</td> </tr> <tr> <td>Consultation Close-out for representations</td> <td>10 March 2016</td> </tr> <tr> <td>Final Modification Report published for Panel</td> <td>11 March 2016</td> </tr> <tr> <td>UNC Modification Panel recommendations</td> <td>17 March 2016</td> </tr> </tbody> </table>		Initial consideration by Workgroup	06 August 2015	Workgroup Report presented to Panel	18 February 2016	Draft Modification Report issued for consultation	18 February 2016	Consultation Close-out for representations	10 March 2016	Final Modification Report published for Panel	11 March 2016	UNC Modification Panel recommendations	17 March 2016	
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<p>Throughout this report black text is used for items common to both proposals. The following colour coding is used to denote modification-specific text:</p> <p>0541 was Withdrawn during the Workgroup assessment phase</p> <p>0541A is shown red</p> <p>0541B is shown blue</p>														

# 1 Summary

## Are these Self-Governance Modifications?

The Modification Panel determined that these are not self-governance modifications because they are likely to have material effect on competition in the shipping of gas, since the modifications attempt to ensure that UNC charges are not unfairly applied to certain Users.

## Are these Fast Track Self-Governance Modifications?

No, Fast-Track procedures do not apply because these are not housekeeping modifications.

## Why Change?

Modification 0461 – Changing the UNC Gas Day to align with the Gas Day in EU Network Codes was implemented on 01 October 2015 (<http://www.gasgovernance.co.uk/0461>), however it does not apply to arrangements “upstream” of the NTS (within which the Balancing zones are situated) such as the UK gas beach processing terminals. The NTS runs a United Kingdom time 05:00 hours to 05:00 hours Gas Day, however the majority of United Kingdom gas beach processing sub terminals will continue to run on a United Kingdom time 06:00 hours to 06:00 hours Gas Day (the “GMT Terminals”).

This results in a situation where Users have to base their nominations and claims on an 06:00 Gas Day whilst National Grid NTS will provide flow data on an 05:00 Gas Day basis. The resulting “Time Shift Mismatches” would be likely to inadvertently place affected Users out of balance; triggering Imbalance, Scheduling and potentially Incentivised Nomination charges. Such “Time Shift Charges” would be not be as a result of Users’ failure to balance or an NTS imbalance and are not able to be mitigated by Users.

Monies raised from Time Shift Charges would be returned to all Users via the neutrality mechanism. Time Shift Charges would therefore not be in compliance with the principles set out in the EU Regulation that balancing rules should: (i) financially incentivise network users to balance their balancing portfolios via cost reflective imbalance charges; (ii) reflect genuine system needs; (iii) be non discriminatory; and (iv) avoid cross subsidisation.

## Solution

Two alternative solutions have been identified:

**0541A Setting the Time Shift Charges to zero** by calculating charges using GMT UDQIs at GMT Terminals. This would prevent Users incurring unearned charges, restore the correct financial incentives to balance and avoid discrimination of Users at GMT Terminals and cross subsidisation by Users at GMT Terminals of all other Users.

**0541B Reimbursing Users at GMT Terminals for Time Shift Charges** by creating a second category of Capacity and Balancing Neutrality Charges for Users at GMT Terminals only. This would mean that Users would be reimbursed for Time Shift Charges and would have the effect of preventing Users incurring unearned charges, restore the correct financial incentives to balance and avoid discrimination of Users at GMT Terminals and cross subsidisation by Users at GMT Terminals of all other Users.

## Relevant Objectives

These modifications better facilitate the achievement of Relevant Objectives d) (i) securing of effective competition between relevant shippers, and 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.

## Implementation

No implementation timescales are proposed, however it is anticipated that the successful modification should be implemented on 01 October 2015, the date on which the gas Day will change to 05:00 hours to 05:00 hours, or at the earliest possible date thereafter. If implementation is post 01 October 2015 then a reconciliation of the relevant charges will be applied.

### **Do these modifications impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?**

These modifications are likely to have an impact on the EU Phase 3 systems changes due to the need to acquire additional 06:00 hours to 06:00 hours flow data.

## 2 Why Change?

The European Network Code on Capacity Allocation Mechanisms (“CAM”) stipulates that there should be a harmonised gas Day across the EU. CAM is due to be implemented from 01 November 2015. The European Network Code on Gas Balancing (“BAL”) makes reference to the gas Day as defined in the CAM Network Code. BAL is due to be implemented from 01 October 2015. Both the CAM and BAL Network Codes form part of Regulation (EC) No 715/2009 of the European Parliament dated 13 July 2009 (the “Regulation”). However the Regulation only applies the harmonised gas Day to Interconnection Points and downstream systems within the EU. It does not apply to arrangements “upstream” of the transmission systems (within which the Balancing zones are situated) such as the UK gas beach processing terminals.

The National Transmission System will run a United Kingdom time 05:00 hours to 05:00 hours gas Day from 01 October 2015. However, the majority of United Kingdom gas beach processing sub terminals will continue to run on a United Kingdom time 06:00 hours to 06:00 hours gas Day on and after 01 October 2015 (the “GMT Terminals”). This is due to the technical challenges and costs that would be incurred in changing all terminal and upstream metering to run on an 05:00 hours to 05:00 hours gas Day.

There will be no arrangements (for example linepack flexibility or operational balancing type arrangements) between National Grid NTS and the GMT Terminals to handle mismatches arising from the NTS running on a 05:00 hours to 05:00 hours gas Day and the GMT Terminals running on a 06:00 hours to 06:00 hours gas Day.

### Impact on Users at GMT Terminals

Users inputting gas to the NTS from GMT Terminals will only have Day ahead and within Day information about their intended and actual flows on a 06:00 hours to 06:00 hours basis and will accordingly have to schedule and nominate to National Grid NTS and make “Claims” to the Claims Validation Agent based on 06:00 hours to 06:00 hours numbers.

Without this modification National Grid NTS would give the Claims Validation Agent a 05:00 hours to 05:00 hours metered Entry Point Daily Quantity Delivered for each System Entry Point at a GMT Terminal and the Claims Validation Agent would need to allocate that quantity between Users based on 06:00 hours to 06:00 hours Claim numbers. There would therefore likely be on all Days mismatches arising from the differences between the 05:00 hours to 06:00 hours aggregate quantity on one Day and the 05:00 hours to 06:00 hours quantity on the next Day (“Time Shift Mismatches”).

The effect of such Time Shift Mismatches on the existing Claims Validation arrangements would be that: (1) if the Entry Point Daily Quantity Delivered is less than the aggregate of all Users’ Claims, all Users’ Claim numbers and therefore their User Daily Quantity Input quantities will be reduced pro rata; and (2) if the Entry Point Daily Quantity Delivered is greater than the aggregate of all Users’ Claim numbers, the resulting “Time Shift Excess Gas” will be lost to the NTS as unallocated gas. Depending on the overall NTS balance, such

Time Shift Excess Gas may be sold by National Grid and the proceeds returned to all Users via the balancing neutrality system rather than just to Users using the GMT Terminals.

In order to prevent the loss of Time Shift Excess Gas on a regular basis as a result Time Shift Mismatches, the shareholders of the Claims Validation Agent are in the process of amending the Claims Validation arrangements so that Time Shift Excess Gas will be allocated to Users at the GMT Terminals rather than be treated as unallocated gas. This will have the effect of increasing each such User's Claim number and therefore their User Daily Quantity Input quantities. These changes will also enable the Claims Validation Agent to provide National Grid NTS with each User's UDQI on a 05:00 hours to 05:00 hours basis and on 06:00 hours to 06:00 hours basis if required.

Even following such intervention, Users at GMT Terminals will likely incur on every Day NTS Daily Imbalance Charges and Scheduling Charges and potentially Overrun Charges and Incentivised Nomination Charges as a result of the Time Shift Mismatches since they will be out of balance every Day (long or short) depending on whether the Entry Point Daily Quantity Delivered is greater or smaller than the aggregate of all Users' Claim numbers ("Time Shift Charges").

The Users will be unable to manage or mitigate the Time Shift Charges as they are a factor simply of the difference between the 05:00 hours to 06:00 hours aggregate quantity on one Day and the 05:00 hours to 06:00 hours quantity on the next Day. The Time Shift Mismatches will have no effect on the overall physical balance of the NTS. Users will only become aware of their Time Shift Mismatches after the Day.

Time Shift Charges will be unearned and not capable of mitigation by Users and will not arise from the physical needs of the NTS nor the Users' failure to balance. Monies raised from Time Shift Charges will be returned to all Users via the neutrality charge systems. Time Shift Charges will therefore not be in compliance with the principles set out in Regulation that balancing rules should: (i) financially incentivise network users to balance their balancing portfolios via cost reflective imbalance charges; (ii) reflect genuine system needs; (iii) be non discriminatory; and (iv) avoid cross subsidisation.

Put simply, under the existing arrangements GMT shippers incur **unreasonable** network charges in the form of balancing, **and possibly**, scheduling and capacity overruns. The continued imposition of these charges is unwarranted, anti-competitive and damaging to shipper businesses operating at the GMT Terminals. Not only do the costs undermine commercial arrangements, but their unpredictable nature increases the risk of transacting at the GMT Terminals.

These charges are a result of the enforced conversion of offshore 06.00 to 06.00 allocations to downstream 05.00 to 05.00 allocations and as such can be categorised as resulting in 'phantom costs'; generated purely by an accounting process. There are no system or operational costs caused by the conversion of the upstream allocations and as such all Time shift charges are spurious.

These shippers are victims of a) some of the offshore industry **not converting** to a 05.00 to 05.00 Gas Day, due to the complexities and costs that this would entail and b) National Grid **not introducing** centrally coordinated services that would manage the Time shift impacts.

The modification proposal reverses out the Time Shift charges, which in turn puts the GMT shippers on an equal footing with others by reimbursing the proceeds distributed to the industry via the neutrality process. It will ensure that contracts entered into at the GMT Terminals are respected and undue commercial risks are eliminated.

## 3 Solution

**0541A**

Setting the Time Shift Charges to zero by calculating charges using GMT UDQIs at GMT Terminals.

This would prevent Users incurring unearned charges, restore the correct financial incentives to balance and avoid discrimination of Users at GMT Terminals and cross subsidisation by Users at GMT Terminals of all other Users. For the avoidance of doubt, Uniform Network Code charges will continue to be applied for User imbalances arising from physical imbalances and as such the Users allocated gas at GMT Terminals will not benefit from any positive discrimination.

The Claims Validation Agent will be able to provide National Grid NTS for each User at a System Point at a GMT Terminal (a "GMT System Entry Point") for each Day with a UDQI calculated from National Grid's Entry Point Daily Quantity Delivered (05:00 hours to 05:00 hours basis) and with a "GMT UDQI" calculated from the User's Claim on an 06:00 hours to 06:00 hours basis for the "GMT Day" starting on the Day.

Changes should be made to, inter alia, the following Sections of the Uniform Network Code:

#### TPD Sections A and E

Add concept of "GMT Day" (i.e. 06:00 hours to 06:00 hours) and a concept of "Associated GMT Day", being the GMT Day starting on the Day, to General Terms.

Add a new Section A.5 introducing concept of "GMT System Entry Point", being a System Entry Point connected to facilities using a GMT Day.

Add concept of a "GMT UDQI" being the quantity of gas treated as being entered by the User to the Total System on the Associated GMT Day at a GMT System Entry Point to Section E 1.1.2 and a new Section E2.4 detailing how GMT UDQI's will be calculated.

#### TPD Section F2.3 - Clearing Charge

Add a new Section 2.3.5 to provide that, for GMT System Entry Points the Daily Imbalance for the purposes of calculating the Daily Imbalance Charge shall be calculated by using GMT UDQIs instead of UDQI's.

Section 2.3.1 should then be expressed to be subject to Section 2.3.5.

#### TPD Section F3.2.1 – Input Scheduling Charges

Definition of "Input Scheduling Quantity" amended to use GMT UDQIs instead of UDQIs for GMT System Entry Points.

#### TPD Section B2.12.2 – Overrun Charges

The "overrun quantity" to be calculated using use GMT UDQIs instead of UDQIs for GMT System Entry Points for the purposes of determining System Entry Overrun Charges.

#### TPD Section E5.3 – Incentivised Nomination Charges

Add an extra sub Section 5.3.8 (d) to provide that "A", the User's Daily Imbalance, is calculated for GMT System Entry Points by using GMT UDQIs instead of UDQIs.

#### TPD Section C – Nominations and Renominations

Amend Section 1.1.5 to say that Users will use reasonable endeavours based on the information available to them nominate and renominate accurately

#### Reconciliation

If this modification is not in force for 01 October 2015, National Grid NTS to run a reconciliation process from the date of implementation of the modification back to 01 October 2015 to reimburse Users for Time Shift Charges incurred by the Users in the period from 01 October 2015.

#### **0541B – [Not updated for amended mod]**

Reimbursing Users at GMT Terminals for Time Shift Charges by creating a second category of Capacity and Balancing Neutrality Charges for Users at GMT Terminals only.

This would mean that Users would be reimbursed for Time Shift Charges and would have the effect of preventing Users incurring unearned charges, restore the correct financial incentives to balance and avoid discrimination of Users at GMT Terminals and cross subsidisation by Users at GMT Terminals of all other Users. For the avoidance of doubt, charges will continue to be applied for User imbalances arising from physical imbalances and as such the Users allocated gas at GMT Terminals will not benefit from any positive discrimination.

The Claims Validation Agent will be able to provide National Grid NTS for each User at a System Point at a GMT Terminal (a "GMT System Entry Point") for each Day with a UDQI calculated from National Grid's Entry Point Daily Quantity Delivered (05:00 hours to 05:00 hours basis) and with a "GMT UDQI" calculated from the User's Claim on an 06:00 hours to 06:00 hours basis for the "GMT Day" starting on the Day. The User's "Time Shift Quantity" for the Day, being the difference between the UDQI and the GMT UDQI, whether positive or negative, can therefore be calculated.

**The suggested changes to the Uniform Network Code are:**

#### TPD Sections A and E

Add concept of "GMT Day" (i.e. 06:00 hours to 06:00 hours) and a concept of "Associated GMT Day", being the GMT Day starting on the Day, to General Terms.

Add a new Section A.5 introducing concept of "GMT System Entry Point" being a System Entry Point connected to facilities using a GMT Day.

Add concept of a "GMT UDQI" being the quantity of gas treated as being entered by the by the User to the Total System on the Associated GMT Day at a GMT System Entry Point to Section E1.1.2 and a new Section E2.4 detailing how GMT UDQI's will be calculated. Then add concept of a "Time Shift Quantity" being the difference between the UDQI and the GMT UDQI.

#### TPD Section B – Capacity Neutrality Arrangements

Exclude "Time Shift Entry Overrun Charges" (being System Entry Overrun Charges arising solely from Time Shift Quantities) from the calculation of Relevant Capacity Revenues in Section 2.13.2.

Add new Sections from 2.13.8 onwards setting up a new "Time Shift Capacity Neutrality Arrangements" scheme. This scheme should follow the existing Capacity Neutrality Arrangements but:

- only be in respect of Time Shift Entry Overrun Charges less any applicable National Grid NTS costs ("Relevant Time Shift Capacity Revenues)
- be in respect of GMT System Entry Points only
- shall return the Relevant Time Shift Capacity Revenues arising at a GMT System Entry Point to Users at such GMT System Entry Point pro rata to the amount of Time Shift Entry Overrun Charges paid by them in the relevant period.

#### TPD Section I – Balancing Neutrality Charges

Exclude "Time Shift Daily Imbalance Charges" payable to National Grid NTS (being Daily Imbalance Charges arising solely from Time Shift Quantities), "Time Shift Scheduling Charges" (being Scheduling Charges arising solely from Time Shift Quantities) and "Time Shift Incentivised Nomination Charges" (being Incentivised Nomination Charges arising solely from Time Shift Quantities) from the calculation of Aggregate System Receipts in Section 4.4.2 and the calculation of the Monthly Adjustment Neutrality Amount in Section 4.5.3.

Exclude “Time Shift Daily Imbalance Charges” payable by National Grid NTS (being Daily Imbalance Charges arising solely from Time Shift Quantities) from the calculation of Aggregate System Payments in Section 4.4.3 and the calculation of the Monthly Adjustment Neutrality Amount in Section 4.5.3.

Add new Sections from 4.7 onwards setting up a new “Time Shift Balancing Neutrality Arrangements” scheme. This scheme should follow the existing Balancing Neutrality Arrangements but:

- only be in respect of Time Shift Entry Daily Imbalance Charges (positive and negative), Time Shift Scheduling Charges and Time Shift Incentivised Nomination Charges less any applicable National Grid costs and adjusted by any interest due for late payments (“Time Shift Balancing Neutrality Charge”)
- be in respect of GMT System Entry Points only
- shall return the Time Shift Balancing Neutrality Charge arising at a GMT System Entry Point to Users at such GMT System Entry Point pro rata to the amount of such charges paid by them in the relevant period.

#### TPD Section C – Nominations and Renominations

Amend Section 1.1.5 to say that Users will use reasonable endeavours based on the information available to them nominate and renominate accurately

#### Reconciliation

If this Modification is not in force for 01 October 2015, National Grid NTS to run a reconciliation process from the date of implementation of the Modification back to 01 October 2015 to reimburse Users for Relevant Time Shift Capacity Revenues and Time Shift Balancing Neutrality Charges due to the Users in the period from 01 October 2015. Note: National Grid NTS to use Reconciliation process to reallocate any such Relevant Time Shift Capacity Revenues and Time Shift Balancing Neutrality Charges that have been returned to all Users using the existing neutrality processes in the interim period.

<b>User Pays – Proposers View</b>	
Classification of the modifications as User Pays, or not, and the justification for such classification.	No User Pays service would be created or amended by implementation of these modifications and they are not, therefore, classified as User Pays Modifications.
Identification of Users of the service, the proposed split of the recovery between Gas Transporters and Users for User Pays costs and the justification for such view.	N/A
Proposed charge(s) for application of User Pays charges to Shippers.	N/A
Proposed charge for inclusion in the Agency Charging Statement (ACS) – to be completed upon receipt of a cost estimate from Xoserve.	N/A

National Grid NTS’ view differed on the matter of User Pays. They cited the recent Ofgem Decision relating to Modification 0534 (<http://www.gasgovernance.co.uk/0534>):

“The UNC534 FMR and a number of consultation responses considered that the modification is required due to the implementation of the CAM Network Code, which led to the Bacton split. In our view, the proposals in UNC534 to change the application of the shorthaul charge are separate from



the decision to split Bacton. They are being made to provide a service to NTS users electing to pay that charge at Bacton and not to ensure compliance with the CAM Network Code or to facilitate the achievement of its objectives. On this basis, we do not consider that the costs associated with implementing the modification should be captured by the allowance NGGT receives to introduce code modifications required by European Network Code changes.”

The proposers believe that the arguments presented by National Grid in relation to the decision on UNC534 are not relevant in relation to these modifications. It is the view of the proposers that the GB arrangements are in contravention of the BAL Network Code as imbalance charges on Time Shift Volumes are not cost reflective, nor do they properly incentivise Users to balance. By definition, incentives such as imbalance charges should have an effect on nominating behaviour. However, as demonstrated by the cost benefit analysis and the impact assessment, the modifications will have no impact on nominations and in some cases imbalance charges are imposed on one shipper due to events relating to another shipper at the same terminal.

It was established many months prior to the implementation of BAL into the UNC, that Users would incur charges as a result of the need to translate upstream 06:00 to 06:00 allocations into downstream 05:00 to 05:00 allocations in order to ensure compliance with the change to the Gas Day. The modifications seek to remedy the problem of Time Shift Volumes and represent the Users attempts to ensure that the UNC is fully compliant with the BAL Network Code. The fact that National Grid did not propose a mechanism that maintained the integrity of the balancing and entry capacity booking regimes is a failing on its part which Users are seeking to rectify.

For these reasons, the Proposers are firmly of the view that the modifications should not be classified as User Pays and that the justification for User Pays cited in UNC534 is not relevant.

User Pays – National Grid NTS View	
<p>Classification of the modification as User Pays, or not, and the justification for such classification.</p>	<p>Implementation of any of the alternates would create a User Pays Service and therefore the Modification Proposal should be classified as a User Pays Modification Proposal.</p> <p><b>0541A:</b> The implementation of functionality to adjust a relevant User’s “Time Shift Charges” prior to being invoiced (and a one off adjustment back to 1st October 2015) would require changes to the Transporter Agency systems and processes.</p> <p><b>0541B:</b> The implementation of functionality to adjust a relevant User’s “Time Shift Charges” subsequent to the issue of the original invoices for the relevant period (and a one off adjustment back to 1st October 2015) require changes to the Transporter Agency systems and processes.</p>
<p>Identification of Users of the service, the proposed split of the recovery between Gas Transporters and Users for User Pays costs and the justification for such view.</p>	<p>Users of the service will be those Shipper Users with entry allocations at the relevant Entry Points (“GMT Terminals”) as recipients of the adjustments proposed. On this basis the proposed split of the recovery between Gas Transporters and Users for User Pays is 100% Shipper Users.</p>

<p>Proposed charge(s) for application of User Pays charges to Shippers.</p>	<p>0541A: Shippers will pay a charge based on their proportion of the total flows allocated at the GMT Sub-Terminals i.e. over each 12 month period (from 1st October 2015 on the basis that this is the earliest date in respect of which adjustments under this Proposal will be processed)</p> <p>0541B: Shippers will pay a charge based on their proportion of the total flows allocated at the GMT Sub-Terminals i.e. over each 12 month period (from 1st October 2015 on the basis that this is the earliest date in respect of which adjustments under this Proposal will be processed)</p>
<p>Proposed charge for inclusion in the Agency Charging Statement (ACS) – to be completed upon receipt of a cost estimate from Xoserve.</p>	<p>0541A or 0541B - System and process changes*</p> <p>For an offline database: In the range £100k to £300k, plus annual operating costs of [£x]</p> <p>OR,</p> <p>For a Gemini-based solution: In the range £500k to £1m, plus annual operating costs of [£x]</p>

\* Note – these are High Level Cost (HLC) estimates based only on similar implementations. A detailed analysis to provide firm costs is not expected to complete until May 2016

The Workgroup also noted that an offline system had an increased susceptibility to late data processing and with a consequential risk to invoicing when compared to a central system. National Grid NTS favoured a full Gemini solution, whereas Shipper participants believed that the long lead-time associated with central solutions meant that a quick implementation using an offline solution was preferable. It was noted that these views were based upon little factual information about systems given the HLC basis, and this would only become clear later.

## 4 Relevant Objectives

Impact of the modification on the Relevant Objectives:	
Relevant Objective	Identified impact
a) Efficient and economic operation of the pipe-line system.	None
b) Coordinated, efficient and economic operation of (i) the combined pipe-line system, and/ or (ii) the pipe-line system of one or more other relevant gas transporters.	None
c) Efficient discharge of the licensee's obligations.	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	<p>0541A – Impacted</p> <p>0541B – Impacted</p>

arrangements with other relevant gas transporters) and relevant shippers.	
e) Provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards... are satisfied as respects the availability of gas to their domestic customers.	None
f) Promotion of efficiency in the implementation and administration of the Code.	None
g) Compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.	<b>0541A – Impacted</b> <b>0541B – Impacted</b>

## Proposers' Views

The proposers believe that these modifications ensure that those UNC charges which would be levied on Users at GMT Terminals as a result of mismatches arising from the differences between the 05:00 hours to 06:00 hours aggregate quantity on one Day and the 05:00 hours to 06:00 hours quantity on the next Day are not applied. Users have no control over the "Time Shift Mismatches" and are unable to take any mitigating actions to address them. The imposition of UNC charges, which result from Time Shift Mismatches means that affected Users face unwarranted costs, which are redistributed to all Users via neutrality charges, for example. In combination, these outcomes create inefficiencies in terms of cost allocation and undermine competition.

### Differences between GMT Terminal and downstream end-user final allocations:

The Time Shift-related uncertainty faced by GMT Terminal users has been compared to the unpredictability faced by shippers delivering gas to end-users. Exact end-user demand is unpredictable, as it is impacted by numerous factors, such as changes in climatic conditions and customer behaviour.

As a result, downstream end-user shippers are exposed to imbalance risks; however, unlike GMT Shippers these risks are known and can to a large extent be diluted, if not expunged. The main differences between the volume and resultant imbalance risks for shippers delivering gas to customers and those operating at GMT Terminals are as follows:

1. End-user demand is predictable and controllable

Shippers, which have elected to participate in the end-user sector, are aware of the volume risk prior to contracting with customers/suppliers based on day-ahead and within-day Temperature updates. GMT shippers have been burdened with the risk following the implementation of the 05.00 to 05.00 Gas Day and as such are unable to introduce risk mitigation arrangements.

2. National Grid provides forecasts to end-user shippers

For NDM customers, National Grid carries out nominations on behalf of shippers based on daily demand forecast. It does not provide any such forecasting service to GMT shippers as it is not possible to predict the direction, or the magnitude of the Time Shift Quantities. Allocations for NDM offtakes are calculated using the same demand model as that used to determine nominations and as a result, imbalance charges occur when there is a variation between the within day demand forecasts and the after the day demand attributions. Reconciliation of NDM volumes occurs following the submission of NDM meter reads, the daily allocations being calculated by reference to the demand attribution model. Reconciliation volumes are cleared via application of daily SAPs and the relevant transportation charges. For GMT shippers the Time Shift volumes are not "reconciled"

and are charged at SMPs and the relevant transportation charges. There is no opportunity to remedy the Time Shift volume variation prior to, or after the final allocation.

3. Variation in end-user demand reflects physical reality

Not only is end-user demand in the proposer's view more predictable and controllable than Time Shift Mismatches, but its derivation reflects actual physical flows (on the assumption that the demand attribution model is accurate). In this context, both shippers entering gas at the beach or supplying end-users are susceptible to the risk of flows/demand not matching their nominations. However, end-user shippers do not have to contend with an unexpected accounting correction of their final demand numbers after they have already adjusted their nominations based on the most up-to-date temperature forecasts.

In this sense, GMT Shippers face penalties arising not only from errors in forecasting actual physical flow, but also from the conversion of 06:00-06:00 to 05:00-05:00. As has been extensively explained in this report, this conversion is influenced by the allocations across three Gas Days, as well as by other shippers' allocations at the same sub-terminal, which make them unpredictable as well as uncontrollable. The Modifications can separate real imbalances from Time Shift Imbalances and aim to ensure that shipper charges continue to be based on the physical reality of the System. i.e real physical imbalances are calculated and charged on a 05.00 to 05.00 basis

Moreover, whereas incorrect nominations reflecting physical variations both downstream or upstream may have an impact on system operations, there are no system or operational costs caused by the conversion of the upstream allocations since they are decided on one month later and as such all Time shift charges are spurious both in terms of cost-reflectivity or acting as an incentive.

4. End-user demand uncertainty can be factored in the price making it more controllable

In many, if not all cases, shippers will include a risk premium in the contracted price with end-users to insure against variability in consumption. The level of the premium is determined in accordance with a risk profile constructed for each customer, often by reference to historical consumption patterns and information from customers regarding future changes to energy management, etc... In some cases, shippers will include price escalators for consumption, which are triggered following breaches of pre-determined tolerances. Often these price escalators will reflect System Marginal Prices. Another side of having price escalators is the influence they can have on consumption behaviour making the uncertainty far more controllable.

These risk mitigation measures are not available to GMT shippers as there is no direct contracted customer associated with the gas allocated at the terminal level. Gas which enters the network at GMT Terminals is a component within the overall daily supply stack, which also includes gas supplied at 05.00 to 05.00 terminals. The interaction between aggregate supply and aggregate demand sets the market price for gas, which, in simple terms, means that the NBP is the "customer" for gas supplies. The nature of the NBP market means there are no opportunities for GMT shippers to enter into contractual arrangements to share or pass through the volume risks caused by Time Shift Mismatches.

## Workgroup Assessment

This section of the Report sets out the Impact Assessment carried out by the Workgroup, the Cost Benefit Analysis and then, as a consequence, participants' views on the Relevant Objectives.

### Initial Representation from National Grid NTS

The workgroup initially considered National Grid NTS' views and requested that the proposers respond on the issues identified.

This representation is published on the Joint Office website (<http://www.gasgovernance.co.uk/0541>) however, for convenience, the content is reproduced in Appendix 1 of this report.

### Transport (Gas Day) Working Group Response

Following approval of Modification 0461 (and prior to 0541A and 0541B) a Working Group was established under the chairmanship of DECC to investigate the issues arising from implementation of the new gas day arrangements. On behalf of the proposers, the Working Group submitted a response to National Grid NTS' representation that is also published on the Joint Office website (<http://www.gasgovernance.co.uk/0541/020915>). The content of this response is reproduced in Appendix 2.

In addition, a background paper was provided by this Working Group, which describes the gas day impacts and options considered (<http://www.gasgovernance.co.uk/0541/020915>).

## Impact Assessment

Workgroup participants carried out an impact assessment, identifying six key issues arising from proposals 0541A and 0541B that are listed below. Based on this assessment, the Workgroup assessed each modification against the Relevant Objectives d) (i) securing of effective competition between relevant shippers, and 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.

- 1. Compliance with EU Legislation**
- 2. NTS physical needs**
- 3. Incentive to Balance**
- 4. Appropriateness of, and impacts on, Scheduling Charges/Balancing Neutrality**
- 5. Effect on Competition**
- 6. Justification for Retrospectivity**

The six key areas of impact identified by the Workgroup are explored below:

### 1. Compliance with EU Legislation

The Workgroup noted National Grid NTS' concerns that some elements of Modifications 0541A and 0541B might not be consistent with the EU Balancing Code (BAL), specifically around the calculation of daily imbalance quantities and charges. The proposers agreed that some elements of the proposals might make it more difficult to comply with the detail of BAL, however they believed it was more important to follow the principles enshrined in the 2009 Regulation and BAL than the finer details of one code. In summary, shipper participants active at the affected sub-terminals observed that they could see no way to

comply with both the principles of the Regulation and with the detail of BAL if the UNC was to be applied as currently written.

The proposers highlighted that the Modifications would enable compliance with EU legislation, as shippers would still be liable to pay for non-Time Shift-related Imbalances on a 05:00-05:00 basis, arguing that the current arrangements are non-compliant. In particular it was recommended that, due to the imposition of UNC charges on Time Shift Volumes, such charges are inconsistent with BAL which requires that imbalance charges financially incentivise shippers to balance and be cost reflective (BAL: Art 4,2 and Arts 19 & 22). In relation to 0541B, the ex-post reconciliation of Time Shift Charges is carried out via existing neutrality mechanisms. The BAL (Art 30.2) permits the NRA (Ofgem, at its discretion) to publish the methodology for the calculation of the neutrality charges for balancing, including their apportionment amongst network users and credit risk management rules, and such charges should be proportionate to the extent the network user makes use of the relevant entry or exit points concerned or the transmission network. As a result, the proposed crediting back of Time Shift charges to the impacted Users in the manner proposed is compliant with BAL.

The Workgroup considered whether a hierarchy of legislation existed; whether being consistent with the principles of the Regulation was 'better' than complying with the letter of the various Codes. Ultimately it was clarified that there is no such hierarchy and modifications needed to evidence how they furthered the Relevant Objectives. It was observed that BAL was more detailed than the UNC and that if one or more of these proposals were in conflict with BAL then this may reduce the likelihood of implementation.

National Grid NTS also believed that Ofgem's Decision letter relating to Modification 0534 (<http://www.gasgovernance.co.uk/0534>) included a clarification worth noting in respect of compliance with EU Legislation:

“...They are being made to provide a service to NTS users electing to pay that charge at Bacton and not to ensure compliance with the CAM Network Code or to facilitate the achievement of its objectives.....”

National Grid believes that this statement recognises that, from a shippers perspective, a modification would not be needed were it not for the implementation of the EU Codes; however the service requested (adjustment of shorthaul charges in the case of 0534, the adjustment of neutrality positions in the case of 0541A and 0541B) it is not a direct requirement of the EU Codes and therefore cannot better facilitate the Relevant Objective g).

Concerns were raised that implementation of the modifications would undermine BAL by effectively permitting balancing on a 6 to 6 basis. This was refuted as the allocations (both at entry and exit) will be provided on a 5 to 5 basis with imbalance charges calculated accordingly. Moreover, the Modifications do not prevent the charging of imbalances that do not arise from Time Shift Mismatches, such as those arising from variation in physical flow at GMT Terminals.

The neutrality adjustment provides a mechanism by which charges are not cost reflective (BAL: Art 19.3) and do not result in network users' excessive financial exposure to daily imbalance charges (BAL: Art 22.6 (d)) while incentivising Users to balance their inputs and offtakes (BAL: Art 22.6(a))<sup>1</sup>. By using the neutrality mechanism to remove Time Shift Charges this is consistent with, not least (BAL:30.6) “*where relevant, the transmission system operator's methodology for the calculation of the neutrality charge for balancing may provide rules for the division of the neutrality charge for balancing components and the subsequent apportionment of the corresponding sums amongst the network users in order to reduce cross subsidies*” Where, it is argued, any costs incurred and receipts awarded due to the creation of

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<sup>1</sup> Note that this provisions relate to the setting of the small adjustment (default cash-out charge), but nonetheless are relevant

Time Shift charges, results in cross subsidies between GMT shippers and non-GMT shippers and, as in the circumstances explained below, between GMT shippers.

As such polar views were expressed, participants agreed to differ and no consensus could be achieved; it would ultimately be a matter for Ofgem to consider in determining whether to implement one of the proposals.

## 2. NTS physical needs

During the course of the Workgroup Assessment, 0541B was amended to remove the link to nominations which, in turn, meant that National Grid NTS had no residual concerns about the impact of the Solution on the NTS' physical needs.

This section has been left in the report for completeness (since it was originally highlighted in the National Grid NTS Initial Representation).

## 3. Incentive to Balance

The creation of Time Shift Volumes is a result of the process of translating offshore 06:00 to 06:00 allocations into 05:00 to 05:00 downstream allocations. Users have neither control, nor ex ante comprehension of the size or direction of the Time Shift Volume and as such any subsequent charges (balancing, capacity, scheduling and INS) are spurious. The modifications preserve “properly” incurred imbalance charges (or real imbalances) and as such retain an incentive to balance on those aspects of a User’s portfolio where it can apply reasonable control.

The examples below demonstrate how the Business Rules provided for 0541B in this Report would work based on the following nominations and claims below (**Figure 1**). Based on the algorithm values of 1/24 for Gas Days 2 and 3, the User Daily Quantity Input (UDQI) for Gas Day 3 is 5 units more than the 06:00 to 06:00 allocation of 240 (because there was more gas flowing on the previous day).

**Figure 1 – Simple Demonstration of the Impact of Time Shift Mismatches**

	Gas Day 1	Gas Day 2	Gas Day 3
6-6 Allocation	240	360	240
Algorithm value (1/24 <sup>th</sup> )	- 10	- 15	- 10
Previous day (1/24 <sup>th</sup> )		+ 10	+ 15
5-5 Allocation		= 355	= 245
5-5 Nomination (= 6-6 allocation)	240	360	240
Time Shift Imbalance		- 5	+ 5

**Figure 2** shows how the process explained for Gas Day 3 (highlighted by the red rectangle) in **Figure 1** works with a real imbalance, which would reflect real variation in production and which has always been subjected to imbalance charges even before the gas day change in October 2015. National Grid NTS

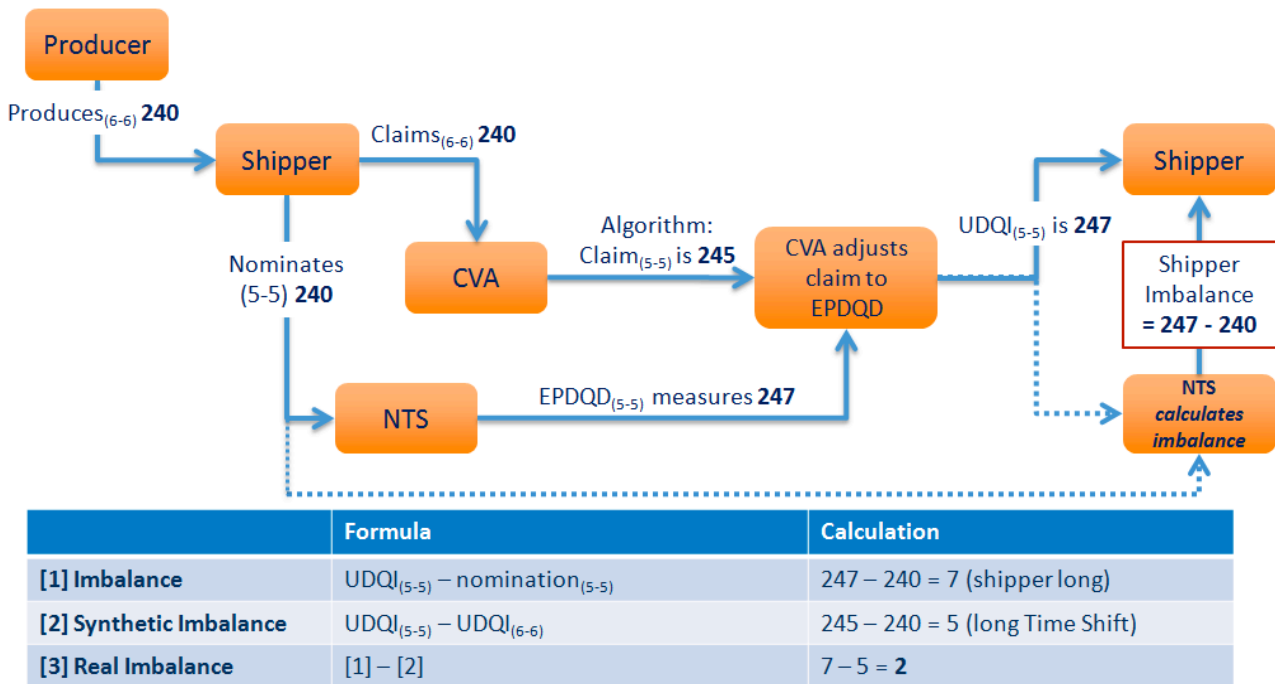
receives a nomination of 240 from the shipper, but is given a physical measurement of 247 as the Entry Point Daily Quantity Measures (EPDQD), which the Claims Validation Agency (CVA) must process and allocate among GMT Terminal shippers on a pro-rata basis, based on their share of total claims. In this one-shipper scenario, the CVA adjusts a shipper's claim upwards to match the EPDQD, thus producing a UDQI of 247.

As we can see from below (and from **Figure 1** above) the shipper's claim is updated to 245 on a 05:00-05:00 basis, which reflects the Time Shift Mismatch arising from the application of the Option A algorithm by the CVA, the additional 2 produces a UDQI of 247, reflect an actual physical imbalance. Thus as demonstrated in the box at the bottom of the **Figure 2**, it is easy to extrapolate real imbalances from synthetic imbalances. Because synthetic imbalances are based on claims and not nominations, it is not possible for shippers to abuse the proposed solution to reduce their total imbalance charges: if a shipper over-nominates, the Time Shifted volume is based on claims and will always remain the same. Instead the real physical imbalance would increase.

**Figure 2 – Adding a real physical imbalance to the calculation**  
**Example for Day 3 (plus real imbalance)**

In this scenario, shipper claimed 360 on Day 2 and claimed (and nominated) 240 on Day 3; and NGG NTS measured 247.

5-5 claim is converted to 245, meaning the real physical imbalance is 2 and the synthetic imbalance is 5



**Figure 3** below shows an example where the real imbalance is the same size as the Time Shifted volume but negatively related to it, in such a way that the real imbalance cancels the synthetic imbalance. In other words, the shipper behaves exactly as in Figure 1, but the EPDQD measures 240 of gas for that 05:00 to 05:00 gas day. The 06:00-06:00 claim is converted from 240 to 245 as above by using the algorithm. In this case, the 05:00-05:00 claim is larger than the EPDQD by 5 units, indicating that there was a physical drop in flows during the day, but the shipper will not be charged this SMBP because the UDQI of 240 will match the nomination of 240. Because of the algorithm, National Grid NTS would be unable to charge SMSP to the Shipper for the real physical imbalance.

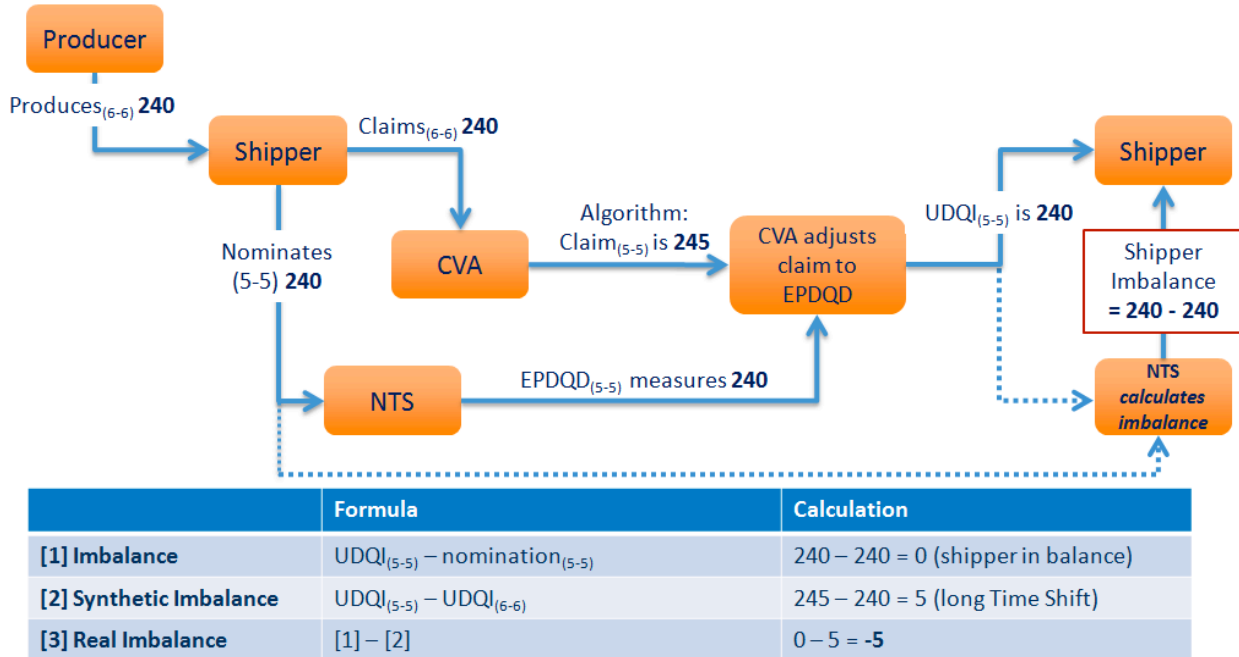


**Figure 3 - Time Shifted volumes and Real Imbalances cancel each other out**

**Example for Day 3 (but shipper guesses right)**

In this scenario, shipper claimed 360 on Day 2 and claimed (and nominated) 240 on Day 3; and NGG NTS measured 240 → **Imbalance is 0**

NGG is unable to use balancing incentives on shipper because nomination is actually right!



Finally, as demonstrated in the cost benefit analysis, some Time Shift imbalance costs may be incurred by a shipper because of the allocations of other shippers, meaning that the resulting cash outs have little to do with acting as a shipper to balancing.

**4. Impacts on Charges and Neutrality**

National Grid NTS observed that in the balancing neutrality model UNC charges removed from one shipper are required to be allocated to other shippers in order to remain cash-neutral. This is explained further in the diagram in Appendix 5

One of the consequences of additional imbalance charges arising from Time Shift Mismatches is the increase of the neutrality charge, which redistributes revenue from imbalance charges among all shippers based on the size of each shippers throughput.

The example in **Figure 4** below demonstrates how this additional revenue is redistributed between both GMT shippers and other shippers operating at 05:00 to 05:00 sub-terminals, indicating that Time Shift Imbalances are subsidising non-GMT shippers. In the first example, the 06:00 to 06:00 claim is corrected downwards from 100 to 99 and therefore the GMT shipper pays SMBP for one unit it had nominated against but did not inject into the System. The second example illustrates the opposite example whereby the GMT shipper has to pay more SMSP because it had nominated 100 but the UDQI was scaled upwards by one unit.

**Figure 4 – How neutrality is redistributed**

Current Neutrality Exposure	
SAP	50.0 p/th
SMBP	51.0 p/th
SMSP	49.0 p/th

Example 6-6 ST > 5-5 DQ						
	Claim	UDQI Volume	Imbalance Volume	Net Cost per Shipper	Neutrality % per Shipper	Neutrality Benefit
5-5 Shipper	100	100	0	0.0 p	50.25%	0.5025 p
6-6 Shipper	100	99	-1	-1.0 p	49.75%	0.4975 p
<b>TOTAL</b>	<b>200</b>	<b>199</b>	<b>-1</b>	<b>-1.0 p</b>		<b>1.0 p</b>

Example 6-6 ST < 5-5 DQ						
	Beach 6-6 Claim	UDQI Volume	Imbalance Volume	Net Cost per Shipper	Neutrality % per Shipper	Neutrality Benefit
5-5 Shipper	100	100	0	0.0 p	49.75%	0.4975 p
6-6 Shipper	100	101	1	-1.0 p	50.25%	0.5025 p
<b>TOTAL</b>	<b>200</b>	<b>201</b>	<b>1</b>	<b>-1.0 p</b>		<b>1.0 p</b>

Sum of examples							
	Beach 6-6 Claim	UDQI Volume	Imbalance Volume	Net Cost per Shipper	Neutrality % per Shipper	Neutrality Benefit	Neutrality vs. cash out
5-5 Shipper				0.0 p		1.0 p	1.0 p
6-6 Shipper				-2.0 p		1.0 p	-1.0 p

Shipper participants believed that the charges didn't really exist, as they related to a synthetic imbalance described in the Solution section, and they should be removed in totality from the neutrality mechanism through the implementation of the modifications.

## 5. Effect on Competition

National Grid NTS expressed concerns that, in the event imbalance-related costs were ultimately attributable somewhere within the neutrality mechanism (ie and not removed as suggested), then to allocate them to any party other than those triggering the imbalance would potentially create cross-subsidisation contrary to the principles of effective competition.

The proposers disagreed, believing that these proposals have the opposite effect since they restore equality for affected shippers with those not using the sub-terminals retaining a 06:00 - 06:00 gas day. Otherwise liquidity in beach trading and National Balancing Point<sup>2</sup> (NBP) swaps could be diminished, with a consequential adverse impact on consumer prices.

In order to maintain competition it is essential that markets are transparent and cross-subsidisation is minimised. Without these modifications both of these principles are compromised. There is insufficient relevant information around final allocations for those Users operating at GMT Terminals at the time of operating; and a cross subsidy between GMT Terminal Users and non-GMT Terminal Users is created. Additional cross-subsidies will occur between Users operating at the same GMT Terminals as a result of the application of the Option A algorithm. Both modifications will ensure that Users are able to manage and have confidence in entry allocations and that any cross subsidies resulting from the imposition of Time Shift charges are removed.

<sup>2</sup> the nominal 'centre' of the NTS; a virtual trading location for the sale, purchase and exchange of gas

Again, no consensus view was achieved as views were recognised as being very much influenced by the degree to which a party is impacted; affected shippers felt disadvantaged by a matter they had no control over, whereas other shippers did not believe it was something they should be required to contribute towards.

## 6. Justification for Retrospectivity

The new GB Gas Day, resulting from the implementation of the Balancing Network Code (BAL NC) on October 2015 and CAM on November 2015, was not foreseen to have such negative consequences to the UK gas Industry until a time after EU ratification. Since then, DECC has supported Oil & Gas UK's discussions on changing the Codes with ACER, which agreed to consult stakeholders on the new Gas Day given the new information on its impacts and costs. The consultation on amending CAM and BAL NCs to allow GB to maintain its 06.00 to 06.00 Gas Day was held in early 2015.

Responses were largely mixed (National Grid opposed), with some shippers/producers pointing to excessive implementation costs and negligible gains to cross-border trading (the main justification for a harmonised Gas Day), which at the time was largely reflected by similar prices in NBP, TTF and ZEE separated only by transportation costs (a fact Ofgem agrees with<sup>3</sup>). After the consultation, ACER announced on 19 March 2015 its decision to not propose amending the Codes to the EU Commission.

It is clear from the above that by the time the UK had fully analysed the impact of the harmonised Gas Day, this was not something that the UK wanted (as represented by DECC, shippers and producers) . Assessing the full impact of the implementation of EU Network Codes is not easy and many unintended consequences were uncovered much later in the process – as witnessed by problems which gave rise to Modifications 0501, 0534 and 0560 (the latter two being retrospective Modifications).

The UK gas industry response to addressing consequences of having two different Gas Days at GMT Terminals consisted in an initial “fix” to address the potential loss of up to ~30 million GBP of gas annually (the Option A solution, implementing the algorithm converting GMT Terminal 06:00-06:00 allocations to 05:00-05:00) and a subsequent fix addressing the uncontrollable costs incurred by GMT shippers (the 0541 Modifications). The latter fix was seen as a necessary and complementary solution to the ongoing issues associated with the operation of different Gas Days, onshore and offshore.

The 0541 Modifications attempt to resolve a problem that could not have been reasonably foreseen until it was too late. Moreover, the Modifications were proposed as soon as practically possible, which was after ACER had decided on the possibility of amending CAM and BAL NCs (March 2015) and Option A had been sufficiently developed (July 2015). The Modifications highlighted early in the process there was a risk of there being a retrospective element to them if their development dragged on beyond October 2015.

Ofgem's guidelines on the application of retrospective modifications were provided in its Decision on electricity Modification to the Balancing and Settlement Code Proposal P19<sup>4</sup>. Quoting Ofgem: “the circumstances which could give rise to the need for a retrospective rule change could, for instance, include:

- 1) A situation where the fault or error occasioning the loss was directly attributable to central arrangements;
- 2) Combinations of circumstances that could not have been reasonably foreseen;
- 3) Where the possibility of a retrospective action had been clearly flagged to the participants in advance, allowing the detail and process of the change to be finalised with retrospective effect

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<sup>3</sup> [https://www.ofgem.gov.uk/sites/default/files/docs/2013/07/interconnector-flows-further-analysis-next-steps-final\\_0.pdf](https://www.ofgem.gov.uk/sites/default/files/docs/2013/07/interconnector-flows-further-analysis-next-steps-final_0.pdf)

<sup>4</sup> Modification P19: “To provide for the remedy of errors in Energy Contract Volume Notifications and in Metered Volume Reallocation Notifications”

**In relation to Point 1: A situation where the fault or error occasioning the loss was directly attributable to central arrangements;**

The New Gas Day comes as a result of UK implementation of the BAL and CAM NCs. It is also the result of a failed attempt to amend these Network Codes through ACER by Oil & Gas UK in March 2015.

**In relation to Point 2: Combinations of circumstances that could not have been reasonably foreseen;**

The Modifications were proposed as soon as practically possible after it became clear that the cause of the problem could not be amended; after ACER had rejected the possibility of amending CAM and BAL NCs (March 2015) and Option A had been sufficiently developed (July 2015). The Modifications attempt to resolve a problem that could not have been reasonably foreseen (as needing a UNC resolution) until after this. The Modifications highlighted early in the process there was a risk of there being a retrospective element to them if their development dragged on beyond October 2015.

**In relation to Point 3: Where the possibility of a retrospective action had been clearly flagged to the participants in advance, allowing the detail and process of the change to be finalised with retrospective effect**

The Modifications were proposed as soon as practically possible, which was after ACER had rejected the possibility of amending CAM and BAL NCs (March 2015) and Option A had been sufficiently developed (July 2015). The Modifications highlighted from the onset in [August 2015] there was a risk of there being a retrospective element to them if their development dragged on beyond October 2015. Further, the issues raised by these proposals are well known to industry participants, DECC and UK government ministers.

It is important to mention, both the cost-benefit analysis and impact-assessment extensively explain how nominations behaviour cannot be impacted by the knowledge of these Modifications' retrospective elements, since Time-Shift Mismatches and other associated costs are uncontrollable and happen regardless.

## Cost Benefit Analysis

An Executive Summary of the analysis is included below; please see Appendix 5 for the detailed analysis.

### Executive Summary

The cost-benefit analysis produced by Gazprom Marketing & Trading seeks to identify the costs incurred by shippers operating at 06:00 to 06:00 Terminals ("GMT Terminals"). The analysis used daily allocation data and price data spanning the period October 2014 to July 2015. The aggregate findings are consistent with those produced by National Grid during DECC Gas Day Working Group process, however importantly it has highlighted that the problem is far more complex than previously thought, particularly when costs are broken down at shipper level.

Time Shift Imbalance costs to GMT Shippers:

The headline figure for aggregate Time Shift imbalance costs across the GMT Terminals is between £210k and £276k per annum. On an individual GMT Terminal basis and removing the volume netting effects across all the terminals, the total Time Shift imbalance costs are around £480k to £550k per annum.

The volume ascribed to the Time Shift Mismatch in the cost-benefit analysis is calculated based on end of day quantities (for an 05:00 and an 06:00 Gas Day) and an assumed flat profile of supply during these daily periods. Clearly this is an over-simplification as, in reality, terminal flows will within-day deviate away

from a 1/24<sup>th</sup> rate. As a result, any movement away from a 1/24<sup>th</sup> flow rate at a GMT Terminal will generate higher Time Shift Mismatch volumes and subsequently, higher costs to the shippers flowing at such terminals. This implies that the Time Shift Imbalance costs set out above are an underestimate of the true costs. An example of how Time Shift Volumes are impacted by a varying within day supply profiles is shown in **figures 9 & 10** in Appendix 5.

National Grid provided the exact Time Shift numbers at £591,980 for the 12 months period from September 2014 to August 2015, as shown in **Figure 10a** below. The calculation supports the Proposer's claims that the estimated £480,000 value of Time Shifts is a minimum due to the within-day variability of flows.

#### Effects on Shipper allocations by other Shippers:

In drilling down to individual shipper impacts, the cost-benefit analysis reveals how the actions taken by one shipper at a GMT Terminal can impact other shippers operating at the same GMT Terminal as a result of the application of the Option A allocation algorithm employed at all of the GMT Terminals. The Option A allocation algorithm is based on aggregate flows at the GMT Terminal and scales up/down volumes across all shippers 06:00 to 06:00 claims. It does not take into account the flow (and claim) patterns of individual shippers operating at the GMT Terminal. As a result, this leads to shippers 05:00 to 05:00 allocations, on an individual basis, being scaled up/down on a disproportionate basis. It can be argued that this results in a cross-subsidisation between shippers at a GMT Terminal level. Again this is explained by using an example, the results of which are shown in **figures 11 & 12** in Appendix 5.

#### Time Shift Capacity Overruns:

In addition to the impacts on imbalance costs, the cost-benefit analysis considered the impacts on entry capacity. Based on the average daily Time Shift volumes generated for the 10 month period reviewed, it would be rational for shippers operating at the GMT Terminals to acquire a minimum additional 1.17% of entry capacity so as not to incur overrun charges. The cost of acquiring this capacity, under the current capacity charging regime is likely to be negligible given the zero cost of within day capacity, however, the continuation of this regime is not guaranteed and in fact, highly improbable given the most recent draft of the EU Tariff Network Code and the recommendations set out in Ofgem's policy position on the Gas Transmission Charging Review<sup>5</sup>. Moreover, as the EU Tariff Network Code enters the final Comitology procedure, the EU Commission has expressed its preference for short term multipliers higher than 1, further increasing the competitive disadvantage between GMT Terminals and other supplies of gas to the UK. Using the annual entry capacity reserve prices for each GMT Terminal the total annual cost of purchasing 1.18% of additional entry capacity is £648k, the alternative being an exposure to £4.6m in overrun costs. It is noted that the £648k is a conservative estimate as it does not recognise daily deviations from the mean, nor the within terminal effects at a shipper level described above. It is worth noting that at Bacton UKCS ASEP, firm capacity is already fully booked for Quarter 1 in the medium term and shippers depend on the availability of non-obligated capacity.

#### Time Shift Scheduling Charges:

The cost benefit analysis also looks at the effect of the Option A algorithm on scheduling charges. Although these Time Shift costs seem small, these are minimum values because (1) they do not take into consideration real quantities subjected to scheduling charges which would up the volumes and days subjected to scheduling charges; (2) the values assume a flat flow profile (3) the values hide netting off effects of shipper nominations and allocations within each Sub-Terminal.

In summary, the cost-benefit analysis provides a high level assessment of the impacts on shippers operating at GMT Terminals. The headline Time Shift Imbalance numbers are conservative as the

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<sup>5</sup> <https://www.ofgem.gov.uk/publications-and-updates/gas-transmission-charging-review-confirmation-policy-view-and-next-steps>

analysis does not attempt to value the effects of within day flow profiles nor the impacts at an individual shipper level, but National Grid's numbers confirmed the higher cost. Certainly, it is clear that one of the unintended consequences of the Option An algorithm is the creation of cross-subsidies between shippers operating at a GMT Terminal. In terms of capacity costs, again the headline figures should be viewed as conservative, due to the application of an average Time Shift Volume, which by its very nature will not reflect day to day deviations from the mean.

## Relevant Objectives

Taking the issues raised into account, the workgroup participants assessed the impact of each proposal on the Relevant Objectives d) and g).

### Relevant Objective d) Securing of effective competition between shippers

**0541A Setting the Time Shift Charges to zero; and,**

**0541B Reimbursing Users at GMT Terminals for Time Shift Charges**

Shipper participants believe that both modifications remove the discriminatory position introduced as a result of the new Gas Day arrangements, meaning that all entry facilities can operate on an equal footing. This furthers relevant objective d), securing of effective competition between shippers.

One participant, National Grid NTS, did not agree; they believe that both proposals have a negative impact on competition because the adjustment at GMT Terminals socialises costs that should only be, in their view, targeted at shippers at GMT Terminals.

Shipper participants disagreed, believing that 'socialising costs' was misleading; there are no costs to non-GMT shippers, the neutrality pot would in fact be reduced and the effect of these proposals was to redistribute neutrality correctly. Additionally, these proposals removed any benefit for non-GMT Terminal users that are an unwarranted effect of the current arrangements.

### Relevant Objective g) Compliance with the Regulation.....

**0541A Setting the Time Shift Charges to zero**

**0541B Reimbursing Users at GMT Terminals for Time Shift Charges**

Shipper participants believe that both modifications further compliance with EU legislation as described in section 1 of the Impact Assessment above and therefore further relevant objective g). In particular, charges are meant to incentivise appropriate behavioural change of Users.

One participant, National Grid NTS, did not agree; they believe that both proposals have a negative impact on EU Codes, since they may not comply with the EU Balancing Code as they could be seen to undermine existing incentives to balance.

## 5 Implementation

The workgroup was unable to form a view on implementation since the corresponding systems and processes analysis could not be completed during this assessment (see User Pays above).

Implementation should be as soon as possible after a decision by Ofgem, as the start date for adjustments is 01 October 2015, however National Grid NTS will notify an effective date as soon as it is known.

## 6 Impacts

### Do these modifications impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

The EU Phase 3 systems Design phase has been completed, meaning that any central systems changes arising from these proposals would need to be delivered as a separate programme of works at a later date.

## 7 Legal Text

### Text Commentary

Insert text here

### Text

The following Text has been prepared by X, and no issues were raised by the Workgroup regarding its content.

## 8 Recommendation

The Workgroup invites the Panel to:

- NOTE that the costs described in this report are 'High Level Costs' only and that there is a delay before the corresponding change to the Agency Charging Statement will be prepared. The Workgroup recommend that consultation should not be delayed, since the HLC costs are considered to be adequate for respondents to form an opinion.
- AGREE that these modifications should be submitted for Consultation.

## 9 Appendices

### Appendix 1 – National Grid NTS’ Initial Representation (content only)

Thank you for your invitation seeking initial representations with regards to UNC Modification Proposals 0541/A/B (the “Proposals”). This response is submitted on behalf of National Grid NTS and is a combined response applicable to all of the Proposals.

We understand that NTS Shippers have raised the Proposals to mitigate a risk they have identified which is associated with the continued application of 06:00-06:00 gas day arrangements by upstream producers, whilst the NTS and downstream networks move to 05:00-05:00 gas day arrangements under the direction of EU legislation and as implemented through UNC Modification Proposal 0461 (Changing the UNC Gas Day to Align with the Gas Day in EU Network Codes).

We have been actively involved in the Gas Day Industry Workgroup chaired by DECC, with some involvement in the sub-group that has developed the Proposals. This response includes a number of points we have already highlighted in discussions with that sub-group prior to the Proposals being raised, and which we believe should be considered further by the UNC Workgroup.

As a result of our involvement in pre-modification discussions, we have a good understanding of the issue that the proposers are seeking to address, i.e. Shippers who may feel they are exposed to an increased system clearing imbalance risk (as a consequence of their current upstream production contracts) are looking to mitigate this risk by amending the downstream regulatory regime administered under the UNC. However, we have concerns that seeking a resolution of this issue in the downstream UNC arrangements may not be an efficient, targeted or equitable approach for all Shippers. Specifically, some Shippers who do not have input allocations at the affected NTS entry points may incur additional financial risk via the energy balancing neutrality mechanism. We would therefore suggest that further work continues, alongside the UNC Workgroup, to consider alternative upstream solutions that sit outside the UNC framework.

There are a number of areas that we suggest should be discussed further as part of the Workgroup development and have detailed our initial thoughts below.

#### 1. EU Network Code Compliance (CAM and Balancing)<sup>6</sup>

A suite of Modifications has been developed by National Grid NTS over the past 2 years in order to achieve GB compliance with the legislative requirements of the EU Network Codes. Many of these Modifications will be implemented in October/November 2015, including the change to the UNC gas day under UNC Modification 0461, to ensure consistency with the definition detailed in the EU Capacity Allocation Mechanism (CAM). We have concerns that some fundamental elements of the Proposals are not compliant with the requirements of the EU Balancing Code, specifically around the calculation of Shippers’ daily imbalance quantities and charges. For example, the Workgroup may need to consider whether knowingly utilising a 06:00-06:00 User Daily Quantity Input (UDQI) in the calculation of daily imbalance quantities and charges for a 05:00-05:00 gas day is consistent with the obligations placed upon TSOs and Shippers by the EU Balancing Code (Articles 19, 21 and 37).

#### 2. Principles of the GB Balancing Regime

The GB Balancing Regime has been developed with the Shipper as the primary energy balancer, and the



Transmission System Operator (TSO) as the residual balancer. This model, which has subsequently been adopted by the EU Balancing Code, explicitly prescribes that the Shipper is incentivised to balance its own portfolio<sup>7</sup>. If it is unable to do so, the Shipper pays costs associated with its imbalance position for the relevant gas day (the 'polluter pays' principle). We believe the Workgroup may wish to consider whether the solutions described within Modification Proposals 0541A and 0541B weaken this principle. Under the balancing neutrality model, if UNC charges are removed from one Shipper, they will be allocated elsewhere in order that the Shipper community as a whole remains cash-neutral. This could result in some Shippers who do not have input allocations at the affected NTS entry points being liable for a proportion of these charges. The Workgroup should consider whether this creates the potential for cross-subsidisation of imbalance costs, and whether this could therefore be viewed as undermining effective competition between Shippers.

### **3. Industry System Changes and User Pays**

Our current understanding of the solutions described is that there are likely to be changes required to industry systems (UKLINK) which are managed by the Transporters' Agency (Xoserve). We note that the User Pays Guidance Document<sup>8</sup> published on the Joint Office of Gas Transporters website states that "...any Modification Proposal which has the potential to incur incremental Transporter Agency costs... will be classified as a User Pays Modification Proposal". If the Proposals were to be classified as User Pays, as we believe they should be, the Workgroup will need to consider which UNC parties would benefit from implementation to identify how such User Pays costs should be apportioned. In pre-Modification discussions with the proposers, it was suggested that National Grid NTS should pay the system change costs associated with any solution from our RIIO-T1 EU market facilitation funding. However, we do not believe that the solutions outlined are necessitated by EU legislation and therefore we do not consider these to be EU related Modifications. As a result, we do not believe the use of RIIO-T1 EU market facilitation funding is appropriate.

National Grid NTS has also met with Xoserve to discuss the Proposals. After reviewing the level of detail provided within the current stated solutions, and taking into account both parties' interpretation of the Proposals, Xoserve has advised us that, at this stage, there is insufficient detail to complete a cost assessment ('Rough Order of Magnitude' - ROM) which is meaningful. However, we recognise that the Proposers have suggested (and the Modification Panel subsequently directed) that the Proposals be issued to a Workgroup for further development. We believe that the Workgroup should seek to strengthen and provide further detail in respect of each of the solutions (likely to be in the form of detailed Business Rules) at an early stage in the Workgroup discussions, so the impacts can be understood and a ROM completed at the earliest opportunity.

### **4. Cost Benefit**

The Workgroup may wish to consider whether a cost benefit analysis is required to ensure that any implementation costs are justified as there is no quantification of the impact of 'Time Shift Charges' (and therefore the extent of the impact on neutrality charges) detailed in the Proposals for impacted Shippers. Although a level of cost benefit analysis could be completed based on past information, the Workgroup may wish to consider whether a thorough and accurate quantification of the additional imbalance risk is achievable prior to implementation and evaluation of the impacts of the gas day industry solution (otherwise known as 'Option A'). If such a quantification cannot be completed prior to this point, then as Option A will not be implemented until October 2015, it may be appropriate to allow a minimum evaluation period (for example 3 months) to fully assess the extent of 'Time Shift Charges' whilst operating in accordance with Option A in order to provide an accurate cost benefit assessment of the solutions

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<sup>7</sup> Article 4.1 of Commission Regulation (EU) No 312/2014 establishing a Network Code on Gas Balancing of Transmission Networks

<sup>8</sup> <http://www.gasgovernance.co.uk/sites/default/files/User%20Pays%20Guide%20Doc%20v2.pdf>: page 3 paragraphs 4 and 6

presented in the Proposals.

## 5. Relevant Objectives

The Workgroup may wish to make an assessment of whether the proposers' suggestions that the Proposals would have a positive impact on Relevant Objective (d) "Securing of effective competition" and Relevant Objective (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" are correct. Our initial thoughts in respect of this are outlined below:

**Relevant Objective d):** We believe the Proposals have the potential to have an adverse impact on competition between Shippers, by creating additional undue Neutrality cashflows for parties who do not have input allocations at the relevant sub- terminals, and creating cross-subsidies that may weaken the proposers' balancing incentives. Further, the potential for retrospective application of the solutions from the point of direction from the Authority (should this be forthcoming) may arguably undermine competition still further.

**Relevant Objective g):** As previously mentioned, we do not believe that the solutions as described in the Proposals are mandated by the EU Network Codes; therefore we would question whether this Relevant Objective is better facilitated. The Workgroup may need to consider whether the Proposals may negatively impact upon this Relevant Objective as they have the potential to jeopardise TSO and Shipper compliance with EU Regulation, by effectively seeking to retain a 06:00 to 06:00 gas day for a subset of Shippers within the framework of the UNC neutrality regime. This may be contrary to the requirements of the EU Balancing Code.

## 6. Implementation and Retrospective Adjustment

We note the proposers' ambition to implement one of the Proposals by 01 October 2015. Due to the timescale for development of the Proposals in the Workgroup, the lead time for development and implementation of a robust system/process solution and the existing change congestion associated with Xoserve system delivery, we believe this implementation date is not achievable.

The proposers have also suggested that if 01 October 2015 implementation cannot be achieved, the adjustment to Shippers' UNC charges should be calculated retrospectively from 01 October 2015. Modifications with retrospective application have historically been heavily debated within UNC Workgroup discussions, and in previous decision letters Ofgem has documented its concerns associated with such retrospective application.<sup>9</sup> Such concerns include introducing uncertainty into the market and an increase in the perception of risk, which can negatively impact on competition. The Workgroup will need to consider whether the retrospective element of the Proposals could be seen as anti- competitive (as described above), especially if new entrants to the market may be liable for costs at a time when they were not active market participants.

In summary, we believe there are several aspects of the Proposals that are unclear, or require further consideration, and which need to be further developed and understood as part of the Workgroup development. National Grid NTS welcomes further discussion on the points highlighted in this initial representation at the forthcoming Workgroup meetings.

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<sup>9</sup> For example, UNC Modification 451V and 451AV Individual Payments for Pre-Payment and Smart Meters

## Appendix 2 – Transport Working Group Response

The Workgroup has considered carefully the impact of the EU Regulations on network users using sub terminals that continue to operate on a 0600 hours to 0600 hours gas day ("Affected Terminals") and National Grid as Transmission System Operator.

**The Workgroup has concluded that, without the proposed Modifications, neither National Grid nor network users at Affected Terminals will be able to comply with the Regulations.**

The Gas Day changes are required by Regulation (EC) No 715/2009 of the European Parliament dated 13 July 2009 ("**2009 Regulation**") and Commission Regulation (EU) No 312/2014 of 26 March 2014 establishing a Network Code on Gas Balancing of Transmission Networks ("**BAL Code**"). The BAL Code forms part of the 2009 Regulation.

The relevant principles that the 2009 Regulation seeks to achieve are set out in the 2009 Regulation and repeated in the BAL Code and are as follows:

- (i) Access rules to natural gas transmission systems to be **non-discriminatory** (Art 1(a) 2009 Regulation and Recital 4 BAL Code)
- (ii) Balancing Rules to reflect **genuine system needs** (Art 21.1 2009 Regulation and Art 4.2 BAL Code)
- (iii) Imbalance charges to be **cost reflective** to the extent possible and shall take account of the prices associated with the TSO's balancing actions (Art 21.3 2009 Regulation and Art 19.3 BAL Code)
- (iv) Imbalance charges shall act as **appropriate incentives on network users to balance** their input and offtake of gas (Art 21.3 2009 Regulation and Art 4.2 BAL Code)
- (v) Imbalance charges shall **avoid cross subsidisation** between network users (Art 21.3 2009 Regulation)
- (vi) Imbalance charges shall **not hamper the entry of new market entrants** (Art 21.3 2009 regulation)

The BAL Code further sets out at Art 21 how to calculate daily imbalances (inputs – offtakes) and calculate imbalance charges (Art 22).

Given that post 1<sup>st</sup> October 2015 at Affected Terminals:

- a) day ahead, within day and post day flow information will only ever be available to users of those terminals on a 0600 hours to 0600 hours basis and they will therefore have to schedule to National Grid on a 0600 hours to 0600 hours basis;
- b) National Grid will use an 0500 hours to 0500 hours metered Daily Quantity for the Affected Terminals;
- c) network users inputting gas into the NTS at Affected Terminals will have their NTS input quantities artificially adjusted after the day so as to reconcile the 0600 hours to 0600 hours terminal numbers to the National Grid 0500 hours to 0500 hours Daily Quantity;
- d) such network users will, in addition to any imbalances arising from failures to physically flow to scheduled quantities, consequently be out of balance long or short every day due solely to such hour adjustment ("**Time Shift Adjustments**");
- e) such network users will, unless Modification to the UNC is achieved, incur imbalance charges (SMBP, SMSP, Scheduling and Overrun Charges) every day as result of the Time Shift Adjustments (please note that if the UNC is applied by National Grid as currently drafted these imbalance charges **will be** incurred, it is not merely a question of network users "feeling" they may be exposed to increased system clearing imbalance risks);

- f) as explained at paragraph 4, the Time Shift Adjustments are not a result of actual physical flows of gas into the NTS and the mass balance of the NTS nor any balancing actions taken by National Grid but are solely a result of the differences between the 0500 hours to 0600 hours aggregate flows of gas through an Affected Terminal on day 1 and the 0500 hours to 0600 hours aggregate flows of gas through the Affected Terminal on day 2; and
- g) monies raised from the imbalance charges levied by National Grid arising from Time Shift Adjustments will be returned to all network users entering and exiting gas to and from the NTS through the neutrality charge regimes not just to network users at Affected Terminals (please note that network users at non Affected Terminals will not incur additional financial risk as a result of the proposed Modifications but rather without the Modifications will receive "windfall gains");

then, unless the UNC is modified,:

- h) any imbalance charges levied on network users as a result of Time Shift Adjustments would **not arise as a result of genuine system needs** nor would they relate to network users intended flows, resulting in National Grid and network users failing to comply with Art 21.1 2009 Regulation and Art 4.2 BAL Code;
- i) imbalance charges arising from Time Shift Adjustments will therefore **not incentivise shippers to balance**, resulting in National Grid and network users failing to comply with Art 21.3 2009 Regulation and Art 4.2 BAL Code;
- j) since National Grid will take no balancing actions in respect of Time Shift Adjustments, the resulting imbalance charges will **not be cost reflective**, resulting in National Grid and network users failing to comply with Art 19.3 BAL Code;
- k) network users at non Affected Terminal will not bear these additional imbalance charges arising solely from Time Shift Adjustments so network users using Affected Terminals will **be discriminated against**, resulting in National Grid and network users failing to comply with Art 1(a) 2009 Regulation and Recital 4 BAL Code; and
- l) monies raised by National Grid from these imbalance charges will be returned to all network users entering and exiting gas to and from the NTS through the neutrality charge regimes not just to network users at Affected Terminals so there will be **cross subsidisation** of all network users by those at Affected Terminals, resulting in National Grid and network users failing to comply with Art 21.3 2009 Regulation.

Without any correction of the unjustified imbalance charges there will be wider impacts on the industry falling out from the risks to beach trading (and NBP swaps). It is evident that liquidity in these markets will likely be diminished, which in turn will frustrate true price discovery and the delivery of gas to consumers at the most cost effective price. Beach trading and swaps permit shippers to optimise their portfolios so that deliveries into the system can be managed most effectively, in terms of location, volume and price.

We note that some of the proposed Modifications may make it harder to comply with some of the details in Articles 21 and 22 of BAL Code but, in the case of any such inconsistencies, complying with the principles set out in the 2009 Regulation and the BAL Code should take precedence over the details of the BAL Code. Unless the Affected Terminals change their gas day or National Grid enters into operational balancing arrangements with the Affected Terminals, the Workgroup cannot see anyway to comply with both principles in the 2009 Regulation and all provisions of the BAL Code if the UNC is applied as currently drafted.

# Appendix 3 – “DO nothing” Costing Model (Proposers to confirm if needed- if so, suitable narrative to be provided)

Gas Day Process Flow																
INFORMATION AVAILABLE ON THE GAS DAY FROM PRODUCERS FOR SHIPPERS TO ACT UPON (DAY 1 & 2 ASSUMED IDENTICAL - PERFECT DAY)																
Shipper	Forecast Sale Producer to Shipper	Beach Sale Shipper2 to Shipper3	Final Sale Producer to Shipper	Shipper Position at Sub-Terminal	Shipper Allocation (Shipper UDQ)	Sub-Terminal Purchase	Shipper Capacity	Shipper sale @ NBP	Shipper Daily Imbalance	Shipper Capacity Overrun	Scheduling Error Percentage	Shipper Daily Imbalance Charge £	Shipper Daily Capacity Overrun	Scheduling Charge (Inner/Outer) £	Overall Shipper Cost/Revenue £	Balancing Neutrality Pot Impact £
Shipper1	5,000,000	-250,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	-5,000,000	0	0	0%	0.00	0	0.00	0.00	0.00
Shipper2	5,000,000	250,000	5,000,000	4,750,000	4,750,000	4,750,000	4,750,000	-4,750,000	0	0	0%	0.00	0	0.00	0.00	0.00
Shipper3	5,000,000	250,000	5,000,000	250,000	250,000	250,000	250,000	-250,000	0	0	0%	0.00	0	0.00	0.00	0.00
<b>OPTION A - DAY 1 - 5:5 DD &lt; 6:6 DD</b>																
<i>Exactly 10ml therms produced as named on a 6-6 basis, but a small difference in the hour 5-6 results in 4.9ml therms produced on a 6-6 basis.</i>																
Shipper1	5,000,000	-250,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	-5,000,000	0	0	0%	0.00	0	0.00	0.00	0.00
Shipper2	5,000,000	250,000	5,000,000	4,750,000	4,750,000	4,750,000	4,750,000	-4,750,000	0	0	0%	0.00	0	0.00	0.00	0.00
Shipper3	5,000,000	250,000	5,000,000	250,000	250,000	250,000	250,000	-250,000	0	0	0%	0.00	0	0.00	0.00	0.00
<b>OPTION A - DAY 2 - 5:5 DD &gt; 6:6 DD</b>																
<i>Exactly 10ml therms produced as named on a 6-6 basis, but a small difference in the hour 5-6 results in 10.2ml therms produced on a 6-6 basis.</i>																
Shipper1	5,000,000	-250,000	5,000,000	5,000,000	4,900,000	4,900,000	5,000,000	-5,000,000	-100,000	0	2.0%	-0.49,900.00	0	0.00	-0.49,900.00	0.00
Shipper2	5,000,000	250,000	5,000,000	4,750,000	4,955,000	4,955,000	4,750,000	-4,750,000	-95,000	0	2.0%	-0.47,495.00	0	0.00	-0.47,495.00	0.00
Shipper3	5,000,000	250,000	5,000,000	250,000	245,000	245,000	250,000	-250,000	-5,000	0	2.0%	-0.2,495.00	0	0.00	-0.2,495.00	0.00
<b>OPTION A - DAY 2 - 5:5 DD &gt; 6:6 DD</b>																
<i>Exactly 10ml therms produced as named on a 6-6 basis, but a small difference in the hour 5-6 results in 10.2ml therms produced on a 6-6 basis.</i>																
Shipper1	5,000,000	-250,000	5,000,000	5,000,000	5,100,000	5,100,000	5,000,000	-5,000,000	100,000	100,000	2.0%	0.48,130.00	0	0.00	0.48,130.00	0.00
Shipper2	5,000,000	250,000	5,000,000	4,750,000	4,845,000	4,845,000	4,750,000	-4,750,000	95,000	95,000	2.0%	0.45,725.50	0	0.00	0.45,725.50	0.00
Shipper3	5,000,000	250,000	5,000,000	250,000	255,000	255,000	250,000	-250,000	-5,000	-5,000	2.0%	0.2,406.50	0	0.00	0.2,406.50	0.00
<b>Option A Dayz</b>																
Overall Balancing Neutrality Pot Impact £															0.00	
Overall Shipper Cost/Revenue £															0.00	
<b>Option A Dayz</b>																
Overall Balancing Neutrality Pot Impact £															0.00	
Overall Shipper Cost/Revenue £															0.00	
<b>New costs introduced through Option A process that shippers at 6-6 sub-terminals will incur and cannot mitigate.</b>																
<b>Resultant revenues are generated into the Balancing Neutrality Pot and unfairly distributed to all shippers, not just impacted shippers.</b>																
<b>CHANGE IN BALANCING NEUTRALITY CHARGE (2 DAY IMPACT)</b>																
Shipper1															0.00	
Shipper2															0.00	
Shipper3															0.00	

Scheduling Charges  
 Tolerance <3% = FREE  
 Inner Tolerance 3-5% = 2% SAP  
 Outer Tolerance >5% = 5% SAP  
 % Difference between 5-5 & 6-6  
 2.00%

Gas Prices	p/wh
SRMP	48.90 Short Gas
SAP	48.00 Day Average
SRPS	48.13 Long Gas
Capacity Overrun	2.00

# Appendix 4 – Cost Impacts (Proposers to confirm if needed- if so, suitable narrative to be provided)

**Example Gas Day:**

Gas Prices	p/wh
SMPB	51.00 Short Gas
SAP	50.00 Day Average
SMP5	49.00 Long Gas
Capacity Overrun	4.00

Scheduling Charges	p/wh
Tolerance <3% = FREE	0.00
Inner tolerance 3-5% = 2% SAP	1.00
Outer Tolerance >5% = 5% SAP	2.50
(Sub-Terminal Supply Change %)	2.00%

**Gas Day Process Flow**

**INFORMATION AVAILABLE ON THE GAS DAY FROM PRODUCERS FOR SHIPPERS TO ACT UPON (DAY 1 & 2 ASSUMED IDENTICAL)**

Sub-Terminal 6-6	Production Forecast	Forecast Sale Producer to Shipper	Beach Sale Shipper2 to Shipper3	Shipper Position at Sub-Terminal	Shipper Input Nominated Quantity	Sub-Terminal Shipper Capacity Purchase	Shipper sale @ NBP	Shipper Daily Imbalance	Shipper Capacity Overrun	Scheduling Error Percentage	Shipper Daily Imbalance Charge £	Capacity Overrun £	Scheduling Charge (Inner/Outer) £	Overall Balancing Neutrality Impact £
Field1	5,000,000	5,000,000	-250,000	5,000,000	5,000,000	5,000,000	-5,000,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Field2	5,000,000	5,000,000	-250,000	4,750,000	4,750,000	4,750,000	-4,750,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Shipper1	5,000,000	5,000,000	-250,000	250,000	250,000	250,000	-250,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Shipper2	5,000,000	5,000,000	-250,000	250,000	250,000	250,000	-250,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Shipper3	5,000,000	5,000,000	-250,000	250,000	250,000	250,000	-250,000	0	0	0%	£0.00	£0.00	£0.00	£0.00

**AFTER THE DAY ALLOCATED INFORMATION (DAY 1 & 2 ASSUMED IDENTICAL)**

Sub-Terminal 6-6	Sub-Terminal Allocation	Final Sale Producer to Shipper	Beach Sale Shipper2 to Shipper3	Shipper Position at Sub-Terminal	Final Allocation (Shipper UDOI)	Sub-Terminal Shipper Capacity Purchase	Shipper sale @ NBP	Shipper Daily Imbalance	Shipper Capacity Overrun	Scheduling Error Percentage	Shipper Daily Imbalance Charge £	Capacity Overrun £	Scheduling Charge (Inner/Outer) £	Overall Balancing Neutrality Impact £
Field1	10,000,000	5,000,000	-250,000	5,000,000	5,000,000	5,000,000	-5,000,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Field2	5,000,000	5,000,000	-250,000	4,750,000	4,750,000	4,750,000	-4,750,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Shipper1	5,000,000	5,000,000	-250,000	250,000	250,000	250,000	-250,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Shipper2	5,000,000	5,000,000	-250,000	250,000	250,000	250,000	-250,000	0	0	0%	£0.00	£0.00	£0.00	£0.00
Shipper3	5,000,000	5,000,000	-250,000	250,000	250,000	250,000	-250,000	0	0	0%	£0.00	£0.00	£0.00	£0.00

**OPTION A - DAY 1 - 5:5 DG < 6:6 DG**

Sub-Terminal 5-5	Sub-Terminal Allocation	Final Sale Producer to Shipper	Beach Sale Shipper2 to Shipper3	Shipper Position at Sub-Terminal	Final Allocation (Shipper UDOI)	Sub-Terminal Shipper Capacity Purchase	Shipper sale @ NBP	Shipper Daily Imbalance	Shipper Capacity Overrun	Scheduling Error Percentage	Shipper Daily Imbalance Charge £	Capacity Overrun £	Scheduling Charge (Inner/Outer) £	Overall Balancing Neutrality Impact £
Field1	9,900,000	5,000,000	-250,000	5,000,000	4,900,000	5,000,000	-5,000,000	100,000	0	2%	£51,000.00	£0.00	£0.00	£51,000.00
Field2	10,000,000	5,000,000	-250,000	4,750,000	4,655,000	4,750,000	-4,750,000	-95,000	0	2%	£48,450.00	£0.00	£0.00	£48,450.00
Shipper1	5,000,000	5,000,000	-250,000	250,000	245,000	250,000	-250,000	-5,000	0	2%	£2,550.00	£0.00	£0.00	£2,550.00
Shipper2	5,000,000	5,000,000	-250,000	250,000	245,000	250,000	-250,000	-5,000	0	2%	£2,550.00	£0.00	£0.00	£2,550.00
Shipper3	5,000,000	5,000,000	-250,000	250,000	245,000	250,000	-250,000	-5,000	0	2%	£2,550.00	£0.00	£0.00	£2,550.00

**OPTION A - DAY 2 - 5:5 DG > 6:6 DG**

Sub-Terminal 5-5	Sub-Terminal Allocation	Final Sale Producer to Shipper	Beach Sale Shipper2 to Shipper3	Shipper Position at Sub-Terminal	Final Allocation (Shipper UDOI)	Sub-Terminal Shipper Capacity Purchase	Shipper sale @ NBP	Shipper Daily Imbalance	Shipper Capacity Overrun	Scheduling Error Percentage	Shipper Daily Imbalance Charge £	Capacity Overrun £	Scheduling Charge (Inner/Outer) £	Overall Balancing Neutrality Impact £
Field1	10,200,000	5,000,000	-250,000	5,000,000	5,100,000	5,000,000	-5,000,000	100,000	100,000	2%	£49,000.00	£4,000.00	£0.00	£45,000.00
Field2	10,000,000	5,000,000	-250,000	4,750,000	4,845,000	4,750,000	-4,750,000	95,000	95,000	2%	£46,550.00	£3,800.00	£0.00	£42,750.00
Shipper1	5,000,000	5,000,000	-250,000	250,000	255,000	250,000	-250,000	5,000	5,000	2%	£2,450.00	£200.00	£0.00	£2,250.00
Shipper2	5,000,000	5,000,000	-250,000	250,000	255,000	250,000	-250,000	5,000	5,000	2%	£2,450.00	£200.00	£0.00	£2,250.00
Shipper3	5,000,000	5,000,000	-250,000	250,000	255,000	250,000	-250,000	5,000	5,000	2%	£2,450.00	£200.00	£0.00	£2,250.00

## Appendix 5 – Cost Benefit Analysis

### Measuring GMT Terminal Synthetic Imbalance costs

The proposer considered the impact of a “do-nothing” scenario on imbalance costs to shippers due to Time Shift Mismatches (Synthetic Imbalances) at GMT Terminals over the period October 2014 to July 2015. Reported quantities were analysed to generate Time Shift Mismatches<sup>10</sup> and ascribed a monetary market value based on the differentials between daily System Marginal Prices and daily System Average Prices. For example, if a shipper was shown to be “Time Shift short” then the SAP and SMBP differential was applied to the imbalance quantity.

The SAP/SMP differential was used to derive a value for the Time Shift cost to the shippers: SMP being the absolute imbalance cost and SAP a proxy for the market price. This methodology ensures that the overall costs of Time Shift Mismatches are calculated by reference to the market value of the Time Shift Quantities. The proposer considered Time Shift Mismatches on a per GMT terminal basis, as well as in aggregate. This approach allowed the Workgroup to observe that Time Shift Mismatches were far lower on an aggregated basis due to the netting of volume variations at different GMT Terminals.

This analysis, however, only looks at GMT Terminal imbalances and not shipper imbalances within each GMT Terminal that are invariably larger. This issue is explored in the next sub-section.

The GMT Terminal results can be seen in **Figure 5** below:

**Figure 5 – GMT Terminals’ imbalances**

Per Terminal	Total volumes injected (mcm)	Average Timeshift percentage	Max Option B variation	Time Shift Mismatch addressed by Mods 541/A/B	Time Shift value using DAH-mid
Bacton Parenco	1,535	0.37%	2.98%	-20,708	-20,599
Bacton Seal	3,048	0.44%	1.80%	-43,731	-52,357
Bacton Shell	3,154	0.44%	2.30%	-51,710	-64,867
Barrow	1,330	0.91%	23.12%	-33,635	-40,905
Easington Dimlington	2,126	0.40%	4.17%	-28,680	-35,939
St Fergus Mobil	5,356	0.43%	2.47%	-72,885	-79,652
St Fergus Shell	7,014	0.31%	2.00%	-74,190	-79,711
Teeside BP	1,774	0.44%	1.65%	-29,151	-27,493
Teeside PX	2,991	7.69%	2042.19%	-43,777	-51,902
Theddlethorpe	241	0.27%	2.83%	-2,400	-2,335
<b>TOTAL</b>	<b>28,567</b>	<b>1.17%</b>		<b>-400,866</b>	<b>-455,759</b>
				<b>Difference SAP-DAH</b>	<b>-54,893</b>
<b>Sub Terminals Aggregate</b>	<b>28,567</b>	<b>0.60%</b>	<b>1.15%</b>	<b>-175,764</b>	<b>-230,657</b>

The values of Time Shift Mismatches costs per terminal are shown in the column “Time Shift Mismatch” and it is these costs which are addressed by Modifications 0541A and 0541B. The total cost to entry shippers for the ten GMT terminals over the 10 months period investigated is in excess of £400,000.

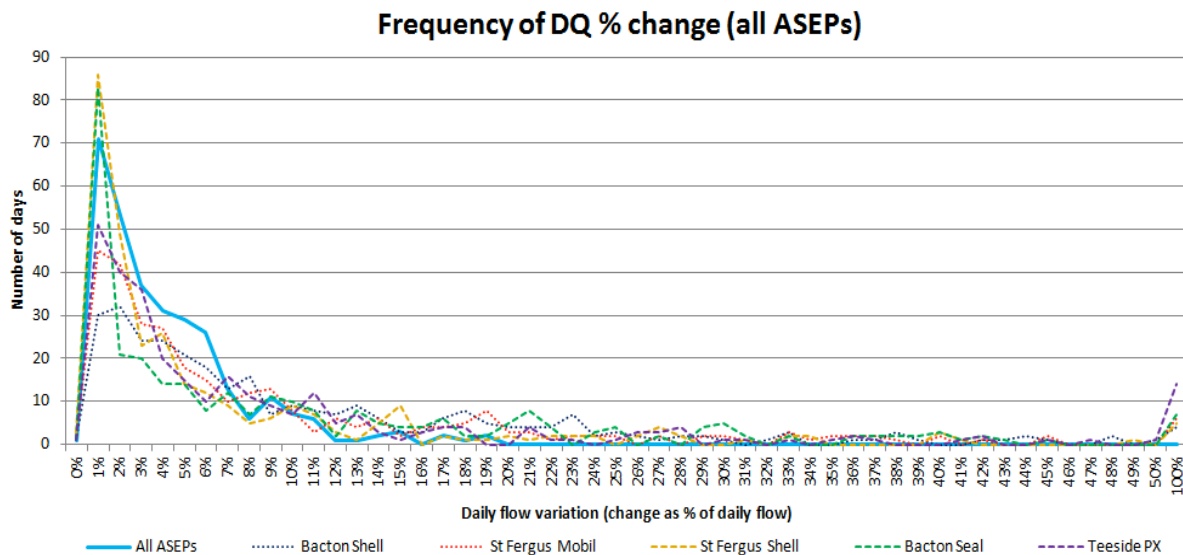
The final column “Time Shift value using DAH-mid” looks at the cost to shippers, who price their gas for the next day against Day-Ahead Heren Mid (replacing SAP as proxy for the market price on the day). The value is over £455,000 for the same ten months. The proposer contends that is a more accurate measure of shipper costs as it better reflects the strategies employed by shippers to manage their portfolios.

The second and third columns look at the change in daily volumes due to the application of the Option A algorithm, which converts a 6-6 UDQI to a 5-5 UDQI and used by National Grid Gas NTS to compare against shipper nominations. The Option A algorithm converts on (a weighted) average basis 1.17% of volumes each day, at each GMT Terminal. The third column identifies the maximum percentage of daily flows that was transferred to the next 5-5 day during that period.

<sup>10</sup> Time Shift Mismatches were calculated by removing 1/24 from a 6-6 gas day and adding it to next 5-5 day.

Finally, the last row “Sub Terminals Aggregate” measures the value of Time Shift Mismatches if all sub-terminals were considered as one, allowing for positive and negative changes in daily flows at each GMT Terminal to be netted off. Unsurprisingly, the total value of the Time Shift Mismatch for the period was significantly lower compared to the value that was calculated on a terminal by terminal basis.

**Figure 6 – Frequency of DQ % Change (all ASEPs)**



**Figure 6** displays the variation in quantities from one day to the next. The x-axis represents the percentage difference in aggregate quantities, by terminal, between D and D+1, while the y-axis represents the frequency (in days) of the excursions. The solid blue line “All ASEPs” represents all GMT Terminal flows in aggregate and it is clear from this graph that there has been no day where flows varied by more than 20% for All ASEPs. On an individual GMT Terminal basis, significant variation in flows is far more common exposing shippers to higher Time Shift costs

**Figure 7 – Daily Flow Variation by Sub Terminal**

Percentage of 6-6 gas days where variation in physical flow is 10% or more	
All entry points	5.92%
Bacton Parenco	25.33%
Bacton Seal	33.88%
Bacton Shell	35.86%
Barrow	50.00%
Easington-Dimlington	24.67%
St Fergus Mobil	27.96%
St Fergus Shell	20.39%
Teeside PX	28.95%
Teeside BP	41.45%
Theddlethorpe	20.72%

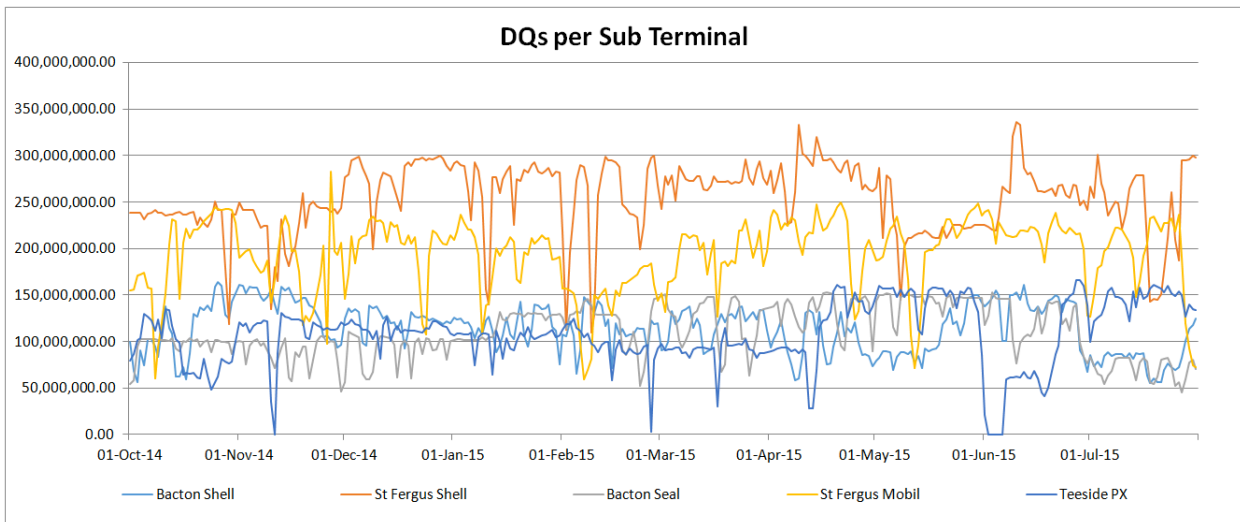
**Figure 7** shows daily flow variation per GMT Terminal and all ASEPs in terms of percentage of days where flows varied by more than 10%. The table shows very clearly the dampening effect of the aggregation of flow data, caused by the netting off of flow deviations. In particular, it is worth noting that four out of the ten GMT Terminals have experienced flow variations in excess of 10% on more that 30% of the days analysed.

**Synthetic imbalance sum is a minimum sum only**



The underlying calculation of Synthetic Imbalances or Time Shift Mismatches, used for the Cost-Benefit Analysis above was based on transferring 1/24<sup>th</sup> of the daily flow quantity from each 6-6 Gas Day to the next 5-5 Gas Day. In essence, this assumes that all flows during a Gas Day are uniform, which, in reality, is never the case. Below (**Figure 8**) we can see there is a high degree of variation in Daily Quantities at GMT Terminals, yet these quantities, are actually the sums of throughput during a day's 24 hours.

**Figure 8 – Daily DQ swing at GMT Terminals**



**Figure 9 and Figure 10** show how a Gas Day with a flat delivery profile produces a much smaller Time Shift Mismatch quantity than a Gas Day with the same DQ but subject to some within-day flow variation. In **Figure 9** for Gas Day 2 and Gas Day 3, we can see that the total absolute Time Shift Mismatch between the 6-6 Gas Days and the 5-5 Gas Days is 10.

**Figure 9 - Flat flow within Gas Day**

Terminal	6-6 Day	6-5 hour	5-6 hour	5-5 Day	Time Shift
Gas Day 1	720	690	30		
Gas Day 2	600	575	25	605	5
Gas Day 3	480	460	20	485	5

Gas Day 1	Shipper A	Gas Day 2	Shipper A	Gas Day 3	Shipper A
6:00	30	6:00	25	6:00	20
7:00	30	7:00	25	7:00	20
8:00	30	8:00	25	8:00	20
9:00	30	9:00	25	9:00	20
10:00	30	10:00	25	10:00	20
11:00	30	11:00	25	11:00	20
12:00	30	12:00	25	12:00	20
13:00	30	13:00	25	13:00	20
14:00	30	14:00	25	14:00	20
15:00	30	15:00	25	15:00	20
16:00	30	16:00	25	16:00	20
17:00	30	17:00	25	17:00	20
18:00	30	18:00	25	18:00	20
19:00	30	19:00	25	19:00	20
20:00	30	20:00	25	20:00	20
21:00	30	21:00	25	21:00	20
22:00	30	22:00	25	22:00	20
23:00	30	23:00	25	23:00	20
0:00	30	0:00	25	0:00	20
1:00	30	1:00	25	1:00	20
2:00	30	2:00	25	2:00	20
3:00	30	3:00	25	3:00	20
4:00	30	4:00	25	4:00	20
5:00	30	5:00	25	5:00	20

To understand the impact of a change in flow rates, **Figure 10** shows for all of the 6-6 Gas Days the same aggregate quantities are reported, as in **Figure 9**, however, there is a drop in supply on Gas Day 2. There is a correction on Gas Day 3 to make up the Gas Day 2 shortfall. The result of the within-day variations, is that the absolute Time Shift Mismatch is 35. The proposer contends that the circumstances described in this scenario are more realistic than one which assumes a flat delivery profile and that as a result, the £400,000 sum (~£480,000 for 12 months) calculated in the first subsection of this chapter, is likely to be significantly higher than reported since the analysis assumed a flat profile for each day.

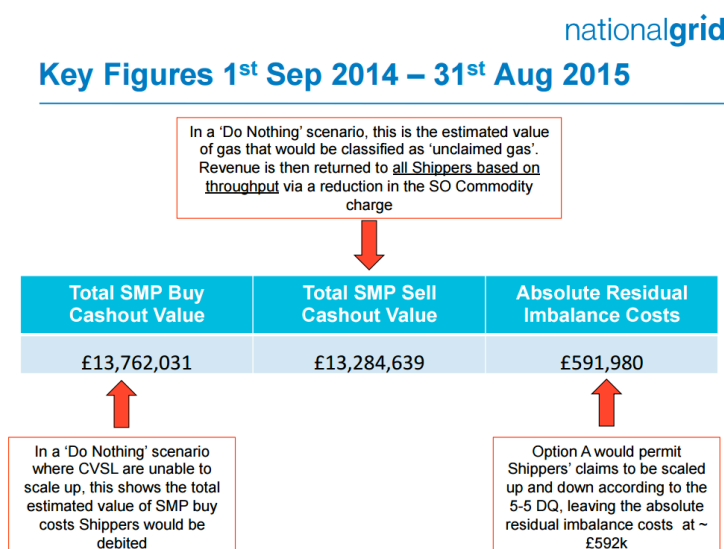
**Figure 10 - Same DQs as above but flows vary within the day**

Terminal	6-6 Day	6-5 hour	5-6 hour	5-5 Day	Time Shift
Gas Day 1	720	690	30		
Gas Day 2	600	585	15	615	15
Gas Day 3	480	445	35	460	-20

Gas Day 1	Shipper A	Gas Day 2	Shipper A	Gas Day 3	Shipper A
6:00	30	6:00	30	6:00	15
7:00	30	7:00	30	7:00	15
8:00	30	8:00	30	8:00	15
9:00	30	9:00	30	9:00	15
10:00	30	10:00	30	10:00	10
11:00	30	11:00	30	11:00	10
12:00	30	12:00	30	12:00	10
13:00	30	13:00	25	13:00	10
14:00	30	14:00	25	14:00	10
15:00	30	15:00	25	15:00	15
16:00	30	16:00	25	16:00	15
17:00	30	17:00	25	17:00	20
18:00	30	18:00	25	18:00	20
19:00	30	19:00	25	19:00	20
20:00	30	20:00	25	20:00	20
21:00	30	21:00	25	21:00	25
22:00	30	22:00	25	22:00	25
23:00	30	23:00	25	23:00	25
0:00	30	0:00	20	0:00	30
1:00	30	1:00	20	1:00	30
2:00	30	2:00	20	2:00	30
3:00	30	3:00	20	3:00	30
4:00	30	4:00	20	4:00	30
5:00	30	5:00	15	5:00	35

National Grid provided the exact Time Shift numbers at £591,980 for the 12 months period from September 2014 to August 2015, as shown in **Figure 11** below. The calculations support the Proposer's claims that the estimated £480,000 value of Time Shifts is a minimum due to the within-day variability of flows.

**Figure 11 – National Grid calculation of Time Shift value using 5-6 hour bar volumes**



## Spillover effects of algorithm on shipper DQs within GMT Terminals

Figure 12 shows how flow variations for one producer can impact the 5-5 UDQIs for all shippers receiving gas from alternative producers at the same GMT Terminal. In this example one shipper experiences a fall in supplies from its upstream counterparty.

Figure 12 - Shipper C's gas is interrupted for last 12 hours and claims are adjusted to 12000

Terminal	6-6 Day	6-5 hour	5-6 hour	5-5 Day	Time Shift
Gas Day 1	720	690	30		
Gas Day 2	600	580	20	610	10
Gas Day 3	720	690	30	710	-10

Gas Day 1	Shipper A	Shipper B	Shipper C	Gas Day 2	Shipper A	Shipper B	Shipper C	Gas Day 3	Shipper A	Shipper B	Shipper C
6:00	10	10	10	6:00	10	10	10	6:00	10	10	10
7:00	10	10	10	7:00	10	10	10	7:00	10	10	10
8:00	10	10	10	8:00	10	10	10	8:00	10	10	10
9:00	10	10	10	9:00	10	10	10	9:00	10	10	10
10:00	10	10	10	10:00	10	10	10	10:00	10	10	10
11:00	10	10	10	11:00	10	10	10	11:00	10	10	10
12:00	10	10	10	12:00	10	10	10	12:00	10	10	10
13:00	10	10	10	13:00	10	10	10	13:00	10	10	10
14:00	10	10	10	14:00	10	10	10	14:00	10	10	10
15:00	10	10	10	15:00	10	10	10	15:00	10	10	10
16:00	10	10	10	16:00	10	10	10	16:00	10	10	10
17:00	10	10	10	17:00	10	10	10	17:00	10	10	10
18:00	10	10	10	18:00	10	10	0	18:00	10	10	10
19:00	10	10	10	19:00	10	10	0	19:00	10	10	10
20:00	10	10	10	20:00	10	10	0	20:00	10	10	10
21:00	10	10	10	21:00	10	10	0	21:00	10	10	10
22:00	10	10	10	22:00	10	10	0	22:00	10	10	10
23:00	10	10	10	23:00	10	10	0	23:00	10	10	10
0:00	10	10	10	0:00	10	10	0	0:00	10	10	10
1:00	10	10	10	1:00	10	10	0	1:00	10	10	10
2:00	10	10	10	2:00	10	10	0	2:00	10	10	10
3:00	10	10	10	3:00	10	10	0	3:00	10	10	10
4:00	10	10	10	4:00	10	10	0	4:00	10	10	10
5:00	10	10	10	5:00	10	10	0	5:00	10	10	10

In the situation above and in accordance with the Option A algorithm, to calculate the GMT Terminal 5-5 aggregate Gas Day 2 quantities, the aggregate quantities delivered to the system on Gas Day 2 during the 5-6 hour bar (20) is subtracted from the aggregate 6-6 Gas Day 2 quantities and the aggregate 5-6 quantities from Gas Day 1 (30) are added. Moreover, the 20 subtracted from Gas Day 2 are subtracted from each shipper on a pro-rata basis based on their share of claims for the whole Gas Day 2. In this example, Shipper A and B both claimed 40%, and Shipper C claimed 20%. Similarly, the 5-6 quantity from the previous Day is added to the Gas Day quantities and distributed to each shipper based on their claims for Gas Day 1 (33.3% each).

As a result, Shippers A and B are affected by Shipper's C flow variation in Gas Day 2 due to the way the algorithm is applied (see Figure 13 below). They each receive allocations 2 units higher than claimed, while Shipper C receives 6 units more than claimed (2.5% more). In summary, the Time Shift Mismatches are shared across all shippers, independent of their individual flow (and claims) patterns. This results in a cross-subsidisation at GMT Terminals. The proposer believes that this further strengthens the case that imbalance charges applied on Time Shift Mismatches (Synthetic Imbalances) do not function as an incentive as required by the EU Balancing Network Code.

Figure 13 - Time Shift Mismatches are shared by all Shippers within the Terminal

	Shipper A	Shipper B	Shipper C	SUM	Shipper A	Shipper B	Shipper C	SUM	Shipper A	Shipper B	Shipper C	SUM
Claims	240	240	240	720	240	240	120	600	240	240	240	720
Share of total 6-6 allocations	33.3%	33.3%	33.3%	100.0%	40.0%	40.0%	20.0%	100.0%	33.3%	33.3%	33.3%	100.0%
Previous day 5-6 allocation				0	10	10	10	30	8	8	4	20
Current day 6-5 allocation				0	230	230	120	580				0
Current day 5-6 allocation	-10	-10	-10	-30	-8	-8	-4	-20	-10	-10	-10	-30
Total 5-5 allocation				0	242	242	126	610	238	238	234	710
Time Shift				0	2	2	6	10	-2	-2	-6	-10

## Additional capacity exposure

Given the added variation in DQs, Shippers are potentially exposed to overrun charges if they have not booked sufficient entry capacity. As a result, Shippers will need to procure additional capacity as an insurance against the risk of incurring overrun charges.

If the average Time Shifted volume in the ten months considered above is 1.17% of daily flows, then Shippers would have to book a sufficient amount of additional capacity to cover for the risk of the penalty of overrun charges. In this sense, the total amount of additional capacity booked is positively related to the penalty (priced at eight times the MSEC price) and negatively related to the cost of capacity; thus, the higher the penalty, the more capacity shippers will have to book to cover the risk. This cost is in addition to the additional capacity Shippers must already book to cover against real physical variations in flows.

Although this cost is currently low because there is “surplus” capacity allowing for the purchase of zero-priced within-day capacity, this cost is likely to increase once the EU Tariff Network Code is in place in 2017/18/19. In parallel with the development of the Tariff Code, Ofgem has made it clear in its Gas Transmission Charging Review that it would like to end the 100% discount for WDDSEC capacity. In December 2015, the European Commission, which guides the Comitology discussions on the Tariff Code, announced its preference for short-term multipliers between 1.5 and 3, thus potentially increasing the overrun charge. As mentioned above in the section addressing comparisons between Time Shift Mismatches and end-user Shipper imbalances, this is a cost that cannot be passed down to the NBP customers. This would grossly increase the costs of adjusting a Shipper’s bookings closer to the delivery period, and put GMT Shippers at an even greater disadvantage to other sources of gas into the UK.

It is worth mentioning that firm capacity at Bacton UKCS ASEP has been fully booked, meaning shippers rely on the release of non-obligated capacity by NTS.

In order to estimate annualised volumes, the total quantities reported at each GMT Terminal over the period should be multiplied by 1.2. If the product is multiplied by 1.18% (the weighted average Time Shift quantity) and then multiplied by the entry point capacity prices, the total additional annual cost to shippers of having to acquire capacity to cover the additional Time Shift quantities would be £648,926. It should be noted that this cost estimate conservative, since it is based on the average Time Shift variation and there is a costly penalty for not booking more. Moreover, most shippers do not know if the flow will increase or decrease the next day leading to a positive or negative Time Shift Mismatch, and will book more capacity than is necessary because of this risk.

By multiplying the same volumes by the overrun price (at eight times the relevant point MSEC price) and then dividing the subsequent product by two (assuming a positive Time Shift Mismatch 50% of the days); the do nothing<sup>11</sup> cost in terms of capacity overruns is estimated to be £4,672,268 per year (see **Figure 14** below).

Logically, shippers should take a risk-averse approach and book as much capacity as necessary to prevent them losing any money on overruns. In this sense, the £4,672,268 figure reflects £584,000 of MSEC capacity (which is 1/8<sup>th</sup> of overrun figure) that should have been booked to avoid the Time Shift related overrun charges; but shippers do not know on which days the Time Shift Mismatches are positive or negative and thus need to book double that figure (assuming 50% of Time Shifts Mismatches are positive). Even the figure of £1,168,000 of additional MSEC capacity (to be divided equally over 365 days) is conservative since Time Shift Mismatches can still peak above the additional capacity booked, albeit it is a good estimate. In theory, shippers could book up to £4.5 million additional capacity per year and still be saving money – although this is very likely unnecessary.

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<sup>11</sup> Where do nothing is not implementing this modification and shippers not booking additional capacity

**Figure 14 - Pricing capacity overruns**

Average time shift mismc 1.18%

Terminal	Bacton Perenco	Bacton Seal	Bacton Shell	Barrow	Easington Dimlington	St Fergus Mobil	St Fergus Shell	Teeside BP	Teeside PX	Theddlethorpe	TOTALS
15/16 prices											
Volumes (10 months)	16,880,375.095	33,528,032.782	34,694,042.077	14,625,710.662	23,380,544.188	58,913,662.334	77,154,312.614	19,511,595.588	32,900,630.064	2,651,985.160	314,240,890.564
MSEC price (p/kWh/day)	0.0104	0.0104	0.0104	0.0023	0.0133	0.0473	0.0473	0.0105	0.0105	0.0133	
DSEC price (p/kWh/day)	0.0069	0.0069	0.0069	0.0015	0.0089	0.0315	0.0315	0.0070	0.0070	0.0089	
Total Cost MSEC	£20,710.02	£41,134.53	£42,565.07	£3,968.35	£36,683.55	£328,732.23	£430,513.19	£24,168.36	£40,752.91	£4,160.91	£973,389.12
Annual Cost MSEC (x1.2)	£24,852.03	£49,361.43	£51,078.08	£4,762.02	£44,020.26	£394,478.67	£516,615.83	£29,002.03	£48,903.49	£4,993.09	£1,168,066.94
Overrun (x8 /2)	£99,408.10	£197,445.74	£204,312.34	£19,048.08	£176,081.05	£1,577,914.68	£2,066,463.33	£116,008.13	£195,613.97	£19,972.35	£4,672,267.77
Annual Cost DSEC (x1.2)	£13,806.68	£27,423.02	£28,376.71	£2,645.57	£24,455.70	£219,154.82	£287,008.80	£16,112.24	£27,168.61	£2,773.94	£648,926.08

**Scheduling Charges**

The effects of the algorithm will also impact scheduling charges at each Sub-Terminal, which is based on the difference between allocations and nominations at each Sub-Terminal.

**Figure 15 – Scheduling charges per Sub-Terminal**

**SCHEDULING CHARGES (Oct14 to Jul15)**

Per Terminal	Days charged	Value of 3-5%	Value of over 5%	Total Scheduling charge	Total Scheduling charge 12 months
Bacton Perenco	2	£362.76	£224.33	£587.08	£704.50
Bacton Seal	1	£19.31	£0.00	£19.31	£23.17
Bacton Shell	2	£39.60	£0.00	£39.60	£47.51
Barrow	25	£1,557.97	£2,902.05	£4,460.02	£5,352.03
Easington Dimlington	6	£670.97	£2,704.97	£3,375.94	£4,051.13
St Fergus Mobil	3	£1,128.03	£855.02	£1,983.05	£2,379.66
St Fergus Shell	2	£1,152.90	£1,002.75	£2,155.65	£2,586.78
Teeside BP	0	£0.00	£0.00	£0.00	£0.00
Teeside PX	9	£1,665.63	£9,309.59	£10,975.22	£13,170.26
Theddlethorpe	0	£0.00	£0.00	£0.00	£0.00
<b>TOTAL</b>	<b>50</b>	<b>£6,597.16</b>	<b>£16,998.71</b>	<b>£23,595.87</b>	<b>£28,315.04</b>
<b>Sub Terminals Aggregate</b>	<b>2</b>	<b>£992.73</b>	<b>£0.00</b>	<b>£992.73</b>	<b>£1,191.28</b>

Figure 15 above shows scheduling charges for the same ten months caused by the Option A Gas Day algorithm per Sub Terminal. The table above should be used for illustrative purposes as scheduling charges are on a per Terminal basis, meaning flows at the three Bacton Sub-Terminals may net each other off. It would seem that the total costs are small; however a few points need to be taken into consideration:

- 1) These charges are for variation on top of the day-to-day variation and should therefore be considered as a supplement to ongoing variation. In this sense, a 2% difference between nominations and allocations before the algorithm is applied could result in a value that crosses the thresholds of 3 and 5%.
- 2) As mentioned above, the Time Shift volumes being considered here are a minimum because they assume a flat flow at each Sub-Terminal, when in reality this is never the case. The within-day variation would increase the volumes and variation subjected to scheduling charges.
- 3) The numbers used are aggregated volumes per Sub-Terminal, thus hiding the netting effects of shipper nominations within each Sub-Terminal. By analogy, we can see that scheduling costs by aggregated flow data from all Sub Terminals (bottom row) results in significantly lower costs.

## Appendix 6 – Explanation of System Average Prices

System Average Price (SAP) is the sum of all Balancing Transaction Charges divided by the sum of the Market Transaction Quantities and Non- Trading System Transaction Quantities for all Balancing Transactions respectively effected in respect of that Day.

Each User is incentivised to maintain a balance each day between the quantities it inputs to the system for that day and the quantities it offtakes from the system for that day. The incentive works by levying imbalance charges for the difference on the following basis:

- for Users with supply in excess of demand, at a unit cost below the system average price (**System Marginal Sell Price**); and
- for Users with demand in excess of supply, at a unit cost premium above the system average price (**System Marginal Buy Price**).

The System Marginal Sell Price is set on the basis of the lower of:

- SAP minus the Default Cashout Differential; and
- the lowest priced 'sell'\* trade by National Grid as residual system balancer

The System Marginal Buy Price is set on the basis of the higher of:

- SAP plus the Default Cashout Differential; and
- the highest priced 'buy'\* trade by National Grid as residual system balancer

### Imbalance Cashout

- Imbalance charges (Cashout) – incentive on shippers to balance. It is based on physical allocations derived from metered flows and traded volumes.

