

0541B:

Ex-post removal of uncontrollable UNC charges at ASEP's which include sub-terminals operating on a 06.00 to 06.00 Gas Day.

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

Removal of uncontrollable UNC charges incurred by shippers allocated 0500 to 0500 Gas Day User Daily Input Quantities at ASEP's which include sub-terminals operating on a 0600 to 0600 Gas Day. This is achieved through ex-post ~~adjustments credits to a second category of capacity, and balancing, scheduling and INS charges neutrality adjustment accounts.~~



The Proposer recommends that this modification should be:

- assessed by a Workgroup














High Impact: Shippers



Medium Impact: None



Low Impact: None

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About this document:		 01926 655031
This modification was presented by the proposer to the panel on 16 July 2015 as Modification 0543. Following the Panel's consideration Modification 0543 was withdrawn and renumbered to Modification 0541B.		Systems Provider: Xoserve
The Proposer recommends the following timetable:		 commercial.enquiries@xoserve.com
Initial consideration by Workgroup	06 August 2015	 telephone
Workgroup Report presented to Panel	07 August 2015	Additional contacts: Nick Wye
Draft Modification Report issued for consultation	20 August 2015	 nick@waterswe.co.uk
Consultation Close-out for representations	11 September 2015	 01789 266811
Final Modification Report presented to Panel	15 September 2015	
UNC Modification Panel recommendation	17 September 2015	

1 Summary

Is this a Self-Governance Modification?

The proposer does not consider that Self-Governance procedures apply to this modification, as it may have a material effect on competition in the shipping of gas, since the modification attempts to ensure that UNC charges are not unfairly applied to certain Users.

Is this a Fast Track Self-Governance Modification?

No, Fast-Track procedures do not apply because this is not a housekeeping modification.

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 0500 hours to 0500 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 0600 hours to 0600 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 a 0500 hours to 0500 hours gas Day.

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 0600 hours to 0600 hours basis and will accordingly have to schedule and nominate to National Grid NTS and make “Claims” to the Claims Validation Agent based on 0600 hours to 0600 hours numbers.

National Grid NTS will give the Claims Validation Agent a 0500 hours to 0500 hours metered Entry Point Daily Quantity Delivered for each System Entry Point at a GMT Terminal and the Claims Validation Agent will need to allocate that quantity between Users based on 0600 hours to 0600 hours Claim numbers. There will therefore likely be on all Days mismatches arising from the differences between the 0500 hours to 0600 hours aggregate quantity on one Day and the 0500 hours to 0600 hours quantity on the next Day (“Time Shift Mismatches”).

Without this Modification Users at GMT Terminals would 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 would 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”).

Time Shift Charges would be unearned and not capable of mitigation by Users and would not arise from the physical needs of the NTS nor the Users failure to balance. Monies raised from Time Shift Charges would be returned to all Users via the neutrality charge systems. Time Shift Charges would 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.

Solution

Reimbursing Users at GMT Terminals for Time Shift Charges ~~via adjustments to by creating a second category of cCapacity, and bBalancing scheduling and INS 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

The modification better facilitates the achievement of Relevant Objectives d (i) and g.

The proposal ensures that those UNC charges which are levied on Users as a result of mismatches arising from the differences between the 0500 hours to 0600 hours aggregate quantity on one Day and the 0500 hours to 0600 hours quantity on the next Day are reversed through secondary adjustments to capacity and balancing neutrality charges. 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 the Time Shift Mismatches means that affected Users face unwarranted costs which would be redistributed to all Users via neutrality charges, for example. In combination, these outcomes create inefficiencies in terms of cost allocation and undermine competition.

The proposal better facilitates compliance with Regulation (EC) No 715/2009 following the required change to the gas Day. In short, the proposal ensures that charges are such that they (i) financially incentivise network users to balance their balancing portfolios via cost reflective imbalance charges; (ii) reflect genuine system needs; (iii) are non discriminatory; and (iv) avoid cross subsidisation.

Implementation

No implementation timescales are proposed, however it is anticipated that this modification should be implemented on the 01 October 2015, the date on which the Gas Day will change to 0500 hours to 0500 hours, or at the earliest possible date thereafter.

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

This modification is likely to impact Systems Changes for EU Reform due to the need to acquire “GMT UDQI” data and the subsequent adjustments to Capacity and Balancing Neutrality charges.

2 Why Change?

The Issue

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 0500 hours to 0500 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 0600 hours to 0600 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 a 0500 hours to 0500 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 0500 hours to 0500 hours gas Day and the GMT Terminals running on a 0600 hours to 0600 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 0600 hours to 0600 hours basis and will accordingly have to schedule and nominate to National Grid NTS and make "Claims" to the Claims Validation Agent based on 0600 hours to 0600 hours numbers.

National Grid NTS will give the Claims Validation Agent a 0500 hours to 0500 hours metered Entry Point Daily Quantity Delivered for each System Entry Point at a GMT Terminal and the Claims Validation Agent will need to allocate that quantity between Users based on 0600 hours to 0600 hours Claim numbers. There will therefore likely be on all Days mismatches arising from the differences between the 0500 hours to 0600 hours aggregate quantity on one Day and the 0500 hours to 0600 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 NTS 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 0500 hour to 0500 hours basis and on 0600 hours to 0600 hours basis if required.

Even following such intervention, without this Modification 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 0500 hours to 0600 hours aggregate quantity on one Day and the 0500 hours to 0600 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.

3 Solution

Reimbursing Users at GMT Terminals for Time Shift Charges ~~via adjustments to by creating a second category of cCapacity, and bBalancing, scheduling and INS-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 (0500 hours to 0500 hours basis) and with a "GMT UDQI" calculated from the User's Claim on an 0600 hours to 0600 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.

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. 0600 hours to 0600 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" on an ex-post basis (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 Revise Section 2.13 to include:~~

- ~~only be in respect of Time Shift Entry Overrun Charges less any applicable National Grid NTS costs ("Relevant Time Shift Capacity Revenues) the calculation of Time Shift Entry Overrun Quantities for each User at each GMT System Entry Point~~
- ~~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.~~ application of the Time Shift Entry Overrun Quantities in the calculation of adjustments to Capacity Neutrality Charges at the earliest possible date after the month in which the Overrun occurred.

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:~~ Revise Sections 4.7 to include

- the calculation of Time Shift Quantities for each User across all GMT System Entry Points
- application of the Time Shift Quantities in the calculation of adjustments to Balancing Neutrality Charges to incorporate credits for Time Shift Balancing, Time Shift Scheduling and Time Shift INS charges at the earliest possible date after the month in which the Overrun occurred.
- 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 ~~Overrun charges~~ 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.~~

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

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

The proposal ensures that those UNC charges which are levied on Users as a result of mismatches arising from the differences between the 0500 hours to 0600 hours aggregate quantity on one Day and the 0500 hours to 0600 hours quantity on the next Day are dis-applied, on a ex-post basis. 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 Users via neutrality charges, for example. In combination, these outcomes create inefficiencies in terms of cost allocation and undermine competition.

The Regulation stipulates a number of basic principles which should be adhered to in relation to the implementation of a daily balancing regime. These principles include:

- **Non-discriminatory** rules for access conditions to natural gas transmission systems.
- Balancing Rules to reflect **genuine system needs** taking into account the resources available to the transmission system operator.
- Imbalance charges shall be **cost-reflective** whilst providing **appropriate financial incentives on network users to balance their input and off-take of gas**.
- Imbalance charges to **avoid cross-subsidisation** between network users and shall not hamper the entry of new market entrants.
- **Shippers to have primary responsibility to balance their balancing portfolios** in order to minimise the need for transmission system operators to undertake balancing actions.

The levying of UNC charges on “Time Shift Mismatches” would be inconsistent with these principles and therefore would not be compliant with the Regulation. This proposal will ensure that the balancing rules in the UNC and more specifically those charges which are applied to Users at GMT Terminals are compliant with the Regulation.

5 Implementation

There are likely to be limited costs associated with the central systems fix to implement the modification. The costs will arise from the need to obtain the “GMT UDQI” data and the subsequent adjustments to Capacity and Balancing Neutrality charges.

No implementation timescales are proposed, however the UNC Gas Day will change to 0500 hours to 0500 hours on 01 October 2015, implementation of this modification should be on this date, or as soon as possible thereafter. If implementation is post 01 October then a reconciliation of the relevant charges will be applied as set out in the business rules in section 3 above.

6 Impacts

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

This proposal is likely to impact Systems Changes for EU Reform due to the need to acquire “GMT UDQI” data and the subsequent adjustments to Capacity and Balancing Neutrality charges.

Pre EU Systems Change Implementation

Ideally, the modification will be implemented prior to the Systems Change, however, if this is not feasible as soon as possible thereafter. If implementation occurs after this time then reconciliation arrangements will be introduced to account for the relevant UNC charges incurred from 01 October 2015.

The benefits of making the change relate to the inefficiencies and detrimental impacts on competition of the Time Shift Mismatches which will occur at GMT Terminals.

7 Legal Text

Transporters are requested to provide legal text

8 Recommendation

The Proposer invites the Panel to:

- Determine that this modification should not be subject to self-governance;
- Progress to Workgroup assessment; and

—To consider requesting Legal text so that the workgroup can complete its assessment to meet the challenging timescales

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 Mismatches¹ 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 which are invariably larger. This issue is explored in the next sub-section.

The GMT Terminal results can be seen below:

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 Parengo	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
TOTAL	28,567	1.17%		-400,866	-455,759
				Difference SAP-DAH	-54,893
Sub Terminals Aggregate	28,567	0.60%	1.15%	-175,764	-230,657

Figure 1

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 Mods 541/A/B. The total cost to entry shippers for the ten GMT terminals over the 10 month 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 figure 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.

¹ 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.

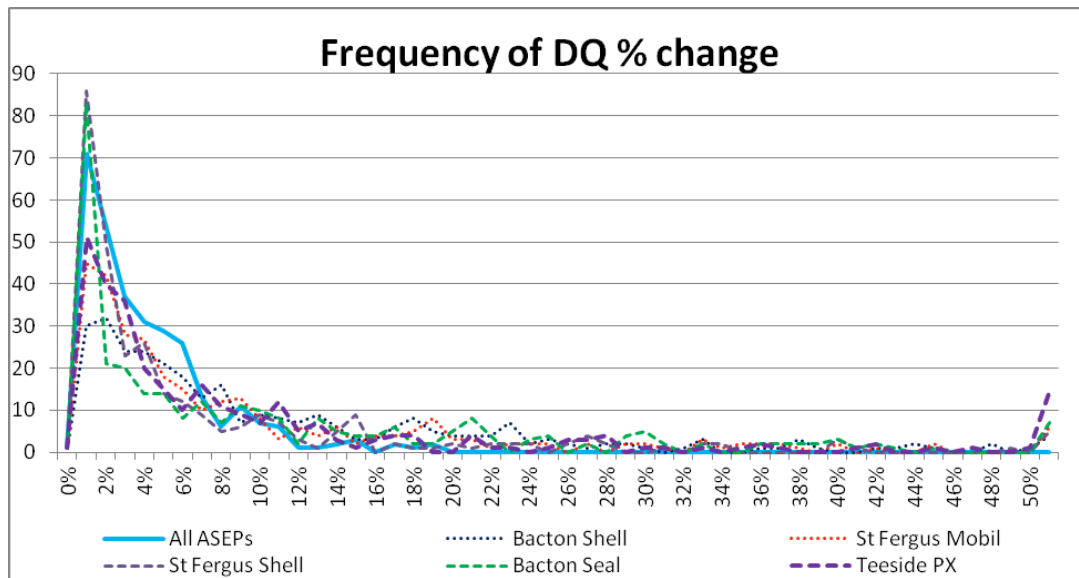


Figure 2

Figure 2 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

Gas days where variation in flow is 10% or less	
All ASEPs	94.08%
Bacton Parenco	74.67%
Bacton Seal	66.12%
Bacton Shell	64.14%
Barrow	50.00%
Easington-Dimlington	75.33%
St Fergus Mobil	72.04%
St Fergus Shell	79.61%
Teeside PX	71.05%
Teeside BP	58.55%
Theddlethorpe	79.28%

Figure 3

Figure 3 shows daily flow variation per GMT Terminal and All ASEPs in terms of percentage of days where flows varied by less 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 than 30% of the days analysed. **Synthetic imbalance sum is a minimum sum**

The underlying calculation of Synthetic Imbalances or Time Shift Mismatches, used for the Cost-Benefit Analysis above was based on transferring 1/24th 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 4) 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.

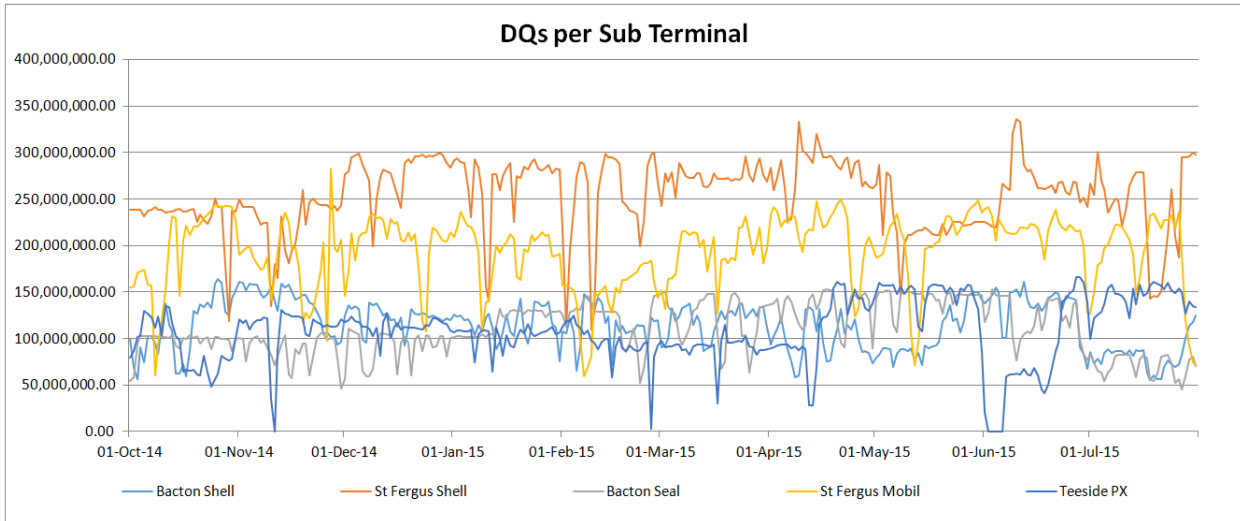


Figure 4 – Daily DQ swing at GMT Terminals

Figure 5 and Figure 6 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 5 for Gas Day 2 and Gas Day 3, we can see that the total Time Shift Mismatch between the 6-6 Gas Days and the 5-5 Gas Days is 3000.

Terminal	6-6 Day	6-5 hour	5-6 hour	5-5 Day	Difference
Gas Day 1	216000	207000	9000		
Gas Day 2	180000	172500	7500	181500	1500
Gas Day 3	144000	138000	6000	145500	1500

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	3000	3000	3000	6:00	2500	2500	2500	6:00	2000	2000	2000
7:00	3000	3000	3000	7:00	2500	2500	2500	7:00	2000	2000	2000
8:00	3000	3000	3000	8:00	2500	2500	2500	8:00	2000	2000	2000
9:00	3000	3000	3000	9:00	2500	2500	2500	9:00	2000	2000	2000
10:00	3000	3000	3000	10:00	2500	2500	2500	10:00	2000	2000	2000
11:00	3000	3000	3000	11:00	2500	2500	2500	11:00	2000	2000	2000
12:00	3000	3000	3000	12:00	2500	2500	2500	12:00	2000	2000	2000
13:00	3000	3000	3000	13:00	2500	2500	2500	13:00	2000	2000	2000
14:00	3000	3000	3000	14:00	2500	2500	2500	14:00	2000	2000	2000
15:00	3000	3000	3000	15:00	2500	2500	2500	15:00	2000	2000	2000
16:00	3000	3000	3000	16:00	2500	2500	2500	16:00	2000	2000	2000
17:00	3000	3000	3000	17:00	2500	2500	2500	17:00	2000	2000	2000
18:00	3000	3000	3000	18:00	2500	2500	2500	18:00	2000	2000	2000
19:00	3000	3000	3000	19:00	2500	2500	2500	19:00	2000	2000	2000
20:00	3000	3000	3000	20:00	2500	2500	2500	20:00	2000	2000	2000
21:00	3000	3000	3000	21:00	2500	2500	2500	21:00	2000	2000	2000
22:00	3000	3000	3000	22:00	2500	2500	2500	22:00	2000	2000	2000
23:00	3000	3000	3000	23:00	2500	2500	2500	23:00	2000	2000	2000
0:00	3000	3000	3000	0:00	2500	2500	2500	0:00	2000	2000	2000
1:00	3000	3000	3000	1:00	2500	2500	2500	1:00	2000	2000	2000
2:00	3000	3000	3000	2:00	2500	2500	2500	2:00	2000	2000	2000
3:00	3000	3000	3000	3:00	2500	2500	2500	3:00	2000	2000	2000
4:00	3000	3000	3000	4:00	2500	2500	2500	4:00	2000	2000	2000
5:00	3000	3000	3000	5:00	2500	2500	2500	5:00	2000	2000	2000

Figure 5 - Flat flow within Gas Day

To understand the impact of a change in flow rates, figure 6 shows for all of the 6-6 Gas Days the same aggregate quantities are reported, as in Figure 5, 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 10500. 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 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.

Terminal	6-6 Day	6-5 hour	5-6 hour	5-5 Day	Difference
Gas Day 1	216000	207000	9000		
Gas Day 2	180000	175500	4500	184500	4500
Gas Day 3	144000	133500	10500	138000	-6000

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	3000	3000	3000	6:00	3000	3000	3000	6:00	1500	1500	1500
7:00	3000	3000	3000	7:00	3000	3000	3000	7:00	1500	1500	1500
8:00	3000	3000	3000	8:00	3000	3000	3000	8:00	1500	1500	1500
9:00	3000	3000	3000	9:00	3000	3000	3000	9:00	1500	1500	1500
10:00	3000	3000	3000	10:00	3000	3000	3000	10:00	1000	1000	1000
11:00	3000	3000	3000	11:00	3000	3000	3000	11:00	1000	1000	1000
12:00	3000	3000	3000	12:00	3000	3000	3000	12:00	1000	1000	1000
13:00	3000	3000	3000	13:00	2500	2500	2500	13:00	1000	1000	1000
14:00	3000	3000	3000	14:00	2500	2500	2500	14:00	1000	1000	1000
15:00	3000	3000	3000	15:00	2500	2500	2500	15:00	1500	1500	1500
16:00	3000	3000	3000	16:00	2500	2500	2500	16:00	1500	1500	1500
17:00	3000	3000	3000	17:00	2500	2500	2500	17:00	2000	2000	2000
18:00	3000	3000	3000	18:00	2500	2500	2500	18:00	2000	2000	2000
19:00	3000	3000	3000	19:00	2500	2500	2500	19:00	2000	2000	2000
20:00	3000	3000	3000	20:00	2500	2500	2500	20:00	2000	2000	2000
21:00	3000	3000	3000	21:00	2500	2500	2500	21:00	2500	2500	2500
22:00	3000	3000	3000	22:00	2500	2500	2500	22:00	2500	2500	2500
23:00	3000	3000	3000	23:00	2500	2500	2500	23:00	2500	2500	2500
0:00	3000	3000	3000	0:00	2000	2000	2000	0:00	3000	3000	3000
1:00	3000	3000	3000	1:00	2000	2000	2000	1:00	3000	3000	3000
2:00	3000	3000	3000	2:00	2000	2000	2000	2:00	3000	3000	3000
3:00	3000	3000	3000	3:00	2000	2000	2000	3:00	3000	3000	3000
4:00	3000	3000	3000	4:00	2000	2000	2000	4:00	3000	3000	3000
5:00	3000	3000	3000	5:00	1500	1500	1500	5:00	3500	3500	3500

Figure 6 - Same DQs but flows vary within the day

Spillover effects of algorithm on shipper DQs within GMT Terminals

Figure 7 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.

Terminal	6-6 Day	6-5 hour	5-6 hour	5-5 Day	Difference
Gas Day 1	216000	207000	9000		
Gas Day 2	180000	174000	6000	183000	3000
Gas Day 3	216000	207000	9000	213000	-3000

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	3000	3000	3000	6:00	3000	3000	3000	6:00	3000	3000	3000
7:00	3000	3000	3000	7:00	3000	3000	3000	7:00	3000	3000	3000
8:00	3000	3000	3000	8:00	3000	3000	3000	8:00	3000	3000	3000
9:00	3000	3000	3000	9:00	3000	3000	3000	9:00	3000	3000	3000
10:00	3000	3000	3000	10:00	3000	3000	3000	10:00	3000	3000	3000
11:00	3000	3000	3000	11:00	3000	3000	3000	11:00	3000	3000	3000
12:00	3000	3000	3000	12:00	3000	3000	3000	12:00	3000	3000	3000
13:00	3000	3000	3000	13:00	3000	3000	3000	13:00	3000	3000	3000
14:00	3000	3000	3000	14:00	3000	3000	3000	14:00	3000	3000	3000
15:00	3000	3000	3000	15:00	3000	3000	3000	15:00	3000	3000	3000
16:00	3000	3000	3000	16:00	3000	3000	3000	16:00	3000	3000	3000
17:00	3000	3000	3000	17:00	3000	3000	3000	17:00	3000	3000	3000
18:00	3000	3000	3000	18:00	3000	3000	0	18:00	3000	3000	3000
19:00	3000	3000	3000	19:00	3000	3000	0	19:00	3000	3000	3000
20:00	3000	3000	3000	20:00	3000	3000	0	20:00	3000	3000	3000
21:00	3000	3000	3000	21:00	3000	3000	0	21:00	3000	3000	3000
22:00	3000	3000	3000	22:00	3000	3000	0	22:00	3000	3000	3000
23:00	3000	3000	3000	23:00	3000	3000	0	23:00	3000	3000	3000
0:00	3000	3000	3000	0:00	3000	3000	0	0:00	3000	3000	3000
1:00	3000	3000	3000	1:00	3000	3000	0	1:00	3000	3000	3000
2:00	3000	3000	3000	2:00	3000	3000	0	2:00	3000	3000	3000
3:00	3000	3000	3000	3:00	3000	3000	0	3:00	3000	3000	3000
4:00	3000	3000	3000	4:00	3000	3000	0	4:00	3000	3000	3000
5:00	3000	3000	3000	5:00	3000	3000	0	5:00	3000	3000	3000

Figure 7 - Shipper C's gas is interrupted for last 12 hours and claims are adjusted to 12000

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 (2000) is subtracted from the aggregate 6-6 Gas Day 2 quantities and the aggregate 5-6 quantities from Gas Day 1 (3000) are added. Moreover, the 2000 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 due to the way the algorithm is applied (see Figure 8 below). They each receive allocations 200 units higher than claimed, while Shipper C receives 600 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.

	Shipper A	Shipper B	Shipper C	SUM	Shipper A	Shipper B	Shipper C	SUM	Shipper A	Shipper B	Shipper C	SUM
Claims	72000	72000	72000	216000	72000	72000	36000	180000	72000	72000	72000	216000
Share of total 6-6 allocations	33.3%	33.3%	33.3%	1	40.0%	40.0%	20.0%	1	33.3%	33.3%	33.3%	1
Previous day 5-6 allocation				0	3000	3000	3000	9000	2400	2400	1200	6000
Current day 6-5 allocation				0	69000	69000	36000	174000				0
Current day 5-6 allocation	3000	3000	3000	9000	2400	2400	1200	6000	3000	3000	3000	9000
Total 5-5 allocation				0	72600	72600	37800	183000	71400	71400	70200	213000
6-6 to 5-5 day difference				0	600	600	1,800	3,000	-600	-600	-1,800	-3,000

Figure 8 - Time Shift Mismatches are shared by all Shippers within the Terminal

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 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 nothing² cost in terms of capacity overruns is estimated to be £4,672,268 per year.

Terminal	Bacton	Bacton	Bacton		Easington	St Fergus	St Fergus					
15/16 prices	Perenco	Seal	Shell	Barrow	Dimlington	Mobil	Shell	Teeside BP	Teeside PX	Theddlethorpe	TOTALS	
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	

Figure 9 - Pricing capacity overruns

² Where do nothing is not implementing this modification and shippers not booking additional capacity