UNC Request Workgroup Report	At what stage is this document in the process?
# UNC 0661R: ## Reconciliation and Imbalance Cash Out Prices	01 Request 02 Workgroup Report 03 Final Modification Report

Purpose of Request:

This Request aims to seek a method of incentivising Shippers to purchase the "correct amount" of gas for NDM sites, in advance of the gas day and support de-risking Shipper imbalance costs relative to reconciliation costs.

	The Workgroup recommends that Panel: • Consider the report recommendations • Close the Workgroup
	High Impact: Shippers
	Medium Impact: CDSP (impact subject to confirmation)
	Low Impact:

Contents

About this document:

This report will be presented to the panel on 16 May 2019.

The panel will consider whether the Request should proceed in line with the recommendations in the report or returned to the workgroup for further assessment.

Any questions?

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1 Request Summary

Why is the Request being made?

The CDSP estimates Shippers' daily offtakes using the NDM Deemed Allocation. National Grid submits NDM nominations on behalf of shippers as per UNC TPD C1.5.1[1]. These nomination quantities are determined by utilising NDM Supply Meter Point Demand as per UNC TPD H2[2]. The CDSP calculates the difference[3] between this nomination and the NDM Deemed Allocation and the Shipper is then subject to an Imbalance Payment[4].

Imbalance payments pay out the difference[5] between the Shipper's Position[6] and the NDM Deemed Allocation at SMSP/SMBP.

Shippers can then submit actual NDM meter reads into UK Link. The difference between the actual meter reads and the NDM Deemed allocation is then calculated and a reconciliation payment is paid by, or paid to the Shipper. These payments are made at SAP.

The fact that different system prices are used for these calculations creates a financial disincentive for Shipper's to submit accurate forecasts. Purchasing over or under your NDM Deemed allocation creates artificial winners and losers, due to the usage of different system prices in Imbalance and Reconciliation processes.

Scope

The NDM Imbalance and Reconciliation processes are within the scope of this request, specifically the system prices used to make the respective payments.

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[1] UNC TPD C1.1.1 'Nominations' is available here: http://www.gasgovernance.co.uk/TPD

[2] UNC TPD H2 'Determination of supply meter point demand' is available here: http://www.gasgovernance.co.uk/TPD

[3] CDSP calculates Shippers' daily energy imbalance based on allocated inputs and allocated outputs (NDM allocation is within total outputs)

[4] Imbalance charges (termed 'Clearing Charges' as per UNC TPD F2.3.1) are based on the overall difference between inputs (UDQI) an outputs (UDQO), including trades, for an individual User (UNC TPD E5.1.1), not for the difference between the nomination and allocation position for a particular component (e.g. NDM) of a User's portfolio. Clearing Charges are set at the System Marginal Prices to maintain the commercial incentive (as opposed to an absolute obligation) for shippers to balance their inputs and outputs.

[5] Daily energy imbalance charge is calculated on total input/output allocations.

[6] Shipper's Position means the sum of the Shipper's UDQIs and aggregate Trade Nomination Quantities under any Acquiring Trade Nominations less the Shipper's UDQO and aggregate Trade Nomination Quantities under Disposing Trade Nominations, as per UNC TPD E5.1.

Daily Metered sites are not within the scope of this request.

Impacts & Costs

Shippers stand to be most impacted, particularly those with a majority of NDM sites. Shippers forecasting processes may have to change. Shippers will also need to be made aware of any potential changes to the Imbalance and Reconciliation processes. There will be direct financial impacts to Shippers if either the Imbalance or Reconciliation process change.

There will be some CDSP impact, depending on the nature of the solution.

Recommendations

The request aims to identify a means of alleviating the impact of using different system prices for the Imbalance and Reconciliation processes.

The Proposer considers the proposal should be issued to a Workgroup for multiple reasons:

- Identify the best solution to be taken forward as a modification
- Ensure other Shippers are not inadvertently penalised
- Help identify other impacted areas

Additional Information

The Proposer has produced a number of charts and tables to illustrate the issue as they currently see it. For the sake of readability, these are attached as APPENDIX A.

The Proposer has produced a number of potential solutions for consideration by the Workgroup (these are attached as APPENDIX B) and would anticipate other solutions being identified.

0661R Issue Summary

The Proposer provide for the 08 November 2018 Workgroup meeting a summary of how the NDM Supply Meter Point Demand estimation is used in both the Imbalance and Reconciliation process for Product Class 3 and 4 supply points. This is shown here as follows:

NDM Supply Meter Point Demand calculation:

$$SPD = \frac{AQ}{365} \times \bar{ALP}t \times (1 + (DAF_t \times WCF_t))$$

For the Imbalance process:

([Shipper's Gas Inputs + Acquiring Trades]

-

[**NDM Supply Meter Point Demand estimation** + Disposing Trades + UIG])

*

System Marginal Price (Buy or Sell dependent on direction of the Shipper's daily energy imbalance)

=

Daily Imbalance Charge

For the Reconciliation Process:

[**NDM Supply Meter Point Demand estimation**]

*

(Reconciliation Metered Volume / [**NDM Supply Meter Point Demand estimation**] / Calorific Value])

*

System Average Price

=

Reconciliation Clearing Value

The issue the Proposer seeks to highlight is the creation of artificial winners and losers as the result of the use of different system prices for these processes.

Where a Shipper believes that their demand will not equal the quantity calculated by the NDM Supply Meter Point Demand estimation, they will input and/or acquire through trades a higher/lower quantity of gas. The difference between this quantity and the NDM Supply Meter Point Demand is defined as the Shipper's Daily Imbalance. This Daily Imbalance quantity will be multiplied by System Marginal Price to create the Shipper's Daily Imbalance Charge.

Reconciliation Metered Volumes are calculated later through the submission of meter reads. The submitted read is divided by the NDM Supply Meter Point Demand[7] estimation to calculate the Daily Reconciliation Factor. This factor shows the percentage variance between the NDM Supply Meter Point Demand and the actual demand, as proven through submission of actual meter reads. The NDM Supply Meter Point Demand is then multiplied by this factor minus one[8], this gives us the Daily Reconciliation Quantity. This Reconciliation Quantity will be equal to the Daily Imbalance quantity, assuming the Shipper's acquiring trades and/or input exactly matched the subsequent Reconciliation Metered Volumes. This Daily Reconciliation Quantity[9] is multiplied by System Average Price to calculate the Reconciliation Clearing Value.

This presents a scenario where the Shipper has acquired the exact amount of gas required to meet their demand. The initial variance from their acquisition and the NDM Supply Meter Point demand

[7] for the sake of simplicity, it assumes this Shipper has no direct offtakes.

[8] this is to calculate the *difference* in volume

[9] The use of factors in this calculation makes it slightly harder to follow than the Imbalance Process. Essentially, the Reconciliation Quantity is equal to the difference between the NDM Supply Meter Point Demand estimation (allocation) and the volume shown to have been actually utilised as the result of the submission of actual meter reads.

estimation is multiplied by System Marginal Price. The meter reads submitted show that the Shipper has acquired the correct amount of gas to cover the variance. However, as part of the subsequent Reconciliation Process, this time the variance is multiplied by System Average Price. This means that the Shipper takes a financial hit equal to the difference between System Marginal Price and System Average Price multiplied by volume.

2 Impacts and Costs

UNC Panel referred this Request to Workgroup on 18 July 2018. Workgroup meetings are summarised as follows:

22 August 2018

- Outline of Modification
- Initial discussion of Modification aims
- Initial clarification of processes
- Consideration of Panel question 1 (Clarification and provision of evidence that the issue is material)
- Consideration of Panel question 2 (Clarification and confirmation of the scope in the Terms of Reference for review at the September 2018 Panel meeting).

01 October 2018

- Overview of Market Operator verification process, together with overview of balancing procedures (National Grid)
- Clarification of how a Shipper interacts with the balancing process, specifically where its forecast of NDM offtake varies from the NDM nomination provided by National Grid (Utilita)
- Consideration of UIG effects and Read performance
- Discussion of how to assess Materiality and difference in gas process vs electricity process
- Consideration of potential Solutions (some additional focus on Solution C)
- Consideration of how Solution C's additional process might be funded

08 November 2018

- Shipper view of Imbalance and Reconciliation processes for Non-Daily Metered Gas Sites (Utilita)
- Brief consideration of moving to Class 2 or 3 or a new hybrid class (CDSP)
- Further discussion on Materiality
- Reconciliation and Imbalance Cash Out Prices - Derivation of marginal prices (National Grid)
- National Grid Residual Balancing Actions 2013-18 (National Grid)
- Solution C would introduce a new process after the reconciliation process using System Marginal Price Buy (SMPB) and Sell (SMPS) rates.
- Discussion of questions around Solution C/ business rules:
    - How might the new 'reconciliation' process work?
    - Is it a Neutrality-type arrangement i.e. credits and debits are cleared down on a regular, consistent basis?
    - How are the debits/credits reapportioned – only those shippers with NDMs (Class 3 / Class 4 Meters)?
    - How is it funded?
    - Consideration of other components not just NDM component alone as cause of a Shipper's daily energy imbalance

- How long would meter reconciliations run and the impact of this?
- Requirement for increased levels of credit cover?

(29 November 2018 cancelled)

23 January 2019 –

- Materiality Assessment 1 discussion (Utilita and Total Oil Gas)
- Materiality Assessment 2 discussion (Utilita and CDSP)
- Discussion on how to reproduce the materiality seen by Utilita
- Discussion on how to frame Solution C: outline the principles of the framework and the suggested reconciliation process

- At the close of the 23 January 2019 Workgroup, the next steps had been stated as follows:
  - Joint Office to Request an extension to the Panel reporting date.
  - Utilita to draft a modification based on Solution C.
  - Workgroup to finalise the Request Workgroup including the draft modification.

(13 May 2019 cancelled)

The Workgroup briefly reviewed potential impacts as follows.

Consideration of Wider Industry Impacts

Impact on Central Systems and Process	
Central System/Process	Potential impact
UK Link	• Daily Energy Imbalance – no impact expected. • NDM Reconciliation – potential impact. • Neutrality – new process required, potentially high impact. • UIG reconciliation – potential impact, level of impact depends on solution and business rules thereof. • Other areas to be determined.
Operational Processes	• NDM Imbalance - no impact expected. • NDM Reconciliation - potential impact. • Neutrality – new process needed, potentially high impact. • Credit/risk management – potential impact to be determined. • UIG reconciliation – potential impact, level of impact depends on solution and business rules thereof. • Other areas to be determined.
Gemini	• Potential new data extracts to go into SAP-ISU – potential impact not yet known

Impact on Users	
Area of Users' business	Potential impact
Administrative and operational	• NDM Forecasting – no impact expected; no changes required of Users. • New neutrality process – increased validation potentially required – potential impact as yet unknown.
Development, capital and operating costs	• To be assessed as part of modification proposal if one is submitted later (after closure of the Request).
Contractual risks	• None
Legislative, regulatory and contractual obligations and relationships	• None

Impact on Transporters	
Area of Transporters' business	Potential impact
System operation	• None
Development, capital and operating costs	• Potentially complex changes to UK Link and Gemini, development cost of these to be assessed.
Recovery of costs	• No impact on transportation revenue. Change costs and funding arrangements to be determined under DSC Change Management arrangements.
Price regulation	• None
Contractual risks	• None
Legislative, regulatory and contractual obligations and relationships	• None
Standards of service	• None

Impact on Code Administration	
Area of Code Administration	No impact
Modification Rules	• None
UNC Committees	• None
General administration	• None
DSC Committees	• None

Impact on Code	
Code section	Potential impact
	• Other areas of TPD Section E • E6.2.5 – Reconciliation Clearing Value; and/or

Impact on Code	
	• Others to be confirmed when business rules defined.

Impact on UNC Related Documents and Other Referenced Documents	
Related Document	No impact
Network Entry Agreement (TPD I1.3)	• None
General	No Impact
Legal Text Guidance Document	• None
UNC Modification Proposals – Guidance for Proposers	• None
Self Governance Guidance	• None
TPD	No Impact
Network Code Operations Reporting Manual (TPD V12)	• None
UNC Data Dictionary	• TBC once business rules fully developed
AQ Validation Rules (TPD V12)	• None
AUGE Framework Document	• None
Customer Settlement Error Claims Process	• None
Demand Estimation Methodology	• None
Energy Balancing Credit Rules (TPD X2.1)	• None
Energy Settlement Performance Assurance Regime	• None
Guidelines to optimise the use of AQ amendment system capacity	• None
Guidelines for Sub-Deduct Arrangements (Prime and Sub-deduct Meter Points)	• None
LDZ Shrinkage Adjustment Methodology	• None
Performance Assurance Report Register	• None
Shares Supply Meter Points Guide and Procedures	• None
Shipper Communications in Incidents of CO Poisoning, Gas Fire/Explosions and Local Gas Supply Emergency	• None

Impact on UNC Related Documents and Other Referenced Documents	
Standards of Service Query Management Operational Guidelines	• None
Network Code Validation Rules	• None
	•
OAD	No Impact
Measurement Error Notification Guidelines (TPD V12)	• None
EID	No Impact
Moffat Designated Arrangements	• None
IGTAD	No Impact
DSC / CDSP	No Impact
Change Management Procedures	• None
Contract Management Procedures	• None
Credit Policy	• None
Credit Rules	• None
UK Link Manual	• TBC

Impact on Core Industry Documents and other documents	
Document	No impact
Safety Case or other document under Gas Safety (Management) Regulations	• None
Gas Transporter Licence	• None

Other Impacts	
Item impacted	No impact
Security of Supply	• None
Operation of the Total System	• None
Industry fragmentation	• None

Terminal operators, consumers, connected system operators, suppliers, producers and other non code parties	• None

3 Terms of Reference

Background

Topics for Discussion

- Understanding the objective
- Clarification and provision of evidence that the issue is material;
- Clarification and confirmation of the scope in the Terms of Reference for review at the September 2018 Panel meeting
- Assessment of any alternative means to achieve objective and identification of any compliance (or other) issues such options would present
- Assessment of potential impacts of the Request
- Assessment of implementation costs of any solution identified during the Request where and if possible.

Outputs

Produce a Workgroup Report for submission to the Modification Panel, containing the assessment and recommendations of the Workgroup including a draft modification where appropriate.

Composition of Workgroup

The Workgroup is open to any party that wishes to attend or participate.

A Workgroup meeting will be ordinarily be quorate provided at least two Transporter and two Shipper User representatives are present. However at the UNC Modification Panel on 16 August 2018, Panel Members agreed a pragmatic approach so that a 0661R Request meeting is quorate providing one Transporter attends.

Meeting Arrangements

Meetings will be administered by the Joint Office and conducted in accordance with the Code Administration Code of Practice.

4 Modifications

The Proposer may submit a Modification for review at a later stage, but as at 13 May 2019 none has been forthcoming as a result of this Workgroup.

Initial Analysis of Solution Options

Below are the solutions explored and identified during the development of this proposal.

- Solution A proposes using SMP(B) and SMP(S) for the reconciliation calculations.
- Solution A2 proposes using SAP for all imbalance prices, i.e. both the reconciliation calculations and the imbalance calculations.
- Solution B proposes to make SMP(B) and SMP(S) the same. This would make it the same as the electricity model
- **Solution C proposes to introduce a new process after the reconciliation process to balance the books using SMP(B) and SMP(S). This is similar to Solution A but does not happen in real time but after the event.**

More detail on the potential solutions can be found in Appendix B.

Compliance with EU Regulations and any potential GB law which may replace it

The current BREXIT position is that GB wishes to remain a part of the European Internal Energy Market (IEM). To support this aspiration, the existing EU Regulations (including the EU Balancing Code) which dictate the high-level rules under which the GB regime operates will, post BREXIT, be incorporated into GB legislation. Therefore, the constraints on the existing gas balancing arrangements (including marginal pricing) will endure post BREXIT.

Workgroup noted the input from National Grid (PL) that compliance with the EU Balancing Code 312/2014 must be taken into account since the regulation is very prescriptive about how any daily imbalance is 'cashed out', and that some of the solutions would not comply with regards to Articles 22 and 23(1).

National Grid understood that example solutions A2 and B would not comply and that of the four solutions presented in the Request proposal it appears that A and C are the only ones that would not conflict with the EU Balancing Code.

Commercial Incentives to Balance'

National Grid stated it would have concerns with, and therefore not be supportive of, options that would reduce or remove the User's commercial incentive to balance on a daily basis. The marginal pricing of daily imbalance currently provides this.

Final focus on Solution C

Solution A was deemed by Workgroup to be inordinately complex and operationally extremely complex.

Workgroup participants agreed with the Proposer that Solution C was the only one that might provide the appropriate and required solution, noting that it is still highly complex but less complex than Solution A. Solution C still requires more work to define and progress the business rules.

Effect of UIG

Workgroup sought to understand the effect of UIG on the Solutions:

The Proposer clarified as follows:

> Unidentified Gas is factored into balancing like an offtake or disposal. Our request is not seeking to change the balancing processes. We do not believe that Solution C would impact UIG in balancing or require any changes to be made.
>
> Unidentified Gas Reconciliation quantities equal in aggregate and opposite to the net aggregate quantities subject to normal offtake Reconciliation in an LDZ over a defined period. Each reconciliation changes the amount of Unidentified Gas. Each reconciliation therefore changes each Shipper's share of Unidentified Gas. Unidentified Gas Reconciliation is smeared across a 12-month period and is distributed based on shares of total aggregate offtakes.
>
> The quantity of gas to be assigned as unidentified gas reconciliation is calculated by taking the reconciliation quantity and multiplying by the ratio of a User's prevailing offtakes vs total LDZ prevailing offtakes (both adjusted according to the UIG allocation Factors table).

The financial value to be exchanged as part of unidentified gas reconciliation is calculated by multiplying the Clearing Value by the ratio of a User's prevailing offtakes vs total LDZ prevailing offtakes (both adjusted according to the UIG allocation Factors table).

The 0661R Request seeks to reverse any unintended cash out differences caused using different prices in Balancing and Reconciliation. Solution C would see the introduction of a new processes purely to achieve this. Whilst Unidentified Gas volumes are constantly shifting, we believe that it is still possible to implement Solution C. The Proposer would welcome specific challenges and further questions from the Request group as to why UIG is seen as a potential issue.

Materiality

Workgroup spent considerable time looking at the issue of Materiality noting that the Proposer has confirmed the issue is significantly material for their organisation. This may be due to specific nature of the portfolio of the Proposer, having solely prepayment customers with corresponding demand patterns.

Proposer's view of Materiality

Analysis has been undertaken by the Proposer to provide context and an indication of the materiality of the issue which this proposal seeks to address. The following analysis should give a feel for the risk introduced by using actual system prices (SMP(B)/SMP(S) vs SAP) for the Imbalance and Reconciliation processes.

851 days worth of system price and volume allocation data has been gathered from National Grid's Transmission operational data (http://mip-prod-web.azurewebsites.net/DataItemExplorer/Index). System Average, Buy and Sell prices are all taken from National Grid and are the actual system prices for each date. The allocation data is also real data and represents the total amount of gas allocation (in kTh) for each given date (converted from National Grid's kWh value at the standard 29.3071 kWh/therm).

Two theoretical market participants' processes have been constructed, a Small Shipper and a Large Shipper. The Small Shipper has a 1% market share and the Large Shipper has a 15% market share, for the purposes of this model these percentages equate to a share of the total allocation, as provided by the National Grid data. Building further upon this, three reconciliation scenarios for each Shipper were constructed: a 1%, 5% and 10% reconciliation run. To calculate the risk introduced, the maximum absolute variance between SMP(B)-SAP and SMP(S)-SAP is taken. This variance represents the theoretical maximum impact the use of SSP/SBP for one process and SAP for another could have.

This maximum absolute variance is then multiplied by the total allocation for the day, to create a theoretical maximum impact of the issue across the entire market. This maximum is then apportioned based on the market share assigned to the Large and Small Shipper. Finally, this value is then broken down into various potential reconciliation quantities to give a feel for a potential impact. This then produces a maximum value for each reconciliation scenario on each date.

The results are summaried in the table below. An average monthly risk has been calculated by taking an average across every day (851 days) of results and multiplying this by 30.5 (average no. days in a month) to give a feel for average monthly risk. The results are provided in the table 1 below. The full set of data and analysis is included as **Appendix C: Imbalance Reconciliation Materiality Data**

Table 1: Average Monthly risk for sample shipper organisations

Average Monthly Risk	
Large Shipper - 1% Reconciled	£84,324
Large Shipper - 5% Reconciled	£421,622
Large Shipper - 10% Reconciled	£843,245
Small Shipper- 1% Reconciled	£5,622
Small Shipper - 5% Reconciled	£28,108
Small Shipper - 10% Reconciled	£56,216

Workgroup actions to assess materiality

Analysis was undertaken in two areas to provide context and an indication of the materiality of the issue which Utilita's proposal seeks to address. The following analysis should give a feel for the risk introduced by using actual system prices (SMP Buy/SMP Sell vs SAP) for the Imbalance and Reconciliation processes.

Workgroup noted that the materiality information given by the Proposer (available here: http://www.gasgovernance.co.uk/0661/) is theoretical and therefore Workrgoup explored additional avenues in order to try and get more information that showed a reproducible view of materiality.

Assessment 1

Total Gas and Power assisted Utilita in formulating an assessment of materiality. The details of this Assessment 1 can be found in a spreadsheet entitled "0661R Total Analysis to support Appendix C: Imbalance Reconciliation Materiality Data" which can be found here:

http://www.gasgovernance.co.uk/0661/230119

This Assessment 1 was only partially successful in replicating the materiality seen by Utilita. In summary it concluded that the analysis indicated that the since the start of Project Nexus, NDM reconciliation has been a net average of 0.38% per month at NDM allocation. At these levels, the proposer's analysis suggests a 'net' monthly risk £32,000 for a Large Shipper and £2,100 for a Small Shipper.

Assessment 2

Xoserve (the CDSP) assisted Utiilta in formulating the second assessment of materiality. The details of this assessment 2 can be found in a spreadsheet entitled "0661R Xoserve Analysis of use of Marginal vs Average Pricing for Reconciliation" which can be found here:

http://www.gasgovernance.co.uk/0661/230119

This Assessment 2 was similar to Assessment 1 in that it was only partially successful in replicating the materiality seen by Utilita. Utilita noted that the materiality figure is again at an aggerated level therefore the extent to which the issue materialises for Utilita in particular becomes lost.

It was believed in summary that the spreadsheet analysis for Assessment 2 indicated, that since the start of Project Nexus, the average change in valuation of UIG Reconciliation volumes, when calculated as a flat average SAP compared to marginal rate, was dependent on energy volume direction and illustrated the monthly cost difference between UIG assessed for imbalance reconciliations.

Some Workgroup Participants suggested that the methodology used by Utilita when they internally assessed the issue as being material could be shared to allow other parties to understand the potential impacts for their portfolio too.

Materiality Issues Summary

Workgroup therefore concluded that the materiality seen by the Proposer was not readily reproduced without examining confidential data regarding the Proposer's business. The Proposer will therefore discuss the issue directly with Ofgem. Once these discussions have taken place the Proposer may raise a Modification Proposal to address the issue with renewed impetus. The Proposer and Workgroup agreed that it was appropriate therefore to close the Workgroup 0661R at this time.

5 Recommendation

Workgroup's Recommendation to Panel

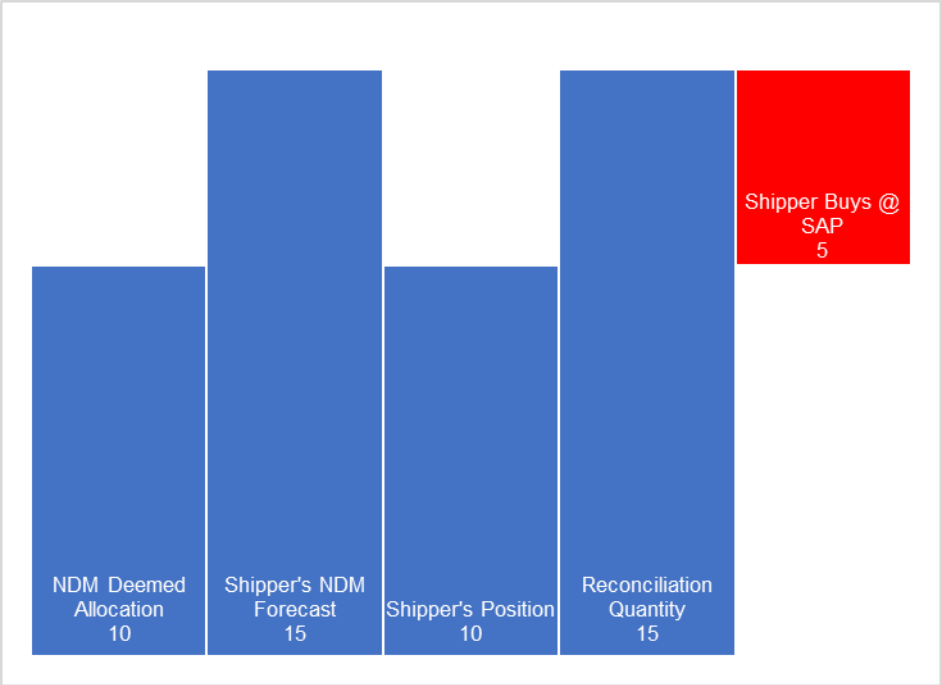
The Workgroup invites the Panel to:

- Consider the recommendations in the report.
- DETERMINE that Request 0661R should be closed.

6 Appendix A – Current Issue

Example One- For Information Only

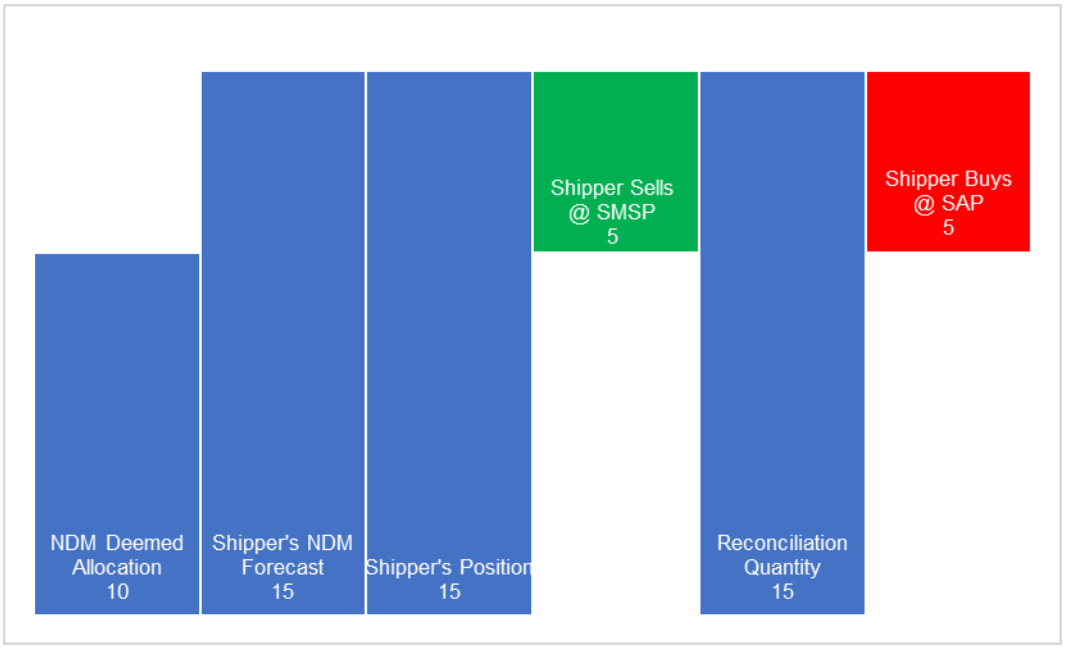
The graph below shows the behaviour encouraged by using different system prices at Imbalance and Reconcilation.



1. An initial NDM Deemed Allocation is calculated by Xoserve using the forecasting alogorithm
2. The Shipper creates their own forecast and believes they will require more than the Deemed Allocation
3. The Shipper acquires and contracts as per the NDM Deemed Allocation
4. There is no difference between the Shipper's contracted volume and the NDM Deemed Allocation, therefore no Imbalance payment is made.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated
6. The reconciliation quantity shows the Shipper's own forecast was correct
7. The Shipper Buys the Reconciliation quantity at System Average Price

Example Two- For Information Only

The example below shows the current processes if a Shipper were to contract above their NDM Deemed Allocation. Submission of Reconciliation metered volumes shows this volume forecast to be accurate, however the use of SMP and SAP at distinct stages results in a monetary loss to the Shipper.



1. An initial NDM Deemed Allocation is calculated by Xoserve using the forecasting alogorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper contracts volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is “long” and therefore sells the volume difference at System Marginal Sell Price.
5. Meter Reads are submitted and a Daily Reconcliation Quantity is calculated. The reconciliation quantity shows the Shipper’s own forecast was correct.
6. The reconciliation quantity is the same volume as sold during the Imbalance process, however the Shipper must pay at SAP.

This means that two separate payments have been made:

1. The difference between the NDM Deemed Allocation and the Shipper’s Position, paid to the Shipper at SMSP.
2. The difference between the NDM Deemed Allocation and the final Reconcilition Quantity, paid by the Shipper at SAP.

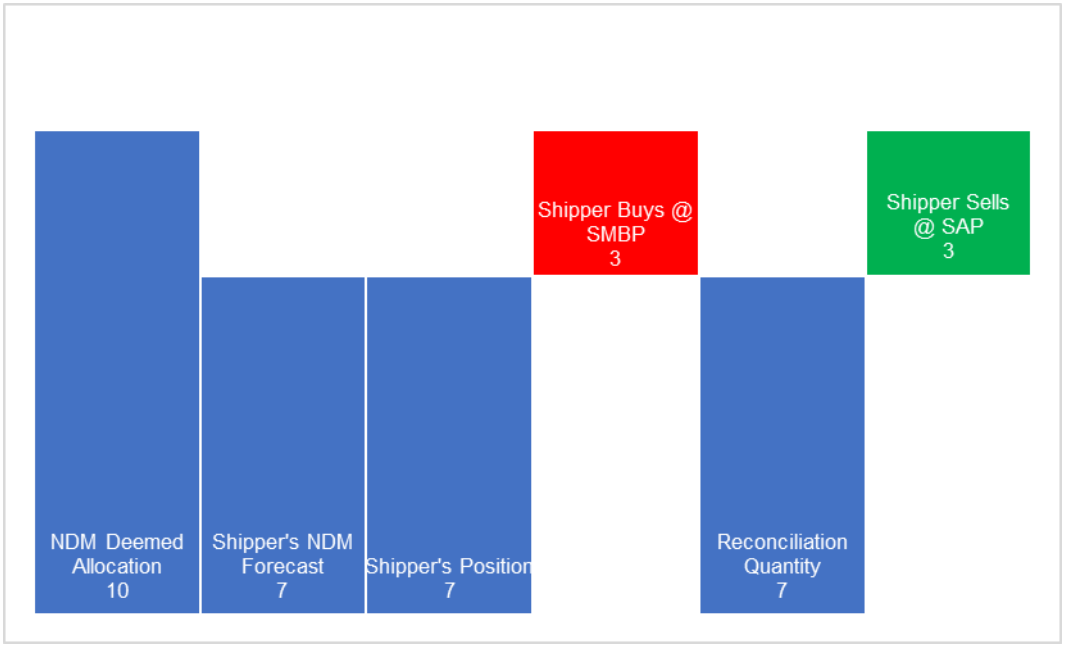
	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		

Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SAP	-5	1.5	-7.5
Differential			-0.5

In this example, as a result of the Shipper's accurate forecast, the volumes settled in each process are equal but opposite. However, the Shipper takes a financial hit equal to the difference between SMSP and SAP multiplied by the reconciled volume.

Example Three- For Information Only

The example below shows the current processes if a Shipper were to submit a forecast below their NDM Deemed Allocation. Submission of Reconciliation metered volumes shows this volume forecast to be accurate, however the use of SMP and SAP results in a monetary loss to the Shipper.



1. An initial NDM Deemed Allocation is calculated by Xoserve using the forecasting alogorithm
2. The Shipper creates their own forecast and believes they will require less gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is "short" and therefore Buys at SMBP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.

The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process, however here the Shipper Sells at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SMBP	-3	1.6	-4.8
Reconciliation Quantity	7		
Shipper Sells @ SAP	3	1.5	4.5
Differential			-0.3

7 Appendix B – Potential Solutions

Below are the solutions explored and identified during the development of this proposal.

Solution A proposes using SMPB and SMPS for the reconciliation calculations.

Solution A2 proposes using SAP for all imbalance prices, i.e. both the reconciliation calculations and the imbalance calculations.

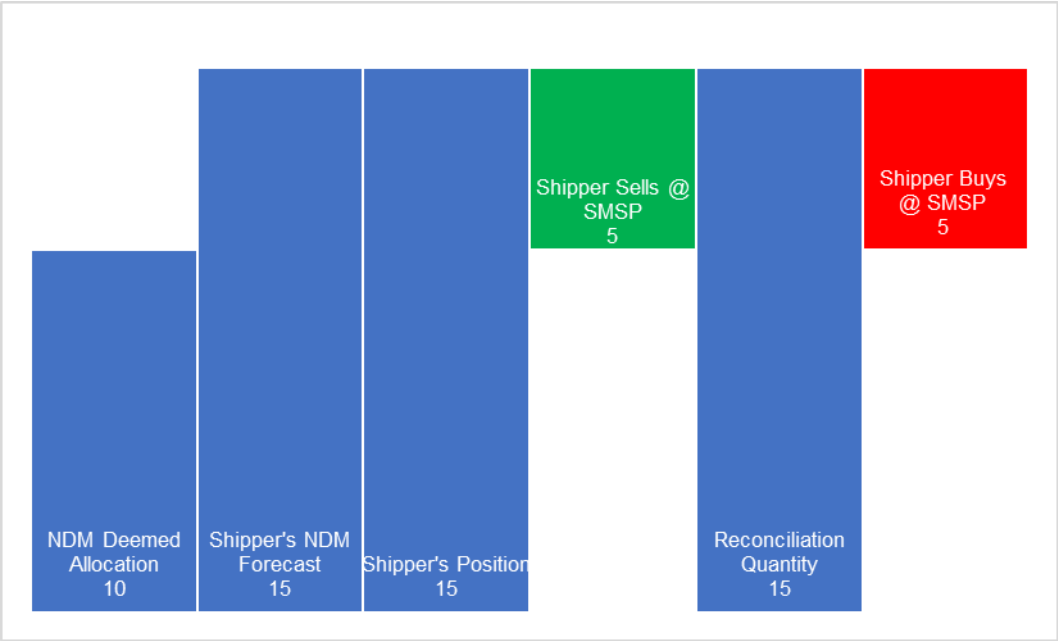
Solution B proposes to make SMPB and SMPS the same. This would make it the same as the electricity model

Solution C proposes to introduce a new process after the reconciliation process to balance the books using SMPB and SMPS. This is similar to Solution A but does not happen in real time but after the event.

Worked Examples - For Information Only

Solution A – Worked Examples – For Information Only

Solution A Scenario A – Shipper Purchases above NDM Deemed Allocation

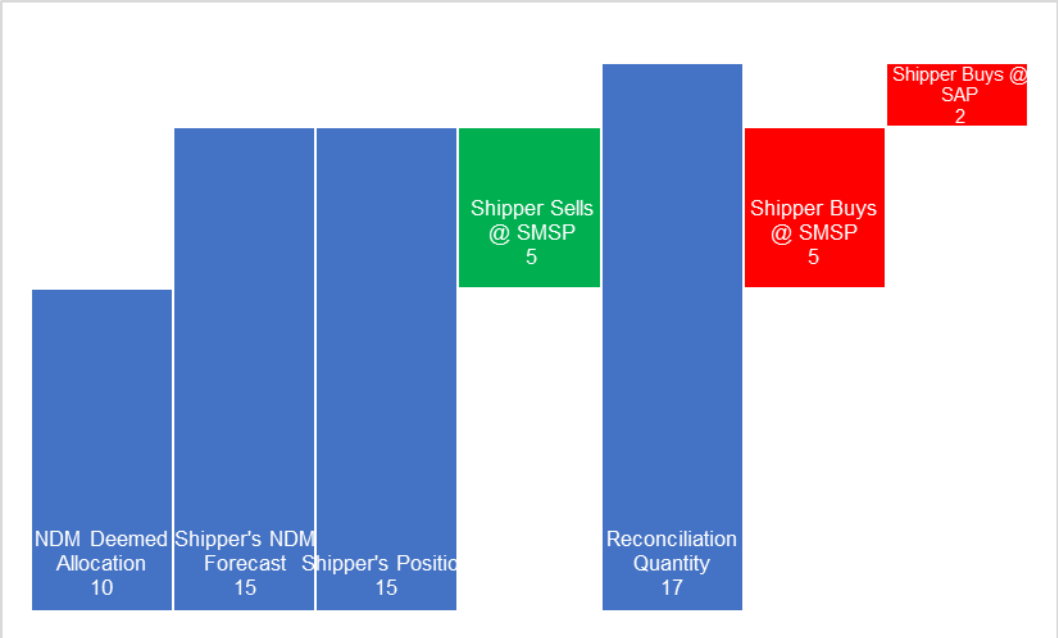


In the diagram above the Shipper is cost neutral for the gas it purchased in advance of the Gas Day.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is “long” and therefore Sells at SMSP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper’s own forecast was correct.
6. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SMSP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper’s Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SMSP	-5	1.4	-7
Differential			0

Solution A Scenario B – Shipper Purchases above NDM Deemed Allocation but below Reconciled Usage – For Information Only

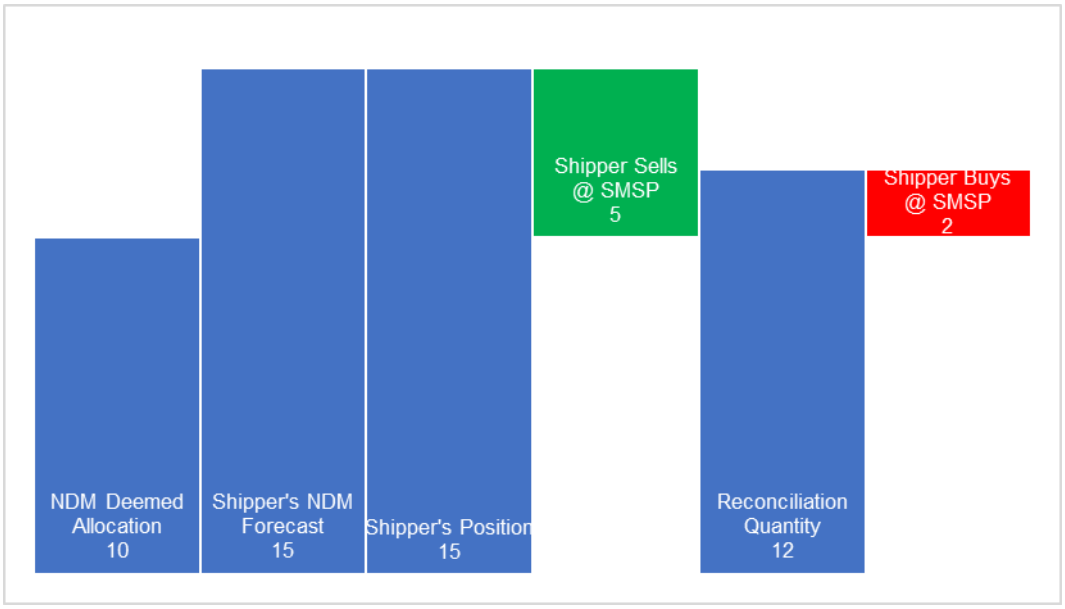


In the graph above the Shipper is not punished for purchasing above the NDM Deemed Allocation however they are still penalised for underforecasting.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is "long" and therefore Sells SMSP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too low.
6. The reconciliation quantity is the higher than the volume as paid out as a result of the Imbalance process. The shipper Buys SMSP up to the level of their submitted NDM Nomination. The volume above that forecasted by the Shipper is paid by them at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	17		
Shipper Buys @ SMSP	-5	1.4	-7
			0
Shipper Buys @ SAP	-2	1.5	-3
Differential			-3

Solution A Scenario C – Shipper Purchases above NDM Deemed Allocation but Reconciled Usage is in-between – For Information Only

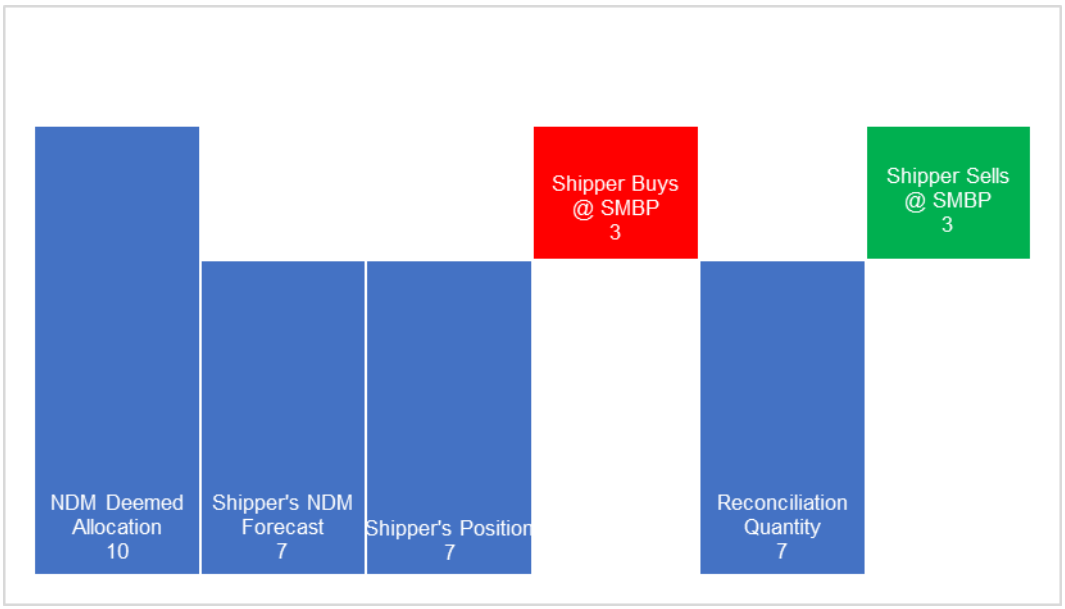


In the diagram above the Shipper is penalised for over purchasing gas but not penalised for purchasing more gas than the National Grid forecast.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is long and therefore Sells at SMSP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too high.
6. The reconciliation quantity is the lower than the volume as paid out as a result of the Imbalance process but higher than the NDM Deemed Allocation. The shipper Buys at SMSP up to the Reconciliation Quanity

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	12		
Shipper Buys @ SMSP	-2	1.4	-2.8
Differential			4.2

Solution A Scenario D – Shipper Purchases Below NDM Deemed Allocation – For Information Only



In the diagram above the Shipper is penalised for under purchasing gas but not penalised for purchasing less gas than the National Grid forecast.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require less gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is short and therefore must pay at SMBP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
6. The reconciliation quantity is the same as the Shipper's own NDM forecast and their initial submitted nomination. The shipper Sells SMBP.

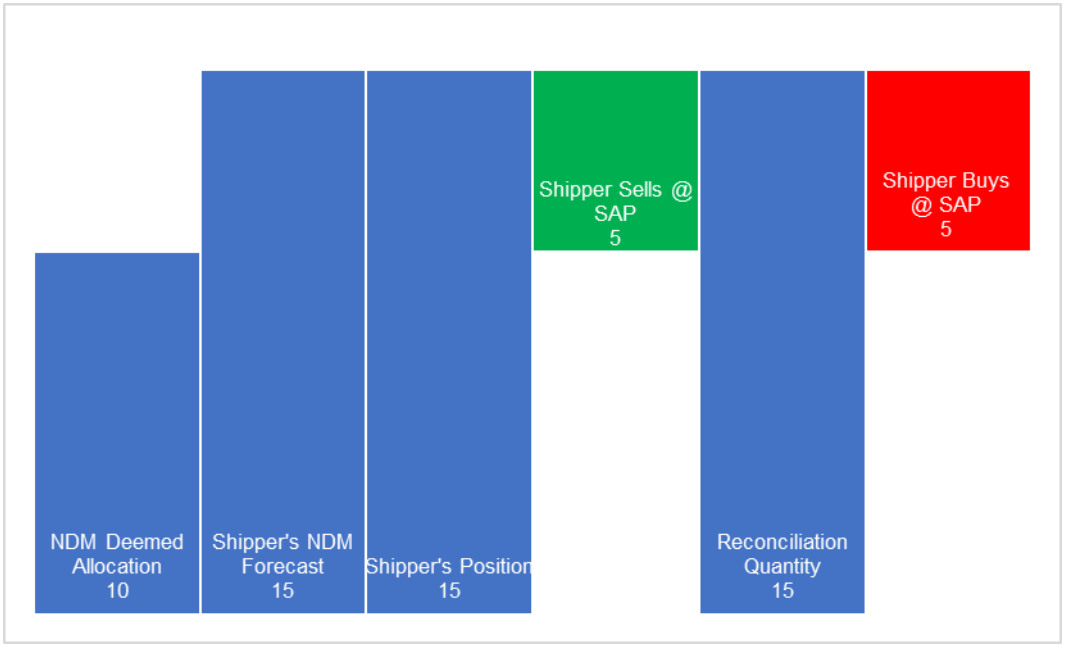
	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SMBP	-3	1.6	-4.8
Reconciliation Quantity	7		
Shipper Sells @ SMBP	3	1.6	4.8
Differential			0

Solution A2 – Adjust Imbalance Payments to be made at SAP

This solution proposes that all Imbalance payments are made at SAP (regardless of whether the Shipper is long/short or has over/under forecasted.) This would be a slightly less punitive model than Solution A1.

Solution A2 – Worked Examples – For Information Only

Solution A2 Scenario A – Shipper Purchases above NDM Deemed Allocation – For Information Only

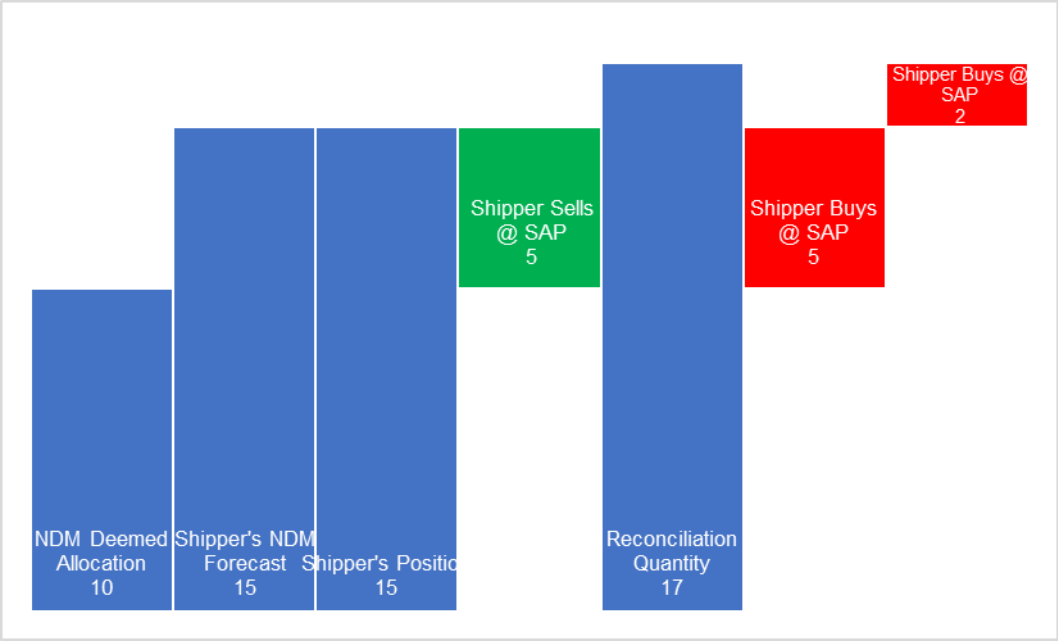


In the diagram above the Shipper is cost neutral for the gas it purchased in advance of the Gas Day.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is "long" and therefore Sells at SAP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
6. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SAP	5	1.5	7.5
Reconciliation Quantity	15		
Shipper Buys @ SAP	-5	1.5	-7.5
Differential			0

Solution A2 Scenario B – Shipper Purchases above NDM Deemed Allocation but below Reconciled Usage – For Information Only

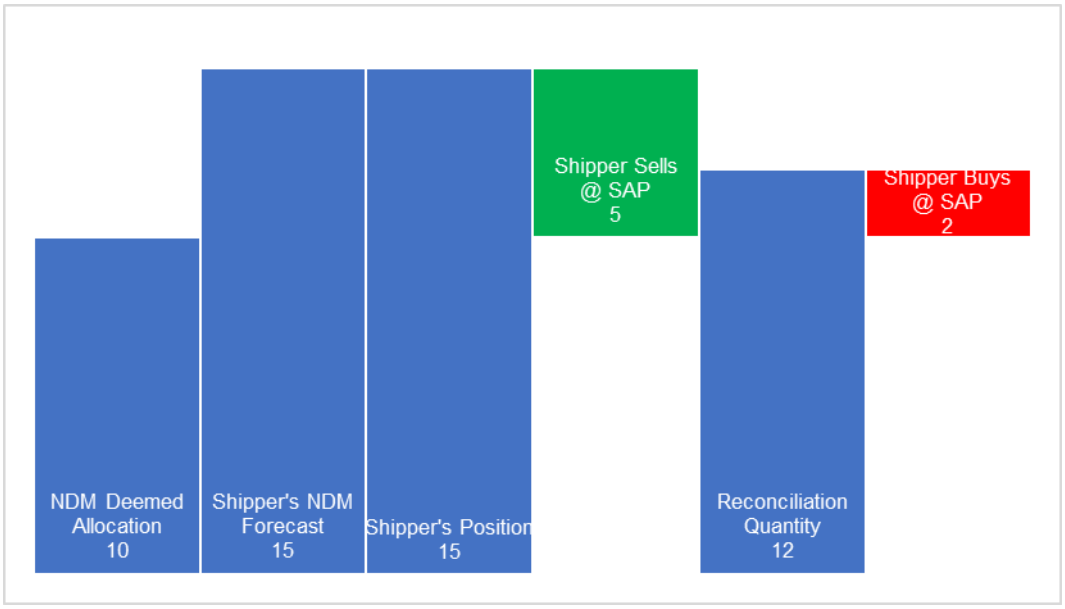


In the graph above the Shipper is not punished for purchasing above the NDM Deemed Allocation however they are still penalised for underforecasting.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is "long" and therefore Sells SAP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too low.
6. The reconciliation quantity is the higher than the volume as paid out as a result of the Imbalance process. The Shipper buys all of the volume at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SAP	5	1.5	7.5
Reconciliation Quantity	17		
Shipper Buys @ SAP	-5	1.5	-7.5
Shipper Buys @ SAP	-2	1.5	-3
Differential			-3

Solution A2 Scenario C – Shipper Purchases above NDM Deemed Allocation but Reconciled Usage is in-between – For Information Only

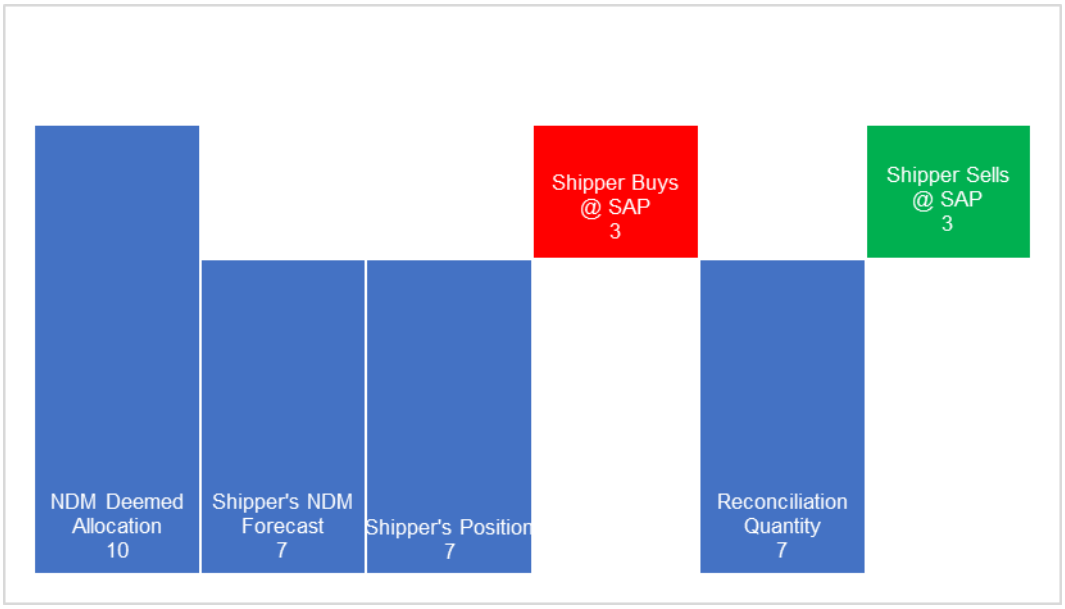


In the diagram above the Shipper is penalised for over purchasing gas but not penalised for purchasing more gas than the National Grid forecast.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is long and therefore Sells at SAP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too high.
6. The reconciliation quantity is the lower than the volume as paid out as a result of the Imbalance process but higher than the NDM Deemed Allocation. The shipper Buys at SAP up to the Reconciliation Quanity

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SAP	5	1.5	7.5
Reconciliation Quantity	12		
Shipper Buys @ SAP	-2	1.5	-3
Differential			4.5

Solution A2 Scenario D – Shipper Purchases Below NDM Deemed Allocation – For Information Only



In the diagram above the Shipper is penalised for under purchasing gas but not penalised for purchasing less gas than the National Grid forecast.

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require less gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is short and therefore must pay at SAP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
6. The reconciliation quantity is the same as the Shipper's own NDM forecast and their initial submitted nomination. The shipper Sells at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SAP	-3	1.5	-4.5
Reconciliation Quantity	7		
Shipper Sells @ SAP	3	1.5	4.5
Differential			0

Solution B – Mirror Electricity Settlement/Imbalance Arrangements and set SBP equal to SSP within each Settlement Period

This solution would seek to mirror the Electricity imbalance arrangements and seek to set a single marginal price for all transactions based on the net imbalance of the system.

- When the system as a whole is short, take the current SBP as the single cash out price
- When the system as a whole is long, take the current SSP as the single cash out price.

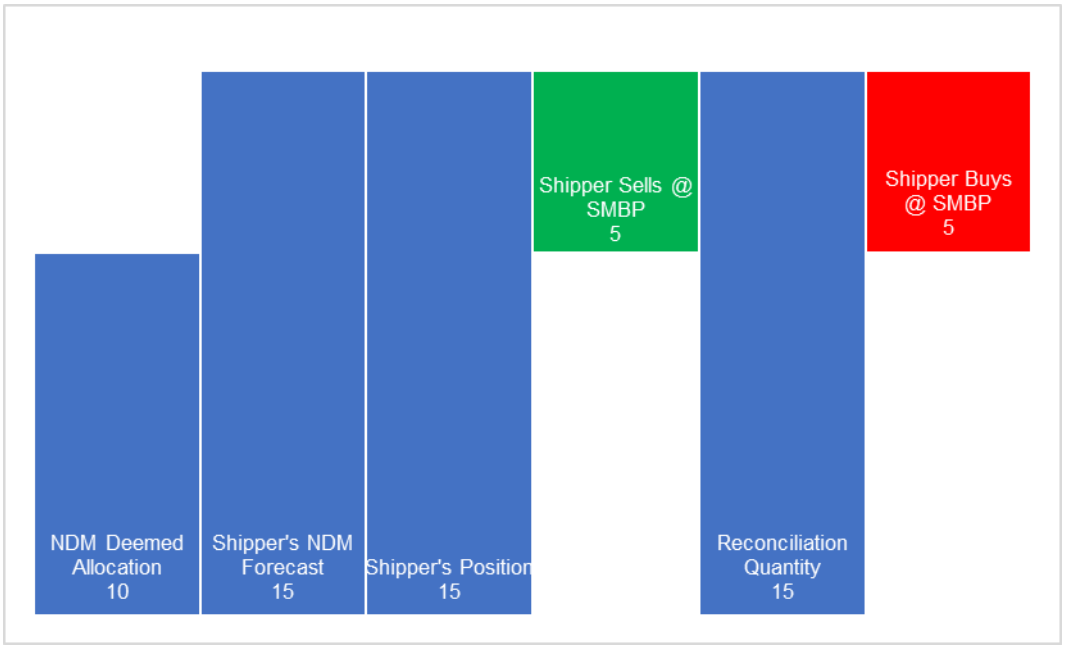
This solution provides a greater incentive for Shippers to balance their own position but it will result in a more volatile cash out price. It is believed that this solution would have the greatest impact on the gas market, as it would introduce a new set of incentives to market participants.

For the purposes of this solution it is envisaged a settlement period being one gas day.

Legal Text to be developed through subsequent Modification workgroup development.

Solution B – Example One – For Information Only

In this example, the entire gas system is short, therefore all transactions are made at SMBP.

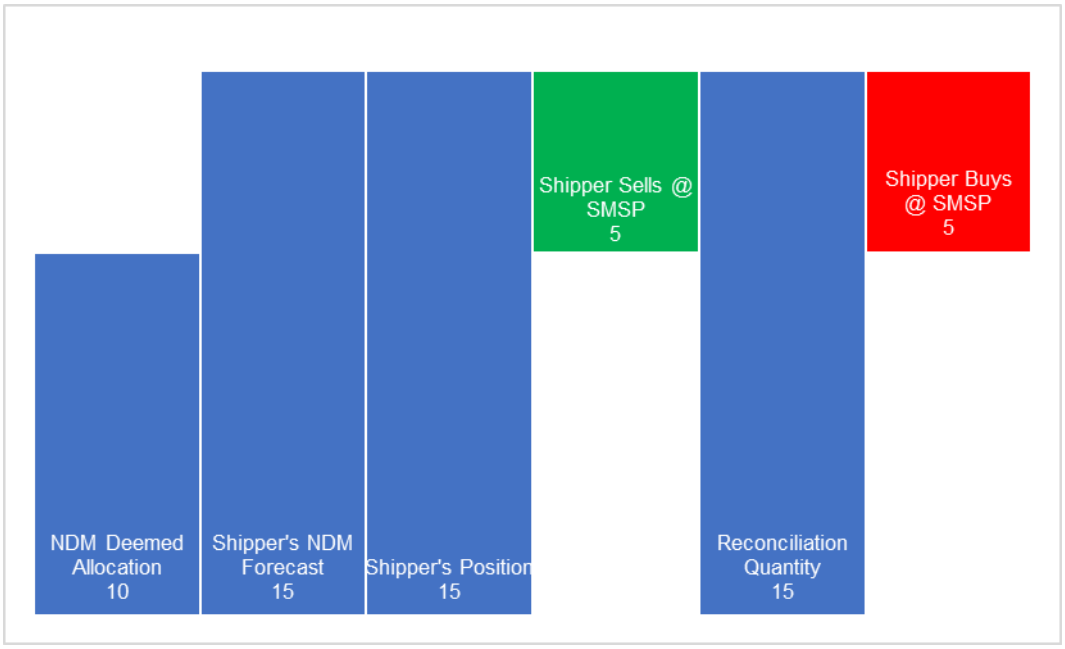


1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the entire system is short, therefore the shipper sells at SMBP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
6. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SMBP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMBP	5	1.6	8
Reconciliation Quantity	15		
Shipper Buys @ SMBP	-5	1.6	-8
Differential			0

Solution B – Example 2 – For Information Only

In this example, the entire gas system is long, therefore all transactions are made at SMSP.



1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the entire system is "long" and therefore the Shipper sells at SMSP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
6. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SMSP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SMSP	-5	1.4	-7
Differential			0

Solution C - Imbalance Reconciliation Process

This solution would see no changes to the existing Imbalance and Reconciliation processes.

A new process could be introduced which would calculate a credit or debit to the Shipper:

1) Take the Shipper's Imbalance Quantity and the SMP at which the imbalance was cashed-out (SMPB or SMPS)
2) Take the Shipper's Reconciliation Quantity and Imbalance Quantity. Provided both are in the same direction (long/short) then take the lower of the two quantities as the Imbalance Reconciliation Quantity.
3) Calculate the difference between the applicable SMP and SAP
4) Multiply the difference between the Reconciliation Quantity and the Imbalance Quantity by the price differential between SMP and SAP

There would be **no** anticipated changes required to the following processes:

- Daily energy imbalance
    - SMP Buy/Sell used for energy imbalance calculation
    - Daily energy imbalance (closed-out) position – not updated as a consequence of meter point reconciliation
- UIG (charged at SMP Buy or SMP Sell dependent on direction of the Shipper's imbalance)
- Meter point reconciliation charged at SAP

This solution requires no changes to any of the processes above yet incentivises shippers to forecast accurately.

Legal text to be developed through subsequent Modification workgroup development.

Solution C – Example One – For Information Only

The existing Imbalance and Reconciliation processes would still occur, as in current arrangements:

1. An initial NDM Deemed Allocation is calculated by Xoserve using the forecasting alogorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper contracts volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is "long" and therefore sells the volume difference at SMSP
5. Meter Reads are submitted and a Daily Reconcliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
6. The reconciliation quantity is the same volume as sold during the Imbalance process, however the Shipper must pay at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SAP	-5	1.5	-7.5
Differential			-0.5

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the New Imbalance Reconciliation Process

1) Take the Shipper's Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 5 Units

Associated System Price = SMSP

2) Take the Shipper's Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 5 Units

Associated System Price = SAP

3) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMSP) = 1.4

System Average Price (SAP) = 1.5

(SAP – SMSP) = 0.1

4) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 5 Units

Shipper's Imbalance Quantity = 5 Units

Therefore, Imbalance Reconciliation Quantity = 5 Units

5) Multiply the Imbalance Reconciliation Quantity by the price differential:

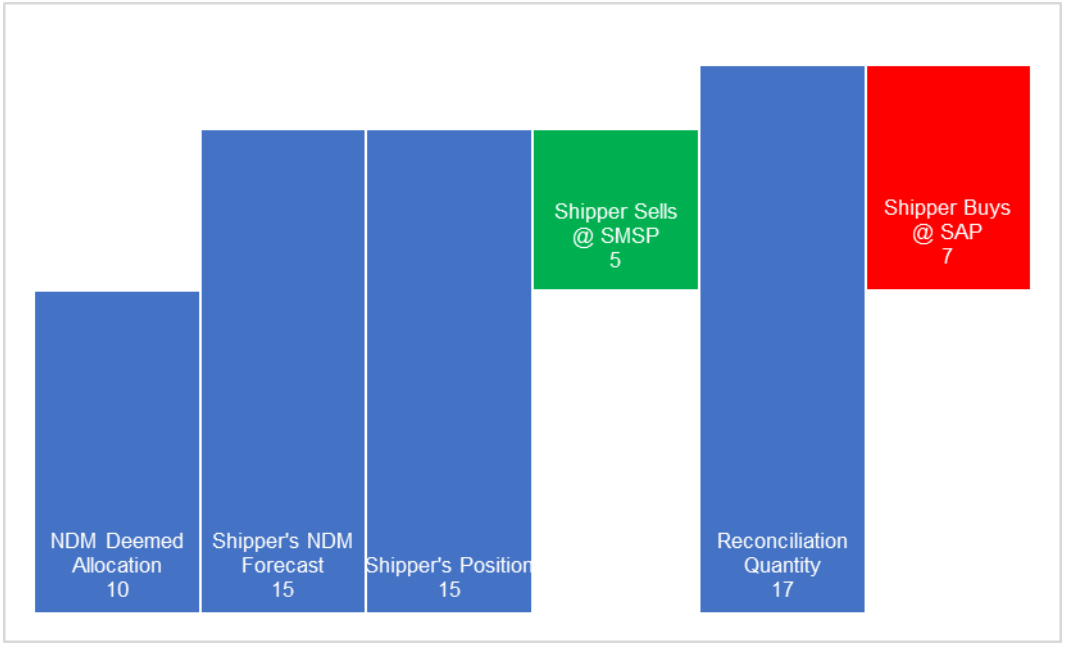
Shipper's Imbalance Reconciliation Quantity = 5 Units

Price Differential = 0.1

Imbalance Reconciliation Payment = 5 x 0.1 = 0.5

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SAP	-5	1.5	-7.5
Differential			**-0.5**
Imbalance Reconciliation Quantity	5	0.1	0.5
Outturn			**0**

Solution C Example Two – For Information Only



Standard Imbalance and Reconcilation Process Still Applies

1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is “long” and therefore Sells SMSP.
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper’s own forecast was too low.
6. The Shipper then Buys the Daily Reconcilation Quantity at SAP

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper’s Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	17		
Shipper Buys @ SAP	-7	1.5	-10.5
Differential			-3.5

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the New Imbalance Reconciliation Process

1) Take the Shipper’s Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 5 Units

Associated System Price = SMSP

2) Take the Shipper's Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 7 Units

Associated System Price = SAP

3) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMSP) = 1.4

System Average Price (SAP) = 1.5

(SAP – SMSP) = 0.1

4) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 7 Units

Shipper's Imbalance Quantity = 5 Units

Therefore, Imbalance Reconciliation Quantity = 5 Units

5) Multiply the Imbalance Reconciliation Quantity by the price differential:

Shipper's Imbalance Reconciliation Quantity = 5 Units

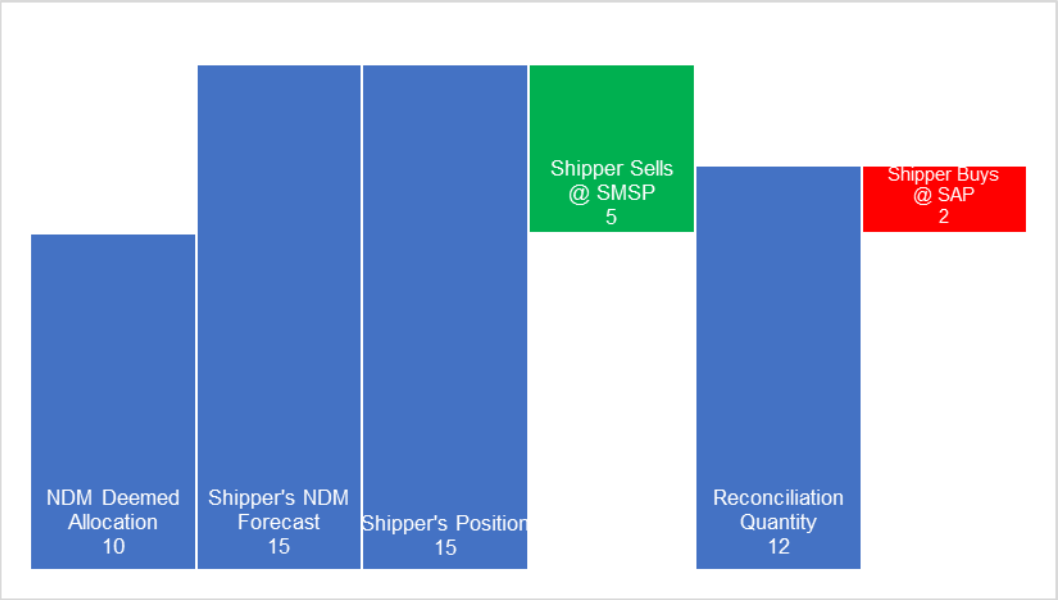
Price Differential = 0.1

Imbalance Reconciliation Payment = 5 x 0.1 = 0.5

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	17		
Shipper Buys @ SAP	-7	1.5	-10.5
Differential			-3.5
Imbalance Reconciliation Quantity	5	0.1	0.5
Outturn			-3

Here, the Shippers final outturn is equivalent to 2 units at SAP (i.e. the difference between Imbalance volumes and Reconciliation volumes at SAP, 2*1.50 = 3). This means that the Shipper is financially neutral for correctly forecasting and nominating their usage above the NDM Deemed Allocation but is still penalised as reconciliation shows they were short on the gas day.

Solution C – Example Three – For Information Only



1. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
2. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is long and therefore Sells at SMSP.
5. Meter Reads are submitted and a Daily Reconcliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too low.
6. The reconciliation quantity is the lower than the volume as paid out as a result of the Imbalance process but higher than the NDM Deemed Allocation. The Shipper Buys at SAP up to the Reconciliation Quanity

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	12		
Shipper Buys @ SAP	-2	1.5	-3
Differential			4

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the new Imbalance Reconciliation Process

1) Take the Shipper's Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 5 Units

Associated System Price = SMSP

2) Take the Shipper's Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 2 Units

Associated System Price = SAP

3) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMSP) = 1.4

System Average Price (SAP) = 1.5

(SMSP – SAP) = 0.1

4) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 2 Units

Shipper's Imbalance Quantity = 5 Units

Therefore, Imbalance Reconciliation Quantity = 2 Units

5) Multiply the Imbalance Reconciliation Quantity by the price differential:

Shipper's Imbalance Reconciliation Quantity = 2 Units

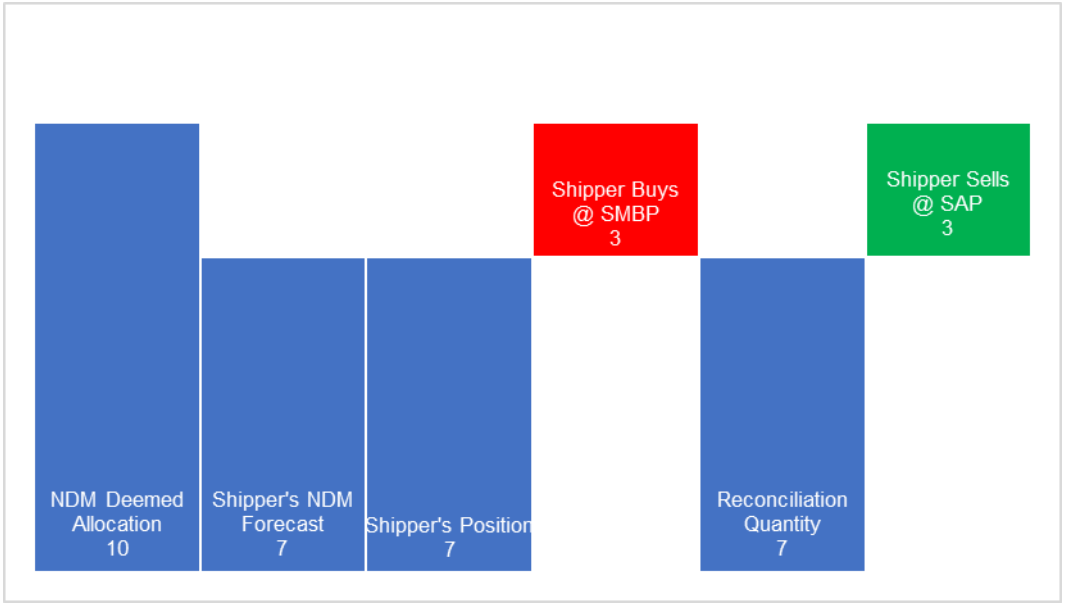
Price Differential = 0.1

Imbalance Reconciliation Payment = 2 x 0.1 = 0.2

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	12		
Shipper Buys @ SAP	-2	1.5	-3
Differential			4
Imbalance Reconciliation Quantity	2	0.1	0.2
Outturn			4.2

Here, the Shipper's final outturn is equivalent to 3 units at SMSP (i.e. the difference between Imbalance Quantity and Reconciliation Quantity at SMSP, 3 * 1.4 = 4.2). This means that the Shipper is financially neutral for correctly forecasting and nominating their usage above the NDM Deemed Allocation but is still penalised as reconciliation shows they were long on the gas day.

Solution C – Example Four – For Information Only



1. An initial NDM Deemed Allocation is calculated by Xoserve using the forecasting alogorithm
2. The Shipper creates their own forecast and believes they will require less gas than the NDM Deemed Allocation suggests
3. The Shipper acquires and Nominates volume as per their own Forecast
4. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is "short" and therefore Buys at SMBP
5. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct
6. The reconciliation quantity is the same as the Shipper's own NDM forecast and their initial submitted nomination. The shipper Sells at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SMBP	-3	1.6	-4.8
Reconciliation Quantity	7		
Shipper Sells @ SAP	3	1.5	4.5
Differential			-0.3

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the New Imbalance Reconciliation Process

1) Take the Shipper's Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 3 Units

Associated System Price = SMBP

2) Take the Shipper's Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 3 Units

Associated System Price = SAP

3) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMBP) = 1.6

System Average Price (SAP) = 1.5

(SMBP – SAP) = 0.1

4) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 3 Units

Shipper's Imbalance Quantity = 3 Units

Therefore, Imbalance Reconciliation Quantity = 3 Units

5) Multiply the Imbalance Reconciliation Quantity by the price differential:

Shipper's Imbalance Reconciliation Quantity = 3 Units

Price Differential = 0.1

Imbalance Reconciliation Payment = 3 x 0.1 = 0.3

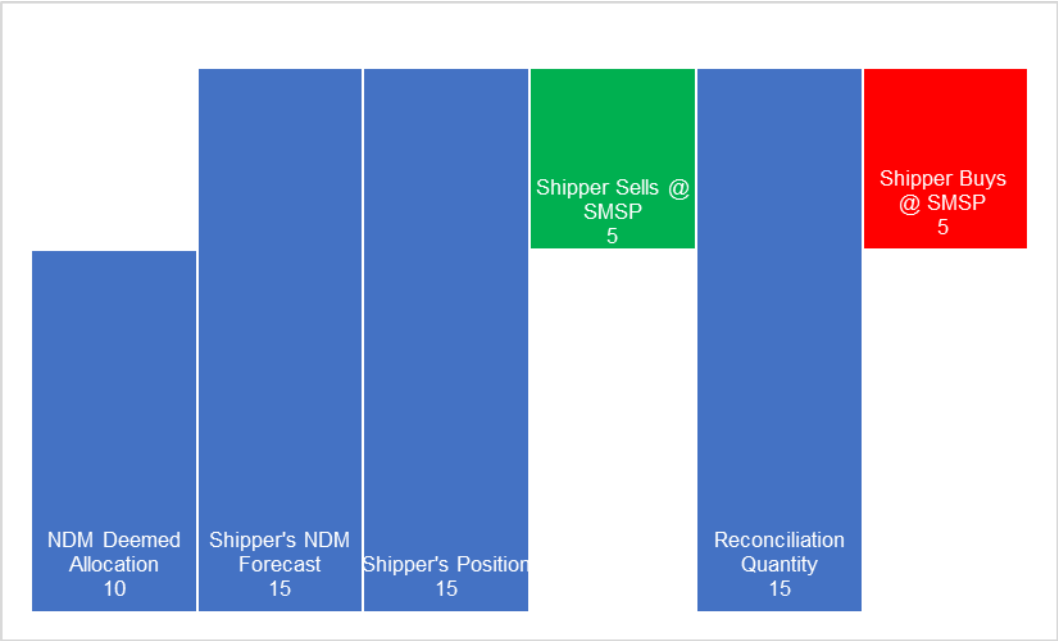
	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SMBP	-3	1.6	-4.8
Reconciliation Quantity	7		
Shipper Sells @ SAP	3	1.5	4.5
Differential			-0.3
Imbalance Reconciliation Quantity	3	0.1	0.3
Outturn			0

Here, the Shipper's final outturn is cost neutral. This means that the Shipper is financially neutral for correctly forecasting and nominating their usage below the NDM Deemed Allocation.

Worked Examples - For Information Only

Solution A – Worked Examples – For Information Only

Solution A Scenario A – Shipper Purchases above NDM Deemed Allocation

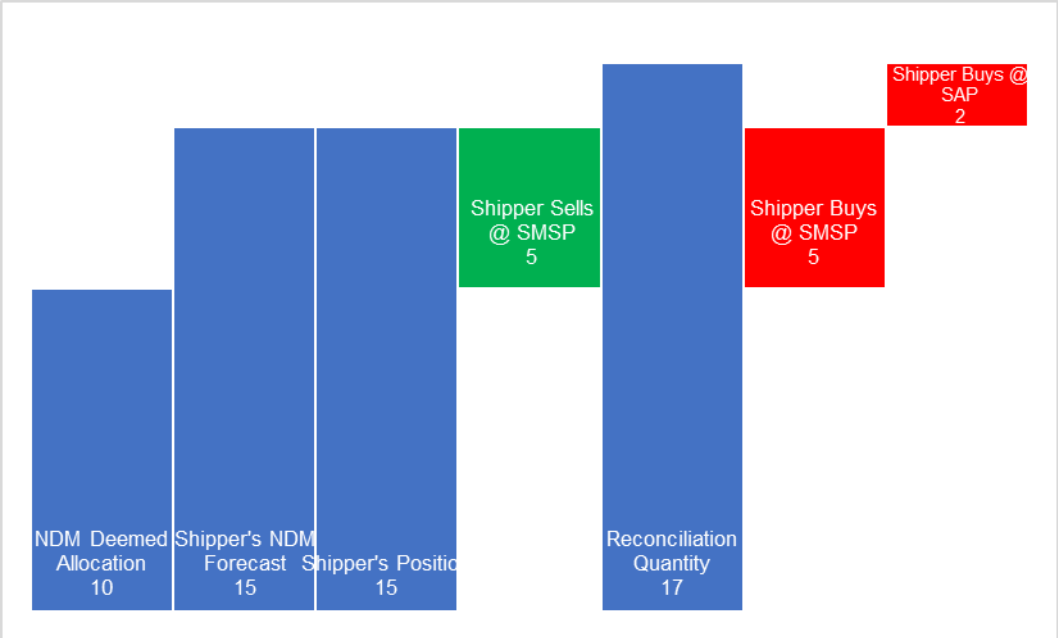


In the diagram above the Shipper is cost neutral for the gas it purchased in advance of the Gas Day.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is “long” and therefore Sells at SMSP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper’s own forecast was correct.
12. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SMSP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper’s Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SMSP	-5	1.4	-7
Differential			0

Solution A Scenario B – Shipper Purchases above NDM Deemed Allocation but below Reconciled Usage – For Information Only

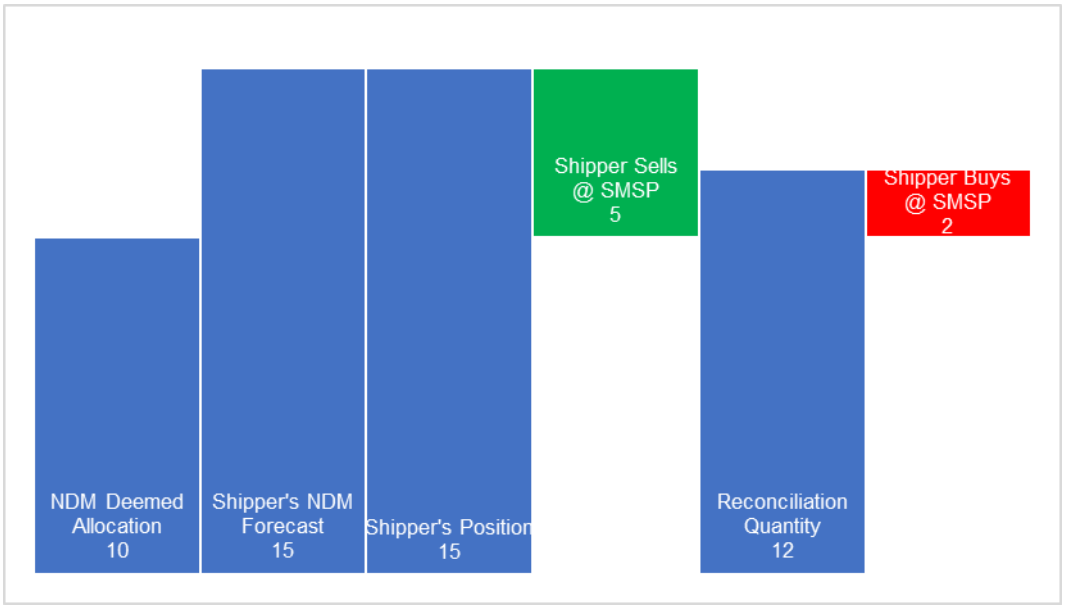


In the graph above the Shipper is not punished for purchasing above the NDM Deemed Allocation however they are still penalised for underforecasting.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is "long" and therefore Sells SMSP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too low.
12. The reconciliation quantity is the higher than the volume as paid out as a result of the Imbalance process. The shipper Buys SMSP up to the level of their submitted NDM Nomination. The volume above that forecasted by the Shipper is paid by them at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	17		
Shipper Buys @ SMSP	-5	1.4	-7
			0
Shipper Buys @ SAP	-2	1.5	-3
Differential			-3

Solution A Scenario C – Shipper Purchases above NDM Deemed Allocation but Reconciled Usage is in-between – For Information Only

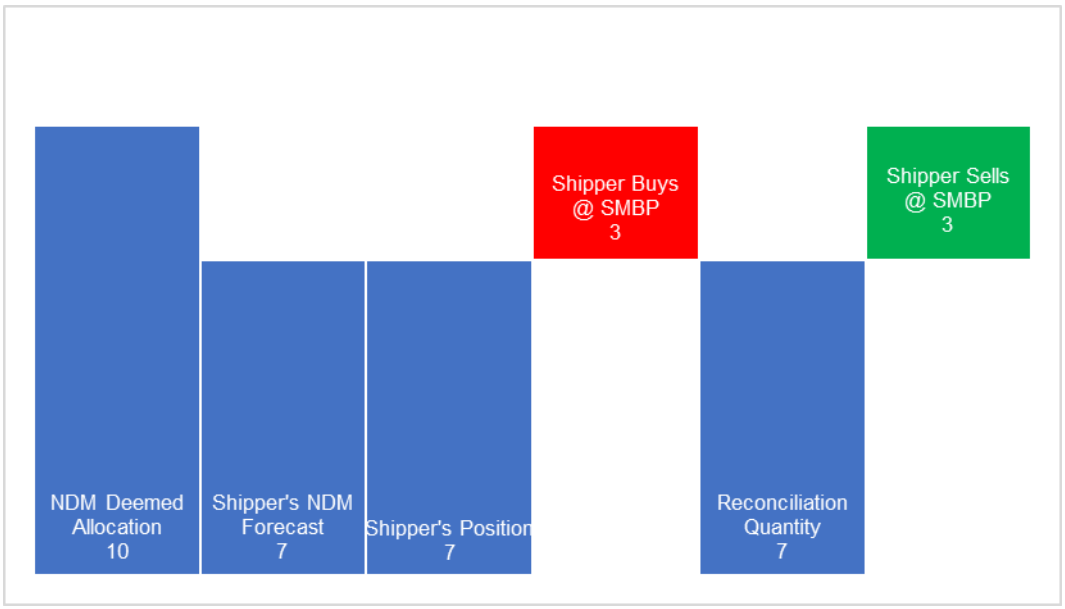


In the diagram above the Shipper is penalised for over purchasing gas but not penalised for purchasing more gas than the National Grid forecast.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is long and therefore Sells at SMSP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too high.
12. The reconciliation quantity is the lower than the volume as paid out as a result of the Imbalance process but higher than the NDM Deemed Allocation. The shipper Buys at SMSP up to the Reconciliation Quanity

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	12		
Shipper Buys @ SMSP	-2	1.4	-2.8
Differential			4.2

Solution A Scenario D – Shipper Purchases Below NDM Deemed Allocation – For Information Only



In the diagram above the Shipper is penalised for under purchasing gas but not penalised for purchasing less gas than the National Grid forecast.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require less gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is short and therefore must pay at SMBP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
12. The reconciliation quantity is the same as the Shipper's own NDM forecast and their initial submitted nomination. The shipper Sells SMBP.

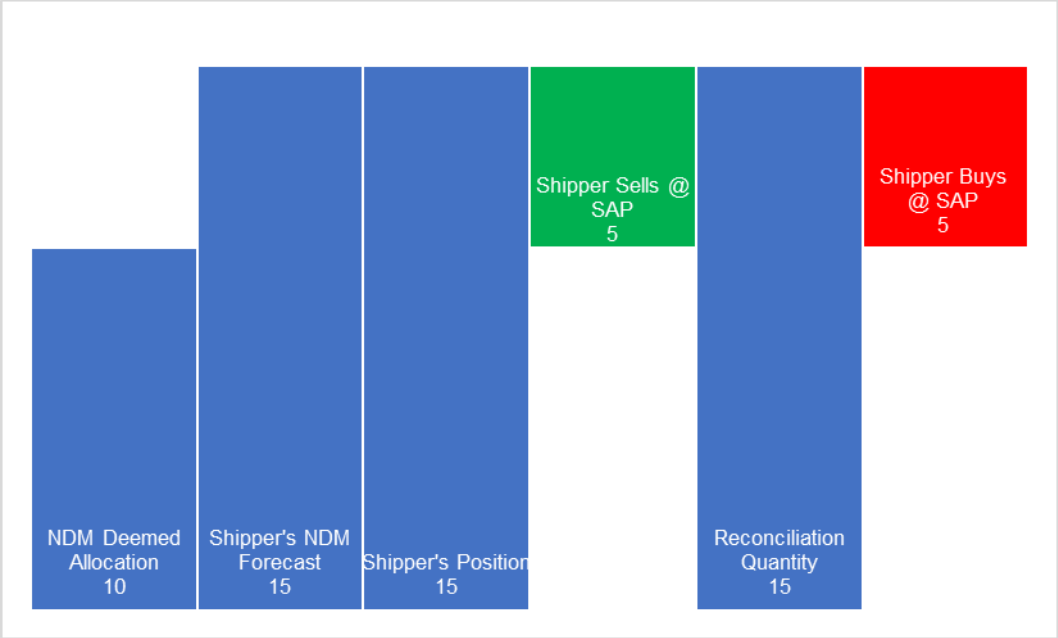
	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SMBP	-3	1.6	-4.8
Reconciliation Quantity	7		
Shipper Sells @ SMBP	3	1.6	4.8
Differential			0

Solution A2 – Adjust Imbalance Payments to be made at SAP

This solution proposes that all Imbalance payments are made at SAP (regardless of whether the Shipper is long/short or has over/under forecasted.) This would be a slightly less punitive model than Solution A1.

Solution A2 – Worked Examples – For Information Only

Solution A2 Scenario A – Shipper Purchases above NDM Deemed Allocation – For Information Only



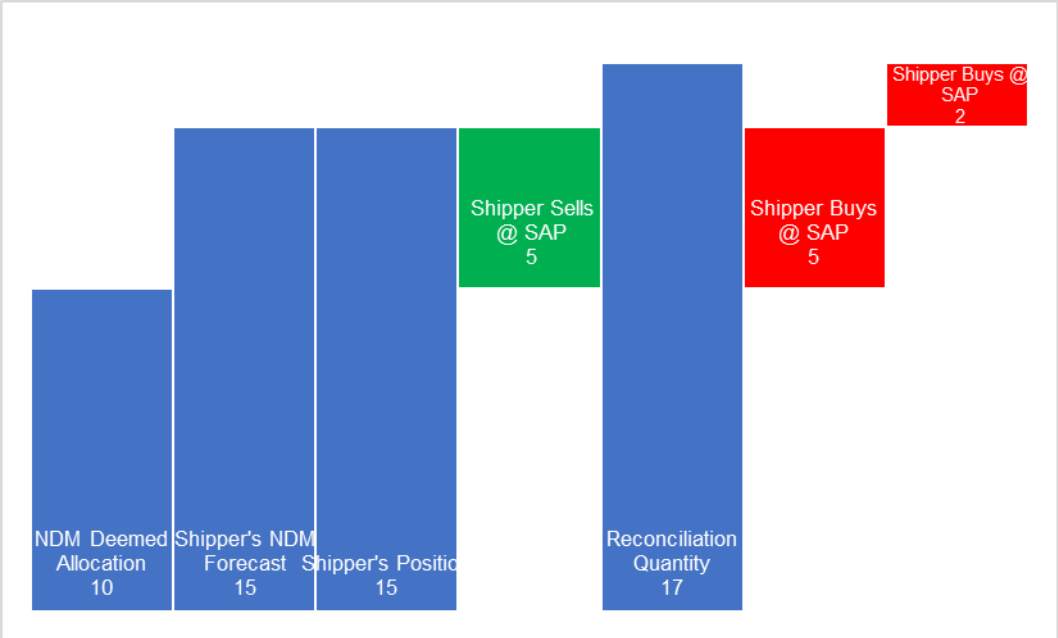
In the diagram above the Shipper is cost neutral for the gas it purchased in advance of the Gas Day.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is “long” and therefore Sells at SAP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper’s own forecast was correct.
12. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper’s Position	15		
Shipper Sells @ SAP	5	1.5	7.5

Reconciliation Quantity	15		
Shipper Buys @ SAP	-5	1.5	-7.5
Differential			0

Solution A2 Scenario B – Shipper Purchases above NDM Deemed Allocation but below Reconciled Usage – For Information Only

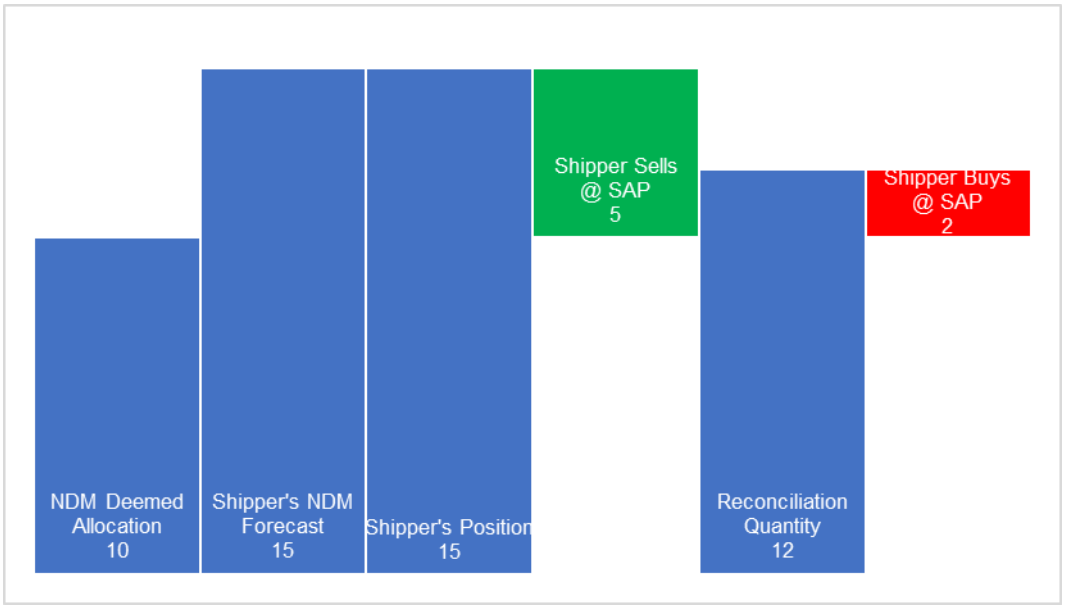


In the graph above the Shipper is not punished for purchasing above the NDM Deemed Allocation however they are still penalised for underforecasting.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is “long” and therefore Sells SAP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper’s own forecast was too low.
12. The reconciliation quantity is the higher than the volume as paid out as a result of the Imbalance process. The Shipper buys all of the volume at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper’s Position	15		
Shipper Sells @ SAP	5	1.5	7.5
Reconciliation Quantity	17		
Shipper Buys @ SAP	-5	1.5	-7.5
Shipper Buys @ SAP	-2	1.5	-3
Differential			-3

Solution A2 Scenario C – Shipper Purchases above NDM Deemed Allocation but Reconciled Usage is in-between – For Information Only

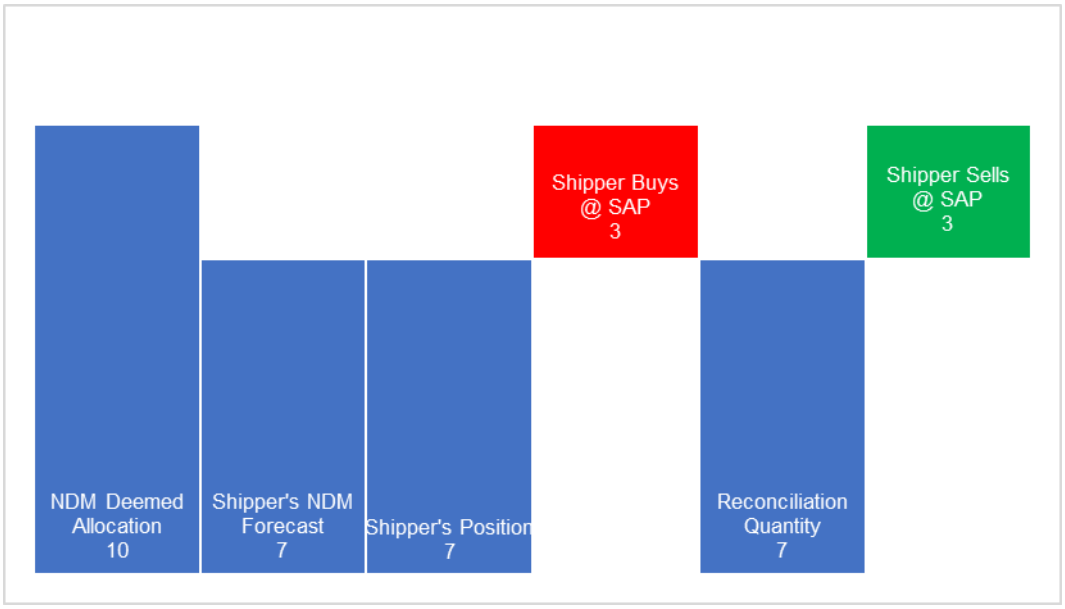


In the diagram above the Shipper is penalised for over purchasing gas but not penalised for purchasing more gas than the National Grid forecast.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is long and therefore Sells at SAP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too high.
12. The reconciliation quantity is the lower than the volume as paid out as a result of the Imbalance process but higher than the NDM Deemed Allocation. The shipper Buys at SAP up to the Reconciliation Quanity

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SAP	5	1.5	7.5
Reconciliation Quantity	12		
Shipper Buys @ SAP	-2	1.5	-3
Differential			4.5

Solution A2 Scenario D – Shipper Purchases Below NDM Deemed Allocation – For Information Only



In the diagram above the Shipper is penalised for under purchasing gas but not penalised for purchasing less gas than the National Grid forecast.

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require less gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is short and therefore must pay at SAP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
12. The reconciliation quantity is the same as the Shipper's own NDM forecast and their initial submitted nomination. The shipper Sells at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SAP	-3	1.5	-4.5
Reconciliation Quantity	7		
Shipper Sells @ SAP	3	1.5	4.5
Differential			0

Solution B – Mirror Electricity Settlement/Imbalance Arrangements and set SBP equal to SSP within each Settlement Period

This solution would seek to mirror the Electricity imbalance arrangements and seek to set a single marginal price for all transactions based on the net imbalance of the system.

- When the system as a whole is short, take the current SBP as the single cash out price
- When the system as a whole is long, take the current SSP as the single cash out price.

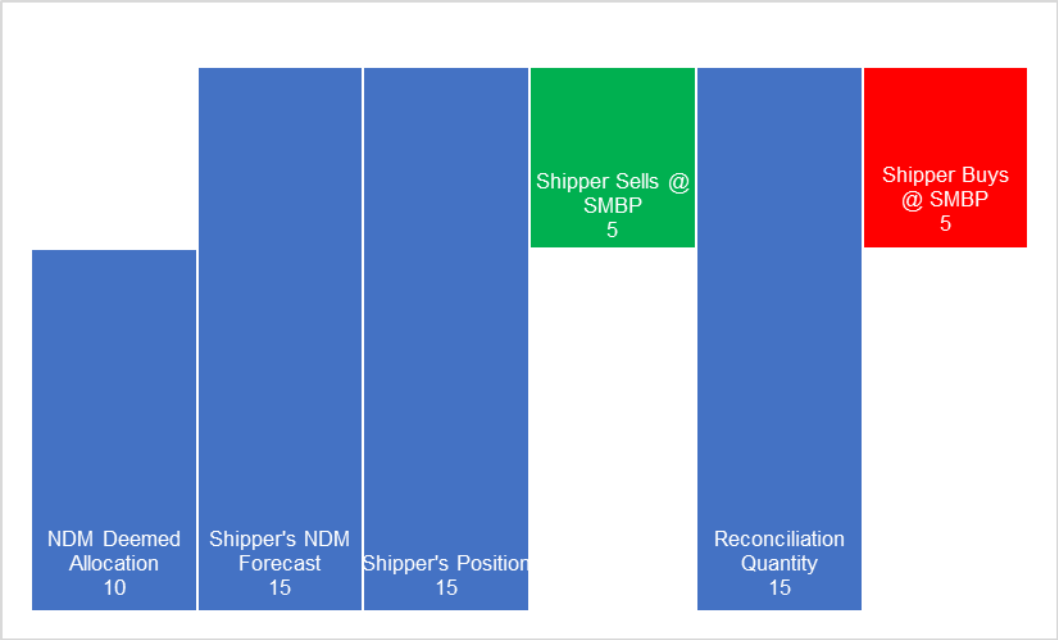
This solution provides a greater incentive for Shippers to balance their own position, but it will result in a more volatile cash out price. It is believed that this solution would have the greatest impact on the gas market, as it would introduce a new set of incentives to market participants.

For the purposes of this solution it is envisaged a settlement period being one gas day.

Legal Text to be developed through subsequent Modification workgroup development.

Solution B – Example One – For Information Only

In this example, the entire gas system is short, therefore all transactions are made at SMBP.

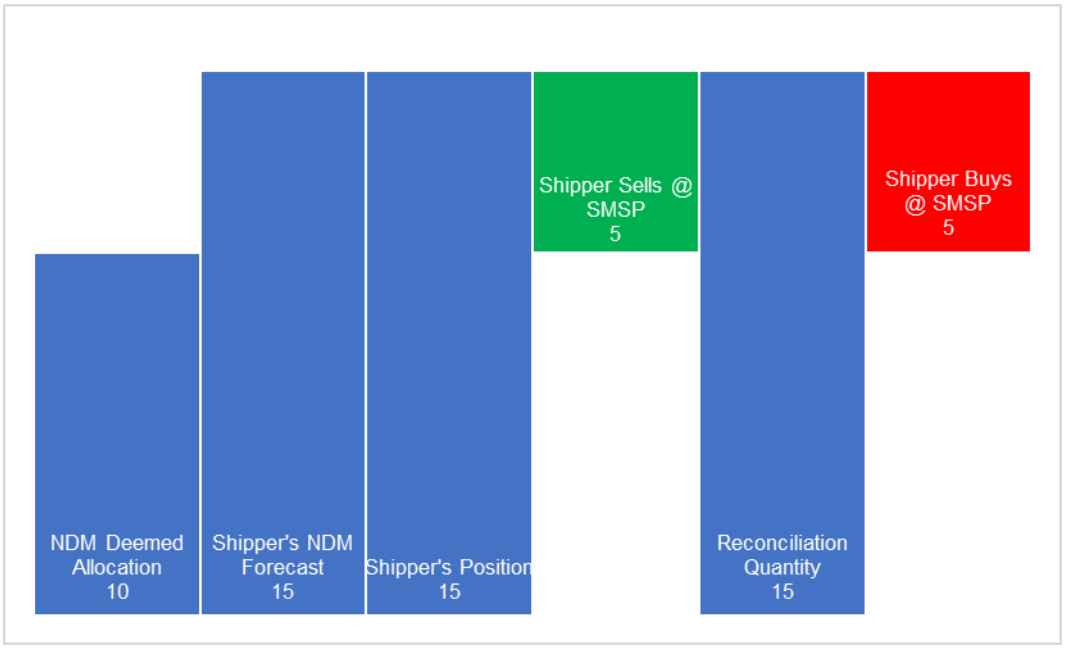


7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates input volume as per their own Forecast
10. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the entire system is short, therefore the shipper sells at SMBP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
12. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SMBP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMBP	5	1.6	8
Reconciliation Quantity	15		
Shipper Buys @ SMBP	-5	1.6	-8
Differential			0

Solution B – Example 2 – For Information Only

In this example, the entire gas system is long, therefore all transactions are made at SMSP.



7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the entire system is "long" and therefore the Shipper sells at SMSP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
12. The reconciliation quantity is the exact same volume as paid out as a result of the Imbalance process. The shipper Buys at SMSP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SMSP	-5	1.4	-7
Differential			0

Solution C - Imbalance Reconciliation Process

This solution would see no changes to the existing Imbalance and Reconciliation processes.

A new process could be introduced which would calculate a credit or debit to the Shipper:

5) Take the Shipper's Imbalance Quantity and the SMP at which the imbalance was cashed-out (SMPB or SMPS)
6) Take the Shipper's Reconciliation Quantity and Imbalance Quantity. Provided both are in the same direction (long/short) then take the lower of the two quantities as the Imbalance Reconciliation Quantity.
7) Calculate the difference between the applicable SMP and SAP
8) Multiply the difference between the Reconciliation Quantity and the Imbalance Quantity by the price differential between SMP and SAP

There would be **no** anticipated changes required to the following processes:

- Daily energy imbalance
    - SMP Buy/Sell used for energy imbalance calculation
    - Daily energy imbalance (closed-out) position – not updated as a consequence of meter point reconciliation
- UIG (charged at SMP Buy or SMP Sell dependent on direction of the Shipper's imbalance)
- Meter point reconciliation charged at SAP

This solution requires no changes to any of the processes above yet incentivises shippers to forecast accurately.

Legal text to be developed through subsequent Modification workgroup development.

Solution C – Example One – For Information Only

The existing Imbalance and Reconciliation processes would still occur, as in current arrangements:

7. An initial NDM Deemed Allocation is calculated by Xoserve using the forecasting alogorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper contracts volume as per their own Forecast
10. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is "long" and therefore sells the volume difference at SMSP
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct.
12. The reconciliation quantity is the same volume as sold during the Imbalance process, however the Shipper must pay at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SAP	-5	1.5	-7.5
Differential			-0.5

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the New Imbalance Reconciliation Process

6) Take the Shipper's Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 5 Units

Associated System Price = SMSP

7) Take the Shipper's Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 5 Units

Associated System Price = SAP

8) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMSP) = 1.4

System Average Price (SAP) = 1.5

(SAP – SMSP) = 0.1

9) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 5 Units

Shipper's Imbalance Quantity = 5 Units

Therefore, Imbalance Reconciliation Quantity = 5 Units

10) Multiply the Imbalance Reconciliation Quantity by the price differential:

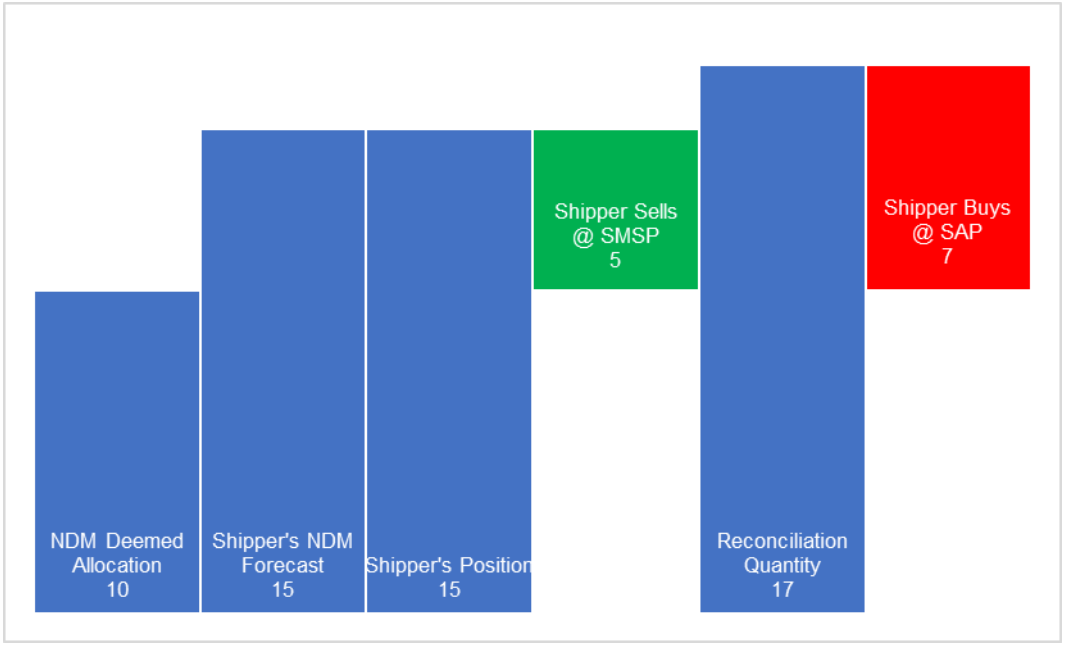
Shipper's Imbalance Reconciliation Quantity = 5 Units

Price Differential = 0.1

Imbalance Reconciliation Payment = 5 x 0.1 = 0.5

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	15		
Shipper Buys @ SAP	-5	1.5	-7.5
Differential			**-0.5**
Imbalance Reconciliation Quantity	5	0.1	0.5
Outturn			**0**

Solution C Example Two – For Information Only



Standard Imbalance and Reconcilation Process Still Applies

7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is “long” and therefore Sells SMSP.
11. Meter Reads are submitted and a Daily Reconciliation Quantity is calculated. The reconciliation quantity shows the Shipper’s own forecast was too low.
12. The Shipper then Buys the Daily Reconcilation Quantity at SAP

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper’s Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	17		
Shipper Buys @ SAP	-7	1.5	-10.5
Differential			-3.5

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the New Imbalance Reconciliation Process

6) Take the Shipper’s Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 5 Units

Associated System Price = SMSP

7) Take the Shipper’s Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 7 Units

Associated System Price = SAP

8) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMSP) = 1.4

System Average Price (SAP) = 1.5

(SAP – SMSP) = 0.1

9) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 7 Units

Shipper's Imbalance Quantity = 5 Units

Therefore, Imbalance Reconciliation Quantity = 5 Units

10) Multiply the Imbalance Reconciliation Quantity by the price differential:

Shipper's Imbalance Reconciliation Quantity = 5 Units

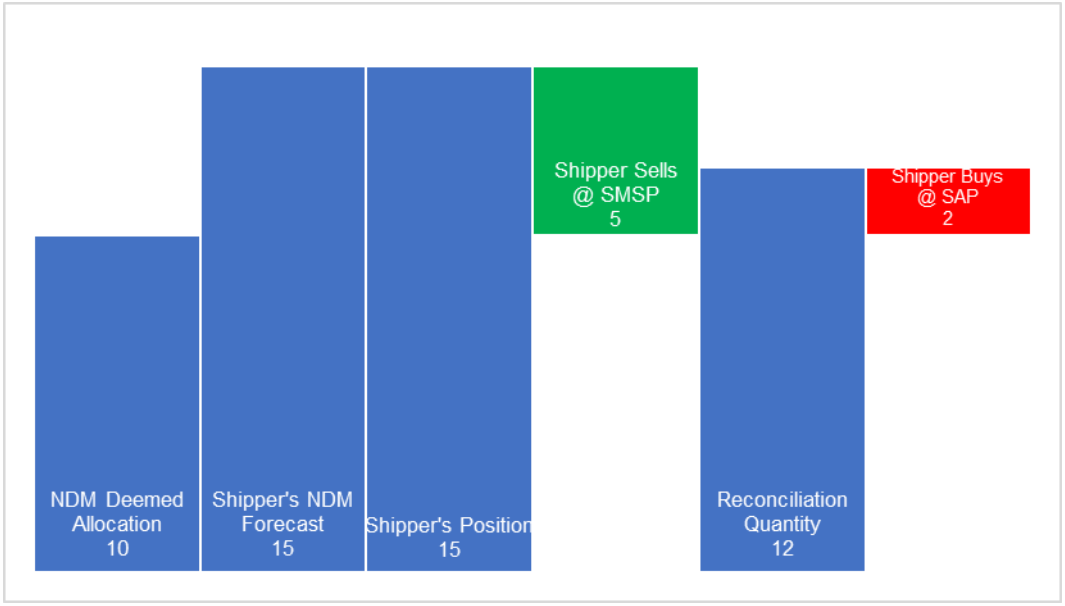
Price Differential = 0.1

Imbalance Reconciliation Payment = 5 x 0.1 = 0.5

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	17		
Shipper Buys @ SAP	-7	1.5	-10.5
Differential			-3.5
Imbalance Reconciliation Quantity	5	0.1	0.5
Outturn			-3

Here, the Shippers final outturn is equivalent to 2 units at SAP (i.e. the difference between Imbalance volumes and Reconciliation volumes at SAP, 2*1.50 = 3). This means that the Shipper is financially neutral for correctly forecasting and nominating their usage above the NDM Deemed Allocation but is still penalised as reconciliation shows they were short on the gas day.

Solution C – Example Three – For Information Only



7. The NDM Deemed Allocation is produced by Xoserve using the forecasting algorithm
8. The Shipper creates their own forecast and believes they will require more gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process always results in the Shipper being cashed out back to their initial NDM Deemed Allocation level. In this example the Shipper is long and therefore Sells at SMSP.
11. Meter Reads are submitted and a Daily Reconcliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was too low.
12. The reconciliation quantity is the lower than the volume as paid out as a result of the Imbalance process but higher than the NDM Deemed Allocation. The Shipper Buys at SAP up to the Reconciliation Quanity

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	12		
Shipper Buys @ SAP	-2	1.5	-3
Differential			4

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the new Imbalance Reconciliation Process

6) Take the Shipper's Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 5 Units

Associated System Price = SMSP

7) Take the Shipper's Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 2 Units

Associated System Price = SAP

8) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMSP) = 1.4

System Average Price (SAP) = 1.5

(SMSP – SAP) = 0.1

9) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 2 Units

Shipper's Imbalance Quantity = 5 Units

Therefore, Imbalance Reconciliation Quantity = 2 Units

10) Multiply the Imbalance Reconciliation Quantity by the price differential:

Shipper's Imbalance Reconciliation Quantity = 2 Units

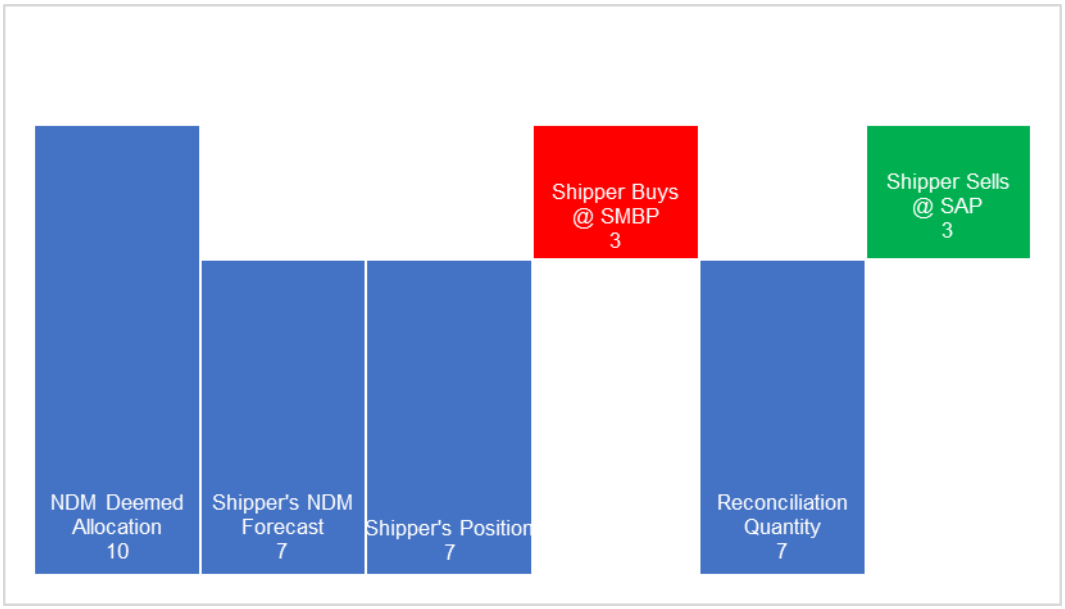
Price Differential = 0.1

Imbalance Reconciliation Payment = 2 x 0.1 = 0.2

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	15		
Shipper's Position	15		
Shipper Sells @ SMSP	5	1.4	7
Reconciliation Quantity	12		
Shipper Buys @ SAP	-2	1.5	-3
Differential			4
Imbalance Reconciliation Quantity	2	0.1	0.2
Outturn			4.2

Here, the Shipper's final outturn is equivalent to 3 units at SMSP (i.e. the difference between Imbalance Quantity and Reconciliation Quantity at SMSP, 3 * 1.4 = 4.2). This means that the Shipper is financially neutral for correctly forecasting and nominating their usage above the NDM Deemed Allocation but is still penalised as reconciliation shows they were long on the gas day.

Solution C – Example Four – For Information Only



7. An initial NDM Deemed Allocation is calculated by Xoserve using the forecasting alogorithm
8. The Shipper creates their own forecast and believes they will require less gas than the NDM Deemed Allocation suggests
9. The Shipper acquires and Nominates volume as per their own Forecast
10. The Imbalance process results in the Shipper being cashed out to their initial NDM Deemed Allocation level. In this example the Shipper is "short" and therefore Buys at SMBP
11. Meter Reads are submitted and a Daily Reconcliation Quantity is calculated. The reconciliation quantity shows the Shipper's own forecast was correct
12. The reconciliation quantity is the same as the Shipper's own NDM forecast and their initial submitted nomination. The shipper Sells at SAP.

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SMBP	-3	1.6	-4.8
Reconciliation Quantity	7		
Shipper Sells @ SAP	3	1.5	4.5
Differential			-0.3

The new imbalance reconciliation process would not impact any of the existing processes and therefore the above would occur as it does under current arrangements.

Applying the New Imbalance Reconciliation Process

6) Take the Shipper's Imbalance Quantity, direction and associated system price

Shippers Imbalance Quantity = 3 Units

Associated System Price = SMBP

7) Take the Shipper's Reconciliation Quantity and associated system price

Shippers Reconciliation Quantity = 3 Units

Associated System Price = SAP

8) Calculate the price differentials (between the daily SMP (buy/sell) and SAP)

System Marginal Sell Price (SMBP) = 1.6

System Average Price (SAP) = 1.5

(SMBP – SAP) = 0.1

9) Calculate the Imbalance Reconciliation Quantity, using the Shipper's Imbalance Quantity and Reconciliation Quantity:

Shipper's Reconciliation Quantity = 3 Units

Shipper's Imbalance Quantity = 3 Units

Therefore, Imbalance Reconciliation Quantity = 3 Units

10) Multiply the Imbalance Reconciliation Quantity by the price differential:

Shipper's Imbalance Reconciliation Quantity = 3 Units

Price Differential = 0.1

Imbalance Reconciliation Payment = 3 x 0.1 = 0.3

	kWh	p/kWh	Cost
NDM Deemed Allocation	10		
Shipper's NDM Forecast	7		
Shipper's Position	7		
Shipper Buys @ SMBP	-3	1.6	-4.8
Reconciliation Quantity	7		
Shipper Sells @ SAP	3	1.5	4.5
Differential			-0.3
Imbalance Reconciliation Quantity	3	0.1	0.3
Outturn			0

Here, the Shipper's final outturn is cost neutral. This means that the Shipper is financially neutral for correctly forecasting and nominating their usage below the NDM Deemed Allocation.

8 Appendix C - Imbalance Reconciliation Materiality Data

Please refer to separate spreadsheet, entitled "Request 0661R Appendix C (11 June 2018)" available here: http://www.gasgovernance.co.uk/0661/