UNC Modification	At what stage is this document in the process?
# UNC 0643 (Urgent): Changes to settlement regime to address Unidentified Gas issues including retrospective correction	01 Modification 02 Workgroup Report 03 Draft Modification Report 04 Final Modification Report

Purpose of Modification:

This modification implements the proposal set out by the DNV GL on 31 October 2017 to utilise a top-up down allocation and nomination approach for NDM allocation, with resulting volatility reconciled to unread meters. This modification backdates the proposal to 01 June 2017.

	The Proposer recommends that this modification should be: treated as urgent and should proceed under a timetable approved by the Authority.
	High Impact: Shippers, Suppliers and Customers
	Medium Impact: CDSP
	Low Impact: Transporters

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Timetable

The Proposer recommends the following timetable:

Panel Recommendation on Urgency	21 December 2017
Ofgem Decision on Urgency	21 December 2017
Initial Workgroup Discussion	04 January 2018
Consultation Commences	01 February 2018
Consultation Close-out for representations	08 February 2018
Final Modification Report available for Panel	12 February 2018
Modification Panel decision	15 February 2018
Ofgem Decision	End of February 2018

Any questions?

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1 Summary

What

The energy allocation model, implemented on 1 June 2017 through UNC Modifications 0432 & 0473 as part of Project Nexus, is misallocating gas to the end consumer creating significant consumer detriment. This new methodology to handle Unidentified Gas is not fit for purpose. It has produced the unintended consequence of perhaps the most volatile, unpredictable and uncertain cost component in the gas market.

The simulations of this new methodology produced significantly different allocations of Unidentified Gas to those which are now being produced. Clearly this will have a material impact on all shippers with a natural flow-through to customers.

The key concern for industry is the current calculation of Unidentified Gas post-Nexus at nomination and allocation does not just reflect Unidentified Gas but also estimation error in the NDM allocations, which is then having a material impact on gas consumers. The industry volume has an estimated cost of around £18m a month (4.65% of total LDZ throughput, using Xoserve data June to November 2017). Of this around 3.5% is due to inaccuracies in settlement, rather than losses, so the inequitable allocation of costs from the settlement error is around £13.5m a month or over £160m a year. The range of Unidentified Gas levels being experienced by individual shippers is much higher; with most seeing uncorrected demand increases (volatility) to their portfolios between -20% and +25% at an individual LDZ. This leaves suppliers exposed to market volatility and this has led to consumer detriment.

In addition to the cost increase for customers, these costs are never fully formalised due to the rolling 12 month pot of Unidentified Gas, after which costs are smeared. This cost uncertainty for customers will result in significant detriment.

Why

This modification is intended to ensure Unidentified Gas is allocated more accurately at nomination and allocation without the detrimental effects of estimation error being smeared across the industry in an unpredictable manner.

How

This modification will make the following changes:

- Utilise the Pre-Nexus nomination and allocation process for NDM meters to improve the overall performance of energy allocation to those customers.
- Set Unidentified Gas as a percentage of throughput for each LDZ, set at 1.1% (utilising the latest AUGE statement assessment) for the remainder of the Gas Year 2017/18. For subsequent gas years, the AUGE will be required to determine the percentage of Unidentified Gas in each LDZ.
- Market reconciliation processes will be revised so that any reconciliation volumes are only applied to those sites that cause the settlement error; namely those DM and NDM sites that do not trigger a reconciliation or DM site that did not submit a valid meter read, unless a Reconciliation Target (defined later) for any particular month is reached, whereby the reconciliation volume will be smeared across all meter points.
- The AUGE will be required to develop Settlement Error Allocation Factors to apportion reconciliation volumes to the sectors that create them. Until these new factors have been compiled the existing Unidentified Gas Allocation Factors will be used.
- The solution will be backdated to 01 June 2017. The Xoserve will undertake a one-off reconciliation exercise to correct shipper positions once this modification is implemented.

2 Governance

Justification for Authority Direction

Using Xoserve data it is estimated that Unidentified Gas is averaging 4.65% a month for the whole market versus the AUGE estimate of 1.1%. Of this around 3.5% is due to inaccuracies in settlement, rather than losses. The current impact on the market from Unidentified Gas has been estimated at costing around £18m a month throughput as provided to UNC Workgroup 0631R:

	Excess above 1% UIG	mkt size ms therms	UIG ms therms	COG ppth	Annual Cost £ms	Monthly cost £ms
Low	2%	17,400	348	50	£ 174	£ 15
Medium	4%	17,400	696	50	£ 348	£ 29
High	6%	17,400	1,044	50	£ 522	£ 44

The inequitable allocation of costs from the settlement error is around £13.5m a month or over £160m a year. This issue has a clear and material impact on the market and competition, so therefore requires Authority decision.

Requested Next Steps

This modification should:

- be treated as urgent and should proceed under a timetable approved by the Authority

This modification has been discussed with the industry on two prior occasions, on 13 and 22 November 2017. In addition Xoserve has been consulted on all stages of development.

3 Why Change?

As part of Project Nexus, the industry moved from a top-down settlement approach for determining and allocating daily NDM consumption to one that attempted to use a bottom-up calculation, using individual site profiles and external weather information to build up a shipper's, and so ultimately the industry's, total supply demand, with any remainder being smeared across the market

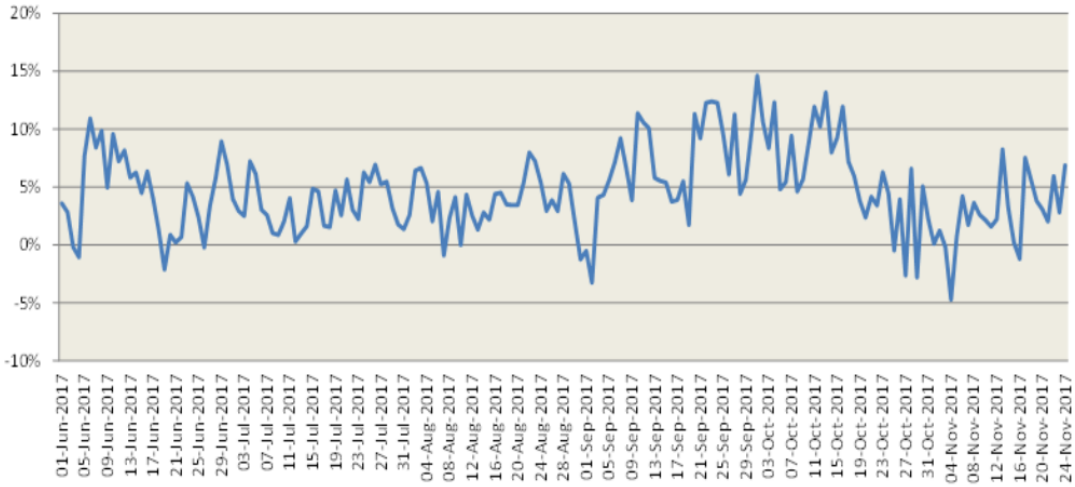
Unidentified Gas is the term given to any residual gas that is not directly allocated each day to a meter or transporters to represent network losses (Shrinkage). At allocation, the term Unidentified Gas is misleading; the vast majority of Unidentified Gas is in fact estimation error caused by inaccuracies in the NDM estimation process which is used for large portions of industry volume.

This problem has been created due to issues with the new settlement process brought in by recent changes to the gas market regime[1], which went live in June 2017. The nature of how Unidentified Gas is now calculated means it is unpredictable in both how it varies and its total volume. It was expected however that the estimation error component would be relatively constant and so Unidentified Gas would approach a value of 1% (the estimated levels of losses through mainly theft and registration errors as calculated by both the 3rd party industry expert[2] and the industry's settlement committee).

[1] Project Nexus

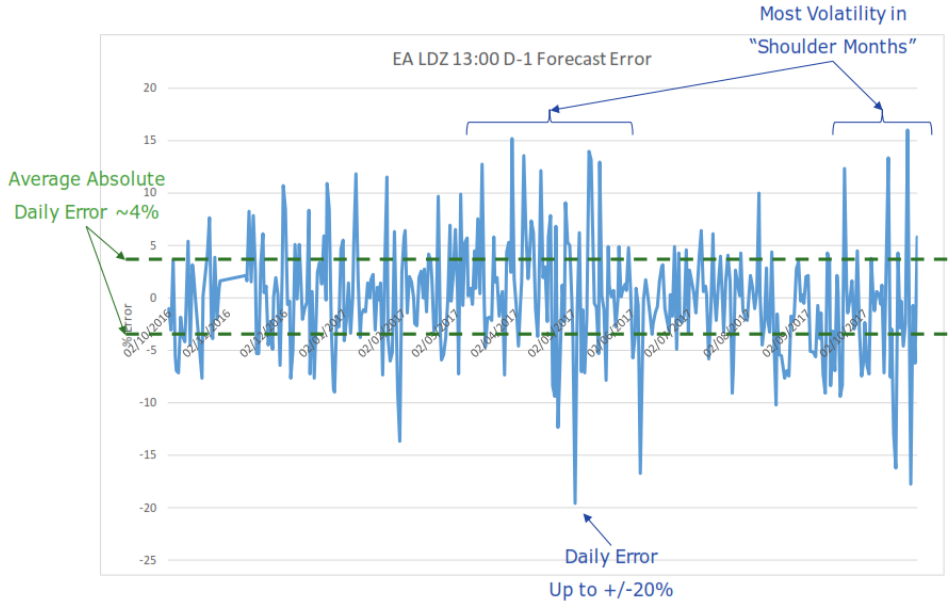
[2] Allocation of Unidentified Expert or AUGE

Unidentified Gas volumes have however not approached this level or exhibited the expected characteristic on the day. Since the start of the new settlement regime, Unidentified Gas has averaged around 4.65% of total demand. Of this around 3.5% is due to inaccuracies in settlement, rather than losses, so the inequitable allocation of costs from the settlement error is around £13.5m a month or over £160m a year. The average movement across the market is below:



Source: Xoserve: UIG Weekly Update 1st December 2017

In reality as Unidentified Gas is calculated regionally and on a daily basis as information is received Unidentified Gas is much more volatile on a daily basis, as shown below for the East Anglia Region.



Source: DNV GL: [31 October 2017 UIG Calculation Issues (provided by the AUGE)](https://www.gasgovernance.co.uk/sites/default/files/ggf/book/2017-10/PAC%20-%20UIG%20Calculation%20Issues%20%28provided%20by%20the%20AUGE%29%20.pdf)[3]

[3] https://www.gasgovernance.co.uk/sites/default/files/ggf/book/2017-10/PAC%20-%20UIG%20Calculation%20Issues%20%28provided%20by%20the%20AUGE%29%20.pdf

This volatility means that shippers incur significant costs in attempting to handle these unpredictable swings in demand. In particular smaller shippers are obliged to buy to peak estimates as failure to balance on the day result in substantial credit requirements.

These swings are not being reduced by the reconciliations of allocations. Despite over 80% of sites being reconciled since June, as reported by Xoserve to DESC, only 15% of the total of Unidentified Gas has been reallocated for June as of middle of November 2017. Similarly the issues that were experienced in loading Valid Meter Reads from daily metered sites have been largely tackled as part of an industry-wide project lead by Xoserve. Xoserve estimates that this error would only account for 1% of Unidentified Gas. The industry have engaged with Xoserve since implementation of Project Nexus to investigate and then resolve the data issues present in Unidentified Gas, but this has not substantially reduced either the volatility or overall level. A number of UNC modifications were raised to address concerns, but none of these will resolve the problem of unpredictable levels of UIG being allocated to shippers on a daily basis

As DNV GL (who provides the AUGE service) has stated[4] ~~(here)~~ "This calculated difference figure is not Unidentified Gas: it is Unidentified Gas plus allocation algorithm error." And *"The most recent figures we have seen show that the daily Mod 432 calculation returned an average Unidentified Gas figure of approximately 7% of throughput for September, with a peak of nearly 15% for the national Unidentified Gas total. Unidentified Gas for individual LDZs is even more variable and ranged between -16.9% and 23.9% of throughput. …. It is clear, therefore, that the current Unidentified Gas calculation is not fit for purpose."*

This modification is intended to achieve the following:
1) make Unidentified Gas more accurately reflect permanent Unallocated Gas only
2) improve the NDM estimation profiles; and as a consequence, the within month profiles
3) make the industry more cost reflective as it more correctly and more quickly matches actual gas costs to the meter
4) encourage the adoption of Smart meters, AMR and the regular submission of these reads, which will be for the benefit of the market as it will reduce initial estimation error
5) reduce within day volatility in the nominations issued, trading costs and therefore customer costs
6) match estimate error to those meters which are estimating in the first rec run for that period
7) give clearer and more understandable cost for customers
8) remove an unintended source of customer detriment

4 Code Specific Matters

Reference Documents

- NDM Demand Estimation Methodology (UNC Related Document)
- AUGE Framework document (UNC Related Document)

[4] Ibid.

Knowledge/Skills

Xoserve has already committed significant levels of resource to attempt to identify and address the issue of Unidentified Gas volatility. The learnings from this exercise will be of great benefit in assessing the proposed solution and can be found on the Xoserve website[5].

The solution developed has been based on the option paper developed by DNV GL (which is contained in Annex 1) and the current solution will expand the AUGE role substantially.

5 Solution

The following changes to the current market business rules are proposed

Allocation

There are two main changes that are proposed to the current NDM forecast and allocation process. The high-level intention is to reinstate the NDM allocation and forecasting processes that were successfully utilised by the industry, prior to implementation of Project Nexus, with the retention of the allocation of Unidentified Gas as a fixed proportion of throughput for the day.

NDM Allocation

The pre-nexus calculation for determining the allocation of a NDM supply point, as set on in Version 5.01 of the UNC, will be reintroduced in full, namely:

$$SPD = \frac{AQ}{365} \times ALP_t \times (1 + (WCF_t \times DAF_t)) \times SF_t$$

where:
Annual Quantity (AQ) is an estimate of consumption (for every site) based on Seasonal Normal Demand (SND).
ALPt is the value of the Annual Load Profile for the Applicable End User Category. is a profiled estimate of consumption using average weather conditions and based on the End User Category (EUC) for that site (defined from its LDZ, AQ and winter consumption, where applicable). The profile is divided by 365 to give a daily forecast on how much that site will use on a gas day (under SND conditions). EUC 'bands' are managed by DESC each year and can be changed on an annual basis (usually 1 October)
DAFt is the value of the Daily Adjustment Factor for the Applicable End User Category. It is an adjustment to weather sensitivity at the EUC
WCFt is the Weather Correction Factor for the relevant LDZ. It is an adjustment made to the algorithm that takes into account external factors like the weather with an adjustment to SND where a negative value (<0) indicates weather warmer than SND and a positive value (>0) indicates colder weather than SND. A value of 0 is SND
SFt is the Scaling Factor for the relevant LDZ. It is a net adjustment of NDM sites in line with NDM LDZ consumption using values to increase allocations and based on LDZ forecast (for Nominations) or LDZ actual (for Allocations)

[5] www.xoserve.com/index.php/unidentified-gas-uig/

The following components of this calculation will be derived as follows. For the avoidance of doubt it is intended that the pre-nexus calculation is reinstated in full.

Annual Load Profile (ALP_t)

The process for determining this was unchanged by Project Nexus and will continue to be derived in accordance with the NDM Demand Estimation Methodology, and for the avoidance of doubt will be unchanged and is provided here for provide clarity on the completeness of the solution.

Daily Adjustment Factor (DAF_t)

The DAF will be derived as pre-nexus and so will be derived as follows:

$$DAFt = \frac{(WVCE_t \,/\, SNDE_t)}{(WVCN_t \,/\, SNDN_t)}$$

$WVCN_t$ is defined as the value of the Weather Variable Coefficient (the element of demand which varies with weather as represented by the Composite Weather Variable) in the Demand Model for the LDZ Aggregate NDM Points for the relevant LDZ.

$SNDN_t$ is defined as the value of seasonal normal demand for LDZ Aggregate NDM Points for the relevant LDZ.

$WVCE_t$ is defined in the NDM Demand Estimation Methodology and is the value of the Weather Variable Coefficient in the Demand Model for the End User Category.

$SNDE_t$ defined in the NDM Estimation as the seasonal normal demand for the End User Category.

Weather Correction Factor (WCF_t)

The Weather Correction Factor will be derived as pre-nexus and so will be derived as follows:

$$WCF_t = (ASD_t - \sum ((AQ_{EUC}/365)*ALP_t)_{LDZ}) \,/\, \sum ((AQ_{EUC}/365)*ALP_t)_{LDZ}$$

ALP_t is defined above.

AQ is defined within the UNC.

ASD_t is defined as

(a) for the purposes of Nomination Determination, Forecast LDZ Demand (at the relevant time of Nomination Determination) less the aggregate sum of DM Output Nominations, shrinkage and Unidentified Gas.

(b) for the purposes of Offtake Determination, that quantity comprised in the LDZ Daily Quantity Offtaken attributable to NDM Supply Points (determined as the LDZ Daily Quantity Offtaken less the aggregate sum for quantities offtaken at all DM Supply Points, shrinkage and Unidentified Gas (This definition has been altered slightly from the pre-Nexus code definition as it now includes Unidentified Gas)

Scaling Factor (SF_t)

Scaling Factor will be derived as pre-nexus and so is defined as:

$$SF_t = ASD_t \,/\, NDMD_t$$

ASD_t is defined above.

$NDMD_t$ is the aggregate for all NDM Supply Points in the LDZ of the amounts determined by calculating Supply Point Demand for Day t.

NDMD review

It will be necessary to also reinstate the review process brought in by UNC Modification 0204 to ensure the WCF continues to follow the current position, though it will increased in frequency to monthly:

In respect of each Gas Year, the CDSP will, on the day AQ files are issued out will compare the AQ change at each LDZ and AQ at the last application date.

Where the comparison made determines that the aggregate NDM LDZ AQ has increased or decreased by an amount of more than 1%, the CDSP will:

a) on the last working day of the month before the AQ's take effect, publish the revised values that will apply in respect of $\sum((AQ_{EUC}/365)*ALP)$ for each LDZ;
b) apply such revised values from the Gas Day of the month; in line with when the AQ's take effect.

In addition there will be an annual process, to coincide with the start of the Gas Year, where the CDSP will be required to undertake of full refresh of WCF values irrespective of their position.

Permanent Unidentified Gas Calculation

There will still be allocated to each User a volume of Unidentified Gas, which will be deducted from the total LDZ offtake. This Unidentified Gas will be a percentage of total LDZ volume. For the Gas Year 2017/18 this will be fixed at 1.1% for all LDZs, in line with the latest level of Unidentified Gas throughput calculated by the AUGE in it last statement. For future Gas Years, the AUGE will be tasked with determining the expected permanent Unidentified Gas percentage from each LDZ for the Gas Year.

This annual percentage of LDZ throughput will be used to determine the total Unidentified Gas each day for an LDZ, by multiplying the expected LDZ offtake by the percentage. The total volume of Unidentified Gas will vary within day (i.e. from initial forecast to Exit Close Out) as the LDZ offtake (forecast and actual) varies. These Unidentified Gas volumes will then be allocated on a daily basis to all shippers using the Allocation Factors derived by the AUGE.

AUGE table example:

LDZ	**SC**	**NO**	**NW**	**NE**	**EM**	**WM**	**WN**	**WS**	**EA**	**NT**	**SE**	**SO**	**SW**
UIG % to be used on day throughput	A%	B%	C%	D%	E%	F%	G%	H%	I%	J%	K%	L%	M%

Calculation:

Assume that an LDZ records an offtake of 1000 Units and Permanent UIG is assumed to be 1.1% of throughput.

Throughput * LDZ% = UIG so UIG is 1000*0.011 = 11 Units.

Shipper	Metered Volume (kWH)	AULOQ	User LDZ Unidentified Gas
A	1,000	111,940	$= \frac{111940}{951490} \times 11 = 1.3$
B	2,000	223,880	2.6
C	1,500	167,910	1.9

D	4,000	447,760	5.2
Total		951,490	11

This position is then fixed.

Reconciliation

There is one significant change to the current reconciliation regime, which is to change how any reconciliation volumes are split across the market when the CDSP undertakes the monthly reconciliation.

Reconciliation Process

The reconciliation process will be changed so that any reconciled volumes (termed Settlement Error) are smeared across NDM that have not been reconciled or DM sites that did nor load a Valid Meter Read. If a site has not been reconciled for a considerable period of time (say several months) then this correction would correspondingly be over several months and so would result in a correction to both the reconciled volumes and the population over which any reconciliation would occur.

To avoid the possibility of a small number of sites being allocated a significant reconciliation volume if the total absolute volume of the reconciliation volume is more than the aggregate demand (defined as the total demand allocated to those site for that month at the point of reconciliation) for the unreconciled sites for that calendar month (the Reconciliation Target), then a different reconciliation process is used. If the Reconciliation Target is reached then instead the reconciliation volume is smeared across all supply meter points.

Settlement Error Weighting Factors

Settlement Error will be apportioned using weighting factors that are to be developed by the AUGE, split by product class 3/4 and EUC Band).

The Settlement Error development process will follow the same timetable and process as the current AUGE framework document, with the AUGE required to develop a Settlement Error Allocation Statement. For the avoidance of doubt we propose that the same provisions as set out in the AUGE framework document and section UNC TPD E9 would apply to this process, substituting Settlement Error for Unidentified Gas. Until these are developed, the Settlement Error will be split using the Unidentified Gas weighting factors.

Reconciliation Worked Example.

An LDZ of 100 meter points all of which are Class 4 EUC Band 1 with equal consumption in each portfolio, with four shippers supplying sites, have the following position at Exit Close Out.

Shipper	Meter points	Total volume (nominal values), kWh	With Scaling factors
A	10	2,000	2,320
B	40	2,000	2,320
C	30	1,500	1,740
D	20	4,000	4,640

The total LDZ offtake minus shrinkage, DM consumption and UIG is 11,000KWh so the scaling factor of 1.16.

By the end of the calendar month, the reconciliation status for that day is the following (in this example it is assumed that LDZ throughput, Shrinkage and DM consumption remain the same). The scaling factor has been set to zero. In reality the calculation is undertaken on a monthly basis, so for the avoidance of doubt the use of a daily regime is simply illustrative:

Shipper	Meter points	Meter Points reconciled	Revised volume (nominal values), kWh	Adjustments from allocation
A	10	5	1,500	-820
B	40	20	4,000	1,680
C	30	20	2,000	260
D	20	0	4,000	-640

It is assumed that the Settlement Error (i.e. net reconciliation for this day) is 480 kWh. Assuming that the UIG allocation factors will be used (so a weighting factor of 111.94 will apply) then the following calculation would occur:

Shipper	% Meter Points unreconciled	Adjusted User NDM allocation (Settlement Error)	Settlement Error Allocation
A	50	=(1,500*0.5)*111.94 = 83,955	48.54
B	50	=(3,500*0.5)*111.94 = 223,880	129.43
C	33.3	=(2,000*0.333)*111.94 = 74,552	43.10
D	100	=(4,000*1)*111.94 = 447,760	258.86
Total		830,259	480

The second reconciliation period will result in a further adjustment. All of these subsequent reconciliations are for supply meter points that were not reconciled in the previous calendar month The revised status for the settlement day is as follows:.

Shipper	Meter points	Meter Points reconciled	Revised volume (nominal values), kWh
A	10	10	1,500
B	40	30	4,000
C	30	20	2,000
D	20	20	4,500

The revised reconciliation volume for this day is now 500 (as 1,000 kWh has bee reallocated to site). The revised settlement error allocation for this nominal day is therefore:

Shipper	% Meter Points unreconciled	Adjusted User NDM allocation (Settlement Error)	Settlement Error Allocation
A	0	0	0
B	25	111940	300
C	33	74627	200
D	0	0	0
Total		186,567	

Transition

There will be a requirement for Xoserve to undertake a transition process for any reconciliations back beyond the reconciliation deadline. To aid implementation Xoserve will only process reconciliations up to the cut-off date; the retrospection process will take account of these volumes (see below).

Retrospection

Retrospection as outlined below will ensure that customers are not unfairly allocated gas which they have not used and therefore prevent an incorrect redistribution of cost between customers.

A corrective exercise will be undertaken for the period between 01 June 2017 and the implementation date of this modification ("Correction Period"). The CDSP will be required to undertake a one-off exercise for this Correction Period, using the revised settlement rules set out in this modification to adjust the shipper gas imbalance positions and cashing out shippers on the basis of those positions. When undertaking the retrospective adjustment the following steps will be undertaken.

- For historic billing period (i.e. month) in the Correction Period, Xoserve will re-calculate UIG, using the 1.1% of LDZ throughput to set UIG. The resulting Settlement Error will be allocated to read or unread meters in accordance with the new process above. This will result in a shippers either increasing or decreasing their NDM allocation. The allocation of Settlement Error will use the UIG weighting factors in force during the time.
- As this calculation will simply move energy between shippers, system settlement prices will remain the same.
- Xoserve will then sum the resulting credit and debits for each shipper over the period and issue a corrective invoice to each shipper.
- To take account of any reconciliations that would have straddled the implementation date of the new regime, Xoserve will undertake a second retrospective correction activity 12 months after the implementation date.

6 Impacts & Other Considerations

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

Not applicable.

Consumer Impacts

This modification has been raised owing to the large and unexpected levels of volatility in the market, resulting in significant costs to all shippers, which are being translated into either higher costs in fixed term domestic contracts (which are expected to become the default market tariff offering) or higher costs being passed through to non-domestic customers in line with their contracts. As have indicated above around £160m of cost is being smeared across the industry owing to these errors. This modification, by removing this volatility and ensuring correct apportionment of costs, will address this negative issue to the benefit of customers.

Cross Code Impacts

None

EU Code Impacts

None.

Central Systems Impacts

- Xoserve will have to undertake a piece of work to adjust Central Systems to take account of the new settlement regime.
- Xoserve will be required to undertake a retrospective adjustment for the Correction Period to correct for the current inequitable settlement regime, with quarterly reconciliations run as meter reads are received.
- The AUGE will be required to undertake some additional tasks, particularly determining individual LDZ UIG percentages.
- A new mechanism will need to be developed to handle any Central System activities that straddle the implementation date of this modification.

7 Relevant Objectives

Impact of the modification on the Relevant Objectives:

Relevant Objective	Identified impact
a) Efficient and economic operation of the pipe-line system.	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:	Positive

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

The current levels of volatility are having a detrimental impact on the market, creating significant levels of uncertainty. This is having the greatest impact on the smallest shipper organisations in the market who do not have the benefit of a large domestic portfolio to absorb the effects of this volatility. Returning the market volatility to pre-Nexus levels will reduce the inefficient costs that shippers are incurring and so further competition between relevant shippers.

A benefit of this option is that the NDM within month shape will be more accurate. As there are products in the market that rely on the customer having good within-month shape to give accurate pricing this will be a market benefit.

The market is currently pricing risk and uncertainty in accordance with the pre-nexus settlement regime (we certainly have seen no substantial shift in either domestic tariffs or non-domestic prices since 01 June 2017). A retrospective adjustment to reinstate the pre-nexus allocation and nomination regime will simply therefore realign settlement with the market pricing that was operated, so avoiding windfall gains or losses.

8 Implementation

No specific timeline is proposed. However, owing to the excessive costs being incurred in the market by the current levels of volatility this modification needs to be implemented as soon as possible.

9 Legal Text

To be provided.

10 Recommendations

The Authority is asked to:

- Agree that this modification should be treated as urgent and should proceed under a timetable approved by the Authority.

11 Annex 1 – DNV GL Paper

See separate document

DNV·GL

UIG Calculation Issue - Analysis

This document is from the AUG Expert in response to an industry request for support in understanding the high levels in UIG and the day to day volatility.

Overview

Mod 432 introduced several changes to the balancing regime, in particular the introduction of reconciliation for all meter points and the calculation of daily UIG – a balancing figure which is then allocated to shippers based on a table of weighting factors provided by the AUG Expert.

The current approach to the calculation of daily UIG contains a key weakness that results in very high levels of variation in the day to day estimate, in addition to UIG with an unrealistically high order of magnitude.

The central issue is the fact that up until all meter reads have been received and reconciled, the UIG calculation mixes actual load data (LDZ intake and daily metered load) with estimated load data (using the NDM allocation algorithm). UIG is then calculated as the difference between the actual LDZ intake and the DM (metered) and NDM (estimated) loads.

As a result of this, the difference figure labelled as UIG actually contains error due to the inaccuracy of the NDM algorithm. This error is the cause of the large magnitude and the volatility of the values that are being returned. This is shown in Figure 1. The left side of the diagram shows the pre-Nexus situation where the Scaling Factor (SF) accounted for both the Unidentified Gas (UG) and the error in the allocation algorithm. Post-Nexus, UIG is made up of both UG and the NDM algorithm error as SF has now been removed.

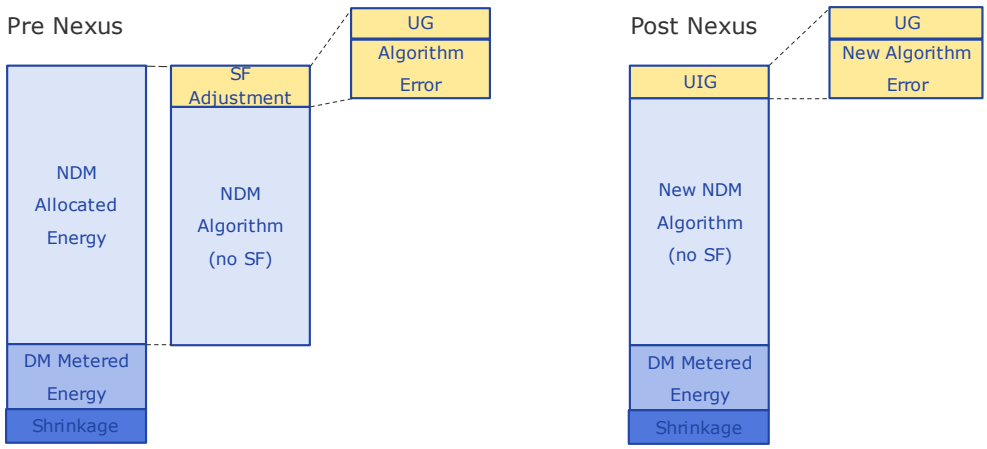


Figure 1: Explanation of 'Algorithm Error'

Over time, as meter reads are received, the reconciliation process will remove the algorithm error as estimated consumption values are replaced with actuals. However, given current meter read frequencies, an accurate estimate of UG will not be obtained until at least a year after initial UIG calculation.

DNV·GL

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Overview

Mod 432 introduced several changes to the balancing regime, in particular the introduction of reconciliation for all meter points and the calculation of daily UIG – a balancing figure which is then allocated to shippers based on a table of weighting factors provided by the AUG Expert.

The current approach to the calculation of daily UIG contains a key weakness that results in very high levels of variation in the day to day estimate, in addition to UIG with an unrealistically high order of magnitude.

The central issue is the fact that up until all meter reads have been received and reconciled, the UIG calculation mixes actual load data (LDZ intake and daily metered load) with estimated load data (using the NDM allocation algorithm). UIG is then calculated as the difference between the actual LDZ intake and the DM (metered) and NDM (estimated) loads.

As a result of this, the difference figure labelled as UIG actually contains error due to the inaccuracy of the NDM algorithm. This error is the cause of the large magnitude and the volatility of the values that are being returned. This is shown in Figure 1. The left side of the diagram shows the pre-Nexus situation where the Scaling Factor (SF) accounted for both the Unidentified Gas (UG) and the error in the allocation algorithm. Post-Nexus, UIG is made up of both UG and the NDM algorithm error as SF has now been removed.

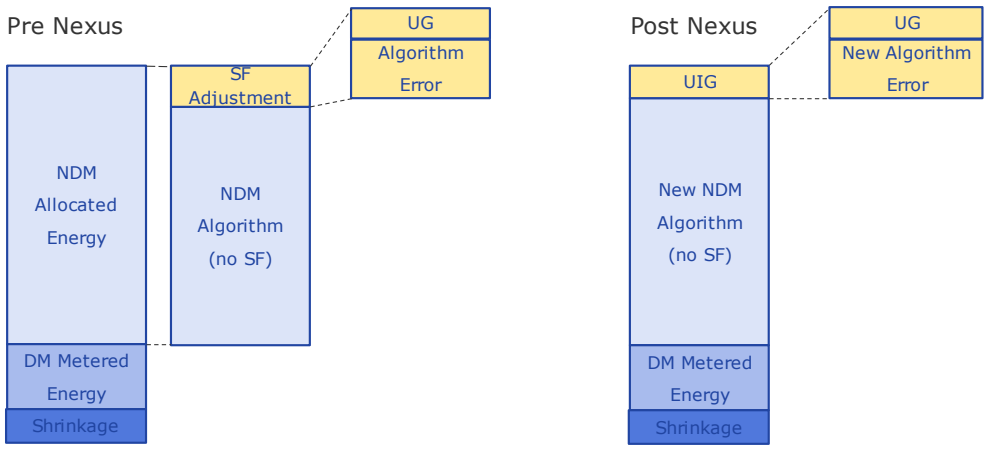

Figure 1: Explanation of 'Algorithm Error'

Over time, as meter reads are received, the reconciliation process will remove the algorithm error as estimated consumption values are replaced with actuals. However, given current meter read frequencies, an accurate estimate of UG will not be obtained until at least a year after initial UIG calculation.

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