Transmission Workgroup

Update on Unidentified Gas Issues

4 January 2018

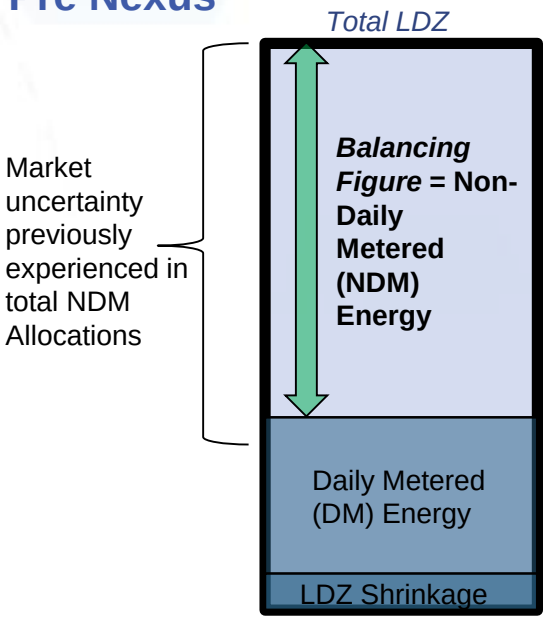
Objectives

- Background to Unidentified Gas (UIG) and Project Nexus Changes
- Overview of current issues with UIG and known causes
- Review of previous UIG simulations
- Current and future initiatives

What Changed at Nexus Go-Live

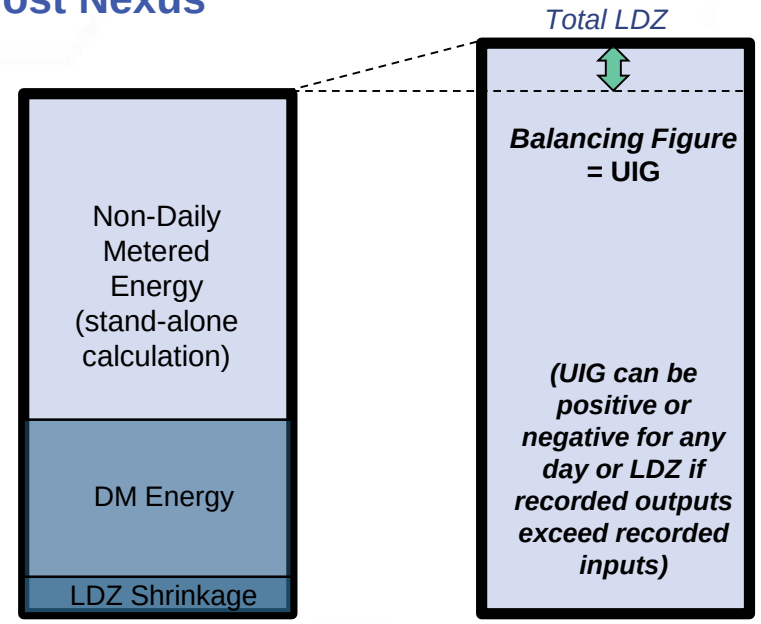
Daily Gas Allocation has changed to support Universal Meter Point Reconciliation – UIG is now the balancing figure in each Local Distribution Zone (LDZ) each day.

Pre Nexus



- Same formula used for Nominations/Allocations
- NDM Energy was the balancing figure (Smaller Supply Point + Larger Supply Point)
- Errors in reads/estimates impacted NDM energy
- Volatility was proportionally lower, as part of a larger number (NDM is c 50 to 60% of each LDZ)

Post Nexus



- Same formula used for Nominations and Allocations
- UIG is now the balancing figure each day
- Volatility is focused in a smaller value and is more visible
- New and existing data items explained on later slide

Background to the Project Nexus Changes

Key requirement – Universal individual Meter Point Reconciliation

- Output from an industry consultation exercise during 2008-09

Previous Reconciliation by Difference (RbD) arrangements are no longer valid

- Inappropriate to smear all Reconciliation energy into the Smaller Supply Point (SSP) market if those meters are all being individually reconciled

New treatment required for reconciliation energy

- Need to apply to a wider population – not just to SSP (AQ <73,200)

Need to derive UIG at point of Allocation

- Not just allocated into a sub-set of the market and then moved post-Reconciliation

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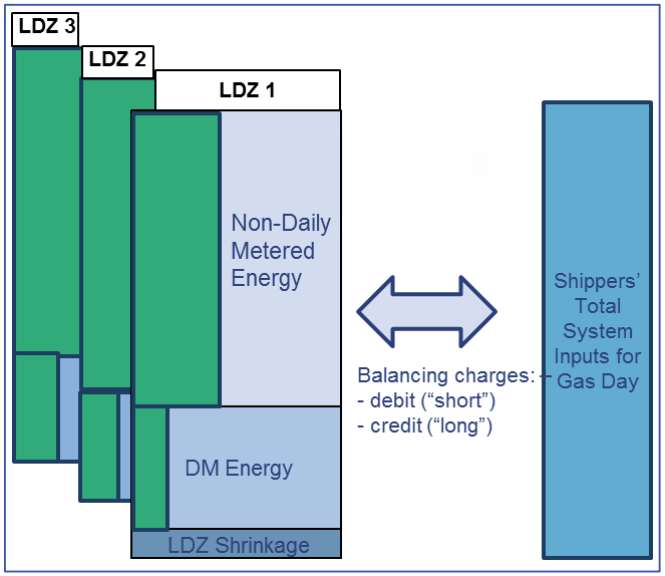
How the Gas is Paid for – post-Nexus

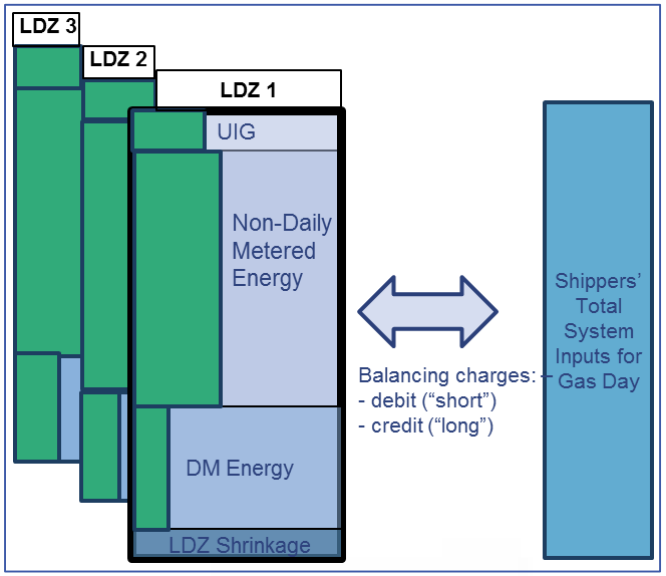
This slide summarises changes in how the gas is paid for following the Nexus implementation. UIG charging is now more transparent and fixed quantities have been removed. Shippers now need to procure UIG as part of their daily total system allocation.

Pre Nexus



- Estimated amount of UIG was billed monthly in arrears (debits to LSP and credits to SSP)
- A fixed monthly quantity for LSP sites which Shippers could account for.
- Shippers only procured for NDM and DM volumes

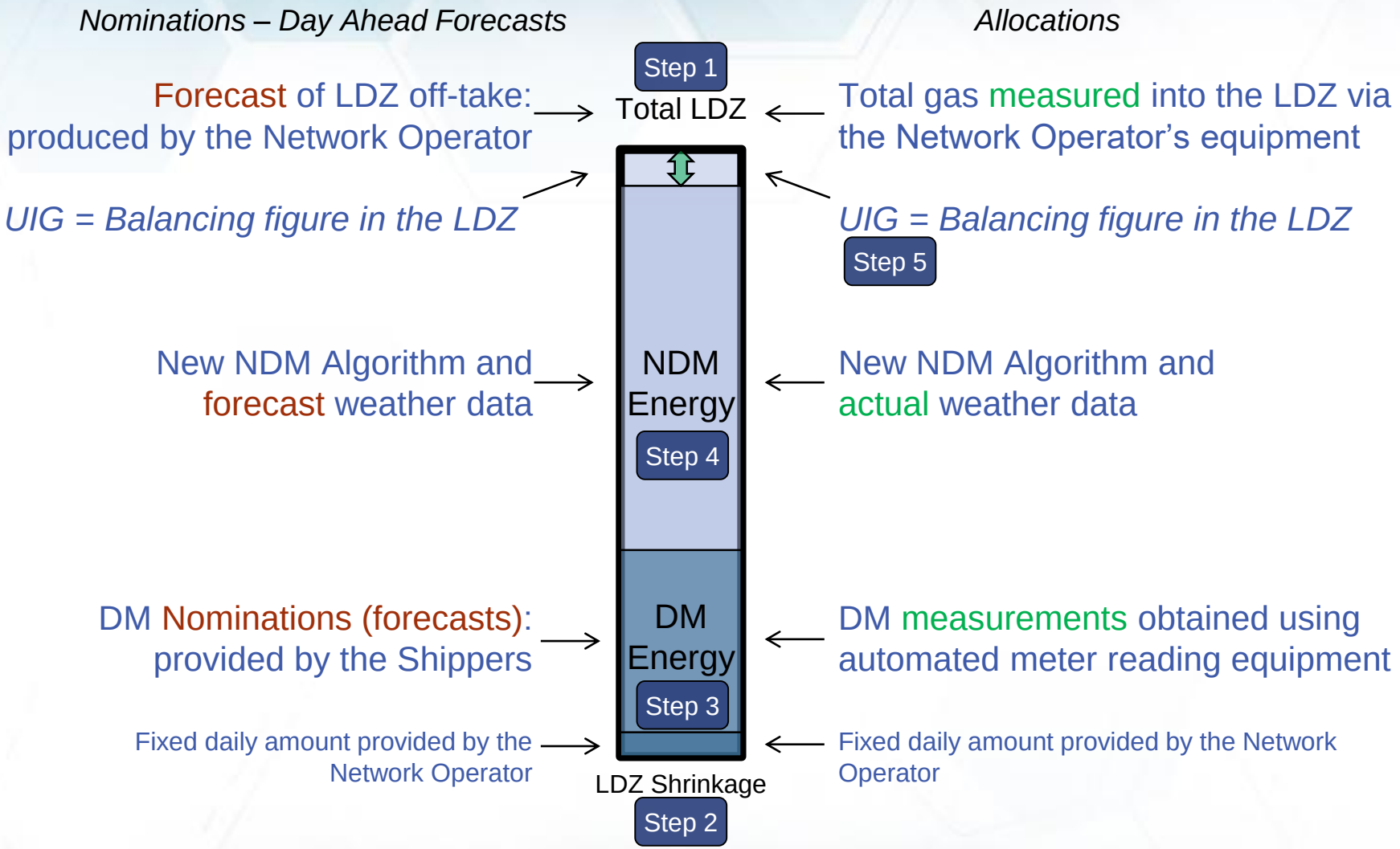
Post Nexus



- UIG now included in daily Energy Balancing position, not on a separate invoice
- Energy Balancing compares total Allocations including UIG to Total Shipper inputs – national level only
- Scheduling Charges only apply to DM Nominations – not to NDM and UIG Nominations

Individual Shipper's Allocation (share of UIG, plus NDM and DM Energy)

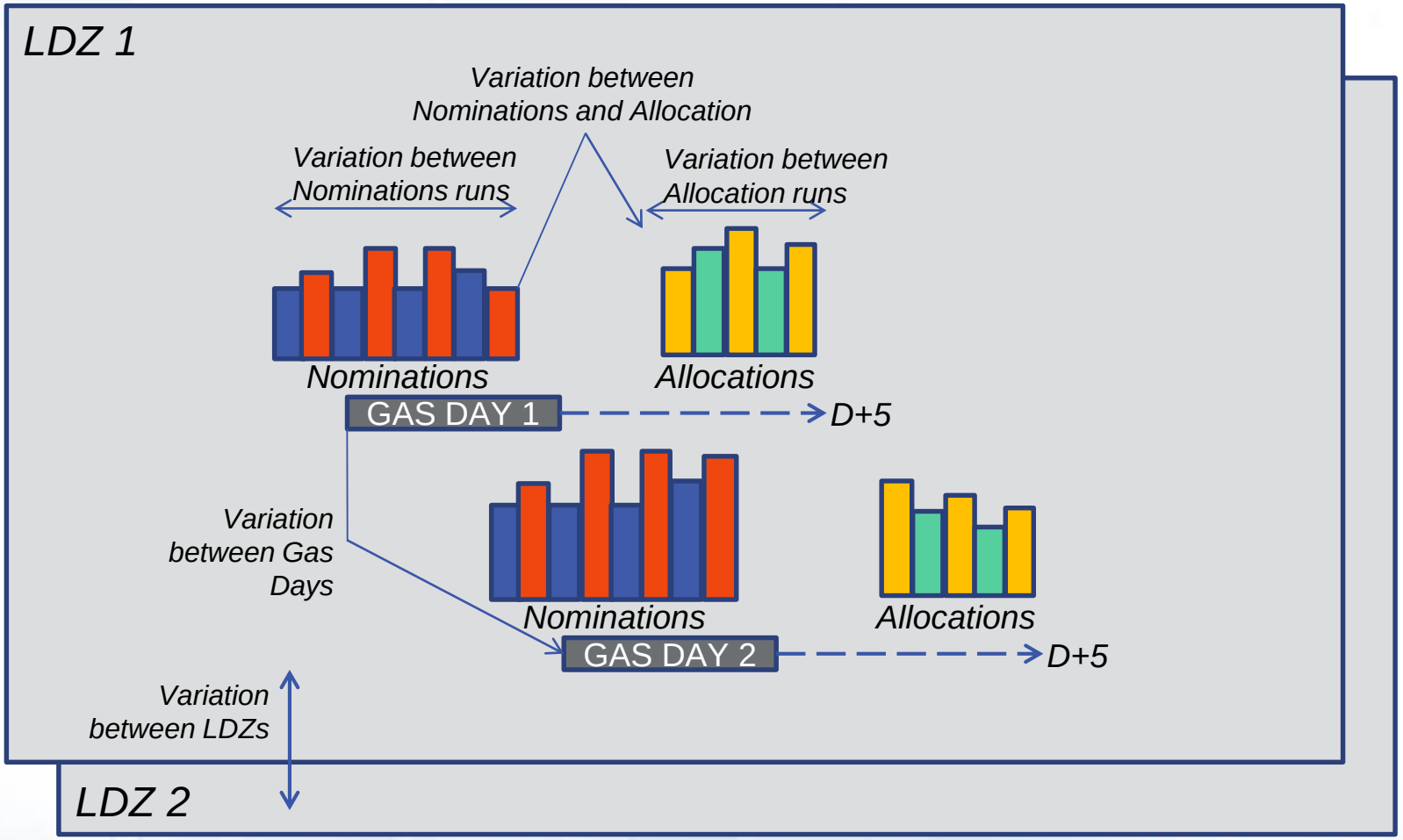
Sources of Data Post-Nexus



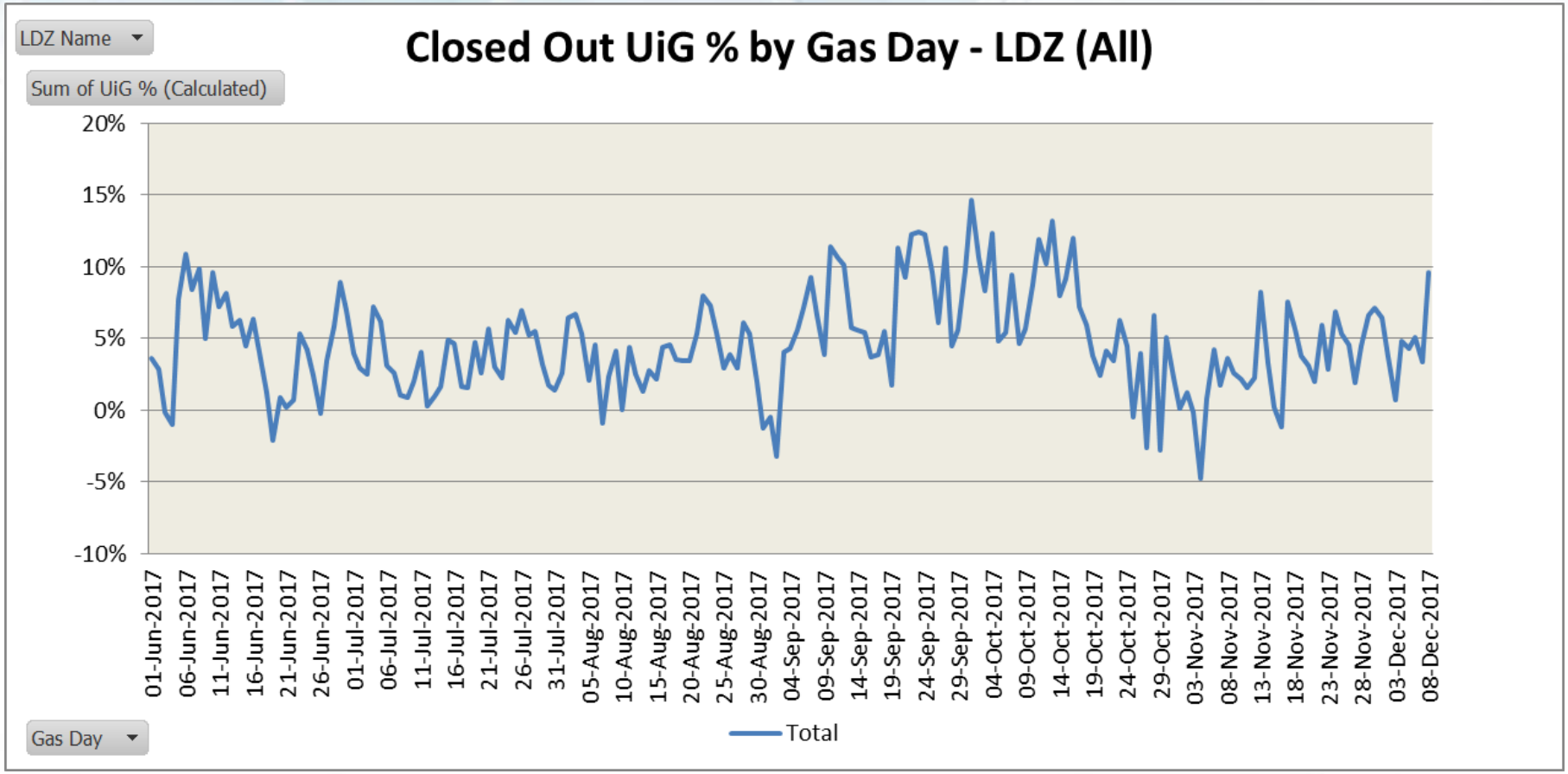
NDM Algorithm uses AQ (Annual Quantity) plus NDM Parameters (ALPs and DAFs) and Actual and Seasonal Normal Weather data

Observed Areas of UIG Volatility

Shippers have reported multiple areas where UIG variation is being observed. These are shown in the diagram below. Known causes are discussed later in this presentation along with actions industry can take to reduce UIG Level and volatility.



Latest View of UIG Volatility – % of Total LDZ



- "Shoulder month" demands are traditionally very hard to model
- DM read rejections and AQs of 1 contributed to increased UIG from go-live
- Hard to quantify the impact of individual issues without detailed analysis

Post D+5 Reconciliation

Step 7

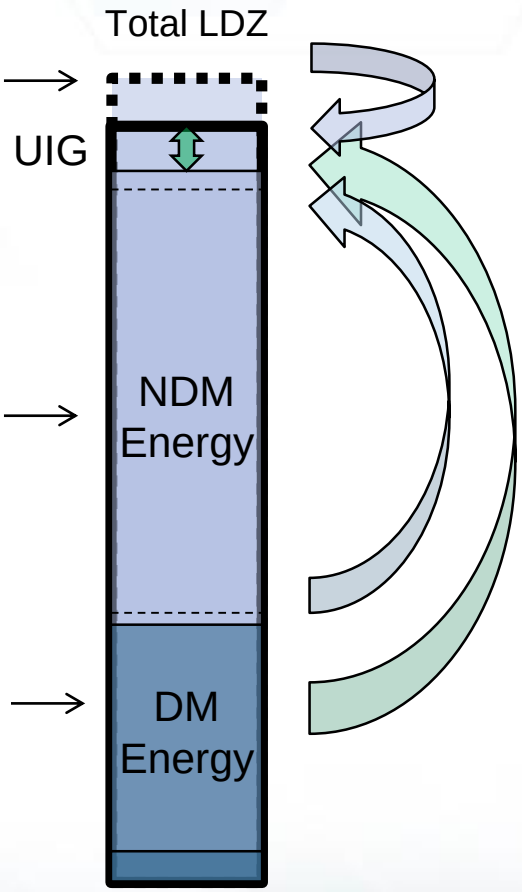
Unidentified Gas is subject to reconciliation via the Amendment Invoice, as the equal and opposite of the meter point reconciliations processed on the same invoice.

Source of Reconciliation

LDZ measurement errors →

NDM reconciliation to actual meter reads – *all categories incl SSP and CSEP* →

DM resynchs and reconciliations (e.g. actual following estimates) →



Treatment

- Opposite entry of all primary DM and NDM recs is an adjustment to UIG in the LDZ
- Change in UIG shared out in proportion to latest measurements/ estimates (i.e. post-rec)
- Same UIG weighting factors as at D+5
- Shared out over last 12 months of updated allocations
- Share of UIG rec for the month appears on same Amendment invoice – energy charge only – issued at Month+18 business days

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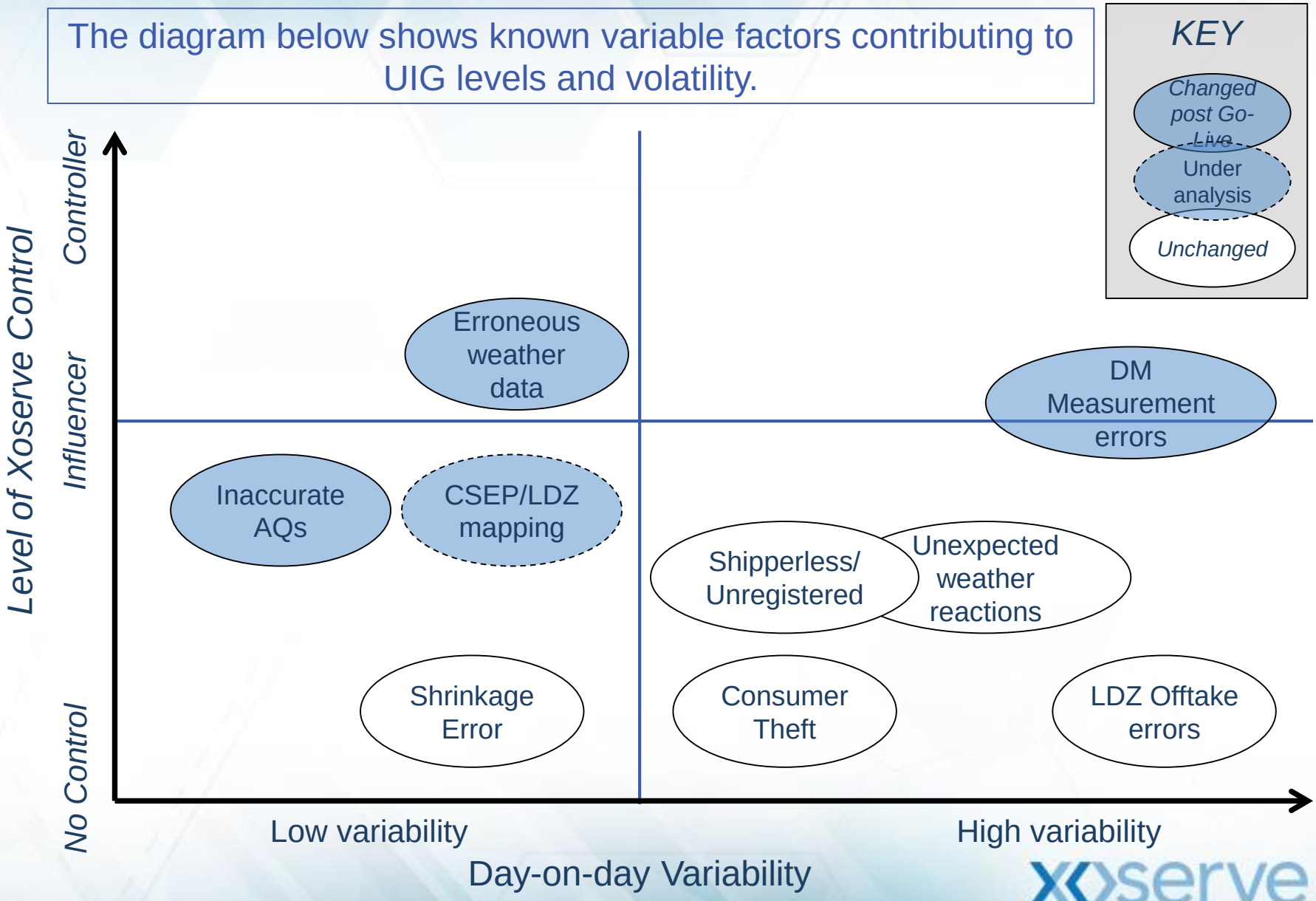
High Level Assessment of UIG Causes

The diagram below shows known variable factors contributing to UIG levels and volatility.



Summary of previous simulations of UIG

- Xoserve simulation for Demand Estimation Sub-Committee: likely position at D+5
  - Used 4 years of historic actual data
  - Used prevailing AQ – no assessment of rolling AQ impacts
  - Suggested some LDZs had negative UIG overall
  - Updated 95% confidence interval:-12.35% to 11.77%
  - Summary on Feb ‘17 DESC page
  - Daily simulated values on Xoserve secure sharepoint (Folder 18; subfolder “Demand Estimation Project Nexus”)
- Allocation of Unidentified Gas Expert has estimated **permanent** UIG at Line-in-the-Sand (after 3 to 4 years)
  - Based on historic meter reads from Sites & Meters and known contributing issues
  - Analysis **suggests** permanent UIG of c. 1.3% of throughput – at Line in the Sand after all reconciliation has taken place – **also based on simulation**
  - This is an **annualised** value and not necessarily achieved day-on-day

Initiatives undertaken to date to control UIG levels

- UIG was raised as a key issue soon after Project Nexus Go-Live
- Initially discussed at Project Nexus Incident Review Group
- A key contributing factor was issue with DM read rejections
  - Meter asset mismatches caused rejections
  - Collaborative approach required – Xoserve/Shipper/DM Service Provider
- Project team established within Xoserve – with DMSP support to manage the resolution – all original sites resolved, a few new failures occur every day – average time to resolve is 22 days
- Issues identified with agreed business rules for AQ tolerances – rules revised and updated – AQs amended prospectively
- Performance Assurance Committee (PAC) is the lead forum for monitoring and managing UIG – developing reporting/incentives/UNC Modifications as required

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Additional areas of focus

- There are a number of activities that industry can undertake to reduce the impact of UIG including:
  - Reviewing accuracy of Annual Quantities (AQ) and adjusting where required
  - Promptly registering shipperless sites
  - Supplying regular accurate monthly reads for NDM meter points
  - Supplying accurate DM Nominations, as early as possible each day
  - Using the Class 2 product for larger NDM LSP sites where appropriate
  - Supporting NDM Demand Estimation modelling by providing additional sample data to Xoserve, especially for small LSP market
  - Continuing to be diligent in managing consumer theft of gas
  - Reviewing the accuracy of LDZ offtake equipment to minimise errors

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Action 1203: Interaction between Unidentified Gas and National Grid Balancing Actions

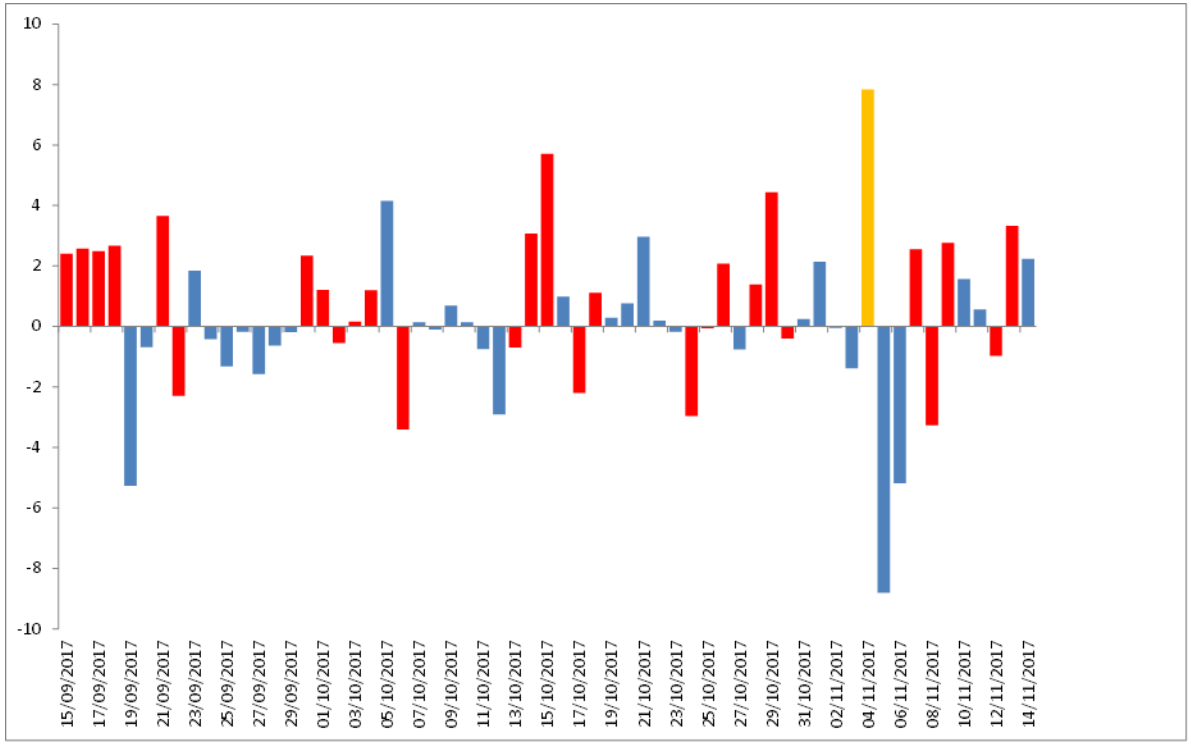


Transmission Workgroup – December 2017

UIG and Balancing Activity

- We are aware of industry concern that volatility in UIG may be driving increased balancing activity by National Grid on the OCM
- To date, our investigations have not identified any direct correlation
- The approach we take to residual balancing has not changed since Project Nexus went live
- In recent months we have experienced increased levels of linepack depletion and limited market response has generated more National Grid buy actions
- We are continuing to investigate the reasons for these system trends

Recent NTS challenges – linepack depletion



Blue – No NG trades
Red – Buy days
Yellow – Sell days

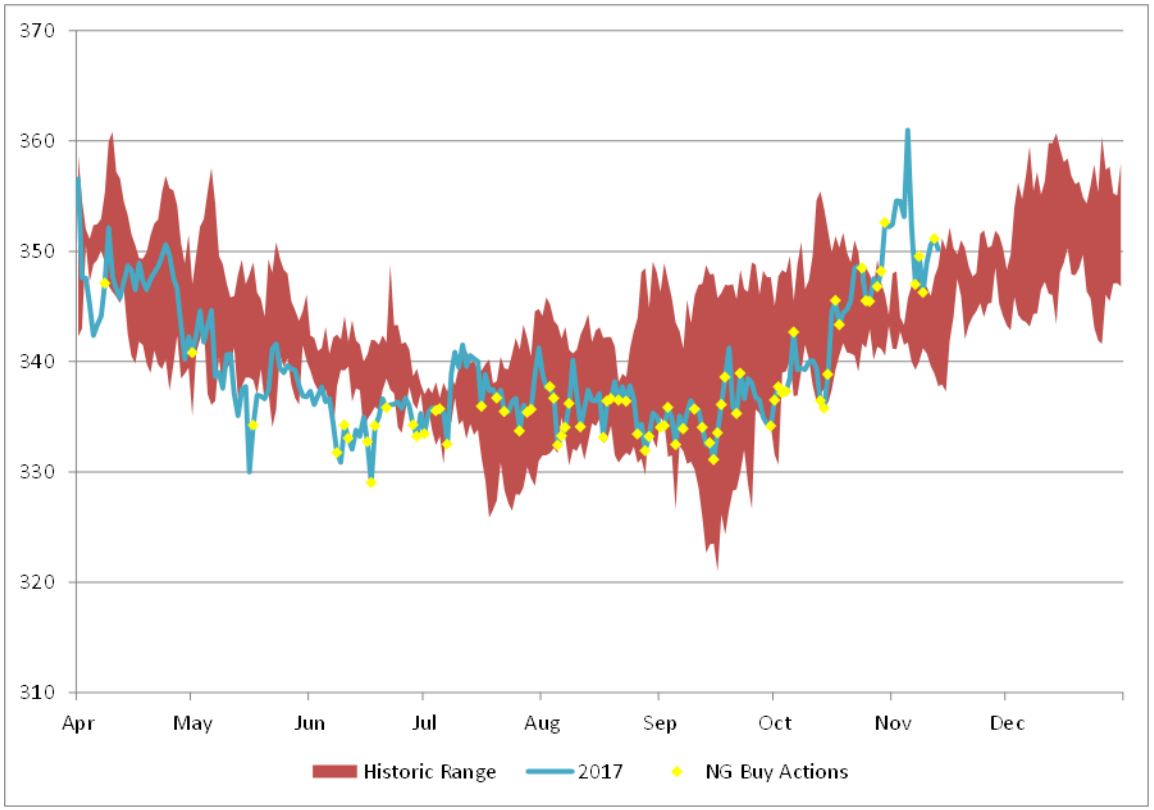
This chart shows the gain or loss in linepack in mcm relative to the start of day position between July and November 2017

50% of these days have seen linepack losses

30% of these days have seen linepack losses even when National Grid has taken system buy actions

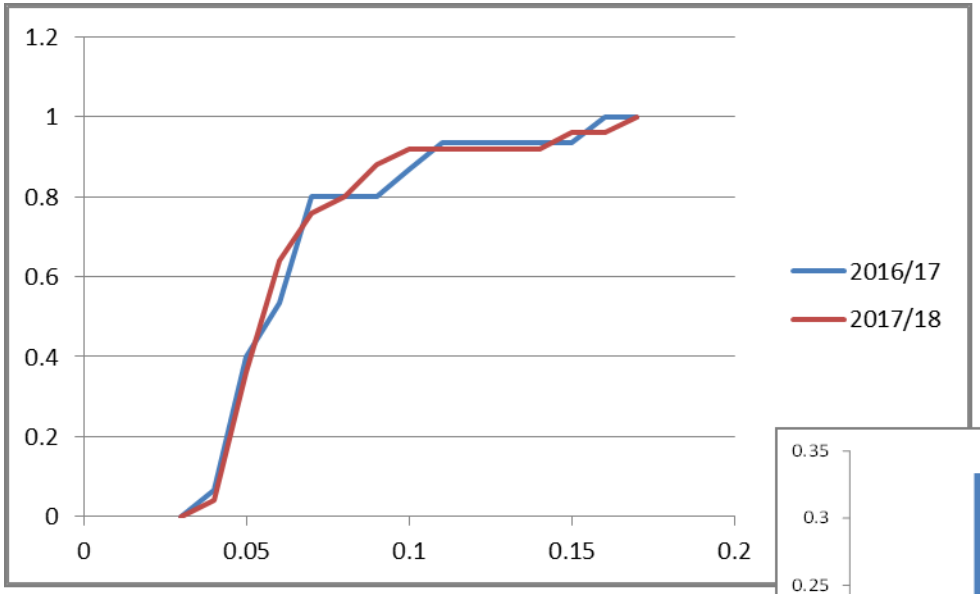
When linepack is gained it is often lost the next day

Seasonal Linepack



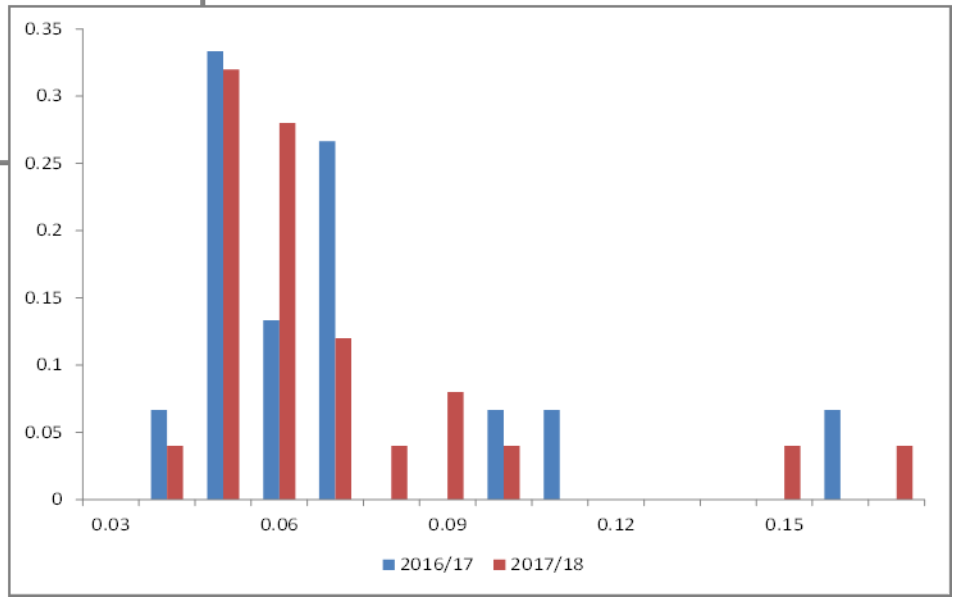
- This graph plots 2017 linepack levels against the linepack range from 2013-16
- Increased levels of linepack are required in the winter months relative to summer.
- This year, more buy actions have been required to achieve this increase due to a more limited market response
- Typically, we are still operating in a similar linepack range compared to previous years

Setting SMP Buy



Trades influencing cashout:

- Increased buy actions do not reflect increase to SMP Buy
- Cumulative position matches that of last year



When we have set SMP Buy:

- Differential between SMP and Default is small
- Distribution of differentials similar to last year