UNC Unidentified Gas (UIG) Workgroup 28th January 2019

Xoserve UIG Task Force recommendations and discussion of next steps

v2 24/01/2019

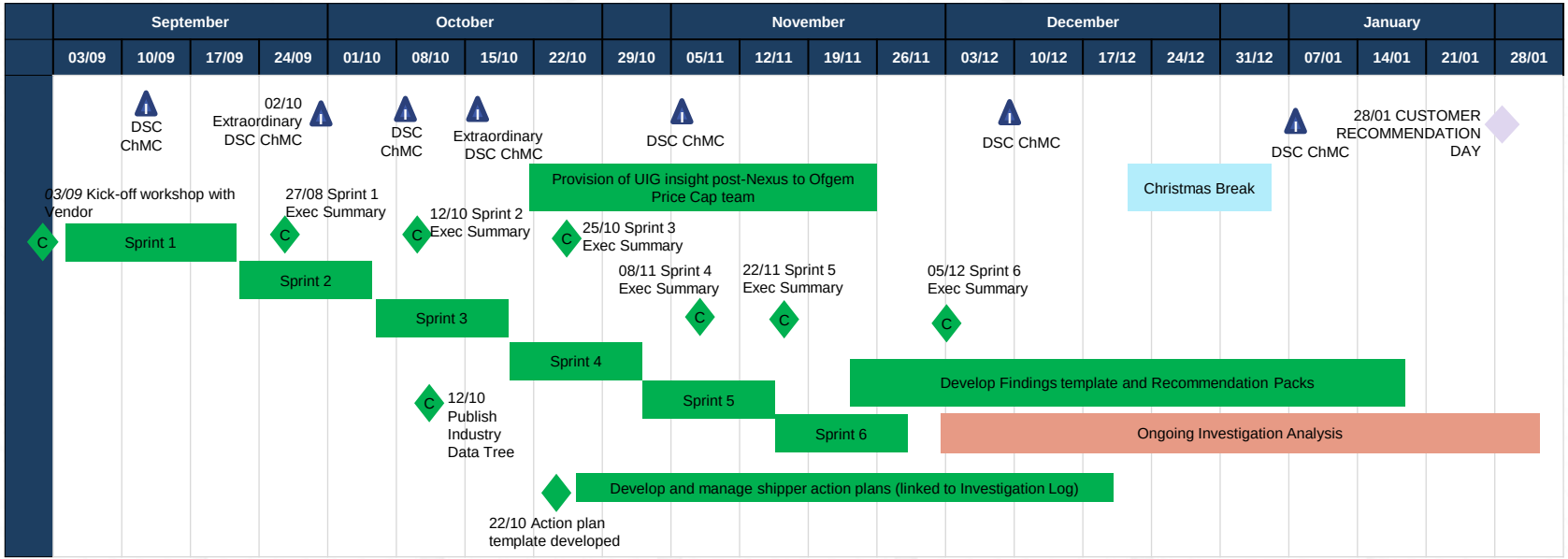
Schedule

- Background
- Objective of today
- Recommendation approach
- Structure of the day
- Todays lines of investigation
- UIG percentage impacts definition
- Recommendation packs
- Findings signposting
- Future areas of Task Force focus
- Supporting information

Background

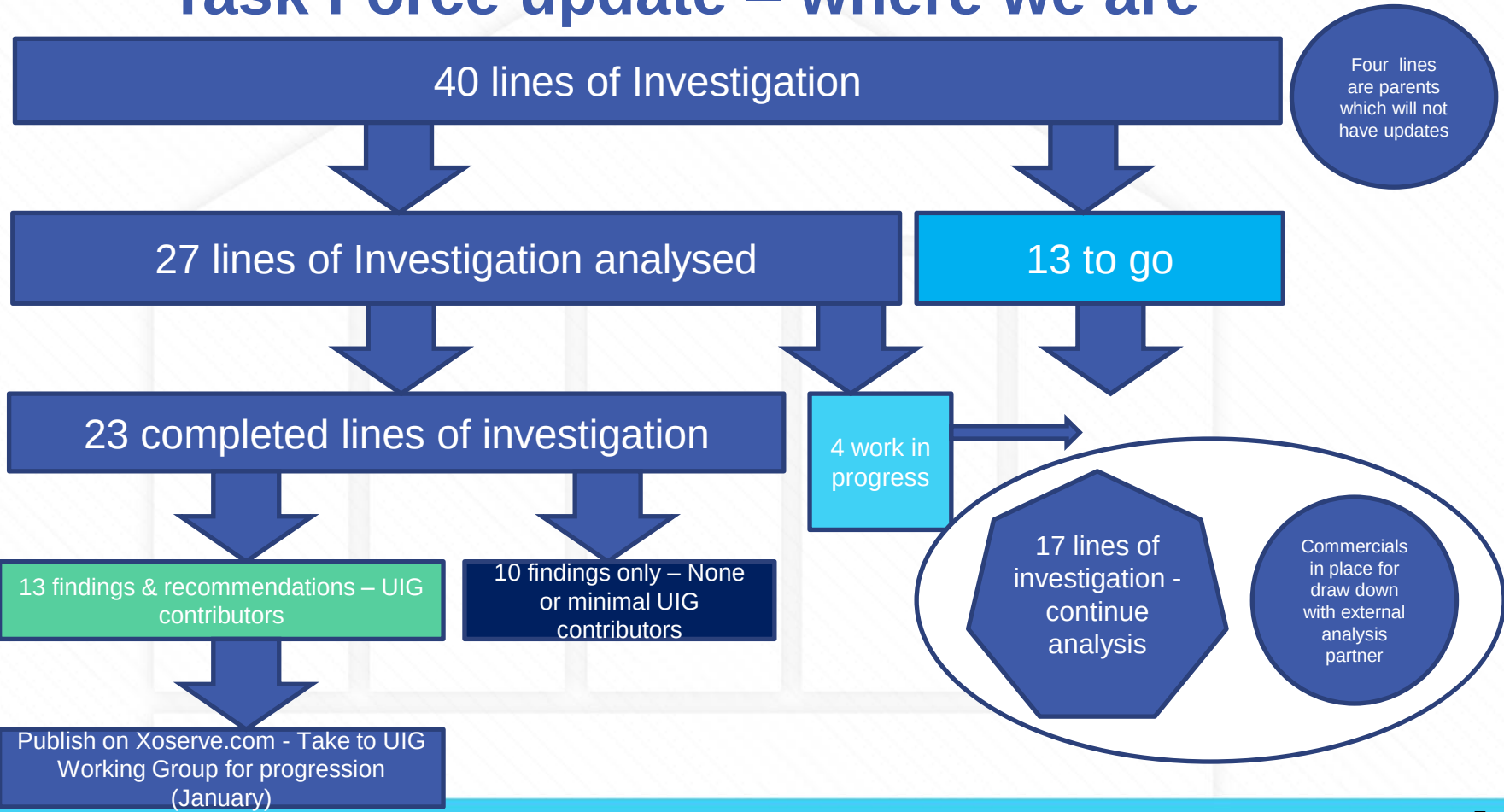
- Modification 0658: ‘Central Data Services Provider (CDSP) to identify and develop improvements to Local Distribution Zone (LDZ) settlement processes’ approved by Ofgem on 6th July 2018
- Modification raised to authorise the CDSP to assign resources and incur costs related to a Task Force to investigate the causes and influencers of UIG, with a target of making recommendations to reduce the volatility and scale of UIG
- Business Evaluation Report (BER) for Change Reference Number XRN4695: ‘Investigating causes and contributors to levels and volatility of UIG’ approved at Change Manager Committee on 11th July 2018
- This Change Proposal added an additional service line into the DSC to enable Xoserve access to investigate, using resources and technology, causes and contributors to levels and volatility of UIG
- Xoserve provides monthly update reports and has published findings of investigations with options to address the finding, where required

Activities completed since BER approval…



- **Completion of 6 analysis sprints**, working in conjunction with our external data analytics partner
- **Enhanced customer engagement** including:
  - fortnightly communication of Executive Summaries
  - attendance at all relevant industry committees (DSC Change Management, DSC Contract Management, UNC UIG Work Group, etc.)
  - direct shipper engagement to response to all UIG queries as well as developing action plans to reduce UIG in the immediate term (e.g. WAR Band action plans)
- **Accepted delivery ownership** of a handful of external and internal changes to aid UIG analysis

Task Force update – where we are

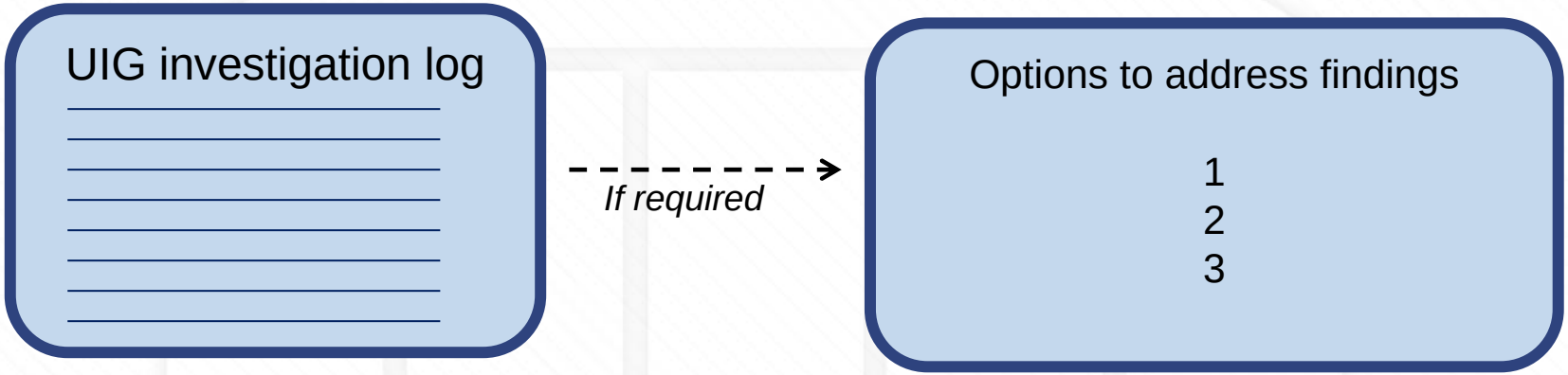


Objective of today

- Summarise the Task Force findings to date – and associated Options
- Explain options for resolution
- Gain Industry views on suggested options and Xoserve Recommendations
- Aim to reach ***consensus/majority*** view on next steps for each of the Findings with recommendations
- Identify Industry sponsors to pursue recommendations

Recommendation approach and interactions with Industry Governance

Creation of UIG Options



Range of options developed, ranging from do nothing through to radical solutions
To be discussed and prioritised at UNC UIG Workgroup

Typical structure of Xoserve suggested solution

- *Usually a combination of activities*

Opt X. [Shipper Engagement]

***Short-term actions**, e.g. via Xoserve Account Managers and internal reporting*

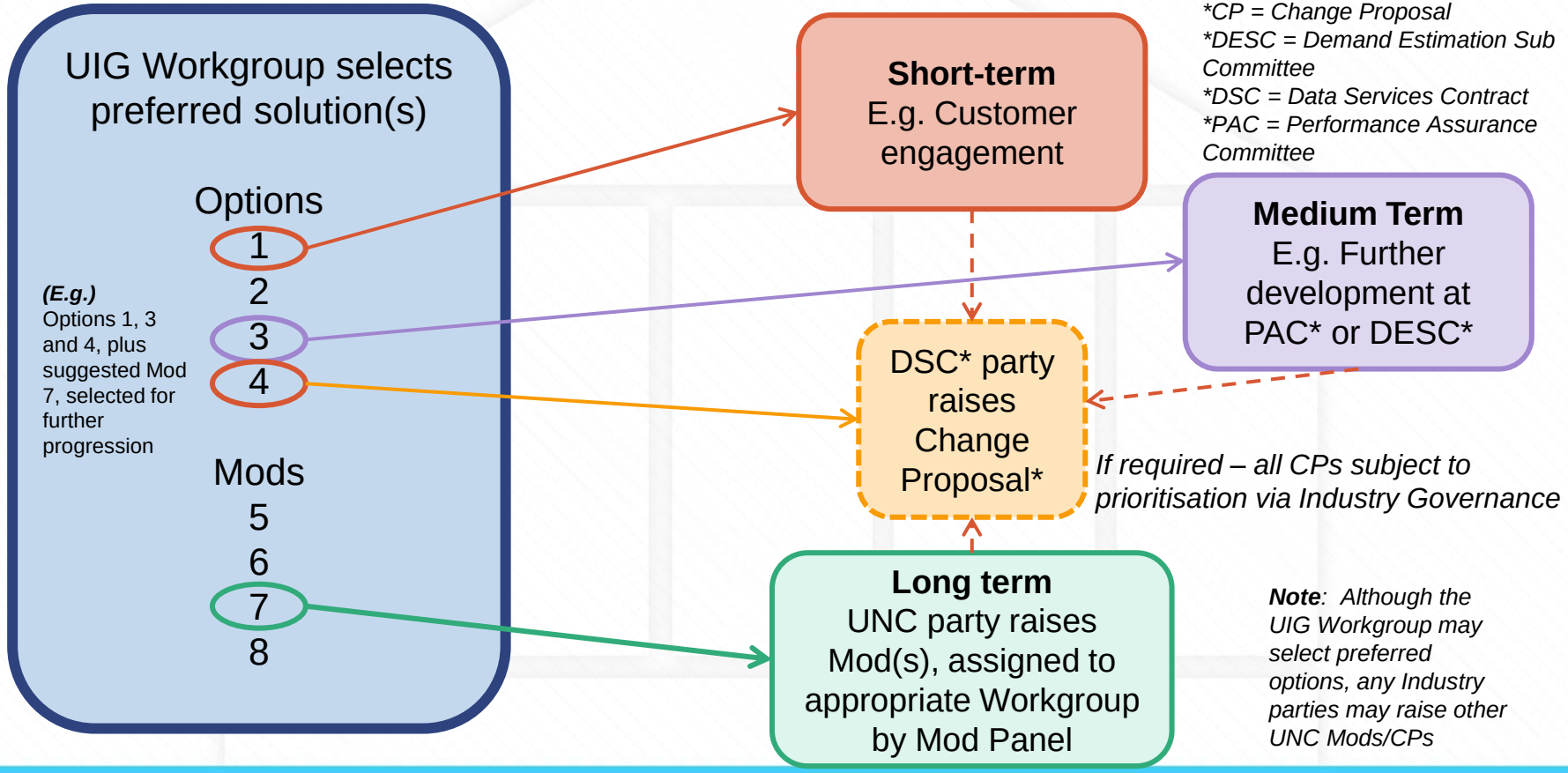
Opt Y. [PAC Reporting] or [DESC]

***Medium-term changes** e.g. extra PAC Reports (industry sponsor required for Change Proposal for extra reports) or changes to Demand Estimation processes*

Mods/Change Proposals etc.: Changes to UNC Rules/ Obligations

***Long-term** via UNC Modifications and or DSC Changes (industry sponsor required)*

Selection/Prioritisation of findings



Structure of the day

- We have ordered the findings by scale of impacts on volatility/base UIG
- Where possible similar investigation lines have been grouped
- After each investigation line all attendees can indicate which option(s) they favour – simple show of hands to capture views quickly and anonymously
- Joint Office will summarise preferred next steps where possible and record actions and owners
- Suggest that UIG Work Group to monitor **all** recommendations moving forwards

Today's list of investigation lines

Log #	Description	Impact on base UIG	Impact on UIG volatility
3.2.1	Non Daily Metered (NDM) Sites in End User Category 09 (AQ >58.6m kWh)	Up to 0.4%	Up to 0.7%
3.2.2	NDM Sample sites with actual usage very different to UK Link AQ	0.25% est.	0.2% est.
1	Use of Estimates for DM Sites (Actuals not loading)	0.09% est.	0.9% est.
12.1	Use of standard volume-to-energy conversion factor (AQ>732,000) (also referred to as "Correction Factor")	0.1%	N/A
12.3	Use of non-standard volume-to-energy conversion factor (AQ<732,000)	- 0.02%	N/A
12.2	Appropriateness of standard volume-to-energy conversion factor of 1.02664	0.4%	3% est.
3.2.8	NDM Sample sites registering consumption, with UK Link AQ=1	0.35% est.	N/A
3.1	AQ calculation errors due to rejection of uncorrected meter reads	TBC	TBC
2	Low Take-up of WAR Band End User Categories for sites based on Winter Annual Ratio (AQ>293,000 kWh)	0.03%	2.5% est.
13.2.2	Accuracy of NDM Algorithm – Use of weather data/weather sensitivity	TBC	TBC
13.2.5	Use of additional weather in the NDM Estimation Algorithm	TBC	TBC

UIG percentage impact assessment

- The following slides refer to the percentage of UIG we believe can be explained by each issue
- Unless noted, these percentages are expressed in terms of total national LDZ throughput
  - For example, if UIG is 4% of throughput and an issue explains 0.2% of UIG, then resolving the issue could reduce UIG to 3.8%
- The percentages are not cumulative. UIG is a complex issue and the overall benefit to UIG seen as each issue is resolved would potentially be a smaller percentage if multiple recommendations are taken forward

UIG Task Force Recommendations

Investigation Item 3.2.1

EUC09 Sites

Background

What is the finding?

- We have identified a number of large sites where the Annual Quantity (AQ) is above the Class 1 threshold of 58.6m kWh
- These sites are currently NDM (Class 3 or 4)
- These sites should be re-confirmed as Class 1 by the Shipper after 3 consecutive AQ calculations above the threshold in a six-month period, or after 18 months if every calculated AQ is above the threshold (UNC G1.6.15)
- Some of the sites have an annual read frequency, so meter reads and AQ updates are infrequent
- We identified 23 sites of which 12 met the G1.6.15 criteria and were not subject to AQ Defect issues

How does it contribute to UIG?

- Sites of this size are likely to have a unique usage pattern
- The NDM Profile for EUC09B is based on national data and is unlikely to be a good representation of each site's usage
- Any difference between the actual usage and the NDM allocation will contribute to UIG each day
- The 12 qualifying sites are estimated to be contributing around 0.4% of LDZ Throughput to UIG on an average day and causing UIG volatility of up to 0.7%

Options to address the finding (1 of 2)

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2. ★	Engagement with Shippers – highlight the individual sites, provide support, encourage action to re-confirm. CDSP to monitor monthly and notify relevant Shippers	Low to medium – requires Shipper co-operation	In Progress: Short to medium
3. ★	PAC reporting and monitoring – add new reports to Performance Assurance Report Register	Medium	Medium (Mod 0660 now approved). Requires a CP to create reports
4.	Notify Ofgem of individual sites and Shippers	Low to medium – requires Shipper co-operation unless Ofgem can apply any financial leverage	Short to medium
5.	Improve NDM Profiles for EUC09, e.g. create WAR Band EUCs	Low – usage of these sites may not follow any pattern – could actually worsen the position	Long term

★ = *Xoserve recommended options*

Options to address (2 of 2) : Possible UNC Modifications

No.	Option	Likelihood of success	Implementation lead times
6.	Reduce the qualifying period for Class 1 (currently 18 months or 6 consecutive calculations)	Low (unless combined with other measures)	Long – UNC Mod timescales but no system changes
7.	CDSP automatically converts sites to Class 1 after qualifying period, CDSP arranges for fitting of Daily Read Equipment	High – after qualifying period	Long – UNC Mod timescales plus system changes
8.	Use the UIG Weighting Factors to create a incentive to change to Class 1 (i.e. increased rate for Classes 2 to 4). *Might need protection for sites which have not yet passed the qualifying period – would add complexity*	Medium/high – depending on the size of the incentive.	Long – UNC Mod timescales plus changes to AUG Table from next Gas Year. May also require system changes
9.	Create financial penalties for sites which have not been re-confirmed to Class 1	Medium/high – depending on the size of the penalty.	Long – UNC Mod timescales plus system changes
10.	Automatically change meter read frequency to Monthly when AQ increases above 293,000	Low/medium – AQ calculations will be more frequent but still requires Shipper action to convert to DM	Long – UNC Mod timescales plus system changes

= Xoserve recommended options

UIG Task Force Recommendations

Investigation Item 3.2.2

Inaccurate / Out of date AQs - Sample sites with different consumption patterns or levels compared with UK Link

Background

What is the finding?

- We have identified sites where the total consumption in UK Link for a read period is different from the consumption recorded for the site in the NDM sample data for an identical period
- We have compared metered consumption as recorded on UK Link against the energy from the NDM sample for identical periods. We have this data available for around 6,000 MPRNs over a 4 year period. The Sample Dataset records around 3% more throughput in total than is recorded on UK Link, although the larger differences are biased toward larger supply points so this will not scale to the whole market
- This mismatch suggests that the level of post reconciliation energy recorded on UK Link may be understated (if we assume that the Daily sample data is correct)
- Responses to UNC Review 0624 suggest a scale of asset errors requiring corrective updates is between 1% and 26% of the market
- The differences could be caused by:
  - Errors in the NDM Sample Data
  - Metering errors
  - Erroneous Asset Data on UK Link, (e.g. incorrect read units, metric / imperial indicators, conversion factors etc.) used to convert recorded volume to metered quantity would result in incorrect energy values on UK Link
  - Incorrect Meter Reads Loaded to UK Link (either incorrect reading or a read date different to when the actual read was taken)

How does it contribute to UIG?

- Where the consumption on UK Link does not reflect actual physical gas usage, then the AQ will be lower than appropriate and will result in understated allocation, which will contribute to UIG
- Where the energy is understated on UK Link following a meter read, this will result in permeant UIG
- The analysis suggests that this could account for up to 0.25% of Unidentified Gas

Options to address the finding (1 of 3)

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2.	CDSP Analyse Read Rejections for asset mismatches. Highlight mismatched asset details to Shippers to review and either resubmit the read with the correct assets or the update the asset details on UK Link as appropriate.	Low – Medium. Shippers receive read rejection data at the moment	Short
3.	CDSP NDM Sample validation – arrange site visits for a representative sample of the Xoserve managed sample sites to validate the daily read equipment is functioning normally and consistent with the physical asset setup on site and consistent with UK Link	Low. DM Sample equipment is already actively monitored and managed by Xoserve. Suspect sites are investigated as a BAU process	Medium
4.	CDSP to Review NDM Sample Site selection and validation process. This is underway following the implementation of UNC Modification 0645S (Mandating the provision of NDM Sample Data)	Low – the mismatch with Sample Data has highlighted this issue but the sample data can’t be used in operational processes. The NDM sample is under investigation under line item 13.3	Medium

Options to address the finding (2 of 3)

No.	Option	Likelihood of success	Implementation lead times
5.	Xoserve defect resolution of issues impacting consumption calculations (BAU activity captured here for completeness)	Medium	Medium
6.	CDSP Reconcile a representative sample of UK Link Asset Data (not the NDM Sample Data). Investigate mismatched asset details and update the appropriate user's records where necessary. This will give an indication of the potential level of asset data quality issues on UK Link. The sample data could be gathered from sources including, but not limited to: a) Shipper Portfolios b) Meter Asset Managers c) DCC Service Flags d) Directly with end users via postal / online form e) Via MRA site visit process sponsored by Xoserve	Low-Medium. Would potentially require UNC modification, sponsorship from shippers and / or the regulator and / or commercial arrangement with MAMs / the DCC / MRAs and or End User support	Long

Options to address the finding (3 of 3)

No.	Option	Likelihood of success	Implementation lead times
7.	Asset Data Cleanse – CDSP to Reconcile entire UK Link Asset Data portfolio. Investigate mismatched asset details and update the appropriate user's records where necessary. This is part of UNC Mod 0651 - Changes to the Retrospective Data Update provisions	Medium-High. Would need approval of UNC modification and possibly commercial arrangement with the MAMs / DCC / Other data providers. Mod 0651 does not have industry wide support	Long
8.	Require validation of Meter Asset Details whenever an actual read taken by a Meter Read Agent. Mismatches flagged to the shipper for investigation and update where appropriate	Medium. Would require a UNC Modification to create the obligation. Risk that MRA records incorrect asset details creating false positives	Long
9.	CDSP to obtain smart meter readings and asset data direct from the DCC rather than the shipper. Would also potentially need a data cleanse exercise to align asset data between the DCC and UK Link to minimise asset based read rejections	High. Smart Meter population is growing and the benefits increase with the install base. Would require multiple UNC Modifications, Changes to the Smart Energy Code and system / file flow changes	Very Long

Xoserve recommended options

UIG Task Force Recommendations

Investigation Item 1

Use of estimates for Daily Metered (DM) Sites

Background

What is the finding?

- Where actual reads are not received or are rejected, for Class 1 and 2 sites a D-7 estimate is used (i.e. the same consumption as 7 days ago is used if available otherwise other AQ/365)
- This may not be a good representation of the actual consumption and any difference would contribute to UIG
- As at 01/01/2019, c. 5bn kWh of Class 1 and 2 (i.e. DM) AQ has not had an actual meter reading accepted for over 3 months
- Read submission rate is 86% for Class 1 and 45% for Class 2 against a UNC target of 97.5%

How does it contribute to UIG?

- This AQ without an actual meter read equates to c 0.9% of total LDZ AQ and creates a risk of both base UIG and volatility, if the actual usage is not well represented by the D-7 estimation processes
- DM sites' consumption can sometimes vary by -50% and +100% from the average on any given day, so this may contribute spikes of around 0.9% on a day
- Assuming 10% change in usage since last reading, this could be contributing around 0.09% to base usage (i.e. 10% x 0.9% AQ at risk)

Options to Address the finding (1 of 2)

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2. ★	Engagement with DMSPs – monitor read rejections for Class 1. Resurrect previous initiatives to monitor and help resolution Engagement with Shippers – monitor read rejections for Class 2. Provide encouragement for action to be taken. CDSP to monitor monthly and notify relevant Shippers/DMSPs	Low to medium – requires Shipper/DMSP co-operation *If UNC Mod 0647 goes ahead (Opening Class 1 Reads to Competition) could Class 1 read performance drop further?*	Short to medium
3. ★	Notify Ofgem of individual sites and associated Shippers	Low to medium – requires Shipper co-operation unless Ofgem can apply any financial leverage	Short to medium
4.	PAC reporting and monitoring – PAC to engage with shippers on basis of existing and/or new reports in Performance Assurance Report Register. Consideration of any additional reporting to PAC	Low to medium – requires Shipper co-operation unless financial incentives are also introduced	Medium

★ Xoserve recommended options

Options to address (2 of 2) : Possible UNC Modifications

No.	Option	Likelihood of success	Implementation lead times
5.	Review DMSP read incentive framework (Class 1)	Low to medium, depending on structure of incentives	Long
6. ★	Reduce the duration for the Class 2 Must Read trigger & extend to include Class 1	Medium to high, depending on access rates for must reads	Long
7. ★	Introduce incentives or liabilities for low submission rates for Class 2, and/or extend Class 1 liabilities to apply to shippers	Medium to high, depending on structure of regime	Long – UNC Mod timescales plus system changes
8.	CDSP obtains reads by installing AMR	Medium to high, depending on accuracy of asset details	Long
9.	Amend the industry processes to allow CDSP to obtain the reads directly from the read provider (DMSP/DCC etc.)	High	Very long

★ Xoserve recommended options

UIG Task Force Recommendations

Investigation Items 12.1 and 12.3

Site-specific conversion factors

Background

What is the finding?

12.1 Use of standard conversion factors for NDM sites > 732,000 kWh AQ

- All sites of this size should have a specific conversion factor (to convert volume to energy) based on altitude, temp and pressure rather than the industry standard value
- There are currently around 5,000 of c.26,000 eligible sites without a site-specific conversion factor
- Details are already provided in the monthly Shipper Performance Pack
- Around 18% of eligible sites have a standard CF but this is a relatively small section of the market (c.1% of AQ)

How does it contribute to UIG?

- Any difference between the standard value and a more accurate value would mean that the gas was under or over metered and would contribute to UIG. Once the reads have been used to calculate an AQ, nominations and allocations would also be affected
- Comparison to average of specific CFs in each LDZ suggests an annualised understatement of 7.4% on consumption of affected sites
- UIG estimate 0.1% of total throughput (assumes all sites were in EUC04B, based on average AQ in dataset of 1.6m kWh)

Background

What is the finding?

12.3 Use of non-standard conversion factors for NDM sites < 732,000 kWh AQ

- All sites of this size should have the industry standard value of 1.02264 (not a specific conversion factor based on altitude, temp and pressure)
- Around 10,000 relevant sites, with a total AQ of 2.8bm kWh (c.5% of total market), have a specific CF
- The average AQ of the dataset is around 270,000 kWh, suggesting that many sites were previously eligible for a site specific conversion factor, and have not yet had an update back to the standard value, following AQ degradation (or the AQ may actually be erroneous and awaiting correction)

How does it contribute to UIG?

- Any difference between the standard value and a site-specific value would mean that the gas was under or over metered and would contribute to UIG
- Once the reads have been used to calculate an AQ, nominations and allocations would also be effected
- Comparison of standard CF to specific CFs for affected sites in each LDZ suggests an annualised error of 3.77% on consumption of affected sites
- This is currently reducing UIG by 0.02%

Options to address findings 12.1 & 12.3

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2. both	CDSP Engagement with Shippers – highlight the individual sites, provide support, encourage action to update correction factors. CDSP to monitor monthly and notify relevant Shippers	Low to medium – requires Shipper co-operation	Short to medium
3. 12.3	PAC reporting and monitoring – add new reports to Performance Assurance Report Register for 12.3 (already exists for 12.1)	Low to medium – requires Shipper co-operation	Medium
4.	Notify Ofgem of individual sites and Shippers	Low to medium – requires Shipper co-operation unless Ofgem can apply any financial leverage	Short to medium
5. both	Allow CF to be amended via Supply Point update (as alternative to RGMA updates)	Low to medium – requires Shipper co-operation	Medium/long – system changes

Xoserve recommended options

Options to address findings (2 of 3 – 12.1 only)

No.	Option	Likelihood of success	Implementation lead times
6. 12.1	UNC Mod to introduce incentives or penalties on inappropriate CFs as an addition to the existing PAC reports	Medium/high – depending on the size of the incentive.	Long – UNC Mod timescales plus system changes
7.	New process to allow CDSP to liaise with MAM to obtain the new correction factor – either update UK Link or provide to Shipper to update	Medium/high – depending on the support of the MAM/ Shipper	Long – system changes, plus UNC Mod may be required
8.	New process to allow CDSP to trigger either a desktop process or a site visit to obtain the new correction factor – either update UK Link or provide to Shipper to update	Medium/high – depending on the success of site visits	Long – system changes, plus UNC Mod may be required
9. 12.1	Use the last non-standard CF (if present) if the site AQ increases above 732,000	High – for sites which had previously had a non-standard CF	Long – system changes, plus UNC Mod may be required

Xoserve recommended options

Options to address findings (3 of 3 – 12.3 only)

No.	Option	Likelihood of success	Implementation lead times
9. ★ 12.3	Introduce incentives or penalties as an addition to the new PAC reports	Medium/high – depending on the size of the incentive.	Long – UNC Mod timescales plus system changes
10. ★ 12.3	Default the Conversion Factor to standard when the AQ drops below 732,000 [after a qualifying period]	Medium/high – depending on length of any qualifying period	Long – UNC Mod timescales plus system changes
11. ★ 12.3	Hold the standard CF as a central parameter rather than against meter points – ensures that calculation always uses correct value	Medium/high – depending on length of any qualifying period	Long – system changes required

★ Xoserve recommended options

UIG Task Force Recommendations

Investigation Item 12.2

Standard conversion factors

Background

What is the finding?

12.2 Use of standard conversion factors for NDM sites < 732,000 kWh AQ, regardless of variations in LDZ or geography

- All sites under 732,000 AQ should have a single industry standard *conversion factor* specified in legislation (also referred to as a *Correction Factor*)
- Any difference between the standard value and more accurate value would mean that gas was under- or over-metered and would contribute to UIG
- Once the reads have been used to calculate an AQ, Nominations and Allocations would also be affected

How does it contribute to UIG?

- Analysis of the impact of using actual LDZ temperatures instead of the standard 12.2 degrees in a colder than average LDZ indicates that the annual effect is non-zero, i.e. that summer over-recording of actual energy does not fully offset the winter under-recording of actual energy
- Analysis of effect of standard v actual hourly temps on first year post-Nexus shows national impact of standard conversion is 0.4% additional UIG. Using actual temps would have reduced UIG by up to 3% on peak days and increased it by up to 4% on the warmest days

Options to address finding 12.2 (1 of 3)

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2.	Use actual LDZ temperatures to convert consumptions used to develop the NDM Profiles (ALPs and DAFs) – to be further refined at DESC forum	Medium – improves daily allocation but does not correct calculation of metered energy or AQ	Short/medium – pending DESC review
3.	Influencing strategy to amend Thermal Energy Regulations	Unknown?	Probably long?
4.	Add a new LDZ level factor to the volume-to-energy conversion formula to account for the net difference in energy. The factor could either be a fixed value reviewed periodically, or calculated daily using actual LDZ weather	Medium to high	Long. Would require a UNC Modification proposal and significant system changes.

Xoserve recommended options

Options to address finding 12.2 (2 of 3)

No.	Option	Likelihood of success	Implementation lead times
5.	Amend AUGE process to re-distribute UIG based on estimated impacts of conversion factors (forecast basis)	Medium/high – depending on actual weather for the year	Medium – requires governance changes but probably no system changes
6.	Mod to introduce retrospective adjustment to allocations based on actual weather for the year	Medium/high – depending on methodology applied	Long – UNC Mod and system changes
7.	Introduce an LDZ level conversion factor (permanent/per year/per month)	Low to medium – depending on whether annual/monthly	Long – UNC Mod and system changes
8.	Amend UNC/legislation to require site specific conversion for every site	Low to medium due to scale of workload	Medium/long – creation of capability only – Long for actual CF updates

Options to Address Finding 12.2 (3 of 3)

No.	Option	Likelihood of success	Implementation lead times
9.	***Suggested by Shipper:*** Create a new category of Energy, treated similarly to Shrinkage, where a percentage of daily throughput is allocated as a Correction Factor error. The percentage of energy would be set at LDZ level based on daily profiled seasonal normal temperature, and then retrospectively trued-up based on the actual LDZ temperature. This option would reduce volatility and the shippers' trading exposure arising	***Shipper assessment:*** Medium-High. Would reflect daily profiled temperature effect, applied to aggregate consumption profile (rather than individual sites' usage profiles). Would need to assess if any changes required to DNs' RIIO arrangements to make it an allowable cost	Long. Would require a UNC modification and changes to CDSP systems, and potentially changes to CDSP Billing processes to incorporate the new energy type

UIG Task Force Recommendations

Investigation Item 3.2.8

Inaccurate/Out of date AQs - Sample sites consuming energy with a UK Link AQ of 1

Background

What is the finding?

- From the NDM Sample, we have identified sites with advancing consumption that have (or had) an AQ of 1 on UK Link
- Where the AQ has now increased on UK Link, the level of AQ is, in the majority of cases, greater than the level the AQ could increase to under normal processes
- This suggests there may be process blockers to increasing AQ to levels reflective of actual consumption
- There are around 400,000 live MPRs with an AQ < 100 on UK Link, and our analysis suggests around 5% of these (20,000 MPRs) have had reads rejected for energy Tolerance reasons and a subsequent read has not been accepted

How does it contribute to UIG?

- Sites with consumption that is not reflected in their AQ will not have appropriate energy allocated and will contribute to baseline UIG variance
- If a read does not load then the energy will not reconcile resulting in permanent UIG
- This line of analysis is ongoing but suggests that this could account for around 0.35% of UIG

Options to address the finding (1 of 3)

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2.	Engagement with Shippers around monitoring read rejections and how CDSP can support through industry processes. We have shared specific sites we have identified with the Customer Account Managers and CDSP will work with the Shippers to resolve	Medium	Medium to Long
3.	XRN4690 will prevent the AQ defaulting to 1 where there is a negative consumption value held on UK Link. Additionally, we could run impacted MPRNs through the AQ correction tool once the code fix is deployed rather than waiting for rolling AQ to increase the AQ back to a suitable level	Medium. Would likely require user approval to correct their AQs	Medium
4.	There is an issue where a shipper cannot submit an AQ correction because there has not recently been an AQ calculation, but the shipper cannot submit a read because it is rejecting for AQ tolerance reasons. This would leave the shipper in a loop unable to correct the AQ. There is a pending change (XRN4803) to allow the AQ to be corrected in this scenario	Medium (This change is already underway and so will not be part of the recommendations but is captured here for completeness)	Medium

Xoserve recommended options

Options to address the finding (2 of 3)

No.	Option	Likelihood of success	Implementation lead times
5.	Enhance PAC reporting around AQ corrections to include more detail and highlight areas of potential concern. PAC have visibility of AQ corrections and this will be enhanced to show the split between AQ increases and decreases and highlight any unusual activity	Low to Medium	In progress; Medium
6.	We have been advised that some shippers are setting AQs to <10 using the AQ correction process where the site is vacant. We could raise a change to create a Vacancy flag on UK Link which would stop the AQ contributing to allocation, resulting in a benefit to the shipper without putting the AQ at risk. It could operate similarly to the Isolation Flag only without the downstream safety visit by the Transporter. The flag would be temporary and revert back to “occupied” after [3] months or on any supply point activity (e.g. Change of supply, read submission or any RGMA activity etc.) Sites would be back billed where the flag was not set appropriately	Medium. Would require a UNC Modification and system changes. There are many contributing factors to low AQs and one measure is unlikely to resolve the issue fully. The Likelihood of Success is therefore capped at Medium for this issue	Long
7.	Raise a change so that where an AQ is corrected by the shipper and a read received within [6] months with a metered consumption that is out of line with the corrected AQ, the AQ correction will be overridden by the usual AQ calculation process and the shipper notified		Long

Xoserve recommended options

Options to address the finding (3 of 3)

No.	Option	Likelihood of success	Implementation lead times
8.	Raise a change to shorten the required read period for AQ calculation to [3] months where the AQ is <[100] until a sufficient read history is available to calculate normally	Medium. Would require a UNC Modification and system changes There are many contributing factors to low AQs and one measure is unlikely to resolve the issue fully. The Likelihood of Success is therefore capped at Medium for this issue	Long
9.	Create new “Vacant Site” AQ correction reason code and logic to allow an AQ correction where the AQ is 1 without the need to have a recently accepted read on UK Link		Long
10.	Reducing the AQ below [100] kWh or by [95%] would trigger a requirement to provide a read or a site visit to obtain a read within [30] Days or the AQ correction would revert to the previous prevailing value. If the provided read energy does not align with the amended AQ then the AQ will revert to the previous prevailing value. If a subsequently submitted read calculates energy materially different from the deemed energy, the AQ will revert to the previous prevailing value and the site will be back billed		Long

Xoserve recommended options

UIG Task Force Recommendations

Investigation Item 3.1 AQ Calculation errors -

Reads rejected because uncorrected read value is lower than previous uncorrected read

Background

What is the finding?

- We have identified an issue where UK Link rejects reads when the new uncorrected read is lower than the previously loaded uncorrected read
- The TTZ count in the read submission file applies to the corrected read as this is the read used for billing
- There is therefore no way to identify when the uncorrected read has gone through the zeroes and so the read will be rejected when the uncorrected register rolls over
- This issue impacts around 1,000 MPRNs and has resulted in 15,000 rejections

How does it contribute to UIG?

- Where a read is rejected for this reason only, it would prevent the actual corrected read from loading in to the system
- If reads do not load then the AQ will not recalculate
- If the actual consumption is significantly different to the AQ, the site will not be allocated appropriately and will contribute to UIG
- This will also stop any reconciliation for the meter point so any historic UIG will not be accounted for

Options to address the finding (1 of 2)

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2.	Engagement with Shippers – highlight the individual sites, provide support, and shippers to raise tickets so CDSP can manually enter reads by exception	Low to medium – requires Shipper to work around UK Link validation issue	Short
3.	Users can increment the uncorrected read so it is higher than the read currently held on UK Link without going through the Zeros. The uncorrected read is not used for billing or AQ calculation so these process will not be impacted. There could be an impact on asset exchanges as the uncorrected read recorded on site will differ from that held on UK Link. As RGMA flows are normally pass through files, these may reject requiring the shipper to modify the uncorrected exchange reading	Medium to Low - requires Shipper to work around UK Link validation issue and may have potential impacts to asset exchanges. The shippers will also have to change the uncorrected read for all subsequent read submission for them to be accepted	Workaround Option: Short
4.	Shipper could submit a cosmetic corrector exchange alongside the lower uncorrected reading as this file format contains uncorrected TTZ count. Subsequent readings would then load normally assuming other validation checks pass	Medium to High - requires Shipper to work around UK Link validation issue	Workaround Option: Short

Xoserve recommended options

Options to address the finding (2 of 2)

No.	Option	Likelihood of success	Implementation lead times
5.	CDSP to monitor rejections for this rejection code. CDSP will manually load the read to UK Link if the read has passed all other validations. Subsequent reads will load normally if they pass validation checks	High. CDSP resource required to maintain this process	Workaround option: Short to medium
6.	The uncorrected read will be an optional field following the November 2019 UK Link release implementation, so it can be blank and the corrected read will load	Low to medium. If the field is populated with a lower read than loaded then the new read will still reject	Long: Implementation November 2019
7.	Raise change to UK Link to remove validation on the uncorrected read as it is not used for billing	High	Medium to Long CP required
8.	Raise a change to add an Uncorrected TTZ count to the incoming and outgoing read file format and any associated logic to ISU	High	Medium to Long CP required
9.	Raise a change to alter the read load logic to derive the TTZ count for uncorrected reads. We would increment the uncorrected read TTZ count by 1 and load the read when the uncorrected read is lower than the previous uncorrected read and all other validation checks pass	High	Medium to Long CP required

Xoserve recommended options

UIG Task Force Recommendations

Investigation Item 2

Low take-up of Winter Annual Ratio (WAR) Band EUCs

Background

What is the finding?

- Around 30% of eligible sites are not in a WAR Band sub-EUC as of 01/09/2018
- This can be because a suitable read pair was not accepted by CDSP and so the Winter Consumption Calculation could not complete
- We have also found an issue in UK Link where the Variance Reason Field is incorrectly populated against a read and as a result the winter consumption calculation fails. This impacted around 1,000 MPRNs in the May 2018 Winter Consumption calculation window

How does it contribute to UIG?

- Where a site is in the Bucket rather than the WAR Band, it will potentially be allocated with different seasonal usage than its actual consumption
- This will result in UIG at different times of the year. If sites were distributed in WAR Bands at the ideal ratio, UIG would be up to 2.5% lower on peak winter days, and summer would be up to 1.5% higher. The net effect is a slight under allocation
- UNC Modification proposal 0652 and Change Proposal XRN 4790 have been raised to highlight the ongoing issue and help improve the position

Options to Address the Finding (1)

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2.	Engagement with Shippers – highlight the individual sites, provide support, encourage read submission and use of the WAR Band Update process where reads not submitted in the winter acceptance periods	Medium – requires Shipper cooperation and we have seen very good progress from some shippers to date	In progress; Short to medium
3.	The WAR Band calculation can fail where the Meter Read Frequency is not Monthly for a site in a WAR Band eligible EUC. Meter Read Frequency should be added to the reports proposed in Modification proposal 0652 so shippers are aware where the MRF needs to be updated before the WAR Band can be applied	Low to medium – requires shipper update MRF on UK Link	In progress; Medium
4.	A new report to monitor sites which cross in to a WAR Band eligible EUC following Rolling AQ calculation. Proactively engage with Shippers to use the WAR Update process when needed	Medium	In progress; Medium
5.	Notify Customer Account Managers when the T51 (WAR Band Calculation Failures) report is available so CDSP can proactively manage Next Steps with Customers	Medium - We have seen very good progress from some shippers to date	In progress; Medium
6.	CDSP to fix the Read Variance issue in UK Link	Medium	In progress; Medium

Xoserve recommended options

UIG Task Force Recommendations

Investigation Item 13.2.2 (Including 13.2.3 & 13.2.4)

Accuracy of NDM Algorithm - Use of weather data - Sensitivity of components of the composite weather variable

Background

What is the finding?

- The Composite Weather Variable (CWV) calculation comprises numerous values, parameters and variables. The analysis reveals which of the inputs has the largest potential to cause big changes in NDM Allocation (and therefore UIG) with only small changes to in the input. The sensitive components are:
- Seasonal Normal CWV (SNCWV)
- Weather Correction Factor
- Wind Chill Coefficient
- Transition Start Temperature
- Temperature
- Effective Temperature Weighting
- Within Day Temperature Weightings

How does it contribute to UIG?

- Varying the inputs by relatively small amounts (1° temperature change, for example) can change the UIG value by up to 20% on a given day and up to around 5% on average
- ***Note:*** *this does not mean that these inputs are causing UIG but reveals which components of the CWV need to be effectively modelled to ensure the NDM Algorithm allocates energy as accurately as possible*

Options to address the findings

No.	Option	Likelihood of Success	Implementation Lead Times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2. 	Provide Sensitivity analysis results to the Demand Estimation team for assessment and incorporation into SNCWV review via the Demand Estimation Subcommittee	Medium	Long – may inform the current SNCWV review which will be implemented October 2020

Xoserve recommended options

UIG Task Force Recommendations

Investigation Item 13.2.5

Accuracy of NDM algorithm - Use of additional weather data in the composite weather variable

Background

What is the findings?

- 13.2.5 Accuracy of NDM Algorithm - Use of Weather Data (Basic Machine Learning)
- The Composite Weather Variable (CWV) calculation comprises numerous values, parameters and variables. It currently includes two-hourly Temperature and four-hourly Wind Speed
- Other weather data items are available as both forecasts and actual observations, and could be used to enhance the NDM Estimation Algorithm

How does it contribute to UIG?

- The Findings for item 13.2.5 (basic machine learning) highlighted that using all six of the common weather items (temperature, wind speed, precipitation, solar radiation, relative humidity and atmospheric pressure) reduced UIG volatility in a simulated model by 28%, compared to a 23% reduction using only the two current data *items (e.g. a range of volatility of +/-10% would be reduced to +/-7.2%)*
- Further work would be required to convert this finding into a new NDM Estimation Algorithm.

Options to address the finding

No.	Option	Likelihood of success	Implementation lead times
1.	No action (“Do Nothing” option) or Park	Very low	N/A
2. 	Next DESC review of Composite Weather Variable (CWV) formula to include the four other commonly available weather data items. Process would include: • Re-optimisation of the CWV formula would assess their relationship to NDM Demand • Seasonal Normal CWV (SN CWV) values would also need to be updated to use history for these weather items • Historic NDM demand models would need to be re-calculated for the purpose of AQ calculations • All AQs that did not recalculate would need to be re-stated to bring them into line with the new SN CWV definitions	Medium/high – if more of the NDM fluctuation can be reliably explained by additional weather	Medium/long – may inform the current SNCWV review which will be implemented October 2020
3.	Replace NDM Allocation formula with a weather-based regression formula	Medium/high – if more of the NDM fluctuation can be reliably explained by a regression formula	Long – major change to CDSP and Shipper systems


Xoserve recommended options

Findings only

Log #	Description
9	DM Nomination Accuracy
13.1.1	Accuracy of NDM Algorithm – Uplift factors
13.1.2	Accuracy of NDM Algorithm – Weekend v's Weekday correlation
13.1.3	Accuracy of NDM Algorithm – Holiday Factors
13.1.4	Influence of geographical factors on Demand Estimation
13.3.1	Accuracy of NDM Algorithm – NDM Sample Data – Representation across EUCs
13.3.2	Accuracy of NDM Algorithm – NDM Sample Data – NDM Sample population
18	Meter points in isolated status which are registering consumption
6	Unregistered/Shipperless
3.2.6	Inaccurate/out of date AQs – different rates of AQ change to inform discussion on meter read frequency

Please visit https://www.xoserve.com/index.php/unidentified-gas-uig/ for our findings published on the Xoserve website

Agree Task Force next steps

Future areas of Task Force focus

Continue UIG analysis

- Commence analysis of outstanding 17 lines of possible UIG investigation in line with second target as quoted within MOD0658 "*reporting on absolute levels and propose measures which aim to reduce variation of Unidentified Gas to plus/minus 0.5% of absolute levels by 31 October 2019"*

Support customers to progress recommendations

- Provide dedicated support, within an agreed window of opportunity, to all customers who have expressed a desire to sponsor the progression of any recommendations suggested by the Xoserve UIG Task Force *(e.g. support customers in reviewing the drafts of MODs/CPs prior to formal submission etc.)*

Complete delivery of CPs/CRs

- Complete the delivery into Xoserve's production estate of all three Change Proposals/Change Request currently being worked on by UIG Task Force resources

Additional focus

- Assess new requests for analysis from Industry parties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Supporting Information

UIG as a % of Total Throughput – Original v Latest as at November Amendment Invoice

- Graph of national UIG after meter point reconciliations (all Classes) processed up to and including end of November 2018 (18 months)
- For 18 months post-Nexus:
  - Original D+5 UIG = 3.8%
  - Post-reconciliations processed to date = 3.5%
- *April spike attributed to unseasonal cold weather, not fully reflected by NDM Algorithm*
- *Summer 2018 dip attributed to unseasonal warm weather*

Simulation of UIG for Gas Year 2019/20 without the NDM "Uplift Factors"

- Graph of national daily UIG at D+5 (actual) compared to simulated UIG using Annual Load Profiles and Daily Adjustment Factors without the Uplift Factors as described in the NDM Demand Estimation Methodology
  (see also Task Force Finding 13.1.1)
- Monthly stats below *(average UIG for the month and Mean Absolute Percentage Error)*

	Average		MAPE	
Month	No uplift	Actual	No uplift	Actual
Oct	1.74%	-0.72%	3.86%	4.16%
Nov	2.27%	-0.38%	2.66%	1.83%
Dec	2.10%	-0.50%	2.67%	2.06%