UIG Task Force Update

Dear Customers and Industry Colleagues,

In late November the Unidentified Gas (UIG) Task Force published an executive summary of their Sprint 5 findings. The team is now pleased to share the most recent findings from Sprint 6 and an update on our next steps.

Background

Since the implementation of Project Nexus in June 2017, gas shippers have experienced much higher than expected absolute levels and volatility of UIG. This is severely affecting their ability to predict demand and commercially manage their businesses from an immediate cash-flow perspective, because UIG is reconciled (corrected) over an extended and unknown future period. In July 2018 Ofgem approved the Unified Network Code (UNC) Modification 0658 to drive a more centralised and focussed approach to the resolution of UIG, mandating Xoserve as the Central Data Service Provider to take on a leadership role on behalf of the industry. I'm pleased to confirm that the sixth sprint of the UIG Task Force completed earlier this week. As this is the final formal Sprint communication, this summary is quite detailed to ensure there is full visibility of our current position.

Sprint 6 Findings

Machine learning

In Sprint 6, we continued to develop Machine Learning techniques with the goal of improving on the accuracy of the existing Non-Daily Metered (NDM) algorithm. Machine Learning models are designed to predict future behaviour based on past performance, and so we have used additional historic NDM sample data, including the most recent data set, which incorporates the extreme cold weather from early 2018 to improve the accuracy of the model. We have trialled a number of different techniques, and using a Neural Network, have shown the most potential in improving NDM allocation accuracy and reducing UIG. At this early stage, the Neural Network shows potential to reduce the level of the volatility spikes by around 15%, which means that the daily variances from the base UIG level are significantly reduced. The focus for Sprint 6 has been on End User Category (EUC) Band 1, as we have previously identified around 80% of UIG is attributable to this EUC band. So future tasks to consider include tuning the model to different EUCs to see if the Machine Leaning model can deliver the same benefits across the market. Neural Networks tend to produce more accurate estimates if they have more historic data to learn from, so we will also look to source additional input data to see if we can further improve the accuracy.

Optimum meter read frequencies for sites in EUC01 & EUC02

We continued with the analysis of the optimum meter read frequencies for sites in EUC01 and EUC02 and have confirmed that increasing the reading rates of sites has little benefit in reducing UIG levels. The rolling Annual Quantity (AQ) calculation is designed to use a read period as close to 365 days as possible, with a priority given to using more recent reads rather than longer read periods. This means that short term consumption changes do not always contribute to the AQ calculation, and that longer term changes in consumption behaviour are not fully reflected in the rolling AQ calculation over a year. The current rolling AQ process works well for sites where the end customer's behaviour and usage aligns with their AQ, but this highlights that where a site shows a significant and sustained

change in usage, there is a real need for customers to follow the AQ correction process and amend the AQ accordingly. We will consider introducing options to monitor AQs which are not in line with actual consumption, which will be captured under formal UIG Task Force recommendations.

Annual quantities

We have begun our investigations into sites with very low AQs that are not in the NDM sample to see if we can identify any systematic issues. We have identified a portfolio of around 400,000 live sites with AQs below 100kWh, and started to investigate Supply Point activity for a random sample of these sites. We will continue with this line of investigation, our aim is to understand whether the low AQs are appropriate, or if there are any system or process issues which are keeping AQs artificially low.

We have looked at reads which were rejected for exceeding the energy tolerance threshold and compared subsequent accepted reads to the rejected energy, to test the appropriateness of the meter read tolerance levels for sites with low AQ. We have also looked at rejected energy compared with historic AQ levels to understand whether these rejected reads are consistent with historic levels of consumption. Our analysis is in the early stages, but indicates that there may be a level of consumption, which is not recorded on our systems for around 5% of these sites. We will continue this line of investigation in the future to understand the potential materiality of this issue, identify any systematic root causes, and engage with the industry to ensure the AQs are representative of actual consumption. We will also look at AQ corrections where the AQ has increased following a read rejection to understand the level of AQ, which may be corrected in the future under current processes.

We are drilling down into the individual Local Distribution Zones (LDZs) to understand AQ material changes over time. We have used the Scottish Independent LDZs as a test case and have validated that the Meter Point AQs pre and post Project Nexus appear to be consistent. There is no obvious trend post Project Nexus with movements ranging between +/-2.5%, but we have identified one Daily Metered (DM), Class 2 site, which hasn't had an actual meter read since March 2018. We will be liaising with the responsible Shipper to offer them assistance to start loading actual reads again. This line of enquiry may be an opportunity for further analysis.

Weighting the existing Non-Daily Metered Sample, End User Category Band 1 Domestic data

In the previous Sprint we used weighted EUC Band 1 Domestic data with the existing demand estimation model to see if we can improve the accuracy of NDM allocation; our findings did not show any significant benefits. It may have been possible that there was too much variation within EUC01 sites for the current model to be effective and that if EUC01 is broken up into sub-EUCs, the current demand estimation model might be able to better model demand and reduce UIG and/or UIG volatility. As part of Sprint 6 we modelled five separate profiles for smaller bands within EUC01 for three LDZs and compared the resulting allocation, to the allocation created using the existing EUC01 methodology. We found that although there were small benefits seen in some of the sub bands, in aggregate there were minimal improvements in terms of reducing UIG levels. Although we will not be developing these findings into a recommendation, we will internally be sharing the findings with the Demand Estimation team, as using smaller sub bands in place of EUC01 may reduce the amount of energy reconciled when sites are read. Bringing NDM allocation more in-line with actual consumption and therefore reducing the amount of energy which must be reconciled is one of the drivers for developing a more accurate NDM algorithm.

Algorithm performance

In addition to the above, we have begun a task to investigate historic, large scale NDM algorithm performance. All metered consumptions for all EUCs in the East Anglia LDZ for the 2016-2017 Gas

Year were compared to a simulated Meter Point level allocation for the same period. We investigated the relationship between the number of days between meter reads and the difference between allocated and metered consumption. The analysis indicates that, while some meters are over allocated and some are under allocated, the net difference is an under allocation of energy compared with actual usage, which contributes to base level UIG. As a future task, we would like to extend this analyse to the other LDZs to see if the pattern is repeated. This will help us understand potential reconciliation trends and identify any changes in recorded consumption patterns since the implementation of UK Link.

Shipperless and unregistered sites
A review of the latest approved Allocation of Unidentified Gas (AUG) statement prepared by the AUG Experts, showed that the estimates of UIG contribution from shipperless and unregistered sites were very low; around 0.015% of UIG at allocation and 0.01% of permanent UIG in the last full year analysed. There are currently around 5,000 sites under active investigation by Xoserve. Past experience has shown that the AQ of the sites is not necessarily a reliable indicator of the actual consumption levels. On the basis of the low materiality and existing industry processes (including the changes to back-billing arrangements introduced by a number of recent Uniform Network Code (UNC) Modifications, the Task Force is not planning any further investigations or recommendations.

Next steps for the task force
All current task force analysis work will now be paused and our focus for the coming weeks will be applied to the findings to date.

The UIG Task Force has focussed on areas of investigation that will result in recommendations by 31st December 2018, that we believe will reduce the levels of LDZ Unidentified Gas below 4% of Throughput, as targeted in UNC Modification 0658. We believe that our proposed recommendations will meet this target, but it is important to note that the issue has proved to have numerous, complex contributing drivers and the estimated impacts against each finding cannot be guaranteed. Our recommendations will be based on analysis of historic data and patterns, predominantly using the NDM sample site data to investigate how different components of the NDM market operate, and therefore the stated improvements to UIG levels historic and based on a representative model of the wider market. Much like the NDM Algorithm, the analysis depends on the sample site data being representative of the whole market for the improvements to be fully realised.

We plan to share our first set of completed, documented recommendations at the December Change Management Committee Meeting and publish them afterwards on our Xoserve website. These will cover:

- Use of estimates for DM sites
- Class 3 and 4 sites within EUC09
- Conversion factors (Site-specific & Standard)

We will continue to work up recommendations in-line with the 4% base level reduction target where the analysis has revealed areas where there can be meaningful improvements to UIG levels.

As agreed at the extraordinary Change Management Meeting on 29th November 2018, for future recommendations we plan to publish them on our website at Xoserve.com as soon as they are complete. We will also continue to communicate with via monthly updates and at our Change Management Committee Meetings.

As always, to view the Investigation Tracker to follow individual updates against each line of investigation, please click here.

The task force will be operating with minimal resource over the Christmas period, 24th December to 2nd January. During this period we will be monitoring our email account on working days only.

May I take this opportunity to wish you a merry Christmas and a Happy New Year. If you have any questions or comments, please contact us at uigtaskforce@xoserve.com.

Kind regards

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