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AUGE Response to Queries arising from AUGS Final Statement

Queries From	British Gas
Date Received	15/05/2012
Date of Response	12th July 2012

Question/Issue:

1. We believe that the AUGE has misunderstood the British Gas query relating to their failure to meet a high level objective. To clarify, British Gas is not stating that the AUGE's chosen method of calculating UG is incorrect. The methodology is fine; indeed as the AUGE correctly state British Gas supports a top-down approach to the calculation of UG. The top-down approach is correct since as the AUGE states:

"it was agreed between all parties that the quality of the theft data available was insufficient to allow this calculation to be robust."

Therefore the top-down approach was selected (and approved as a selection) on the basis that the AUGE (or any other party's) estimate of theft would form no part of the calculation methodology for the total UG.

The issue is that the AUGE has not calculated the total UG and then subtracted the known elements to result in the balancing number as per the requirement of a top-down approach. The AUGE has instead added their estimate of theft to the known elements to result in an estimate of the total UG. This is contrary to the reasoning of selecting a top-down approach and in our view fails to meet the requirement to formulate a calculation of the total UG.

We would question why the AUGE has stated an intention to adopt a top-down methodology but then applied a methodology solely reliant on their estimation of industry theft (added to the calculated elements of UG) to produce the total estimate of UG? This is a bottom up approach. The AUGE had specifically stated that this would not happen and it is universally accepted that this estimate is not robust. In a response to British Gas flagging this concern during the consultation process the AUGE stated:

"The new method will allow the level of theft to be estimated without being influenced by expectations of its likely magnitude, either on the part of the AUGE or any other interested party."

We are concerned that the above statement made by the AUGE during the consultation process has not been adhered to. The AUGE's proposed methodology was approved by the UNCC (subject to the satisfaction of specific concerns around accuracy) on the basis that what was stated in the proposed methodology would be realised. In our view it is not correct for the AUGE to state that they will perform a top-down calculation that would not be reliant on an estimate of theft by any party then deliver the opposite.

The extract below highlights the AUGS reliance on the AUGE's estimate of theft:

"UG estimates higher than this necessarily result in very large volumes of gas being assigned to theft (because other elements of UG are calculated directly and remain constant). Higher

estimates of UG lead to values for theft that are far higher than previously published and accepted values and which the AUGE considers to be unrealistic."

It is therefore clear that the AUGE has constrained the total scale of UG to be in-line with their non-robust estimate of theft. British Gas has repeated this concern throughout the consultation process and it is therefore inaccurate that the AUGE should state:

Response:

We believe this comment is based on a misunderstanding of the methodology. The UG calculation uses a traditional top-down approach and the value of Theft does not affect the calculated total UG. This was explained further at the UNCC meeting on 19th May 2012. The current approach involves calculating the best available estimate of the total UG, and then calculating the directly-estimated UG components (Shipperless/Unregistered Sites, CSEP issues and Meter Errors). This is subtracted from the total to give the Balancing Factor, which is mainly composed of Theft.

The AUGE is currently analysing an approach using consumption data, which has now been received, and if this is successful it may provide an alternative estimate of total UG. Even if this improves the accuracy of the total UG calculation it will not change the approach to calculating UG components, which remains as described.

British Gas, in their comment, highlighted the following statement from the AUGS: *"UG estimates higher than this necessarily result in very large volumes of gas being assigned to theft (because other elements of UG are calculated directly and remain constant). Higher estimates of UG lead to values for theft that are far higher than previously published and accepted values and which the AUGE considers to be unrealistic."*

This statement is actually a reference to the Theft estimate being dependent on the total UG rather than the other way round. This dependence exists because Theft is calculated by subtraction, and so if other elements remain constant then an increase in total UG necessarily causes an increase in the Theft estimate. This statement therefore illustrates the principle that the total UG figure is calculated independently of Theft rather than contradicting it.

2. The top-down methodology was agreed on the basis that the total UG would be calculated (from industry data). The AUGE have not calculated the total but have estimated it, thus have failed to meet the following high level objective:

   ▪ To develop a methodology of <u>calculating</u> Unidentified Gas

   A top-down methodology requires the total to be calculated. The AUGE has not answered our concerns that the total UG has not been calculated. There is a clear distinction between calculation and estimation (and in fact the AUGE's estimation appears not to be based on industry data).

   Early in the consultation stage British Gas clearly highlighted how meter reads could be used to calculate the total quantum of UG. It is our belief that the AUGE has not done enough to utilise the available data in order to robustly calculate the total quantum of UG and therefore the element that is assigned to each sector.

   Response:

Please refer to our response to the Energy UK document (Issue 1: Methodology) which explains that UG can only ever be an estimate since there are elements which have no measurement data that can be used to calculate them fully. This is also the case when using consumption data since there will be sites without meter readings that will need to be estimated.

3. The current industry allocation of UG is unfair. This is the reason for the appointment of the AUGE - to correct for this unfairness. Any under-measurement of the scale of UG or any lack of recognition of the scale of UG that is SSP-assigned initially has the effect of prolonging the residual unfairness by continuing to add cost to the mostly-domestic SSP sector.

There appears to be no basis for the assumption that:

"All elements of the Balancing Factor other than Theft are either small or will sum to zero over time".

We can see no logical reason why this statement should be true and the AUGE has provided no evidence to support this assumption. It is particularly important that the AUGE can provide evidence to support this because the allocation of theft (and therefore any other factors included in the number) is so biased against the SSP sector. We believe it is not reasonable for the AUGE to simply state *"this assessment remains valid"* with no evidence to support the claim.

The AUGE has recognised that there are some non-theft elements included in the Balancing Factor that will not sum to zero over time and will therefore be incorrectly apportioned to the detriment of the SSP sector. We believe this approach is unreasonable. Should the AUGE not be capable of robustly measuring and assigning these elements they should be allocated across sector in proportion to consumption as a default rather than in line with theft; the factors share no common relationship with theft propensity and will relate more closely to consumption; there is no rationale that supports alignment with theft allocation. Furthermore we consider the AUGE's allocation of theft to be unsupported by the industry data available (which we believe suggests a different allocation).

Response:

The AUGE's allocation of Theft across market sectors is based entirely on industry data supplied by Xoserve. Details of that method are given in the AUGS and the spreadsheets used have been supplied to the industry so that the method and calculations can be scrutinised by all parties (please see reference to location in recent progress update letter also posted under the Joint Office of Transporters Website under AUGE communications). In the light of all of this available information, the method was accepted by the UNCC as appropriate.

The AUGE has always openly stated the elements that make up the Balancing Factor, and these are as follows:

- Theft
- Errors in the Shrinkage Estimate
- Open Bypass Valves
- Meters "Passing Unregistered Gas"
- Unknown Sites

- Additional Common Cause Variation

These fall into two categories:

Shrinkage Estimate Errors and Common Cause Variation sum to zero over time. The Shrinkage Model is a trained statistical algorithm that, like all such models, carries the assumption that the residuals are IID $N(0,\sigma)$ and hence by definition sum to zero. Whilst it is recognised that the model was trained some time ago, if conditions have changed since that time and introduced a bias into the Shrinkage estimate, this is an issue to be dealt with by retraining the Shrinkage model rather than in the UG estimate. Common Cause Variation also, by definition, sums to zero over time and hence in combination these two causes, whilst they may affect individual instances of the Balancing Factor, do not affect the sum over time.

Other than Theft, the remaining elements are Open Bypass Values, Meters PUG and Unknown Sites. The AUGE considered calculating these elements directly and requested data in order to assess whether this was possible. Very little data was received, however. The small amount of information that was supplied suggested that these areas contributed a negligible amount to the UG total. This data can be made available if required. Therefore, given no information about these elements except that they are very small, it is appropriate to include them in the Balancing Factor.

If their value was known, they could be taken out of the Balancing Factor and split by market sector separately. They are in the Balancing Factor precisely because this cannot be done, however, and so such an approach is currently not possible. It is therefore necessary to analyse the entire Balancing Factor as a single entity, and given that it is overwhelmingly composed of Theft, the market sector split for Theft is the appropriate one to use.

4. Since the AUGE agrees that there is an element of SSP-assigned UG we find it unreasonable that the AUGE has not quantified this and included it within the AUGS. Lack of recognition of the SSP-assigned UG understates the total UG and continues the unfairness of sector cost allocation that the AUGE has been tasked with correcting.

We do not accept that there is no evidence currently available to support the setting of the SSP-assigned UG percentage to "any given non-zero figure". Industry data is available, some of which is included within the AUGS. The AUGE recognise the existence of SSP-assigned UG; we believe that their failure to size it despite recognising its existence is not a valid reason for setting it to zero.

The AUGE states that there *"is no basis for assigning some arbitrarily chosen small number"* yet has allocated zero. We do not request that the AUGE arbitrarily assigns the volume of SSP-assigned UG (that is what it has actually occurred by assigning zero to the SSP sector and 100% to the LSP sector) but actually calculates it and includes it within the AUGS. A failure to do this despite recognising its existence is a failure to calculate correctly the total UG and the correct sector assignment. This failure has the effect of both understating the total UG and unfairly allocating cost to the SSP sector.

We do not believe the AUGE has used *"the long-term trend defined by the line of best fit"* if this results in a zero allocation of SSP-assigned UG. It is in fact statistically valid to isolate a single point with high positive scatter to demonstrate that in the measured period the allocation of SSP-assigned UG cannot be zero. On a broader point we are concerned about the application of statistical methods by the AUGE generally (another example is the AUGE's use of "null hypothesis" referred to in their latest response) and would request that the

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AUGE's use of statistical theory is peer reviewed by an independent practicing statistician in order to provide confidence to both the AUGE and Suppliers that statistical methods have been selected and applied appropriately.

If Figure 1 (contained within the AUGS) is not representative then why is it contained within the publication? If in fact other data is used for model bias then we have not been afforded the opportunity to review this as part of the consultation process. We believe this is contrary to how the process should work.

Response:

With regards to the original issue, the AUGE made provision for SSP-assigned UG having agreed that this could potentially be non-zero and therefore the methodology should allow for it. However, there was no data available at the time that could be used in order to estimate what that amount should be and any so value estimated at the time would have been arbitrary.

Please see the response to the Energy UK document (Issue 3: SSP-Assigned UG) for further information. The AUGE has now received consumption data which, if the analysis proves successful, we will be able to use to estimate the UG total including SSP-assigned UG in future calculations.

The AUGE acknowledges that the graph contained as Figure 1 in the final draft of the 2011 AUGS for 2012/13 should have been updated. The version that appeared was the one contained in the first draft of the document, when the accompanying text did indeed refer to the figures displayed on it. When the approach was improved, the graph was not changed, which was an oversight on our part. The AUGE will ensure that the most appropriate graphs will appear in the 2012 AUGS for 2013/14. Further to this, the AUGE has published a spreadsheet on the JoT containing the mod 81 data used and the associated charts, which now include data from 2011.

Also, please see response to the Energy UK document (Issue 1:Methodology) regarding peer review of statistical methods.

5. We would like clarification as to exactly what the AUGE means when they state:

   "*The allocation algorithm necessarily scales to AQ by its nature, and any model bias is a result of bias in the AQ values it scales to*".

   "Meter wastage" is a term that is not contained within the AUGS, it is not clear what this means and this requires explanation by the AUGE. The new information presented relating to "retained meter" requires explanation as this is a fundamental part of the AUGE's methodology yet we have not been afforded the opportunity to review the detail as this has not been presented during the consultation process.

   We believe that it is a reasonable expectation that key data used to formulate the AUGS should be published and explained in detail whilst the consultation process is live.

Response

"Meter Wastage" refers to lost sites. The AUGE apologises for any confusion caused by this wording and will ensure future versions use consistent terminology with regards lost sites.

There is no new information presented, however – this is from the final 2011 AUGS for 2012/13 and was also present in earlier versions, which British Gas commented on. A spreadsheet containing the charts and data used for this particular figure has been posted on the Joint Office of Transporters website under AUGE Communications.

6. Even when the AUGE presents this new un-explained data it shows that the trend line for SSP AQ reduction is more steep that that of LSP AQ reduction. Does this also imply there is an error in assigning zero UG to the SSP-sector?

Response:

No, it does not. The main purpose of this graph is to illustrate the difference in AQ drop in a like-for-like analysis between the LSP and SSP sectors. The magnitude of the distance between the two lines is the important issue here, and it's this that results in allocations being skewed towards the LSP sector. The fact that the lines are not quite parallel means that should current trends continue, the size of the issue will reduce slowly over a number of years.

7. The AUGE states:

"Whilst British Gas assert that they may find thefts more quickly than other shippers, over time thefts will continue to be identified for historic years even for those market areas where the detection rate is lower. The cumulative effect of this will eventually provide a realistic split of SSP/LSP theft as more of the 'unknown theft' is detected."

Are the AUGE stating that they acknowledge that the allocation of SSP/LSP theft (and therefore the Balancing Factor) is currently biased by British Gas detecting more theft in SSP sites but that this will correct over time? This seems to be what is suggested. If so then we believe this is an unreasonable approach to the current allocation of theft across sectors as it suggests that it is acceptable to over-allocate cost of theft to the SSP sector in the current year/s. Sufficient data exists to calculate the allocation correctly and therefore it should be used.

British Gas reasserts that the AUGE is required to remove any bias from data before utilising it to allocate theft across sector.

Response:

We believe this has been taken out of context and misunderstood. The AUGE is not suggesting that British Gas is detecting more theft in SSP sites. The text referenced merely plays back the assertion by British Gas that they are more proactive at detecting thefts than other LSP shippers. During last year's process British Gas argued strongly that they have a higher rate of detection of LSP thefts than other LSP shippers and that there are higher levels of LSP theft in the market. The AUGE does not know if British Gas is detecting SSP thefts at a disproportionate rate to LSP thefts as we do not have information on which shipper detected which theft, although we noted the figures you provided regarding detection rates.

Our understanding is that British Gas put a lot of effort into detecting theft in general – i.e. across both market sectors.

If the split of theft is based purely on annual detected thefts then any initiatives by any individual shipper or groups of shippers could skew the detection rates in market sectors for the year of detection. However, the methodology we used is based on the when the theft occurred not when it was detected and this was the key point.

However, the AUGE notes that with the methodology as it currently stands the potential exists for Shippers with a mixed portfolio to influence the theft split by concentrating their efforts on detecting theft in one market sector rather than the other (thus increasing the proportion of known theft in that sector and hence also changing the split of unknown theft). This could, over time, skew the theft split one way or another. There is no suggestion that any Shipper would adopt such an approach as a deliberate policy, but the potential nevertheless exists for Shippers' detection regimes and methods of estimating detected theft to influence the output of the UG calculations in this way.

This issue ties in with that of the potential bias in detection rates, and this is something that the AUGE will look at as part of the revisit of the estimate of theft (please see also response to item 10).

8. The AUGE states:

"*During the preparation of the AUGS the LSP shippers asserted that they carry out pre-customer checks before taking on new customers, implement regular metering services, etc. and this has been summarised in the AUGS*".

What is the purpose of this statement? Have the SSP shippers been afforded the same opportunity to so assert? British Gas are a full CAIS member with Experian credit referencing agency, have a dedicated Risk function and a large field-based Theft team. British Gas would specifically like the AUGE to answer how many of the LSP shippers mentioned above are full CAIS member with Experian?

Response:

During the preparation of the 2011 AUGS for 2012/13 the AUGE asked all members of the industry a number of questions regarding theft and measures they implemented to detect and prevent it. Responses received were summarised and are presented for information in the 2011 AUGS for 2012/13. Our methodology does not rely on any aspect of the responses received – in fact the responses confirmed that to estimate theft in isolation would not be practicable.

This set of questions was sent to all shippers, and therefore SSP shippers have indeed been afforded the same opportunity to assert their views. In fact the AUGE received a very detailed and informative response from British Gas, which is included in the summaries in last year's AUGS. These questions were designed to return information about what initiatives each part of the industry had. In general everyone has a process in place although these differ from business to business.

With regard the question of how many shippers are CAIS members with Experian, the AUGE can put this question to the industry if this would be helpful although how this information would be subsequently used is unclear.

9. The AUGE states:

    "There is a view within the industry that customers who steal gas are likely not to switch shippers in case they get found out, with the result that they stay with the incumbent shipper, i.e. British Gas. Hypothetically, British Gas may well detect a higher level of LSP theft in their client base because they have more LSPs that steal gas compared to the rest of the market".

    British Gas would like the AUGE to publish the evidence that reinforces the inclusion of the above statement in their response. If no such evidence exists then British Gas would like to understand why the AUGE has chosen to associate with the above "view" and rejected competing "views". If the AUGE is basing its estimation on ideas like this our view is that it will be incorrect. The logic fails in any event as it would suggest that British Gas would detect disproportionately more SSP theft than LSP theft. This raises a more general concern over whether there has been a tendency towards maintenance of the status quo i.e. if there is any uncertainty as to how cost should be exactly allocated then it remains within the SSP sector.

    Response:

    We believe this statement has been taken out of context and should be read in conjunction with the remainder of the paragraph. The point was raised by two shippers as part of feedback during the first draft AUGS production in 2011. The AUGE can ask the relevant shippers if they are willing to have their full comments published (in the responses, some information we were given was confidential and hence the full text has not been published but only summarised within the AUGS). Although we only set a few questions, some of the answers from different shippers provided a lot of information.

    This view has not been used by the AUGE in the estimation of theft split. The figures produced are solely on the basis of data received from Xoserve. The statement was included in the AUGS to highlight that it may go some way to explain why British Gas find more theft in their portfolio than other Shippers do. However, when read in full context and particularly the first draft 2012 AUGS for 2013/14, we state that we do not have any data to support that view.

    Fundamentally the theft split is based on data provided by Xoserve and is not affected by anecdotal evidence from SSP, LSP or mixed SSP/LSP shippers.

10. British Gas in their latest response state that:

    "The only correct method of allocating theft instances across sector is to effectively re-calculate the AQ taking into account metered and un-metered (theft) consumption when doing so. This new AQ value can then be used to allocate the associated theft volume to sector."

    The AUGE appears to have misinterpreted this statement to mean "*current AQ plus annual estimate of theft*". As such the AUGE has answered a question not posed by British Gas whilst not answering the specific query raised. We would request that the AUGE answer the query as put to them.

Response:

This issue was discussed at the UNCC meeting on May 19th 2012 and we now have a better understanding of the situation.

In October 2011, British Gas provided a response to the second draft AUGS where this issue was raised and also provided a spreadsheet containing their proposed calculations of Meter AQ adjusted for theft. Having revisited these notes and the spreadsheet, the Meter AQs that British Gas used at that time were indeed the current AQs (i.e. those prevailing in 2011) and not the AQs in situ at the time of theft detection or at the end of the estimated period of theft. Hence the AUGE believed that British Gas were requesting the meter AQ to be amended based on current AQ and theft.

Since the UNCC meeting on May 19th 2012 the AUGE has requested and received meter reads for theft affected meters and additional parameters associated with the calculation of AQ in order to calculate our own version of AQ during the period of theft and to incorporate the effect of detected theft before assigning market sector.

The analysis includes applying a seasonal normal correction to the theft and apportioning theft that has occurred over a number if years into the correct year(s) of occurrence. This work is ongoing.

Also, please see the response to the Energy UK document (Issue 4: Theft Sector Apportionment).