



# Shrinkage Leakage Model Review Consultation Report

23rd December  
2015

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Gas Distribution Networks have an obligation under Special Condition 1F Part E of the License to review the Shrinkage and Leakage Model on an annual basis and to consult on the outcome of that review with other DN operators, gas shippers and interested parties.

Joint Gas  
Distribution Network  
submission

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## Background

Gas Distribution Networks (GDNs) have an obligation under Special Condition 1F Part E of the Licence to review the Shrinkage and Leakage Model (SLM) on an annual basis and to consult on the outcome of that review with other DN operators, gas shippers and other interested parties.

The purpose of the SLM Review is to assess how the SLM can better achieve the objective set out in Special Condition 1F.13 of the Licence. This requires the SLM to be designed to facilitate the accurate calculation and reporting of gas shrinkage and gas leakage in, or from each, GDN operated by a Licensee.

A joint distribution network report<sup>1</sup> was published on 13 November 2015 for industry consultation, and we are pleased to receive representations from British Gas and Engage Consulting Limited. We also received a report for consideration outside of this review from the Gas Retail Group, which is a forum hosted by Energy UK. We acknowledge this report within this consultation response as it is referenced within the British Gas representation and we refer to this within our response. At the time of publication this report is not published in the public domain.

As part of our ambition to increase stakeholder engagement and understanding of shrinkage related matters, we initially invited comment on areas that could be considered in the initial review document, the feedback from which was included in the 13<sup>th</sup> November publication. We would like to take the opportunity to assure interested parties that whilst the SLM review process represents a positive opportunity for wider industry review and comment, we are also committed to understanding the views of our stakeholders via the Shrinkage Forum. We consider that the Shrinkage Forum presents a useful vehicle for interested parties to understand the elements of the shrinkage assessment process of most interest to them, and importantly, also provides an opportunity for our stakeholders to share their views with distribution network representatives.

Our licence obligation is to review the SLM to increase reporting accuracy however, as a result of the stakeholder feedback, we have incorporated additional elements to supplement understanding, increase awareness, and to deliver on our stakeholder requests. We hope this proved valuable to the interested parties who have reviewed the document and we remain committed to continuously improve the value of the review document in future years.

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<sup>1</sup> The 2015/16 joint distribution Shrinkage Leakage Model Review is accessible from the Joint Office website ([http://www.gasgovernance.co.uk/sites/default/files/Joint\\_DN\\_SLMR\\_Document\\_15\\_16.pdf](http://www.gasgovernance.co.uk/sites/default/files/Joint_DN_SLMR_Document_15_16.pdf))

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The consultation process has raised specific areas for attention, identified below, to which we offer our response within this document:

- i) Validation and review of key SLM assumptions.
- ii) Additional transparency of key milestones in those projects with the potential to impact the SLM methodology.
- iii) Implementation of a year on year reporting dashboard detailing the movements in critical components of the SLM calculations.
- iv) Understand outputs and findings of the joint DN SLM input review session.

We thank those individuals who have reviewed the document and also those that have shared their views.

## Outcome of Consultation

### Representation Information

The consultation document set out the findings of the joint DN review of the Shrinkage Leakage Model and detailed our future commitments.

Responses to the consultation were received from two respondents, British Gas and Engage Consulting Limited, the details of which, and our responses, are outlined below.

### Representation from British Gas

This section presents the British Gas (BG) representation to the consultation and the joint DNs' (DN) response. We have captured the salient points from the representation for the purposes of this review paper; the full representation can be accessed on the Joint Office website.<sup>2</sup>

**BG:** We continue to be concerned and share other stakeholders' concerns that a number of assumptions relied upon in the Shrinkage and Leakage Model (SLM) are outdated, some by as much as over two decades. For example, assumed leakage rates for low pressure services have not been validated since the 2002/03 National Leakage Test and venting rates for above ground installations contained in a report published in 1994 are still used. It is important for stakeholders to be confident that the rates used within the SLM are fit-for-purpose and the output reflects actual losses. It is not credible that these assumptions can be used, without review, indefinitely. **Given their age, the key assumptions contained in the SLM now require reassessing.**

**DN:** We recognise the importance of ensuring the rates and assumptions used within the SLM are credible and continue to best reflect shrinkage quantities within each LDZ. Below we outline some of the initiatives we are undertaking or considering.

### AGI Venting

We agree with the observation that the calculation for AGI Venting (source: 1994 Watt Committee report) is outdated and requires refinement. As detailed within the SLM review we are in the process of formulating a future modification to this element of the SLM. We are currently in the process of undertaking site surveys using independent experts, which is both a time consuming and logistically challenging process, to ascertain actual asset numbers and the associated venting rates. This will enable this element of the leakage calculation to be refreshed and calculated at an accuracy level much greater to that used now (subject to an approved methodology modification). Within the SLM review we commit to raising a modification in 2016/17, and envisage a more detailed plan of timescales, including a

<sup>2</sup> British Gas full representation

(<http://www.gasgovernance.co.uk/sites/default/files/British%20Gas%20Consultation%20Response%20to%20the%20Shrinkage%20and%20Leakage%20Model%202015.pdf>)

high level milestone plan, will be provided through the Shrinkage Forum once these are known.

## Smart Metering

Within the SLM review we detail our intention to openly embrace, without prejudice, the future usage of smart metering data to increase the accuracy of shrinkage calculations. Smart Metering data has the potential to supersede those rates used as determined as part of the National Leakage Test programme (NLT) from 2002/03. This is in line with the focus Ofgem has placed on smart metering being embraced as part the future calculation route for shrinkage. Wales & West Utilities are leading a joint distribution network innovation project, with the intention to determine (not exhaustive) the required saturation levels of smart meters that would enable a robust 'gas in' vs. 'gas out' calculation to be used. This could lead to the establishment of a methodology that would further increase the accuracy of the shrinkage assessment, as theoretically, the calculation would move from a 'rates based' calculation linked to an ever changing asset profile to a reflection of actual gas lost. If successful, the effective determination of shrinkage using smart metering data would deliver a long term calculation methodology which would avoid the need for periodic review and update of numerous rate based inputs. We believe if it is useable, smart metering information has the potential to deliver a long term solution that will bring clarity and confidence year on year to the shrinkage calculation. The use of smart metering data has the potential to offer a more sustainable and quickly implemented modelling change.

## National Leakage Test

The feedback received as part of the consultation process has shown that there is some appetite within the industry to repeat the NLT. We have also recently received a detailed report from the Gas Retail Group forum which the DNs will jointly consider and respond to in due course. We believe that due to the multiple potential options available and the level of analysis required to determine an appropriate direction that is in the best interests of customers, that a way forward is developed via the Shrinkage Forum and it would be unwise to determine a strategy or commitment at this stage without the implications of the options being fully understood, and without further stakeholder engagement. We are also conscious that repeating the NLT would have logistical and financial implications which would need to be considered.

It should be noted that all DNs are committed to continually improving the accuracy within the SLM as demonstrated by our focus on initiatives such as the investigations into the use of smart metering data, AGI venting surveys, looking at the correlation between MP pipelines and system pressure, own use gas review and the impact of internally remediated main replacement activities.

- BG: In terms of commitments for 2016, we recommend that analysis be undertaken which sets out for each key assumption:
- i) the current assumption;
  - ii) its source (including date of source);

- iii) whether there are any more recent studies which could be used;  
*(Reference made to Energy UK commissioned report due to be published soon as an example)*
- iv) the potential materiality of any error caused by the use of outdated sources; and,
- v) the cost of any reassessment.

Such an analysis could be used to identify those assumptions on which the greatest focus should be placed and inform a targeted reassessment. Where the costs of reassessment are prohibitive, consideration should be given, through engagement with all interested parties, whether alternative methods of providing robust estimates are available. We also recommend that gas distribution network operators, through the Shrinkage Forum, should agree a 'lifetime' for each key rate assumption so that industry can be confident that such key assumptions will be reviewed at appropriate intervals.

DN: Our commitments, albeit at a high level, show our timeline for revisiting each of the shrinkage component rates and our intentions for future modifications. In the section 'components of shrinkage' the current assumption, source, and date of source are detailed.

We are pleased to have recently been issued with the Energy UK report mentioned within the British Gas representation into the effect of shrinkage on domestic customers, which the DNs will be reviewing collectively in early 2016. We look forward to debating the report and its findings with stakeholders over the coming months.

We would welcome the opportunity to undertake a collaborative review of each assumption with the attendees of the Shrinkage Forum once we have reviewed the Energy UK report and determined milestone plans for each of the key initiatives. This will enabled informed and educated decisions to be made in relation to priority of initiatives, determination of any gaps and also identify an agreed future direction. This could incorporate the 'lifetime' for each key rate assumption as suggested.

We are confident that each of the main influencing factors for the shrinkage assessment calculation are currently under review and we feel sure that if the determination of a shrinkage calculation using smart metering technology is successful that this will revolutionise the current shrinkage assessment process and provide a credible long term solution.

BG: We welcome the inclusion of the list of proposed and in-flight projects, the outputs of which may affect the SLM. However, we are unable to comment because insufficient detail has been presented in the consultation. For future reviews, we recommend greater detail of each proposed or in-flight project is included in the consultation such as specific details on the proposals, the current status of each project and a timeline showing the expected milestones for each project leading to any SLM modifications.

DN: We accept this feedback and will ensure future SLM reviews have the requested information included. We will ensure we work with stakeholders to deliver a mutually agreed representation of in-flight projects developing our approach via the Shrinkage Forum.

### Representation from Engage Consulting Limited

This section presents the Engage Consulting Limited (ECL) representation to the consultation and the joint DNs' (DN) response. We have captured the salient points from the representation for the purposes of this review paper, the full representation can be viewed on the Joint Office website.<sup>3</sup>

ECL: We feel that the extra information published on the GDNs' commitments to refine aspects of the Shrinkage and Leakage model provide welcome visibility on projects currently in progress. However, we would like the information provided to be extended to include a more detailed project plan with key milestones for each project.

DN: Within the SLM review we commit to raising a number of modifications to the SLM in the areas that have greatest impact on the overall calculation or we feel have the opportunity to significantly improve the calculation methodology with the benefit of increased accuracy. For each of these modifications we will develop a high level milestone plan for distribution within the Shrinkage Forum. We will ensure that future publications of this report delivers a mutually agreed representation of in-flight projects that enables comment from the industry.

ECL: To provide the gas industry with assurance that the shrinkage model receives the appropriate level of focus, we suggest implementing a way of tracking and reporting inputs to the model and how they fluctuate year on year. We would like to see a 'dashboard' type display including items such as the amount of PE pipework laid, the number of own use assets and above ground installations, etc.

DN: We can understand the motivations for the production of an annual dashboard that details year on year fluctuations in key shrinkage measures, we believe there are a number of channels that naturally facilitate the detail of both expected and actual performance movement:

- i) The shrinkage proposal published on an annual basis by each distribution network details both our predicted performance forecast and our outturn performance. The format and content of this report was agreed previously within the Shrinkage Forum. The latest proposal documents are due to be published by 31 December 2015 on the Joint Office website.
- ii) The shrinkage assessment and adjustment report which is an annual report published on the Joint Office website by each of the individual distribution networks details the difference between procured shrinkage volumes and

<sup>3</sup> Engage Consulting Limited full representation

(<http://www.gasgovernance.co.uk/sites/default/files/Engage%20Consultation%20Response%20to%20the%20Shrinkage%20and%20Leakage%20Model%202015.PDF>)

- actual outturn shrinkage volumes, along with the reasoning for these differences.
- iii) As part of the annual regulatory reporting process each distribution network publishes a supporting narrative which details shrinkage performance along with other key operational and financial messages relating to the previous year.
  - iv) The Shrinkage Forum is a forum where all DNs are represented where discussion about performance measures can be facilitated.
  - v) Ofgem annual report.

At this point in time we do believe that information is readily available and presented within the public domain however we would be happy to develop a dashboard of measures. It should be noted that due to the complexity of a number of components and the nature of the information that there might be a number of challenges relating to frequency of updates and timing. This is something we feel should be discussed at the Shrinkage Forum.

ECL: We would like to better understand the prevalence of interference damage. We consider that there is potential for improvement in this area of leakage estimation by:

- i) Better estimation of the leakage of each incident (kg/hour)
- ii) Better recording of incident duration considering time to fix each leak plus an estimate of time between incident and first response.

Furthermore where interference damage occurs which releases more than 500kg of gas and where the specific value is unknown we would like to understand the rationale for using a default of 500kg. We believe that this could result in interference damage being systematically under reported, and that this element of the methodology is probably in need of improvement.

DN: We have committed to reviewing the calculation of interference damage and the assumptions used within the methodology as part of the 2016/17 SLM review. Interference damage typically accounts for circa 0.5% of total leakage, and after considering the impact on outturn volumes we believe our focus is better targeted at initiatives such as investigating the usage of smart meter data, refreshing AGI venting methodology, reviewing medium pressure leakage and own use gas which all have a greater impact on leakage output. The rates for interference damage calculations were last refreshed in 2004.

Using National Grid 2014/15 interference damage as an example, out of a total leakage assessment outturn of 1,289GWh, 3.73GWh was attributable to interference damage. This is a combination of 6,084 small scale incidents (3.57GWh) and a quantity of 18 >500kg incidents (0.16GWh)

For incidents >500kg we have a number of factors (not exhaustive) which are required to determine an estimation of escaped gas, these include flow rate, size and shape of orifice, duration of incident, calorific values. In most instances, due either to the manner in which the leak is originally reported (often an unspecified amount of

time after the original damage) and/or actions taken to minimise the gas lost and maintain network integrity, for example the lowering of network pressures, the use of backfill, spoil or sand bags to minimise leakage, means that the precise determination of some, if not all, of these factors is either impossible or unsafe (i.e. they would require operatives to work in an explosive atmosphere). As a result these calculations only ever provide for a 'best estimate'. In some instances the estimation of some of these factors only allows for the most basic of estimations, to determine that the mass of gas lost is most likely greater than 500 kg, and thus in these instances the default value of 500 kg is reported. We would be interested in other methodologies that improve accuracy.

ECL: We would like to understand whether minutes from joint GDN meetings to review all data inputs into the shrinkage and leakage model will be available publically. Publication would be useful, as we believe the industry understanding of the Shrinkage and Leakage Model could be improved. Publishing these minutes might help interested parties develop their own understanding.

DN: This meeting was organised to identify areas of the shrinkage estimation process where DNs might apply different approaches in determining model inputs, the aim being to ensure standardised processes were being applied across the DNs, and where appropriate, to provide the opportunity to share best practice (for example in how we generate data from core systems).

The meeting focused on the methodologies employed in building the shrinkage and leakage model. All DNs adopted the same leakage model at the time of network sales and, hence, it was expected that there would be very little difference in approach. This was the second such session to be undertaken, the first review happening in early 2013.

We are happy to discuss the findings at a future Shrinkage Forum session, however, the conclusion is that all DNs are using the same methodology principles, and there are no material differences in calculation methodology or outcome.

## Summary of Consultation

The annual SLM review process is a formal opportunity for all interested parties to engage with the distribution networks on matters relating to shrinkage modelling. We would like to thank British Gas and Engage Consulting for supporting the process with their representations. It is apparent from the responses that there is some appetite to validate the key assumptions used within the SLM, provide greater detail of future initiatives and provide more transparency to the interested parties.

Our response details our joint commitment to:

- i) Embrace smart metering data for the benefit of determining a shrinkage assessment with even greater accuracy. We also mention the requirement to review the recently received GRG Shrinkage report supplied by Energy UK and assess the most effective and appropriate way of reviewing and updating leakage rates
- ii) Detail the key milestones for each of the future initiatives detailed within the SLM review document, which can be then discussed at future Shrinkage Forums.
- iii) Continue to listen to our stakeholders and encourage participation at future Shrinkage Forums.

We would like to take this opportunity to thank all those who have reviewed and inputted into the SLM review document.