Joint Office of Gas Transporters

UNC Modification	At what stage is this document in the process?

UNC 0843:

Establishing the Independent Shrinkage Charge and the Independent Shrinkage Expert

Purpose of Modification:

To incentivise the reduction of greenhouse gas emissions and lower customer bills, this Modification introduces the role of the Independent Shrinkage Expert (ISE) who will establish:

- the Independent Shrinkage Model (ISM),
- the Independent Shrinkage Model Methodology (ISMM), and
- the Independent Shrinkage Charge (ISC).

Next Steps:

The Proposer recommends that this Modification should be:

- considered a material change and not subject to Self-Governance
- assessed by a Workgroup

This Modification will be presented by the Proposer to the Panel on 20 April 2023. The Panel will consider the Proposer's recommendation and determine the appropriate route.

Impacted Parties:

High: Consumers

Medium: Distribution Networks Operators, Shippers, Suppliers

Impacted Codes:

UNC, Independent Gas Transporters UNC

Contents

Timetable

Modification timetable:	
Pre-Modification Discussed	23 March 2023
Date Modification Raised	03 April 2023
New Modification to be considered by Panel	20 April 2023
First Workgroup Meeting	27 April 2023
Workgroup Report to be presented to Panel	20 July 2023
Draft Modification Report issued for consultation	20 July 2023
Consultation Close-out for representations	10 August 2023
Final Modification Report available for Panel	14 August 2023
Modification Panel decision	21 September 2023

Any questions?

Contact:
Joint Office of Gas Transporters

enquiries@gasgovernance.co.uk

0121 288 2107

Proposer:
OVO Energy

david.morley@ovo.com

0330 303 5063

Transporter:
David Mitchell
Scotia Gas Networks

david.mitchell@sgn.co.uk

07799 343 082

Systems Provider:
Xoserve

UKLink@xoserve.com

Other:
Insert name

email address

telephone

1. Summary

What

Shrinkage consists of Own Use Gas, Theft of Gas, and gas leaks.

The purpose of this Modification is to enable the more accurate allocation of Shrinkage model error to Gas Distribution Networks (GDN). For avoidance of doubt, this modification does not seek to change LDZ Shrinkage Quantities, as calculated by GDNs under the Shrinkage and Leakage Model (SLM), nor does it seek to make changes to the SLM. What it does do is shift Shrinkage model error out of UIG by the application of a new charge.

As Shrinkage currently contributes to 1% of the UK's total greenhouse gas emissions, inaccuracies in the Shrinkage and Leakage Model (SLM) damage the environment.[1]

~~The Revenue = Incentives + Innovation + Outputs (RIIO) incentivises Shrinkage reduction off the back of Shrinkage volumes that GDNs self-report to Ofgem. If the self-reporting of Shrinkage is wrong, RIIO is undermined.~~

Currently, for the leakage element of Shrinkage, the SLM uses set leakage rates and multiplies these across the lengths of pipes that are in the ground, along with temperature and pressure data. This estimation method is shown to have flaws. For example:

1) IGT Shrinkage is set as 0 under the UNC, which is contrary to the 19 GWh of IGT Shrinkage that Shippers need to pay as UIG due to Shrinkage model error.

2) Numerous studies show that Shrinkage volumes are understated.[2] For example, Imperial College London's study using direct air measurement shows that the leakage element of the SLM is ~~currently~~ misreported by 30-35% ~~understated~~.[3]

~~1)~~3) For Formula Year 2023/24 the Allocation of Unidentified Gas Statement (AUGS) has allocated UIG 8,497 GWh of the forecasted 11,713 GWhs of UIG to known contributors. It is arguable that some or all of the 3,216 GWh of unaccounted-for gas is attributable to under-reported Shrinkage levels.[4] For comparison, 3,216 GWhs is over double the volume of Shrinkage that is currently self-reported by GDNs.

Underestimating Shrinkage via Shrinkage model error ~~causes~~ directly increases in Unidentified Gas (UIG), as UIG is the balancing mechanism. This has the direct impact of inflating customer bills, as UIG is a line item in the P~~p~~rice C~~c~~ap set by Ofgem.

Making changes to the SLM is problematic, as it is written into GDN's licence conditions, and attempts to change the SLM are ~~staunchly~~ resisted by the GDN. To get around such resistance, and to create an incentivisation mechanism that will follow the path of least resistance, and lowest cost of implementation, ~~T~~this Modification does not propose to change the SLM or LDZ Shriankge Quantities. The SLM will continue to be managed by the GDNs and they can continue to self-report Shrinkage volumes.

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[1] https://www.gasgovernance.co.uk/sites/default/files/ggf/book/2022-02/2021-22%20Shrinkage%20and%20Leakage%20Model%20Review_Consultation%20FINAL.pdf

[2] See appendix 1

[3] Continuous CH4 and δ13 CH4 measurements in London demonstrate under-reported natural gas leakage; see also London produces up to a third more methane than estimates suggest | Imperial News.

[4] AUG statement 23/24

Instead, 0843it creates a new charge to manage any manifest errorensure that Shrinkage model error is covered by the UNC Party that creates it: the Independent Shrinkage Charge (ISC).

The ISC will be calculated by the Independent Shrinkage Expert (ISE) as detailed in the "How" section and in the business rules.

Why

This Modification should be made to lower greenhouse gas emissions and customer bills. We are currently in a climate emergency, and as such also signed up to the COP 26's Global Methane Pledge to reduce the output of methane by 30%.[5]

If Daily Metered and Non-Daily Metered volumes are substituted from Total LDZ throughput, there are currently two mechanisms that are used to account for any gas that is missing: Shrinkage and Unidentified Gas (UIG). First Shrinkage is removed from any missing gas and the rest is deemed to be UIG. UIG is then distributed amongst Shippers by the independent expertise of the Allocation of an Unidentified Gas Expert (AUGE). If GDNs under-report Shrinkage the extra cost is ultimately fed through to the customer via the Shipper/Supplier relationship as UIG is a line item in the Price Cap. In parallel, under the mains replacement programme, GDNs will also be under-incentivised to find and fix gas leaks.

Making changes to the SLM is also met with resistance by GDNs – see Shrinkage Forum minutes throughout the years for attempts by Shippers to make GDNs accountable for Shrinkage model error - who are protective over their calculation. Thisis understandable: iIf GDNs were obliged to purchase 3 TWhs of natural gas as it is found to be due to gas leaks Shrinkage model error the financial impact would be significant.

At a price cap of £0.13 per kWh, 3 Twhs equates to £390,000,000.

Around 12 TWh of UIG are currently paid for by Shippers.

Throughout the years, constant efforts to amend the SLM by Shippers have been shot downdisregarded by the GDNs. This has meant that the majority of Shippers no longer attend the Shipper Forum. The argument against amending the SLM is usually that it is set in the licence and unalterable. Other arguments are based on the cost of making a change to the SLM being too expensive.

This Modification seeks to navigate around any licence concerns by creating a new mechanism that sits alongside the SLM, but does not amend it in any way. It also seeks to allay cost concerns, by implementing a role that will retrieve data based on its merits, rather than the inherent bias of a UNC Party.

How

To tackle the issue of Shrinkage model error, this Modification will create the role of Independent Shrinkage Expert (ISE) that shall be procured by the CDSP in line with the Framework for the Appointment and Operation of an Independent Shrinkage Expert found in the appendices of this modification document.

The ISE will use methodologies Independent Shrinkage Model Methodologies (ISMM) to create an Independent Shrinkage Model (ISM) via which to estimate an independent account of Shrinkage model error.

The methodologies used by the ISE to create the ISM shall be the purview of the ISE. It is assumed by the modification proposer that methodologies employed by the ISE might include utilising already extant pipeline data and studies such as the leakage rates developed off the back of the National Leakage Tests and those noted within the appendix, but also potentially direct measurement. The relevance of the ISE using data sources, and the costs associated with the retrieval of data from said sources, must be evidenced within their tender bid.

[5] Global Methane Pledge

Where the ISE identifies that costs required to be covered to fulfil the retrieval of data for the completion of the ISM is above what was agreed upon during the tender process, then such costs will be agreed upon within the DSC Contract Committee.

Having established methodologies for the upcoming year, the ISE will retrieve data to create their data set, as appropriate, and create an estimation of shrinkage model error, as described in the business rules. Where there is a difference between the LDZ Shrinkage Quantities estimated by the SLM and the Independent LDZ Shrinkage Quantities (ILSQ) estimated by the ISM, the ISE will recommend to the Authority, via the publication of the Independent Shrinkage Statement (ISS), the approval of the Independent Shrinkage Charge (ISC). To avoid conflating gas purchased by GDNs to cover the ISC with the volumes of gas that are recouped by the GNDs to cover the LDZ Shrinkage Quantities, gas purchased by GDNs to cover the ISC shall be known as ISM Variation Gas (IVG)

The ISC will be calculated by subtracting LDZ Shrinkage Quantities from Independent LDZ Shrinkage Quantities. E.g. if LDZ Shrinkage Quantities = 1000 GWh and Independent LDZ Shrinkage Quantities = 1200 GWh, the ISC would be 200 GWhs.

If the ISC is approved by the Authority, Transporters will be obliged to purchase ~~volumes of natural gas~~IVG to cover the ISC. If the ISC is a negative value, the ISC will not apply.[6]

As with LDZ Shrinkage Quantities, the GDNs will need to purchase IVG to cover the ISC via their Shipper on Gemini on a daily basis. The CDSP will load Daily IVG values into Gemini and the GDNs will need to contract with a Shipper to cover the Daily IVG. A small change to the Transporter licence may be required here to ensure that the GDN is not prohibited from buying the IVG.

As with LDZ Shrinkage Quantities, ~~the GDNs will need to purchase IVG to cover the ISC via their Shipper on Gemini.~~after the end of the financial year, the ISE will compare gas that that the ISE forecast to be lost via their ISM, and that which they observed being lost via the ISM. Where there is a difference then this value will need to be either returned to GDNs or an additional charge will need to be levied.

As with LDZ Shrinkage Quantities, ~~the ISC~~ IVG will be subtracted from missing gas prior to UIG being apportioned to Shippers.

This will lower bills, as UIG is a line item in the Pprice Cc~~e~~ap, and, by virtue of accurate cost allocation, incentivise GDNs to fix sources of Shrinkage.

The Modification also proposes to introduce the Framework for the Appointment and Operation of an Independent Shrinkage Expert. Like the AUGE Framework, the CDSP will be used to procure the ISE.

It will also apply to IGTs, and modification IGT165 has been established to ensure that the ISE is able to have jurisdiction over the IGTs.

2. Governance

Justification for Authority Direction

The Modification:

(i) is likely to have a material effect on:

[6] Within the 0843 workgroup on 23/05, GDNs noted that negative values would impact their licence obligations and have been excluded on this basis.

(aa) existing or future gas consumers; and

(bb) competition in the shipping, transportation or supply of gas conveyed through pipes or any commercial activities connected with the shipping, transportation or supply of gas conveyed through pipes; and

(cc) the operation of one or more pipe-line system(s); and

(dd) matters relating to sustainable development, safety or security of supply, or the management of market or network emergencies; and

(ee) the uniform network code governance procedures or the network code Modification procedures; and

(ii) is unlikely to discriminate between different classes of parties to the uniform network code/relevant gas transporters, gas shippers or DN operators.

Requested Next Steps

This Modification should be considered a material change and not subject to Self-Governance.

This Modification is likely to have a material impact on existing and future gas consumers, by more accurately allocating Shrinkage.

Any delay in the implementation of this Modification will negatively impact the environment and customer bills, as detailed above.

3. Why Change?

Greenhouse gases (GHG) pose an existential threat. This is recognised by the UK government in their Net Zero Strategy:

> "*We are at a crossroads in our history. As we recover from the impact of the pandemic on our lives and livelihoods, we know that it will not be enough to go back to the way things were before. The science is clear, we know that human activity is changing our climate and that this will have a devasting impact on human lives, the economy, and the natural world – ranging from the extinction of some species and the melting of ice caps to extreme weather patterns threatening our homes, businesses, and communities.*"

Methane is widely accepted to be 84x more potent than CO2 as a greenhouse gas. 16 TWh of methane that enters the gas distribution network is currently unaccounted for. Current rates of methane leaks are estimated off the back of the National Leakage Tests performed in 2002, which have been shown to be inaccurate. Inaccuracies in this test lead to the deficient application of RIIO-GD2. This change seeks to remedy that deficiency.

4. Code Specific Matters

Reference Documents

The AUGE currently exists under the AUG Framework. Work has been undertaken within 0828R to establish what an ISE Framework would look like. The ISE Framework should be based on principles of impartiality, environmentalism, and best outcomes for end-consumers.

5. Solution

1. **Procurement:** ~~The ISE will be procured via tender by CDSP under a Framework such as that which was used to procure the AUGE and managed by the UNCC~~ As per the Framework, the Independent Shrinkage Expert (ISE), shall be appointed (procured via tender), and engaged by the CDSP through an ISE contract for the purposes of:

   1.1. developing an Independent Shrinkage Model (ISM), Independent Shrinkage Model Methodology (ISMM) and the Independent Shrinkage Statement (ISS);

   1.2. estimating the Independent LDZ Shrinkage Quantities (ILSQ) based on the ISM and ISMM; and

   ~~1.1.~~1.3. calculating the Independent Shrinkage Charge (ISC) and recommending to the Authority that this should be applied to the GDNs as ISM Variation Gas (IVG).

2 Principles: The ISE will be led by principles of impartiality, environmentalism, and best outcomes for end-consumers.

3 Methodologies: The ISE will use methodologies to create an Independent Shrinkage Model (ISM) via which to estimate an independent account of Shrinkage. The methodologies used by the ISE to create the ISM shall be known as the Independent Shrinkage Model Methodologies (ISMM). The methodologies used by the ISE to create the ISM shall be the purview of the ISE . These may not only be desk based if reasonable. The relevance of the prospective ISE using data sources, and the costs associated with the retrieval of data from said sources, must be evidenced within their tender bid, so that the Stakeholder Evaluation Panel, as formed by the CDSP for the purpose of evaluating tender bids, can make an informed choice as to the validity of the tender bid. Where ISE identifies that costs required to be covered to fulfil the retrieval of data for the completion of the ISM is above what was agreed upon during the tender process, then such costs will be agreed upon within the DSC Contract Committee. TPD E9.3 stipulates the terms of engagement and cost recovery for the AUGE and an equivalent piece of legal drafting may be needed for the ISE. Interested parties can engage with the ISE on their ISMM during the consultation process. Topics that interested parties would like to be considered by the ISE can be shared with the ISE outside of the consultation period via the Independent Shrinkage Sub-committee or in writing.

4 Calculating the ISC: The ISC will be calculated by subtracting LDZ Shrinkage Quantities from Independent LDZ Shrinkage Quantities. Eg if LDZ Shrinkage Quantities = 1000 GWh and Independent LDZ Shrinkage Quantities = 1200 GWh, the ISC would be 200 GWhs

5 Recommending the ISC: Where there is a difference between the LDZ Shrinkage Quantities (LSQ) estimated by the SLM and the Independent LDZ Shrinkage Quantities (ILSQ) estimated by the ISM, the ISE will recommend to the Authority the approval of the Independent Shrinkage Charge (ISC). Where there is an absence of a decision made by the Authority by the Shrinkage Deadline, which shall be [4] weeks prior to the start of the financial year, then the ISC shall apply.

~~The ISC will be calculated by subtracting LDZ Shrinkage Quantities from Independent LDZ Shrinkage Quantities. Eg if LDZ Shrinkage Quantities = 10 GWh and Independent LDZ Shrinkage Quantities = 12 GWh, the ISC would be 2 GWhs~~

6 Negative ISC Values: If the ISC is a negative value, the ISC will not apply. This shall still be reported to the Authority for consideration.

7 Effect on UIG: As with LDZ Shrinkage Quantities, the ISC will be subtracted from missing gas before UIG is apportioned to Shippers.

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8 Recovery of ISC: If the ISC is approved by the Authority, Transporters will be obliged to purchase volumes of ~~natural~~ gas to cover the ISC. To avoid confusion with Shrinkage, the approved ISC will be known as ISM Variation Gas (IVG). ~~–~~The same mechanism to purchase gas for Shrinkage will be employed ~~here~~for IVG.For the avoidance of doubt, the ISE, within the ISS, will divide the Yearly IVG into Daily IVG. CDSP will load the Daily IVG amounts into Gemini and GDNs will use a Shipper to purchase the IVG. ~~–~~To make implementation of this easier for CDSP, the ISC could be added to LDZ Shrinkage prior to loading into Gemini – this, however, is probably worth covering under the XRN and not under 0843~~.~~

9 Reconciliation of ISC: following the application for the ISC for the coming year, the ISE will observe Shrinkage. After the financial year concluding, where observed Shrinkage is more or less than that which is accounted for under the LDZ Shrinkage Quantities and the ISC, and after the GDNs providing their revised LDZ Shrinkage Quantities, the ISE will issue a Reconciliation Statement. This will contain rationale for change, and updated ISC, and Yearly and Daily IVG values. Examples:

1) Where the observed ILSQ remain the same, but LDZ Shrinkage Quantities (LSQ) reduce then the ISC and IVG will increase; or

2) where the observed ILSQ increases by 100GWh, and LSQ decrease by 100GWh then the ISC and IVG will increase by 200 GWh; or

3) where observed ILSQ decreases below the LSQ, then the ISC and IVG will be 0.

~~1.2.~~

10 Reconciliation of ISC continued: where reconciliation increases IVG, increased Daily IVG will need to be recovered by the GDNs. Where reconciliation decreases IVG, this will go into the Amendment invoice.

11 ISM Review: The ISE will review the ISM on an annual basis, as per timetable set out in the Framework.

12 ISE Data Retrieval: The ISE will be able to request relevant data from UNC Parties and UNC Parties will not be able to unreasonably withhold that data. Non-compliances can be escalated to the ~~UNCC and the~~ Authority. Data shall be transferred and stored securely. Data shall be provided by UNC Parties promptly within timeframes stipulated by the ISE to enable ISE to collate the ISMM and ISM. For avoidance of doubt, the ISE will need to be added to the Data Protection Matrix. ~~and in line with GDPR~~. For the AUGE process, in UNC there is a clause related to data being provided: *"9.4.5 Each Transporter and User shall, to the extent provided in the AUG Statement, cooperate with and provide data to the AUG Expert in connection with the preparation of the AUG Table. Something similar could be applied for the ISE process and creation of the ISM."*

13 Engagement with the ISE: The ISE will enable engagement with their activity via the Independent Shrinkage Sub-Committee, formed under UNCC.

~~1.3.~~1.4. Attended by ISE, CDSP and interested parties, such as AUG Sub-Committee. This is a review group to seek consensus on topics, it is not a decision making group. AUG Sub-Committee ToR for reference is here.

14 **Granularity**: The ISC and IVG shall be applied at LDZ level to enable the ISC to be deducted from UIG.~~[7]~~

[7] There is value in this being less granular than LDZ. However, as this would create complexity and cost above and beyond what is currently required it has been removed from this section.

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~~**Note for clarity**~~**Transmission Shrinkage**~~:~~ ~~It is not intended for Transmission Shrinkage to be in scope. Transmission already accounts for all Shrinkage and does not use UIG as a balancing mechanism. It can therefore be appropriately incentivised by Ofgem without additional analysis.~~ For the avoidance of doubt, Transmission Shrinkage is out of scope of this Modification. Transmission already accounts for all Shrinkage and does not use UIG as a balancing mechanism. It can therefore be appropriately incentivised by Ofgem without additional analysis.

15 Appeals: UNC Parties may appeal the decision to implement the ISC via Ofgem. This shall be provided to the Authority in writing and published by the Authority where appropriate. The ISC will continue to apply during the appeals, and relevant Parties will be obliged to purchase gas to cover the ISC. If the appeal is deemed valid, and the ISC is deemed to be UIG, then the Authority will notify UNC Parties and the CDSP, and the CDSP will redistribute costs back to Shippers as UIG. Parties have [4] after the final ISS in published to raise an appeal.

16 IGT Shrinkage: The ISE shall also consider IGT Shri~~a~~nkage and apply the Independent Shrinkage Charge to IGT as it sees fit. An enabling mod shall be raised to ensure that the IGTs comply with any determinations made by the ISE. For the avoidance of doubt, where the ISC is applied to an IGT and volumes of gas charged to the IGTs must not also be charged to GDNs. The IGTAD will need to be amended to ensure that the IGTs are mandated to purchase Daily IVG volumes to cover the ISC. The method that they will use to pay the ISC will be the same as GDNs, and is detailed in appendix 4. In short, CDSP will load daily IVG values into Gemini, and the IGTs will need to contract with a Shipper to purchase gas volumes.

17 Timetable: The ISE will adhere to the timetable set out in the Framework.

18 Independent Shrinkage Statement: The ISE shall develop the Independent Shrinkage Statement as set out in the Framework BR17a: A Framework Document "Framework for the Appointment and Operation of an Independent Shrinkage Expert " must be published as a UNC Related Document. BR17b: The initial content of the Framework Document is provided as an Appendix to this modification proposal. BR17c: The Framework Document may be modified if The Committee votes by majority vote in favour of a proposed change.

19 Funding: Gas Distribution Networks will fund the role of the ISE and related activity. The precedent here is that AUGE is 100% shipper funded.

~~As with Shrinkage, the ISC will cover gas volumes for the coming gas year. This value will be reconciled once the gas year has completed.~~

~~TPD E9.3 stipulates the terms of engagement and cost recovery for the AUGE and an equivalent piece of legal drafting may be needed for the ISE~~

6. Impacts & Other Considerations

Does this Modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

No

Consumer Impacts

Consumers: Reducing gas leaks will reduce greenhouse gas emissions. Reducing methane emissions facilitates Net Zero. As less gas would be lost to the atmosphere, wholesale gas costs, Shrinkage costs, and UIG costs will be reduced, ultimately lowering bills.

This aligns with Ofgem's strategic vision:

- facilitating net zero
- energy consumers receiving good value energy services
- minimise costs
- a data-enabled energy sector.

What is the current consumer experience and what would the new consumer experience be?

Direct bill costs: all consumer groups (Domestic Consumers; Small non-domestic Consumers; Large non-domestic Consumers; Very Large Consumers) currently pay for gas leaks at a rate that could be 35% higher than is currently incentivised under RIIO-GD2. This mod would ensure that GDNs are appropriately incentivised, thereby reducing consumer costs and increasing confidence in the reliability of energy infrastructure.

Environmental cost: the environmental impact of gas leaks on all consumer groups is higher. The knock-on impacts of greenhouse gases on the climate crisis are much higher. This mod would ensure that GDNs are appropriately incentivised, thereby reducing the environmental impact of natural gas leaks in the UK.

Impact of the change on Consumer Benefit Areas:	
Area	Identified impact
Improved safety and reliability This change would mean that the energy system can operate more safely and reliably in the future in a way that benefits end consumers. Gas leaks are dangerous - as this Modification would reduce gas leaks, it would also reduce the inherent danger of gas leaks.	Positive
Lower bills than would otherwise be the case Better incentivisation, will reduce costs attributable to gas lost from the system and knock on environmental costs. This will lower bills and help protect the environment.	Positive
Reduced environmental damage This will reduce greenhouse gas emissions by ~~reducing~~ incentivising the reduction of ~~natural gas leaks~~Shrinkage, supporting the journey to net zero. Natural gas is a potent greenhouse gas that is 84x more potent than CO2. Approximately 16 TWh of ~~natural~~ gas were lost from the total system in 2021/22. It will support the decoupling of leak estimation from party bias. Via accurate calculation of the environmental impact of gas leaks, it will support decisions on how to move away from GHG-intensive energy supply in the UK.	Positive
Improved quality of service Increases confidence in customers that our gas system is operated efficiently	Positive

Benefits for society as a whole As above: this Modification would lower bills and GHG emissions. The economic impacts of climate change are detailed within the linked government webpage.	Positive

Cross-Code Impacts

IGTs may need to have an equivalent Modification. 19 GWh of IGT Shrinkage is currently purchased by Shippers via UIG, as detailed in the AUG Statement.

There may be a prohibition in Special Condition D4 of the Transporter licence that prevents GDNs purchasing gas other than to cover Shrinkage – need to fact check – might need a licence change here.

EU Code Impacts

N/a

Central Systems Impacts

The new charge to cover ISE costs may need to be considered.

Relevant Objectives

Impact of the Modification on the Transporters' Relevant Objectives:

Relevant Objective	Identified impact
a) Efficient and economic operation of the pipe-line system.	Positive
b) Coordinated, efficient and economic operation of (i) the combined pipe-line system, and/ or (ii) the pipe-line system of one or more other relevant gas transporters.	Positive
c) Efficient discharge of the licensee's obligations.	Positive
d) Securing of effective competition: (i) between relevant shippers; (ii) between relevant suppliers; and/or (iii) between DN operators (who have entered into transportation arrangements with other relevant gas transporters) and relevant shippers.	Neutral
e) Provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards… are satisfied as respects the availability of gas to their domestic customers.	Positive
f) Promotion of efficiency in the implementation and administration of the Code.	Neutral
g) Compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy	Positive

Regulators.	

"Efficient and economic operation of the pipe-line system" - this mod will incentivise the reduction of gas leaks leading to efficiency in the operation of the pipe-line system. It will also lead to economic improvements via the accurate allocation of costs for the operation of the pipe-line system. "Efficient discharge of the licensee's obligations" this is positive as licensees are obliged to ensure that the environment is not negatively impacted and that accuracy in data is maintained and assured independently. "Provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards… are satisfied as respects the availability of gas to their domestic customers." Via lowering UIG, this will be achieved by making the price cap more accurately reflective of actually costs. "Compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators" - facilitates net zero.

Impact of the Modification on the Transporters' Relevant Charging Methodology Objectives:

Relevant Objective	Identified impact
a) Save in so far as paragraphs (aa) or (d) apply, that compliance with the charging methodology results in charges which reflect the costs incurred by the licensee in its transportation business;	Positive
aa) That, in so far as prices in respect of transportation arrangements are established by auction, either: 1. no reserve price is applied, or 2. that reserve price is set at a level - (I) best calculated to promote efficiency and avoid undue preference in the supply of transportation services; and (II) best calculated to promote competition between gas suppliers and between gas shippers;	Positive
b)That, so far as is consistent with sub-paragraph (a), the charging methodology properly takes account of developments in the transportation business;	Positive
c) That, so far as is consistent with sub-paragraphs (a) and (b), compliance with the charging methodology facilitates effective competition between gas shippers and between gas suppliers; and	Positive
d) That the charging methodology reflects any alternative arrangements put in place in accordance with a determination made by the Secretary of State under paragraph 2A(a) of Standard Special Condition A27 (Disposal of Assets).	Positive
e)Compliance with the Regulation and any relevant legally binding decisions of the European Commission and/or the Agency for the Co-operation of Energy Regulators.	Positive

7. Implementation

Implementation should be as soon as possible after approval by the Authority.

8. Legal Text

See the Framework for the Appointment of an Independent Shrinkage Expert for suggested text. It is also expected that legal text within Section N of the TPD amongst other areas will need to be updated.

We may need an equivalent of TPD, E, 9.3 - Steer from David Mitchell/workgroup discussion needed

"9.3 Terms of engagement of AUG Expert and cost recovery

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9.3.1 Nothing in this paragraph 9 shall require the CDSP to enter into an AUG Expert Contract on terms which in the CDSP's reasonable opinion: (a) would be unlawful for the CDSP; or (b) would give rise to the CDSP incurring any liability, other than in respect of its own wilful misconduct, gross negligence or fraud.

9.3.2 The CDSP may enter into an AUG Expert Contract on terms which:

(a) limit or exclude the liability (as to such matters as may be provided in such contract) of the AUG Expert;

(b) provide that if a Party or any supplier or consumer makes any claim or takes any legal proceedings (as to such matters as may be provided in such contract) against the AUG Expert, the CDSP will indemnify the AUG Expert in respect of such claim or proceeding,

and in such a case each Party undertakes that it shall not, and in the case of a User it shall procure that each supplier and consumer does not, make such a claim or take such proceedings against the AUG Expert, and shall indemnify the CDSP in respect of any liability to the AUG Expert if such Party or any such supplier or relevant customer does make such a claim or take such proceedings.

9.3.3 For the avoidance of doubt, the CDSP shall not be the agent or trustee of any Party for the purposes of the AUG Expert Contract, and the CDSP shall owe no duties or responsibilities to any Party in respect of the AUG Expert Contract other than as provided in this paragraph 9 and the AUG Document."

9. Recommendations

Proposer's Recommendation to Panel

Panel is asked to:

- Agree that Authority Direction should apply

Appendices

Appendix 1 - Literature Review – methane measurement - academic papers

(2022) Continuous CH_4 and $\delta^{13}CH_4$ measurements in London demonstrate under-reported natural gas leakage

https://acp.copernicus.org/articles/22/3595/2022/acp-22-3595-2022-discussion.html

Long-term methane stable isotope analysis coupled with mole fraction measurement has been used to link isotopic signature to gas leaks in London, UK.

Location: Imperial College London, Huxley roof

Method: δ13CH4 values were made using a Picarro G2201-i isotopic analyser beginning in early 2018; 2 years continuous measurements 2018 - 2020. Simulations completed with UK Met Office Lagrangian dispersion model NAME.

Results: Isotopic source values revealed a predominance of natural gas CH4 with source values higher than -45 ‰ in ~74-80 % of the afternoon data. In contrast, simulated sectoral contributions using UK NAEI and EDGAR inventories showed the largest fractions from waste sectors, leading to a simulated underestimation of observed δ 13CH4.

These results suggest that natural gas leaks in London are under-reported in both inventories. The underestimation of mole fractions in the NAEI-25km and NAEI-2km might be accounted for by missing natural gas emissions in the NAEI inventory for London.

UK NAEI emissions are approximately 2.5 times smaller than the EDGAR emissions for the London area, but 8 % smaller than the EDGAR emissions across the UK.

Subtracting the 25 km NAEI emissions from the 25 km EDGAR emissions shows largest differences between inventories were in: London, Birmingham and the Leeds-Sheffield area, which have higher emissions in the EDGAR inventory.

(2022) Street-level methane emissions of Bucharest, Romania and the dominance of urban wastewater

https://doi.org/10.1016/j.aeaoa.2022.100153

An example of a city-level study that explores the source apportionment of methane emissions. (A paper similar to this one for London is soon to be published.)

Abstract: "*Mobile surveys were conducted in the urban areas of Bucharest while continuously measuring CH4 and C2H6 for locating enhanced CH4 mole fractions above local atmospheric background, which are referred to as a leak indication (LI). The flux rates were determined for identified clusters of LIs. An annual city-wide total emission estimate was calculated by scaling up the flux rates. Multiple locations, where CH4 exceeded the daily atmospheric background mole fractions, were measured for δ13CCH4, δ2HCH4, and C2:C1 ratios for tracing contributing CH4 sources. As Europe seeks to cut urban emissions, studies like this will be useful for identifying targets for mitigating emissions and for assessing future governmental regulation of greenhouse gas (GHG) emissions*."

(2019) Assessing London CO2, CH4 and CO emissions using aircraft measurements and dispersion modelling

https://doi.org/10.5194/acp-19-8931-2019

Pitt, J. R., Allen, G., Bauguitte, S. J.-B., Gallagher, M. W., Lee, J. D., Drysdale, W., Nelson, B., Manning, A. J., and Palmer, P. I.: Atmos. Chem. Phys., 19, 8931–8945.

Abstract: "*We present a new modelling approach for assessing atmospheric emissions from a city, using an aircraft measurement sampling strategy similar to that employed by previous mass balance studies. Unlike conventional mass balance methods, our approach does not assume that city-scale emissions are confined to a well-defined urban area and that peri-urban emissions are negligible. We apply our new approach to a case study conducted in March 2016, investigating CO, CH4 and CO2 emissions from a region focussed around Greater London using aircraft sampling of the downwind plume. For each species, we simulate the flux per*

unit area that would be observed at the aircraft sampling locations based on emissions from the UK national inventory, transported using a Lagrangian dispersion model. To reconcile this simulation with the measured flux per unit area, assuming the transport model is not biased, we require that inventory values of CO, CH4 and CO2 are scaled by 1.03, 0.71 and 1.61, respectively. However, our result for CO2 should not be considered a direct comparison with the inventory which only includes anthropogenic fluxes."

(2017) Characterization of interferences to in situ observations of δ13CH4 and C2H6 when using a cavity ring-down spectrometer at industrial sites

https://doi.org/10.5194/amt-10-2077-2017

"An example study conducted on a UK compressor station, carried out by the LSCE Paris group a few years ago now and linked with an NPL survey of the site. This was from the early days of the laser based instruments and there were difficulties in extracting good ethane data." (Dave Lowry, RHUL)

(2017) Evaluating methane inventories by isotopic analysis in the London region
https://www.nature.com/articles/s41598-017-04802-6

Abstract: "*A thorough understanding of methane sources is necessary to accomplish methane reduction targets. Urban environments, where a large variety of methane sources coexist, are one of the most complex areas to investigate. Methane sources are characterised by specific δ13C-CH4 signatures, so high precision stable isotope analysis of atmospheric methane can be used to give a better understanding of urban sources and their partition in a source mix. Diurnal measurements of methane and carbon dioxide mole fraction, and isotopic values at King's College London, enabled assessment of the isotopic signal of the source mix in central London. Surveys with a mobile measurement system in the London region were also carried out for detection of methane plumes at near ground level, in order to evaluate the spatial allocation of sources suggested by the inventories. The measured isotopic signal in central London (−45.7 ±0.5‰) was more than 2‰ higher than the isotopic value calculated using emission inventories and updated δ13C-CH4 signatures. Besides, during the mobile surveys, many gas leaks were identified that are not included in the inventories. This suggests that a revision of the source distribution given by the emission inventories is needed*."

(2017) Origins and trends in ethane and propane in the United Kingdom from 1993 to 2012
https://www.sciencedirect.com/science/article/pii/S1352231017301103

Abstract: "*Continuous, high frequency in situ observations of ethane and propane began in the United Kingdom in 1993 and have continued through to the present day at a range of kerbside, urban background and rural locations. Whilst other monitored C2 – C8 hydrocarbons have shown dramatic declines in concentrations by close to or over an order of magnitude, ethane and propane levels have remained at or close to their 1993 values. Urban ethane sources appear to be dominated by natural gas leakage. Background levels of ethane associated with long range transport are rising. However, natural gas leakage is not the sole source of urban propane. Oil and gas operations lead to elevated propane levels in urban centres when important refinery operations are located nearby. Weekend versus weekday average diurnal curves for ethane and propane at an urban background site in London show the importance of natural gas leakage for both ethane and propane, and road traffic sources for propane. The road traffic source of propane was tentatively identified as arising from petrol-engine motor vehicle refuelling and showed a strong downwards trend at the long-running urban background and rural sites.* ***The natural gas leakage source of ethane and propane in the observations exhibits an upwards trend whereas that in the UK emission inventory trends downwards****. Also,* ***inventory emissions for natural gas leakage appeared to be significantly underestimated compared with the observations. In addition, the observed ethane to propane ratio found here for natural gas leakage strongly disagreed with the inventory ratio***."

(2016) Spatial and temporal variability of urban fluxes of methane, carbon monoxide and carbon dioxide above London, UK

https://acp.copernicus.org/articles/16/10543/2016/acp-16-10543-2016-discussion.html Long-term (3-year) measurements on methane fluxes in London.

Results: The wintertime increase above background in CH_4 concentrations and the accompanying enrichment in $\delta\ ^{13}C$ were consistent with North Sea natural gas and attributed to losses of CH_4 from over-pressurized pipelines in response to (or anticipation of) an increase in demand and to incomplete combustion upon boiler ignition.

Annual CH_4 emissions (72 tons km^{-2}) were more than double the LAEI value suggesting that sources are not as well characterized by the inventory. A shortfall in inventoried CH_4 emissions can be explained by the existence of temperature-dependent sources related to natural gas usage and perhaps also of biogenic origin (e.g. sewage).

(2017) Natural gas and climate change

https://pure.manchester.ac.uk/ws/portalfiles/portal/60994617/Natural_Gas_and_Climate_Change_Anderson_Broderick_FOR_DISTRIBUTION.pdf

Policy support paper that covers many aspects of natural gas and climate change, concluding that: *"By 2035 the substantial use of fossil fuels, including natural gas, within the EU's energy system will be incompatible with the temperature commitments enshrined in the Paris Agreement."*

The paper cites uncertainty in methane leakage (*from across the full supply chain, not specific to downstream distribution networks*) as critical in understanding the role that natural gas may play as a viable bridging fuel in the transition to a low carbon economy:

"In order to quantify the maximum level of EU natural gas consumption compatible with existing EU targets and the Paris Agreement, the relative lifecycle carbon intensity of a range of potential natural gas sources must be more fully understood, ***particularly methane leakage****."*

The research alludes to the challenge of super-emitter sources and the difficulty in identifying and assessing them:

"*The production and distribution of natural gas releases methane both deliberately and inadvertently. The exact amount varies widely across locations and production technologies, and through time at a given location.* ***Close monitoring shows that in most supply chains a small number of sites, or pieces of equipment, are responsible for a large proportion of methane emissions, however, they are difficult to identify a priori.*** *Leakage rates affect the relative contribution of methane to the climate change impact of natural gas supply chains*."

(2015) Plume mapping and isotopic characterisation of anthropogenic methane sources
https://www.sciencedirect.com/science/article/abs/pii/S1352231015002538

Methane stable isotope analysis coupled with mole fraction measurement has been used to link isotopic signature to methane emissions from landfill sites, coal mines and gas leaks in UK.

Location: London and SE England

Method: Targeted areas, when the methane plume was intercepted, air samples were collected and analysed using δ13C–CH4 isotopic analysis by CF-GC-IRMS (high precision method).

Results: Methane from landfill isotope signatures −60.2 ± 1.4 to −55.2 ± 0.6‰. Methane of constant origin for the methane of −36.3 ± 0.3‰ consistent with a dominantly thermogenic North Sea gas source. It suggests that there are other leaks in the gas distribution system along with the storage tank ("gasometer") that is located in the middle of the transect. 24 ppm north of Bacton where pipelines bring all southern and much northern North Sea Norwegian gas onshore, as well as gas from the interconnector pipeline to Belgium. Samples collected had 13C signatures of 36.3 ± 0.3‰ and −35.7 ± 1.2‰.

Appendix 2 - Framework for the Appointment and Operation of an Independent Shrinkage Expert

Document Control

Version	Date	Reason for Change
0.1	10/01/2023	First Draft
0.2	13/02/2023	Suggestions from 0828R meeting 2
0.3	22/02/2023	Suggestions from 0828R meeting 3
0.4	21/03/2023	Suggestions from 0828R meeting 4
0.5	10/06/2023	Suggestions from 0843

Preamble 1. Development of Rules 2. Modifications 3. Approved Modifications

Main body 1. Definitions 2. The Framework 3. Responsibilities under the tender process for the position of ISE 4. Tendering process 5. Generic Terms of Reference for Appointed ISE 6. Responsibilities for the creation of the ISE 7. Creation of ISMM 8. Creation of ISM

Appendix 10 1 Text to be added to Section N of the UNC's Transportation Principle Document 10

Preamble

1. Development of Rules

The requirement to have in place a "Shrinkage and Leakage Model" (SLM) is specified in the Special Standard Conditions of the Transporter Licence. This Framework for the Appointment and Operation of an Independent Shrinkage Expert (hereafter the "Framework") will detail how the Independent Shrinkage Expert (ISE) will annually develop the Independent Shrinkage Model (ISM), Independent Shrinkage Model Methodology (ISMM), and the Independent Shrinkage Statement (ISS) to create an accurate account of Shrinkage. Where there is a difference between the quantity of Shrinkage that is calculated via the SLM and ISM, the ISE will recommend to Transporters and Ofgem that an Independent Shrinkage Charge (ISC) is used. If approved by Ofgem, Transporters will be obliged to purchase gas to cover the ISC.

2. Modifications

Should a Shipper or Transporter wish to propose modifications to any of the Framework, such proposed modifications shall be submitted to the Uniform Network Code Committee and considered by the Uniform Network Code Committee or any relevant sub-committee where the Uniform Network Code Committee so decide by majority vote. For avoidance of doubt, if the proposed change to the Framework requires a contractual change, this will be managed by the CDSP

3. Approved Modifications

In the event that a proposed modification is approved by a majority vote of the Uniform Network Code Committee, the modification shall be implemented.

Where the Uniform Network Code Committee fails to achieve majority approval the proposed modification shall be considered in accordance with the provisions set out in Section 7 of the Uniform Network Code Modification Rules unless the Uniform Network Code Committee determines otherwise

Each revised version of a Document shall be version controlled and retained by the Joint Office on their website.

Main body

1. Definitions

1.1 Unless otherwise stated, terms in this ~~"Independent Shrinkage Expert Document"~~ **Framework for the Appointment and Operation of an Independent Shrinkage Expert** (this "Framework") shall have the meanings given to them in the Uniform Network Code. Such terms will be capitalised within quotation marks where first used in the Framework.

1.2 In this Framework:

- "The Committee" - The Uniform Network Code Committee (UNCC), or an authorised technical workstream or sub committee appointed by the UNCC to administer the Independent Shrinkage Expert process.
- "Code Parties" – signatories to the Uniform Network Code
- "Generic Terms of Reference" – the standard terms of reference to be applied as basis of the contracts between the ~~Gas Transporters~~CDSP and the ISE for the maintenance of the Shrinkage Model
- "Stakeholder Evaluation Panel" – a group of interested parties (including the CDSP), drawn from or nominated by The Committee, who will participate in the development of procurement materials (including terms and conditions) and the selection of a preferred tenderer for the role of ISE.

Commented [DM2]: UNCC and the sub-committee could have completely different responsibilities and therefore may need to be defined separately. what does workgroup think?

2. The Framework

The process described here sets out:

- ISE appointment;

- Publication of the Independent Shrinkage Model (ISM) and Independent Shrinkage Model Methodology (ISMM) within the Independent Shrinkage Statement (ISS);
- High level process for the maintenance and development of the ISM and the ISMM;
- ISE principles
  - In any and all activity undertaken by the ISE, including updating or replacing the National Leakage Tests (NLT) (if deemed appropriate by the ISE) through innovation, shall be administered via the principles of:
    - impartiality,
    - emissions reduction,
    - accuracy, and
    - best outcomes for end-consumers.

3. Responsibilities under the tender process for the position of ISE

3.0 The Committee may delegate its obligations for the definition of criteria for appointment and for overseeing the selection process to the Stakeholder Evaluation Panel (this should be made up of as equal as possible variance of parties to ensure impartiality).

3.1 The CDSP, on behalf of the The Committee, ~~will~~and in conjunction with a Stakeholder Evaluation Panel will:

3.1.1 Produce a clear set of criteria for the appointment of the ISE detailing (without limitation):

(a) the ability of the ISE to produce the ISM and the ISMM which shall be in line with the Generic Terms of Reference, contained in this Framework plus any other criteria agreed by The Committee;

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(b) the evaluation of the cost of undertaking the role of the ISE over the period stated in the tender document;

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(c) the consideration of the relevant knowledge and expertise of the candidates; and (d) ability of the prospective ISE to follow and take into account relevant industry developments.

3.1.2 The CDSP can review this Framework and submit for approval to the UNCC any proposed amendments.

3.2 The CDSP, in conjunction with the Stakeholder Evaluation Panel, will:

3.2.1 use the criteria developed under 3.1 to assess each submitted tender bid;

3.2.2 where more than one prospective candidate responds to the tender for the position of ISE ("the Interested Parties") the Stakeholder Evaluation Panel shall:

(a) Assess the Interested Parties from the criteria specified in the tender document;

(b) Select and appoint the appropriate Interested Party as the "Prospective ISE".

~~3.2.3 identify any improvements that may be made to the tender process, and detail those improvement to The Committee;~~

Commented [DM3]: this is reflected in 3.1.2 already

3.2.34 organise any meetings held in relation to the ISE appointment;

3.2.45 provide legal resource to prepare a tender document;

3.2.56 organise the advertisement of the tender to all Interested Parties, in accordance with ~~national and European~~relevant ~~l~~legislation;

3.2.67 communicate to Code Parties the progress and outcome of the tender process;

3.2.7~~8~~ invite the Prospective ISE to take up the appointment;

3.2.8~~9~~ where the selected ISE does not accept the appointment, invite the next most favoured ISE in turn; and

3.2.9~~10~~ upon acceptance of appointment, establish the contract with the Prospective ISE, in accordance with the Generic Terms of Reference.

3.3 The Gas Transporters and Shippers will require the ISE:

3.3.1 to act with all due skill, care and diligence when performing its duties as the ISE and shall be impartial when undertaking the function of the ISE, ensuring that any values derived will be equitable in their treatment of Code Parties.

3.3.2 to create the ISM and ISMM and publish them in the ISS in accordance with this Framework

4. Tendering process

4.1 This section details the processes undertaken by the CDSP, to appoint an ISE using a tender process.

4.1.1 The CDSP, in conjunction with the Stakeholder Evaluation Panel, will prepare a tender document to be sent when required to all Interested Parties.

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4.1.2 The tender will detail:

(a) that the aim of the tender is to appoint a Party, the ISE, to compile a publicly available ISM and ISMM;

(b) that the ISE will create a methodology, an ISMM, to populate the ISM annually (the cadence of the production of the ISMM and the ISM may need to change, if appropriate);

(c) that the ISE must provide the necessary information to Code Parties in good time to allow the update of the ISM by ~~the 1st July each year or~~ a date(s) as deemed appropriate;

Commented [DM4]: what is the preferred date?

(d) the ISE must hold a public consultation to provide an opportunity to allow Code Parties to discuss the ISM and ISMM, in accordance with the timetable contained within this Framework;

(e) the requirement to allow Code Parties to submit representations and queries with regard to the ISM in accordance with the timetable contained within this Framework;

(f) that the ISE must consider adjusting ISM and/or the ISMM in response to those representations;

(g) that the ISE must adhere to the Generic Terms of Reference contained within this Framework, as well as any other criteria The Committee notifies to the CDSP prior to the tender document being issued; and

(h) that the ISE maintains good relations with The Committee and the CDSP to be available for discussion on any relevant issues, and to answer any general queries promptly.

(j) their ability to interact with other relevant industry bodies and experts across the Gas and Electricity industries to ensure they can benefit from broader industry expertise;

(k) their acceptance of the proposed terms and conditions under which the service will be provided.

4.1.3 ~~When issued, the tender will be for an initial term as agreed with the CDSP , with an option to extend. Tenure shall be less than [2] years~~ When issued, the tender will be for an initial term agreed by the CDSP in conjunction with the Stakeholder Evaluation Panel with an option for extension.

4.1.4 The CDSP will administer the tender process and will conduct it in accordance with all relevant legislation and generally accepted best practice.

4.1.5 Each tender response will in particular detail:

(a) how the prospective ISE will comply with the Generic Terms of Reference and any other criteria agreed prior to the tender;

(b) an outline of the method to be used by the prospective ISE, and why such a proposed solution would be suitable;

(c) an outline of the data that would need to be collated for such use, and the methods to be used for acquiring such data;

(d) the likely time for such work to be carried out;

(e) the cost of performing the services;

(f) contact details that a Code Party may use to query any aspect of the tender or the ISM and ISMM when produced. The ISE shall confirm to the CDSP before their appointment that they do not hold any interest or duty which would or potentially would conflict with the performance of their duties under their contract with the CDSP;

(g) their independence and impartiality, and their process for identifying and managing conflicts of interest during the lifetime of the contract.

4.1.6 Once all tenders have been received the CDSP will select in accordance with the evaluation criteria the top-ranked tender for appointment.

4.1.7 Once the tender process has been completed the CDSP will use reasonable endeavours to contract with the highest ranked acceptable party that wishes to become the ISE by the 31st ~~August~~May. CDSP will consider contracting with the next highest ranked party if they fail to reach agreement with the immediately previous higher ranked party.

4.1.8 In the event that the ~~1st August~~ deadline is not met, The Committee will decide by a majority vote on whether to:

(a)maintain the current ISM, ISMM, and ISC for another year; or

(b) ~~grant additional time to the ISE~~ grant additional time to the CDSP and Stakeholder Evaluation Panel on the understanding that any additional time granted will not jeopardise the publication of the ISM and ISMM.

4.1.9 Alternatively, by unanimous vote, to apply an ISM and ISMM that The Committee decides as appropriate;

4.1.10 Once the tender process has been completed and the CDSP have contracted with an interested party to be the ISE, the Stakeholder Evaluation Panel in agreement with the UNCC will review the tender process, and incorporate any updates that are believed are required to this document.

5. Generic Terms of Reference for Appointed ISE

5.1 This section will include the main principles the ISE will operate under, once appointed.

5.1.1 The ISE will create the ISM by developing appropriate, detailed methodologies (the ISMM) and collecting necessary data.

5.1.1.1 where reasonably required, Code Parties must comply the ISE's requests for data made under 5.1.1. Data shall be provided by UNC Parties promptly within timeframes stipulated by the ISE to enable ISE to collate the ISMM and ISM.

5.1.1.2 non-compliance with 5.1.1 will be escalated to the UNCC, who in turn can escalate to the Authority

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5.1.2 The decision as to the most appropriate methodologies and data will rest solely with the ISE taking account of any issues raised by any stakeholders during the development and compilation of the ISM.

5.1.3 The ISE will determine what data is required from Code Parties (and other parties as appropriate) in order to ensure appropriate data supports the creation of the ISM. The ISE shall ensure that all data provided by Code Parties will be held confidentially, and where any data, as provided or derived from that provided, is published then it shall be in a form where the source of the information cannot be reasonably ascertained.

5.1.4 The ISE will determine what data is available from parties in order to ensure appropriate data supports the creation of ISM, if deemed appropriate by the ISE, and parties should provide data where requested.

5.1.5 The ISE will determine what relevant questions should be submitted to Code Parties, and any other parties as deemed appropriate by ISE, in order to ensure appropriate methodologies and data are used in the creation of ISM.

5.1.6 The ISE will use the latest data available where appropriate.

5.1.7 Where multiple data sources exist the ISE will evaluate the data to obtain the most statistically sound solution, will document the alternative options and provide an explanation for its decision.

5.1.8 Where data is open to interpretation the ISE will evaluate the most appropriate methodology and provide an explanation for the use of this methodology.

5.1.9 Where the ISE considers using data collected or derived through the use of sampling techniques, then the ISE will consider the most appropriate sampling technique and/or the viability of the sampling technique used.

5.1.9.1 The ISE will either procure services for the collection of data or collect their own data,

5.~~9~~.1.9.2 Procurement activity for 5.1.9 will be managed via ~~UNCC~~ CDSP

5.9.2.3 Approval for costs above and beyond the original scope should be approved by the ~~UNCC~~DSC Contract Committee.

5.1.10 The ISE will present the ISM in draft form (the "Draft ISM"), to Code Parties seeking views and will review all the issues identified and submitted in response.

5.1.11 The ISE will provide the Draft and final ISMM and ISC to ~~relevant stakeholders~~UNC Parties via the ISS for publication.

5.1.12 The Authority's final determination in this process shall be binding, subject to any appeals being raised.~~.~~

5.1.13 The ISE will undertake to ensure that all data that is provided to it by all parties will not be passed on to any other organisation, or used for any purpose other than the creation of the ISM, and ensure that they are following GDPR and taking consideration of commercial sensitivities and intellectual property.

5.1.14 Intellectual property is managed by CDSP

5.1.14.1 the intellectual property should reside with the ISE, but be transferred to the new ISE on appointment. This stipulation can be amended by contractual arrangements decided in the tender process.

~~**Commented [1]:** Need to add text which will anchor to the unc~~

~~**Commented [2]:** Add text to section N of the TPD: "6. Independent Shrinkage Expert: 6.1 Parties must adhere to the stipulations of the Framework for the Appointment of an Independent Shrinkage Expert.~~

5~~6~~.2 Where requested to by the Independent Shrinkage Expert, all parties must comply with requests for data. Any non-compliances will be escalated to the UNCC who may escalate to the Authority if appropriate".

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Commented [DM5]: Question for CDSP: Is this fine from a procurement POV?

made by Transporters when estimating the amounts of Shrinkage via the Shrinkage Model. The Independent Shrinkage Charge must be used by Transporters to accurately account for Shrinkage where so directed by the Authority.

Commented [DM6]: where does this belong?

5.1.16 where reasonably requested to provide data to the Performance Assurance Committee, the ISE shall comply with such requests

6. Responsibilities for the creation of the ISE

~~6.1 CDSP~~

~~At the end of each ISE year, regardless of any ISM outcome, the UNCC shall decide on whether the CDSP shall seek feedback from the industry, including the ISE, on the activities and performance of the ISE and industry for the creation of the ISM.~~

~~The CDSP shall produce a report for The Committee~~

6.2 Code Parties provision of data or information to the ISE

Where, the ISE requests data from Code Parties for the purpose of preparing the ISMM, the Code Parties shall use reasonable endeavours to provide the information requested within the timescales requested. Such timescales having being previously notified to the Code Parties.

Non-compliance with requests shall be escalated to the ~~Committee/~~Authority.

6.3 Code Parties Raising issues for consideration during the consultation period.

Code Parties may submit topic areas for consideration by the ISE during the consultation process. The submission must include a clear explanation of the topic, the reasons why this topic is relevant to the ISM, any accompanying data or suggestions as to how the data may be obtained by the ISE. Each topic submitted by a Code Party will be published (including the details of the Code Party) to the industry as part of the ISE's consultation response.

The ISE will provide a response to the topic detailing whether it is in or out of the scope of work and the rationale to support this.

6.4 Code Parties Raising issues for consideration outside of the consultation period.

Code Parties may submit topic areas for consideration by the ISE outside the consultation process. The submission must include a clear explanation of the topic, the reasons why this topic is relevant to the ISE, any accompanying data or suggestions as to how the data may be obtained by the ISE. Each topic submitted by a Code Party will be published (including the details of the Code Party) to the industry as part of the ISE's consultation response.

The ISE will log the topic and will consider it during the development of the next applicable ISM and ISMM

6.5 Provision of and publication of data

A copy of all data and information requests from the ISE will be published to the industry as and when the request is made e.g. date, information request, request made to, data required by.

A record of all responses by organisation name (not anonymised), will be maintained and published. The report will show the response as one of "provided", "not provided" (i.e. request acknowledged but reason for no provision provided), or "no response to request".

Where applicable, a copy of the data provided to the ISE by the Gas Transporters and Shippers will be provided to the industry, in a suitable format. Where data is confidential or commercially sensitive, the fact that the data had been provided will be published, an organisation may request a copy of the information pertaining to them from the Gas Transporters and Shippers.

~~6.6 Gas Distribution Networks will fund the role of the ISE and related activity as detailed within the Framework~~

7. Creation of ISMM and variation of contract

7.1 This section covers the activities and timescales for the creation, submission to The ~~Committee~~Authoirty and publication of the ISMM by the ISE.

7.1.1 The ISE will use appropriate methodologies (ISMM) for the calculation of the ISM

7.1.2 The ISE will justify the appropriateness of these methodologies within the ISMM

7.1.3 The draft ISMM will be published on [date] so that Code Parties are able to provide commentary and consult

7.1.4 methodologies will be lead by principles of:

- impartiality,
- emissions reduction,
- accuracy, and
- best outcomes for end-consumers.

~~7.1.5 costs for methodologies will be justified~~

~~7.1.5.1 if necessary, Cost Benefit Analysis will be undertaken and consulted within the Stakeholder Panel and escalated to the DSC Contract Management Committee if appropriate~~

~~7.1.5.2 The cost of creating the ISMM will be considered as part of the tender process~~

~~7.1.5.3 where those costs are materially above those stipulated with their contract (for example, if the ISE would like to perform direct measurement to detect gas leaks and this was not already agreed upon) this will need to be escalated to the UNCC.~~

Commented [DM7]: this is captured above

8. Creation of ISS

8.1 This section covers the activities and timescales for the creation, submission to The ~~Committee~~ Authority and publication of the ISS by the ISE.

8.1.1 The ISE must provide a Draft ISS, including the methodology, to the Joint Office for presentation and publication no later than [see timetable] each year. This date can be amended by the ISE as appropriate and agreed with the Committee via a consultation.

8.1.2 The Draft ISS and presentation must detail:

(a) How the ISE has adhered to the Generic Terms of Reference and to any other relevant provisions within its contract;

(b) The methodology used by the ISE, and why such a process was suitable; and

(c) The data has been collated so far for such use, and the methods to be used for acquiring any further data.

8.1.3 Once published, any representations made in relation to the draft ISS must be received ISE within [21~~8~~] calendar days.

8.1.4 The ISE will consider any submissions made, and will provide feedback for discussion at the meeting, which is to be held as soon as possible after the [see timetable].

8.1.5 The ISE will review the ISSM in light of any comments (received in 7.1.3 & 7.1.4), and will adjust the ISSM where it believes appropriate.

8.1.6 The Draft ISSM document, as revised by the ISE in accordance with 7.1.4, will be republished by the [see timetable] on the Joint Office of Gas Transporters website.

8.1.7 The ISE will arrange a meeting to discuss the Draft ISSM (as revised), along with any changes made, to be held as soon as possible after the Draft SLM.

8.1.8 Once the Draft ISM (as revised) document has been published, the Gas Transporters and Shippers will organise a meeting with The Committee and the ISE for approval of the final document before the see timetable. The Committee shall approve the Draft ISM, in the form presented by the ISE, unless they unanimously agree changes to any part of the document. Any changes directed by The Committee in this fashion will be implemented by the ISE immediately. The approvedWhere in the opinion of the ISE no material issues have been raised, the Draft ISSM will be treated as the Final ISSM.

8.1.9 the Final ISSM will issued to Gas Transporters, Shippers, the UNCC, and the Authority for consideration on whether it is more accurate that the SLM by [see timetable]. It shall also be provided to the Joint Office for publication on its website.

8.2.10 For avoidance of doubt, Tthe AUGE may wish to consider the outputs of the ISE. This is not to say that the scope of the AUGE or ISE should be fettered in any way - any determination of what constitutes a contributor to the ISC or UIG should be the purview of the respective roles.

9. The application of the Independent Shrinkage Charge

9.1 where there is a difference between LDZ shrinkage, as estimated by the Transporters, and Independent LDZ Sshrinkage, as estimated by the ISE, the ISE will calculate the Independent Shrinkage Charge to Transporters, Users, and and provide this to the Authority.

9.2 where the Authority has reviewed the Independent Shrinkage Charge together with all associated information as appropriate, and so validated that it provides a more accurate estimation, the Authority shall approve the Independent Shrinkage Charge for use by the Transporters; Where the Authority does not agree that the ISC provides a more accurate representation, the choice on whether to roll over the previous years ISC or apply 0 IC would rest solely with the Authority. Where the Authoirty requires assistance to inform this choice the ISE must comply.

9.3 Transporters must use the value derived approved under 9.23 to accurately purchase gas and report this to the Authority and Users.

9.4 To avoid conflating gas purchased under 9.3 with the volumes of gas that are recouped via the SLM by the GNDs as normal, this gas shall be known as ISM Variation Gas (IVG). To be clear, the ISC refers to pre-approved gas volumes, and the IVG refers to approved gas volumes. IVG will be divided into Daily IVG so that it can be loaded into Gemini by the CDSP.

9.5 For the purpose of calculating Unidentified Gas (UIG) volumes, IVG shall be added to Shrinkage, daily-metered allocations and non-daily-metered estimates prior to deducting from the total gas input into the system.

10. Creation of Independent Shrinkage Statement

10.1 This section covers the activities and timescales for the creation, submission to The Authority and publication of the Independent Statement (ISS) by the ISE.

Step	*Requirement*	*Responsible Party*	*Latest date for delivery*
1	Establish a timetable for the coming ISE Year: book meeting dates for all key industry meetings for the year, and communicate those to the industry.	Code Administrator in conjunction with CDSP	~~31~~ 15 April~~May~~
2	Where applicable, ~~P~~present an overview of the approach to developing the ISS for the coming year at an **Introductory Meeting** with the Independent Shrinkage Sub-Committee, including (but not limited to): • Overview of high-level approach to the assignment for coming year; • Overview of proposed changes to methodology since the previous year; • Summary of Industry issues and key changes (e.g. UNC Mods) since previous year and impact on methodology • Update on the log of items carried over from the previous year	ISE	Late ~~June/early July~~May

	• Proposed data sources for all causes of Shrinkage to be included in the methodology Industry parties may provide feedback on the approach and the data sources, for consideration by the ISE.		
3	Provide the industry with monthly updates on progress with the development of the ISS, including availability of data, new topics identified and any key issues which may impact on the Methodology	ISE	Monthly from ~~July to March~~May to Feb

Step	*Requirement*	*Responsible Party*	*Latest date for delivery*

4	Present an update on the development of the ISS for the coming year at an **Early Engagement Meeting** with the Independent Shrinkage Sub-Committee, including (but not limited to): • latest view of data sources for all topics and availability of data • update on development of the ISS for the coming year, including any new items to be added to the Methodology for the coming year. Industry parties may provide feedback on the proposed data sources and outline of the approach.	ISE	~~Late~~ September~~/ early~~ ~~October~~r

5	Provide a proposed ISS to the CDSP for presentation and publication. The proposed ISS and presentation must detail: a) How the ISE has adhered to the Generic Terms of Reference b) The methodology to be used by the ISE, and why such a process is considered to be the most appropriate approach; c) The data has been collated so far for such use, and the methods to be used for acquiring any further data; and e) Any specific matters the ISE wishes to draw to the industry's attention	ISE	1st ~~January~~December
6	At a meeting of the Independent Shrinkage Sub-Committee, present and discuss the proposed ISS to be held as soon as possible after the proposed ISS document has been published.	ISE	~~7 Jan~~Early December

Step	*Requirement*	*Responsible Party*	*Latest date for delivery*

7	Once the proposed ISS has been published, any responses to the ISE on the proposed ISS must be received by the CDSP within 21 calendar days. The CDSP will then provide these responses to the ISE as they are received or no later than 1 working day after submission.	Code Parties	~~10~~ Early January
8	The ISE will consider any responses made, and will provide feedback for discussion at a meeting of the Independent Shrinkage Sub-Committee.	ISE	~~1 Feb~~ Mid January
9	The ISE will review the Independent Shrinkage Statement in light of any comments (received in Steps 7 and 8), and will adjust the Statement where it believes appropriate. The proposed Independent Shrinkage Statement document, as modified by the ISE in accordance with this Step, will be republished on the Joint Office of Gas Transporters website.	ISE	~~15~~ 1 Feb
10	At a meeting of the Independent Shrinkage Sub-Committee, present and discuss the modified Independent Shrinkage Statement, along with any changes made, after	ISE	~~1 March~~15 Feb

	the modified Independent Shrinkage Statement document has been published.		
11	The Independent Shrinkage Expert will review the Independent Shrinkage Statement in light of any comments raised in the meeting referred to in Step 10 and will adjust the Independent Shrinkage Statement where it believes appropriate. For the avoidance of doubt changes can only be made to address specific concerns raised.	ISE	1~~5~~ March

Step	*Requirement*	*Responsible Party*	*Latest date for delivery*
12	The Independent Shrinkage Expert will provide the final Independent Shrinkage Statement (as updated as described in Step 11, if appropriate) to the Authority and the Joint Office of Gas Transporters for publication.	ISE	7~~15~~ March

13	The Authority will consider the final Independent Shrinkage Statement at its next scheduled meeting. The Authority shall approve the final Independent Shrinkage Statement, in the form presented by the Independent Shrinkage Expert, unless it agrees changes to any part of the document. The approved Independent Shrinkage Statement will be treated as the final Independent Shrinkage Statement.	Authority	1 April

10.2 The Authority's final determination in this process shall be binding on Code Parties.

10.3 The Authority may determine that the ISC shall not be applied. In such circumstances, the Authority shall determine whether to roll over the ISC from the previous year, to not approve the ISC and not roll over the ISC from the previous year, or any other action that it deems appropriate.

10.4 The Code Parties may appeal the Authority's final determination.

10.5 At the end of each Independent Shrinkage Year, regardless of any Independent Shrinkage Statement outcome, the CDSP shall seek feedback from the industry, including the Independent Shrinkage Expert, on the activities and performance of the Independent Shrinkage Expert and industry for the creation of the Independent Shrinkage Statement. The CDSP shall produce a report for the UNCC and the Authority, and it shall be published on the Joint Office website.

Appendix

1 Text that is suggested to be added to Section N of the UNC's Transportation Principle Document

The following text will be added to section N of the TPD to ensure that parties comply with ISE in the production of the ISM and ISMM

3.5

Not later than 31 July in each Formula Year, the ISE will provide a report setting out in respect of the Preceding Formula Year:

(a) values (for the whole year and/or on an average daily basis) of assessed LDZ shrinkage, as estimated in the Independent *Shrinkage Model* via the Independent *Shrinkage Model* Methodology, for each relevant LDZ together with a summary of the statistics and information from which such values were derived;

(b) a comparison of such assessed values with the values of LDZ shrinkage estimated by the Transporters;

(c) where there is a difference between LDZ shrinkage, as estimated by the Transporters, and LDZ shrinkage, as estimated by the ISE, the ISE will publish the *Independent Shrinkage Charge* to Transporters, Users, and the Authority;

(d) where the Authority has reviewed the *Independent Shrinkage Charge* together with all associated information as appropriate, and so validated that it provides a more accurate estimation, the Authority shall approve the *Independent Shrinkage Charge*for use by the Transporters;

(e) Transporters must purchase gas to cover the ISC and report this to the Authority and Users.

3.6 For the purpose of calculating an independent estimate of shrinkage, as detailed within 3.5, the CDSP, on behalf of the UNCC and in line with the Framework for the Appointment of the independent Shrinkage Expert document, shall procure the role of the Independent Shrinkage Expert."

"6. Independent Shrinkage Expert: 6.1 Parties must adhere to the stipulations of the Framework for the Appointment of an Independent Shrinkage Expert.

6.2 Where requested to by the Independent Shrinkage Expert, all parties must comply with

requests for data. Any non-compliances will be escalated to the UNCC who may escalate to the Authority asappropriate". ~~**Deleted:** if~~

~~Appendix 3~~ Appendix 3

Uniform Network Code Committee Independent Shrinkage Sub-Committee Terms of Reference

1. Introduction

The Uniform Network Code Committee (UNCC) agreed these updated terms of reference for the AUG Sub-Committee on 19 November 2020 and amendments shall only be made with the consent of the UNCC.

2. Scope of the Independent Shrinkage Sub-Committee

2.1 General

The Independent Shrinkage Sub-Committee is defined as a sub-committee of the Uniform Network Code Committee, with certain rights and responsibilities relating to the Framework for the Appointment and Operation of the Independent Shrinkage Expert (the "Framework").

In particular, the ISE Framework defines an Independent Shrinkage Sub-Committee – an open meeting of interested parties, at set points throughout the annual cycle, to review and provide guidance/support to the ISE and discuss issues raised relating to the Independent Shrinkage Model Methodology.

The Independent Shrinkage Sub-Committee is chaired by the Joint Office of Gas Transporters and is attended by the Independent Shrinkage Expert (the "ISE"), the Central Data Services Provider (the "CDSP") and interested parties.

2.2 Meetings

The Independent Shrinkage Sub-Committee is to meet to support the creation of the Independent Shrinkage Statement as per the timescales in the Framework:

- *Introductory Meeting of the Independent Shrinkage Sub-Committee - late June/early July*
- *Early Engagement Meeting of the Independent Shrinkage Sub-Committee – late September/ early October*
- *Meeting of the Independent Shrinkage Sub-Committee for the Independent Shrinkage Expert to present and discuss the draft ISS – no later than 15th January*
- *Meeting of the Independent Shrinkage Sub-Committee for the ISE to provide feedback on the consultation responses made on the draft AUG Statement and Table – no later than 15th February*

• *Meeting of the Independent Shrinkage Sub-Committee, for the ISE to present and discuss the modified Independent Shrinkage Statement– no later than 12th March*

• *Meeting of the Independent Shrinkage Sub-Committee, for the ISE to present the final Independent Shrinkage Statement – no later than 5 days prior to the April UNCC meeting.*

The Code Administration Code of Practice shall apply to the conduct of the meetings.

The ISE will also provide the industry with monthly updates on progress with the development of the ISS, including availability of data, new topics identified and any key issues which may impact on the Methodology. This information will also be published by the Joint Office.

2.3 Guidance and support to the ISE

The IS Sub-Committee will provide guidance/support to the ISE and discuss issues raised relating to the ISMM via its scheduled meetings, or in adhoc meetings, if required.

Topics on which the Sub-Committee would provide guidance/support to the UNCC on the use of funds for:

• *Innovation Service – identify, assess and propose ways in which Shrinkage model error could be better and more equitably allocated*

• *Advisory Service – provision of expert advice by the ISE on the independently adjudicated Shrinkage to industry Stakeholders*

The ISE and CDSP will gather the views of Sub-Committee attendees and seek a consensus view on the most appropriate and cost-effective use of these funds.

If there is no clear consensus, the ISE may be asked to provide further information to support the Sub-Committee or the expenditure may be deferred to a later date. The majority or consensus view of Sub-Committee members would be the leading factor in determining the most suitable next step.

If there is a consensus or widespread support, a proposal for use of the funds, including a summary of the views of the Sub-Committee attendees, will be presented to UNC Committee for a vote. Any commercially sensitive aspects of the proposal would be made available to UNC Committee members only.

2.4 Decision making

The Independent Shrinkage Sub-Committee has no voting capacity and voting related to the ISS is a matter of the UNCC only.

3.0 Document Control

Version Date Reason for Change

1.0 [tbc]

Appendix 4: GDN's Shrinkage Reconciliation Process

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- GDNs will assess the level of Shrinkage in the coming year in their network, in kWh terms.
  - For example / reference, please see the link which shows the Cadent Final LDZ Shrinkage Quantity Proposals Formula Year 2023/24
  - On p4 you can see the daily amounts by LDZ.

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- Once the value has been agreed (and not disallowed by Ofgem), DNOs will send the daily values to the CDSP who will load them into Gemini.

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- Each day, that Shrinkage energy quantity gets assigned within Gemini, to the DNO who has to buy that much gas.
  - The GDNs will have a contract with a Shipper to be their Shrinkage provider to go on the market and buy the gas for them.
  - This is briefly mentioned on Slide 16 of the UIG Education Pack (xoserve.com) and it is the first step in calculating daily UIG (i.e. total LDZ usage - Shrinkage etc).
  - This means that Shrinkage is not part of UIG but any under or over estimation, UIG would pick up the difference.

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- Shrinkage does not appear on any itemised bills for the Shipper: it's gas that the DNOs need to buy to keep the network running, so it's part of the DNOs allowed costs and rolled up in Transportation pricing.

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- After the end of the Financial Year, the GDN evaluates their original estimates and may do a reconciliation if they have bought the wrong amount of gas.
  - This goes onto the Amendment invoice as a change to the UIG energy amount on the Amendment invoice, using daily SAP prices, and looks very similar to an LDZ measurement error.
  - Each GDN publishes a document showing their workings out: Assessment and Adjustment 2021-22 | Joint Office of Gas Transporters (gasgovernance.co.uk)
  - That's the only time that anything to do with Shrinkage appears on an invoice the CDSP issue.

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