Call for input

A review of shrinkage volumes on the National Transmission System (NTS)

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Contents

1. Introduction

1.1 Shrinkage describes the energy that is consumed, lost or otherwise not accounted for in the operation of the National Transmission System (NTS). There are three components of NTS Shrinkage:

- Compressor Fuel Use ('CFU'), also described as Own Use Gas ('OUG'): the energy (electricity and gas) used to run compressors to transport gas through the NTS;

- Calorific Value Shrinkage ('CVS'): gas that cannot be billed due to the application of a capped CV under the Gas (Calculation of Thermal Energy) Regulations 1996 (amended 1997), and is the Local Distribution Zone (LDZ) energy difference between measured and billed calorific value (CV)[1];

- Unaccounted for Gas ('UAG'): the remaining quantity of gas that is unallocated after taking into account all measured inputs and outputs from the system. This includes fugitive emissions (i.e. methane lost in transportation over the network) and residual shrinkage, which is generally considered attributable to metering errors.

1.2 Gas that is lost on the network, namely through CV Shrinkage and UAG, reflects system inefficiency and waste. It has implications for consumer bills and GB's Net Zero goals as the System Operator, National Gas Transmission (National Gas) must procure additional gas to replace volumes lost on the network. Further, methane emissions negatively impact the environment.

1.3 There are two aspects to managing NTS Shrinkage:

- Price paid for the NTS Shrinkage energy in National Gas' procurement process, and;

- The actions taken by National Gas, to minimise the volume of energy (electricity and gas) that is lost in the operation of the NTS.

[1] The Gas (Calculation of Thermal Energy) Regulations 1996. The maximum daily CV average permitted by the Regulations is equal to 1.0 MJ/m^3 above the lowest measured daily CV of the supplied gas into that charging area. If the supplied gas into a charging area has, at any point, a CV outside of this range, a capped CV (lowest CV + 1MJ/m^3) is applied to the whole region for billing purposes and recovered under the RIIO price control.

1.4 Together, price and volume define the total cost of NTS Shrinkage which is passed onto network users and end consumers. Both should be kept as low as possible in order to minimise the NTS Shrinkage cost borne by consumers.[2]

1.5 In response to our 2024 RIIO-3 Sector Specific Methodology Consultation (SSMC), stakeholders raised concerns over the volumes of gas lost on the NTS system in recent years, namely through UAG and CV Shrinkage.[3] As the economic regulator for gas networks, we are committed to acting on these concerns. In our 2025 Draft Determinations, we stated our intention to commence a review to identify the key drivers behind UAG and CV Shrinkage, and consider options to reduce the volume of NTS Shrinkage gas.[4]

1.6 This Call for Input kickstarts that review by seeking stakeholder views on fugitive emissions, metering and minimisation of metering errors, gas quality issues and its impact on CV Shrinkage, and the roles and responsibilities of key relevant players (e.g. National Gas, Gas Distribution Networks (GDN), gas shippers, meter owners and operators) in the management of NTS Shrinkage volumes.

1.7 This review has the potential benefit to contribute to GB's Net Zero goals, as well as delivering savings for consumers, through increasing the efficient operation of the NTS system. By improving the efficiency of the system more gas can be used productively and efficiently, reducing waste, cost and the environmental impact of emissions.

Ofgem's role

1.8 As Great Britain's independent energy regulator, Ofgem's principal objective is to protect the interests of existing and future gas and electricity consumers, including their interests in the Government's compliance with the net zero target

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[2] In our 2025 RIIO-3 Draft Determinations, we set out our minded to position in regards the price paid for NTS Shrinkage through National Gas' procurement process: to introduce a NTS Shrinkage Procurement financial incentive with a Procurement Strategy requirement to incentivise the efficient procurement of NTS Shrinkage: *RIIO-3 Draft Determinations – GT Annex*, *pp.23-28*: RIIO-3 Draft Determinations for the Electricity Transmission, Gas Distribution and Gas Transmission sectors | Ofgem

[3] See: *RIIO-3 Sector Specific Methodology Decision – GT Annex*, *pp.15-21*: RIIO-3 Sector Specific Methodology Decision for the Gas Distribution, Gas Transmission and Electricity Transmission Sectors | Ofgem

[4] See: *RIIO-3 Draft Determinations – GT Annex*, *pp.28-29*: RIIO-3 Draft Determinations for the Electricity Transmission, Gas Distribution and Gas Transmission sectors | Ofgem

for 2050 and five-year carbon budgets.[5] In regulating these sectors, we[6] also have a duty to promote growth.

1.9 Ofgem's economic regulation of the gas sector extends to gas conveyed through transmission, distribution and independent networks.[7] The regulation of these networks is achieved through legislation such as the Gas Act 1986, statutory instruments, and industry codes.

The Issues

1.10 During the RIIO-3 consultation process, industry stakeholders raised concerns over the volumes of shrinkage and associated costs in recent years. Shrinkage costs are passed on to network users and to end consumers. As energy bills remain high, it is important Ofgem continues to attempt to reduce costs borne by consumers wherever possible. We have taken note of stakeholder views that the drivers behind shrinkage volumes should be investigated before considering how volumes could be reduced through regulatory reforms such as incentives.

1.11 UAG accounts for the largest portion of NTS Shrinkage. Metering errors are generally regarded as the principle cause. There are a wide range of meter owners and operators associated with the NTS (National Gas, GDNs, gas shippers, large offtakers and third-party operators). Therefore, no single party is clearly responsible for meter errors and its impact on shrinkage volumes on the NTS. We intend to investigate the reasons behind metering errors and the roles and responsibilities of relevant parties. This includes considering how costs are recovered and distributed among industry participants.

1.12 Fugitive emissions make up the other part of UAG. This refers to methane emissions which are lost into the atmosphere during the operation of the network (such as through venting, escapes during maintenance works and general leakage). Fugitive emissions contribute to waste, negatively impact the environment and is contrary to GB's Net Zero goals. Ofgem intends to investigate

[5] Being the obligations on the Secretary of State set out in sections 1 and 4(1)(b) of the Climate Change Act 2008

[6] References to the "Authority", "Ofgem", "we" and "our" are used interchangeably in this document to refer to GEMA, the Gas and Electricity Markets Authority. The Office of Gas and Electricity Markets (Ofgem) supports GEMA in its day-to-day work.

[7] By transmission network, we mean the National Transmission System (NTS), a system formed of high pressure gas pipelines that transport gas from terminals and ports and is owned and operated by National Gas. By distribution network, we mean the network of medium and low pressure pipelines that receive gas from the NTS and are owned and operated by the four Gas Distribution Networks (GDNs), namely Cadent, Northern Gas Networks, SGN and Wales and West Utilities. By independent gas networks, we mean the local gas transportation networks owned and operated by independent gas transporters.

further the extent of emissions on the NTS, review practices of detection and reporting and consider what possible measures can be introduced to reduce emissions levels.

1.13 Second to UAG, CV shrinkage is the other major component of NTS Shrinkage where gas is lost on the system. Gas quality and CV Shrinkage are increasingly important issues on the NTS. They may become more pronounced as different gas sources with varied CV levels are utilised. For instance, gas imports from the United Kingdom Continental Shelf (UKCS) are expected to decline, with an increasing share of imports from Liquefied Natural Gas (LNG). Further, biomethane production and hydrogen blending on the NTS are expected to increase. A mixed gas system has implications for the rules around CV capping and its impact on CV Shrinkage.

Our objective and approach to the review

Objective

1.14 Ofgem's principal objective under the Gas Act 1986 is to protect the interests of existing and future consumers in relation to gas conveyed through pipes. As such, the primary aim of our review will be to consider the information we receive in response to this Call for Input on:

1. Fugitive emissions:
    a. the scale of emissions on the NTS,
    b. the processes in place for the detection and monitoring of emissions,
    c. the operational areas most at risk of fugitive emissions,
    d. potential measures to reduce emission levels.

2. Metering:
    a. the factors that impact metering and possible measures to reduce meter errors,
    b. the current make-up of the metering population on the NTS (i.e. the range of meter types and owners), and the scale of metering errors on the NTS,
    c. the metering regulatory landscape and meter recalibration and repair processes,
    d. the roles and responsibilities of National Gas and meter owners/operators,
    e. the recovery and distribution of UAG costs among industry participants.

3. Gas quality and CV Shrinkage:
    a. the key drivers behind CV Shrinkage levels and possible measures to reduce volumes,
    b. the recovery and distribution of CV Shrinkage costs among industry participants,
    c. the potential impact of a future mixed gas system on CV Shrinkage.

Approach

1.15 We will use information, data and documents provided in response to this Call for Input to identify existing and future trends, risks and opportunities. We will gather this information and the views of stakeholders via this Call for Input, as well as potential future formal consultations and engagements if necessary.

1.16 If we are unable to gather the requisite information we require to conduct this review via voluntary responses, and/or we deem it necessary to target more specific information further along our review, we may elect to issue a Request for Information to regulated entities using our powers under Section 34A of the Gas Act 1986.

1.17 We will use the information we gather and subsequent analysis we complete to identify the factors that impact NTS Shrinkage and consider options to reduce volumes.

2. Responding to the Call for Input

Who should respond?

2.1 We are keen to engage with a wide range of interested parties. This Call for Input has been drafted with the intention that it is read by National Gas, GDNs, gas shippers, large offtakers, meter owners and operators and relevant parties, as well as consumer and environmental bodies.

2.2 The questions are organised around three headings: 1) Fugitive emissions, 2) Metering and 3) Gas Quality and CV Shrinkage. Each of these headings begin with questions with all stakeholders in mind, followed by questions targeted at specific group(s):

1. Fugitive emissions
    a. Questions for all stakeholders
    b. Specific questions for National Gas

2. Metering
    a. Questions for all stakeholders
    b. Specific questions for National Gas and meter owners/operators

3. Gas quality and CV Shrinkage
    a. Questions for all stakeholders
    b. Specific questions for National Gas

2.3 We welcome responses to the questions that follow and, as far as possible, ask that responses are supported with appropriate evidence in the form of information, documents, numerical data and analysis.

2.4 Respondents are invited to use our response template which accompanies this CFI to provide the quantitative data requested in questions 4, 11 and 21.

Questions

Fugitive emissions

Questions for all stakeholders

1. Which NTS operational activities are at risk of fugitive emissions and where on the NTS system? (e.g. maintenance works and meter points).

2. In your view, what measures may reduce the levels of fugitive emissions on the NTS system? i.e. technology innovations, regulatory reforms, enhanced monitoring.
    a. For technology innovation, please provide specific technological solutions and estimated potential for fugitive emissions reduction.
    b. If available, please provide estimated costs of these measures.

3. If you have any other comments relevant to fugitive emissions, please provide them here.

Specific questions for National Gas

4. How does National Gas currently monitor, detect and measure fugitive emissions and at what frequency?
    a. If available, please provide historic data on the levels of fugitive emissions on the NTS system and corresponding monetary value as a whole and (if possible) per cause.
    b. Please include the % of fugitive emissions of throughput.

5. Please set out if there are acceptable limits for levels of fugitive emissions on the NTS system, and if these change per cost/throughput/quality of gas on the system.

Metering

Questions for all stakeholders

6. In your view, what are the primary causes of metering errors on the NTS and how can they be reduced?

7. Currently, the cost of Unaccounted for Gas (UAG) due to metering errors is recovered via NTS General Non-Transmission charges paid by network users. In your view, is the current cost recovery arrangements for UAG appropriate?
    a. If not, please specify why. If yes, how could arrangements be improved?

8. What standards and regulations are in place to limit metering errors (e.g. IGEM standards)?
    a. How could these standards and regulations be improved? Are they still fit for purpose?

9. If you have any further comments relevant to metering errors, please provide them here.

Specific questions for National Gas and meter owners and operators

10. What activities do National Gas, meter owners and operators undertake to detect and limit meter errors?
    a. How effective are these measures?
    b. What contractual arrangements are in place between National Gas and meter owners and/or operators?

11. If you are a meter owner and/or operator, can you please provide the following information:
    a. Your current meter maintenance procedures to manage meter accuracy, and how this complies with relevant regulations/standards.
    b. What is the in-service accuracy of your fleet of meters? And in your view, how could this be improved?
    c. If known, what is the extent of your metering errors as a %. Please provide historic data for the previous 5 - 10 financial years, and set out reasons for these error levels.
    d. The number of meters you own and/or operate.
    e. For each meter that you own and/or operate – the type of meter.

12. What are the rules and processes in place for meter calibration?
    a. Are the current standards sufficient or are there issues that need to be addressed?
    b. Are those rules sufficient for a mixed gas network?
    c. What is the appropriate gas composition range for your existing meters, in regard to:
        i. Hydrogen blending.
        ii. Biomethane blending.

13. Are there any risks and/or issues regarding the repair/replacement of meters?

Gas quality and CV Shrinkage

Questions for all stakeholders

14. In your view, what are the key drivers behind CV Shrinkage volumes?

15. What measures are National Gas or other parties undertaking to limit CV Shrinkage levels?
    a. In your view, how effective are these measures and what improvements could be made?

16. In your view, what additional measures (e.g. operational, regulatory reforms) could reduce the levels of CV Shrinkage?
    a. What is your view of the level of the cap imposed by the Gas (Calculation of Thermal Energy) Regulations 1996.

17. Currently, the cost of CV Shrinkage is recovered via NTS General Non-Transmission charges paid by network users. In your view, is the current cost recovery arrangements for CV Shrinkage appropriate?
    a. If not, please specify why. If yes, how could arrangements be improved?

18. In your view, how may the following potential changes to the gas system impact gas quality and CV Shrinkage:
    a. A mixed gas network system (Natural Gas, Hydrogen, Biomethane).
    b. A decline in gas imports from UKCS, and a relative rise in LNG imports.
    c. An increase in the Wobbe index upper limit at injection points to the NTS.

19. In your view, does cycling gas through storage impact gas quality and CV Shrinkage?
    a. Do certain storage types/facilities have more or less impact on gas quality?

20. If you have any further comments relevant to gas quality and CV Shrinkage, please provide them here.

Specific questions for National Gas

21. If available, please provide historic data (5-10 years) on CV Shrinkage volumes and corresponding monetary value.

Other questions

22. In regards the scope of this CFI, please provide your views, and if possible supporting evidence, on any other matters which we should consider in regards understanding the drivers behind, and options to reduce NTS Shrinkage volumes.

3. Next Steps

3.1 Please email responses to gas.systems@ofgem.gov.uk by 7 January 2025. We may publish non-confidential responses on our website (see paragraphs 3.4-3.7 below for more information).

3.2 We invite stakeholders' views on any aspect of the issues raised in this paper. We ask that, as far as is possible, responses are supported with appropriate evidence in the form of information, documents, numerical data and analysis. As set out in

paragraph 2.4 above, respondents are invited to use our response template which accompanies this CFI to provide the quantitative data requested.

3.3 As stated in paragraph 1.18 above, following the Call for Input, we will use the information we gather to understand the factors that impact NTS Shrinkage, which will inform our review of options to reduce NTS Shrinkage volumes. The review may produce one or several different options for change depending on the results of the analysis undertaken by us. We will engage with industry and wider stakeholders on these options and next steps.

Your responses, your data and confidentiality

3.4 You can ask us to keep your response, or parts of your response, confidential. We will respect this, subject to obligations to disclose information. For example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations, or where you give us explicit permission to disclose. If you do want us to keep your response confidential, please clearly mark this on your response and explain why.

3.5 If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you do wish to be kept confidential and those that you do not wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we will contact you to discuss which parts of the information in your response should be kept confidential and which can be published. We might ask for reasons why.

3.6 If the information you give in your response contains personal data under the General Data Protection Regulation (Regulation (EU) 2016/679) as retained in domestic law following the United Kingdom's withdrawal from the European Union ("UK GDPR"), the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 4.

3.7 If you wish to respond confidentially, we will keep your response confidential, but we will publish the number, but not the names, of confidential responses we receive. We will not link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.