Gas Quality
Wet Gas Administration Scheme

Initial Proposals

24th September 2004

Summary

This document reviews the current scheme for adjusting consumers' bills to take account of water vapour that may, from time to time, be contained in some gas supplies being erroneously billed as hydrocarbon gas.

Before natural gas was introduced, town gas entering the distribution networks was saturated with water vapour and all bills were calculated on that basis. Natural gas entering the distribution network is dry. The wet gas administration scheme was first commissioned following the introduction of natural gas in order to give confidence that consumer's bills could be calculated assuming dry gas. However, some water vapour is introduced to the dry gas arising from water ingress within the distribution system and the scheme has remained in operation.

The current regime used to adjust consumers' bills does not provide any protection for the vast majority of consumers and it is not cost effective as a whole. Those consumers that are protected receive compensation which is usually excessive, which is to the detriment of other consumers. Plastic distribution pipes are replacing metallic pipes and the distribution system now comprises over 50% plastic. Ofgem has been advised that plastic pipes are much less susceptible to water ingress.

Three options for wet gas administration are considered. The first option is to retain the current scheme, the second is to develop a more robust, but more expensive, scheme that would protect all consumers and the third option is to discontinue adjusting bills. Discontinuing the scheme provides a net benefit to consumers overall and this is Ofgem's preferred option. The current scheme does not provide protection for most consumers and the cost of a more robust scheme would be disproportionate to the benefits. Adoption of Ofgem's preferred option will reduce industry costs by £1.1 million and, via cost pass-through in the regulated industries and competitive market, can be expected to reduce consumers' bills by approximately 5 pence per consumer per annum.

A key input to deciding the appropriate policy will be the views of interested parties and formal responses to this document are invited by 5th November 2004.

Table of contents

1. Introduction

Context

1.1. Section 12(2) of the Gas Act 1996 ("the Act") gives a discretion to the Authority to determine the quantity of water vapour in gas supplied to consumers. In carrying out such determinations, the Authority carries out a function which, under section 4AA of the Act, must be performed in the manner the Authority considers is best calculated to further the principal objective, having regard to the general duties described in that section. The principal objective is to protect the interests of consumers, wherever appropriate by promoting effective competition.

1.2. Ofgem administers a scheme that is intended to adjust consumer's gas bills to take into account water vapour contained in their gas supply being registered by their gas meter. The current regime used to adjust consumers' bills does not provide any protection for the vast majority of consumers and it is not cost effective as a whole. Those consumers that are protected receive compensation which is excessive, which is to the detriment of other consumers.

1.3. Ofgem classifies gas as being "wet" if the dew point is -26 Celsius or greater, otherwise it is considered to be dry. Gas containing water vapour with a dew point of -26 Celsius causes a billing error of 0.06%, which is equivalent to an error of 18 pence on a typical consumer's bill of £300.

Outline of this document

1.4. Chapter 2 sets out the timetable and procedure for submitting responses. Chapter 3 sets out three options for consideration. Chapter 4 provides analysis of the options and presents Ofgem's preferred option. Appendix 1 contains an impact assessment. Appendix 2 contains a description of the current scheme and interpretation of the results of tests carried out in 2003.

2. Timetable and Responses

2.1. Ofgem will consider responses to this consultation prior to taking a decision on which option to adopt and intends to issue a final decision document in December 2004.

2.2. Responses to this consultation should be received by 5th November 2004.

2.3. Responses to this consultation should be sent to:

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2.4. Unless marked as confidential, all responses will be published by placing them in Ofgem's library or on the website. It would be helpful if responses could be submitted electronically.

3. Options

3.1. Three options for wet gas administration are considered. The first option is to retain the current scheme, the second is to develop a more robust, but more expensive, scheme that would protect all consumers and the third option is to discontinue adjusting bills by means of determinations.

Option 1 - The current scheme

Overview of the current scheme

3.2. Suppliers domestic bills are generally based on the assumption that all gas delivered to consumers is dry. Gas transporters perform quarterly tests at a number of test points and advise Ofgem of any test results that indicate the presence of water vapour. If a test point is found to be wet, the Authority issues a determination to the gas transporter deeming that the gas contains 1.68% water vapour (it is highly unlikely that this is ever the case). This is equivalent to £5.04 on a typical consumer's bill of £300 per annum. Transporters in turn inform shippers and they inform suppliers that gas in the area downstream of the test point is wet. Suppliers then make an adjustment to the gas calorific value used to calculate consumers' bills.

3.3. When originally setting the level of adjustment a figure of 1.68% was chosen. It is not practical to ascertain the temperature and pressure of gas being supplied to each consumer and, even if it was, it would be expensive and impractical to adjust individual bills via industry billing systems. A worst case figure of 1.68% was selected as the maximum amount of water vapour that can be carried in the gas stream at 1013.25mbar and 15C. Although it compensates affected consumers for any water vapour contained in supplies deemed to be wet, it must be recognised that this level is inappropriate in almost every instance and that other consumers pay for this over compensation. Of the points that were routinely tested and determined to be wet, the average dew point of supplies tested in 2003 was -15 Celsius, which produces a billing error of 0.16% or 48 pence per annum for a typical bill of £300 per annum, yet these customers received compensation of 1.68% or £5.04. The overcompensation of £4.56 is paid for by charges recovered from other consumers.

3.4. Some 1500 wet gas test points are located at fixed points in the distribution network. It is estimated that only 30 to 40% of consumers are located downstream of these test points. Also, the test points do not adequately protect downstream consumers as it is probable that most water ingress occurs downstream of the fixed test points. As the other 60 to 70% of consumers are not protected at all, the scheme can not be considered effective.

3.5. Following reported leaks of water into the network, Ofgem usually specifies installation of additional test points near to the location of the leak. It is not known what proportion of leaks into the network is reported as only "substantial" leaks are reported. Once the leak has been repaired and the gas shown to be dry, testing at the new test points is discontinued.

3.6. Ingress affecting small numbers of premises is ignored, as the administrative burden is considered excessive, as is ingress from individual service pipes.

3.7. Anecdotal reports suggest that the existing regime may not be comprehensively implemented through all transporters', shippers' and suppliers' billing systems. Ofgem would be interested to hear respondent's views on the extent that wet gas adjustments are currently implemented within these billing systems.

Interpretation of 2003 test results

3.8. Of the points that were routinely tested and determined to be wet, the average dew point for the 2003 measurements was -15 Celsius, which produces a billing error of 0.16% or 48 pence for a typical consumer with a bill of £300 per annum, yet consumers in determined areas received billing adjustments of 1.68%, which is equivalent to £5.04. The overcompensation of £4.56 is charged to other consumers, some of whom are receiving wet gas, others who are receiving dry gas.

3.9. The average dew point of the wettest 10% of samples taken in 2003 was zero Celsius, which produces a billing error equal to 0.60%, equivalent to £1.80 on a typical consumer's bill of £300. This means that even worst case consumers were bills were over-adjusted by more than 1% or £3.24. This overcompensation is paid for by other consumers.

3.10. Analysis of data shows that, for all those consumers whose gas was tested in 2003, the average consumer received gas with a water content of 0.019%, which is equivalent to 6 pence on a typical consumer's bill of £300.

Effects of the current scheme

3.11. It is estimated that the current scheme costs Ofgem and industry £1.1 million per annum to administer. These costs are ultimately charged to consumers.

3.12. If no determinations are issued it is estimated that those consumers affected by wet gas would be overcharged by a total of £1.2 million and those not affected would be undercharged by the same amount. Industry participants neither materially gain nor lose because of the presence of water vapour although individual consumers are affected.

3.13. Adjustment is not properly targeted under the current regime. Many consumers that receive water vapour ("wet gas") receive no adjustment at all, as their supplies are never tested, and no consumers are fully protected by the current scheme. In 2003, as a result of Determinations issued by the Authority, some one million consumers had their gas bill reduced by an average of £5. It is estimated that the average over charging of these consumers was 48 pence. This resulted in inappropriate transfer costs of £4.5 million from consumers that did not receive Authority determinations to those that did.

3.14. Although intended to improve the accuracy of consumers' bills, because of the ineffectiveness of testing and the overcompensation of consumers supplied with wet gas, the current scheme actually increases the billing error and the costs of administering the scheme increase costs for all consumers.

Option 2 – Alternative scheme

3.15. In order to provide statistically appropriate protection for all consumers it would be necessary to randomly test some 10 to 20% of consumers' gas supplies. This would require over 2 million tests; probably on a quarterly or half yearly basis. Each test takes about one hour to perform. Performing 2 million tests just once per annum would therefore cost around £100 million and a comprehensive scheme considerably more. Costs of this magnitude overwhelmingly outweigh any possible benefit to consumers from more accurate bills.

Option 3 –Discontinue wet gas administration

3.16. If the process of testing for wet gas and issuing determinations was discontinued, there would be a marginal improvement in the accuracy of billing (because the current scheme over compensates consumers with wet gas). Industry costs would be reduced by some £1.1 million per annum. Consumers' bills overall would be reduced by 5 pence per annum due to the removal of passed through costs, with no substantive reduction in consumer protection. There will be overcharging for water vapour in gas, typically 48 pence per annum per affected consumer, but the costs of correcting this would far outweigh the benefits. It is expected that an average consumer's bill will be reduced by around 5 pence per annum. A small number of consumers may be overcharged by around £5 per annum, it is not possible to calculate exactly how many consumers would be affected to this extent but in 2003 no test points were found to have water vapour at this level. The worst point tested had water vapour that caused a measuring error of 1.2% or £3.60 for the worst case consumer with a typical bill of £300 per annum. It should be noted that Transporters may chose to perform a limited amount of hygrometric testing if option 3 is adopted. The expected number of tests is however limited and will not materially affect the analysis presented in this report.

4. Recommendation

4.1. The description of the current scheme in section 3 clearly shows that it is ineffective in providing improved billing for consumers and is not cost effective. Option 2 would provide improvement in the accuracy of consumers' bills, an improvement in accuracy in the order of 0.16% or 48 pence per annum for the average consumer. The costs of such a scheme, well in excess of £100 million per annum, over £5 per annum per consumer, far outweigh the benefits to customers of having more accurate bills.

4.2. As no scheme that provides adequate levels of protection for a sensible price has been identified, it is recommended that option 3 is adopted and the wet gas administration scheme is discontinued.

4.3. If following consultation the scheme is discontinued, it is proposed that all existing wet gas determinations be revoked.

4.4. Ofgem would welcome views of interested parties on this recommendation and would welcome any views on whether other schemes that could effectively correct for water vapour should be considered.

Appendix 1 - Impact assessment

Objective

4.5. The objective of this paper is to provide information on the current wet gas scheme and to propose alternative arrangements, seeking views of interested parties on the extent to which bills should be adjusted to take account of water vapour present in gas supplies erroneously being billed as hydrocarbon gas. The objective is to select the scheme that best protects the interests of consumers.

Overview of key issues

4.6. Small quantities of water vapour are sometimes present in gas supplies. Ofgem administers a scheme that is intended to adjust consumer's gas bills to take into account water vapour contained in their gas supply being registered by their gas meter. The current scheme is ineffective, as testing does not cover the vast majority of consumers and it is also not cost effective for those consumers that are covered by the scheme because the cost of administration is similar to the cost of the erroneous over billing. Where water vapour is detected, the current scheme for issuing determinations overcorrects consumers' bills to the detriment of consumers overall.

Options

4.7. Three options are presented, firstly to retain the current scheme, secondly to introduce a more comprehensive scheme that would protect the majority of consumers and thirdly to discontinue issuing wet gas determinations. The third option is proposed.

Risks and unintended consequences

4.8. No risks or unintended consequences have been identified.

Competition

4.9. There is no substantive impact on competition. Suppliers' administration costs and the complexity of their billing systems will be reduced, marginally reducing barriers to entry in this market.

Costs and benefits

4.10. If wet gas administration scheme is discontinued, based on data from tests conducted in 2003, the actual average error in the bills of consumers receiving wet gas would have been +0.16% (approximately £0.48 per annum for a typical domestic consumer with a bill of £300) if determinations had not been issued.

4.11. Where gas was considered to be wet, the Authority issued Determinations adjusting consumers' bills by 1.68% or £5.04 for the average consumer with a bill of £300.

4.12. Issuing determinations has increased the billing error (albeit in favour of these consumers) by £5.04 – £0.48 = £4.56. The costs of this are borne by other consumers.

4.13. If the wet gas administration scheme is discontinued, savings of £1.1 million per annum will be realised. These savings will be passed through to consumers by means of price control adjustments and competition in the retail market resulting in a reduction in the average consumer's bill of 5 pence per annum.

Environment

4.14. Conducting hygrometric tests requires that small quantities of gas be vented to the atmosphere. Should the activity be stopped, emissions would be reduced.

Safety

4.15. The industry undertakes extensive safety measures to ensure consumer safety and these will continue to be implemented. No benefits to safety from wet gas testing have been identified, other than a minor improvement to monitoring network condition upstream of the test points. However, the network downstream of these points is not covered and much of the network does not have test points at all. It would be very inappropriate for transporters to rely on data from these tests to demonstrate network integrity. All transporters are obligated to produce and comply with a Safety Case that is acceptable to HSE. The transporters' safety cases must include appropriate measures for network monitoring.

4.16. Conducting hygrometric tests involves operational personnel travelling and working on live gas installations often located on the public highway. Provided suitable precautions are taken, this does not generate significant safety risks but ceasing the testing would reduce the degree of exposure to risk for both the personnel involved and the general public.

Security of Supply

4.17. The wet gas regime has no impact of security of supply.

Summary of costs and benefits

4.18. Reduction in consumers' bills of 5 pence per annum

4.19. Improvement in the accuracy of bills as compared to the current regime.

4.20. Minor improvement to safety exposure and the environment.

Distributional effects including social impacts

4.21. No specific distributional effects are created by the proposal, other than an improved distribution of costs from consumers currently receiving disproportionate corrections to their bills to those consumers whose bills are currently not corrected.

4.22. Fuel poor and consumers in general will be equally affected.

4.23. The majority of fuel poor consumers will benefit if the scheme is discontinued. Typical fuel poor consumers who are being supplied with wet gas could incur bills that are 48 pence too high, based on a bill of £300. If the scheme is discontinued, fuel poor consumers will benefit from a reduction of 5 pence per annum, based on a typical bill of £300.

4.24. Large users may be affected to a larger extent in absolute terms but as a percentage of their bill, water vapour has the same proportionate effect as on other users. The current scheme is not beneficial to large users overall and it has not been possible to identify a cost effective scheme that could apply specifically to large users.

Conclusion

4.25. Discontinuance of wet gas administration is of benefit to consumers overall.

4.26. The current regime used to adjust consumers' bills does not provide any protection for the vast majority of consumers and it is not cost effective as a whole. Those consumers that are protected receive compensation which is usually excessive, which is to the detriment of other consumers.

4.27. It has not been possible to identify an economically viable alternative scheme that could provide appropriate levels of protection to all consumers. The cost of introducing a more comprehensive scheme would be prohibitive and totally disproportionate to the value of the issue it is trying to resolve.

4.28. Ofgem's preferred option is to discontinue the wet gas scheme.

4.29. Adoption of this preferred option will reduce industry costs by £1.1 million, and via cost pass through in the regulated industries and competitive market will reduce consumers' bills by 5 pence per annum.

4.30. There is a progressive move to plastic gas pipes which are less prone to water ingress. Around 50% of pipes in the current distribution network are plastic.

Appendix 2 - Existing scheme

Historic perspective

4.31. The current wet gas testing scheme was introduced in 1972 following conversion from town gas to natural gas. It has been suggested that British Gas and Scottish Gas believed that they would be entitled to receive higher levels of income from consumers when they were supplied with dry gas. Town gas was produced in local gas works and was delivered to the network saturated with water vapour; it is hence described as wet. Natural gas entering the network contains very low amounts of water vapour and is considered to be dry. Following conversion from town gas to natural gas, a number of test points were installed throughout the network to show that gas in an area was "dry". If this was confirmed then the supplier could charge for a higher energy content than it could for wet gas. It is thought that the test points were installed on the advice of scientists and engineers at locations where it was considered likely that water would be present.

4.32. Water no longer enters the network at source but ingress occurs via leaks that are distributed throughout the network. Although some test point locations have been changed over time, there appears to be no rational basis for their current distribution. This has resulted in some areas having numerous test points and other areas having none.

4.33. Currently there are some 1500 test points where the water content of the gas is measured quarterly. These test points partially cover around 5-million consumers. Consumers covered by test points are only protected from water ingress upstream of the test point, it is probable that most water ingress occurs downstream of the test points (there is more low pressure pipe downstream of the test points than upstream), which means that the scheme does not fully protect any consumers.

General overview of the current process

4.34. Suppliers bills are generally based on the assumption that all gas delivered to consumers is dry. Transco performs quarterly tests at a number of test points within its distribution network and advises Ofgem of any test results that indicate

the presence of water vapour. If a test point is found to be wet, the Authority issues a determination to the gas transporter stating that the gas contains 1.68% water vapour (it is highly unlikely that this is ever the case). Transporters in turn inform shippers and they inform suppliers that gas in the area downstream of the test point is wet. Suppliers then make an adjustment to the calorific value used to calculate consumer's bills in that geographic area.

4.35. There are currently around 250 determinations in force covering approximately 1 million consumers.

Interpretation of 2003 test results

4.36. Of the points that were routinely tested and determined to be wet, the average dew point for the 2003 measurements was -15 Celsius, which produces a billing error of 0.16% or 48 pence per annum for a typical bill of £300 per annum, yet they received compensation of 1.68% or £5.04. The overcompensation of £4.56 is paid for by other consumers.

4.37. The average dew point of the wettest 10% of samples taken in 2003 was zero Celsius, which produces a measurement error equal to 0.60% or £1.80 per annum for a typical consumer with a bill of £300 per annum. This means that even worst case consumers were over compensated by £4.56 to the detriment of other consumers.

4.38. Analysis of data shows that, for those consumers whose gas was tested in 2003, the average consumer received gas with a water content of 0.019% or 5 pence per annum.

4.39. Transco, under an HSE enforcement order, is currently replacing designated metallic mains with plastic ones. Other mains and services are also being changed to plastic. Substantially lower levels of water ingress are experienced into plastic pipes than into metallic pipes. Over time, as the mains replacement program progresses and a greater proportion of the network is constructed from plastic pipe instead of metallic pipe, the number of consumers affected by wet gas will reduce. Currently around 50% of the network is constructed from plastic pipes and this proportion is increasing each year.

Effect of determinations

4.40. The maximum theoretical error to a domestic consumer's bill caused by the presence of water vapour in gas is approximately 1.68% or £5.04 per annum for a typical consumer with a bill of £300 per annum. When determinations are issued consumers' bills are reduced by this amount.

4.41. In 2003 the actual average error in the bills of consumers receiving wet gas would have been 0.16% or 48 pence for the typical consumer, if determinations had not been issued. Therefore, issuing determinations has increased the measurement error (albeit in favour of these consumers) by £5.04 – £0.48 = £4.56 per annum. The costs of this are borne by other consumers.