ofgem Promoting choice and value
for all gas and electricity customers

Gas Security of Supply Significant Code Review (SCR) Initial Consultation

Document type: Consultation

Ref: 02/11

Date of publication: 11 January 2011

Deadline for response: 22 February 2011

Target audience: Consumers, industry, Government and other interested parties

Overview:

This document is our first consultation paper for the Gas Security of Supply SCR (Gas SCR). The aim of the Gas SCR is to assess whether reforms to the current gas market arrangements are required to improve security of supply, and if so, what these reforms should be.

Our appraisal of the current arrangements for delivering security of supply as part of Project Discovery reaffirmed our long stated view that changes may be required to these arrangements, particularly given Great Britain's (GB's) increasing reliance on imported gas. We have been working closely with the Department of Energy and Climate Change (DECC), and it fully supports this review.

This document sets out a range of options for consultation, including potential changes to the emergency cash-out arrangements, compensation for customers with non-interruptible contracts who are disconnected, and the potential case for enhanced security of supply obligations. We are keen to work with consumers, industry, the Government and other interested parties to find the best way forward.

Contact name and details: Peter Sherry, Senior Economist, GB Markets

Tel: 020 7901 7187

Email: gb.markets@ofgem.gov.uk

Team: Markets

Context

Over the two decades since privatisation and liberalisation, the gas and electricity markets in Great Britain (GB) have delivered secure supplies and substantial investment. However for a number of years, Ofgem[1] has expressed concerns with the ability of the current market arrangements to deliver secure gas supplies over the longer term. These issues primarily concern the emergency arrangements, though changes to these arrangements alone may not fully alleviate our concerns. A number of attempts have been made by industry participants to improve the emergency arrangements. We have accepted a number of proposed modifications to the Uniform Network Code (UNC). However, we have continually expressed that whilst all of the accepted modifications have made incremental improvements to the arrangements, none of these proposals have fully addressed our concerns regarding security of supply.

The Code Governance Review (CGR) Final Proposals and the subsequent licence changes[2] introduced a new regulatory mechanism within the industry codes[3]. The Significant Code Review (SCR) mechanism is designed to facilitate complex and significant changes to these codes. It provides a role for Ofgem to undertake a review of a code-based issue and play a leading role in facilitating code changes through the review process. This document and the launch statement published alongside it initiate a Significant Code Review of the arrangements that deliver security of gas supplies.

DECC is supporting this consultation and has proposed a new statutory power to allow Ofgem to direct modifications to the emergency arrangements section of the UNC, if Ofgem considers that such modifications will decrease the likelihood or the severity of a gas supply emergency. This may allow reforms to be in place by winter 2011-12.

[1] Ofgem is the office of The Gas and Electricity Markets Authority ('the Authority'). The terms 'Ofgem' and the 'Authority' are used interchangeably in this document.
[2] The final proposals and statutory licence changes are on the Ofgem website: http://www.ofgem.gov.uk/Licensing/IndCodes/CGR/Pages/GCR.aspx.
[3] The industry codes affected are the Balancing and Settlement Code (BSC), the Connection and Use of System Code (CUSC) and the Uniform Network Code (UNC).

Associated Documents

Project Discovery - Energy Market Scenarios
- (Reference number: 122/09):
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=2&refer=markets/whlmkts/discovery

Project Discovery - Options for delivering secure and sustainable energy supplies
- (Reference number: 16/10):
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=73&refer=markets/whlmkts/discovery

Open letter - Next Steps: Potential Significant Code Reviews:
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=373&refer=Licensing/IndCodes/CGR

Code Governance Review - Final Proposals
- (Reference number: 43/10):
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=297&refer=Licensing/IndCodes/CGR

Gas Security of Supply Significant Code Review - Launch Statement:
http://www.ofgem.gov.uk/Markets/WhlMkts/CompandEff/GasSCR/Documents1/Launch%20Statement%20-%20Gas%20Security%20of%20Supply%20Significant%20Code%20Review.pdf

Table of Contents

Summary

In the Great Britain (GB) gas market, security of supply is primarily delivered by incentives on market participants to balance their inputs to and off-takes from the gas pipeline system. It is important that these incentives are sufficient, or that they are supplemented with other measures to deliver security of supply. For a number of years, Ofgem has expressed concern with the incentives on gas shippers in this regard and particularly in relation to how supplies will be secured over the longer term. As GB becomes more dependent on gas imports, these concerns become even greater. Incremental improvements have been made, but further changes are required, as illustrated by our Project Discovery findings. The introduction of the new significant code review (SCR) process allows us to take a leading role on this issue and to take a holistic approach to reviewing the gas emergency arrangements.

The Coalition Agreement stated that the Government would ensure that GB energy markets deliver security of supply. In the December Energy Bill, the Government is seeking to ensure that the outcomes of the Gas Security of Supply SCR (Gas SCR) consultation process can be implemented quickly if necessary. The Department of Energy and Climate Change (DECC) has proposed a new statutory power to allow Ofgem to direct modifications to the emergency arrangements section of the Uniform Network Code (UNC), where in Ofgem's view such modifications would decrease the likelihood or the severity of a gas supply emergency. This may allow reforms to be in place by winter 2011-12.

As part of this Initial Consultation we have undertaken a thorough review of the current gas market arrangements, and we present a range of options for reforms to enhance gas security of supply. These options include reforms to the gas emergency cash-out arrangements, as well as enhanced obligations on suppliers and/or National Grid Gas (NGG). GB has not been subject to a gas supply emergency and all the options are designed to decrease the likelihood and/or duration of such an emergency. Our preliminary view is that the options would produce significant benefits which would outweigh any impact on gas prices if an emergency were to occur. A full analysis of the costs and benefits to consumers and industry will be undertaken in an impact assessment later this year.

The current arrangements

Outside of a gas emergency, shippers have an incentive to balance their supply and demand. When they take more off the system than they put on, they face charges (cash-out) which reflect the costs of balancing the system. However, in the event of a gas emergency, the cash-out price is frozen at its prevailing level. This means that under the current arrangements, consumer outcomes can be distorted in an emergency. Where the cash-out price is below the price that customers without interruptible contracts (i.e. firm load customers) would be willing to pay, these customers might be disconnected despite attributing a higher value to security of supply.

If however the price were able to rise in an emergency, additional imports could be attracted to GB, reducing the risk of interruption for firm load customers. This could act to enhance security of supply. Furthermore, without the value of security of supply being fully reflected in the arrangements — through, for example, compensation payments for firm customer disconnection — companies may not have sufficient incentives to secure sufficient sources of gas to avoid an emergency. In effect, the incentives may mean that inadequate 'insurance' is being procured by shippers against high costs of being short in an emergency.

Objectives

Our key objective for this review is to enhance gas security of supply in an efficient manner. Specifically, we are seeking to:

- minimise the likelihood of an emergency occurring, by encouraging gas shippers/suppliers to take out sufficient insurance (e.g. in the form of long-term contracts and storage capacity)
- minimise the severity and duration of a gas emergency if one were ever declared, by sharpening incentives to attract and purchase imported gas
- appropriately compensate firm consumers if they were ever interrupted.

The range of options

As part of this Gas SCR we are considering the case for allowing cash-out prices to continue to be set by market prices during an emergency (that is, allowing for 'dynamic cash-out'). With dynamic cash-out, the price could increase to attract imported gas into GB, but only up to the value that customers would be willing to pay, known as customers' value of lost load (VoLL). Some of our options may involve changes to the roles of NGG as the system operator (SO) and the Network Emergency Coordinator (NEC). These changes will need to be given careful consideration both from a commercial and a safety perspective. We also consider options for appropriately compensating consumers with firm contracts in the event of an interruption to supply.

In this Initial Consultation we are seeking views on three options for reform of the gas emergency cash-out arrangements. These are presented in table i below. We also welcome views on any other options that stakeholders consider should be examined that are not set out in the table.

In each of the options presented in table i, we have included arrangements to allow NGG to buy gas up to an administrative VoLL, and for disconnected firm customers to be compensated at VoLL. We believe that incorporating an approximation of VoLL into the arrangements (to signal willingness to pay/compensation) and allowing NGG to purchase gas up to this price will better attract gas supplies in an emergency and encourage demand-side response, thereby reducing the duration and severity of an emergency. In addition, it should encourage the industry to take out greater insurance, which should reduce the likelihood of an emergency occurring.

Table i: Options for reform of the gas emergency arrangements

Element	Current arrangements	Option 1	Option 2	Option 3
Shipper-to-shipper trading	Continues	Continues	Suspended	Suspended
Cash-out price	Frozen	Dynamic	Dynamic	Frozen
Post emergency claims	Required	Not required	May be required for domestic supply	Required
Role of VoLL	None	Administrative price cap(s) at VoLL	Administrative price cap(s) at VoLL	Administrative price cap(s) at VoLL
NGG role	No market balancing actions	Market balancing actions set cash-out	Market balancing actions set cash-out; Sole purchaser of gas from non-domestic sources	Sole purchaser of gas from non-domestic sources
NEC role	Authorise firm load disconnection; Authorise instruction of maximum flows from domestic sources	Authorise firm load disconnection	Authorise firm load disconnection; Authorise instruction of maximum flows from domestic sources	Authorise firm load disconnection; Authorise instruction of maximum flows from domestic sources
Compensation for firm customers disconnected	None	Compensation at administrative VoLL(s)	Compensation at administrative VoLL(s)	Compensation at administrative VoLL(s)

We recognise that there are many complexities in designing reforms of this type and that this that will require careful consideration over the course of the review. In particular, estimating VoLL is difficult and applying it is potentially more difficult, particularly with respect to the cost targeting of compensation costs. Further, even if we are able to fully reflect the value of security of supply in the arrangements, there are questions over whether industry participants will be able to respond appropriately to sharper price signals. Therefore, alongside our review of the gas emergency cash-out arrangements, we are also considering the case for enhanced obligations on suppliers and/or the SO. Such obligations would place an additional requirement to deliver security of supply beyond the incentives provided by cash-out. However, there are complex design issues to consider with enhanced obligations — they should not therefore be considered an easy option.

We would welcome views from interested parties regarding all aspects of this Gas SCR Initial Consultation document, particularly the questions set out within each chapter. Responses should be sent to Ofgem no later than 22 February 2011 (see chapter 5 for an indicative timeline). Details of how to respond can be found in Appendix 1.

1. Background

Chapter Summary

This chapter provides the background for this Gas SCR. The findings of Project Discovery are discussed in relation to concerns with the current gas emergency arrangements. This is followed by a discussion of the Government's views on this issue, previous reform attempts, the SCR process, and the wider context.

1.1. Over the two decades since privatisation and liberalisation, the gas and electricity markets in Great Britain (GB) have delivered secure supplies and substantial investment. However, for many years Ofgem has considered that the current gas emergency arrangements do not provide sufficient incentives for shippers/suppliers to provide the appropriate level of gas security of supply over the longer term. Security of supply can never be wholly guaranteed. It is therefore important to aim to provide the level of security of supply that consumers would want if they were able to express their preferences fully. In this chapter we discuss our concerns with the current arrangements and the context surrounding the Gas Security of Supply Significant Code Review (SCR).

Project Discovery

1.2. Project Discovery highlighted concerns that the incentives for gas shippers to ensure secure supplies over the longer term are not sufficient. In particular, it set out our concerns surrounding the fact that price signals are weakened in a gas supply emergency. GB has historically been able to rely almost entirely on domestic supplies of gas from the UK Continental Shelf (UKCS). However, in recent times domestic supplies have declined and the GB market has become increasingly reliant upon gas from international sources including Norway, continental Europe and global Liquefied Natural Gas (LNG) markets. This trend is expected to continue into the future and exacerbates our concerns with the current arrangements.

1.3. Ofgem's Project Discovery[4] assessed that there was a reasonable doubt over gas security of supply in the latter half of the decade and reaffirmed our belief that there are a number of key issues with the current arrangements, including:

- Short term price signals at times of system stress do not fully reflect the value that customers place on supply security, which could mean that the incentives to make additional peak energy supplies available and to invest in peaking capacity are not strong enough.

[4] Project Discovery documents can be found on the Ofgem website: http://www.ofgem.gov.uk/Markets/WhlMkts/Discovery/Pages/ProjectDiscovery.aspx

- Interdependence with international markets exposes GB to a range of additional risks that could undermine GB security of supply.

1.4. When shippers take more off the system than they put on, they face charges (cash-out) which are designed to reflect the costs to the system operator of balancing the system. However, in the event of a gas emergency, the cash-out price is frozen at its prevailing level. This means that under the current arrangements, consumer outcomes can be distorted in an emergency. Where the cash-out price is below the price that customers without interruptible contracts would be willing to pay, these customers might be disconnected despite having a higher value of security of supply.[5]

1.5. The problem in the current arrangements primarily manifests itself in the emergency cash-out arrangements.[6] Firm load customers (that is, customers that do not have interruptible contracts for gas[7]) could be curtailed in an emergency with the cash-out price frozen potentially significantly below the value that customers attribute to security of supply (that is, the Value of Lost Load (VoLL)). This could mean that sufficient gas is not attracted into GB in an emergency, and firm customers could be disconnected at a price well below the price they would be willing to pay. Further, this leads to a socialisation of the risks faced by industry players which may lead to insufficient 'insurance' (e.g. storage or long-term contracts) being procured to minimise the risk of an emergency occurring.

1.6. Some steps have been taken to increase harmonisation of gas and electricity markets across Europe and Ofgem has led efforts which bring improved transparency of gas transmission and storage. However, there are a number of differences between the way that the markets operate in GB and the way that interconnected markets operate. There is a danger that change will not occur on a sufficient scale and/or sufficiently quickly to mitigate the security of supply risks caused by these differing arrangements. For example, whereas in GB we rely on price signals to provide security of supply, in some European markets public service obligations (PSOs) and strategic provisions have occasionally been used to achieve this. Due to

[5] We recognise that following recent code modifications, charges for shippers with negative supply-demand imbalances would be adjusted ex-post to reflect compensation paid to those providing gas supplied at a cost above the cash-out price. Whilst we think it was an improvement to the previous arrangements, we still consider that the risk of distortion to consumer outcomes persists and that further change is necessary.

[6] When shippers take more off the system than they put on, they face charges (cash-out) which are designed to reflect the costs to the system operator of balancing the system. In a gas emergency, the cash-out price is frozen at its prevailing level.

[7] An interruptible contract may be signed by gas consumers where the relevant transporter and/or supplier has the ability to ask a consumer to reduce its off-takes (generally daily metered customers). These contracts allow the transporter and/or supplier to disconnect the consumer (in or out of an emergency) in order to manage demand on the system. Consumers may sign these contracts in return for reduced rates on their gas supply.

the existence of longer-term contracts, third party access to pipelines and storage can also be more difficult in other European gas markets than in GB.

1.7. We believe that reform of the emergency arrangements is likely to improve the incentives for shippers and suppliers to manage the risk of a gas emergency occurring and to minimise the duration and severity of any gas emergency. However, we are aware that it is difficult to get these incentives right, and that there are risks that industry participants might not (or might not be able to) respond to these signals appropriately.

1.8. We recognise that even if you can get these incentives right they may not in themselves 'solve' the security of supply problem. Indeed, it may be prohibitively costly to guarantee security of supply for all possible scenarios. Project Discovery presented a full range of policy measures for consideration by Government. These ranged from sharpening price signals during an emergency, through to enhanced obligations on suppliers or NGG, to more interventionist measures such as strategic storage.

Government views on gas security of supply

1.9. In the Energy Bill of December 2010 the Department of Energy and Climate Change (DECC) proposed a new statutory power to allow the Authority to direct modifications to the emergency arrangements section of the UNC (rather than merely direct a modification proposal as per the SCR process), if Ofgem considers that such modifications will decrease the likelihood or the severity of a gas supply emergency. Ofgem is required to consult before directing changes using the new statutory powers. This could be done through the SCR consultation process, even if we do not subsequently utilise SCR powers to direct a licensee to raise a proposal. The new statutory power could allow potential modifications to the UNC to be implemented up to seven months earlier than if we were to utilise SCR powers to direct a licensee to make the required code modifications.

1.10. The Government aims to gain royal assent on the Energy Bill before summer 2011. This would provide Ofgem with the powers to require NGG to make modifications to the UNC and we anticipate that this would allow the reformed arrangements to be implemented by winter 2011-2012. Whether this is practically achievable depends on the time taken to implement any required changes to systems/processes. DECC has indicated they would like to see potential reforms implemented by winter 2011-2012.

Our concerns with the current gas emergency cash-out arrangements

1.11. The current emergency arrangements allow the Network Emergency Coordinator (NEC) to co-ordinate actions of both the supply and demand side to ensure the safe management of an emergency situation. The 'philosophy' underpinning the current emergency cash-out arrangements is that all industry

parties should be working together to maintain safe supplies where possible without being unduly distracted by short-term market lead financial incentives. When GB was self-sufficient in terms of gas supplies, these arrangements allowed for these supplies to be 'administered' in the event of an emergency. However, now that GB is a net importer of gas, particularly in the high demand winter months, there is a need to be able to attract gas from non-domestic sources in an emergency.

1.12. The current arrangements may not provide shippers with the incentive to purchase imported gas, even at a price that their customers would be willing to pay. Further, the physical nature of the system does not always allow targeting of interruption to the customers of shippers that are out of balance. This leads to a socialisation of the risks faced by industry players which may lead to insufficient 'insurance' (eg storage, long-term contracts) being procured to minimise the risk of an emergency occurring.

1.13. In addition, customers with firm contracts for gas that are interrupted (ie firm load disconnections) will not receive compensation for losing their supplies, despite their expectations that gas should always be available to them. This creates insufficient incentives for shippers to utilise demand side response through interruptible contracts. Further, as there are compensation arrangements for consumers who are disconnected due to a network outage, it seems inconsistent that there are no similar arrangements where an outage is caused by a shortage of gas.

1.14. In summary, the key drivers for this Gas SCR are the shortcomings in incentives to avoid an emergency, to import gas in the event of an emergency, and the absence of arrangements to compensate firm load disconnections.

Previous reform attempts - UNC modification proposals

1.15. There have been several previous UNC modification proposals in this area which have provided some incremental improvements. These include:

- allowing the On-the-day Commodity Market (OCM) to remain open for shippers to trade on into stage 2[8] of an emergency [9]
- targeting the costs of post emergency claims at shippers with a negative imbalance (short shippers)[10].

1.16. A number of related UNC modification proposals are summarised in appendix 3. However, the unavoidable piecemeal nature of the modification process has proven a major obstacle to reform. We have expressed concerns about the potential impacts

[8] A description of the stages of an emergency is contained in chapter 2 and appendix 2.
[9] A summary of UNC modification 149A can be found in appendix 3.
[10] A summary of UNC modification 260 can be found in appendix 3.

of a frozen cash-out price at stage 2 of an emergency for some time. For example, as part of UNC modification proposal 0149/0149A in October 2007 we stated that frozen cash-out prices are unlikely to be appropriate:

'They may, under certain circumstances, be too low so that non-UKCS supplies will not be attracted to GB. At the extreme, it is possible to envisage situations where low cash-out prices could even create commercial incentives for Users to reduce imports and sell gas in to higher-priced continental markets and take the cash-out exposure in the GB market. In other circumstances 'frozen' cash-out prices could be too high so that Users, and ultimately customers, are paying too much for their gas and any imbalances.'[11]

1.17. We can see the potential for too low a cash-out price primarily manifesting itself in an emergency situation that has developed rapidly, for example due to a loss of a large storage facility and/or an extended interconnector outage. If, on the other hand, the emergency situation built up slowly over time — for example, due to geopolitical issues affecting supplies over an extended cold snap — we may have more confidence that prices (and the right signals in the forward market) can respond in time and attract additional non-domestic supplies before a stage 2 emergency is declared.

1.18. UNC modification proposal 260 in November 2009 on the post emergency claims (PEC) arrangements went some way to enhancing incentives for shippers to purchase non-domestic gas in an emergency. However, we do not consider it to have adequately addressed our concerns in this area. The PEC arrangements effectively created a proxy for a dynamic cash-out price. They allow shippers with gas available in excess of their off-takes to claim up to the opportunity cost of delivering this gas and target the costs of the associated claims on short shippers. However, these arrangements are complex and uncertain and may not provide accurate price signals to the market during the course of the relevant gas day, nor do they necessarily provide strong incentives to provide non-domestic gas to GB.

1.19. Under the PEC arrangements, where non-domestic shippers' could have attracted a higher price (than the frozen GB cash-out price), they can claim up to the price available in other reachable markets. This opportunity cost may be above or below GB customers' VoLL but does not provide an opportunity for VoLL to feed into decisions about whether to buy gas. This process includes an economic validation of claims by the Authority which may reduce shippers' certainty of receiving the claimed price. In addition, it may take longer for shippers to receive payment for this gas through these arrangements than it would under circumstances where the cash-out price was dynamic. Shippers operating in multiple international markets may also have a number of competing obligations to fulfil. We therefore believe that the

[11] UNC Modification Proposals 0149/0149A: Gas Emergency Cash-out Arrangements: Keeping the On-the-day Commodity Market open during a Gas Deficit Emergency; 19 October 2007; p.6

current arrangements do not provide sufficient incentives to deliver gas to GB in an emergency at stage 2 and beyond. It was on this basis that we restated our concerns about the impact of frozen cash-out prices on gas security of supply in Project Discovery.

Significant Code Review

1.20. The gas SCR process was introduced on 1 January 2011 as one of the outcomes of our Code Governance Review (CGR). The SCR process allows Ofgem to undertake a review of a significant code-based issue and play a leading role in facilitating code changes.

1.21. While we recognise that the standard code modifications process has worked well in providing incremental change to industry codes, it has not been effective in supporting larger scale and more complex change. In particular, none of the changes to date have fully addressed our concerns regarding gas security of supply and the emergency arrangements. As such, we consider that the SCR process is an appropriate mechanism to allow us to take a coordinated approach to code modifications in this area, as we believe that significant changes may be required to the existing relevant UNC provisions.

1.22. In an open letter consultation in August 2010 we identified gas security of supply as a potential area for consideration as part of the new SCR process. This Initial Consultation document represents the first formal stage in the Gas SCR process.

Existing or planned code modification proposals

1.23. We are aware of a number of existing or planned code modification proposals that are related to the scope of the Gas SCR.

1.24. In particular, we note that work is ongoing on updating the fixed differentials used for determining the cash-out price outside of an emergency and the potential for introducing a linepack product in accordance with NGG's obligations under licence condition C27.

1.25. While these issues are relevant to gas balancing, we do not consider these modifications to be within the scope of the SCR. However, as stated in the CGR Final Proposals, we reserve the right to subsume any modification proposal that is raised into the Gas SCR if it is within or related to the scope of our Gas SCR.

Wider context

1.26. We recognise that a number of other energy sector reforms are currently underway. To the extent that these reforms could affect, or be affected by, the Gas

SCR, we will be mindful of these interactions and of the need for consistency in approach. Key reforms are highlighted below.

Electricity Market Review

1.27. The Government's Annual Energy Statement announced the Electricity Market Review (EMR) project, which will, following consultation, result in a White Paper in spring 2011. The EMR will undertake a fundamental overhaul of electricity market arrangements to help to promote investment in energy infrastructure, especially low-carbon generation.

1.28. One of the proposals in the EMR consultation is to implement a capacity mechanism to enhance electricity security of supply. Combined cycle gas turbines (CCGTs) form a significant proportion of the GB electricity generation mix and are a valuable price responsive source of gas demand. Moreover, in the event of a gas emergency, balancing the need to maintain consumers' gas supplies and electricity supplies generated using CCGTs is crucial. Given the important interaction between the gas and electricity markets we shall continue to monitor EMR developments closely. We are also aware that the reforms coming out of EMR are likely to impact consumer bills over the same time period contemplated by the Gas SCR.

Liquidity and barriers to entry

1.29. Over the last 18 months we have been monitoring and investigating the liquidity of wholesale power in GB. In particular, we have concerns that low liquidity in the wholesale market (and therefore reduced availability of appropriate products) is acting as a barrier to entry for independent participants. This could be having a negative impact on the outcomes for consumers in the supply market, especially if it means that there is no viable competitive threat to existing suppliers. We recently published an open letter which reaffirmed our commitment to take action to improve liquidity in the electricity wholesale market, if industry-led initiatives do not deliver sufficient improvement.[12]

1.30. This work highlights our belief that a well-functioning wholesale market should underpin competition in the supply market. To this end, the impact of the Gas SCR proposals on wholesale gas market liquidity and potential barriers to entry must be carefully considered. For example, the potential introduction of dynamic cash-out arrangements in an emergency has the advantage of allowing flexibility for individual shippers to manage their imbalance position. However, outside of an emergency the increased risks placed on shippers could create a barrier to entry, for example due to increased credit requirements.

[12] See http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=163&refer=Markets/WhlMkts/CompandEff

European Legislation

1.31. Any options for reform must be compatible with the European framework. The Third Package[13], which has been adopted and is required to be implemented by 3 March 2011, creates a framework for new legally-binding rules to liberalise markets and to promote cross-border trade. The Third Package seeks to create a regulatory regime for cross-border issues by requiring national regulators to cooperate on cross-border issues, establishing network codes for cross-border issues and creating an Agency for Cooperation of national Energy Regulators (ACER), which will be operational from March 2011.

1.32. In addition, the Gas Security of Supply Regulation[14] entered into force on 2 December 2010 (with the exception of certain parts), will apply from 3 March 2011. The Regulation will have important interactions with the Gas SCR and provides the European Commission with additional powers, including powers to declare and be able to take certain actions in a regional or European Union (EU) emergency. The Gas Security of Supply Regulation also imposes a number of requirements on the Member State and the competent authority. For example:

- to ensure capacity to deliver total gas demand for levels of demand which are statistically exceeded no more than once in 20 years (1 in 20 year) in the event of disruption of the largest gas infrastructure
- to require natural gas undertakings to ensure supply to protected consumers for levels of demand occurring in a 1 in 20 year in the following conditions:
    - extreme temperature during a seven day peak day period
    - a period of at least 30 days of exceptionally high gas demand
    - a period of at least 30 days of the disruption of the largest infrastructure under average winter conditions.

1.33. Where possible, Member States are expected to fulfil these obligations through market-based mechanisms.

[13] The term 'Third Package' refers to Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC; Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005; Directive 2009/72 EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54 EC; Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003 and Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators.

[14] Regulation (EU) No 994/2010 of the European Parliament and of the Council of 20 October 2010 concerning measures to safeguard security of gas supply and repealing Council Directive 2004/67/EC.

1.34. There is also an obligation on the competent authority to put in place an emergency plan which clearly defines the roles and responsibilities of the various players involved in such events. Amendments to the relevant code objectives in licences to reflect Third Package requirements will make compliance with EU law one of the UNC objectives. This means that further changes to the UNC could potentially be introduced if this is required by the Gas Security of Supply Regulation or other EU legislation.

Exit Reform

1.35. The stages of a GDE are currently being reviewed as part of the exit reform review. We will follow this review and ensure that our proposals for reform of the gas emergency arrangements are aligned with the review as it develops.

Structure of the document

1.36. The rest of this document is organised as follows:

- Chapter 2 outlines the current gas emergency arrangements.
- Chapter 3 considers a range of options for reforming the emergency arrangements.
- Chapter 4 describes the potential case for introducing obligations and what this could involve.
- Chapter 5 sets out our thinking on the potential criteria that we will consider as part of our impact assessment and also discusses the next steps for the Gas SCR.
- The Technical Annex details the options for incorporating VoLL and compensation for firm load disconnection.
- Appendix 1 details how to respond to this consultation document.
- Appendix 2 outlines the current arrangements for managing a gas emergency and related legislation and regulations.
- Appendix 3 details previous modifications that have been proposed for the Uniform Network Code.
- Appendix 4 outlines the Authority's powers and duties.
- Appendix 5 contains a glossary and list of acronyms.
- Appendix 6 contains a feedback questionnaire.

2. Current arrangements

Chapter Summary

This chapter sets out the current legal and regulatory framework in place to provide safe, secure gas supplies in GB.

Legal and Regulatory Framework

2.1. The legal and regulatory framework relating to the functioning of the gas network and its safe and efficient operation is set out primarily in the Gas Act 1986 (the Gas Act), the Gas Safety (Management) Regulations 1996 (the GS(M)R) and in the relevant codes and licences.

The Gas Act, the Gas Transporters' Licence and the Uniform Network Code

2.2. The Gas Act prohibits engaging in certain specified activities without obtaining a licence. Licences are issued by the Authority.[15] The Authority's powers and duties are set out in the Gas Act (see also appendix 2). The Gas Act also requires the Authority to consult the Health and Safety Executive (HSE) where appropriate.

2.3. Gas transporters' licences require the creation of a Network Code and Uniform Network Code (UNC). Gas transporters' transportation arrangements must comply with these codes. The codes, in effect, create the contract between the gas transporter and the users of its pipeline system.

2.4. Modifications to the code can be proposed by all signatories to the code. Following the introduction of the SCR process, Ofgem may also direct the relevant transporter to raise a modification following a SCR. The modifications can only be made where the Authority considers that they better facilitate the relevant objectives of the code, consistent with the objectives of the relevant transporter's licence. In directing a modification, the Authority will also carry out its functions in the manner it considers is best calculated to further its general duties.

2.5. As set out in chapter 1, DECC has proposed a new statutory power to allow the Authority to direct modifications to the emergency arrangements section of the UNC (rather than merely direct a modification proposal as per the SCR process), if Ofgem considers that such modifications will decrease the likelihood or the severity of a gas deficit emergency (GDE). Ofgem is required to consult before directing such changes. This consultation can be conducted through the SCR process, even if we do not subsequently utilise SCR powers to direct a licensee to raise a proposal. The new

[15] The powers and duties of gas transporters are set out in Section 9 of the Gas Act.

statutory power could allow potential modifications to the UNC to be implemented up to seven months earlier than if we were to utilise SCR powers to direct a licensee to raise a code modification proposal. This should allow us to accelerate industry reform of the emergency arrangements as considered necessary to maintain security of gas supply.

2.6. Under paragraph 15(b) of the Standard Special Condition A11 of the transporters' licence, the test that the Authority must apply when deciding whether to direct that a proposed modification should be made is whether the modification will better facilitate the achievement of the relevant objectives, as compared to the existing provisions of the UNC or any alternative proposal (consistent with the gas transporter's duties under section 9 of the Gas Act). The Authority must therefore consider whether the modification is consistent with the gas transporter's objectives under section 9 of the Gas Act and whether it will better facilitate the relevant objectives. In making this decision the Authority will also consider its primary objective and secondary duties.

Gas Safety (Management) Regulations

2.7. The GS(M)R are regulations made by the Secretary of State under powers conferred on him by the Health and Safety at Work Act 1974. The GS(M)R requires all gas transporters to submit a safety case to the HSE. If there is more than one gas transporter, it also requires there to be a Network Emergency Coordinator (NEC) who is responsible for coordinating the actions of shippers and transporters on the network in an emergency. The NEC is also required to prepare a safety case. Safety cases are documents which demonstrate the method by which the holder will ensure the safe operation of its network. In the case of the NEC, the safety case requires a demonstration of the arrangements that are in place and actions to be taken to prevent a gas supply emergency. A supply emergency is defined in GS(M)R as 'an emergency endangering persons and arising from a loss of pressure in a network or any part thereof'.

2.8. The GS(M)R also requires the holders of a licence granted under Section 7A of the Gas Act (gas shippers and gas suppliers) to co-operate as far as is necessary with gas transporters and with the NEC, enabling them to comply with their obligations under the GS(M)R. This may include complying with a direction from the NEC not to consume gas for a specified period.

2.9. Changes to licences and/or the UNC might need to be reflected in the NEC and transporter safety cases. We will need to liaise closely with the HSE throughout the Gas SCR process to determine what changes may be needed in this regard.

Market Arrangements

2.10. The gas cash-out (or imbalance price) arrangements seek to provide commercial incentives for gas market participants to balance their inputs into and off-takes from the gas transportation system by the end of the gas day. The trading that takes place to allow National Grid Gas (NGG) to balance the system takes place

on the On-the-day Commodity Market (OCM). Shippers may also trade with each other on the OCM. The cash-out arrangements set the price that companies pay for a negative imbalance and are paid for a positive imbalance. Current cash-out arrangements seek to achieve a balance between reflecting the costs to the transporter of addressing shipper imbalances, and providing appropriate incentives on shippers to arrange for sufficient supplies to meet their contracted demands and to deliver against residual balancing actions. These arrangements are important for ensuring that the market delivers security of supply by providing incentives for market participants to balance supply and demand.

Emergency Arrangements

2.11. The current emergency arrangements are largely contained in section Q of the UNC. All gas shippers and gas transporters are required to comply with the UNC under their licence. Appendix 2 provides more detail on the current emergency arrangements.

2.12. The emergency arrangements emerge from a philosophy that once a supply-demand imbalance becomes so severe that it requires NGG to disconnect users from the network, a single body should be responsible for co-ordinating actions across affected parts of the various gas transporters' gas networks. This is done in order to minimise the possibility of a supply emergency developing and where one develops, to minimise the safety consequences.

2.13. The arrangements in the NEC safety case, which are reflected in section Q of UNC, reflect the actions necessary to prevent a supply emergency. This includes the declaration of a network gas supply emergency. If it is deemed that actions under the emergency arrangements may be required in order to prevent a supply emergency or to minimise the possibility of a supply emergency developing, the relevant transporter will notify the NEC.

2.14. There are two main types of gas supply emergency:

- Gas deficit emergency (GDE)
- Critical transportation constraint emergency.

2.15. The focus of this review is a GDE, a situation arising as a result of a national shortage of gas.

2.16. Where NGG is notified of a potential gas shortage it may issue a gas balancing alert (GBA).[16] If the GBA fails to encourage the delivery of sufficient volumes of gas, and if other market actions are not sufficient to resolve the supply/demand imbalance, NGG can submit a plan to the NEC recommending that it declares an emergency to maintain the safety of the system. If the emergency is declared by the NEC, NGG may take a number of actions. The actions available depend on the stage of emergency declared. There are 5 stages of emergency. These do not have to be declared in order and actions from any stage up to that most recently declared can be taken. The actions available are set out in table 1 below.

Table 1: Stages of a gas emergency

Emergency stage	Actions
1 (Potential)	Use emergency specification gas Maximise use of linepack Use distribution network storage Emergency interruption Public appeal
2 (Declaration)	NGG's participation in the OCM is suspended Cash-out price is frozen at prevailing level Maximise supplies Public appeal
3 (Firm load shedding)	Firm load shedding of daily-metered customers
4 (Allocation of gas and network isolation)	Allocation of available gas to individual local distribution zones (LDZ) Firm non-daily metered load shedding
5 (Restoration)	Restoration

2.17. Where it is necessary for transporters to disconnect consumers from the network they will largely do so in size order. However, there are some categories of customer that may not be disconnected in size order.[17]

2.18. Under the current arrangements, at stage 2 and beyond of an emergency, the NEC can direct shippers to maximise flows. The secretary of state can take command and control powers over domestic (GB) gas. Command and control may be delegated

[16] Four within day GBAs were issued in January 2010 and two day ahead GBAs were declared in December 2010 The market responded to these GBAs and delivered the necessary gas to the system to avoid the declaration of an emergency.
[17] Priority consumers include those for whom a lack of supply could cause loss of life (eg hospitals and care homes) and those for whom disruption could cause in excess of £50m worth of damage.

to the NEC. Shippers are obliged to comply with the instructions of the NEC under their licence. NGG's activities on the OCM are suspended. It is therefore not possible to set a dynamic (variable) cash-out price reflecting NGG actions. Shippers can continue to trade out their imbalances on the OCM or any other market. A cash-out price is established that is frozen for the duration of the emergency. For shippers who are short,[18] the cash-out price is the price of the most expensive NGG action on the day of the declaration of stage 2 of an emergency. In some circumstances (e.g. where parties in other markets are willing to pay more than the frozen cash-out price), this price might not be sufficiently high to attract non-domestic gas.

2.19. In addition, the freezing of the cashout price could create perverse incentives for shippers with a negative imbalance to accelerate the declaration of an emergency by not purchasing gas available from non-domestic sources (prior to stage 2 of an emergency). In other words, given that there is no constraint on the level the cash-out price can reach prior to stage 2 of an emergency, short shippers may prefer that an emergency is declared so that the cost of their imbalance is frozen.

2.20. There is an additional mechanism that incentivises shippers to flow available gas and to avoid a short imbalance position. The post emergency claim (PEC) arrangements allow shippers to claim up to their opportunity cost of delivering gas to the National Transmission System (NTS).[19] The opportunity cost for those able to source gas imports is the price they would be able to command for the gas in an alternate market that they could feasibly deliver the gas to. By making a PEC, they may have less certainty of receiving this price and have to wait longer to receive payment if they deliver gas to GB. As such, the incentive to import gas in an emergency might still not be sufficiently strong.

Compensation arrangements

2.21. Compensation arrangements exist for shippers whose customers' supplies are interrupted as a consequence of a GDE. The emergency curtailment arrangements provide for compensation at the average of the system average prices for the 30 days prior to interruption for the intended volume of off-takes interrupted. Shippers are still required to pay cash-out on their imbalances, but curtailed quantities are subject to a trade between the shipper and the residual balancer. The shipper’s imbalance will be unaffected by these curtailed quantities.

2.22. Unlike customer disconnections caused by distribution network issues, there are no arrangements in place to compensate customers with firm contracts who are interrupted as a consequence of a GDE. This means that the value that consumers

[18] A shipper is short when it is taking more gas off the system than it is putting on.
[19] These arrangements were introduced by UNC 260 a brief description of which can be found in appendix 3.

place on security of supply (value of lost load (VoLL)) is not adequately reflected in suppliers' incentives to maintain supplies to their customers.

System Safety

2.23. NGG has additional tools available to allow it to preserve the safety of the total system. These are established in the NGG and NEC safety case and are reflected largely in the UNC. The safety monitor is one of these tools. It is a level of gas that would be required in storage to allow supplies to non-daily metered consumers to be maintained and to safely disconnect daily metered consumers in a 1 in 50 winter. In calculating the appropriate value for the safety monitor, NGG makes a number of assumptions about the availability of gas from other sources.

2.24. If the safety monitor is within 2 days of being breached this can have an impact on the GBA trigger level. For a more detailed explanation of the interactions between the safety monitor and the GBA trigger level see appendix 2.

3. Options for reform of the emergency arrangements

Chapter Summary

This chapter sets out our initial thinking on potential reforms to the gas emergency arrangements. We present three reform options and our initial thinking on the pros and cons associated with them.

Questions

Question 1: Have we captured the appropriate range of options for reform of the gas emergency arrangements? Are there other options that should be considered?
Question 2: Of the three options presented, which do you prefer? Why?
Question 3: What is the appropriate role for NGG in an emergency?
Question 4: Do you have any comments on our initial assessment of the pros and cons associated with each option?
Question 5: Are there any safety case implications associated with each option?
Question 6: What benefits, if any would dynamic cash-out bring relative to the post emergency claims arrangements?

Our initial thinking on potential reform options

3.1. We believe that there are a number of key elements that need to be explored in developing reform options for the current arrangements for stage 2 (and beyond) of a GDE:

- whether to allow shipper-to-shipper trading to continue
- whether the cash-out price is frozen or dynamic
- whether some form of post emergency claim (PEC) arrangements need to be retained
- the extent to which measures of the value of security of supply are incorporated into the market arrangements
- whether changes to the role of National Grid Gas (NGG) are required
- whether changes to the role of the Network Emergency Coordinator (NEC) are required
- implementing compensation arrangements for firm customers who are disconnected.

3.2. In our view, any option for reform of the emergency arrangements must incorporate an explicit decision on each of these elements. Our initial view is that there are some elements for which the solution to be examined is the same under all circumstances, whereas for others there are a number of options. Where there are options, only some combinations are internally consistent. For example, if we were to conclude after consultation that the cash-out price should become dynamic, we may need to consider changes to the roles of NGG and the NEC to reflect a greater commercial focus. However, if shipper-to-shipper trades were suspended, we expect that more fundamental changes to the role of NGG would be required, whereas the role of the NEC could remain fundamentally as it is today.

3.3. On the other hand, our current view is that there are likely to be significant benefits to consumer if there are strong incentives to purchase gas during a gas deficit emergency (GDE), up to the value that customers place in their gas supplies (the 'value of lost load' or 'VoLL'). We consider incorporating a price cap (at VoLL) into the cash-out arrangements and compensation at VoLL for firm load customers who are disconnected to be therefore important parts of all of the options that we have set out.

3.4. Using these key elements (and with the current arrangements as a reference point) table 2 below sets out three options for reform that we are consulting on as part of this Gas SCR.

3.5. We are aware that the feasibility of these potential options depends on the extent to which VoLL can be reflected in the cash-out and compensation arrangements (see technical annex: The Value of Lost Load), and also the extent to which shippers are expected to respond to these sharper incentives. Consequently, enhanced obligations are still being considered as an option (see chapter 4). However, at present we would ask stakeholders for their comments on the three options that are set out below, as well as on any other options that stakeholders consider should be examined further.

Table 2: Options for reform of stage 2 (and beyond) of the gas emergency arrangements

Element	Current arrangements	Option 1	Option 2	Option 3
Shipper-to-shipper trading	Continues	Continues	Suspended	Suspended
Cash-out price	Frozen	Dynamic	Dynamic	Frozen
Post emergency claims	Required	Not required	May be required for domestic supply	Required
Role of VoLL	None	Administrative price cap(s) at VoLL	Administrative price cap(s) at VoLL	Administrative price cap(s) at VoLL
NGG role	No market balancing actions	Market balancing actions set cash-out	Market balancing actions set cash-out; Sole purchaser of gas from non-domestic sources	Sole purchaser of gas from non-domestic sources
NEC role	Authorise firm load disconnection; Authorise instruction of maximum flows from domestic sources	Authorise firm load disconnection	Authorise firm load disconnection; Authorise instruction of maximum flows from domestic sources	Authorise firm load disconnection; Authorise instruction of maximum flows from domestic sources
Compensation for firm customers disconnected	None	Compensation at administrative VoLL(s)	Compensation at administrative VoLL(s)	Compensation at administrative VoLL(s)

3.6. The options set out in this chapter could potentially involve changes to the UNC, licence conditions, and the NEC safety case.

3.7. The following sections describe the three options for reform in greater detail, as well as some of our initial thinking on the pros and cons.

3.8. As stated above, incorporating a price cap at VoLL into the cash-out arrangements and compensation at VoLL for firm load customers who are disconnected are included in all packages. We recognise that this could lead to high wholesale prices in GB if an emergency were ever declared, for the immediate period

of the emergency. This may have an impact on customer bills (particularly for daily-metered customers). However, particularly given GB's growing import dependency, we believe that these reforms could be important in minimising both the duration and severity of an emergency if one were ever declared. More importantly, sharper incentives during an emergency should encourage gas shippers and suppliers to take out additional 'insurance' to avoid an emergency ever occurring. Although the costs of additional insurance will likely be passed on to consumers over the long term, we believe that the benefits to consumers through improved security of supply should outweigh these costs.[20]

Option 1: Ongoing shipper-to-shipper trade with dynamic cash-out

3.9. Under this option the shipper-to-shipper trade continues and the cash-out price would no longer be frozen at stage 2 (and beyond) of a GDE, but would remain dynamic and be set based on the balancing actions taken by NGG. The cash-out price could fluctuate up to an administratively determined level of VoLL (or multiple levels depending on the customer group affected), at which point NGG would start disconnecting firm customers to balance the system. This option suggests that NGG should no longer be able to instruct maximised supplies from domestic sources, since the market would still be functioning. However, NGG would still maintain the power to instruct firm disconnection for safety reasons (subject to NEC approval). Firm customers who are disconnected would be compensated at the appropriate level of VoLL.

3.10. Table 3 below summarises our initial view of the pros and cons associated with option 1 (with the current arrangements as the counterfactual).

[20] We intend to consider these issues and the other pros and cons of the packages later in the process through a detailed impact assessment.

Table 3: Option 1 - pros and cons

Pros	Cons
Cash-out price unfrozen: reflects supply-demand balance, able to reward delivery of both domestic and non-domestic gas appropriately	*Potential for gaming:* can be minimised if market balancing actions of NGG set the cash-out price
Shipper-shipper trade allowed: shippers can trade out their position	*Current NEC role changed:* removal of ability to instruct maximum supplies from domestic shippers may create market power concerns
Efficient cost allocation: short shippers fully responsible for imbalance	*Complexities in implementation:* need to balance efficiency objectives with need to take potentially very expensive balancing actions in incentive arrangements for NGG
Enhanced security of supply: firm disconnection only when cash-out price reaches VoLL for that customer group	*Risk of financial distress high:* short shippers may be more at risk of financial distress during an emergency
Appropriate compensation: at the appropriate VoLL for firm disconnection	*Barrier to entry:* Potential new credit requirements may create a barrier to entry for small shippers

3.11. The key trade-off under option 1 is between efficient cost targeting via dynamic cash-out, and the relative increase in the risk of financial distress for individual shippers during an emergency.

Incentives for shippers

3.12. The central reform under this option is the 'unfreezing' of the cash-out price at stage 2 of an emergency. This should ensure that deliveries of both domestic and non-domestic supplies in an emergency are adequately remunerated. It should also create strong incentives for shippers to minimise the risk of an emergency occurring.

3.13. There are a number of options available to set the dynamic cash-out price, for example the cash-out price could be set on the basis of shipper trades only or on the basis of the market balancing actions of NGG only.

3.14. The first of these options was put forward by NGG as part of UNC modification proposal 149 (alongside its proposal for opening the On-the-day Commodity Market (OCM) to shippers). We rejected the proposal as we considered that the potential for unintended consequences had not been fully explored.[21] In short, we have concerns that the emergency cash-out price under this scenario could be either too high (due to a small number of low volume high priced actions) or too low (due to the incentive to limit future exposure). That said, we are interested in views on whether there are other variants on this model that ought to be considered as part of this Gas SCR — in particular whether a form of price averaging may be more appropriate. However if we were to consider a weakening of incentives for these reasons, there may be a greater need to implement enhanced obligations alongside reform of the emergency arrangements.

3.15. Another option may be for NGG to issue an alert indicating that firm disconnection is likely within a certain timeframe unless further supplies are forthcoming. If firm disconnection occurs, NGG could effectively take a market balancing action on behalf of the disconnected customers, which would automatically set the cash-out price at the administratively determined VoLL. To avoid exposure to high cash-out prices, once the alert has been issued shippers would have an incentive to purchase gas up to the administrative level of VoLL. However, we would be concerned that the cash-out price could be set too high on the basis of high priced actions of individual shippers that reflect a degree of market power particularly as there may be few competing offers available.

3.16. The second option put forward above — to allow NGG to take market balancing actions during an emergency which set the cash-out price-effectively retains the current market arrangements throughout an emergency. The financial liability created by the action of NGG provides the incentive for short shippers to restore balance by purchasing gas at a lower price than the prevailing cash-out price. Shippers may even purchase gas at a price higher than the prevailing cash-out price, depending on their expectation of whether a further high-priced action will be taken by NGG.

3.17. If NGG needed to disconnect firm load (subject to NEC approval), the cash-out price could automatically revert to the VoLL for those customers to be disconnected. This would provide very strong incentives for shippers to bring additional non-domestic gas on to the system, minimising the likelihood of further firm disconnection. In the extreme, depending on the length of the potential outage and the compensation arrangements for firm disconnection, short shippers may have an incentive to make gas trades at a price in excess of VoLL. Shippers would need to undertake their own risk assessment to determine whether a gas purchase is economic, taking into account the potential liabilities (this is discussed in more detail in the technical annex on VoLL)

[21] See our UNC 149 decision letter
http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/UNC149D.pdf

3.18. We also note that under option 1, the PEC arrangements could be removed. Gas from all sources would only flow where it received the price at which it was traded, removing the need for ex-post arrangements such as PEC.

3.19. Option 1 should result in an efficient allocation of costs, with short shippers fully exposed to the costs of their imbalances. With shipper-to-shipper trading allowed to continue, individual shippers can respond to the dynamic cash-out signals in the most economic way. We consider it important in principle that the costs of an emergency are appropriately targeted at shippers in accordance with their imbalance position. This creates the right incentives on individual shippers to manage their risk ex-ante, and avoids issues of moral hazard or free riding.

3.20. However, combined with an administrative VoLL setting, this option may result in a greater risk of financial distress for individual shippers during an emergency. In an emergency, the exposure of an individual shipper to the dynamic cash-out price could be difficult to manage. Outside an emergency, the risks placed on shippers by the dynamic emergency arrangements may create a barrier to entry, for example due to increased credit requirements. These are issues that we would like to understand further as part of this Gas SCR. In particular we would be interested in any quantitative evidence stakeholders may have in respect of this issue.

3.21. We would need to consider further whether the force majeure arrangements in the UNC are fully aligned with the objectives of options 1 and 2 to target the costs of a supply shortage on those responsible for the shortage. To the extent that shippers believe that a force majeure could be declared, shippers may not take appropriate actions to limit their liabilities as such liabilities would in certain circumstances be reduced or extinguished if a force majeure were declared.[22] In these circumstances, this may reduce an individual shipper's incentive to avoid an emergency occurring. The interactions between the force majeure arrangements in the UNC and the emergency arrangements will be considered as part of the Gas SCR.

Implications for SO incentives

3.22. It is likely that changes to NGG's role in and around an emergency would need to be reflected in their incentives. For example, changes to NGG's residual balancer incentive would need to be considered. The appropriate incentives would be likely to differ depending upon the option chosen. In any case the SO should be incentivised to act efficiently.

[22] Force majeure protection from liability applies only for so long as and to the extent that the occurrence of the force majeure and/or the effects of such occurrence could not be overcome by measures which the affected party might reasonably be expected to take with a view to resuming performance of its obligations. A number of other conditions would also need to be satisfied before force majeure protection would apply. These are set out in detail in the UNC.

3.23. We note that NGG has some tools available to it to manage imbalances through contracts for operational margins (OM) gas and system balancing guidelines. Any interactions between these arrangements and changes to NGG's role will have to be considered carefully.

Implications for the safety case

3.24. Under this option NGG would still retain the ability to disconnect firm load for safety reasons (subject to NEC approval), and depending on the geographic scale of the disconnection, this instruction could result in the cash-out price rising to VoLL for those customers affected. This is important for the NGG and NEC safety cases.

3.25. However, with a dynamic cash-out price and shippers able to trade out imbalances, NGG is likely to need to relinquish its ability to instruct shippers to maximise supplies. This may provide less certainty over the flow of gas from domestic sources than under the current arrangements. However, we consider that the dynamic cash-out price should provide strong incentives for domestic sources to flow at maximum rates.

Option 2: Dynamic cash-out with NGG the sole purchaser of gas from non-domestic sources

3.26. Under this option, the shipper-to-shipper trades on all platforms would be suspended but the cash-out price would no longer be frozen at stage 2 (and beyond) of a GDE. Rather, it would remain dynamic and be set based upon the market balancing actions taken by NGG. The NEC would retain the ability to instruct GB shippers to maximise supplies, and would still maintain the power to instruct firm disconnection. NGG would purchase all non-domestic gas on behalf of customers, and the cash-out price could fluctuate up to an administratively determined level of VoLL (or multiple levels depending on the customer group affected). Where consumers would no longer be willing to pay the price gas is available for, NGG would start disconnecting firm customers. Firm customers that are disconnected would be compensated at the appropriate level of VoLL.

3.27. Table 4 below summarises our initial view of the pros and cons associated with Option 2 (with the current arrangements as the counterfactual).

Table 4: Option 2 - pros and cons

Pros	Cons
Cash-out price unfrozen: reflects marginal action taken by NGG	*Highly centralised:* NGG may have less expertise in negotiating large non-domestic purchases, exposing industry to additional costs
Coordination: Ability of NGG to take a system-wide view over non-domestic purchases may reduce costs	*Complexities in implementation:* may need a significant change to the incentive regime for NGG
Current NEC role retained: ability to instruct maximum supplies from domestic shippers	*Shipper-shipper trade suspended:* shippers are unable to trade out their imbalance position
Efficient cost allocation: short shippers fully responsible for imbalance position	*Risk of financial distress high:* short shippers may be more at risk of financial distress during an emergency
Enhanced security of supply: firm disconnection only when cash-out price reaches VoLL for that customer group	*Barrier to entry:* Potential additional credit requirements may create a barrier to entry for small shippers
Appropriate compensation: at the appropriate VoLL for firm disconnection	

3.28. The key trade-offs under option 2 are:

- between efficient cost targeting via dynamic cash-out, and the increased (relative) risk of financial distress for individual shippers during an emergency, and
- between the potential benefits from coordination during an emergency, and the risks of exposure to the potential inefficiencies of greater centralised decision-making.

Incentives for shippers

3.29. As with option 1, the cash-out price is dynamic, based upon the market balancing actions of NGG. This should lead to an efficient allocation of costs among shippers according to their imbalance position. Compared to option 1 however, the volumes associated with the market balancing actions of NGG are likely to be much greater. The cash-out price could fluctuate up to the administrative VoLL setting for

firm customers, at which point the NEC would instruct NGG to disconnect firm customers.

3.30. Under option 2 shipper-to-shipper trade is suspended, making NGG the sole purchaser of non-domestic gas.[23] This means that shippers would effectively lose the ability to manage their own imbalance positions, relying instead on NGG to resolve the system imbalance. Shippers would then be cashed-out at the dynamic cash-out price set by the market-balancing actions of NGG. Option 2 therefore exposes individual short shippers to the full costs of their imbalance, but provides less flexibility for them to trade out imbalances. As with option 1, compared to the current arrangements, option 2 may result in a greater risk of financial distress for individual shippers during an emergency. Outside an emergency, the risks placed on shippers by the dynamic emergency arrangements may create a barrier to entry (for example, due to increased credit requirements) but should still provide enhanced incentives to avoid an emergency from ever occurring.

3.31. Suspending shipper-to-shipper trades and making NGG the sole purchaser of non-domestic gas could expose shippers to additional risks and costs beyond their control. NGG may not have as much expertise (at least currently) as shippers to allow it to carry out this function effectively. On the other hand, we can see some potential coordination benefits from NGG taking a system-wide view during an emergency, minimising the risk of firm disconnection.

3.32. As the NEC would retain the ability to instruct maximum flows from GB shippers at stage 2 (and beyond) of a GDE, the current PEC arrangements would need to be retained in some form. These would be required to compensate shippers where the cash-out price in an emergency is not sufficient to recover the costs of providing domestic supplies.

Implications for SO incentives

3.33. We recognise that some substantial changes may be required to the SO incentive regime to facilitate this expanded role for NGG during an emergency. In

[23] In its role as sole purchaser and more generally where NGG trades gas in an emergency, NGG's actions would have to be consistent with the system operator tasks set out in Article 13 of the Gas Directive in the Third Package and with unbundling provisions set out in Article 9 of the Third Package Gas Directive. In particular, in designing this option we would need to ensure that any activity of NGG in purchasing the gas does not constitute supply within the meaning of the Third Package, but falls within the transmission system operator activities, such as the obligation to '*operate, maintain and develop under economic conditions secure, reliable and efficient transmission… facilities*'. The Gas Directive defines '*security*' as both security of supply of natural gas and technical safety. We would need to consider as part of the Gas SCR whether it is possible to develop a design of the market establishing NGG as the sole purchaser, which would be fully compliant with the transmission system operator ownership unbundling requirements.

particular, the question of funding would need to be addressed. Although the probability of a GDE ever occurring could be considered low, the potential costs to NGG as sole-purchaser of non-domestic gas could be very significant. Without adequate protection NGG may be more at risk of financial distress.

3.34. The uncertainty associated with these costs makes ex-ante provision of funds quite difficult. Moreover, we consider that NGG should be cost neutral. In other words we would need to ensure that this sole-purchaser role for NGG did not lead to a double-provision of 'insurance' to avoid an emergency (by shippers and NGG), as this would come at excessive cost to consumers.

3.35. The issue of ex-ante access to funding for NGG in its role as sole purchaser of non-domestic gas requires further consideration. Under option 2, the costs of NGG's gas purchases could then be recovered from short shippers through dynamic cash-out. These payments could be spread out over time to minimise the risk of financial distress for shippers. Careful consideration would also need to be given to how NGG would be allowed to recover costs related to its actions in an emergency.

3.36. We would need to consider how NGG can be incentivised to deal with emergencies or to prevent emergencies in an efficient way. Failing to do so would expose consumers to unduly high costs.

Implications for the safety case

3.37. As the NEC would maintain the ability to authorise instruction of maximum flows from domestic sources under this option this may not require the NEC and/or NGG safety cases to change as much as under option 1. However, this needs further detailed consideration in consultation with the HSE.

Option 3: Frozen cash-out with NGG the sole purchaser of gas from non-domestic sources

3.38. This option is equivalent to option 2, except that the cash-out price is frozen. The NEC would retain the ability to authorise instruction of maximised supplies from GB sources, and would still maintain the power to instruct firm disconnection. NGG would purchase all non-domestic gas on behalf of customers, but the costs of any purchases made by NGG would be smeared across all shippers regardless of their imbalance position going into the emergency. NGG would continue to purchase non-domestic gas until the marginal cost of such purchases reached the administratively determined level(s) of VoLL. At this point NGG would start disconnecting firm customers. Firm customers who are disconnected would then be compensated at the appropriate level of VoLL.

3.39. Table 5 below summarises our initial view of the pros and cons associated with option 3 (with the current arrangements as the counterfactual).

Table 5: Option 3 - pros and cons

Pros	Cons
Socialise costs: costs of resolving the emergency are smeared across the industry, which could be considered appropriate if the market is believed to no longer be functioning	*Inefficient cost allocation:* short shippers are not held wholly responsible for their imbalance position
Coordination: Ability of NGG to take a system-wide view over non-domestic purchases may reduce costs	*Cash-out price frozen:* potential for less transparency for shippers' liabilities with respect to their imbalance positions
Current NEC role retained: ability to maximise supplies from domestic shippers	*Highly centralised:* NGG may have less expertise in negotiating large non-domestic purchases, exposing industry to additional costs
Risk of financial distress minimised: as costs are socialised there is less risk of individual shipper financial distress	*Shipper-to-shipper trade suspended:* shippers are unable to trade out their imbalance position
Optimal security of supply: firm disconnection only when cost of marginal NGG action exceeds VoLL for the relevant customer group	*Complexities in implementation:* may need a significant change to the incentive regime for NGG
Appropriate compensation: at the appropriate VoLL for firm disconnection	

3.40. The key trade-offs under option 3 are:

- between less than efficient cost targeting of the (relatively) reduced risk of financial distress for individual shippers during an emergency, and
- between the potential benefits from coordination during an emergency, and the risks of exposure to the potential inefficiencies of greater centralised decision-making.

3.41. While option 3 can help to end an emergency more quickly, it would do little to avoid one occurring in the first place. By itself, option 3 could weaken the incentives on individual shippers to manage their own imbalance. Therefore, if we were to favour option 3 we consider that this would be more likely to need to be accompanied by some form of enhanced obligations to deliver security of supply.

3.42. Option 3 could be worthy of detailed consideration if the value that consumers place on security of supply cannot be fully reflected in the administrative VoLL setting(s) and the compensation arrangements. While smearing the costs appears undesirable in terms of efficient incentives, option 3 still has the potential to minimise the duration and severity of a GDE if GB were ever to enter into one.

Incentives for shippers

3.43. Under option 3 the cash-out price is frozen as with the current arrangements. With shipper-to-shipper trades suspended, NGG would make purchases of non-domestic gas on behalf of all customers, up to the administrative VoLL(s) of firm customers. As with option 2, this reliance on NGG may expose shippers to additional risks and costs.

3.44. Shippers would be cashed out at the frozen cash-out price, with the costs of any non-domestic purchases made by NGG smeared across the industry (e.g. according to throughput). Therefore the key difference with this option is that it involves less exposure for individual short shippers. On this basis option 3 might mean lower barriers to entry relative to the other two options put forward.

3.45. There are a number of possible justifications for socialising the costs of a GDE.

- The GDE may have been the result of wider gas shortages across Europe and globally, which individual shippers may argue is beyond their control (invoking force majeure).
- It may be difficult to accurately target the costs of a GDE in compensation arrangements for firm disconnection.
- Socialising the costs of a GDE may minimise the likelihood of financial distress for individual shippers.

3.46. However, as an individual shipper's liability would not be related to its own imbalance position, in our view option 3 is unlikely to provide appropriate incentives to minimise the likelihood of a GDE. It could result in an inefficient allocation of GDE costs, with a tendency to penalise larger shippers based on throughput. This could lead to free-riding and moral hazard issues. To counter such concerns, there could be a stronger case for enhanced obligations alongside option 3.

3.47. PEC arrangements would be required to compensate shippers that flow additional gas onto the system from domestic sources. This would be required where the frozen cash-out price is not sufficient to recover the costs of providing domestic supplies.

Implications for SO incentives

3.48. As with option 2, we recognise that some substantial changes may be required to the SO incentive regime to facilitate this expanded role for NGG during an

emergency. The impact on OM incentives and residual balancing incentives would need to be carefully considered.

3.49. The issue of ex-ante access to funding for NGG in its role as sole purchaser of non-domestic gas requires further consideration. With a frozen cash-out price under option 3, the costs of NGG's purchases would then need to be recovered from the industry over time, perhaps through an ex-post levy of some description.

Implications for the safety case

3.50. As the NEC would maintain the ability to authorise instruction of maximum flows from domestic sources under this option this may not require the NEC and/or NGG safety cases to change as much as under option 1. However, this needs further detailed consideration in consultation with the HSE.

4. The potential case for enhanced obligations

Chapter Summary

This chapter sets out our initial thinking on the potential case for enhanced obligations to achieve security of supply outcomes instead of, or as well as, sharper incentives on shippers. The reasons for including obligations as well as some of the issues we would need to consider if obligations were included are discussed.

Questions

Question 1: Are there any reasons why industry might not respond adequately to sharper price signals, thus delivering sub-optimal security of supply? How could these be overcome?
Question 2: What are the likely barriers to attracting gas imports during a GDE? Could these barriers be overcome?
Question 3: Do you think that the risks associated with sharpening price signals make it necessary to apply additional obligations on relevant parties?
Question 4: If enhanced obligations were applied, to whom should they be applied and why?
Question 5: How could obligations be designed and enforced?
Question 6: What are the risks and potential unintended consequences associated with placing enhanced obligations on parties to ensure security of supply? Can these be overcome?

4.1. As discussed previously, sharper price signals could enhance incentives to manage the risk of a gas emergency occurring. These risks may be managed through decisions to invest in new storage, interconnection or demand side response — each of which would enhance security of supply.

4.2. However, it is difficult to get the administrative Value of Lost Load (VoLL) — and hence, the incentives — right. Even if appropriate incentives were put in place, industry participants might not provide the optimum level of supply security, or the potential risks and unintended consequences may outweigh the benefits. In such circumstances, it might be appropriate to consider obligations as well as, or instead of, sharper incentives.

4.3. This chapter investigates the rationale for considering obligations and, at a high level, the associated design issues.

Industry may not be able to respond adequately to price signals

4.4. It is difficult to estimate a VoLL (or VoLLs) that accurately reflect gas users' value of security of supply (see the technical annex on VoLL for more discussion).

4.5. Even if VoLL were set at a level which provides the appropriate incentives for market participants to deliver an appropriate level of gas security of supply, there could be other reasons why security of supply issues remain.

4.6. Firstly, market participants might not respond appropriately to price signals due to the difficulty of accurately assessing the risk of a gas emergency occurring. The gas market is a complex global market, influenced not only by market factors but also the risk of accidents, bad weather, geopolitics and technical failure. Security of supply failures, almost by definition, will occur in extreme and unexpected circumstances. Risk management tools are often based on simplistic assumptions and do not cope well with low probability, high impact events. The limitations of such models were exposed during the 2008/9 financial crisis and although these events may well result in improved models, it is unlikely that risk management can ever be more than an inexact science.

4.7. Secondly, security of supply issues might remain if market participants are not individually held accountable for supply failures — that is, if the reputational risk is shared. In many markets, suppliers that fail to deliver on goods or services are likely to suffer reputational damage and risk losing customers. In the gas industry, it is not generally possible to accurately target outages at the customers of those suppliers that are short of gas. Where it is possible (for the largest industry and commercial customers), this is not generally the method by which curtailment order is decided.[24] Customers are usually disconnected in the order which best protects the safety of the system, usually size order. This creates the 'moral hazard' that reputational risk is effectively shared, unlike in other markets. As a result, suppliers might not have sufficient regard for security of supply. Some suppliers could decide not to take out additional insurance causing those that do to suffer a commercial disadvantage.

4.8. Thirdly, even where the risks of an emergency occurring can be assessed, there might be reasons why market participants will choose to take those risks at a cost to the market. For example, individual employees may be rewarded bonuses for supplying customers at minimum cost with minimal backup capacity. If they do not suffer a proportionate penalty for a security of supply problem, they may feel it is worthwhile to take greater risks. The low probability of these events may mean that the repercussions of individuals' actions might not be realised until they have left the company.

4.9. In this way, companies might consider that taking such a risk is worthwhile. The drive to increase earnings and the low probability of such an event occurring could provide sufficient incentive to take these risks, with a low probability of negative repercussions. Moreover, prudent suppliers may lose business to imprudent suppliers whose costs would be likely to be lower.

[24] Some large users have priority user status and will be disconnected last. Priority users are those for whom disconnection may lead to a loss of life (e.g. hospitals) or those for whom disconnection may lead to costs in excess of £50m.

4.10. Further, companies might expect the Government to intervene to prevent failure in extreme circumstances. This is particularly the case for large, strategically important companies that might believe they are 'too big to fail'. This is especially relevant for 'non-commercial risks', such as severe weather, large infrastructure disruptions and political risks. The perception that supply security has some public good characteristics might enhance this expectation.

Even if the response was adequate there might not be enough spot gas in an emergency

4.11. Even if prices were allowed to rise, there might be other barriers to attracting gas from international markets.

4.12. As highlighted in Project Discovery some steps have been, and continue to be, taken to increase harmonisation of gas and electricity markets across Europe, and Ofgem has led efforts to improve transparency of gas transmission and storage. However, there are a number of differences between GB markets and other markets that GB is connected to. There is a risk that change will not occur on a sufficient scale and/or sufficiently quickly to mitigate the security of supply risks caused by these heterogeneous arrangements.

4.13. Divergence in the arrangements for delivering security of supply in other connected markets can exacerbate the risks in GB. Where the security standards provided by public service obligations (PSOs) and strategic provision create stronger incentives than the price signals provided by the GB arrangements, gas may flow to continental markets rather than GB, and could in fact flow out of GB. While gas markets have generally worked well even in tight conditions observed this winter and last, there have been concerns (for example in January 2009 during the Russia/Ukraine gas crisis) that gas may be withdrawn from GB storage ahead of continental storage in a way that does not reflect price differentials.

4.14. Given the existence of longer-term contracts in Europe, third party access to pipelines and storage can also be more difficult in other European gas markets than in GB. Consequently, GB companies may find it more difficult to make forward arrangements to cover peak positions.

4.15. These factors may mean that strong commercial signals might not attract this gas an emergency. In some circumstances a liquid spot Liquid Natural Gas (LNG) market can provide the required price-responsive gas. However, there could be fewer spot cargoes available in tight conditions where long term option contracts are active.

4.16. In addition, the (lack of) availability of spot LNG cargoes, and the physical limitations imposed by transporting these stocks over large distances, could limit LNG responsiveness to short term price signals in GB.

Gas security of supply may have public good characteristics

4.17. In addition, some have argued that the provision of reliability has some of the characteristics of a public good. There might be additional benefits to society from having secure gas supplies that are not fully reflected in the market. Outages could damage business, reducing GB productivity. Insufficient security of gas supplies may deter investment in GB. Moreover, a gas outage causing local distribution zone (LDZ) isolation (a stage 4 emergency) would be a major civil emergency and it could take weeks to restore supplies to all consumers. Of course, superfluous supply security and 'gold plating' could be detrimental, disproportionately raising prices for both domestic and business consumers.

4.18. The risks and issues identified above may necessitate the use of further mechanisms to ensure an appropriate level of supply security is established and maintained. Obligations on suppliers or the SO could be used to address the issues identified above. These obligations would place an additional requirement on suppliers beyond the incentives provided by emergency imbalance prices.

4.19. Obligations may also be necessary to reinforce options considered in chapter 3 that may not create sufficiently strong incentives to avoid an emergency occurring in the first place (for example option 3 and/or socialised compensation costs).

Design issues with enhanced obligations

4.20. Relying solely on a price-based mechanism to achieve secure gas supplies may have a number of risks, as outlined above. If these risks are considered to be substantial it could be beneficial to include other mechanisms to promote security of supply. These could include supplier and/or SO obligations. However, obligations should not be considered an easy option. There are a number of questions around how they should be designed and there are risks associated with their introduction. Some of the issues that would need to be considered include:

- Should obligations be placed on shippers or suppliers?
- Should obligations be monitored ex post or ex ante?
- Should obligations concern storage or long term contracts?
- Should an obligation refer to a demand level in a given situation and, if so, what level (e.g. a 1 in 20 winter)?
- Should obligations be placed on only a sub set of shippers?
- What would be the implications for competition?
- What would be the implications for liquidity?
- How could obligations be designed to ensure that certain remedies are not given preferential treatment?
- How could obligations be designed to ensure that they are flexible enough to deal with changes in shippers' supply and demand portfolios?

4.21. While not the focus of this Initial Consultation, we are interested in the views of respondents regarding these issues.

5. Criteria for assessing options and next steps

Chapter Summary

This chapter sets out our initial thinking on how we will assess the costs and benefits of the various options for reform and our next steps in the consultation. Firstly, we highlight the criteria that we intend to consider as part of a cost and benefit analysis of the options and we invite stakeholders' views on these. We then present an indicative timeline for the process going forward.

Question

Question 1: Have we captured the feasible range of costs and benefits for inclusion in an impact assessment?

5.1. As discussed in this paper and in previous Ofgem publications — including Project Discovery — we have concerns that the current emergency arrangements are unlikely to be sufficiently effective in:

- minimising the likelihood of a gas emergency occurring; and
- minimising the duration and severity of a gas emergency, should one occur.

5.2. To address these concerns, we have identified a number of possible options to improve security of supply. Chapter 3 presents three options for reform and chapter 4 introduced the idea of placing additional enhanced obligations on market participants.

5.3. The optimal solution could be one of the options presented in chapter 3 alone; one of the options in chapter 3 combined with enhanced obligations; or enhanced obligations with minimal change to the UNC.

Criteria for assessing options

5.4. In considering the possible options we will undertake a full assessment of their costs and benefits. While the broad impacts have been discussed above, we will devote resources and time to quantifying and estimating these impacts to understand which of the options is likely to deliver the best outcomes for consumers.

5.5. While assessing these potential options for reform, we will also have regard to the applicable objectives of the Uniform Network Code (UNC), the Authority's wider statutory duties and our principal objective, which is to protect the interests of existing and future consumers in relation to gas conveyed through pipes. The interests of such consumers are their interests taken as a whole, including in the security of the supply of gas to them.

5.6. The sorts of factors that we will consider in undertaking this cost benefit analysis are presented in table 6 below.

Table 6: Indicative criteria for the assessment of potential reform options

Criteria	Key issues
Impact on consumers	▪ Impact of dynamic cash-out ▪ Impact on consumer bills ▪ Compensation arrangements ▪ Impact on vulnerable customers
Ensure a secure and reliable gas supply	▪ Probability of emergency occurring ▪ Relative duration and severity of emergency ▪ Incentives to balance
Impact on competition	▪ Liquidity ▪ Barriers to entry including credit requirements
Efficient balancing	▪ Cost allocation of emergency balancing actions ▪ Demand side response
Impact on investment	▪ Incentives for investment in capacity ▪ Reduction in diversity of purchasing strategies
Risks and unintended consequences	▪ Financial distress for shippers ▪ Potential for gaming ▪ System operator incentives ▪ Impact on electricity market
Health and safety	▪ Network Emergency Co-ordinator safety case ▪ Other safety cases
Other impacts, costs and benefits	▪ Implementation costs ▪ Ongoing administrative costs

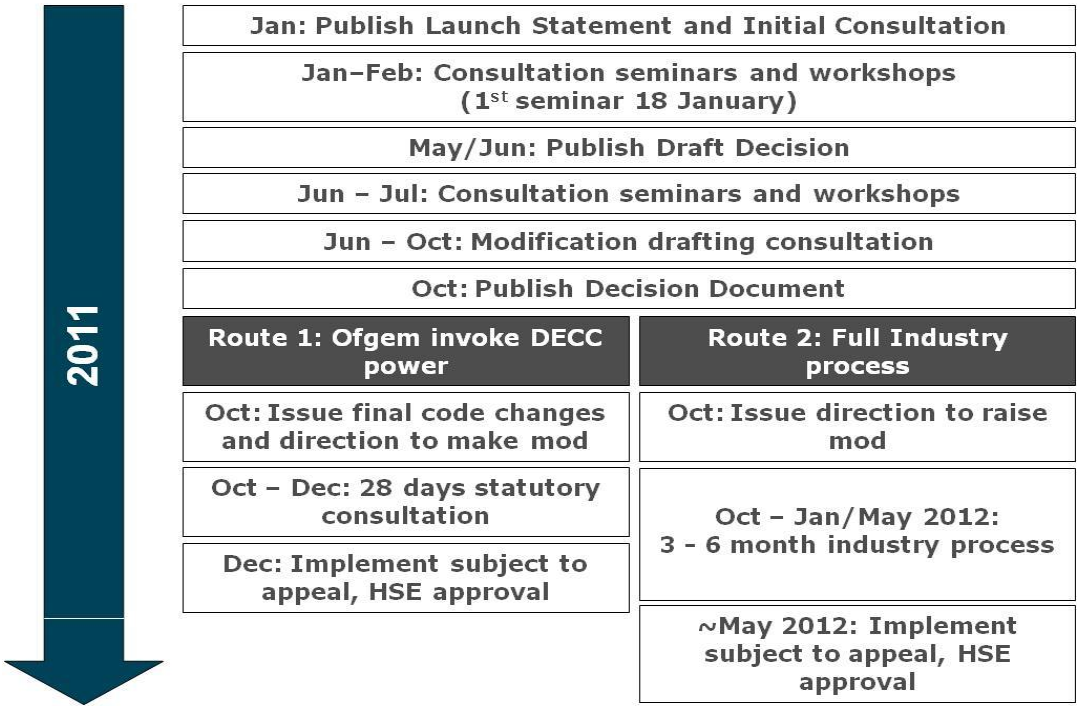
Next steps

5.7. The indicative timetable for the Gas SCR is shown in figure 1 below. There are two potential routes that our consultation process could follow:

- Route 1 — if the new statutory powers in the December Energy Bill receive royal assent before summer 2011, Ofgem would be able to direct NGG to make modifications to the UNC following the Gas SCR consultation, in time for winter 2011-2012 (subject to implementation timeframes).
- Route 2 —if the new statutory powers do not receive royal assent before summer 2011 we would follow the SCR process which allows us to direct NGG to raise a code modification proposal reflecting our conclusions. The proposal would then follow the industry process (through to an Authority decision), and we would expect reforms to be in place around spring 2012.

5.8. Following consultation, if we decide that obligations are needed then the relevant licence conditions should be in place for December 2011, but we would not expect obligations to become enforceable until winter 2012-13.

Figure 1: Indicative timetable for the Gas SCR



Technical annex: The value of lost load (VoLL)

Summary

Each of the options discussed in chapter 3 incorporate a value of lost load (VoLL) to signal customers' willingness to pay for gas (and cap cash-out) and to set the amount of compensation for interrupted firm customers. This annex discusses the rationale for using VoLL and possible methods for estimating VoLL. This is followed by a discussion of how compensation could be paid for firm load disconnection and the corresponding impacts on incentives.

Questions

Question 1: Would it be appropriate to have multiple administrative VoLL settings for different customer groups? Why/ why not? How are VoLL estimates likely to vary between customer groups?
Question 2: For a customer group, how should we determine where in the range of estimates (i.e. $VoLL_{max}$, $VoLL_{average}$ or $VoLL_{min}$) we should apply a single administrative VoLL setting?
Question 3: Should the compensation payments to disconnected firm customers (based on VoLL) change with the duration of the interruption and the season in which the interruption occurs?
Question 4: What are the advantages and disadvantages of various methods for estimating VoLL?
Question 5: What sort of compensation arrangements should be used to apportion the costs of compensation between shippers?

1.1. A common element of the options proposed in chapter 3 is the inclusion of an administrative value of lost load (VoLL)[25] to set the maximum cash-out price and the level of compensation for firm customers.

1.2. As well as setting the level of compensation, the VoLL will reflect the value that users attribute to gas security of supply. In this way, an administrative VoLL could serve as a signal to National Grid Gas (NGG) that firm load interruption has become economic. In addition, it will mean that firm customers are not disconnected at a price below their willingness to pay for continued supply (where there is gas available at or below this price).

[25] We envisage that VoLL would be expressed in terms of pence per therm. However, in practice, average historic use could be used to convert this into a daily amount for compensation payments for each class of customer.

Establishing the value of lost load (VoLL) for firm customers

1.3. VoLL is difficult to estimate. It is important to note that if all gas users were able to respond instantaneously to price changes by changing their demand accordingly, this would allow all individuals to reveal their VoLL through their actions. Further, if all users were able to enter into interruptible contracts the case for an administrative VoLL would be weakened. However, few gas users are able to respond quickly to price changes and few users are on (or are able to be on) interruptible contracts. Hence, use of an administrative VoLL may be appropriate.

1.4. Capping cash-out prices at VoLL — rather than allowing them to be set by the market — may also be important. If there were no cap, prices could increase to a point well above users' maximum willingness to pay, making users worse off than if they were disconnected (i.e. their bills would be greater than needed). Further, capping cash-out will ensure that prices do not spiral out of control in an emergency to the detriment of short shippers.

1.5. The theory of VoLL and methodologies used to set VoLL are discussed below.

Theoretical basis for VoLL

1.6. VoLL can be defined as the price that consumers would be willing to pay to maintain gas supply. In theory, if gas prices increased above this level, consumers would rather have their supply curtailed or disconnected than receive an additional unit of gas. Typically these preferences will be context and customer specific.

1.7. In theory, the 'optimal' level of security of supply would be revealed in a world with ubiquitous smart meters and time-of-use tariffs — in which all consumers had both the means and the ability to express their preferences quickly. Individual consumers could then self-disconnect once the gas price exceeded their individual VoLL, or sign an interruptible contract that achieved an equivalent outcome. From a pure efficiency perspective (i.e. leaving aside issues of fuel poverty), if all consumers could express their preferences in this way the optimal level of security of supply could be achieved.

1.8. DECC plans to mandate the rollout of smart meters to all domestic households over a number of years. In the meantime relatively few customers currently have the means to reduce or cease consumption when prices are high. Therefore, in the context of the options presented in chapter 3, an administrative VoLL would be required to signal the value of security of supply for consumers on firm contracts. Further, the need to estimate an administrative level(s) of VoLL could arguably remain even in a world with ubiquitous smart metering technology and time-of-use tariffs. This is because there are still likely to be some customers who would prefer to sign a firm rather than an interruptible contract. Also, there could be barriers to widespread adoption of such contracts — for example, if transaction costs were high or if some customers could not be disconnected individually.

1.9. Individual preferences and context create an inherent difficulty in calculating a single administrative VoLL for a group of consumers. For industrial and commercial (I&C) customers we could use estimates of the cost of lost output as a result of a gas outage to value gas security of supply, for example. For domestic customers however, estimating VoLL becomes more difficult as there is often no measureable or tangible cost of curtailment as domestic consumers do not produce 'outputs' in the same way as business or I&C customers. Additionally, an individual's VoLL will vary depending upon the weather, timing and duration of the outage, and their personal preferences and circumstances. Therefore, establishing an appropriate VoLL (or VoLLs) — to inform decisions about whether to purchase additional gas on behalf of all consumers (or customer groups) in an emergency — is particularly challenging.

VoLL may vary between customer groups

1.10. VoLL is likely to vary both between, and within, domestic and I&C customer groups. The difference in VoLL estimates for domestic customers relative to that for I&C customers could be significant due to factors such as:

- differences in average consumption
- differences in intangible costs such as the 'hassle factor'.

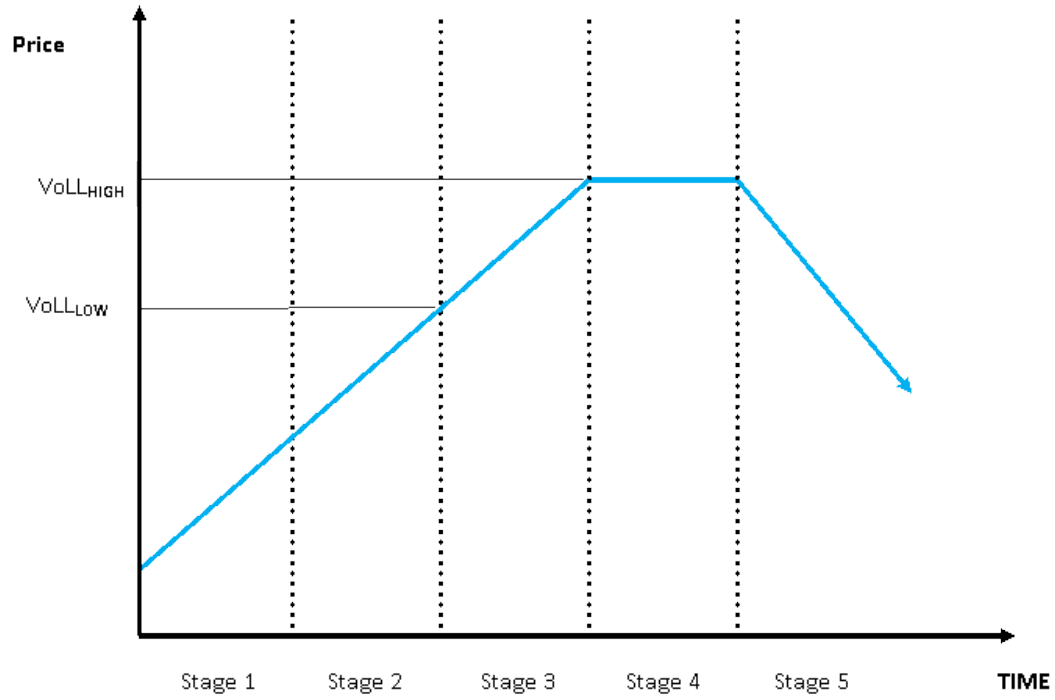
1.11. This raises the question of whether it may be appropriate to have more than one administrative VoLL setting in place. For example, we could have one administrative VoLL for large daily-metered firm customers, and another for firm non-daily metered domestic (local distribution zone, or LDZ) customers. This is mapped across the five stages of an emergency in figure 2 below.

1.12. In this way, VoLLs could be used to signal to NGG when certain customer groups should be disconnected — customers with the lowest VoLL could be disconnected first and customers with the highest VoLL could be disconnected last.

1.13. Using VoLLs to prioritise disconnections could reduce the costs of a gas emergency and would likely be the most efficient way in which to prioritise disconnections. However, there may be practical reasons that mean that other considerations are more important in choosing the order of disconnection — including safety considerations and the location of customers, for example.

1.14. On the other hand, given the difficulty inherent in estimating VoLL, there could be an argument for setting only one VoLL for all types of gas customers. This could especially be the case if VoLLs could not be used to determine when different customer groups should be disconnected. In addition, I&C customers may have widely varying VoLLs (as some customers will be more reliant on gas than others). If this were the case there could be little benefit from setting one VoLL for I&C customers and one VoLL for domestic customers. There could also be some interesting knock-on effects for the electricity industry, especially for CCGTs.

Figure 2: Dynamic cash-out with multiple administrative VoLL settings



Setting VoLL for a particular customer group

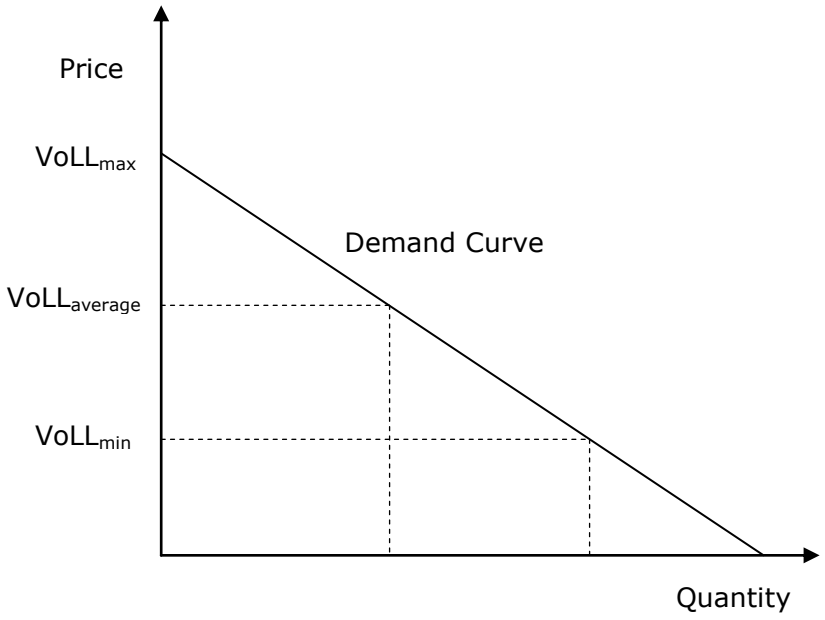
1.15. Even when setting an administrative VoLL for a group of customers there is the issue of how to reflect the collective preferences of the individuals within that group. For example, an administrative VoLL for all domestic customers could theoretically be set at three different levels:

- the demand-weighted average (mean, median, mode) of all domestic consumer preferences ('VoLL$_{average}$');
- the VoLL of the consumer with the lowest VoLL ('VoLL$_{min}$'); or
- the VoLL of the consumer with the highest VoLL ('VoLL$_{max}$').

1.16. This is illustrated in figure 3 below.[26]

[26] In this example we have set VoLL$_{min}$ greater than zero on the assumption that we are only representing gas customers' preferences.

Figure 3: Demand for gas and corresponding VoLL estimates



1.17. Using VoLL$_{min}$ is unlikely to bring about the most efficient outcomes. If VoLL was set at VoLL$_{min}$, all but those who have the lowest VoLL would face a curtailed supply below their individual preference. This is likely to represent a sub-optimal level of security of supply from society's aggregated perspective. In addition, setting VoLL at VoLL$_{min}$ would likely dampen the market for interruptible contracts and could increase the need for customers to invest in alternative supplies, which could be more costly than providing more reliable supply across the market. The only option for customers with a VoLL above VoLL$_{min}$ would be to invest in alternative energy sources to ensure they can meet their energy requirements even in the event of a disconnection.

1.18. An average VoLL would be, by definition, the most representative of the group as a whole. However, customers with a VoLL lower than the VoLL$_{average}$ would be paying for firm load at a value higher than their individual preference. Conversely, all those with a VoLL above the VoLL$_{average}$ would have their load curtailed below their willingness to pay. In this way, only those with VoLL exactly equal to VoLL$_{average}$ would be completely satisfied.

1.19. To the extent that there is a market for interruptible contracts, customers with a VoLL below VoLL$_{average}$ could enter into contracts for interruptible supply. In addition (as is the case with VoLL$_{min}$), those with a VoLL above VoLL$_{average}$ could invest in substitutes to ensure they can meet their energy requirements even in the event of a disconnection. In this way, VoLL$_{average}$ allows for other markets to develop to allow for security of supply to vary across customers according to their individual levels of VoLL.

1.20. At the other end of the spectrum, if VoLL was set at $VoLL_{max}$ the vast majority of consumers would remain connected at a price they are no longer willing to pay. While this would deliver the highest level of security of supply compared to other options, this method is likely to be the most expensive (compared to $VoLL_{average}$ and $VoLL_{min}$) as the theoretical $VoLL_{max}$ for all users is likely to be very high. This could lead to higher risk of financial distress for shippers/suppliers if an emergency were to occur. In addition, there is likely to be a flow on effect for customer bills. However, using $VoLL_{max}$ would have the strongest incentives for demand side response and price discovery through interruptible contracts.

1.21. The standard example used for an individual/organisation with a very high VoLL is a hospital, for which the loss of firm supply could have life threatening consequences. For this reason a hospital is likely to have back-up generation that could be used to avoid involuntary curtailment (or extreme high prices). The existence of back-up generation and the varying motives for its use complicates the associated estimates of VoLL for these customers.

1.22. In addition to creating the greatest incentive to provide security of supply, the $VoLL_{max}$ option creates an opportunity for price discovery through the use of interruptible contracts. If prices were allowed to rise to $VoLL_{max}$, this would provide an opportunity for all consumers with a lower VoLL to enter into interruptible contracts such that they only receive a firm connection up to their individual VoLL. The exercise of such interruptible contracts in an emergency would free-up additional supply for those consumers with a higher VoLL.

1.23. Importantly, setting an administrative VoLL at or close to $VoLL_{max}$ would still appear compatible with the introduction of smart meters and time-of-use tariffs. That is, the rollout of smart meters to all domestic households and the introduction of time-of-use tariffs should empower consumers to act on the incentives created by the gas emergency arrangements.

1.24. However, to the extent that there are barriers to entering into interruptible contracts — such as high transaction costs — there could be an argument for setting VoLL closer to $VoLL_{average}$. This would still allow some scope for interruptible contracts for users with lower VoLLs whilst providing signals to users with high VoLLs to invest in back-up generation (to the extent it is economic). It would also be less costly for consumers as a whole than a situation where VoLL was set at $VoLL_{max}$.

1.25. Another issue on which we would appreciate comment is whether VoLL should be implemented slowly over time. This could include introducing a VoLL closer to $VoLL_{min}$ in earlier years with this ramping up to $VoLL_{average}$ and $VoLL_{max}$ over time. The justification for doing this would be to allow the market to adjust to higher gas prices over time. This would allow market participants to progressively make the necessary investments to increase security of supply. It would also allow for price discovery with interruptible contracts being extended to more customers as VoLL was increased. At the other end of the spectrum, it could encourage users with very high VoLLs to invest in their own back-up generation as insurance against potential gas emergencies. It would also reduce the risk of financial distress for shippers in the short term due to a failure to respond quickly enough to sharpened price signals.

Season and duration are likely to matter

1.26. In addition to VoLLs potentially varying across and within customer groups, VoLLs are also likely to vary with season and the duration of the disruption.

1.27. Theoretically, the first day of interruption is likely to be the most costly for domestic consumers. It is reasonable to expect that a household, without significant financial constraints, would be able to adapt their behaviour such that the impact of an involuntary curtailment decreased with time. In practice, this might involve purchasing an electric heater or making alternative cooking arrangements. This is also likely to be true for I&C customers, who may be able to change their energy use patterns and re-optimise production in periods of extended interruption, thus reducing their losses. On the other hand, for some customers there may be a 'tipping point' in outage duration, after which point they need to invest or spend heavily to maintain or restore their business or lifestyle. For example, customers with a high reliance on gas may hire or even purchase back-up generation to insure against disconnection.

1.28. To deal with these issues it may be appropriate to alter the compensation paid to disconnected firm customers with the duration of the interruption. This would have to be weighed up against the need to provide very strong and continuous signals to suppliers to restore supplies in a timely fashion.

1.29. An additional important variable that will impact VoLL is seasonality. The potential cost of involuntary curtailment in winter is likely to be higher than in summer, particularly for domestic customers reliant on gas heating. It may be inappropriate therefore, for NGG and/or shippers to be incentivised to purchase gas up to a VoLL applicable to a winter period, if the emergency were to occur in the summer months. To combat these seasonal differences, VoLL could be set dependent on the season, with a higher VoLL in winter than in summer. Alternatively, VoLL could vary dynamically across the year, dependent on temperature.

Methods for estimating VoLL

1.30. A number of studies have investigated methods for estimating VoLL, mainly for electricity.[27] In addition, a number of methods exist in other areas of non-market valuation which could be useful for estimating VoLL. These methods can generally be

[27] For example, see McLennan Magasanik Associates (MMA), STTM Market Settings Analysis, Report to VENCorp, 10 June 2009, http://www.ofgem.gov.uk/Networks/GasDistr/GDPCR7-13/Documents1/GDPCR%20consumer%20research%20report.pdf, http://www.dspace.cam.ac.uk/bitstream/1810/194716/1/0736%26EPRG0713.pdf, http://www.carinthia.ihs.ac.at/studien/WorkingPaper_Reliablility.pdf and http://www.transpower.co.nz/f1175,28006890/assessing-voll-feb-09.pdf.

broken into two categories: revealed preference methods; and stated preference methods. These approaches are discussed below.

Revealed preference methods

1.31. Revealed preference methods aim to estimate consumers' willingness to pay (or accept, in the case of compensation) from observed evidence of how consumers behave in the face of real choices in existing markets. They usually rely on data from actual markets to infer values for related non-market goods or services. Common examples of revealed preference methods that could be applied to estimate VoLL include averting behaviour studies, output at risk and derived cost from related markets.

Averting behaviour and output at risk

1.32. Averting behaviour studies investigate what actions people have to undertake either to avoid an event or to cope with an event occurring (such as having your gas supply interrupted). Using this method would involve looking at what sorts of costs users would incur if their gas supply were to be disconnected. For domestic customers, for example, costs could include:

- the purchase of alternative heating or cooking appliances
- having to buy meals instead of cooking at home
- having to stay in alternative accommodation.

1.33. For I&C customers, the 'averting behaviour' costs of a gas disconnection could include investment in back-up energy sources and lost output, for example. The value of lost output could be estimated using the output at risk approach.

1.34. The output at risk approach considers the gas use and outputs of gas-intensive industry sectors. By comparing this gas use to a measure of output, for example Gross Value Added, the economic loss or opportunity cost of curtailment for I&C customers can be estimated. Preliminary analysis using output at risk has derived estimates of VoLL ranging between £5 and £15 per therm.[28]

1.35. For averting behaviour studies, this data could be collected via surveys and focus groups. In the case of I&C customers, this information could be supplemented with data from gas dependent users as an input to production and the value of outputs produced by these users. Similar approaches could be used for output at risk estimates.

[28] Using industry gas consumption and output data from Ilex Energy Consulting, 2006, *Strategic Storage and Other Options for Long-Term Gas Security*, report to DTI, April.

Derived cost

1.36. Derived cost methodologies could be used to estimate VoLL in two ways:

- by using data from interruptible contract bids to infer the value of gas security of supply for that customer
- by using new entry costs for flexible capacity to infer a value of security of supply for the market as a whole.

1.37. Interruptible contract auctions are entered into by customers who are willing to curtail demand for a given price. These prices can give an insight into the value that I&C customers in particular place on lost load. However, this approach would require substantial data from auctions in order to estimate VoLL with any level of reliability. At present, there is little data from which to accurately predict VoLL using this methodology alone. However, early analysis using data from interruptible contract auctions has provided estimates of VoLL up to around £7 per therm. We note that more data should become available as interruptible contract markets develop.

1.38. The rationale for using new entry costs for flexible capacity to value security of supply is that any market price cap or VoLL setting would have an impact on investment in flexible capacity such as gas storage, LNG facilities or linepack. To generate estimates using this method we would consider the investment and operating costs of these facilities, then calculate the price that would be required (based on various assumptions) to make the investment viable. We have undertaken some preliminarily analysis with reference to larger LNG storages to estimate VoLL using this method.

Stated preference methods

1.39. Stated preference methods are based on what people say rather than what they do — peoples' preferences are 'stated'. The benefit of stated preference methods is that they can be applied in almost any valuation context. Consequently they can be used where there is insufficient data to use revealed preference methods.

1.40. The two main stated preference methods are contingent valuation (CV) and choice modelling (CM).

Contingent Valuation (CV)

1.41. In CV respondents are asked direct questions about their maximum willingness to pay (or accept) for a good or service (or losing a good or service). The context is a hypothetical but plausible scenario which includes a description of the relevant good or service and the proposed payment vehicle (such as a tax, donation or rebate).

1.42. CV has the advantage that it can be tailored to suit almost any circumstance for estimating willingness to pay or willingness to accept. Hence, it could be applied to many different customer groups to estimate multiple VoLLs. However, CV is often

susceptible to a number of shortcomings (partly due to its hypothetical survey nature) which can undermine the reliability of CV estimates.

1.43. In 2007, Ofgem commissioned some CV research into customer awareness and satisfaction with the Gas Distribution Network (GDN) quality of service regulations.29 This research informed the compensation arrangements for the first Gas Distribution Price Control Review which came into effect in 2007. From this research the average level of compensation each customer expected for each 24 hours of unplanned interruption was around £55 for I&C customers and £34 for domestic customers. This would equate to approximately £2 per therm for I&C customers and around £18 per therm for domestic customers.

Choice Modelling (CM)

1.44. CM focuses instead on rankings or ratings of alternatives. CM experiments usually present respondents with a number of options made up of varying levels of characteristics and ask respondents to select the option they prefer (see figure 4 below). This is done repeatedly to infer respondent's preferences for the alternatives presented. Based on random utility theory, respondent's preferences are used to infer values for each of the characteristics presented. Once levels of the characteristics are known, these can be substituted into the model to determine willingness to pay or accept levels.

1.45. CM surveys can avoid many of the shortcomings inherent in CV exercises. In CM exercises, respondents are presented with more tangible examples that are easier to understand and assess, making them easier for respondents than CV exercises. In addition, as it is a repeated process which does not ask for compensation estimates directly, respondents are less able to bias outcomes as compared to CV exercises. However, as CM relies heavily on proper design of the survey and modelling of the results, it is more difficult to undertake.

[29] See http://www.ofgem.gov.uk/Networks/GasDistr/GDPCR7-13/Documents1/GDPCR%20consumer%20research%20report.pdf

Figure 4: Example of a choice modelling question — values are illustrative only

Consider the four options below.

	Option A	Option B	Option C	Option D
Duration of gas disconnection	3 days	6 days	15 days	30 days
Number of disconnections per year	2	1	1	1
Time of year	Winter	Summer	Winter	Winter
Compensation (discount on next bill)	£100	£100	£200	£400

What is your preferred option? _____

Application of VoLL

1.46. This section considers the implications of using VoLL as compensation and the different options for how to fund any compensation liability.

VoLL as compensation for firm load disconnection

1.47. One of our key concerns with the current arrangements is the lack of compensation for firm gas customers disconnected in an emergency. Currently compensation arrangements exist for a number of parties in an emergency. Shippers are able to claim up to the opportunity cost of delivering gas to the system in excess of their off-takes.[30] Suppliers whose customers are curtailed are compensated for the losses they incur as a consequence of their customers not paying for their gas supply. This compensation takes place for the first day of an emergency through the

[30] Post Emergency Claim arrangements are set out in section Q of the UNC; see http://www.gasgovernance.co.uk/UNC. The Guidelines for economic assessment of post emergency claims are available on the Ofgem website; see http://www.ofgem.gov.uk/Markets/WhlMkts/CompandEff/GasEmerg/Pages/GasEmerg.aspx

emergency curtailment quantity arrangements.[31] However, if firm load is disconnected as a consequence of a gas deficit emergency, the affected customers will not be compensated.

1.48. Customers on interruptible contracts receive a discount for being willing to be interrupted. In effect this means firm customers pay a premium for a firm service. In exchange they receive a lower probability of interruption but this may not be commensurate with their expectation of the firmness of their supplies. Currently interruption is a 'free option' to maintain system integrity in a gas deficit emergency. However, the costs to consumers could be significant and it can be argued that consumers should be compensated for this at VoLL.

A potential framework for compensation payments

1.49. Compensation could be recovered from short shippers or smeared across the industry. Targeting the costs of failing to maintain supplies to firm consumers on short shippers would provide strong incentives on suppliers not only during an emergency but also to avoid being responsible for an emergency being declared.

1.50. In Project Discovery we noted the moral hazard caused by the potential mismatch between the consumers interrupted and short suppliers. In particular, as customers are generally interrupted on the basis of maintaining a safe network, it is rare that the customers that are interrupted are also the customers of those suppliers that have caused the interruption. Hence, there is little reputational risk from being short. If compensation were to be introduced this could address the moral hazard issue but this would depend on how compensation was allocated to shippers/suppliers.

1.51. The moral hazard is likely to be more of an issue where costs are not targeted at those responsible for them. In previous discussions of dynamic cash-out[32] industry participants expressed concerns that targeting costs in an emergency would be inappropriate as shippers would be unable to react to incentives. This has been used as a justification for not pursuing a more dynamic form of cash-out. If this rationale were relevant here, it may be considered appropriate for the compensation costs to be spread across all shippers by throughput.

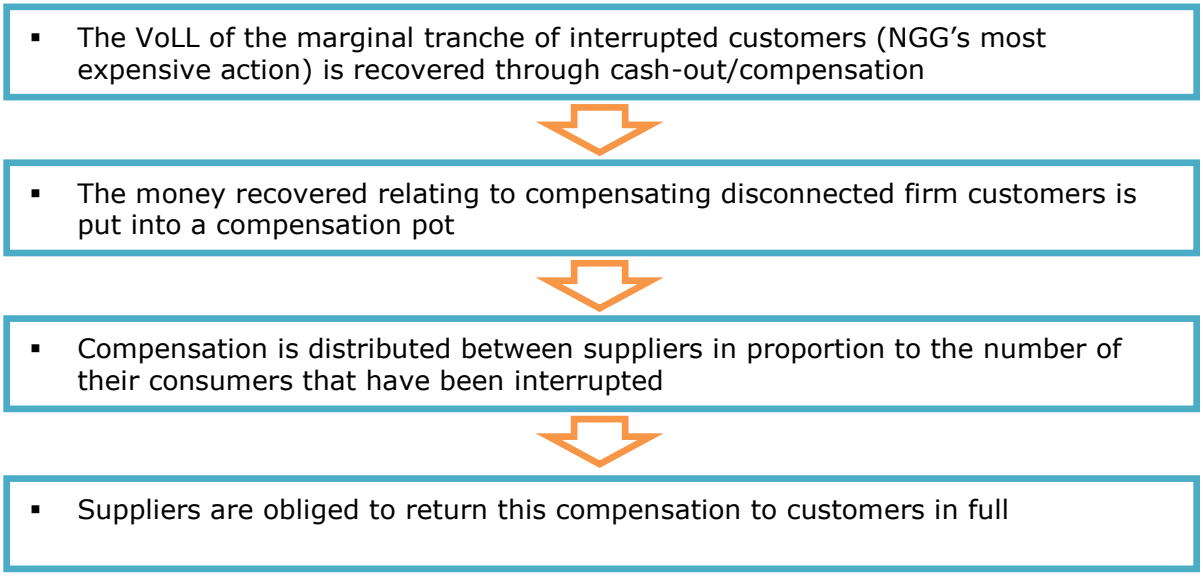
[31] ECQ arrangements are set out in section Q of the UNC; see http://www.gasgovernance.co.uk/UNC

[32] See appendix 3 for a summary of key modification proposals that have been raised in the past.

Apportioning costs

1.52. On the first day of an emergency, it is fairly straightforward to envisage a mechanism whereby costs could be targeted effectively or socialised. The mechanism described below could provide this outcome.

Figure 5: Potential compensation mechanism for interrupted firm customers



1.53. Following the first day of an emergency, targeting the costs of compensation becomes more difficult. There may need to be differentiation between cost recovery and cost targeting on day 1 of an emergency/interruption, and subsequent days of an emergency/interruption.[33]

Cost targeting on shippers short on first day of interruption

1.54. Shippers that were short on day one of an emergency could be held responsible for compensating interrupted firm customers for the duration of their interruption. These shippers could be required to pay into the compensation pot to cover compensation at the VoLL of their share of the affected consumers until their supplies were reinstated.

[33] We will need to consider issues around liability in insolvency and interactions with the supplier of last resort and force majeure arrangements.

1.55. Where additional interruptions take place on subsequent days, costs of interruption could either be applied to those shippers whose shortages caused the first outage or to those shippers who were short on the day of curtailment of the given group of consumers.

1.56. The volumes that interrupted customers were expected to consume could be deducted from shippers off-takes that are subject to imbalance charges. Shippers could continue to be charged for their imbalances on their remaining portfolio. The relevant shippers could then pay their share of compensation directly into the compensation pot.

1.57. These arrangements could be consistent with the approach taken in option 1 above.

Socialising costs

1.58. It may be considered that compensation cost targeting is not appropriate in an emergency. In this case, the costs could be smeared across all shippers by throughput. This approach would be consistent with option 3 and possibly option 2 from chapter 3 as shippers would not be able to react to their imbalance positions under these models. This would reduce concerns about shippers having a higher risk of financial distress but would reinforce concerns with moral hazard as the incentives to avoid an emergency would be reduced.

1.59. A cost smearing approach could be adopted for the duration of the emergency or costs could be targeted on the first day and socialised on following days. This approach could be taken to overcome the difficulties associated with allocating costs in subsequent days. However, if the emergency lasts a number of days, or even weeks, cost targeting on the first day of interruption might be a relatively small proportion of the overall costs, dampening the incentive to avoid an emergency occurring in the first place.

Appendices

Index

Appendix 1 - Consultation Response and Questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by 22 February 2011 and should be sent to: gb.markets@ofgem.gov.uk

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Next steps: We invite responses to this consultation and will now be holding a number of stakeholder events. Any questions on this document should, in the first instance, be directed to:

Peter Sherry, Senior Economist
Ofgem, 9 Millbank, London, SW1P 3GE
Tel: 020 7901 7000
Email: gb.markets@ofgem.gov.uk

CHAPTER 1

There are no questions associated with chapter 1.

CHAPTER 2

There are no questions associated with chapter 2.

CHAPTER 3

Question 1: Have we captured the appropriate range of options for reform of the gas emergency arrangements? Are there other options that should be considered?

Question 2: Of the three options presented, which do you prefer? Why?

Question 3: What is the appropriate role for NGG in an emergency?

Question 4: Do you have any comments on our initial assessment of the pros and cons associated with each option?

Question 5: Are there any safety case implications associated with each option?

Question 6: What benefits would dynamic cash-out bring relative to the post emergency claims arrangements?

CHAPTER 4

Question 1: Are there any reasons why industry might not respond adequately to sharper price signals, thus delivering sub-optimal security of supply? How could these be overcome?

Question 2: What are the likely barriers to attracting gas imports during a GDE? Could these barriers be overcome?

Question 3: Do you think that the risks associated with sharpening price signals make it necessary to apply additional obligations on relevant parties?

Question 4: If enhanced obligations were applied, to whom should they be applied and why?

Question 5: How could obligations be designed and enforced?

Question 6: What are the risks and potential unintended consequences associated with placing enhanced obligations on parties to ensure security of supply? Can these be overcome?

CHAPTER 5

Question 1: Have we captured the feasible range of costs and benefits for inclusion in an impact assessment?

TECHNICAL ANNEX

Question 1: Would it be appropriate to have multiple administrative VoLL settings for different customer groups? Why/ why not? How are VoLL estimates likely to vary between customer groups?

Question 2: For a customer group, how should we determine where in the range of estimates (i.e. VoLLmax, VoLLaverage or VoLLmin) we should apply a single administrative VoLL setting?

Question 3: Should the compensation payments to disconnected firm customers (based on VoLL) change with the duration of the interruption and the season in which the interruption occurs?

Question 4: What are the advantages and disadvantages of various methods for estimating VoLL?

Question 5: What sort of compensation arrangements should be used to apportion the costs of compensation between shippers?

Appendix 2 – Current Arrangements

Legislation

1.7. There are two main pieces of legislation that provide the framework under which the current gas emergency arrangements are set. These are the Gas Act of 1986 and the Gas Safety (Management) Regulations of 1996.

The Gas Act 1986 (The Gas Act)

1.8. The Gas Act is a piece of primary legislation that prohibits persons from engaging in specified activities unless authorised to do so by a licence. The Authority has the power to grant licences to persons to carry out the activities specified in the licence. The Authority has the power to require these licensees to meet a number of obligations.

1.9. The Gas Act also sets out the powers of the Authority in carrying out its functions under Part I of the Gas Act. The Authority's principal objective in relation to the Gas Act is to protect the interests of existing and future consumers in relation to gas conveyed through pipes. The interests of such consumers are their interests taken as a whole, including their interests in the reduction of greenhouse gases and in the security of the supply of gas to them. The Authority's powers and duties are set out in appendix 4.

1.10. Section 4A of the Gas Act requires the Authority to consult the Health and Safety Executive about all gas safety issues which may be relevant to the carrying out of its functions under Part I of the Gas Act.

The Gas Safety (Management) Regulations 1996 (GS(M)R)

1.11. The GS(M)R are regulations made by the Secretary of State under powers conferred on him by the Health and Safety at Work Act 1974. These regulations set out the requirement for a National Emergency Coordinator (NEC) for any network which includes more than one gas transporter (as is the case for GB).

1.12. The regulations require each gas transporter to prepare a safety case which must be approved by the HSE. This requires a safety case to be published by NGG as the national gas transporter, by the gas distribution network owners and by the NEC. Those safety cases must demonstrate the method by which the holder will ensure the safe operation of its network. In the case of the NEC, the safety case includes details of the procedures that the NEC has established to monitor the situation throughout a supply emergency and for co-ordinating actions across affected parts of the gas network. It also sets out the stages of a gas deficit emergency that the NEC may declare in order to minimise the risk or impact of a supply emergency.

1.13. The GS(M)R also requires the holders of a licence granted under Section 7A of the Gas Act (gas shippers and gas suppliers) to co-operate as far as is necessary with gas transporters and with the NEC, enabling them to comply with their obligations under the GS(M)R. This may include complying with a direction from the NEC not to consume gas for a specified period.

1.14. The Gas Act requires parties involved in the gas industry to be licensed by the Authority. As license holders, these parties are required to comply with a number of licence conditions. In addition, licensees are required to adhere to the legal and contractual framework that is set out in the Uniform Network Code (UNC).

Gas Licences

1.15. All parties licensed by the Authority to partake in gas industry activities are required to meet certain licence conditions. The licence conditions for the gas industry are categorised into transporter, shipper, supplier and interconnector licence conditions. The licence conditions are separated into standard licence conditions which apply to all licensees of one type (e.g. transporters) and special licence conditions which apply only to a specific party (e.g. NGG).

Gas Transporters Licence

1.16. A party engaged in the conveyance of gas through pipes is required to hold a gas transporters licence granted under Section 7 of the Gas Act. In the case of the Gas Transporters Licence, there are a number of standard special licence conditions (SSCs) that apply to a select group of gas transporters. SSC A9 and SSC A11 contain standards that are designed to reduce the risk of a GDE occurring and the scale of a GDE in the event that it is announced.

SSC A9

1.17. SSC A9 is targeted at avoiding a GDE arising. The condition contains a 1 in 20 planning standard applying to gas demand of all non-interruptible customers. The transporter is required to provide sufficient transportation capacity to meet the peak demand likely to be exceeded (whether on one or more days) only in one year out of 20 (a 1 in 20 year).

SSC A11

1.18. Under SSC A11 of the gas transporter licence, gas transporters have an obligation to put reasonable incentives on suppliers to meet the demands of their domestic customers in a (a) one in 50 year; (b) one in 50 winter; (c) one in 20 year peak day. Cash-out charges are an example of these incentives.

1.19. SSC A11 also requires that the licensee establishes transportation arrangements that facilitate the achievement of the following objectives:

(a) the efficient and economic operation of the pipe-line system to which this licence relates;

(b) so far as is consistent with sub-paragraph (a), the 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;

(c) so far as is consistent with sub-paragraphs (a) and (b), the efficient discharge of the licensee's obligations under this licence;

(d) so far as is consistent with sub-paragraphs (a) to (c) the securing of effective competition:

(i) between relevant shippers;
(ii) between relevant suppliers; and/or
(iii) between distribution network operators (who have entered into transportation arrangements with other relevant gas transporters) and relevant shippers;

(e) so far as is consistent with sub–paragraphs (a) to (d), the provision of reasonable economic incentives for relevant suppliers to secure that the domestic customer supply security standards (within the meaning of paragraph 4 of standard condition 32A (Security of Supply – Domestic Customers) of the standard conditions of Gas Suppliers' licences) are satisfied as respects the availability of gas to their domestic customers; and

(f) so far as is consistent with sub–paragraphs (a) to (e), the promotion of efficiency in the implementation and administration of the network code and/or the uniform network code.

1.20. In addition, SSC A11 requires that the licensee establishes a Network Code and UNC setting out its transportation arrangements – in effect the contract between the gas transporter and the users of its pipeline system.

1.21. Those arrangements must facilitate the achievement of a number of objectives, relating to the efficient and economic operation and use of the system and effective competition between parties involved in its use. This is consistent with the gas transporters duties under Section 9 of the Gas Act.

Gas Shipper Standard Condition 6

1.22. Gas shippers are required under Standard Condition 6 of the shipper licence to comply with security standards. This condition also places an obligation on them to ensure off-take is possible so as to meet demand likely to be exceeded (whether on one or more days) only in 1 year out of 20.

UNC Section Q (the emergency arrangements)

1.23. Section Q of the UNC is the main framework which sets out the arrangements that will be in place in the event of declaration of a gas emergency. This includes the conditions under which an emergency will be declared, the cash-out arrangements and the post emergency claims (PEC) arrangements.

Gas supply emergency

1.24. Section Q set out the conditions under which a gas emergency shall be declared by NGG[34].

1.25. A gas supply emergency is defined in the UNC as the occurrence of an event or series of events that results in, or gives rise to a significant risk of, a loss of pressure in the gas system which may lead to a supply emergency. When a potential or actual supply emergency has been identified by the primary transporter the NEC will be notified.

1.26. In section Q, two main types of Gas Supply Emergency are defined. These are:

- A Gas Deficit Emergency (GDE)
- A Critical Transportation Constraint Emergency
-

1.27. A GDE is the focus of this Gas SCR and is defined as a gas supply emergency arising as a result of:

- insufficient deliveries of gas to meet required demand of the gas system
- a potential or actual breach of a safety monitor

Stages of a Gas Deficit Emergency

1.28. NGG will announce a Gas Balancing Alert (GBA) where forecast daily demand for the day ahead is greater than the GBA trigger level (which is determined by the sum of a central assumption of the amount of available non storage supplies and the deliverability of storage sites with two or more days of gas available). This will provide a signal to the market that demand side reduction and/or additional supplies may be required.[35]

[34] The NEC safety case also sets out some of these conditions.
[35] See http://www.nationalgrid.com/uk/Gas/OperationalInfo/GBA/

1.29. A GBA can be issued within day if there has been a supply shock of greater than 25mcm and if NGG has a reasonable expectation of an end of day deficit.

1.30. If the issuance of a GBA is not sufficient to avoid an unacceptable imbalance between supply and demand or if other market actions do not resolve the deficit leading to the possibility of a supply emergency developing, NGG will recommend to the NEC that a network gas supply emergency is declared. The NEC will declare the relevant stage of the emergency which is required to ensure the imbalance is managed safely. A number of steps will be taken by the NEC at each of these stages. The NEC need not declare the stages sequentially and may declare a number of stages together. The decision of what action to take will always be made in the interests of safety. The steps taken during a GBA and the following five stages of a GDE are set out below:

Gas Balancing Alert

- Publication of GBA status
- Entry into non-OCM transactions with gas shippers not registered with APX
- Normal cash-out procedures apply

The 5 stages of an emergency and the actions available at each stage are as follows:

Stage 1 – Potential

- Emergency specification gas permitted onto system
- NGG maximise use of line-pack
- Distribution network storage
- Emergency interruption of consumers
- Public appeal to use less gas
- Normal cash-out procedures apply

Stage 2 – Declaration

- National Grid's participation in the OCM will be suspended
- Maximise supplies onto the system
- Public appeal to use less gas

Stage 3 – Firm Load Shedding

- Interruption of supply to firm load consumers. So far as is practicable supply will be curtailed in the following order:

- At interruptible supply points (insofar as this has not already been performed)
- At supply points other than priority[36] supply points which include Very Large Daily Metered Customers (VLDMC) supply point components ie sites consuming more than 50mtpa, including interconnectors
- At Large firm supply points other than priority supply points ie sites consuming between 25,000tpa and 50mtpa
- At all remaining firm supply points ie consuming less than 25,000tpa and at priority supply points. This will include domestic end users

Stage 4 – Allocation & Isolation

- Allocation of available gas across distribution networks supplying non daily-metered end-users
- Networks to utilise isolation plans to achieve requested reduction in demand

Stage 5 – Restoration

- NEC requests start of restoration process to revoke measures taken during previous stages
- Restoration plans implemented by Distribution Networks if Stage 4 has been entered

1.31. In addition to these steps, the NEC may take any further action which it judges to be in the interests of safety during a Gas Supply Emergency.

1.32. Further, the Secretary of State has the power to take 'command and control' of gas supplies should he so wish. This command and control role allows the Secretary of State to direct certain suppliers to flow or with-hold supply as he sees fit. The Secretary of State may delegate this power to the NEC if it is considered that this will reduce the risk or magnitude of an emergency.

1.33. The order in which off-take of gas at Supply Points is restored will be, as far as is practicable, the inverse of the order in which they are curtailed as outlined above. Where the NEC and the relevant transporters consider that shippers are in a position to understand and manage their portfolio of supplies and demands then they may return to a stage 1 even where some firm NDM loads remain isolated.

1.34. In the case of firm load disconnection of NDM consumers, the reinstatement of supply can take a number of weeks. Therefore, there may be a situation in which

[36] Priority consumers include those for whom a lack of supply could cause loss of life (eg hospitals and care homes) and those for whom disruption could cause in excess of £50m worth of damage.

firm load disconnection has been carried out at NDM supply points which remains disconnected following re-opening of the OCM. In this event, the emergency can be reclassified from a GDE to the status of a local gas emergency for the network zones that remain disconnected.

1.35. The stages of a GDE are currently being reviewed as part of the exit reform review. We will follow this review and ensure that our proposals for reform of the gas emergency arrangements are aligned with the review as it develops.

Emergency cash-out

1.36. At stage 1 of an emergency, imbalance cash-out prices will continue to be set by the relevant System Marginal Buy Price and System Marginal Sell Price for the relevant Gas Flow Day as would be the case outside of an emergency.[37]

1.37. That is, those Users with a positive system imbalance would receive the System Marginal Sell Price. Users with a negative system imbalance would pay the System Marginal Buy Price.

1.38. Upon announcement of stage 2 of an emergency, cash-out prices will be frozen at the level at which they were at entry to stage 2. In this event, those Users with a positive system imbalance would receive the frozen System Average Price. Users with a negative system imbalance would pay the frozen System Marginal Buy Price.

Post Emergency Claim (PEC) Arrangements

1.39. Upon announcement of stage 2 of an emergency, the NEC will take responsibility for physically balancing the gas system. This will involve directing flows from domestic sources and storage (that may otherwise not be flowed) in order to ensure that the safety requirements of the network are met.

1.40. Parties who are directed to flow additional gas onto the system (in excess of their contracted positions) can claim for any financial costs incurred by doing so through the PEC process.

1.41. In order for a party to submit a claim, they must first have a long imbalance position and secondly have posted an OCM Market Offer to effect a Physical Market Transaction following announcement of stage 2 of an emergency but prior to stage 5 being declared. In addition, they can only claim for an amount of gas which is the lesser of their OCM bid amount or their imbalance quantity for the relevant gas day. A party that wishes to make a claim must submit a PEC to National Grid NTS within

[37] See UNC section F for calculations of System Buy and Sell Prices.

six days of posting the Market Offer to which the claim refers. The party must submit information regarding the claim such as the claimed quantity, the Market Offer Price and reasonable justification for the level of that Market Offer Price.

1.42. All claims that meet the necessary criteria (as set out in full in section Q of the UNC) will be subject to a mechanistic validation process. That is, the lowest priced 80% of claims will be 'recommended for payment' while the remaining 20% will be required to undergo a further economic assessment under the direction of the Authority.

1.43. Subject to the validation process and, if applicable, the economic assessment, Users will receive payment for their claims less the SAP for the relevant day.

1.44. In considering the validity of the claims undergoing further economic assessment, the Authority will consider the Guidelines for Economic Assessment of PECs[38]. These guidelines are based on the principle that Users should be able to claim up to the opportunity cost of gas they deliver to the system, less the relevant SAP.

Recovery of Post Emergency Claims costs

1.45. The costs incurred through the PEC process will be recovered from Users of the system. The costs will initially be apportioned to those Users that held a deficit daily imbalance during the relevant day and will be proportionate to the size of their imbalance.

1.46. In the event that the full amount of costs is not recovered through these Users then the remaining costs will be shared amongst all Users as a proportion of total throughput on the relevant gas day through the Balancing Neutrality adjustment process.

Compensation arrangements for disconnection

Emergency Curtailment Quantity (ECQ) Arrangements[39]

1.47. In the event of a GDE, the NEC may need to interrupt or discontinue off-take of gas at a daily metered System Exit Point without providing an interruption notice to the relevant User. The ECQ is the volume of gas associated with such actions. This

[38] The Guidelines can be found here: http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=8&refer=Markets/WhlMkts/CompandEff/GasEmerg

[39] See http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/16229-98-98aD.pdf

is the quantity of gas calculated by NGG as the sum of the aggregate quantities of gas reasonably estimated by each Transporter (based on the information provided by the shipper) that the User would have off-taken from the relevant System Exit Points had it not been for the emergency curtailment.

1.48. There is a methodology, published by the relevant gas transporters, that is used to calculate the ECQ (the 'ECQ methodology') in such an event. Once determined, the ECQ is then the subject of a title trade between the residual balancer and the shipper.

1.49. The ECQ arrangements apply where a User has been instructed to take a site off during a Gas Deficit Emergency where this occurs under declaration of either stage 1 (potential) or stage 3 (firm load shedding). Where this is the case, the User will receive an ECQ for the day of interruption so that the quantity interrupted maintains that user's imbalance position.

1.50. For those occurrences of Emergency Curtailment in a GDE, Users would receive payment based on the ECQ multiplied by an Emergency Curtailment Trade Price determined as the 30 day average SAP prevailing at the commencement of the GDE.

1.51. The actions of NGG to provide payment to Users would be funded from the energy element of Balancing Neutrality[40] with the costs spread amongst Users proportional to their energy throughput.

1.52. NGG will not pay Balancing Charges, Balancing Neutrality Charges, Scheduling Charges or Daily Imbalance Charges as a result of ECQ related Trade Nominations. Any amounts payable by NGG will not be included in the System Marginal Buy, Sell or Average Prices.

P70 form submission

1.53. P70 forms are used where a User has made a commercial decision to interrupt its own end consumers and allow the relevant User to be relieved of its cash-out liability for the relevant interruption. For example, they may be used where a User has offered to reduce demand via a physical or locational action on the OCM. A P70 may also be used following a day in which the User has been instructed to discontinue off-take of gas, i.e. for day 2+ of the relevant interruption.

1.54. The P70 is submitted by the shipper to indicate to the relevant transporter that the User has commercially interrupted the relevant consumers. They will therefore avoid the imbalance position that would have resulted otherwise and the interruption will have no effect on their imbalance position.

[40] See http://www.gasgovernance.co.uk/UNC

1.55. When the User wants to reinstate the consumer's supply they should indicate this intention to NGG in good time so as to allow NGG to take any necessary action. For example, in a GDE, the NEC may want to instruct firm load disconnection of the relevant consumers upon their reinstatement.

Storage Withdrawal Curtailment Quantity Arrangements (SWCQ arrangements)

1.56. The Safety and Firm Gas Monitor Methodology (see below) provides a requirement for sufficient gas to be held in storage to meet a number of criteria. This requirement is still valid in the event of a GDE.

1.57. It is therefore possible that the NEC may order the reduction or cessation of delivery of gas from a Storage Facility onto the gas system. In the event that this occurs the storage users will be compensated by NGG at the Storage Curtailment Compensation Price determined as the System Buy Price less the 30 day System Average Price. This price will be multiplied by the curtailment quantity submitted by the User to NGG.

1.58. Any amounts payable by NGG in relation to Storage Curtailment will not be included in the System Marginal Buy, Sell or Average Prices.

The Gas Safety (Management) Regulations 1996 (GS(M)R)

1.59. The GS(M)R is a piece of secondary legislation which sets out the requirement for a network which has more than one gas transporter (as is the case for GB) to have a NEC which must have a safety case approved by the HSE. The regulations also require each gas transporter to prepare a safety case which must be approved by the HSE.

The NEC safety case

1.60. The NEC safety case sets out the role and responsibilities of the NEC in the event of an emergency. This includes particulars of the procedures that the NEC has established to monitor the situation throughout a supply emergency and for co-ordinating actions across affected parts of the gas network. It also sets out the stages of a gas deficit emergency that the NEC may declare in order to minimise the risk or impact of a supply emergency.

Actions available to the NEC

1.61. In the event of a GDE, the NEC is responsible for co-ordinating actions across the affected parts of the various Transporters' networks in order to prevent an emergency from developing as far as is possible. Where the emergency cannot be prevented, the NEC is responsible for taking timely decisions in order to minimise the safety consequences.

1.62. In order to do this, the NEC has established arrangements for co-ordinating the actions of duty-holders, including transporters operating on the affected parts of the overall system. The NEC will direct these parties to reduce consumption, provide a timescale for doing so and request confirmation that the actions have been taken.

1.63. The arrangements that the NEC may have in place include:

- Arrangements to prevent an emergency occurring
- Arrangements for identifying a potential or actual emergency
- Arrangements for providing a staged response to a potential or actual emergency
- Arrangements for coordinating the actions of transporters and distribution networks during a potential or actual emergency
- Description of the facilities available to the NEC and the communication arrangements with the transporters and distribution networks.

1.64. The NEC will request the co-operation of parties including:

- A gas transporter
- An emergency service provider
- A person transporting gas in pipes which are not part of a network
- The holder of a licence issued under section 7A of the Gas Act 1986 (i.e. shippers and suppliers)
- The person in control of a gas production facility, a gas processing facility, a storage facility or an Interconnector supplying gas to the network

The Safety and Firm Gas Monitor (The Safety Monitor)

1.65. In order to meet the requirements of the GS(M)R, NGG's Safety Monitor provides requirements for sufficient gas to be held in storage to support those gas consumers who cannot be physically and verifiably isolated from the gas network within a reasonable period of time. These consumers are classified into two groups:

- Protected by Monitor – Sufficient gas must be held in storage to ensure continuity of supply up to and including in a 1 in 50 winter.
- Protection by Isolation – These consumers would be physically isolated from the network in order to ensure network safety.

1.66. Each year, NGG notifies users of the minimum storage requirement that must be deliverable in order to safely isolate 'protected by isolation' consumers (the deliverability safety monitor) and to support 'protected by monitor' consumers (the space safety monitor) for the coming winter period. The deliverability safety monitor provides operational cover in the case that a gas emergency is announced on any given day. The space safety monitor is designed to ensure that sufficient gas remains in storage to support 'protected by monitor' consumers for the remainder of the winter.

1.67. If either the deliverability or volume safety monitors are breached then a GS(M)R Monitor Breach emergency can be declared.

Interactions between the safety monitor and the GBA trigger level

1.68. In addition, if the safety monitor is within 2 days of being breached this can have an impact on the GBA trigger level. The trigger level for a GBA is based on a combination of the absolute Supply & Demand levels and the impact of a potential breach of a safety monitor.

1.69. The basic trigger level for the alert is set by the anticipated available (non storage) supplies into the network plus storage deliverability. The base case assumptions for non storage supplies are consistent with those published in the Winter Consultation Report and form the basis behind the September safety monitor requirements.

1.70. A GBA will be issued when forecast daily demand for D-1 > Trigger Level. Additionally all storage sites with two or more days of deliverability will be included within the GBA Trigger Level. If a storage site is forecast to be depleted to such a level that there will only be two days (at maximum withdrawal rate) left in storage above the Safety Monitor level by the end of the current gas day, the trigger level will be reduced by the maximum withdrawal rate for that storage site.

Appendix 3 – Previous related UNC modification proposals

The Standard Modifications Process

1.1. The standard UNC modification process is an industry-led procedure. Under this process, all signatories to the UNC are able to propose modifications to it. An industry player will raise and prepare a modification proposal before presenting it to a UNC panel made up of representatives from the industry signatories. Depending on how developed the panel considers the proposal to be it may recommend the proposal for consultation. Alternatively, it may decide that the proposal requires further development through a development group set up for this purpose.

1.2. Once a proposal has been considered as well developed and has been through the consultation process it would then be submitted to the Authority which would decide to accept or reject the proposal based on whether or not it believes the proposal to further the relevant objectives set out in appendix 2 above.

1.3. We set out a selection of the modification proposals that have had the most relevance to the development of the emergency arrangements as they are today below.

Previous modification proposals

UNC Modification Proposal 021 'Revision of the Emergency Cash-out Arrangements'[41]

1.4. Under arrangements at the time of proposal 021, the dual cash-out price which existed under normal market operation was replaced by a single price frozen upon entry into stage 2 of a GDE. This single price was set by the SAP for the 30 days immediately preceding entry into stage 2 at which it was 'frozen'.

1.5. Modification proposal 021 was raised in July 2005 by Transco NTS in response to growing concern that the existing arrangements did not provide effective incentives to encourage gas onto the system or to reduce gas demand in the event of an emergency.

1.6. Modification proposal 021 sought to make amendments to the emergency arrangements by replacing the existing single cash-out price with a dual price regime still 'frozen' upon entry into stage 2:

[41] The modification proposal 021 decision letter can be found here: http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/11197-021D.pdf

- The cash-out price for users with a negative Daily Imbalance would be set by the System Marginal Buy Price that existed on the day of commencement of the GDE.
- The cash-out price for users with a positive Daily Imbalance would be set by the System Average Price that existed on the day of commencement of the GDE.

1.7. In addition to the above, the proposal sought to introduce a new Emergency Interruption Volume (EIV) title trade and associated 'trade' payment. Under these arrangements, the EIV would effectively be purchased by Transco NTS at the 30 day average SAP but would also be removed from the supply and demand flows of affected Users thus leaving their positions unchanged.[42]

The Authority's Decision

1.8. The Authority decided to reject proposal 021 on procedural grounds on the basis of concerns surrounding the adequacy of the consultation process. It was also unsure of whether all of the relevant issues and effects had been set out to a sufficient level of clarity.

1.9. However, we stated in the modification proposal Decision Letter that we considered the issues that Transco NTS were attempting to address in raising the modification proposal to be very important, particularly ahead of the coming winter. We also indicated in the letter that we would encourage Transco NTS and all other signatories to consider whether further modification proposals should be raised to address the important issues highlighted in the proposal.

UNC Modification Proposals 042 'Revision of the Emergency Cash-out price' and 044 'Revised Emergency Cash-out & Curtailment Arrangements'[43]

1.10. Modification proposals 042 and 044 were raised in September 2005 by E.ON UK and Transco NTS respectively in response to growing concern surrounding the existing arrangements, including our indication that we would welcome further proposals as set out in our Decision Letter on proposal 021.

1.11. Modification proposal 042 sought to amend the emergency cash-out price from the existing single price of the 30 day average SAP to a single price of the prevailing SAP at entry into stage 2 of a GDE.

1.12. Modification proposal 044 was similar to proposal 021 and sought to replace the single emergency cash-out price with a dual cash-out price as set out above.

[42] The EIV discussed in this proposal is now referred to as the ECQ.
[43] The modification proposals 042 and 044 decision letter can be found here: http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/11548-20305.pdf

1.13. Similarly to the EIV proposals put forward in proposal 021, proposal 044 also sought to introduce a new Emergency Curtailment Quantity (ECQ) title trade and associated 'trade' payment. The objective was to align the quantities of gas associated with emergency curtailment actions undertaken by NGG in a GDE as a Trade Nomination between NGG and each user. These are the ECQ arrangements that are currently in place as described in more detail in (see appendix 2).

The Authority's Decision

1.14. The Authority considered that both proposals would better facilitate the achievement of the relative objectives of the UNC. However, given that the two proposals were considered to be mutually exclusive, it decided to reject proposal 042 and accept 044.

1.15. In our Decision Letter, we indicated that approval of modification proposal 044 had alleviated our concerns regarding the cash-out arrangements to some degree. However, we also stated that the proposals had raised some additional issues more generally which would benefit from further consideration. In particular, we suggested that it may be appropriate for market participants to review the implications of a GS(M)R monitor breach in terms of the emergency arrangements.

UNC Modification Proposal 052 'Storage Withdrawal Curtailment Trade Arrangements in an Emergency'[44]

1.16. Modification proposal 052 was raised by E.ON UK in November 2005 and sought to review the safety monitor arrangements as suggested in our Decision Letter on proposals 042 and 044. The importance of the proposal with regards to the coming winter was reflected in the proposal being granted 'urgent' status.

1.17. The NEC may prevent shippers from withdrawing gas from storage in order to avoid storage levels falling below that set out in the Safety and Firm Gas Monitor Methodology[45]. Modification proposal 052 sought to leave shippers financially neutral in this event by:

- Defining a storage withdrawal curtailment quantity (SWCQ) as the amount of gas that could be reasonably nominated for delivery in the absence of curtailment of storage withdrawal.
- Enabling affected shippers to acquire their portion of the overall SWCQ from NGG at the 30 day average of the System Average Price via an SWCQ trade.

[44] The modification proposal 052 decision letter can be found here: http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/11751-U052D.pdf
[45] See http://www.nationalgrid.com/uk/Gas/Data/storage/

1.18. As a result of this proposal an affected shipper would retain their imbalance position which existed prior to withdrawal curtailment. As such, the shipper concerned would not face exposure to cash-out for any difference between its delivery onto and off-takes from the system which were linked to the withdrawal curtailment.

The Authority's decision

1.19. The Authority decided to approve proposal 052. However, we stated in our modification proposal Decision Letter that we considered the Safety Monitor arrangements to require urgent review and requested parties to assess these arrangements and submit further proposals for revisions which could be implemented in time for the coming winter.

UNC Modification Proposals 061 'Facilitating further Demand Side Response in the event that a GBA is triggered' and 062 'Introduction of a GBA'[46]

1.20. Both modification proposals 061 and 062 were also raised in November 2005 but by NGG. The importance of these proposals in the context of the existing arrangements and the coming winter was reflected in their being granted urgent status by Ofgem.

1.21. Both modifications sought to introduce a GBA to be applied as follows:

- NGG would issue a GBA during day D-1 when the Forecast Total System Demand on a Gas Day is greater than or equal to the anticipated available supplies.
- A GBA would be issued 'within-day' if NGG was notified of an incident or event that may result in an end-of-day loss of available supplies of 25mcm or greater, subsequently resulting in the remaining anticipated available supplies being less than or equal to the Forecast Total System Demand.

1.22. In addition to these proposed amendments, UNC 061 included a number of additional features with the intention of reflecting the increased likelihood that NGG would have to take additional balancing actions following announcement of a GBA. These additional features were as follows:

- To enable NGG to accept multiple-day offers on the OCM and/or OTC as Eligible Balancing Actions following announcement of a GBA.
- Change the definition of the SAP, SMP Buy Price and the SMP Sell Price to incorporate any multiple-day offers accepted by NGG

[46] The modification proposals 061 and 062 decision letters can be found here: http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/12331-061-062D.pdf

The Authority's Decision

1.23. The Authority decided to accept proposal 061 and reject 062. We supported both modifications in that they proposed to introduce a GBA. We considered it important that the supply and demand side could come to the market in an economic and efficient manner in the event of a potential emergency.

UNC Modification Proposals 071 and 071A: 'User Compensation for NEC Storage Curtailment'[47]

1.24. Modification proposals 071 and 071A were raised in December 2005 by NGG and E.ON UK respectively. Both proposals sought to build on the emergency storage curtailment arrangements that were introduced by modification 052. The proposals were granted 'urgent' status to enable their implementation ahead of the Christmas period to allow gas that may be available at this time to be injected into store.

1.25. Modification proposal 071 sought to remove the SWCQ Trade that was introduced through proposal 052 and put in its place a storage curtailment compensation payment calculated through the formula below:

SAP-(ASSAP+0.0611p)

Where:

- ASSAP (Average Summer System Average Price) is the volume weighted average of the end of Gas Day Sap prices between 1st April and 30th September inclusive in the previous gas year.
- 0.0611p is the minimum differential between the System Marginal Buy Price and the System Marginal Sell Price (see UNC section F 1.2[48] for more detail) and was originally intended to reflect the costs of transferring gas in and out of storage.

1.26. This was intended to ensure that users would be adequately compensated for any gas curtailed by the NEC during an emergency while retaining the incentives upon them to balance their position on the system.

1.27. Proposal 071 also set out the introduction of a cap on the volumes of gas for which compensation would be payable. The cap would be equal to the volume of gas that the user had in storage when its withdrawals were first curtailed plus any

[47] The modification proposal 071 decision letter can be found here: http://www.gasgovernance.co.uk/sites/default/files/0071OfgemDecisionLetter.pdf

[48] http://www.gasgovernance.co.uk/sites/default/files/10%20June%202010%20TPD%20Section%20F%20-%20System%20Clearing,%20Balancing%20Charges%20and%20Neutrality.pdf

volumes subsequently injected minus any volumes subsequently withdrawn or already compensated for.

1.28. Modification proposal 071A was raised as an alternative to proposal 071 and sought to ensure that the valuation of any curtailed gas would reflect the wholesale price of gas at the time that users regained the right to withdraw gas from storage.

1.29. A two stage approach was proposed:

- The SWCQ compensation value established by modification 052 would be retained but as a direct compensation payment rather than via an imbalance adjustment mechanism.
- The compensation payment would be adjusted to take into account the value of gas remaining in storage following restoration of the emergency. This would have the overall effect of compensating the relevant affected parties at:

SMP Buy - (Post Emergency 30 day SAP +0.0611p)

Where: Post Emergency 30 day SAP = the value of the arithmetic mean of the first 30 consecutive days of normal market operations following an emergency.

1.30. Proposal 071A also sought to introduce the same cap as described under proposal 071.

The Authority's Decision

1.31. The Authority decided to accept modification proposal 071A while rejecting proposal 071.

1.32. While we stated in the Decision Letter that some of the shortcomings of modification 052 had been addressed, we again indicated that our concerns surrounding the storage curtailment arrangements had not been fully satisfied. We suggested that a more fundamental review of the arrangements, requiring input from all market participants including NGG, would be beneficial.

UNC Modification Proposals 098 and 098A: 'Modifications to Codify Emergency Curtailment Quantity (ECQ) Methodology'[49]

1.33. Modifications 098 and 098A were raised in November 2006 by E.ON UK plc and NGG respectively. The proposals sought to build on the ECQ arrangements

[49] The modification proposal 098 decision letter can be found here: http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/16229-98-98aD.pdf

introduced under modification 044 by defining a clear and consistent method of governing the ECQ methodology.

1.34. Modification 098 proposed to include the ECQ methodology within the UNC arrangements rather than simply being published on the Joint Office of Gas Transporters website. They proposed that this would allow all UNC signatories to propose amendments to the methodology.

1.35. The modification also proposed an adjustment to the current methodology for calculating the ECQ. It proposed that Nominations[50] be used to calculate the ECQ where Off-take Profile Notifications[51] (OPNs) were not available for use. As with OPNs, Nominations would only be used for the first day on which emergency curtailment occurred.

1.36. Similar to proposal 098, alternative proposal 098A sought to include the ECQ methodology within the UNC referenced as an ancillary document. This would mean that changes proposed to the code would be placed under the oversight of the UNC committee and that the UNC committee themselves could propose and make changes to the ECQ methodology. Modification proposal 098A did not propose any amendments to the calculation of the ECQ.

The Authority's Decision

1.37. The Authority considered that both proposals offered potential benefits. It decided that, on balance, proposal 098A was considered to better facilitate the relevant objectives. Thus the Authority decided to reject proposal 098 and accept proposal 098A.

1.38. However, in our modification proposal Decision letter we cited the lack of analysis of the likely costs and benefits of changes to the calculation methodology in proposal 098 as preventing us from fully assessing these proposed changes with respect to the relevant objectives. We stated in the Decision Letter that the decision '...does not 'close the door' to future changes along the lines of the calculation methodology suggested in modification 098.'

[50] For a definition see TDP J 4.5.1 of the UNC.
[51] For a definition see TPD C 1.1.1.2(a) of the UNC.

UNC Modification Proposals 149 and 149A: 'Gas Emergency Cash-out Arrangements: Keeping the On-the-day Commodity Market open during a Gas Deficit Emergency'[52]

1.39. We welcomed the significant development of the gas emergency arrangements following discussion with industry in 2005/6 as summarised above. However, we outlined our remaining concerns regarding the emergency arrangements with the publication of an open letter in November 2006. In this letter we requested industry to review these issues as a matter of urgency given GB's move from a net exporter of gas to a position of import dependency. Modification proposals 149 and 149A were raised in October 2007 by NGG and E.ON UK respectively in response to this request.

1.40. At the time of the proposals, the OCM would be suspended to all Users and the cash-out price 'frozen' upon entry to stage 2 of a GDE. Both NGG and E.ON UK proposed to amend this by allowing Users, with the exception of NGG, to retain the ability to trade on the OCM following entry into stage 2 of an emergency.

1.41. In proposal 149A E.ON UK proposed to keep the existing 'frozen' cash-out prices upon entry to stage 2.

1.42. Proposal 149 differed from 149A in that it also looked to amend these arrangements. NGG proposed to incorporate trades carried out by Users on the OCM into the derivation of the 'relevant price' which would remain dynamic rather than being frozen at stage 2. The 'relevant price' would instead be calculated for each Day during a GDE (for stage 2 and beyond) as follows:

- Positive Market Imbalances would be cashed out at the volume weighted average of all the Market Offer Prices for that day
- Negative Market Imbalances would be cashed out at the highest Market Offer Price taken for that day.

1.43. In the event that no eligible trades were made on a day of a GDE, the relevant prices would default to those of the previous day. This would also be the method used to set the relevant price for Day 1 of an emergency.

The Authority's Decision

1.44. The Authority decided to reject modification proposal 149 and accept proposal 149A. The Authority cited insufficient information in the Final Modification Proposal and concerns surrounding the risks of unintended consequences of the proposal for their decision to reject proposal 149.

[52] The modification proposal decision letter can be found here: http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/UNC149D.pdf

1.45. While the Authority decided to accept proposal 149A, it was stated in the Decision Letter that our concerns surrounding the gas emergency arrangements had not been fully resolved.

1.46. In this letter we said that 'Despite our decision to accept Alternative Proposal 149A, we believe that there remains a strong need to revise further the gas emergency cash-out arrangements in light of GB's growing gas import dependence...' and that 'We are of the view that some form of dynamic cash-out pricing, or other alternative arrangement, is required to attract gas and LNG into the GB market under emergency conditions.' We again urged the industry to examine the issues in more detail and bring forward further proposals to address the need to revise the existing arrangements.

UNC Modification Proposal 260 'Revision of the Post Emergency Claims Arrangements'[53]

1.47. Following the continued expression of concerns surrounding the emergency arrangements by Ofgem and a number of industry participants, NGG raised proposal 260 in October 2009 as an outcome of an industry review of the existing arrangements. The proposal sought to improve the clarity surrounding the post emergency claims arrangements as well as increasing the effectiveness of incentives for shippers to correct any negative imbalance position.

1.48. At the time of proposal 260, the costs involved in PECs were spread across the whole industry by throughput, ignoring imbalance position completely.
NGG considered that this did not provide effective incentives to avoid an emergency or to reduce a negative imbalance position once a GDE had been declared.

1.49. UNC 260 proposed to revise the arrangements by introducing a new process by which claims would be assessed. In order for gas supplied to the system to be subject to a claim, it would have to be placed on the OCM as a Physical Market Offer. The volumes and prices of these offers would be available to all market participants. OCM offers that were not accepted by other market participants would be submitted to the PEC Agent who would apply a set of mechanistic criteria. The lowest priced 80% of the claims that met these criteria would be 'recommended for payment'. The remaining 20% would be deemed as 'subject to economic price assessment' by the Authority. Rather than being spread across the whole industry, the costs of these claims would initially be targeted upon shippers with a Negative Imbalance Position.

[53] The modification proposal 260 decision letter can be found here:
http://www.ofgem.gov.uk/Licensing/GasCodes/UNC/Mods/Documents1/UNC260D.pdf

The Authority's Decision

1.50. The Authority decided to approve proposal 260.

1.51. However, in the modification proposal Decision Letter, we pointed once again to our concern that the gas emergency arrangements still required further development. We stated that 'We do not consider this modification to be a long term solution to the problem of attracting the necessary gas to the UK in an emergency.' Further, we said that 'We share the view (with a number of respondents) that a wide ranging review of the arrangements is necessary as part of a broader review of security of supply in the GB market.'

Appendix 4 - The Authority's Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ('the Authority'), the regulator of the gas and electricity industries in GB. This appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute (such as the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Acts of 2004, 2008 and 2010) as well as arising from directly effective European Community legislation.

1.3. References to the Gas Act and the Electricity Act in this appendix are to Part 1 of those Acts.[54] Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This appendix must be read accordingly.[55]

1.4. The Authority's principal objective is to protect the interests of existing and future consumers in relation to gas conveyed through pipes and electricity conveyed by distribution or transmission systems. The interests of such consumers are their interests taken as a whole, including their interests in the reduction of greenhouse gases and in the security of the supply of gas and electricity to them.

1.5. The Authority is generally required to carry out its functions in the manner it considers is best calculated to further the principal objective, wherever appropriate by promoting effective competition between persons engaged in, or commercial activities connected with,

- the shipping, transportation or supply of gas conveyed through pipes;
- the generation, transmission, distribution or supply of electricity;
- the provision or use of electricity interconnectors.

1.6. Before deciding to carry out its functions in a particular manner with a view to promoting competition, the Authority will have to consider the extent to which the interests of consumers would be protected by that manner of carrying out those functions and whether there is any other manner (whether or not it would promote competition) in which the Authority could carry out those functions which would better protect those interests.

[54] Entitled 'Gas Supply' and 'Electricity Supply' respectively.
[55] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.

1.7. In performing these duties, the Authority must have regard to:

- the need to secure that, so far as it is economical to meet them, all reasonable demands in GB for gas conveyed through pipes are met;
- the need to secure that all reasonable demands for electricity are met;
- the need to secure that licence holders are able to finance the activities which are the subject of obligations on them[56]; and
- the need to contribute to the achievement of sustainable development.

1.8. In performing these duties, the Authority must have regard to the interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[57]

1.9. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

- promote efficiency and economy on the part of those licensed[58] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
  protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity; and secure a diverse and viable long-term energy supply, and shall, in carrying out those functions, have regard to the effect on the environment.

1.10. In carrying out these functions the Authority must also have regard to:

- the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.11. The Authority may, in carrying out a function under the Gas Act and the Electricity Act, have regard to any interests of consumers in relation to communications services and electronic communications apparatus or to water or

[56] Under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Acts in the case of Electricity Act functions.
[57] The Authority may have regard to other descriptions of consumers.
[58] Or persons authorised by exemptions to carry on any activity.

sewerage services (within the meaning of the Water Industry Act 1991), which are affected by the carrying out of that function.

1.12. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in GB and is a designated National Competition Authority under the EC Modernisation Regulation[59] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

[59] Council Regulation (EC) 1/2003.

Appendix 5 - Glossary

A

Authority (The)

The Authority is the Gas and Electricity Markets Authority (GEMA). GEMA is the governing body of Ofgem and consists of non-executive and executive members and a non-executive chair.

C

Cash-out

NGG is responsible for taking out balancing actions on behalf of the market. The prices paid for these balancing actions are then passed onto long and short shippers. That is, long shippers are paid at one rate for their positive imbalance and short shippers have to pay at a different rate for their negative imbalance. These charges are known as cash-out prices.

Cash-out (dynamic)

Dynamic cash-out means that the level of the cash-out continues change in response to circumstances upon declaration of a stage 2 emergency.

Cash-out (frozen)

Under current gas emergency arrangements the cash-out price is frozen when stage 2 of an emergency is declared. That is, the cash-out price remains at the level it was at this time for the duration of the emergency.

Code Governance Review

The Code Governance Review was initiated by Ofgem to assess the governance of the codes which set out participation in the gas and electricity markets of GB. The project was concluded in March 2010. The development of the Significant Code Review process was one of the outcomes of the Code Governance Review.

Cost of capital

The cost of capital is the shareholder's required return on a project or a portfolio of a company's existing securities, to make the investment worthwhile. Cost of capital is a function of the cost of debt and the cost of equity.

Curtailment Order

The order in which load will be curtailed at stage 3 and above of an emergency.

D

Daily-metered customer

This is a gas customer with a meter which allows their consumption to be measured on a daily basis.

Distribution Network Operator

Distribution Network Operators are companies licensed by Ofgem to distribute gas or electricity in GB.

E

Emergency curtailment arrangements

The emergency curtailment arrangements provide for compensation to be provided to shippers in the event that off-take at a certain supply point is curtailed without notice being provided. shippers are still required to pay cash-out on their imbalances but curtailed quantities are subject to a trade between the shipper and the residual balancer at the Emergency Curtailment Trade Price. As such, shippers will not be 'cashed out' on these curtailed quantities.

Emergency curtailment trade price

The price at which a shipper's emergency curtailment quantity is compensated. This is determined as the 30 day average SAP prevailing at the commencement of a GDE.

Emergency specification gas

For gas to be allowed to enter the GB network it must meet certain specifications with respect to, for example, its calorific content. In the event of an emergency these specifications may be relaxed to allow for gas that would not normally meet the tighter specifications to enter the system. This is known as emergency specification gas.

F

Firm customer

A customer with a non-interruptible gas supply contract. These customers cannot be requested to reduce their demand or have their demand curtailed except for following the announcement of stage 3 or greater of an emergency.

Firm load shedding/ disconnection

Upon declaration of stage 3 of an emergency, the NEC may instruct transporters of gas to disconnect customers that have firm contracts (i.e. contracts for a secure supply of gas). This is known as firm load shedding.

Free-riding

This is an economics term which describes the action of a party in receiving the benefit of a good or service without paying for it.

G

The Gas Act (1986)

The Gas Act is a piece of primary legislation that prohibits persons from engaging in specified activities unless authorised to do so by a licence granted by the Authority. The Gas Act also sets out the powers of the Authority in carrying out its functions under Part I of the Gas Act.

Gas Balancing Alert

A Gas Balancing Alert is used by NGG where the amount of demand on the system reaches a certain trigger level relative to the supply available. It provides a signal to the market to increase gas flows to the system in order to reduce the risk of entering into a gas supply emergency.

Gas Deficit Emergency

A Gas Deficit Emergency is a type of Gas Supply Emergency arising as a result of insufficient deliveries of gas being available to meet required demand on the gas system or as a result of a potential or actual breach of a safety monitor.

The Gas Safety (Management) Regulations 1996 (GS(M)R)

The GS(M)R set out the requirement for a National Emergency Coordinator (NEC) for any network which includes more than one gas transporter. They also require each gas transporter, as well as the NEC, to prepare a safety case which must be approved by the HSE.

Gas Supply Emergency

A Gas Supply Emergency is defined in the UNC as the occurrence of an event or series of events that results in, or gives rise to a significant risk of, a loss of pressure in the gas system which may lead to a supply emergency.

H

The Health and Safety at Work Act (2005)

The Health and Safety at Work Act is the primary piece of legislation covering occupational health and safety in the United Kingdom. The Health and Safety Executive is responsible for enforcing the Act.

Health and Safety Executive

The Health and Safety Executive (HSE) is the national independent watchdog for work-related health, safety and illness. The safety case produced by the Network Emergency Coordinator must be submitted to the HSE for their approval.

I

Interruptible contract

An interruptible contract may be signed by gas consumers where the relevant transporter and/or supplier has the ability to ask a consumer to reduce its off-takes (generally daily metered customers). These contracts allow the transporter and/or supplier to disconnect the consumer (in or out of an emergency) in order to manage demand on the system. Consumers may sign these contracts in return for reduced rates on their gas supply.

L

Licensee (Gas)

The Gas Act requires parties involved in the gas industry to be licensed by the Authority. As license holders, these parties are required to comply with a number of licence conditions. In addition, licensees are required to adhere to the legal and contractual framework that is set out in the Uniform Network Code (UNC).

Licence condition

All parties licensed by the Authority to partake in gas industry activities are required to meet certain licence conditions. The licence conditions for the gas industry are categorised into transporter, shipper, supplier and interconnector licence conditions. The licence conditions are separated into standard licence conditions which apply to all licensees of one type (eg transporters) and special licence conditions which apply only to a specific party (eg NGG).

Line-pack

Gas line-pack is the quantity of gas that is available in the network itself held in the pipes that are used to transport the gas. As there is some flexibility in the pressures that are allowed in the gas system line-pack may be used by NGG to manage load to a certain degree.

Liquefied Natural Gas

Liquefied natural gas or LNG is natural gas (predominantly methane, CH4) that has been converted temporarily to liquid form for ease of storage or transport.

Liquidity

Liquidity is a measure of the potential for new entrants to join a market. A low liquidity means that it is difficult for new entrants to enter into and grow in a market.

Local Distribution Zone

LDZs are low pressure pipe-line systems which deliver gas to final users and Independent Gas Transporters. There are twelve LDZs which take gas from the high pressure transmission system for onward distribution at lower pressures.

M

Market Balancing Action

An action taken by NGG to balance the system in which it enters into a transaction with a party so that that party will agree to make an acquiring or disposing trade nomination. The cash-out prices set the price at which these trades will be made.

Modification (Code)

The Uniform Network Code is the framework which sets out the gas transportation arrangements for those parties licensed under the Gas Act 1986. This code has developed through modifications raised by signatories to the UNC. It is still possible for modifications to be made through this industry led process. However, the introduction of the Significant Code Review process now allows for Ofgem to lead on the development of modifications before directing them to be raised.

Moral hazard

An economics term used to describe the tendency of parties to take greater risks in relation to an event occurring when they have insurance against the occurrence of this event.

N

National Grid Gas (NGG)

The GT licence holder for the North West, West Midlands, East England and London GDNs. NGG also hold the GT licence for the gas national transmission system (NTS). Prior to 10 October 2005, NGG was known as Transco.

National Transmission System

National Grid's high pressure gas transmission system. It consists of more than 6,400 km of pipe carrying gas at pressures of up to 85 bar (85 times normal atmospheric pressure).

Network Emergency Coordinator

The Network Emergency Coordinator is responsible under safety legislation for the coordination of a gas supply emergency.

O

Obligations

Obligations would place an additional requirement on the relevant parties to have access to or have contracts in place for a certain amount of gas above that which is required for the supply contracts which they have in place. These obligations may be targeted at either the suppliers or the system operator.

On-the-day Commodity Market

This is the market on which trading takes place to allow NGG to balance the system. shippers may also trade with each other on the OCM.

P

Post Emergency Claim

The post emergency claims arrangements are used to compensate parties for any financial costs incurred in flowing gas onto the system in addition to that which they would choose to supply in the event that this is directed by the NEC.

Project Discovery

Project Discovery is Ofgem’s investigation into whether or not future security of supply can be delivered by the existing market arrangements over the coming decade.

Public Appeal

An appeal made by NGG to consumers in the event of a Gas Supply Emergency to reduce gas use.

Public Service Obligations

An obligation on suppliers to meet the needs of certain categories of customers. The details of the obligation placed on each supplier will differ.

R

Royal Assent

Royal Assent is the Monarch's agreement to make a Bill into an Act and is a formality. A Bill must have Royal Assent before it can become an Act of Parliament (law).

S

Safety case

The Gas Safety (Management) Regulations 1996 set out the requirement for each transporter of gas to publish a safety case which must be approved by the HSE. These safety cases must demonstrate the method by which the holder will ensure the safe operation of its network. In the case of the NEC, the safety case includes details of the procedures that the NEC has established to monitor the situation throughout a supply emergency and for co-ordinating actions across affected parts of the gas network.

Safety Monitor

The Safety and Firm Gas Monitor Methodology (Safety Monitor) provides a requirement for sufficient gas to be held in storage to meet a number of criteria. This requirement remains valid in the event of a GDE.

Significant Code Review

A new modifications process introduced through the Code Governance Review. This process allows Ofgem to develop modifications proposals before directing them to be raised.

Smeared/shared cost

This is a cost that is spread across all relevant parties. For example, the costs to National Grid of a certain activity may be spread across all shippers involved in the GB gas market.

Socialised cost

This is a cost to a party which is passed through to consumers through bills for example.

Sole-purchaser

The only party that is allowed to purchase gas.

Stage 2 Emergency

Upon entrance into a Gas Supply Emergency, a number of stages may be declared. Under the current arrangements the cash-out price is frozen upon declaration of stage 2 of an emergency.

System Average Price

This is the average of the prices paid by National Grid in taking market balancing actions for all balancing transactions in respect of that day.

System operator

The entity responsible for operating the GB transmission system and for entering into contracts with those who want to connect to and/or use the transmission system. National grid is the GB system operator.

T

Therm

A unit of heating value equivalent to 100,000 British thermal units (Btu) (0.1 MMBtu).

The Third Package

The Third Package is a key step in implementation of the internal EU energy market. It recognises the need for better co-ordination between European network operators and continuing co-ordination between regulators at that level.

Transporter (Gas)

The holder of a Gas Transporter's licence in accordance with the provisions of the Gas Act 1986.

U

Uniform Network Code (UNC)

The UNC defines the rights and responsibilities for all users of gas transportation systems in GB. The UNC is, in effect, a contract between the gas transporter and the users of its pipeline system.

Uniform Network Code (UNC) – Section Q

Section Q of the UNC is the main framework which sets out the arrangements that will be in place in the event of declaration of a gas emergency.

V

Value of Lost Load

This is the theoretical price at which a consumer would rather have their gas supply disconnected than pay for a firm supply. It is measured in price/unit of gas (eg £/therm).

List of Acronyms

ACER	Agency for Cooperation of national Energy Regulators
ASSAP	Average Summer System Average Price
CM	Choice Modelling
CV	Contingent Valuation
DECC	Department of Energy and Climate Change
DN	Distribution Networks
ECQ	Emergency Curtailment Quantity
EMR	Electricity Market Review
GBA	Gas Balancing Alert
GDE	Gas Deficit Emergency
GS(M)R	Gas Safety (Management) Regulations 1996
HSE	Health and Safety Executive
LDZ	Local Distribution Zone
LNG	Liquefied natural gas
NEC	Network Emergency Coordinator
NGG	National Grid Gas
NGSE	Network Gas Supply Emergency
NTS	National Transmission System
OCM	On-the-day Commodity Market
OTC	Over The Counter
PEC	Post Emergency Claim
PSOs	Public Service Obligations
SAP	System Average Price
SCR	Significant Code Review
SO	System Operator
SSC A7	Standard Special Condition A7 (of a gas transporter's licence)
SSC A11	Standard Special Condition A11 (of a gas transporter's licence)
SSCs	Standard Special Conditions
SWCQ	Storage Withdrawal Curtailment Quantity Arrangements
UKCS	UK Continental Shelf
UNC	Uniform Network Code
VoLL	Value of Lost Load

Appendix 6 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments.

1.2. Please send your comments to:

Andrew MacFaul
Consultation Co-ordinator
Ofgem
9 Millbank
London
SW1P 3GE
andrew.macfaul@ofgem.gov.uk