

**National Grid Gas plc**

**Conclusions on  
Operating Margins Contestability**

**And**

**Initial Thoughts for  
Associated SO Incentive Arrangements**

Issue 1.0: Published 2<sup>nd</sup> September 2008

**nationalgrid**

## 1. Executive Summary

Special Condition C25 has been introduced into National Grid Gas's Gas Transporter Licence in respect of the NTS, which requires it to use reasonable endeavours to promote competition in the provision of OM services by 1st April 2009.

National Grid Gas ran an initial consultation exercise between March and May 2008. The initial consultation document described in detail National Grid Gas's need for the OM Service and considered options for further competitive provision of OM services going forward. Interested parties were encouraged to attend a workshop to debate issues further and inform their responses to the options contained within the document.

National Grid Gas received 12 formal responses to the Initial Consultation representing a broad cross-section of the industry. These responses have informed the development of the proposals contained within this document.

Alongside the work to promote competition in the provision of the OM Service, National Grid Gas is engaged in work to develop the wider gas System Operator (SO) incentives. Last year Ofgem trialled a new consultation process for SO incentives and in November 2007 asked National Grid to lead the development of Initial Proposals for SO Incentives. Following a review of the success of this approach, Ofgem has again asked National Grid to lead on the development of Initial Proposals for its own SO Incentives for the period from 1<sup>st</sup> April 2009<sup>1</sup>.

To initiate industry engagement and debate on the issues around SO Incentives, an Industry Workshop was held on the 25<sup>th</sup> June 2008 where National Grid Gas presented on a number of issues relating to the current SO incentive schemes. The slides from the workshop can be found on National Grid Gas's website<sup>2</sup>. To ensure maximum industry engagement in the process, National Grid has also presented on this year's process to the Transmission Workstream, Gas Forum, Demand Side Working Group and the Gas Operational Forum.

Discussions at the workshop focussed on the need to manage the uncertainty created by the OM Contestability work by ensuring that incentives had sufficient flexibility to cope with the evolution of the market for OM and the providers of the OM Service.

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<sup>1</sup> <http://www.ofgem.gov.uk/Markets/WhlMkts/EffSystemOps/SystOpIncent/Documents1/SO%20Incentives%20Open%20Letter%20May%202008.pdf>

<sup>2</sup> <http://www.nationalgrid.com/uk/Gas/soincentives/IndustryWork/>

This document is issued pursuant to the requirement set out in Special Condition C25. It is broadly split into three sections:

- **Potential OM Service Providers:** The document presents National Grid Gas's conclusions on how the OM Service could be delivered from a range of potential Service Providers. National Grid Gas seeks views on whether the industry agrees with its conclusions, whether there are any other issues that need to be taken into account and whether and to what extent potential providers would consider providing the OM Service;
- **Procurement Mechanisms:** The document considers how best to procure the OM Service in an efficient, economic and co-ordinated manner from existing and potential providers. National Grid Gas seeks views on the proposed procurement mechanisms and how best to encourage participation in the service; and
- **Incentivisation:** The document looks at how best to incentivise OM Service procurement and how the incentive could be used to assist the aims of the OM contestability work. National Grid Gas seeks views on how best to incentivise the procurement of the OM Service going forward.

Representations received in response to the OM Contestability aspects of this document will be used to inform the next stage of the process, which we expect to involve the following:

- changes to the UNC;
- changes to the System Management Principles Statement and Procurement Guidelines;
- Running a procurement exercise for OM service delivery from 1<sup>st</sup> April 2009

Representations received in response to the OM Incentive consultation will feed into an Initial Proposals consultation document on all SO incentives, which will be issued at the beginning of November, with a consultation period closing before Christmas.

**Responses to this document will be published on National grid Gas's website and should be sent to:**

[ian.pashley@uk.ngrid.com](mailto:ian.pashley@uk.ngrid.com)

**by 5pm on 30<sup>th</sup> September 2008**

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## **2. Introduction**

### **2.1. Operating Margins - An Overview**

OM gas is used to maintain NTS pressures in the immediate period following operational stresses, before market balancing measures become effective. Such stresses may result from supply failure, unanticipated demand changes or failure of an NTS pipeline or associated equipment. A quantity of OM is also procured to manage the orderly run-down of the System in the event of an NGSE.

The obligation to procure OM is set out in National Grid Gas's Gas Transporter Safety Case in respect of the NTS (hereafter referred to as the 'Safety Case') and in the Uniform Network Code (UNC). National Grid Gas's Safety Case currently defines OM as being '...gas held in storage...to cover sudden changes in supply or demand that can not be met by the On-the-day Commodity Market (OCM).'

### **2.2. Purpose and Scope of this Document**

Special Condition C25 has been introduced into National Grid Gas's Gas Transporter Licence in respect of the NTS, which requires National Grid Gas to use reasonable endeavours to promote competition in the provision of OM services by 1st April 2009.

National Grid Gas ran an initial consultation exercise between March and May 2008. The initial consultation document described in detail National Grid Gas's need for the OM Service and considered options for further competitive provision of OM services going forward. Interested parties were encouraged to attend a workshop to debate issues further and inform their responses to the options contained within the document.

National Grid Gas received 12 formal responses to the Initial Consultation representing a broad cross-section of the industry. These responses have informed the development of the proposals contained within this document.

This document is issued pursuant to the requirements of Special Condition C25 and the wider SO Incentives development process. The scope of the document covers the following key objectives:

- To investigate in detail the extent to which the OM service can be tendered by a wider range of Providers;
- To review those barriers to participation that National Grid Gas can directly influence;
- To highlight potential barriers to participation that National Grid Gas can not directly influence;
- To propose a transparent and robust procurement mechanism that meets the needs of both potential providers and National Grid Gas; and

- To investigate how best to incentivise the efficient and economic procurement of the OM Service.

The document is split into the following sections:

- Section 3 presents an overview of the industry engagement and consultation process to date
- Sections 4 and 5 summarise OM provision by existing service providers and presents National Grid Gas's conclusions on how the OM Service could be delivered from a range of potential new service providers;
- Section 6 considers some of the contracting principles expected to underpin the procurement of the OM Service;
- Section 7 considers options for efficient, economic and co-ordinated procurement of the OM Service; and
- Section 8 presents initial thoughts on how future procurement could be incentivised.

### 2.3. Responding to this Document

An electronic copy of this document can be found at:

<http://www.nationalgrid.com/uk/Gas/OperationalInfo/GasOperatingMargins>  
<http://www.nationalgrid.com/uk/Gas/soincentives/>

There will be a consultation period of four weeks in relation to this document. Responses will be placed on National Grid Gas's website and are requested by **5pm on 30<sup>th</sup> September 2008**.

Responses should be emailed to [ian.pashley@uk.ngrid.com](mailto:ian.pashley@uk.ngrid.com).

Representations received in response to the questions raised within this document will be used to inform the next stage of the process, which we expect to involve raising the necessary changes to the UNC, System Management Principles Statement and Procurement Guidelines to facilitate procurement of the OM Service under newly-competitive arrangements for service delivery from 1<sup>st</sup> April 2009.

If you wish to discuss any aspect of this document, please contact Ian Pashley by emailing [ian.pashley@uk.ngrid.com](mailto:ian.pashley@uk.ngrid.com) or by telephoning 01926 653446.

### 3. Industry Engagement and Consultation to Date

#### **Section Overview**

This section summarises the Initial Consultation exercise and presents a high level summary of the views expressed.

The full responses are available on the Operating Margins section of the National Grid Gas website.

#### 3.1. Initial OM Consultation

The scope of the Initial OM Consultation<sup>3</sup> covered the following key objectives:

- To review what system events or circumstances OM should be procured to cover;
- To review and clarify the OM service specification, so that any potential barriers to OM provision can be minimised (without compromising necessary service requirements);
- To investigate whether the OM service can be tendered by a wider range of Providers; and
- To consider the most appropriate means of procuring OM in a way that meets the needs of both potential providers and National Grid Gas.

To support the consultation process a workshop was held on Thursday 17th April 2008 at the Ardencote Manor Hotel, Claverdon. The workshop presented further information relating to OM and the consultation and brought together interested parties to debate issues around future OM provision. The overall aim of the day was to provoke thought/debate and inform participants' responses to the consultation.

Additionally, the consultation was promoted at industry forums such as the Demand Side Working Group, Gas Operational Forum and Transmission Workstream.

National Grid Gas was keen to receive comments and feedback on all aspects of the Initial Consultation. A high level summary of the consultation responses is presented in this section. The responses have been placed in their entirety on the National Grid Gas website (link below).

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<sup>3</sup> A copy of the Initial Consultation document can be found at:  
<http://www.nationalgrid.com/uk/Gas/OperationalInfo/GasOperatingMargins/>

## 3.2. Summary of Consultation Responses

### 3.2.1. Summary of Views on Potential OM Service Providers

All respondents recognised the potential benefit that increasing the range of potential OM Service providers could have on diversity of service provision and location. Comments relating to specific potential service providers can be summarised as follows:

#### ***NTS Connected Loads***

CCGT operators/representatives were fairly upbeat regarding the technical ability of CCGTs to offer an OM Service. They stated that CCGTs are well suited to delivering a known reduction in the offtake of gas within a short timescale, and also cited location and ease of communication as being beneficial. It was suggested however that there is a risk that the service might not be sufficiently attractive for CCGTs to forgo electricity revenues or switch to alternative fuels to provide OM, and that the state of the electricity network would need to be considered when deciding whether or not to curtail electricity production.

#### ***Supply/Importation***

One respondent expressed the view that there could be significant merit in extending non-Orderly Rundown OM to UK gas fields, and that there may be merit in considering the use of offshore linepack for OM.

No interconnection-specific responses to the Initial Consultation were received.

#### ***Distribution Networks (DNs)***

Distribution Networks (DNs) stating that, in theory, they could provide an OM Service. However, they highlighted several practical barriers that would need to be overcome, such as the reform of DN interruption arrangements; NTS exit reform and the need to revisit DN Safety Cases as creators of significant uncertainty.

It was suggested that it would be necessary for National Grid Gas to contract directly with DN for provision of the OM Service, with the DN then contracting with loads for OM Service delivery. It was not seen as appropriate for National Grid Gas to have direct access to DN loads for curtailment.

#### ***General***

A number of respondents suggested that, whilst it may be possible to determine the necessary physical and contractual frameworks to facilitate OM Service provision from different types of provider, there was a great deal of uncertainty regarding whether the associated economics would make service provision viable.

### **3.2.2. Summary of Views on Potential Procurement Mechanisms**

Some respondents preferred close to real time OM procurement, noting that, whilst potential providers such as CCGTs could offer the OM Service at long lead times, they would face significant commercial risk which would feed through into tender prices. Whilst potentially making them uneconomic, this would also mean that potential benefits of diversity of providers and locations may not be realised.

Others, however, were sceptical of closer to real time procurement, particularly via the OCM Locational market. It was suggested that the OCM Locational Market is more of a commercial tool to assist in residual balancing, and that the majority of potential providers highlighted in the initial consultation document were already able to offer gas via the OCM Locational market.

A number of respondents preferred a process of procurement ahead of time, as it would provide better investment signals and commercial certainty. They expressed a preference for contract periods for service provision to be over the longer term (e.g. up to five years) as this would increase certainty regarding future income streams. However they also saw benefit in a tender structure that would allow providers to offer the service for individual years as this would provide bidders with the flexibility to structure service provision around the capability of their assets.

### **3.2.3. General Points**

Some respondents expressed concern that the HSE's stated view that potential new sources of the OM Service would need to demonstrate the same level of service provision as gas in store would create a barrier for potential service providers. Whilst other respondents also recognised this, they suggested that it was right that safety was the paramount concern (above facilitating competition) and that it therefore should not be seen as a barrier to entry.

## **3.3. System Operator (SO) Incentives Workshop**

An Industry Workshop was held on the 25<sup>th</sup> June 2008 where National Grid Gas presented on a number of issues relating to the current SO incentive schemes, including the System Reserve (OM) Incentive. Discussions at the workshop focussed on the need to manage the uncertainty created by the OM Contestability work by ensuring that incentives had sufficient flexibility to cope with the evolution of the market for OM and the providers of the OM Service. Further information relating to the System Reserve (OM) Incentive can be found in section 8 of this document.

## 4. Current OM Service Providers

### Section Overview

This section summarises the OM requirements framework for OM and provides details of the physical processes and contractual relationships that, for current providers (NTS Connected Storage and LNG Importation with Storage), meet the OM requirements. It also discusses the level of OM Service available from current OM providers so as to provide a baseline against which potential providers could be judged.

### 4.1. Current OM Requirements Framework

The requirement to hold OM gas is set out in National Grid Gas's Gas Transporter Safety Case and in UNC Section K. The OM events are categorised as follows:

- Group 1: Beach supply failure and forecast demand change;
- Group 2: Compressor failure and pipeline failure (which can require both locational and non-locational OM to be held; and
- Group 3: Orderly rundown.

Group 1 events are related to 'energy' issues. Should a Group 1 event occur, the OM used will be the minimum associated with operational requirements and will be used on the basis of an 'action of last resort'. Its use is concerned with the safety of the system and managing pressures, rather than with economics.

Group 2 events are related to 'system' (NTS) issues. Should a Group 2 event occur, OM will be to support network pressures on the Gas Day upon which the event occurred. Following the day of the event, any reduction in capacity resulting from the event becomes equivalent to a planned maintenance activity, and therefore is not supported by the use of OM.

Should a Group 3 event occur, OM is used to effect isolation of Very Large Daily Metered Customers (VLDMCs) and Local Distribution Zone Daily Metered (LDZ DM) loads such that the remaining predominantly domestic demand can be met with supply available at the time.

The OM requirements framework is revisited for each of the potential providers within section 5, which discusses the ability of those potential providers to deliver OM for each of Groups 1, 2 and 3.

## 4.2. OM Provision from NTS connected storage

National Grid Gas already procures the OM Service from NTS connected storage.

This section is included to highlight issues with OM provision from NTS connected storage that potential new providers would need to be aware of.

### 4.2.1. Description of OM Service Provision

The OM service can be provided by storage through several mechanisms. National Grid Gas can procure a bundled storage service (i.e. including storage space, injection and deliverability rights) and place gas in store at a storage facility to allow for the withdrawal of gas onto the NTS following occurrence of an OM event.

Alternatively, where available, National Grid Gas can procure storage space only and incur additional withdrawal/injection and overrun charges in the event the OM Service is used.

A further option is for National Grid Gas to procure a gas delivery OM Service such that, following the occurrence of an OM Event, a Shipper's gas in store is delivered to the NTS.

Presently, National Grid does not procure firm deliverability at storage facilities so as to avoid sterilising site deliverability to guarantee a flow rate change for a low probability OM event.

A storage service would need to have a level of stock to enable withdrawal of gas for OM purposes taking into account, amongst other factors, boil-off and/or heel/cushion gas<sup>4</sup> requirements. The gas delivered would need to continually meet Network Entry Agreement (NEA) and Gas Safety (Management) Regulations 1996 ("GS(M)R") requirements. The following factors will also need to be taken into account:

- The ability of the site to increase its flow onto the NTS (which is affected by the withdrawal capability of the site; and whether and to what extent the site is already flowing);
- The ability of the site to withdraw gas for OM within the response timescales following injection;
- The site maintenance schedule;
- The feasible withdrawal rates when OM gas is the only gas left within a storage site other than that for boil off and/or heel gas; and
- The feasibility of being able to refill OM space outside the standard injection season following a utilisation.

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<sup>4</sup> Gas required to be left in storage for operation reasons, such as maintaining minimum operating pressures/conditions

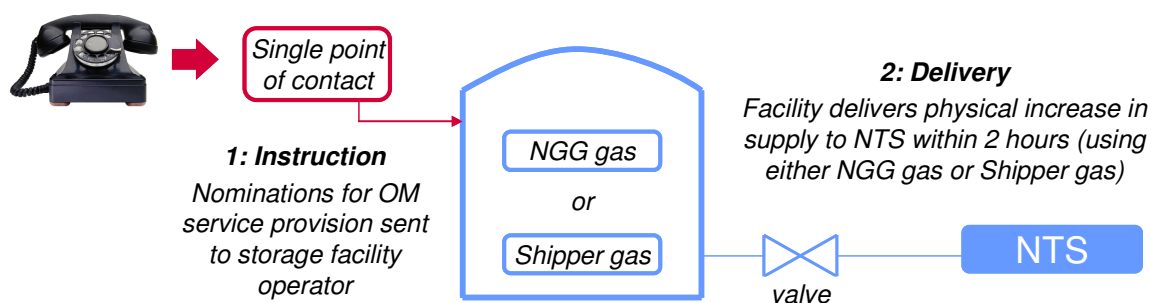
A single site can be contracted to deliver a flow rate change, although it will not always be possible to predict whether the site would already be flowing at partial or full capacity. This supports the use of a variety of storage facilities to provide diversity. Maintenance schedules would be taken into account in order to ensure that, as far as possible, sufficient OM Service remains available.

#### 4.2.2. OM Suitability

Storage services are suited to delivering against OM Groups 1, 2 and 3. If storage is unavailable for the full Operating Margins service level because it is already withdrawing, the gas flow from that site may in certain circumstances reduce the need for an Operating Margins call off, for example by satisfying a locational need.

#### 4.2.3. Physical Processes

The diagram below summarises the physical processes used by National Grid Gas for a storage facility or user of that facility in providing the OM Service:



##### a) Instruction

National Grid Gas requires a single point of contact through which a physical storage withdrawal (or delivery of gas onto the NTS) can be instructed twenty four hours a day, seven days a week. This would generally be the operator of the site.

##### b) Delivery

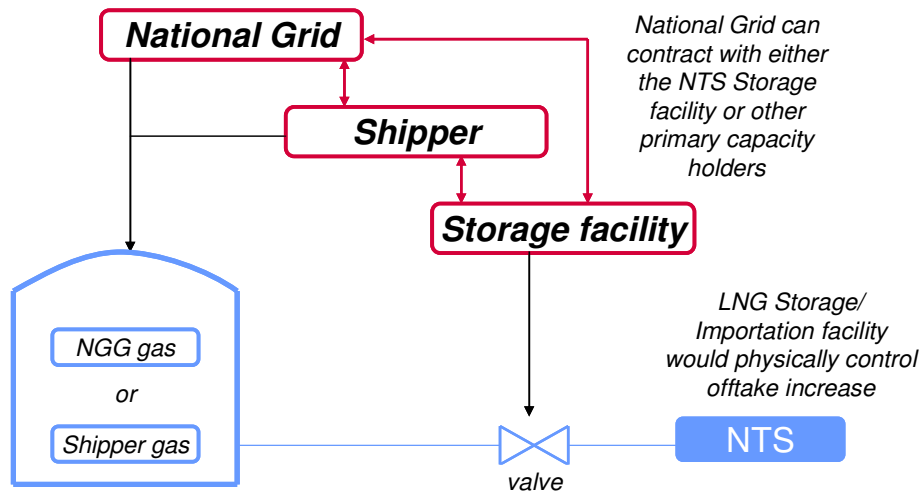
The single point of contact requires the authority to ensure that the OM Service is provided, i.e. that a change in gas flow rate is achieved and seen at the NTS entry point.

The storage facility needs to have the ability to achieve the change in gas flow rate within two hours.

The Shipper(s) with gas-in-store within the storage facility could be re-allocated the gas withdrawn to their portfolios or sell it on, as long as a genuine gas flow onto the NTS was delivered.

#### 4.2.4. Contractual Relationships

The contractual terms for OM provision via NTS connected storage are set out in UNC Sections K, R and Z, and through bilateral commercial arrangements or standard storage terms for other NTS connected storage sites. They can be summarised as follows:



The key point to note from the above diagram is that National Grid Gas can either contract directly with storage facilities to procure an OM Capacity Service (within which to store its own gas), or contract with another primary capacity holder within a storage facility to procure an OM Delivery Service (using the primary capacity holder’s gas).

#### 4.2.5. Barriers to OM Provision by NTS Connected Storage

##### UNC

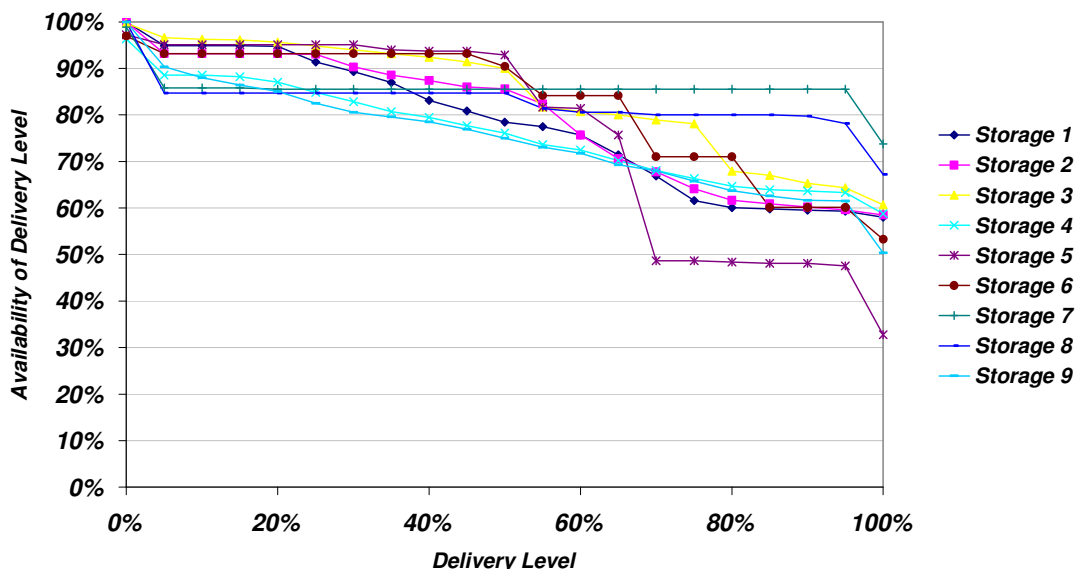
Section K of the UNC Transportation Principal Document (“Operating Margins”) already refers to OM Service provision via Capacity arrangements (holding capacity in storage facilities) and Delivery arrangements (third parties who hold capacity in storage facilities). Hence, the UNC currently already allows provision of the OM Service from storage sources.

##### Safety Case

The safety case currently states that OM Gas is gas held in storage and hence it already allows provision of the OM Service from storage sources. As stated above, site specific factors that may affect the availability and delivery of OM gas will be taken into account in the assessment of a storage facility’s ability to provide OM services.

The chart below provides an overview of the availability of specific delivery levels from a range of NTS Connected storage facilities during the 2007/08 storage year. The availability is determined on an hourly basis, taking the maximum potential delivery less any maintenance periods, withdrawals and unavailability due to injection.

**Availability of OM Service: Storage Facilities**



The chart shows that the storage facilities were available to deliver 95% of their withdrawal capability for between 48% and 86% of the time.

The availability levels shown in the above chart can be considered as a baseline level of availability for the purpose of comparison with that of the potential OM Service providers discussed in Section 5 of this document.

### 4.3. OM Provision from LNG Importation

National Grid Gas already procures OM Services from users of the LNG Importation with Storage facility at the Isle of Grain.

This section is included to highlight issues with OM provision from LNG Importation that potential new providers would need to be aware of.

#### 4.3.1. Description of OM Service Provision

There are two theoretical categories of LNG Importation OM provision – from LNG Importation sites with storage and from LNG Importation sites without storage capability.

To deliver a physical increase in the rate of flow of gas into the NTS, a site without storage would either require a ship to be berthed coincident with the occurrence of an OM event, or a dedicated ship moored at the site in a state of readiness (effectively making it a site with storage). The gas carried by the

ship would need to continually meet Network Entry Agreement (NEA) and Gas Safety (Management) Regulations 1996 (“GS(M)R”) and boil-off would need to be managed. Clearly this would be uneconomic.

Sites with storage capability need to maintain a minimum level of LNG stock to meet the contracted OM Service requirements (as above, taking into account heel gas and boil-off requirements and as well as ensuring that the gas continually meets Network Entry Agreement (NEA) and GS(M)R requirements). The following factors will also need to be taken into account:

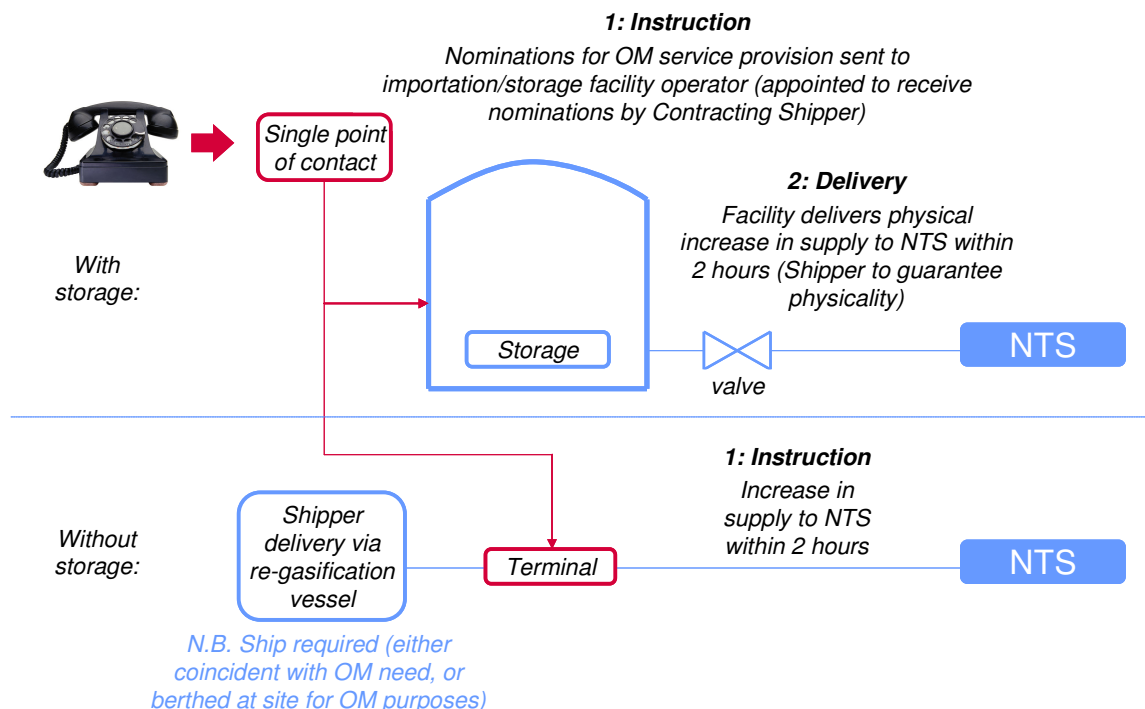
- The ability of the site to increase its flow onto the NTS (which will be affected by the withdrawal capability of the site and whether and to what extent the site is already flowing);
- Overall site capacity and the impact holding OM might have;
- Suitable entry capacity holdings;
- The site maintenance schedule;
- Withdrawal rates (which can be affected by the amount of gas left within a storage tank); and
- The schedule for the refilling of the tanks to maintain a compliant specification and volume of OM gas stocks.

#### **4.3.2. OM Suitability**

LNG Importation terminals with storage can provide both capacity and deliverability services; and are suitable for delivering against OM Groups 1, 2 and 3.

### 4.3.3. Physical Process

The diagram below summarises the physical processes for LNG Importation Terminals providing the OM Service:



#### a) Instruction

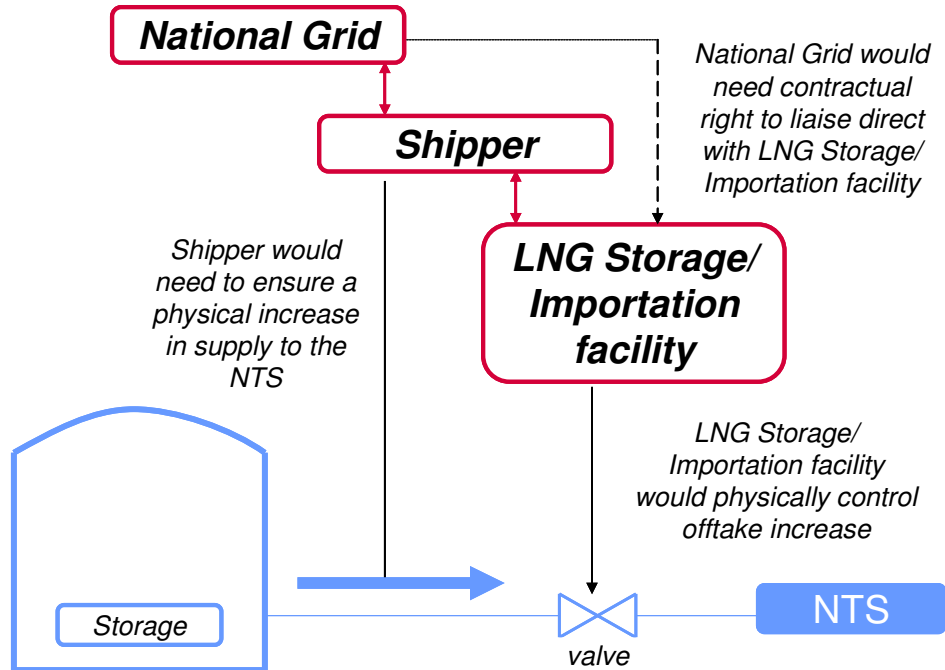
National Grid Gas requires a single point of contact through which a physical increase in supply to the NTS can be instructed twenty four hours a day, seven days a week. This would generally be the operator of the site.

#### b) Delivery

The single point of contact would require the authority to ensure that the OM Service is provided, i.e. that a physical increase in the rate of gas delivery to the NTS is achieved and seen at the NTS entry point.

#### 4.3.4. Contractual Relationships

There are two primary contractual interfaces – between National Grid Gas and a Shipper or Shippers who operate out of the LNG Importation site and between the Shipper and the LNG Importation site.



The contract between National Grid Gas and the Shipper(s) would provide the right for National Grid Gas to liaise direct with the site operator to instruct provision of the OM Service.

The Shipper could retain the gas within their portfolio or sell it on, as long as a genuine increase in the rate of gas delivery to the NTS was delivered.

The service would be subject to re-stock frequency and boil-off considerations.

#### 4.3.5. Barriers to OM Provision by LNG Importation

##### UNC

Section K of the UNC Transportation Principal Document (“Operating Margins”) already refers to National Grid NTS in its role as Operating Margins Manager as an LNG Importation User and that the OM Service can be provided via Capacity arrangements (holding capacity in LNG importation facilities) and Delivery arrangements (third parties who hold capacity in LNG importation facilities). Hence the UNC currently already allows provision of the OM Service from LNG Importation Terminal sources.

### **Safety Case**

The safety case currently states that OM Gas is gas held in storage; hence it already allows provision of the OM Service from LNG Importation Terminal sources with storage. As stated above, site specific factors that may affect the availability and delivery of OM gas will be taken into account in the assessment of the storage facility's ability to provide OM services.

LNG Importation facilities without any form of storage are not considered viable as an OM Service provider due to the low likelihood of OM gas being available coincident with an OM event and the economics of addressing this.

#### **4.3.6. Summary Views**

LNG Importation terminals without any form of storage are not considered viable as an OM Service provider due to the low likelihood of being available coincident with an OM event.

LNG Importation terminals with storage are considered viable and are catered for by existing OM arrangements.

#### **Question Box: Section 4.2**

- Q4.2.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from LNG Importation?
- Q4.2.3: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of LNG Importation terminals with storage to provide an OM Service?
- Q4.2.4: (For LNG Importation terminal operators/users): Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision from LNG Importation terminal operators/users?

## 5. Potential OM Service Providers

### Section Overview

This section details the physical processes and contractual relationships that, for each potential Provider, could deliver the OM Service. In addition, this section looks at what else might need to be considered by both National Grid Gas and potential Service Providers when considering OM Service Provision.

National Grid Gas's views on the robustness of each potential provider is also presented against the storage baseline established in Section 4

### 5.1. OM Provision from NTS Connected Demand

National Grid Gas does not currently procure the OM Service from NTS Connected Demand.

NTS connected demand, such as Combined Cycle Gas Turbine (CCGT) Power Stations and Very Large Daily Metered Customers (VLDMCs), could in theory provide an OM service by reducing gas offtake from the NTS at exit points.

#### 5.1.1. Proposals for OM Service Provision

There are three potential categories of NTS Connected Demand OM provision:

- CCGTs with alternative fuel supplies (e.g. distillate);
- CCGTs without alternative fuel supplies; and
- directly connected industrial customers with or without alternative supplies.

Whilst the mechanism for OM Service delivery would be the same, the downstream impacts will be different, and are discussed in detail further in this section.

An NTS connected CCGT or industrial load would need to be taking gas from the NTS to be available to provide an OM Service. The following factors would also need to be taken into account:

For CCGTs without alternative fuel supplies:

- The Minimum Non-Zero Time (the minimum period on-load between synchronising to and desynchronising from the electricity transmission system). A CCGT will be able to deliver the OM Service once this time has elapsed; and
- The time taken to re-contract to cover the lost generation, and the timescales associated with the delivery of that generation.

For industrial loads without alternative fuel supplies:

- The impact on the business of the reduction of gas demand over the utilisation period and potentially a subsequent period

For CCGTs and industrial loads with alternative fuel supplies:

- The ability to switch fuel on-load (and maintain output);
- The availability of the equipment required to enable use of the alternative fuel;
- Any minimum period the CCGT or industrial load requires to operate on gas prior to switching fuels;
- The availability of the alternative fuel supply;
- The ability to re-stock fuel following utilisation;
- Whether the output capacity remains the same when using alternative fuel
- Any environmental issues or limitations arising from use of the alternative fuel

A single CCGT or industrial load could be contracted to deliver a flow rate change, although its expected offtake rate might be difficult to predict ahead of time.

A group of CCGTs or industrial loads could be contracted to deliver a flow rate change, increasing the likelihood that a specific flow rate change could be predicted ahead of time and delivered in real-time, either from one or a number of CCGTs or industrial loads.

Alternatively, a CCGT's contracted flow rate change could be augmented by a storage based backup, which could be used to make up any shortfall between the contracted flow rate change and what was actually available at the time.

### **5.1.2. OM Suitability**

To deliver a genuine locational flow rate change, the electricity generated by the CCGT would either need to be replaced by using alternative fuel, or on a different generator which is locationally remote from the CCGT providing the OM Service such that any increased offtake did not exacerbate the need for OM. Replacing electricity generated on another CCGT within the same locational area would deliver no net reduction in gas offtake in that area, which may render a locational service ineffective.

To deliver a genuine non-locational flow rate change, the electricity generated by the CCGT would either need to be replaced by using alternative fuel, or on a different generator utilising non-gas fuel. Replacing electricity generated on another CCGT would deliver no net reduction in gas offtake, rendering a non-locational service ineffective.

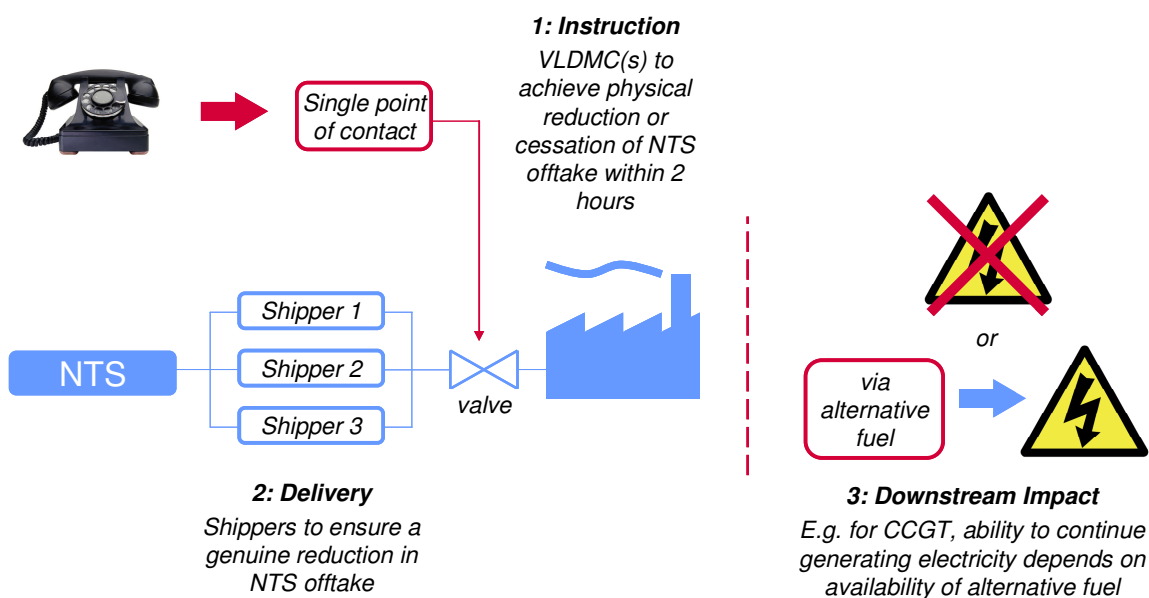
Switching from NTS supplies to LDZ supplies would render both a locational and non-locational OM service ineffective from any form of demand side provision, as the overall rate of offtake of gas would be unlikely to change.

A locational service could in theory be provided by individual CCGTs and industrial loads or a number of CCGTs and industrial loads in a similar location. A non-locational service could in theory be provided by a number of CCGTs and industrial loads pooled together.

CCGTs and industrial loads would be best suited to delivering against OM Groups 1 and 2, as they would be expected to already be shutting down in an Orderly Rundown of the system.

### 5.1.3. Physical Processes

The diagram below summarises the physical processes envisaged by National Grid Gas for an NTS connected CCGT or industrial load providing the OM Service:



#### a) Instruction

National Grid Gas requires a single point of contact through which a physical reduction or cessation in offtake can be instructed twenty four hours a day, seven days a week. This could either be on an individual CCGT or Industrial Load basis or via an agent who could act as a single point of contact for multiple CCGTs or Industrial Loads.

#### b) Delivery

The single point of contact would require the authority to ensure that the OM Service is provided, i.e. that a change in offtake is achieved and seen at the NTS exit point.

The CCGT or industrial load would need to achieve a reduction in or cessation of gas offtake within two hours.

The Shipper(s) for the CCGT or industrial load could retain the unused gas within their balancing portfolios, or sell it on, as long as a genuine reduction in NTS offtake was delivered.

### **c) Downstream Impact**

As mentioned above, the downstream impact for CCGTs delivering the OM Service will depend on whether alternative fuel supplies are available and the rate of call-off required for OM. It should be noted that the following impacts are the views of National Grid Gas; there may be other impacts which potential providers may wish to take into account that are not listed below.

The impact is considered on two levels; the CCGT owner/operator and the electricity system.

#### ***Impact on CCGTs with Alternative Fuel***

The ability of a CCGT to provide the OM Service by using an alternative fuel would minimise the impact on the electricity network, although there may be an increase in the risk of the CCGT tripping during fuel switchover.

The use of distillate stocks may impact on the ability of a CCGT to meet other commitments, for example the requirement to hold alternative fuel supplies under a black start agreement with the Electricity System Operator. Further, there may be environmental consequences for the CCGT when using distillate, for example by adversely affecting emissions of carbon, sulphur, etc.

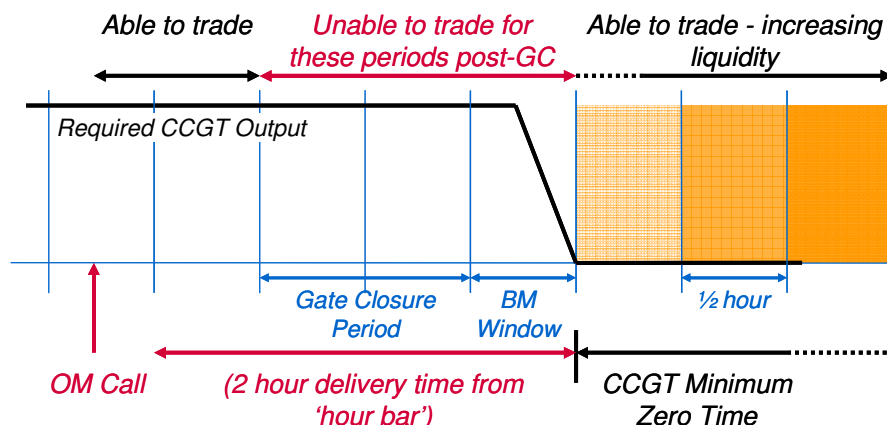
#### ***Impact on CCGTs without Alternative Fuel***

If a low rate of call off is required, a generator may only need to reduce output rather than shut down. However, in the event of a larger call off rate requirement, National Grid Gas anticipates that the CCGT would need to remain off for its Minimum Zero Time<sup>5</sup> (MZT). Typical CCGT MZTs lie between 3 and 6 hours which broadly aligns with recent OM call-off durations.

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<sup>5</sup> MZT is an electricity Balancing Mechanism parameter that signifies the minimum time between a BMU desynchronising from the electricity network subsequently being able to re-synchronise. MZT varies by plant type and is driven by technical considerations.

Without an alternative fuel source, the CCGT would need to balance its traded position via procurement of electricity from the market or from alternative generation within its own portfolio. To meet a response time of two hours, a CCGT could face exposure to imbalance against its electricity contracts - the ability of the CCGT to trade-out its electricity position (and so remove its imbalance exposure) is limited by the electricity Balancing Mechanism (BM) timescales, as shown below:



The diagram shows how an OM call might interact with a CCGT’s operation in the BM. Each division in the diagram represents a half-hour Settlement Period; and each Settlement Period has its own ‘Gate Closure’ which occurs one hour ahead.

An OM call would require delivery within two hours of the next hour bar. This would allow the CCGT at least half an hour to attempt to trade out its position prior to Gate Closure. However following Gate Closure, the CCGT is unable to trade freely for periods for which the gate has closed and also has obligations to follow its notified output profile during the same periods. Beyond those periods, the CCGT is able to trade freely within the market. Alternatively, the CCGT would have at least two hours to arrange for replacement of the lost generation output within its own portfolio.

**Impact of using CCGTs to provide OM on the Wider Electricity System**

Unless the CCGT operator has managed its generation shortfall by contracting or increasing other (non-gas) generation within its portfolio, the lost generation output would need to be replaced by the electricity System Operator via an alternative power station source. Note that it is unlikely that sufficient replacement plant could be procured in the necessary timescales, which suggests that the use of electricity reserve may be required. Whilst electricity reserves are routinely used to manage the unplanned loss of gas generation, its use to manage planned reductions instructed by NGG would create an unusual interaction with the National Grid Electricity Transmission (NGET)’s operations.

Further, replacement other than by on-site alternative fuel stocks may have an adverse impact on electricity plant margins. This could be an issue if OM usage were to coincide with operational stresses on the electricity network as

it has the potential to put system security at risk and make the use of the OM service very expensive for both National Grid Gas and National Grid Electricity Transmission, and ultimately, gas and electricity consumers.

**Impact on NTS connected Industrial loads With Alternative Fuel**

The ability of an industrial load to provide the OM Service via use of alternative fuel would minimise the impact on the business, although there may be a greater risk of a process tripping during fuel switchover.

**Impact on NTS connected Industrial loads Without Alternative Fuel**

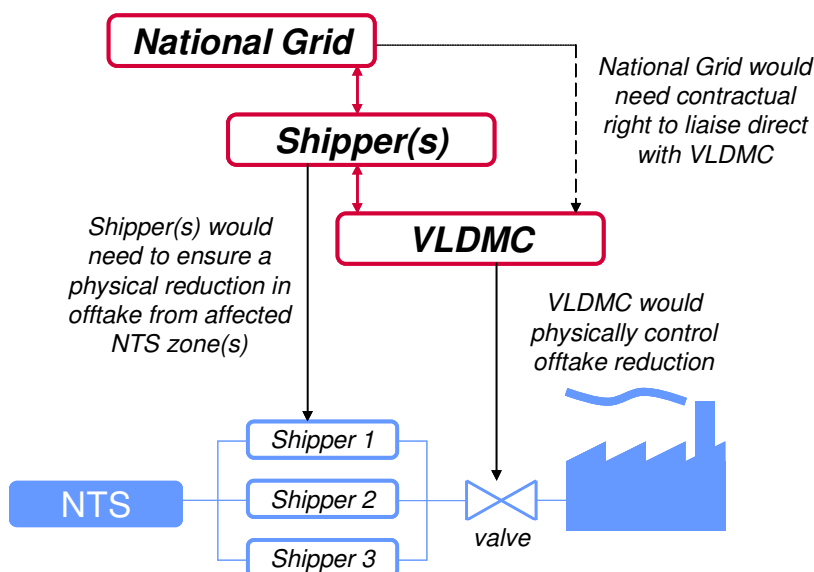
Without an alternative fuel source, the industrial load would need to consider its position with respect to the impact on its business of the reduction of gas demand over the utilisation period and, potentially, subsequent periods.

**Interaction with Interruption Arrangements**

National Grid Gas sees OM Service provision as an augmentation of any Interruption arrangements rather than an alternative. That is, if a CCGT were to provide the OM Service within two hours and an Interruption Notice is subsequently issued which required interruption within five hours, the OM Service would cease to be provided once the interruption was required to take effect.

**5.1.4. Contractual Relationships**

Section 5 of the Gas Act 1986 makes it an offence for a person to "arrange with a gas transporter for gas to be introduced into, conveyed by means of or taken out of a pipe-line system operated by that transporter" unless that person holds a gas shipper licence or is exempt from the need to hold such a licence. Hence for the purposes of a CCGT or Industrial Load providing an OM Service, National Grid Gas would be required to contract with the Shipper(s) of the CCGT or Industrial Load.



There would be two primary contractual interfaces – between National Grid Gas and the Shipper(s) and between the Shipper(s) and the CCGT. Where there are multiple Shippers supplying a CCGT, then depending on the number it might be appropriate to contract with a ‘lead’ Shipper who then agrees suitable arrangements with the other Shippers. Alternatively, the service could be governed by one multi-party agreement.

#### **5.1.5. Barriers to OM Provision by NTS Connected Loads**

##### ***UNC***

Section K of the UNC Transportation Principal Document (“Operating Margins”) refers to OM Service provision via Capacity arrangements (holding capacity in storage facilities) and Delivery arrangements (third parties who hold capacity in storage facilities). Hence the UNC currently acts as a barrier to provision of the OM Service from demand side sources.

National Grid Gas is in the process of identifying those changes to the UNC necessary to enable provision of the OM Service from demand side sources. Once this process is complete, a suitable UNC modification proposal will be raised.

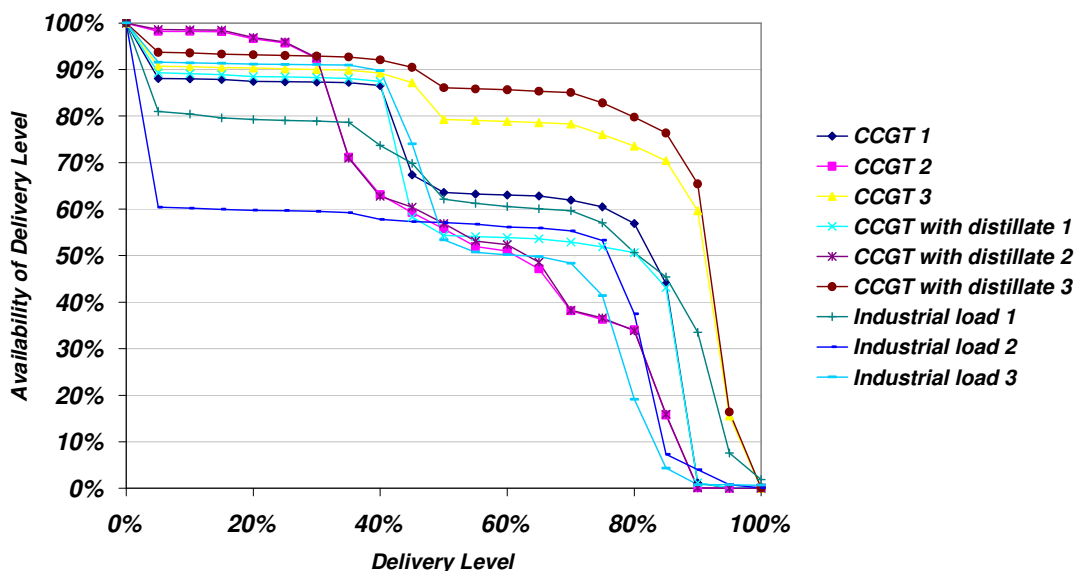
##### ***Safety Case***

The safety case does not currently permit OM Service provision from NTS Connected Loads

National Grid Gas expects that a material change to the Safety Case would need to be submitted to the HSE for NTS directly connected demand to be seen as an acceptable form of OM provision. For a material Safety Case change to be accepted, National Grid Gas will have to demonstrate that the service would not increase the possibility of a supply emergency occurring when compared to the level of service that current service providers are able to deliver.

Individual sites will have their ability to deliver a similar level of service to that provided by current OM service providers assessed, which would include an assessment of the available delivery level through time. The chart overleaf shows how the available delivery level for a range of NTS Connected Loads varied during the 2007/08 storage year. The availability data was derived from hourly offtake data, with allowance made for the minimum amount of time CCGTs would need to remain synchronised to the electricity system before being able to shut down.

**Availability of OM Service: NTS Connected Loads**



From initial analysis of the offtake rate of NTS connected demands in the 2007/08 storage year, the higher levels of offtake (and therefore demand response) are only reached at infrequent intervals. Therefore, it may be necessary to assume a level of offtake reduction that is less than the maximum capability of the site to reduce demand, in order to have a service availability comparable to that of storage facilities. Analysis undertaken on 2007/08 data suggests that booking between approximately 10% and 35% below maximum delivery capability may have enabled the availability of offtake reduction from CCGTs and industrial loads to have been considered comparable with current OM providers.

Further, the offtake profiles from the 2007/08 storage year for most NTS Connected Loads show a lower level of availability at each level of offtake than storage when booking a level below the maximum offtake capability is considered. In order to provide the same availability of service as currently provided by storage, National Grid Gas would need to book a larger volume of service from NTS Connected Loads for a given requirement level in order to deliver the same volume of available capability.

Further work may show that supplier diversity is required, in which case an assessment of the level of correlation of the availability of the different providers will be needed. For a similar level of availability to current OM providers during 2007/08, approximately 110% of the storage volume requirement would have needed to have been booked from a CCGT and approximately 110% to 150% from industrial loads.

It should be remembered, however, that the HSE would have the final say in relation to the viability of any OM Service offered by NTS Loads.

As discussed above, NTS connected demands with interruptible exit capacity would only be able to provide the OM Service until an Interruption Notice had taken effect and therefore only a short length of service could be assumed.

An NTS connected load that is also connected to the distribution network for offtake of gas, must not provide an OM service by switching load to the DN connection. Unless robust contracts can be agreed, a CCGT without alternative fuel capability and stocks (e.g. distillate) would only be eligible for locational OM Service provision due to the possibility of another CCGT increasing load to replace that lost by utilising a CCGT for OM call off. Where CCGTs with alternative fuel capability and stocks and industrial loads may be eligible for locational and non-locational services, they would not be eligible for Orderly Rundown OM services as discussed above.

### 5.1.6. Summary Views

Of all the potential OM Service providers considered in this section, NTS Connected Load is perhaps the one most likely to be able to offer the OM Service in the short term. The barriers to participation are within National Grid Gas's sphere of influence; that is, UNC modifications can be proposed and the service could be structured and, subject to acceptance by the HSE, procured such that it delivers something approaching equivalence to storage.

Given the uncertainty regarding offtake levels, individual CCGTs might struggle to provide non-locational (e.g. supply loss) OM services unless (a) a number of providers were aggregated to deliver some certainty of offtake reduction and (b) any deficit in generation was replaced with generation not fed by gas from either the NTS or a DN. However as long as any replacement generation could be procured such that any increase in offtake from the NTS was locationally remote such that it did not exacerbate the effects of the OM event, then a locational service might be feasible.

#### **Question Box: Section 5.1**

- Q5.1.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from NTS Connected Loads?
- Q5.1.2: Who would be most appropriate to aggregate provision from a group of CCGTs or industrial loads (e.g. Shippers, an Agent, or National Grid Gas)?
- Q5.1.3: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of NTS Connected Loads to provide an OM Service?
- Q5.1.4: (for NTS Connected Loads): Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision from NTS Connected Loads?

## 5.2. OM Provision from Offshore Supply & Interconnection

National Grid Gas does not currently procure the OM Service from offshore supplies or interconnectors.

Offshore Supplies and Interconnections could in theory provide an OM service by increasing gas input into the NTS at entry points.

### 5.2.1. Description of OM Service Provision

There are three theoretical categories of Offshore Supply OM provision – from UK based supply, non-UK based supply and from interconnection to overseas networks.

Supply points would require an amount of headroom, or reserved capacity, such that they could deliver a physical increase in supply to the NTS. Interconnectors would either require an amount of headroom or the ability to reduce export such that they could deliver an increase in supply to the NTS. The gas delivered would need to continually meet Network Entry Agreement (NEA) and Gas Safety (Management) Regulations 1996 (“GS(M)R”) requirements. The following factors will also need to be taken into account:

- The level of offshore linepack;
- Whether and the extent to which the site would already be flowing;
- The complexity of the upstream supply chain;
- Whether other Shipper nominations would negate an OM increase; and
- The site maintenance schedule.

### 5.2.2. OM Suitability

UK-based supply sources may be suitable for delivering against OM Groups 1 and 2. Their unsuitability for Orderly Rundown provision stems from the fact that, under emergency conditions, they would have already been instructed to operate at full rate.

Non-UK based supply sources, such as Langede, would not be instructed to run at full rate by National Grid Gas under emergency conditions, so may have headroom to spare to be able to deliver against OM Groups 1, 2 and 3.

To deliver a genuine locational flow rate change, the gas would either need to be additional or a re-routing of supplies from another terminal outside the locational area as otherwise the locational service would be rendered ineffective.

To deliver a genuine non-locational flow rate change, the gas would need to be additional and not just a re-routing of supplies from another terminal as this would render a non-locational service ineffective.

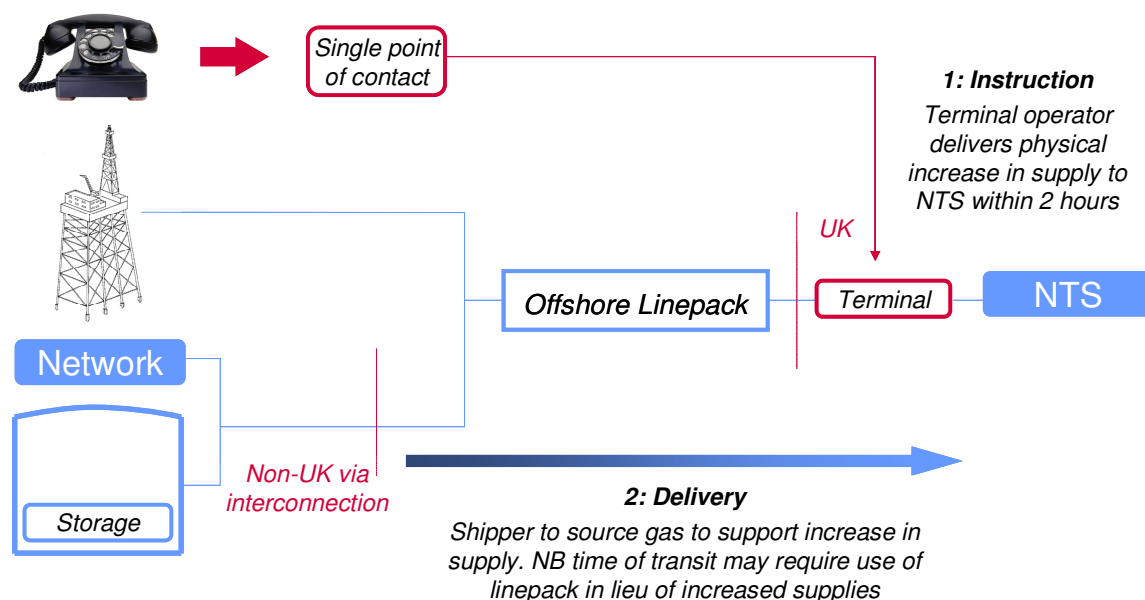
National Grid Gas anticipates that it would be difficult, given the number of potential users at a supply terminal, for a single user to guarantee a supply

increase for OM purposes, as other users' requirements may see them reducing supply levels at the same time.

The ability of interconnectors to provide the OM Service is more limited than for other supply sources, as the combined effects of the Gas Act and sector-specific EU energy rules make it very difficult to reserve importation capacity on interconnectors – any OM provision would be subject to market conditions at the time. The uncertainty that this creates raises significant questions regarding the viability of Interconnection as an OM Service provider.

### 5.2.3. Physical Process

The diagram below summarises the physical processes envisaged by National Grid Gas for an NTS supply source providing the OM Service:



#### a) Instruction

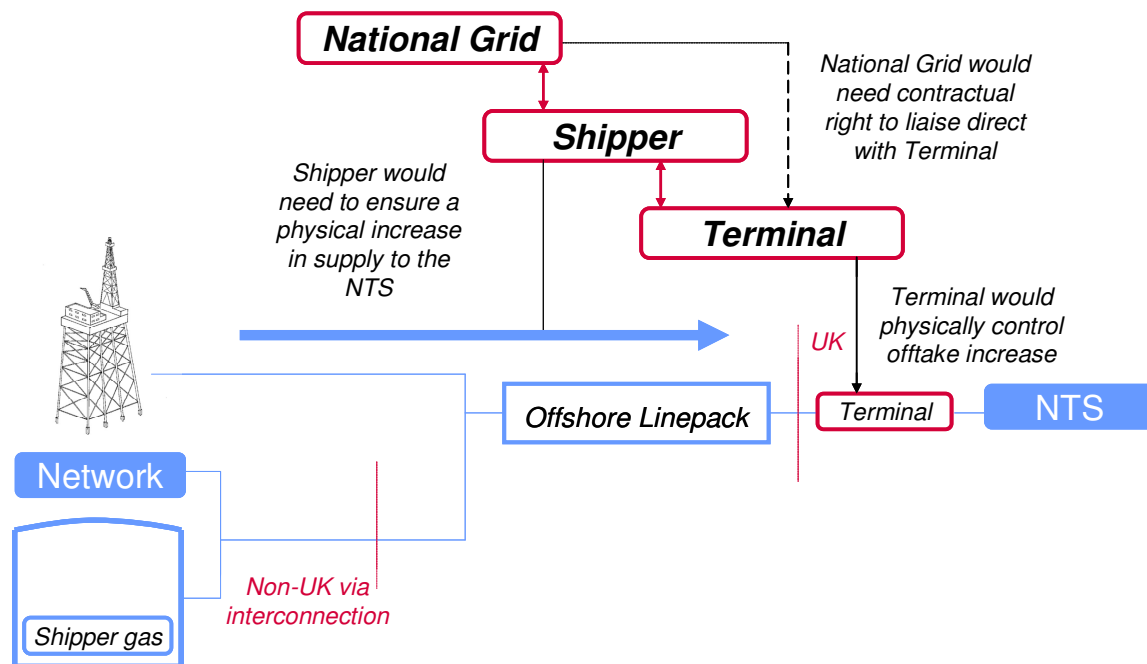
National Grid Gas requires a single point of contact through which a physical increase in supply to the NTS can be instructed twenty four hours a day, seven days a week. This would generally be the operator of the supply terminal.

#### b) Delivery

The single point of contact would require the authority to ensure that the OM Service is provided, i.e. that a physical increase in the rate of gas delivery to the NTS is achieved and seen at the NTS entry point.

To achieve a physical increase in supply within the timescales required by the OM Service, it could be expected that offshore linepack might be required to be used, backed up by increased production from offshore fields or from the non-UK end of an interconnector (using storage, for example).

### 5.2.4. Contractual Relationships



There would be two primary contractual interfaces – between National Grid Gas and the Shipper(s) and between the Shipper(s) and the Terminal Operator. Where there are multiple Shippers bringing gas into the Terminal, then depending on the number it might be appropriate to contract with a ‘lead’ Shipper who then agrees suitable arrangements with the other Shippers. Alternatively, the service could be governed by one multi-party agreement.

The contract between National Grid Gas and the Shipper(s) would provide the right for National Grid Gas to liaise direct with the Terminal operator to instruct provision of the OM Service.

The Shipper could retain the gas within their portfolio or sell it on, as long as a genuine increase in the rate of gas delivery to the NTS was delivered.

### 5.2.5. Barriers to OM Provision by Supply/Interconnection

#### UNC

Section K of the UNC Transportation Principal Document (“Operating Margins”) refers to OM Service provision via Capacity arrangements (holding capacity in storage facilities) and Delivery arrangements (third parties who hold capacity in storage facilities). Hence the UNC currently acts as a barrier to provision of the OM Service from supply or demand side sources.

National Grid Gas is in the process of identifying those changes to the UNC necessary to enable provision of the OM Service from supply side sources. Once this process is complete, a suitable UNC modification proposal may be raised.

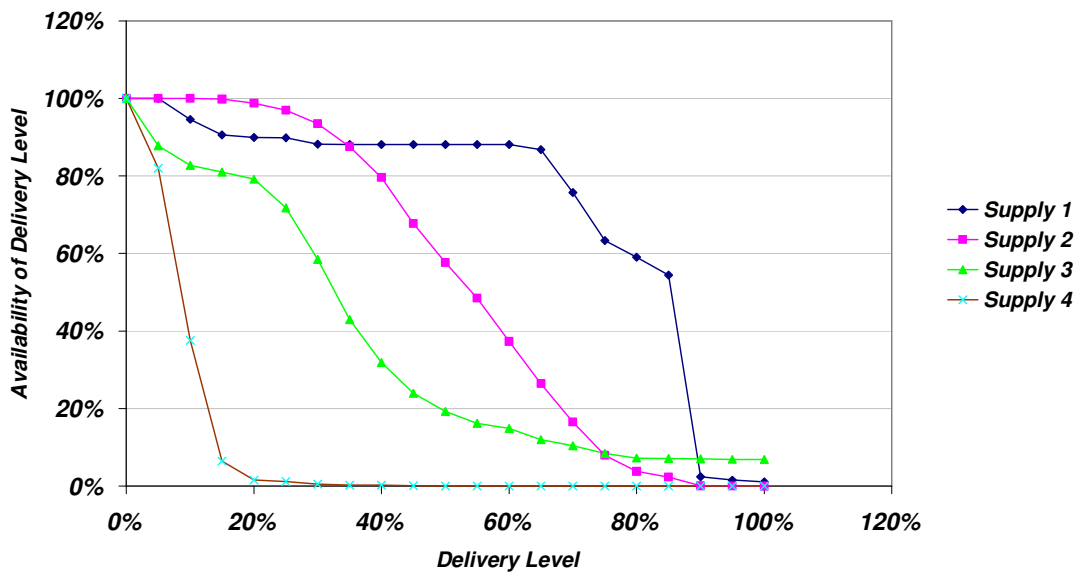
**Safety Case**

The safety case currently states that OM Gas is gas held in storage and hence this is currently a barrier to entry for this form of OM service provision.

National Grid Gas expects that a material change to the Safety Case would need to be submitted to the HSE for supply sources to be seen as an acceptable form of OM provision. For a material Safety Case change to be accepted, National Grid Gas will have to demonstrate that the service would not increase the possibility of a supply emergency occurring when compared to the level of service that current service providers are able to deliver.

As in the case of storage, individual supply providers will have their ability to deliver an OM service assessed against that provided by current OM service providers. This may include an assessment of the availability of supply headroom and that delivery can be demonstrated to be within OM timescales despite the complexities of upstream supply chains. The chart below shows how the available delivery level for a range of NTS supply terminals varied during the 2007/08 storage year. The availability data was derived from hourly entry capacity data, with allowance made for periods of maintenance and observed flow.

**Availability of OM Service: Supply**



Initial analysis reveals large variations in the levels of available headroom between different terminals. This may be due to different fields being used in different commercial patterns. Therefore, it would be necessary to assume a level of offtake reduction that is less than the maximum capability of the site to reduce demand, in order to have a service availability comparable to that of storage facilities. Analysis undertaken on 2007/08 data suggests that these large variations would require between approximately 6% and 85% of headroom booking, depending on the site, to make them comparable to

storage when used with overbooking (see below) on 2007/08 storage year data.

Further, the supply profiles from the 2007/08 storage year show a lower level of availability at each level of headroom when compared to storage, including when booking below the maximum level is considered. In order to provide the same availability of service as currently provided by storage, National Grid Gas would need to book a larger volume of services for a given requirement level in order to deliver the same volume of available capability.

Further work may show that provider diversity is required, in which case an assessment of the level of correlation of the availability of the different providers will be needed. For a similar level of availability to current OM providers during 2007/08, depending on the supply source's characteristics, a minimum of between 100% and 150% of the storage volume requirement would need to have been booked.

#### **5.2.6. Summary Views**

There are significant questions regarding the ability of Offshore Supply and Importation to provide the OM Service.

Due to the issues outlined in this section regarding the ability of interconnectors to provide of the OM service independently of market conditions, National Grid Gas does not believe tenders for OM provision from interconnection facilities would be possible.

The suitability of Offshore Supply for managing supply losses would require diversity in OM holding. Given the wide variation in the availability of headroom from Offshore Supply, National Grid Gas has concerns regarding the economic viability of sterilising headroom across a variety of supplies in order to secure that diversity.

As with NTS Connected Loads, some barriers to participation are within National Grid Gas's sphere of influence; that is, UNC modifications can be proposed to allow OM provision by Supply and the service could be structured and procured such that it delivers something approaching equivalence to storage.

National Grid Gas remains concerned, however, that it would be difficult, given the number of potential users at a supply terminal, for a single user to guarantee a supply increase for OM purposes, as other users' requirements may see them reducing supply levels at the same time. Hence overall, National Grid Gas is uncertain whether OM Service provision from Offshore Supply would be viable.

**Question Box: Section 5.2**

- Q5.2.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from Supply/Interconnection?
- Q5.2.2: What effect do you believe the long term reservation of headroom of supply would have on the market?
- Q5.2.3: Do you agree with National Grid Gas's view that current European legislation leaves importation facilities unable to offer an OM Service?
- Q5.2.4: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of Offshore Supply to provide an OM Service?
- Q5.2.5: (For Offshore Supply operators/users): Do you see OM Service provision as viable? Do you think National Grid Gas should encourage participation in OM Service Provision from offshore supply operators/users?

**5.3. OM Provision from Distribution Networks (DNs)**

National Grid Gas does not currently procure the OM Service from Distribution Networks.

**5.3.1. Description of OM Service Provision**

There are two potential categories of Distribution Network (DN) OM provision - by demand reduction and via use of gas in storage. DNs themselves could offer a demand reduction/gas in storage/linepack service, whilst loads within DNs could offer a demand reduction service.

***Demand Reduction***

Demand reduction within a DN is likely to face similar issues to NTS connected loads (see section 5.1 for details).

Further, it would be necessary to ensure that the demand reduction delivers a resulting flow change at the NTS offtake level, i.e. that the demand reduction is not used to increase DN storage.

### ***Gas in Storage/Linepack***

DNs could provide an OM service by offering excess storage (via linepack or gas holders).

This service could be delivered in at least two ways:

- The DN operator could agree to turn down offtake(s), using its own excess storage stocks for a number of hours during an OM event and then later in the gas day replenish its storage stocks by increasing its NTS offtake. This mechanism for service delivery might have limited flexibility, as turndown on gas day one could not be replenished on gas day two due to the requirements to correctly target costs on the gas day in which they occur.
- DN storage assets could be operated as a storage facility, whereby gas is injected, held in dedicated storage and then withdrawn.

#### **5.3.2. OM Suitability**

As with NTS connected demand, to deliver a genuine locational flow rate change, electricity generated by CCGT(s) within the DN would either need to be replaced by using alternative fuel, or on a different generator which is locationally remote from the CCGT providing the OM Service. Replacing electricity generated on another CCGT within the same locational area would deliver no net reduction in gas offtake in that area, rendering a locational service ineffective.

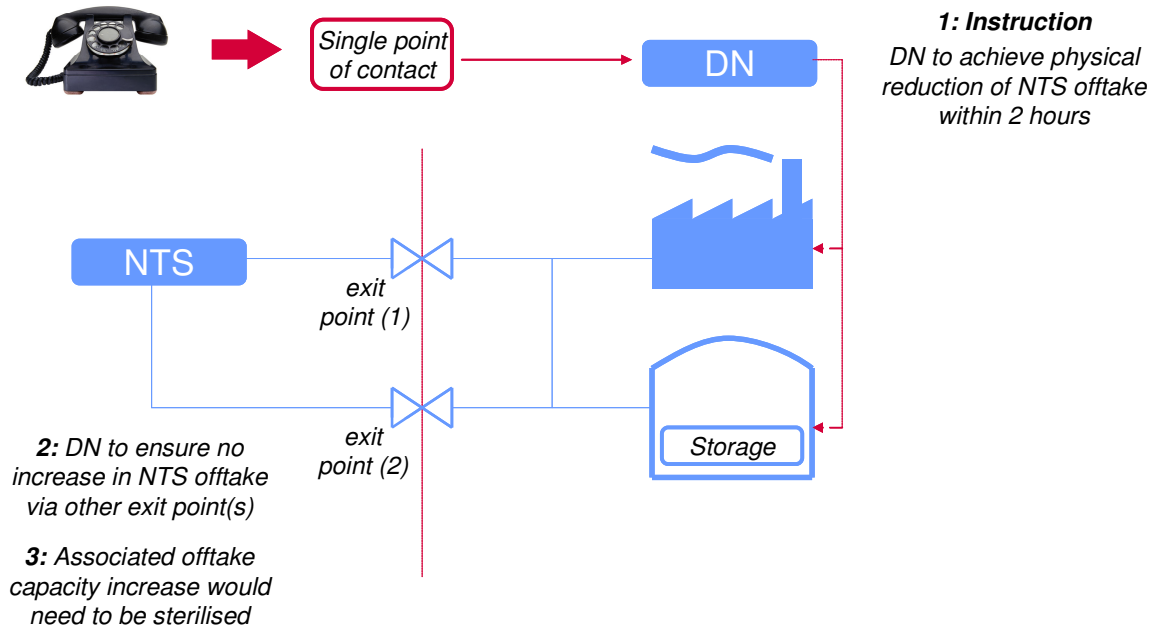
To deliver a genuine non-locational flow rate change, electricity generated by the CCGT would either need to be replaced by using alternative fuel, or on a different generator utilising non-gas fuel. Replacing electricity generated on another CCGT would deliver no net reduction in gas offtake, rendering a non-locational service ineffective.

OM provision from a diurnal based product is to a great extent only available between 06:00 to 22:00 period as the ability of the DN to recover a downturn in flows by the end of the day becomes constrained.

DN-connected CCGTs and industrial loads would be best suited to delivering against OM Groups 1 and 2 (e.g. not Orderly Rundown, where they could be expected to already be shut down).

### 5.3.3. Physical Process

The diagram below summarises the physical processes envisaged by National Grid Gas for a DN providing the OM Service:



#### a) Instruction

National Grid Gas requires a single point of contact through which a physical reduction or cessation in offtake can be instructed twenty four hours a day, seven days a week. The DN would be ideally placed to undertake such a role as it could co-ordinate OM provision from multiple sources.

#### b) Delivery

The single point of contact would require the authority to ensure that the OM Service is provided, i.e. that a change in DN offtake is achieved and seen at the NTS exit point.

CCGTs or industrial loads would need to achieve a reduction in or cessation of gas offtake within two hours.

The Shipper(s) for the CCGT(s) or industrial load could retain the unused gas within their portfolios or sell it on, as long as a genuine reduction in NTS offtake was delivered.

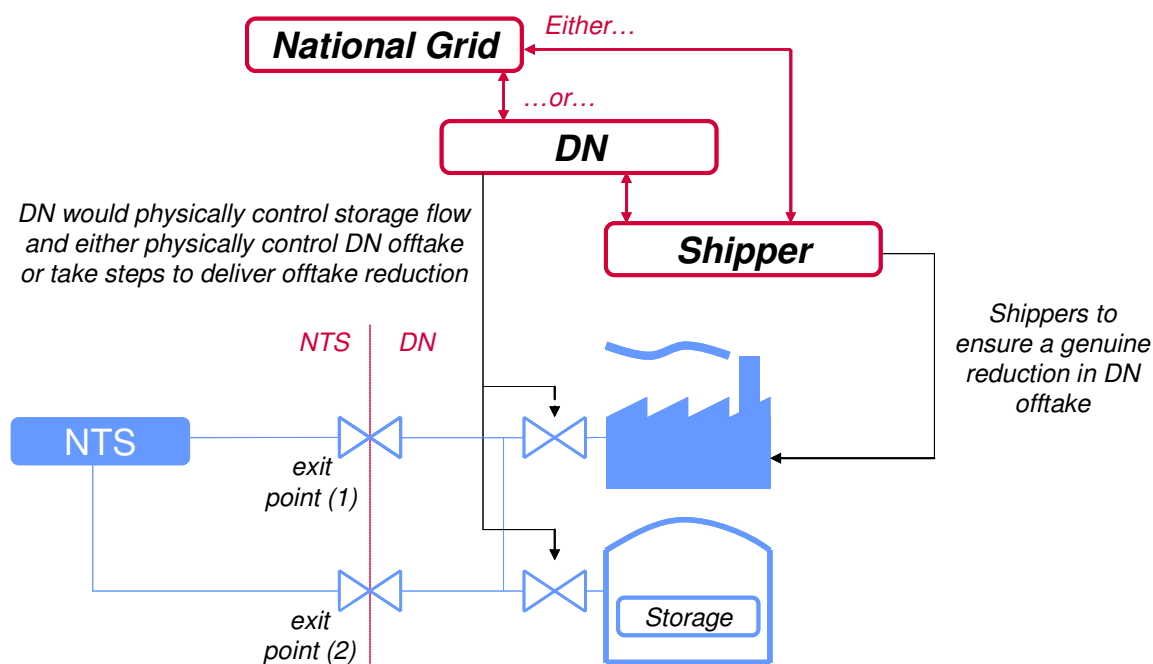
#### c) Downstream Impact

Demand reduction within a DN is likely to face similar issues to NTS connected loads (see section 5.1 for details).

An OM event which is satisfied via use of DN storage or linepack might impact the ability to promptly refill that storage, depending on the event's duration. Consequently, diminished NTS pressure could affect the ability of the DN to provide the full amount of contracted OM via such means on the following day.

It may be that DN loads on interruptible supply contracts could also provide an OM Service. In the event that interruption was subsequently called, OM Service provision could dovetail into the interruption call.

### 5.3.4. Contractual Relationships



It could be that the DN would be the primary contractual interface with National Grid Gas, with the DN having contracts with Shippers to achieve load reductions within the DN (this contractual arrangement is shown above).

An alternative approach would be to contract directly with Shippers of individual loads, with those Shippers having contracts with the DN to ensure NTS offtake reductions take place. However, some of the DNs who responded to the Initial Consultation did not believe it to be appropriate for National Grid Gas to have access to loads within DNs for curtailment.

Further to this, from a system operation point of view, the use of a DN as a primary point of contact represents a more efficient procurement and utilisation option.

### **5.3.5. Barriers to OM Provision by Distribution Networks**

#### ***UNC***

Section K of the UNC Transportation Principal Document (“Operating Margins”) refers to OM Service provision via Capacity arrangements (holding capacity in storage facilities) and Delivery arrangements (third parties who hold capacity in storage facilities). Hence the UNC currently acts as a barrier to provision of the OM Service from supply or demand side sources.

National Grid Gas is in the process of identifying those changes to the UNC necessary to enable provision of the OM Service from supply and demand side sources. Once this process is complete, a suitable UNC modification proposal will be raised.

#### ***Exit Reform***

Provision of the OM Service will affect the DN’s requirement for flat and/or flexible exit capacity over the day of service provision. The infrequent nature of the OM Service suggests that, from a DN point of view, such flat/flexible exit capacity changes might be best procured within-day. However the certainty of delivery required by National Grid Gas suggests that the risk of insufficient flex being available within-day may need to be mitigated by capacity procurement ahead of time.

#### ***Safety Case***

The safety case currently states that OM Gas is gas held in storage and hence this is currently a barrier to entry for this form of OM service provision.

In order to deliver a similar level of service to that provided by storage that currently provides OM services, similar issues to those for NTS connected demand described above in 4.2 in terms of availability of a given volume of provision need to be considered. In addition, National Grid do not have direct measurements of DN loads or stock, only of DN flows that are also subject to a range of factors such as demand forecast changes leading from weather forecast changes. In addition, National Grid could not ensure that contractual flow changes are secured by physical means, as this could have downstream gas supply emergency implications.

Any demand reduction would need to deliver a physical reduction in offtake from the NTS, therefore a DN connected load that is also connected to the NTS for offtake of gas, must not provide an OM service by switching load to the NTS connection.

Any DN providing an Operating Margins service would need to make its own demonstration that it continues to comply with its own Safety Case. National Grid would need to be assured that any flow changes made were sustainable and would not need to be reversed should they present the DN with its own pressure problems that could lead to a supply emergency. As in the case of

storage, each individual provider would have their ability to deliver a similar level of service to that provided by current storage OM service providers assessed. This may include an assessment of the availability of an expected delivery rate and could lead to a requirement to book a larger volume in order to have a similar availability to that of storage.

Unless robust contracts can be developed, a CCGT without alternative fuel capability and stocks (e.g. distillate) will only be eligible for locational OM service provision due to the likelihood of another CCGT increasing load to replace that lost by utilising a CCGT for OM call off. CCGTs with alternative fuel capability and stocks and industrial loads will be eligible for locational and non-locational services. NTS connected demand will not be eligible to provide Orderly Rundown as explained above in the OM suitability section.

As discussed above, NTS connected demands with interruptible exit capacity would only be able to provide an Operating Margins service until an Interruption Notice had taken effect and therefore only a short length of service can be assumed.

### ***Gas Act***

Section 5 of the Gas Act 1986 makes it an offence for a person to "arrange with a gas transporter for gas to be introduced into, conveyed by means of or taken out of a pipe-line system operated by that transporter" unless that person holds a gas shipper licence or is exempt from the need to hold such a licence.

However, National Grid Gas believes that there is an exemption (The Gas Act 1986 (Exemption)(No. 2) Order 2005) which permits certain arrangements between NTS and DNs that would otherwise have been prohibited by Section 5. It does not specifically relate to OM but does provide an exemption in relation to "relevant gas shipping arrangements", which is defined as arrangements between two transporters for gas to be introduced into a DN, taken out of a DN or taken out of the NTS, at a connection point. This could conceivably include OM arrangements depending on how they are structured.

### ***Other Issues***

The regulatory regime would need to recognise DNs participation in the provision of the OM Service and allow revenue received for the provision of the service to be retained.

To support the requirement for daily balancing and the correct apportionment of gas, it may be necessary to treat DN storage in a similar way to NTS storage, i.e. for it to have suitable injection, capacity and withdrawal products.

### 5.3.6. Summary Views

Whilst, for DN loads, there are similarities with the ability of NTS Connected Loads to provide the OM Service, there remain significant barriers to OM provision by DNs that National Grid Gas, acting alone, is unable to resolve.

Provision of the OM Service from DNs would therefore be a longer-term goal, if and when the necessary regulatory, commercial and DN Safety Case issues are addressed.

National Grid Gas is prepared to work with the industry to develop the ability of DNs to provide the OM Service, but believes that the driving force behind the work would sit better with the DN community

#### **Question Box: Section 5.3**

- Q5.3.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from DNs?
- Q5.3.2: What do you consider to be the most appropriate form of OM Service provision from DNs (e.g. demand reduction or demand deferral)? Is there scope for both to be provided?
- Q5.3.3: Do you think that it would be right for National Grid Gas to contact directly with shippers of DN loads, or should the DN be the contracting party?
- Q5.3.4: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of DNs to provide an OM Service?
- Q5.3.5: (For DNs): Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision from DNs?

#### 5.4. Summary of Potential Provider Suitability

The table below presents a high level summary of National Grid Gas’s views regarding the suitability of the potential providers discussed in this section 5 for providing the OM Service:

Provider	Suitable?	Next Steps
Storage		As current OM providers, new sites should be encouraged to consider OM provision.
LNG Importation		As current OM providers, new sites should be encouraged to consider OM provision.
NTS Demand		Potential OM providers. UNC changes required. Safety Case principles (for equivalent storage robustness) set out, but HSE decisions would be on a case-by-case basis.
Offshore Supply/ Importation		Unlikely OM providers – for supply, depends on load factor, offshore linepack and time of flight of product. For importation, significant legislative barriers exist.
DNs		Potential OM providers. UNC changes required. DN Safety Case changes required/principles (for equivalent storage robustness) to be set out. Regulatory issues. Exit Reform uncertainty.

#### General Questions on Section 5 as a Whole

Question Box: Section 5	
Q5.1:	To what extent do you believe that National Grid Gas has fully considered the extent to which Storage, NTS Connected Loads, LNG Importation, Supply/Interconnection and DNs could provide the OM Service?
Q5.2:	To what extent do you believe that National Grid Gas has sought to address barriers to provision of the OM Service from Storage, NTS Connected Loads, LNG Importation, Supply/Interconnection and DNs? Are there other barriers to service provision which National Grid Gas may or may not be able to remove?
Q5.3:	Who should be allocated the gas when OM is utilised? Should the shipper have an option that it can be reallocated the gas against its balancing and gas-in-store portfolio?
Q5.4:	Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision?

## 6. Contracting Principles

### Section Overview

This section provides an overview of the contracting principles that are expected to apply for OM Service provision from non-storage providers. In particular, it considers how to treat availability and nomination of the OM Service.

### 6.1. Introduction

Through the consultation process, National Grid Gas has received questions regarding how availability and utilisation will be determined for potential OM Sources with variable supply or offtake profiles. This section 6 considers how to manage, as far as possible, those variations in the availability of supply increase or offtake reduction to enable a consistent level of availability to be offered. It also considers how best to treat instructions to deliver the OM Service against such variations.

### 6.2. Availability

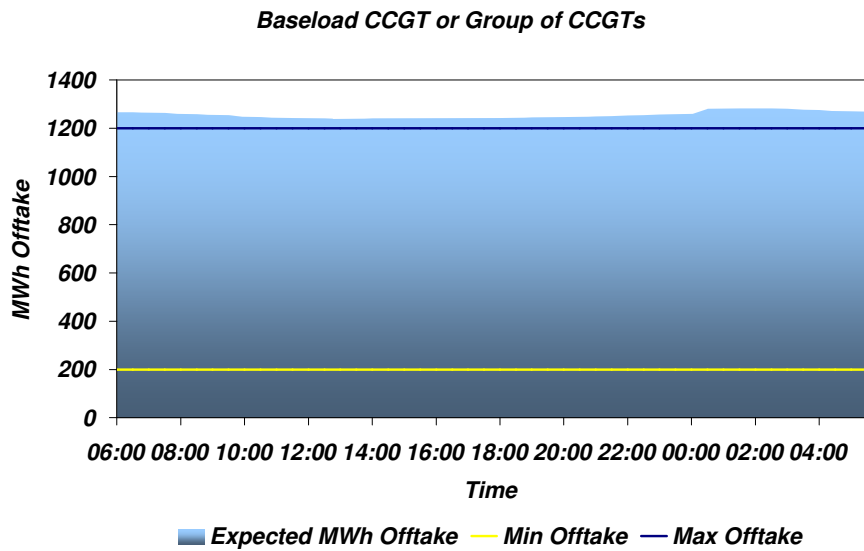
For dealing with OM events, National Grid Gas requires certainty regarding the availability of a supply increase or an offtake reduction.

Supply sources and NTS/DN Connected Loads cannot guarantee they will be available or on at a certain level at any time. The following section considers how the OM Service might deal with variability of availability. Examples given are from a demand side perspective, although they could be equally applicable to headroom on supply side sources.

Accordingly, a potential service provider could provide a percentage availability to offer the expected turndown rate in each month. National Grid Gas would be looking for equivalent percentage availability to existing OM providers outside agreed outage periods.

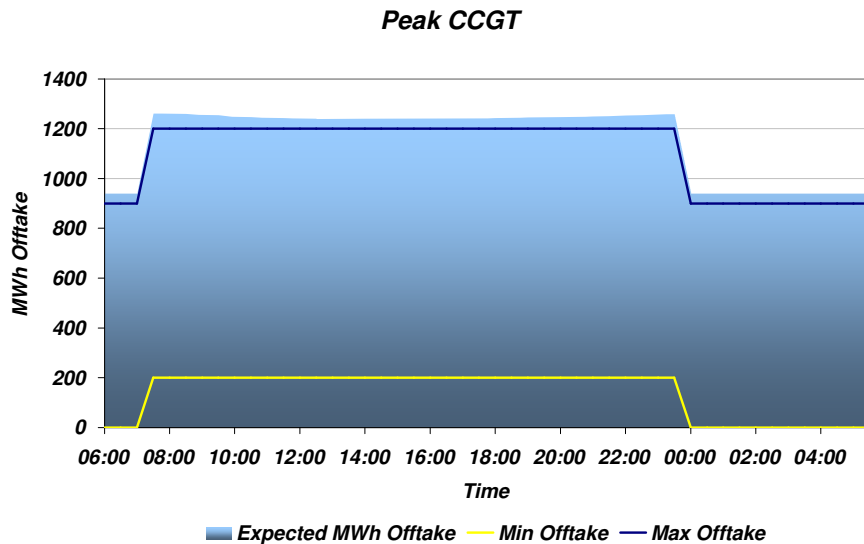
The following examples consider availability and utilisation for an illustrative CCGT of, say, 650 MW in size which, at 50% efficiency, would offtake up to approximately 1300 MWh worth of gas (maximum) per hour. National Grid Gas would look for a minimum offtake reduction of at least 1000 MWh/h.

A CCGT running baseload might have an offtake profile as shown below:



The difference between the Max and Min Offtake levels would represent the contracted turndown rate. The use of a Maximum Offtake Rate would allow a provider to ‘draw a line’ under volatile load and hence increase the likelihood that a tendered offtake reduction level could remain available. The Minimum Offtake Rate would be the rate at which an offtake must be capable of reducing to, if instructed. Non-zero values could be used to represent a desire to maintain a minimum production level.

A CCGT running in more of a peaking capacity would have a different offtake profile:



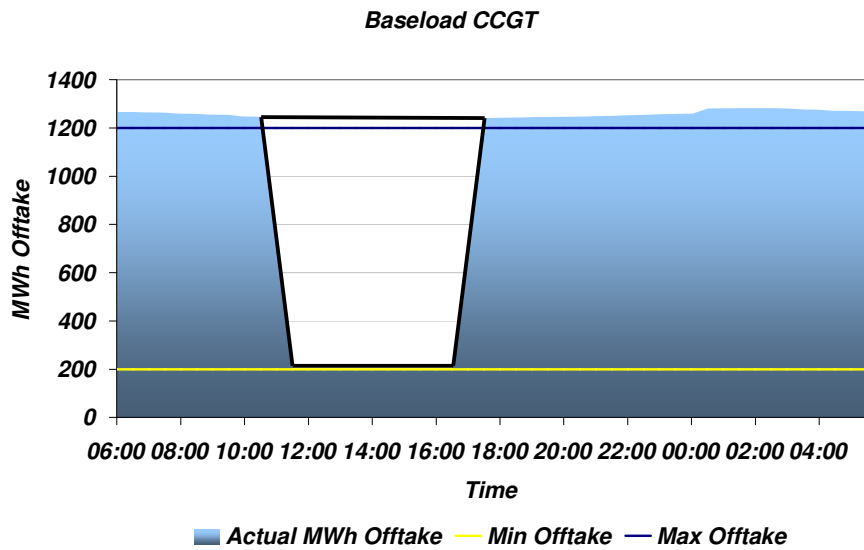
Maximum and Minimum Offtake Rates could be amended as required by providers to reflect different modes of operation whilst indicating to National Grid Gas that level of offtake reduction that could be delivered. The Minimum Offtake Rate in the chart above is shown varying in line with the Maximum Offtake Rate – equally, it could remain constant.

Actual availability would be monitored hourly, although for the purposes of payment a monthly average would be calculated. This would aim to encourage the stable availability of turndown on an hourly basis, but also to allow some ability to recover from short-term dips in availability.

Any difference between the calculated monthly average and the required contracted availability for the month would result in a reconciliation credit falling due.

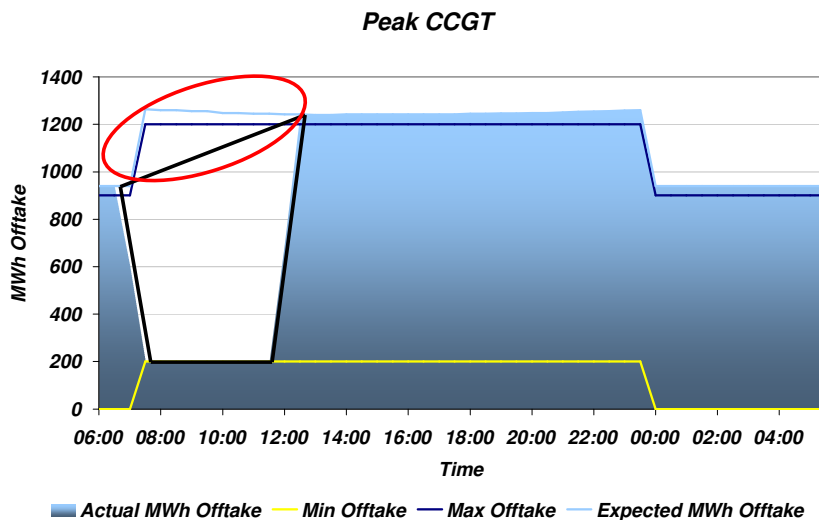
### 6.2.1. Nominations

For a baseload CCGT, nomination for an OM Service call-off could look like this:



The offtake at the start and end of the OM utilisation could be used to derive the overall volume. The steady nature of the offtake makes this a reasonable approximation of the volume of turndown delivered.

For a peaking CCGT however, things are not necessarily as straightforward:



Using the offtake at the start and end of the OM utilisation may not accurately represent the overall volume. As shown in the chart above, an OM utilisation which spanned a planned rate of change of offtake may exclude a significant volume of potential offtake reduction.

An alternative means of assessing what a CCGT or other NTS Connected load was planning to do might be to use the most recent Offtake Profile Notice (OPN), which should set out the expected rates of offtake of gas for the relevant CCGT System Exit Point for the Gas Day. However, use of the OPN to determine payments under a commercial agreement may not be deemed appropriate.

A further possible mechanism for assessing what a CCGT was planning to do might be to use an electricity Balancing Mechanism parameter – the Physical Notification (PN) – as a basis for determining forecast gas offtake. The PN represents the level of expected generation output and is submitted to the electricity system operator as a series of point MW values looking forward in time. This mechanism would of course be unsuitable for non-CCGT loads.

### **6.3. Service Parameters**

#### ***Contracted Volume and its Availability***

National Grid Gas would expect a provider to offer a turndown rate in kWh/h, and would be looking for at least 1,000,000 kWh/h of turndown. There would be a trade-off between the diversity of service provision and the complexity of instructing those providers to achieve the desired turndown level. The turndown rate would be the difference between the Maximum Offtake Rate and the Minimum Offtake Rate multiplied by the Availability Percentage. National Grid Gas may also be interested in the ability to request partial offtake reductions.

Availability would account for a specified number of outage days, which National Grid Gas and the provider would use reasonable endeavours to agree.

#### ***Utilisation***

National Grid Gas would be looking for the ability of a provider to deliver a response time of two hours from the hour bar following the issue of the OM instruction. However, the flexibility to achieve a two hour response time from a normally longer response time, upon issue of an instruction to achieve a certain state of readiness, would be considered.

Providers would offer minimum and maximum hours per utilisation for OM Service use, along with any required recovery periods post-utilisation. Providers would need to indicate what the maximum utilisation hours per month would be.

## ***Payment***

The following pricing structure would be adopted:

- Holding/Availability price (p/kWh/h) based upon turndown rate
- Utilisation price (p/kWh) based upon volume delivered
- Gas Title Transfer price (p/kWh) if applicable, based upon volume delivered

Payment would be made for monthly availability based upon the turndown rate multiplied by a rate in p/kWh, with a reconciliation of payment based upon actual performance.

## ***Complying with Service Requirements***

A key component of any contract is the liabilities associated with failing to comply with the contractual terms. For OM, the contractual requirements are presently enshrined within the UNC and Safety Case. Whilst this framework does not directly expose National Grid Gas to financial liabilities for non-compliance, failure to comply with the Safety Case is a criminal offence which is prosecutable by the HSE. National Grid Gas's criminal liability cannot be contractually assigned to third parties. Hence contracts for OM Service provision would need to feature financial liabilities sufficient to ensure compliance with delivery obligations.

The current mix of service providers is split between facilities for which National Grid is responsible (and hence can assume criminal liability) and third party facilities with a proven ability to deliver presents an acceptable level of risk to National Grid Gas and the HSE. For potential service providers, National Grid Gas would need to be certain that when it calls on the OM Service, the service provider will fully comply with its contractual obligations.

Clearly one way to achieve this would be to have large financial liabilities associated with contractual breaches. However, whilst this approach may deter parties from breaching their contractual obligations, getting the balance wrong is likely to discourage parties from entering into such contracts in the first place.

In light of the infrequent but important nature of OM utilisation, National Grid Gas proposes that penalties for failing to deliver be linked to the duration and magnitude of the failure, priced appropriately (multiple of System Marginal Buy Price or the hourly availability rate), and include the exercise cost of alternative provision.

Prior to commencement of service provision, a successful test would be required. National Grid Gas would be looking for the ability to test the availability of the service at least once per annum, with the ability to re-test following failure. Following three failed tests, or where the required availability has not been met for a period of three months, National Grid Gas would have the option to terminate service provision.

**Question Box: Section 6**

- Q6.1: To what extent do you believe the use of Minimum and Maximum Offtake Rates facilitate a usable measure of available provision?
- Q6.2: What are your views on the best way to determine the volume of gas associated with the utilisation of OM from demand and supply side sources? Should OPNs and Delivery Flow Notifications (as defined in Network Entry Agreements) be used?
- Q6.3: What do you believe to be a suitable penalty arrangement for failure to make the OM Service available?
- Q6.4: What do you believe to be a suitable penalty arrangement for failure to deliver the OM Service?

## 7. Procurement Strategy

### Section Overview

This section provides an overview of the mechanisms National Grid Gas could use to procure the OM Service in a manner that promotes efficiency whilst facilitating entry into the OM Service marketplace by new providers. It looks at the different timescales over which OM could be procured and the structure of tendered procurement exercises.

### 7.1. Procurement Close to Real Time

Procurement of the OM Service close to real time from sources with variable supply or demand profiles, either within-day through a mechanism such as the OCM Locational Market, or at, say, the week-ahead stage via other equivalent contract terms, would provide a much greater level of certainty over available turn-up or turn-down rates.

Several respondents to the Initial OM Consultation expressed support for procurement of the OM service close to real time, however National Grid Gas's view remains that the use of mechanisms to procure OM close to real time would be contradictory with the requirement for OM to support the NTS in operational timescales (immediately following an OM event) until the market is able to deliver.

The key difference between close to real time procurement, for example using the OCM Locational Market, and current OM Service provision from storage facilities is that current OM Service providers are contracted to be available, rather than choosing to make themselves available. Storage facilities that currently provide OM services are only unavailable in known circumstances such as when and to the extent that the facility is already withdrawing, on maintenance or if force majeure is declared.

In a market, participants who may be able to provide a service may choose not to submit offers to the market for commercial reasons when the service may be physically available. This could mean that services are unavailable during periods of system stress when OM is required, as a provider may not have to provide a service despite being able. A contractual availability quota could reduce this risk, although there could still be occasions where providers have fulfilled their availability quota at other times giving rise to the same problem.

If a service was to be available when it was physically feasible, monitoring may be required to ensure compliance with the contract or market rules. This would be in line with procedures currently in place to enable National Grid Gas to assess whether a storage site is able to provide the OM Service (visibility of stock levels, outages and gas flows to and from the site).

If providers are to bid into an OCM Locational market mechanism on the day at prices that have not been pre-defined (at fixed or indexed rates), this could lead to price inefficiency as providers would be offering a price into the market knowing that it would only be accepted at a time of difficult system operation. The System Operator may be forced to accept high prices at a time of system distress due to reduced market liquidity on the day. The longer-term contracting alternative would mean that prices would be preset – fixed or indexed in timescales that allow other market participants to be encouraged to compete for OM provision contracts.

For the above reasons, National Grid Gas does not believe that procurement of OM close to real time via a mechanism such as the OCM Locational market would be appropriate.

## **7.2. Procurement Ahead of Time**

Having a longer timescale over which to procure for future OM provision would enable National Grid Gas to contract with those providers who need to invest in order to provide the service, to contract within the optimal timescales for the given provider type and where necessary provide an increased level of certainty that it could procure the required future volumes of OM provision. By allowing longer term provision by new providers, the cost of any training, service level monitoring or communications requirements would be less of an obstacle to provision and would be easier to manage due to a reduced turn over in the pool of providers. Importantly, procurement ahead of time would also provide a level of certainty that the OM service will be available when it is required.

Procurement ahead of time over a longer term could, however, foreclose competition in the market for the duration of the contract such that if new providers are to be established within the timescales of the contract they would not be able to participate in the provision of OM services. In order to reduce the effects on competition, OM tenders will allow a variety of contract lengths and start dates to enable providers to invest in order to provide and to choose the period over which they are comfortable with any pricing risks. The tenders would allow for seasonal (summer and winter) as well as annual and multi-year contracts.

### **7.2.1. Provider Specific Issues**

#### ***Storage***

Procurement ahead of time of storage products increases the certainty of the availability of those storage products and of being able to get gas-in-store, as it allows a period of time over which to procure and inject gas if necessary. However, there is less certainty over unavailability due to unplanned outages and injection and withdrawal on the day.

In order to facilitate provision by a wide pool of providers, both standard storage products (such as space, withdrawal etc) will be considered as well as delivery contracts where a provider provides a fully bundled service including holding gas in store.

Orderly Rundown provision can only be booked at facilities with gas storage.

There are established market mechanisms that can be used to buy storage capacity that can deliver market efficiency and therefore a tender will not necessarily be the only procurement mechanism for OM from storage. Indeed, some storage facilities have obligations to offer equal access to their services, and as such the extent to which they could participate in tenders run by National Grid Gas may be limited.

### ***LNG Importation with Storage***

Procurement ahead of time of the OM Service from LNG importation with storage enables longer-term planning of the requirement for shipments of LNG to the terminal, therefore providing a reasonable level of certainty of the availability of the service.

National Grid has established contract terms for procuring the OM Service from LNG Importation facilities with storage. Also, such facilities could participate in a National Grid Gas-run tender process.

### ***NTS Connected Demand (CCGTs and NTS connected industrial loads)***

Procurement ahead of time increases the level of certainty that an offtake reduction would be made available when there is a physical ability to provide the OM service, but introduces uncertainty regarding what offtake profiles might be.

As there is currently no established mechanism to procure the sort of offtake reduction service required for OM from NTS Connected Demand, such loads would be required to participate in a tender process run by National Grid Gas.

### ***Offshore Supply and Interconnectors***

Due to the issues outlined in section 5 regarding the ability of interconnectors to provide the OM service independently of market conditions, National Grid Gas does not believe tenders for OM provision from interconnection facilities would be possible.

As there is currently no established mechanism to procure the sort of offtake reduction service required for OM from offshore supplies, such loads would be required to participate in a National Grid Gas-run tender process.

### ***Distribution Networks***

Procurement ahead of time of the OM Service from DNs might enable those DNs to take a longer-term view of service provision, for example by developing a portfolio of loads that could turn down in OM timescales. Such longer term view may allow co-ordination with loads on interruptible contracts such that the interruption timescale of five hours could be reduced to two to provide an 'interim' OM Service.

As there is currently no established mechanism to procure the sort of offtake reduction service required for OM from DNs, such loads would be required to participate in a tender process run by National Grid Gas.

#### **7.3. Procurement of Group 3 (Orderly Rundown) OM**

Operating Margins provision for Orderly Rundown requires a more specific subset of products as it would be called upon while emergency arrangements are in place and as such, some providers would already be assumed to have turned up supplies or reduced demand accordingly.

The procurement of Orderly Rundown is therefore based on storage products only. Consequently, there are established mechanisms that can be used to procure Orderly Rundown OM from storage. Certain sites have obligations to offer services on a non-discriminatory basis, which can restrict their ability to participate in bespoke procurement exercises.

#### **7.4. Procurement of Group 1 and Group 2 Non-Locational OM**

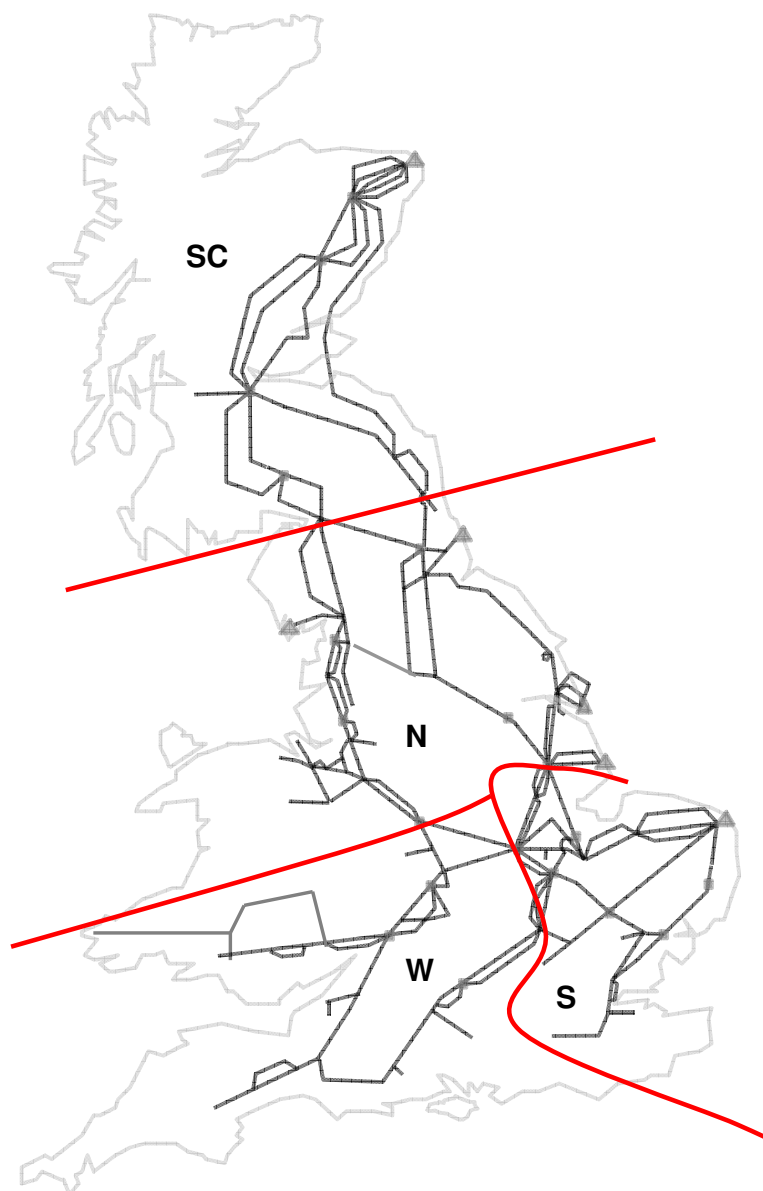
As well as for Orderly Rundown, the procurement of Group 1 and Group 2 non-locational OM can benefit from the use of existing procurement mechanisms for storage that present the possibility of exploiting known efficiencies, such as seasonal price differentials. However, it does not preclude storage from participating in tender processes run by National Grid Gas.

#### **7.5. Procurement of Group 2 Locational OM**

Non-orderly rundown OM provision may in future be procured from a range of sources, but some types of provision may only be suitable for locational or non-locational requirements as discussed in section 5.

##### **7.5.1. OM Locational Zones**

For the purposes of determining locational OM requirements, the country will be split into zones as outlined overleaf on a map of the UK (non-locational OM requirements will be separately identified).



The OM procurement zones shown above represent one way in which the country could be sub-divided for OM procurement purposes. National Grid Gas believes there is benefit in avoiding an overly complex zonal division of the NTS, but recognises that there may be varying effectiveness of OM Service provision depending on the location of a potential provider within a given zone. This variance would be taken into account when the value of a tender is being assessed.

The above zones were originally derived for the 2006 OM 'request for proposals' exercise and were based on the network topology and characteristics at the time. Whilst the network has developed since that time, National Grid Gas has considered the impact of the changes and determined that the zones remain valid for the locational procurement of OM. However, National Grid Gas expects to continue to review the suitability of the zones on an ongoing basis.

National Grid Gas expects to publish an indication of the maximum and minimum OM locational requirements within each zone, so as to assist potential OM providers to decide whether they would wish to participate in OM procurement exercises.

### **7.5.2. OM Procurement within Zones**

An indication of the number of potential service providers within each zone is presented in Appendix 1. The extent of active competition within each zone would ultimately be determined through the level of within-zone participation seen via procurement exercises. However it is likely that such participation would take time, and a suitable financial incentive, to develop.

There are existing OM providers within each of the zones, some of which are able to participate freely in National Grid Gas procurement exercises and others (National Grid's LNG Storage facilities) which are not, instead being subject to a price methodology set out in Special Condition C3 of National Grid Gas's Gas Transporter Licence in respect of the NTS.

It could be expected that, to give true competition a chance to develop, all providers and potential providers should be allowed to price their services freely via a competitive procurement exercise. However there is a risk that existing service providers might submit prices into a tender run by National Grid Gas that do not reflect the value which the majority of shippers place on storage and would be accessible to National Grid through provider run procurement and/or the secondary market in the absence of suitable alternatives

### **7.5.3. Cost Issues**

The net result of this could be that the cost of procuring the OM Service increases in the short term and/or the overall procurement process becomes more complex. Until the first 'contestable' procurement exercise is run, the extent of competition to existing OM providers will not be clear. It may be that an increase in costs will be required to entice new providers into the market for OM Service provision; there is a risk, however, that costs could increase without attracting sufficient participation/competition to apply downward pressure on prices in the longer term.

### **7.5.4. Encouraging Participation**

In order to encourage participation from both existing and new potential providers of the OM Service, tenders will be advertised and tender documentation circulated by the Joint Office of Gas Transporters and also directly to those who have expressed an interest in either a previous tender or the current Operating Margins Contestability process, as well as being published on our website.

The tender process to be held during winter 2008/09 for service provision from April 2009 onwards will be held for all provision types simultaneously to

maximise the opportunity for all eligible participants to take part on a fair basis and in order to maximise the comparability of offers.

As discussed above, the tender rules will allow a variety of contract lengths and start dates (1<sup>st</sup> April 2009, 1<sup>st</sup> May 2009, 1<sup>st</sup> April 2010, etc) to enable providers to invest in order to provide the OM Service and to choose the period over which they are comfortable with any pricing risks. The tenders would allow for seasonal (summer and winter) as well as annual and multi-year contracts.

#### **7.5.5. Contingency**

What if competition does not materialise? Should existing providers be permitted to continue to tender freely in a continued attempt to entice new providers to market, or should an alternative approach be adopted?

The question here is essentially; “At what point can we say if there exists true contestability in OM provision?”

National Grid Gas currently procures over 50% of its OM from non-LNG Storage facilities at non-regulated prices. However, if no alternative locational sources of OM are forthcoming, National Grid believes that there will remain a reliance on those LNG Storage sites that are able to meet locational OM requirements, which in turn may require a review of NGLNG storage funding arrangements.

#### **Question Box: Section 7**

- Q7.1: Do you agree with National Grid Gas’s view that short-term procurement is unsuitable of the OM Service?
- Q7.2: Do you agree that the proposed OM zones are a sensible way of determining the extent to which alternative locational OM providers exist?
- Q7.3: To what extent do you believe the ability to tender for a variety of contract commencement dates and durations will benefit potential providers?
- Q7.4: In addition to the proposal to publish minimum and maximum OM requirements on both a locational and non-locational basis, what other information do you feel would be useful for a potential OM provider considering participation in an OM procurement exercise?
- Q7.5: What approach do you think National Grid Gas should take to OM procurement if few or no additional OM Service providers result from the efforts made to develop further contestability?

## 8. SO Incentive Arrangements for OM

### Section Overview

This section summarises the existing Incentives on OM, the behaviours driven by the existing incentive and, in light of the work to promote competition in OM Service provision, discusses what the best approach to incentivising OM procurement might be.

### 8.1. SO Incentives Review

Last year, at Ofgem's request, National Grid Gas led the development of Initial Proposals for SO Incentives commencing 1<sup>st</sup> April 2008. This year, Ofgem has again asked National Grid to lead the on the development of Initial Proposals for SO Incentives commencing 1<sup>st</sup> April 2009<sup>6</sup>.

There is a strong linkage between the OM Contestability work and the development of an enduring incentive regime that supports the key themes from the contestability work to be taken forward. That is to say, National Grid Gas believes that it should continue to be incentivised to procure the OM Service in an efficient, economic and co-ordinated manner, but that the design of such incentives should be able to deal with the potential complexity and uncertainty that the contestability work might bring.

### 8.2. Objectives of System Reserve (OM) Incentive

The objective of the System Reserve (OM) Incentive is to minimise the total cost (in terms of both volume procured and prices paid) of procuring Operating Margins Services to meet an Operating Margins Requirement. Currently, due to the design and process for establishing the incentive, it acts primarily as a mechanism to allow National Grid Gas to recover the efficiently incurred cost of procuring OM whilst also allowing a limited amount of scope for procurement innovation. With the potential uncertainty brought about by the contestability work it is useful to take a step back and look in a broader sense at some of the issues surrounding OM procurement, before then considering more detailed issues with the current arrangements.

Clearly the need to hold OM is linked to issues that National Grid Gas has some influence over, such as physical events relating to NTS equipment and the topology of the NTS itself. But it is also linked to issues which National Grid Gas has no influence over, such as offshore supply losses. It could therefore be asked whether National Grid Gas's role in OM procurement should be all encompassing, or whether certain responsibilities should be shared.

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<sup>6</sup><http://www.ofgem.gov.uk/Markets/WhlMkts/EffSystemOps/SystOpIncent/Documents1/SO%20Incentives%20Open%20Letter%20May%202008.pdf>

For example it was highlighted in the Initial Consultation Document<sup>7</sup> that National Grid Gas is no longer able to maintain up-to-date assessments of Orderly Rundown requirements for those DNs sold as part of the network sales process undertaken in 2005, and that National Grid Gas has sought engagement with DNs to ensure their full participation in the assessment of Orderly Rundown through the Gas Transporters' Forum and the National Emergency Co-ordinator (NEC) Safety Case forum.

Whilst a collaborative approach to the determination of Orderly Rundown requirements would be beneficial, National Grid Gas believes that there remain benefits in adopting a co-ordinated approach to the procurement of OM, rather than, for example, requiring individual Shippers to identify and procure their own share of OM to cover supply losses.

Rather than just incentivising the efficient procurement of OM to meet the forecast requirement, it might be appropriate to shift the focus of the incentive to more directly incentivise controllable elements that make up the overall OM requirement.

The remainder of this section looks in detail at how OM procurement is currently incentivised, the behaviours driven by the existing incentive and what the best approach to incentivising future OM procurement might be.

### **8.3. Current System Reserve (OM) Incentive**

#### ***Incentive Structure***

OM is currently incentivised under the two elements of the System Reserve (OM) Incentive – Holding Costs and Utilisation Costs. Common ownership between National Grid Gas and the LNG Storage assets (which meet some of the OM storage requirements) results in the current OM Holding Costs incentives having 100% sharing factors and no cap or collar. This is the most material element of the incentive.

Incentivised Utilisation Costs comprise withdrawal and re-injection charges, and delivery overrun charges (not the cost of the gas). These are incurred as National Grid Gas predominantly books 'space only' storage products, leading to additional Utilisation Costs if OM is required, rather than reserving and paying for deliverability in advance.

As a result of last year's incentives process, a small incentive was established in respect of utilisation costs, with National Grid having a limited exposure to utilisation costs. The Utilisation Cost incentive has an average 'background' utilisation cost target of £0.27m. This together with the System Reserve Utilisation Collar (£0.5m) leaves National Grid Gas exposed to the majority of 'background' utilisations but allows National Grid Gas to recover actual costs

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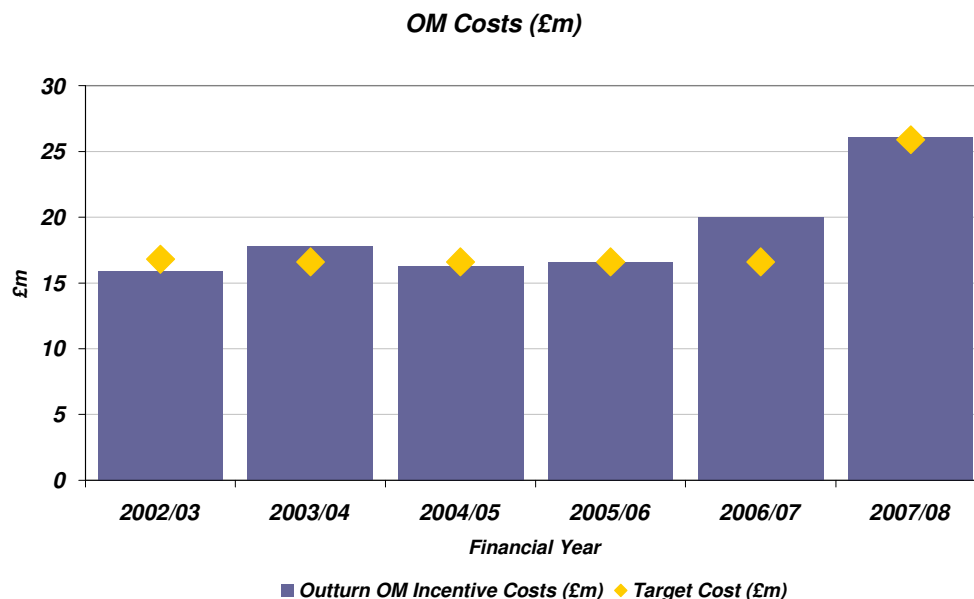
<sup>7</sup>A copy of the Initial Consultation document can be found at:  
<http://www.nationalgrid.com/uk/Gas/OperationalInfo/GasOperatingMargins/>

incurred over and above £0.5m post event, which may be caused by more significant OM utilisation events.

**OM Incentive Costs and Volumes Booked**

The following charts give an overview of the way OM Incentive Costs and volumes booked have varied in recent years.

The first chart shows outturn OM Incentive Costs between 2002/03 and 2007/08:

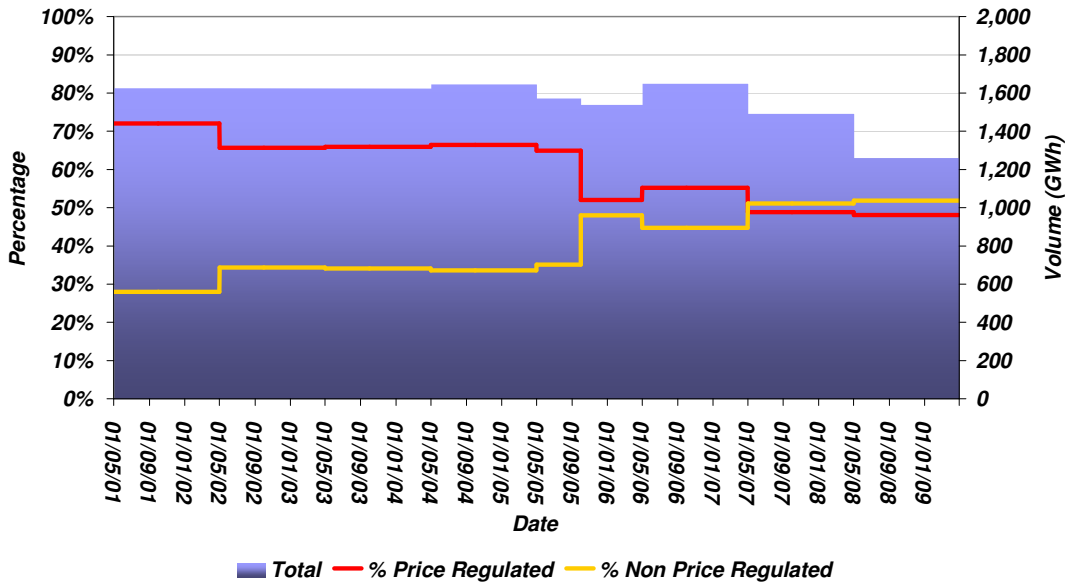


The chart demonstrates reasonably consistent costs for 2002/03 to 2005/06 due in part to underlying Special Licence Condition C3 prices for NGLNG storage services. Costs for 2007/08 onwards feature revised Special Licence Condition C3 prices for OM provision at NGLNG storage facilities.

The Holding Cost target for 2008/09 is £20.54m.

The second chart (overleaf) shows how OM capacity bookings have changed between 2001/02 and 2008/09:

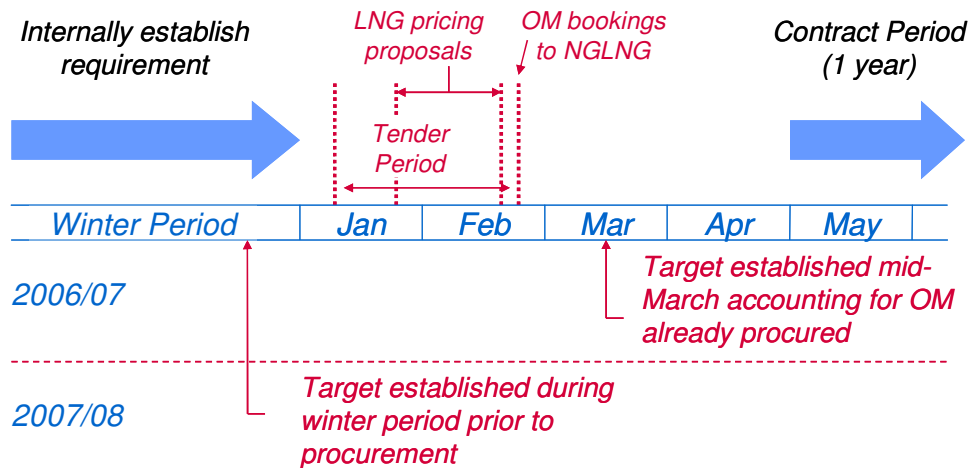
**OM Volume & % Held by Storage Type**



The chart shows fairly consistent bookings between 2001/02 and 2005/06, with an increase in 2006/07 following the first full year of Grain operation as an LNG importation terminal. Overall bookings from 2007/08 onwards took a downward turn in light of reduced bookings at NGLNG storage facilities.

**8.4. Behaviours under the Current Incentive**

The current holding incentive relates to the advance procurement of the OM Service to meet our calculated requirement. The timeline of events is as shown below:



The target setting process has differed over the last two years. During 2006/07, the 2007/08 target was finalised after much of the OM requirement had already been procured, the cost of which was factored into the incentive target. During 2007/08, an indicative target for 2008/09 was set during the winter period which remained unchanged at the time the target was finalised.

The fact that the target for 2008/09 remained unchanged provided some scope for optimisation of bookings across different storage sites and providers; however the resultant contracts were invariably one-year deals.

The annual incentive period tends to favour existing OM providers who are familiar with the OM procurement process and are geared up to participate. As National Grid Gas is currently incentivised on the cost of re-profiling gas between storage facilities within the holdings incentive between storage years, there is also a financial barrier to overcome such that different facilities will only be used if the holding cost saving is greater than the re-profiling cost.

The System Reserve Holding Cost Incentive effectively operates as 'allowed revenue' due to the 100% sharing factors against a close-to-incentive-start target setting mechanism rather than a procurement incentive in the wider sense. It is therefore questionable whether the current incentive structure drives the 'right' behaviour and gives sufficient scope for procurement innovation.

It is also worth noting that, in the past, the use of a single annual tender as the main procurement mechanism for OM has not always delivered the most efficient prices. National Grid has gained significant price efficiencies over some of the submitted tenders through the use of other established procurement mechanisms.

## 8.5. Issues with the Current Incentive

Potential issues with the current OM Incentive structure can be summarised as follows:

1. **Lack of incentive to innovate:** The combination of annual incentive duration and target setting overlapping with procurement timescales presents limited scope to vary from the current procurement mechanism to either pursue longer term deals or take advantage of earlier procurement opportunities.
2. **No recognition of amount of OM procured from non-NGLNG Storage:** Recent OM procurement has seen greater than 50% of the OM requirement sourced from storage facilities other than National Grid Gas's LNG Storage facilities. The current incentive, with its lack of caps/collars and 100% sharing factors, is structured on the basis that the majority of OM is sourced from National Grid Gas's LNG storage facilities and, as such, places all risk and reward associated with the procurement and management of OM solely with National Grid Gas, once the target is set, rather than allowing Shippers to share the risks and rewards.
3. **Uncertainty associated with OM Contestability work:** Whilst the aim of the OM contestability work is to promote competition and remove barriers to participation, the extent to which competition will develop, the range of potential new OM sources and the form and duration of any new contractual arrangements for procurement, is not yet clear. If the existence of increased competition has an implication for incentive design,

the 'trigger' to change is likely to be unclear. Further, the current incentive structure offers limited scope to assist in the development of contestability.

**4. Misalignment between incentive (formula) year and storage year:**

Currently, as OM is procured from storage, most costs are incurred in line with the Storage Year (1<sup>st</sup> May – 30<sup>th</sup> April). This creates a mismatch with the incentive period, which operates on a Financial Year basis.

## **8.6. Considerations for Change**

### **8.6.1. Longer-Term Incentives**

A longer-term incentive could drive innovation in that it may assist in the development of alternative service providers, and might encourage acceptance of longer-term service offers (which could include an element of investment to develop service provision) which may be more economic. It could be argued that a multi-year incentive with appropriate targets would be a key element in the development of competition in OM provision and may ultimately drive efficient market prices. It may also help to remove financial barriers to re-profiling gas between storage facilities, as the balance between re-profiling costs and holding cost savings may shift.

Setting an OM incentive over a longer period of time would require multi-year volume requirements to be derived. OM requirements are dictated by an established methodology and there will be increasing uncertainty over elements that feed into the methodology as lead-time increases, which could mean that requirements might outturn higher or lower than anticipated by a long term incentive target agreed in advance. Note however as requirements could be revised up or down, there would be no guaranteed 'volume' benefits for National Grid through agreeing a longer-term scheme.

Setting an OM incentive over a longer period of time would also require either an accurate view of the drivers for OM costs (i.e. storage charges, cost of gas, costs associated with downstream impact of demand-side OM provision such as electricity generation) or a mechanism such as indexation or a process for target review to manage uncertainty. Further, the increased cost and volume risk of a longer-term incentive is likely to go hand in hand with a mechanism to allow the sharing of incentive benefits/costs.

### **8.6.2. Target Setting Date vs. Incentive Start Date**

Setting incentive targets further ahead of the incentive start date could drive innovation by allowing National Grid Gas to take advantage of earlier procurement opportunities and hence derive maximum efficiencies from those opportunities. Currently the combination of the annual duration and timing of incentives setting leads to a relatively narrow window of opportunity for procurement.

### **8.6.3. Orderly Rundown Procurement Separate from Other OM**

The procurement of Orderly Rundown OM from storage can make use of established, market based mechanisms to deliver the most efficient procurement solution. Further, National Grid Gas has an understanding of storage market fundamentals and participant behaviour that does not exist at the moment for potential non-storage OM providers.

This suggests that there may be value in structuring the System Reserve (OM) Incentive to separately incentivise the procurement of Orderly Rundown OM and the procurement of Group 1 and 2 OM, such that the most efficient behaviour in each case can be encouraged.

### **8.6.4. Removal of LNG Storage Price Regulation**

Increased competition in OM provision may deliver sufficient alternative sources to National Grid Gas's LNG storage facilities to remove the need to regulate the prices paid for the OM Service at these facilities. This in turn could trigger a change in the incentive scheme structure to introduce cap/collar and sharing factor concepts. However what the trigger point should be remains unclear.

### **8.6.5. Change to the Incentive Start Date**

The current OM incentive, like the other SO Incentives, aligns with the Financial Year. Current storage-based procurement aligns to the Storage Year, and so straddles two Financial Years. Hence, when agreeing an incentive target for April, not only are the majority of the first month's costs known, but any efficiency delivered by those costs is likely to be assimilated into the target and hence lost.

For OM provided via storage, there may be benefit from aligning the incentive to the Storage Year, although the contestability work may deliver non-storage providers who are likely to operate to Financial Years. Additionally, shifting incentives away from Financial Years could introduce complexities with the potential to impact on System Operator (SO) Commodity Charge setting.

## **8.7. Materiality of the Potential Changes**

As the changes to the System reserve incentive are closely linked to the contestability work, the materiality of some of the proposals is difficult to assess at this stage. It depends on whether NGLNG storage assets retain price regulation for OM Service provision and the extent to which the contestability work encourages new providers.

**Question Box: Section 8**

- Q8.1: Should National Grid Gas continue to be incentivised to assess and procure overall OM requirements on behalf of the industry?
- Q8.2: What should the objective of the OM incentive be and what is the most appropriate parameter against which to measure performance?
- Q8.3: How might incentive targets and structures be set to promote long-term cost management strategies, recognising the trade-off between the accuracy of the incentive target and the potential economic benefits of longer-term procurement?
- Q8.4: How should the incentive develop to drive innovation and potentially promote the aims of the OM contestability work?
- Q8.5: Should the incentive treat the procurement of the Orderly Rundown requirement differently from other OM requirements, given its storage-based nature?
- Q8.6: Should the incentive be designed to share risks and rewards between National Grid and Shippers (i.e. through sharing factors, caps and collars), should this be linked to the development of contestability and is there a contestability 'trigger' point where such arrangements should be introduced?
- Q8.7: Is the difference between the Storage Year and financial year significant enough to warrant changing the incentive start date potentially introducing accounting and reporting complexity into the arrangements?

## 9. Next Steps

Representations received in response to this document will be used to inform the next stage of the process, which we expect to involve the following:

- changes to the UNC;
- changes to the System Management Principles Statement and Procurement Guidelines;
- Running a procurement exercise for OM service delivery from 1<sup>st</sup> April 2009
- In parallel, developing and consulting on proposals for changes to the System Reserve (OM) Incentive

### **Question Box: Section 9**

Q9.1: Do you have any processes or timescales that might interact with a winter OM procurement exercise that you would like to make National Grid Gas aware of, so that they can be taken into account when designing the detail of the procurement exercise?

## 10. Summary of Views Sought

National Grid Gas welcomes views on any aspect of this document. In particular, National Grid Gas is keen to receive views on the specific questions raised within this document, as presented below. Responses are requested by **5pm on 30<sup>th</sup> September 2008**. Responses should be emailed to [ian.pashley@uk.ngrid.com](mailto:ian.pashley@uk.ngrid.com).

- Q4.2.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from LNG Importation?
- Q4.2.3: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of LNG Importation terminals with storage to provide an OM Service?
- Q4.2.4: (For LNG Importation terminal operators/users): Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision from LNG Importation terminal operators/users?
- Q5.1.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from NTS Connected Loads?
- Q5.1.2: Who would be most appropriate to aggregate provision from a group of CCGTs or industrial loads (e.g. Shippers, an Agent, or National Grid Gas)?
- Q5.1.3: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of NTS Connected Loads to provide an OM Service?
- Q5.1.4: (for NTS Connected Loads): Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision from NTS Connected Loads?
- Q5.2.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from Supply/Interconnection?
- Q5.2.2: What effect do you believe the long term reservation of headroom of supply would have on the market?
- Q5.2.3: Do you agree with National Grid Gas's view that current European legislation leaves importation facilities unable to offer an OM Service?
- Q5.2.4: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of Offshore Supply to provide an OM Service?
- Q5.2.5: (For Offshore Supply operators/users): Do you see OM Service provision as viable? Do you think National Grid Gas should encourage participation in OM Service Provision from offshore supply operators/users?

- Q5.3.1: Do you believe National Grid Gas has correctly identified the physical and contractual processes for OM Service provision from DNs?
- Q5.3.2: What do you consider to be the most appropriate form of OM Service provision from DNs (e.g. demand reduction or demand deferral)? Is there scope for both to be provided?
- Q5.3.3: Do you think that it would be right for National Grid Gas to contact directly with shippers of DN loads, or should the DN be the contracting party?
- Q5.3.4: Is there anything you feel that National Grid Gas has overlooked, which may impact the ability of DNs to provide an OM Service?
- Q5.3.5: (For DNs): Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision from DNs?
- Q5.1: To what extent do you believe that National Grid Gas has fully considered the extent to which Storage, NTS Connected Loads, LNG Importation, Supply/Interconnection and DNs could provide the OM Service?
- Q5.2: To what extent do you believe that National Grid Gas has sought to address barriers to provision of the OM Service from Storage, NTS Connected Loads, LNG Importation, Supply/Interconnection and DNs? Are there other barriers to service provision which National Grid Gas may or may not be able to remove?
- Q5.3: Who should be allocated the gas when OM is utilised? Should the shipper have an option that it can be reallocated the gas against its balancing and gas-in-store portfolio?
- Q5.4: Would you be interested in providing the service? What more do you think National Grid Gas could do to encourage participation in OM Service Provision?
- Q6.1: To what extent do you believe the use of Minimum and Maximum Offtake Rates facilitate a usable measure of available provision?
- Q6.2: What are your views on the best way to determine the volume of gas associated with the utilisation of OM from demand and supply side sources? Should OPNs and Delivery Flow Notifications (as defined in Network Entry Agreements) be used?
- Q6.3: What do you believe to be a suitable penalty arrangement for failure to make the OM Service available?
- Q6.4: What do you believe to be a suitable penalty arrangement for failure to deliver the OM Service?
- Q7.1: Do you agree with National Grid Gas's view that short-term procurement is unsuitable of the OM Service?

- Q7.2: Do you agree that the proposed OM zones are a sensible way of determining the extent to which alternative locational OM providers exist?
- Q7.3: To what extent do you believe the ability to tender for a variety of contract commencement dates and durations will benefit potential providers?
- Q7.4: In addition to the proposal to publish minimum and maximum OM requirements on both a locational and non-locational basis, what other information do you feel would be useful for a potential OM provider considering participation in an OM procurement exercise?
- Q7.5: What approach do you think National Grid Gas should take to OM procurement if few or no additional OM Service providers result from the efforts made to develop further contestability?
- Q8.1: Should National Grid Gas continue to be incentivised to assess and procure overall OM requirements on behalf of the industry?
- Q8.2: What should the objective of the OM incentive be and what is the most appropriate parameter against which to measure performance?
- Q8.3: How might incentive targets and structures be set to promote long-term cost management strategies, recognising the trade-off between the accuracy of the incentive target and the potential economic benefits of longer-term procurement?
- Q8.4: How should the incentive develop to drive innovation and potentially promote the aims of the OM contestability work?
- Q8.5: Should the incentive treat the procurement of the Orderly Rundown requirement differently from other OM requirements, given its storage-based nature?
- Q8.6: Should the incentive be designed to share risks and rewards between National Grid and Shippers (i.e. through sharing factors, caps and collars), should this be linked to the development of contestability and is there a contestability 'trigger' point where such arrangements should be introduced?
- Q8.7: Is the difference between the Storage Year and financial year significant enough to warrant changing the incentive start date potentially introducing accounting and reporting complexity into the arrangements?
- Q9.1: Do you have any processes or timescales that might interact with a winter OM procurement exercise that you would like to make National Grid Gas aware of, so that they can be taken into account when designing the detail of the procurement exercise?

## 11. Appendix 1: Potential OM Providers by Zone

Examples of potential OM providers are shown below for each of the OM Locational zones (current providers shown in bold):

Zone	Provider Type	Potential Provider
Scotland	Storage	<b>Glenmavis LNG storage facility</b>
	LNG Importation with storage	None
	NTS connected CCGTs	Peterhead Gowkhal (Longannet)
	Industrial Loads	Grangemouth
	Supply Sources & Interconnectors	St Fergus Terminals
	Distribution Networks	Scotia Gas Networks
North	Storage	<b>Partington LNG storage facility</b> Hatfield Moor storage facility Aldbrough Storage Facility <b>Hole House Farm storage facility</b> <b>Rough storage facility</b> <b>Hornsea storage facility</b>
	LNG Importation with storage	None
	NTS connected CCGTs	Brigg Burton Point (Connah's Quay) Cottam Deeside Enron Immingham Keadby Keadby B Rocksavage Roosecote Saltend Cogen Sellafield Stallingborough 1 & 2 (Humber Power) Teesside Thornton Curtis (Killingholme) Thornton Curtis (Humber) Winnington
	Industrial Loads	BASF Teesside Blackburn CHP (Sappi Mill) BOC Teesside BP Saltend Bridgewater Paper Guardian Glass Hays Chemicals ICI Billingham ICI Runcorn (Castner Kellner) Shell Star (Kemira Grow How) Shotton Paper
	Supply Sources & Interconnectors	Barrow supply terminal Burton Point Easington terminals Theddlethorpe Teesside terminals
	Distribution Networks	Northern Gas Networks

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Zone	Provider Type	Potential Provider
		National Grid Gas Distribution Wales and West Utilities
West	Storage	<b>Avonmouth Arms LNG storage facility</b> <b>Dynevor Arms LNG storage facility</b> Humbly Grove storage facility
	LNG Importation with storage	South Hook LNG importation facility Dragon LNG importation facility
	NTS connected CCGTs	Baglan Bay Corby Didcot Marchwood Langage Seabank Seabank B
	Industrial Loads	None
	Supply Sources & Interconnectors	None
	Distribution Networks	National Grid Gas Distribution Scotia Gas Networks Wales and West Utilities
South	Storage	None
	LNG Importation with storage	<b>Grain LNG Importation Terminal</b>
	NTS connected CCGTs	Barking (Horndon) Coryton Damhead Creek (Kingsnorth) Epping Green (Enfield Energy) Great Yarmouth Kings Lynn Little Barford Medway Peterborough Rye House Spalding Sutton Bridge
	Industrial Loads	None
	Supply Sources & Interconnectors	Bacton terminals Bacton Interconnector
	Distribution Networks	National Grid Gas Distribution Scotia Gas Networks