

Preliminary Safety & Firm Monitor Requirements 2008/9

31st May 2008

Introduction

This document sets out 'Safety Monitors' and 'Firm Gas Monitors' for the 2008/9 winter, pursuant to National Grid's obligations under the Uniform Network Code Section Q.

Our Winter Consultation Report 2008/9, which will be published in June will present an initial view of supplies for the coming winter. It will highlight continuing uncertainty with regard to potential non-storage supply levels, notably for imports.

The preliminary safety monitors shown here use our 2008 demand forecasts and incorporate supply information provided to us by market participants through our 2008 Transporting Britain's Energy consultation process. We are currently preparing our 2008 supply forecasts reflecting this latest information. We expect to update our safety monitor analysis, taking into account our latest supply forecasts in addition to any further feedback that we receive via the winter 2008/9 consultation process.

It is our responsibility to keep the monitors under review (both ahead of and throughout the winter) and to make adjustments if it is appropriate to do so on the basis of the information available to us. In doing so, we must recognise that the purpose of the safety monitors is to ensure an adequate pressure can be maintained in the network at all times and thereby protect public safety.

National Grid will continue to provide within winter feedback to industry regarding supply assumptions and any resulting changes to safety monitors by means of monthly updates via Operational Forums and our web site.

The firm gas monitors represent the storage levels required to support firm demand in a severe winter. They are published for information only.

We would welcome views on the appropriate basis for setting the 2008/9 safety monitors and request that market participants respond to our winter 2008/9 consultation process to assist us in developing our final safety monitor determination in September.

Background

Prior to 1 November 2004, the Network Code required National Grid Gas to establish Top-up storage profiles (one per storage facility type) against which actual storage stocks could be monitored throughout the winter period. The purpose of the Top-up arrangements was to underpin security of supply to firm customers. However, following Ofgem's 2004 Top-up review, the Top-up arrangements were removed from the Network Code.

To ensure that sufficient gas is held in storage to preserve the ongoing safe operation of the gas transportation system, the concept of safety monitors has been introduced into the National Grid Gas GS(M)R Safety Case. The Uniform Network Code (UNC) (inter alia) requires us to publish the safety monitors and to provide regular reporting of actual storage stock levels for comparison with these monitors. As the name suggests, the focus of the safety monitors is public safety rather than security of

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supply. They provide a trigger mechanism for taking direct action to avoid a potential gas supply emergency (as defined in the Gas Safety (Management) Regulations).

In addition, the UNC requires us to calculate and publish firm gas monitors based upon the forecast demands of firm consumers. The firm gas monitors are published solely for the purpose of providing further information to the market.

Methodology

The methodological basis for the safety monitor calculations is described in detail in the paper "Safety & Firm Gas Monitor Methodology" published December 2006¹.

There are two main steps in the assessment of the respective storage monitors:

- The calculation of the storage requirement at the start of the winter for each type of storage
- The assessment of the way in which this initial requirement decays as the winter progresses, known as the winter profile

This note only covers the first step.

Safety Monitor Calculation Process

The concept behind the safety monitors is to ensure that sufficient gas is held in storage to support those gas consumers whose premises cannot be physically and verifiably isolated from the gas network within a reasonable time period. To achieve this all gas consumers are categorised into one of two groups:

- Protected by Monitor - Gas is held in storage to facilitate continuity of supply to these consumers even in a 1 in 50 winter
- Protected by Isolation – Network safety would be maintained if necessary by physically isolating these customers from the network

The categorisation into these groups (accepted by the HS&E as part of the National Grid Gas Safety Case revision) is summarised in the table below:

Table 1: End Consumer Categorisation for Safety Monitors

Protected by Isolation - Sites which can be safely isolated from the network	Protected by Monitor - Sites which require protection under the safety monitor
NTS Interruptibles	Priority ² Firm DM
LDZ Interruptibles	Ireland Firm
NTS Power Firm	>5860 MWh NDM
NTS Industrial Firm	2196-5860 MWh NDM
DM (excluding priority customers)	732-2196 MWh NDM
	73-732 MWh NDM
	0-73 MWh NDM

¹ <http://www.nationalgrid.com/NR/rdonlyres/B4ACC5F8-A8AF-48B4-A8AA-04BE3743E1C9/13676/20067SafetyFirmGasMonitorMethodology.pdf>

² Currently, priority loads represent roughly 2% of protected by monitor demands.

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The safety monitor storage requirements comprise two elements:

- **Supply-demand:** Storage required to support 'protected by monitor' loads, assessed using a severe winter load duration curve and assumed supply levels;
- **Isolation:** Storage required during the process of demand reduction, effectively to support 'protected by isolation' loads in the period over which these loads would be isolated from the system.

Supply

Table 2 shows the supply assumptions used in calculating the safety monitors. The safety monitor requirement is highly dependent on the non-storage supply level. We are currently consulting on the likely non-storage supplies we will see this coming winter, as part of the Winter Consultation Report 2008/9, to be released in June. As there is considerable uncertainty regarding the make up and aggregate level of non-storage supplies, we have provided an outer range for the preliminary safety monitor levels for 2008/9, based on a high level of non-storage supplies and a low level of non-storage supplies.

High non-storage supply assumptions

- 90% peak UKCS availability = 194 mcm/d
- High Norwegian supplies at 115 mcm/d
- BBL supplies at 30 mcm/d
- High LNG supplies at 83 mcm/d
- Total non-storage supplies excluding IUK = 422 mcm/d
- IUK and storage provide additional supplies to meet demand in the ratio 1:3

Low non-storage supply assumptions

- 90% peak UKCS availability = 194 mcm/d
- Lower Norwegian supplies at 80 mcm/d
- BBL supplies at 30 mcm/d
- No LNG supplies
- Total non-storage supplies excluding IUK = 304 mcm/d
- IUK and storage provide additional supplies to meet demand in the ratio 1:3

The non-storage supply assumptions are summarised in Table 2.

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Table 2 - Supply Assumptions

	CV ³ (MJ/m ³)	2008/9 Safety Monitor: <u>high</u> non-storage supply assumptions		2008/9 Safety Monitor: <u>low</u> non-storage supply assumptions	
		mcm/d	GWh/d	mcm/d	GWh/d
UKCS	39.30	194	2118	194	2118
Norway	40.00	115	1278	80	889
BBL	39.00	30	325	30	325
LNG	39.63	83	914	0	0
IUK	38.82	Variable	Variable	Variable	Variable
Total (excl IUK)		422	4635	304	3332

Table 3 shows the anticipated availability of storage capacity in winter 2008/9.

Table 3 - Storage⁴

	Space (GWh)	Deliverability (GWh/d)
Short (LNG)	2058	526
Medium (MRS)	8251 ⁵	260 ⁶
Long (Rough)	32845 ⁷	455
Total	43154	1241

Demand

The demand background used for the analysis in this section is our latest set of demand forecasts for 2008/9 that we produced in May 2008. These 2008 forecasts are lower than our equivalent 2007 forecasts. This has put downward pressure on the safety monitors.

³ An estimated CV has been applied to assist conversion of data published in both volumetric and energy terms

⁴ Excludes Operating Margins gas and Scottish Independent Undertakings

⁵ Excludes Aldbrough storage space

⁶ Excludes Hole House Farm and Albrough storage deliverability

⁷ Reflects latest information from Centrica Storage Limited

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Safety Monitor Space Requirement

Table 4 shows safety monitor requirements on the basis of the assumptions outlined above. The resultant space requirements highlight the sensitivity to the supply assumptions used. For the low level of non-storage supply case, approximately 15% of total storage space is required.

Table 4 – Safety Monitor Space Requirement

Storage type	Assumed storage capacity (GWh)	Safety Monitor Space Requirement			
		<u>high</u> non-storage supply assumptions		<u>low</u> non-storage supply assumptions	
		(GWh)	%	(GWh)	%
Long duration storage (Rough)	32845	40	0.1%	5872	17.9%
Medium duration storage (MRS)	8251	0	0%	525	6.4%
Short duration storage (LNG)	2058	0	0%	7	0.3%
Total	43154	40	0.1%	6404	14.8%

At this stage, it is reasonable to conclude that the final safety monitor determination in September will lie somewhere within the range bounded by the high and low supply cases. Ideally the passage of time before next winter and the outcome of the winter 2008/9 consultation may provide further clarity on expected levels of supply for next winter.

Storage Safety Deliverability Requirement

Table 5 shows the supply surplus on day 1 of the 1 in 50 winter, for the two supply cases. It should be noted that there is considerable surplus in both cases, that is additional deliverability over and above that required to meet NDM and priority demand on the day.

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Table 5 – Peak NDM & Priority Demand and Peak Day Supply

Demand	GWh/d	
Peak ⁸ NDM & Priority Demand (A)	4401	
Peak Supplies	<u>high</u> non-storage supply assumptions	<u>low</u> non-storage supply assumptions
UKCS	2118	2118
Imports	2621	1644
Storage	1241	1241
Total Supplies (B)	5980	5003
Supply Surplus (B) – (A)	1579	602

Firm Monitor Calculation Process

As stated previously, firm gas monitors are published solely for the purpose of providing further information to the market.

The concept behind the firm monitors is to illustrate the indicative level of gas that would need to be held in storage to support all firm demand in a 1 in 50 winter. The analysis uses the same demand and supply assumptions as used for the calculation of the safety monitors.

Firm Monitor Space Requirement

Table 6 shows the indicative level of storage required at the three storage facility types to support all firm demand in a 1 in 50 winter, using both the high and low non-storage supply assumptions. It can be seen that for the low non-storage supply case, there is insufficient Medium and Short duration storage. This is not surprising, as the non-storage supply assumptions for the low case will necessarily result in a very high storage requirement, as the 1 in 50 winter represents a sustained, very cold winter. Under such a scenario, with the UK experiencing several months of sustained very cold weather, it seems plausible that the tight supply-demand position will result in higher prices that will in turn attract additional imports, thereby reducing the firm monitor space requirement.

By comparison, Table 7 shows that even for the low non-storage supply case, there is sufficient deliverability to meet the 1 in 20 peak day firm demand. This shows that there should be no issues regarding supporting all firm demand for short, but very cold snaps.

⁸ Day 1 of the Severe (1 in 50 cold) diversified load duration curve

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Table 6 – Storage space Analysis

Storage type	Assumed storage capacity (GWh)	Firm Monitor Space Requirement			
		<u>high</u> non-storage supply assumptions		<u>low</u> non-storage supply assumptions	
		(GWh)	%	(GWh)	%
Long duration storage (Rough)	32845	782	2.4%	30410	92.6%
Medium duration storage (MRS)	8251	22	0.3%	8499	103.0%
Short duration storage (LNG)	2058	0	0%	3975	193.1%
Total	43154	804	1.9%	42884	99.4%

Storage Firm Gas Deliverability Requirement

Table 7 – Peak Firm Demand and Peak Day Supply

Demand	GWh/d	
Diversified 1 in 20 Cold Peak Day (C)	5059	
Peak Supplies	<u>high</u> non-storage supply assumptions	<u>low</u> non-storage supply assumptions
UKCS	2118	2118
Imports	2621	1644
Storage ⁹	1331	1331
Total Supplies (D)	6070	5093
Supply Surplus (D) – (C)	1011	34

⁹ Includes Hole House Farm deliverability