

Safety Monitor and Firm Gas Monitor Requirements

September 2009

Introduction

This document sets out 'Safety Monitors' and 'Firm Gas Monitors' for the 2009/10 winter, pursuant to National Grid's obligations under the Uniform Network Code (UNC), Section Q.

This document also highlights the revisions made to the Safety Monitor methodology prior to winter 2009/10, and the reasons for those revisions.

Safety Monitors were introduced in 2004 to replace the so-called 'Top-up' monitors, which had existed (through the Network Code) since 1996. Safety Monitors define levels of storage that must be maintained through the winter period. The focus of the Safety Monitors is public safety rather than security of 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).

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

Revisions to Safety Monitor methodology

This year we have made a number of changes to the Safety Monitor methodology, to improve security of supply whilst at the same time facilitating improved transparency and enhanced information provision to the market. It is important to note that these changes have not affected the overall Safety Monitor space requirement. The revisions to the Safety Monitor methodology sought to;

- Treat all storage types equitably, by grouping all storage types/facilities together such that there is only one aggregated monitor for space. Hence operational storage space is apportioned equitably across all storage sites, including those with high cycling rates, rather than apportioning over the historically determined three storage types, Long, Medium and Short range storage.
- Retain the prevailing determination of storage space requirements but make the deliverability requirement more visible. Hence there is one Safety Monitor for space and one for deliverability.

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 storage deliverability Safety Monitor indicates the minimum level of deliverability required to both safely isolate loads that are "protected by isolation" and also support

Safety Monitor and Firm Gas Monitor Requirements

September 2009

loads that are “protected by monitor”. The deliverability Safety Monitor is therefore providing operational cover should an emergency be called on any particular day, whilst the space Safety Monitor ensures that there is sufficient gas in store to support “protected by monitor” loads for the remainder of the winter.

We believe that by having just one Safety Monitor for space and one for deliverability, there is greater clarity for market participants in terms of their operational decision making.

Operation of Safety Monitors

It is a requirement of National Grid’s Safety Case that we operate this monitor system and that we take action to ensure that storage stocks (space) do not fall below the defined level. The level of storage established by the Safety Monitor is that required to underpin the safe operation of the gas transportation system. It ensures the preservation of supplies to domestic customers, other non-daily metered (NDM) customers and certain other customers who could not safely be isolated from the gas system if necessary in order to achieve a supply-demand balance and thereby maintain sufficient pressures in the network.

The space Safety Monitor defines the minimum level of stored gas required in aggregate in all UK storage, on each day of the winter. We monitor the level of gas in all storage facility types throughout the winter to ensure that the actual aggregate stock level does not fall below the space Safety Monitor level. If this were to occur, there would be insufficient gas left in storage to underpin the safe operation of the system in a 1 in 50 cold winter or for 1 in 50 conditions for the remainder of the winter. Under these conditions, we would therefore be obliged by our Safety Case to take action to remedy this situation. In the lead-up to such a situation, we would advise the market with the objective of encouraging mitigating action. If necessary, however, the Network Emergency Co-ordinator (NEC) may require the relevant storage operators to reduce or curtail flows of gas out of storage. In this situation, we would expect the market to rebalance in order to achieve a match between supply and demand.

We would continue to provide information to the market as the situation developed. For this winter we will be providing through our website a new platform showing a five day ahead view of the supply/demand balance, historic and forward projections of storage use and how these levels relate to the Safety Monitor requirements and the setting of the Gas Balancing Alert (GBA) trigger.

The combination of improved information, greater clarity of the remaining storage position together with the alignment between the GBA and Safety Monitor should assist market participants and enhance security of supply. While National Grid would seek to minimise the extent of any intervention in the market, the balance between allowing the market to resolve the situation and taking action via the NEC will clearly depend on the severity of the situation and the associated timescales.

Safety Monitor and Firm Gas Monitor Requirements

September 2009

Approach to the Safety Monitor Levels

This note is published in conjunction with the Winter 2009/10 Outlook Report, which contains our Base Case supply forecast for the coming winter. This Base Case was composed of our 2009 Transporting Britain's Energy (TBE) forecasts being updated with new information regarding supply developments and feedback and intelligence received via the winter consultation process.

For winter 2009/10 a significant level of uncertainty remains with regard to non-storage supply levels, in particular with import supplies. This is especially so with the new LNG importation facilities. As the purpose of the Safety Monitors is to ensure that an adequate pressure can be maintained in the network at all times and thereby protect public safety, a prudent approach is therefore required.

The following sections explain the approach that we have taken to the Safety Monitor calculation in relation to supply and demand respectively. It should be noted that we will continue to review the Safety Monitor and Firm Gas Monitor levels throughout the winter and, if necessary, we will revise them to reflect material changes to the supply-demand balance.

National Grid will continue to provide winter feedback to industry regarding supply assumptions and resulting changes to Safety Monitors by means of monthly updates via Operational forums and our enhanced reporting on our website.

Supply Assumptions

There is still considerable uncertainty associated with the supply background for winter 2009/10. For the calculation of the Safety Monitors we have used the Base Case supply assumptions from the Winter 2009/10 Outlook Report as a starting point.

Whilst the Winter Outlook Report assumes that the IUK Interconnector may import as demands approach 400 mcm/d, we believe that the more prudent approach for calculating the Safety Monitors is to assume that IUK flows remain at zero. Table 1 details our non storage supply assumptions used in setting the Safety Monitors.

Table 1 – Non-Storage Supply Assumptions by Supply Source

Supply source	Assumed flow (mcm/d)	CV ¹ (MJ/m ³)	Assumed flow (GWh/d)
UKCS ²	183	39.30	1995
Norway	100	40.04	1112
IUK	0 ³	38.85	0
BBL	20	38.94	216
LNG imports	40	39.43	438
Total	343		3761

Table 2 shows the anticipated availability of storage in winter 2009/10.

¹ An estimated CV has been applied to assist conversion of data published in both volumetric and energy terms

² Assumes average availability of 90% max UKCS

³ IUK imports are assumed to be zero, this is consistent with our prudent approach to setting the Safety Monitors

Safety Monitor and Firm Gas Monitor Requirements

September 2009

Table 2 – Storage Space and Deliverability Assumptions

Storage type	Space⁴ (GWh)	Deliverability (GWh/d)
Short (LNG) ⁵	1428	390
Medium (MRS)	9981 ⁶	515 ⁶
Long (Rough)	38188 ⁷	455
Total	49597	1360

Demand Assumptions

The basis for the calculation of the Safety Monitor levels is our 2009 demand forecasts for 2009/10, using a severe (1 in 50 cold) load duration curve.

Safety Monitor Levels

Table 3 shows the initial Safety Monitor requirements for space and deliverability.

Table 3 – Stored Safety Gas and Storage Safety Deliverability Requirement

Assumed total storage space (GWh)	<u>Space</u> Safety Monitor (GWh)	<u>Space</u> requirement (%)	<u>Deliverability</u> Safety Monitor (GWh/d)
49597	1127	2.3%	639

⁴ Excludes Operating Margins space booking for 2009/10. Scottish Independent Undertakings and Constrained LNG requirements for 2009/10 are not excluded.

⁵ Includes Glenmavis, Partington and Avonmouth

⁶ Includes Hornsea, Holehouse Farm, Hatfield Moor, Humbley Grove and Aldbrough

⁷ Reflects latest information from Centrica Storage Limited on anticipated space for winter 2009/10

Safety Monitor and Firm Gas Monitor Requirements

September 2009

Stored Firm Gas Requirement

The Firm Gas Monitors represent the storage levels required to support all firm demand in a severe (1 in 50 cold) winter. They are published for information only. Note that they are calculated using the same supply demand assumptions as used for calculating the Safety Monitor.

Table 4 – Firm Monitor Space Analysis

Assumed total storage space (GWh)	Firm Space (GWh)	Firm Space (%)
49597	13965	28.2%

Storage Firm Deliverability Requirement

Table 5 – Peak Firm Demand⁸ and Peak Day Supply

Firm Demand	GWh/d
Diversified 1 in 20 Cold Peak Day (A)	4636
Peak Supplies	
Non-storage supplies	3761
Storage	1360
Total Supplies (B)	5121
Supply Surplus (B) – (A)	485

⁸ Diversified firm demand for a 1 in 20 cold peak day

Safety Monitor and Firm Gas Monitor Requirements

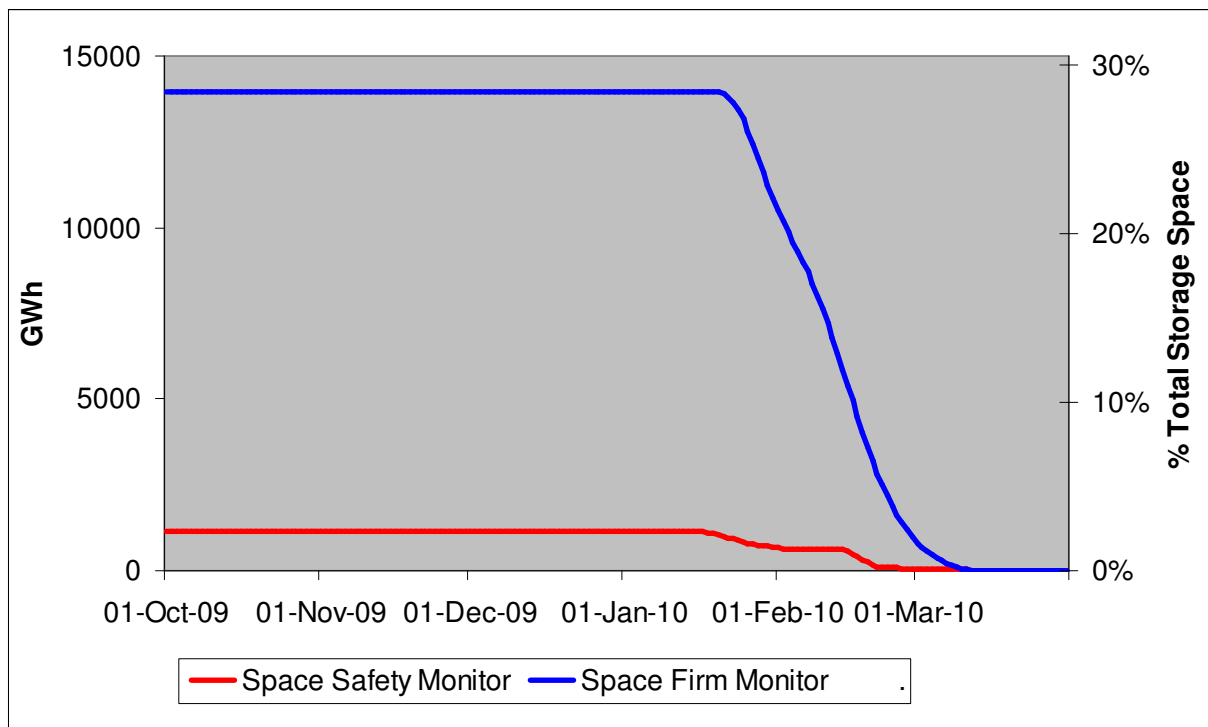
September 2009

Monitor Profiles

Figure 1 show the space profiles for the Safety Monitor and Firm Gas Monitor whilst Figure 2 shows the deliverability profile for the Safety Monitor.

The objective of the Safety Monitor profiles is to ensure that at any point in time sufficient gas will remain in store to underpin the safe operation of the gas transportation system for what remains of the winter period. They allow for the possibility of late winter cold weather patterns based on analysis of historical temperatures. However, in the event of cold weather earlier in the winter, the profiles may be reduced to reflect the occurrence of cold weather. This methodology is explained in more detail in our Safety & Firm Gas Monitor Methodology document⁹. This document will be updated to reflect the revisions made to the Safety Monitor methodology during October 2009.

Figure 1: Space Safety Monitor and Space Firm Monitor Profiles

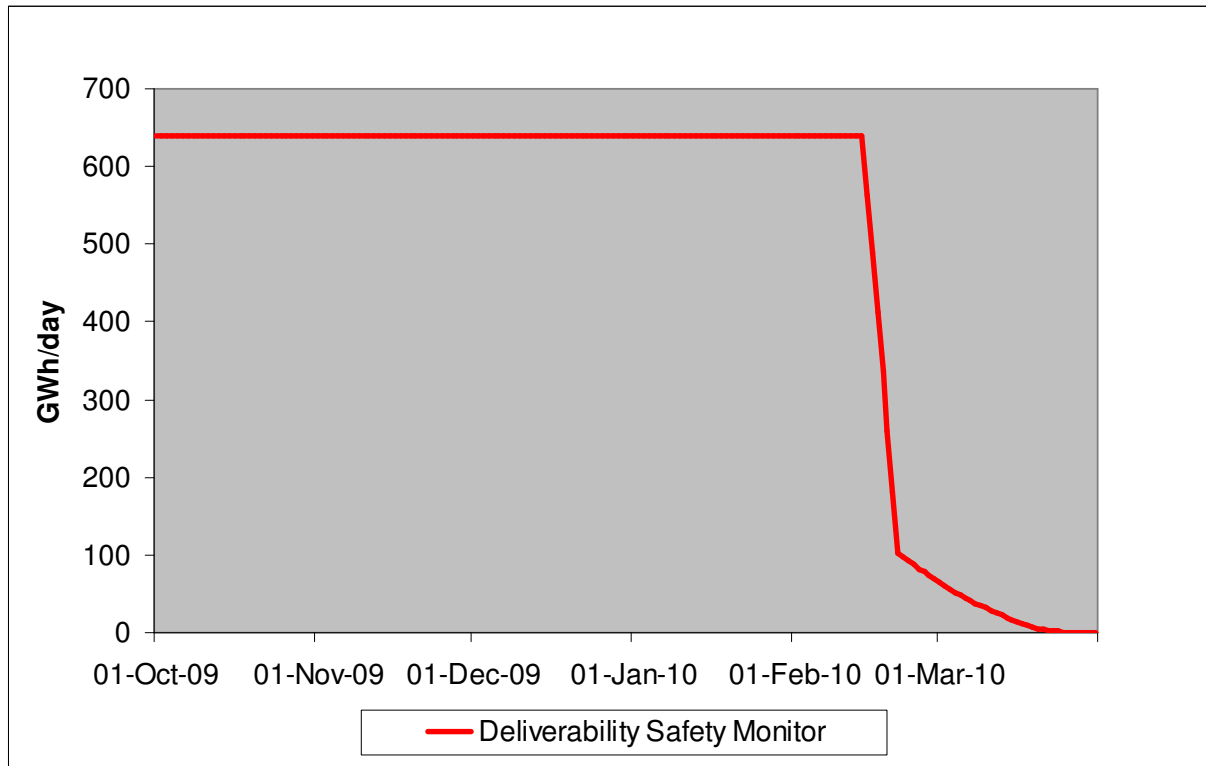


⁹ <http://www.nationalgrid.com/NR/rdonlyres/B4ACC5F8-A8AF-48B4-A8AA-04BE3743E1C9/13676/20067SafetyFirmGasMonitorMethodology.pdf>

Safety Monitor and Firm Gas Monitor Requirements

September 2009

Figure 2: Deliverability Safety Monitor profile



Notes on Demand Assumptions

National Grid forecasts both diversified demand and undiversified demand. The diversified peak day is the peak day for the whole country, whilst the undiversified peak day is the peak day for each area of the country added together.

For planning and investing in the network, National Grid uses 1 in 20 cold peak day undiversified demand conditions (in addition to analysing other less severe weather conditions). This allows for the fact that there is no single profile of demand across the country associated with a 1 in 20 cold peak day, and therefore ensures sufficient transportation capacity is available to meet 1 in 20 cold demand under a range of conditions.

For security planning including Safety Monitors, National Grid uses diversified demand forecasts, which is the appropriate basis for assessing the balance between supply and demand on a national basis.