

# **Safety Monitor Requirements**

**September 2012**

## **Introduction**

This document sets out 'Safety Monitors' for the 2012/13 winter, pursuant to National Grid's obligations under the Uniform Network Code (UNC), Section Q.

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).

## **Removal of obligation to publish Firm Gas Monitor**

Modification 0411S, 'Removal of the Obligation to Publish Firm Gas Monitor from the UNC' was accepted by the Modification Panel on 21 June 2012 and was implemented on 13 July 2012. Hence the Firm Monitor requirement is no longer published.

## **Safety Monitor Methodology**

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. It is therefore appropriate that we adopt a prudent approach to setting the Safety Monitor levels.

The concept behind the Safety Monitors is to provide sufficient gas 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 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 provides sufficient gas in store to support "protected by monitor" loads for the remainder of the winter.

The level of the Safety Monitor is dependant on the level of non storage supplies (NSS) and therefore if the level of NSS reduces, the Safety Monitor will increase. This assessment is undertaken on a regular basis by National Grid throughout the winter period.

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### **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. Its aim is to ensure 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. 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 continue to provide through our website 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 relevant information and clarity of the remaining storage position should assist market participants in ensuring 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.

### **Approach to the Safety Monitor Levels**

This note is published in conjunction with the Winter 2012/13 Outlook Report, which contains more detailed coverage of our preliminary view of supplies for the coming winter.

For winter 2012/13 there continues to be significant levels of uncertainty with respect to NSS levels, in particular with import supplies. We will continue to review the Safety 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 reporting on our website.

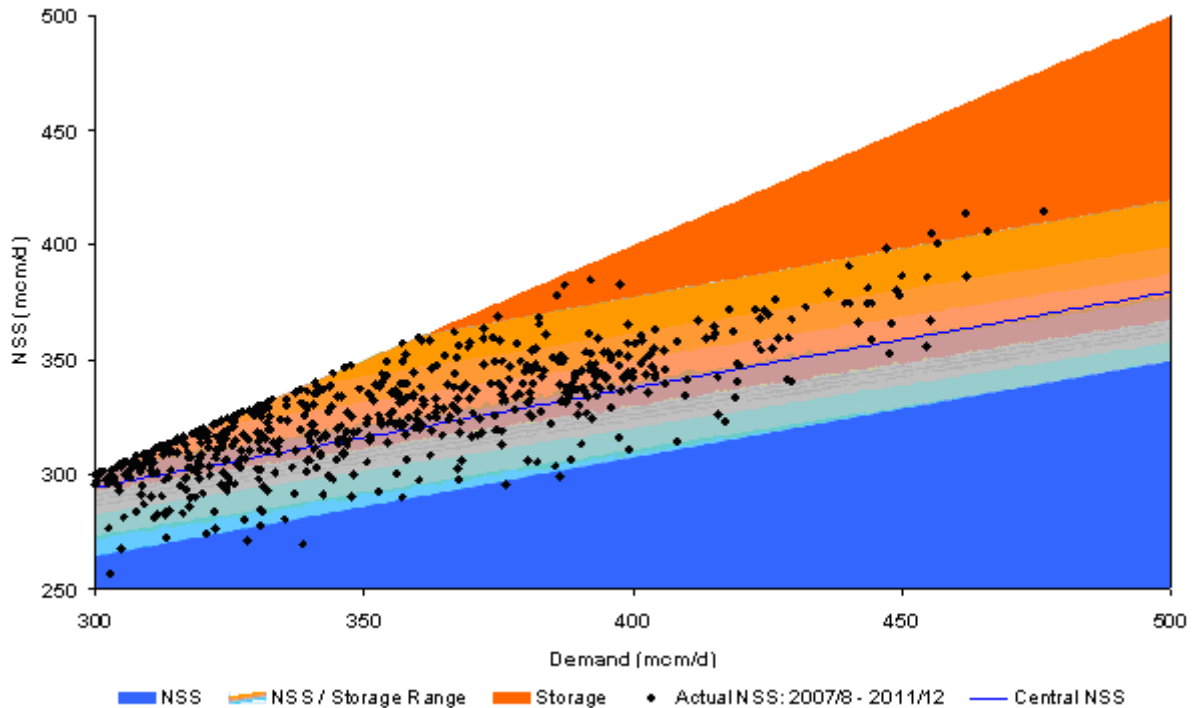
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### Supply Assumptions

Figure 1 shows a simplified representation of how supply is forecast to meet demand for winter 2012/13. The data set to create this chart is from the past 5 winters with a weighting towards the most recent winters. The supply is broken down into three discreet areas, one of non storage supply (NSS), one of storage and an area in between where storage and NSS are both expected to contribute to some extent.

Figure 1 – Winter 2012/13 Simplified Representation of Supply



The chart shows considerable variation in NSS, this is not surprising given the different winter conditions. In winter 2010/11, the level of NSS reached record levels in excess of 400 mcm/d as the headroom of capacity was utilised to a greater extent than in previous winters. Winter 2011/12 saw much lower demands with significantly lower NSS levels.

For winter 2012/13 there is considerable uncertainty regarding the level of individual supply components, most notably LNG. For the winter security assessment central view on NSS, published within the 2012/13 Winter Outlook Report, we have used an NSS assumption based on a weighted rolling average of the last five years of NSS: this is shown by the blue line on the chart above.

For the Safety Monitor calculation, which has a focus on public safety by maintaining adequate pressures within the network, it is prudent to assume a level of NSS which will be available throughout the winter, notably at times of high demand: this is set at 95% of the blue line.

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Within winter monitoring of actual NSS levels will enable us to determine whether the NSS v demand relationship used within the Safety Monitor calculation methodology is fit for purpose: if it is found not to be, it can be revised based on the latest information.

Table 1 shows the anticipated availability of storage in winter 2012/13.

**Table 1 – Storage Space and Deliverability Assumptions<sup>1</sup>**

<b>Storage type</b>	<b>Space (GWh)</b>	<b>Deliverability (GWh/d)</b>
Short (LNG)	300	143
Medium (MRS)	10665	558
Long (Rough)	40000	485
<b>Total</b>	<b>50965</b>	<b>1186</b>

### Demand Assumptions

The basis for the calculation of the Safety Monitor levels is our 2012 demand forecasts for 2012/13, using a severe (1 in 50 cold) load duration curve. Our base case for demands assumes relatively low power generation. These could be potentially significantly higher if there is a shift in the relative economics of gas and coal fired generation, resulting in decreased use of coal and increased use of gas for power generation.

Within day profiles for isolating various loadbands, such as power stations and large industrial loads are based upon operational experience of emergency exercises undertaken by National Grid. The profiles are reviewed and updated as new information becomes available, but as stated previously the Safety Monitor calculation has a focus on public safety, hence a prudent approach is taken to revising the isolation profiles.

### Safety Monitor Levels

Table 2 shows the initial Safety Monitor requirements for space and deliverability.

**Table 2 – Stored Safety Gas and Storage Safety Deliverability Requirement**

<b>Assumed total storage space (GWh)</b>	<b>Space Safety Monitor (GWh)</b>	<b>Space requirement (%)</b>	<b>Deliverability Safety Monitor (GWh/d)</b>
<b>50965</b>	<b>2359</b>	<b>4.6%</b>	<b>672</b>

<sup>1</sup> This table represents our operational assumptions and is based on proven performance. Reported deliverabilities may be different from 'name plate' capacities. Space includes 814GWh of Operating Margins and excludes Hill Top Farm, which will be added when operational. GWh to mcm conversions assumes a CV of 39.6 MJ/m<sup>3</sup>.

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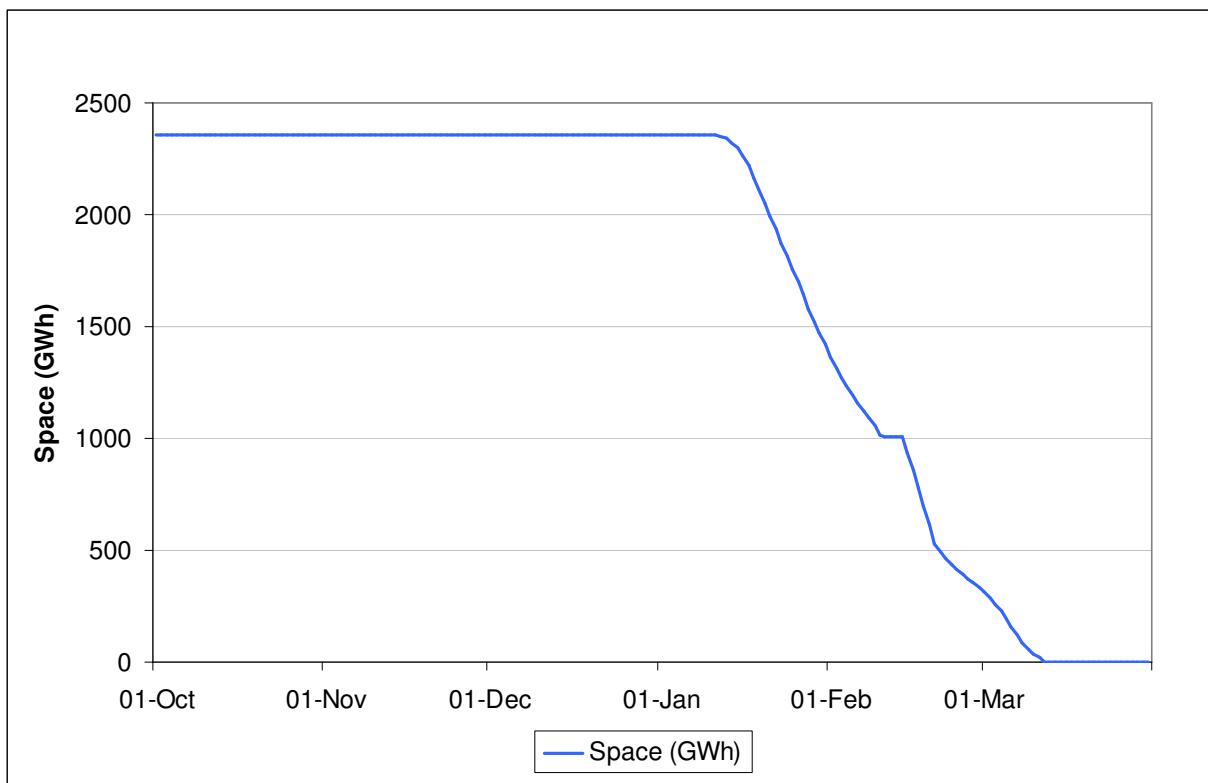
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## Monitor Profiles

Figure 2 shows the space profile for the Safety Monitor whilst Figure 3 shows the deliverability profile for the Safety Monitor.

The objective of the Safety Monitor profile is to identify at any point in time the requirement for gas in store to underpin the safe operation of the gas transportation system for what remains of the winter period. The Safety Monitor allows 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.

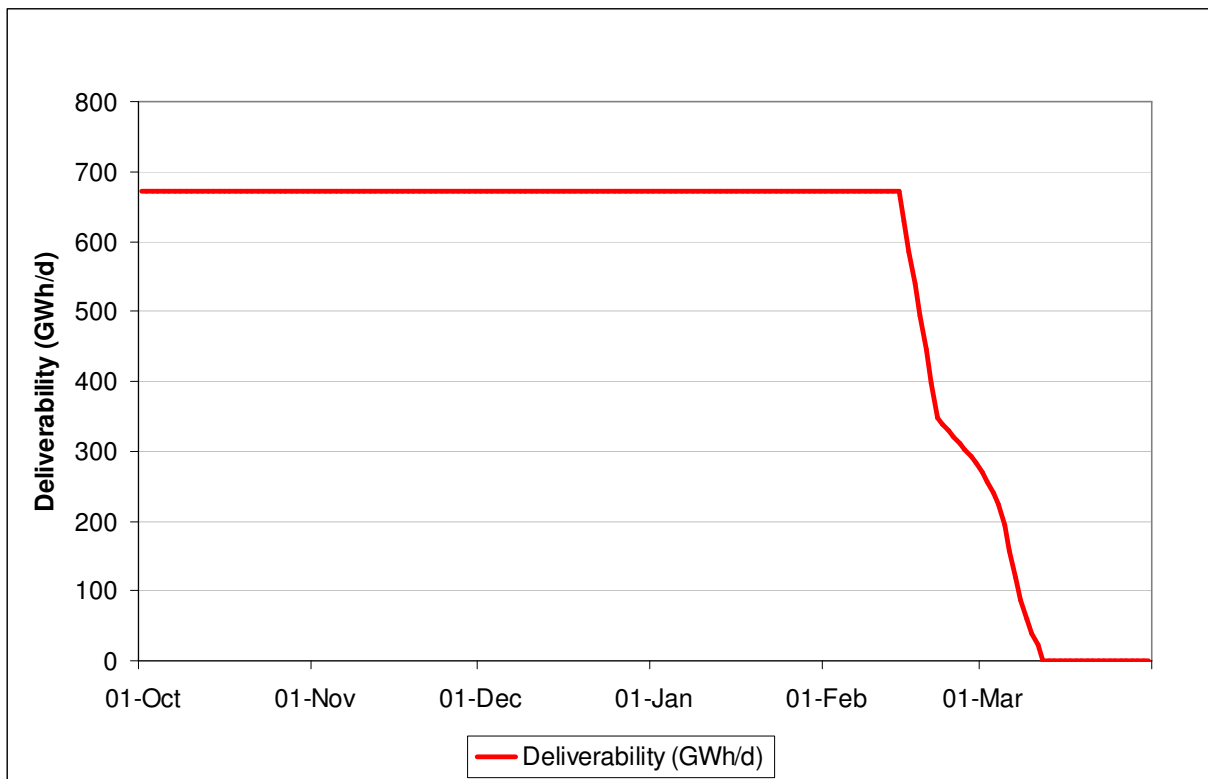
**Figure 2: Space Safety Monitor**



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**Figure 3: 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 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 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.