

# **Preliminary Safety & Firm Monitor Requirements 2011/12**

**6<sup>th</sup> June 2011**

## **Introduction**

This document sets out the 'Safety Monitor' and 'Firm Gas Monitor' for the 2011/12 winter, pursuant to National Grid's obligations under the Uniform Network Code Section Q.

The preliminary safety monitor provided in this note uses our 2011 demand forecasts produced in June 2011 and our provisional 2011 supply forecasts which incorporate supply and demand information provided to us by market participants through our 2011 Transporting Britain's Energy (TBE) consultation process. We expect to update our safety monitor analysis to include any further feedback that we receive via the winter 2011/12 consultation process.

Our Winter Consultation Report 2011/12 which will be published in June will present an initial view of gas demand and supplies for the coming winter. It will highlight continuing uncertainty with regard to potential non-storage supply levels, notably for imports. We request that market participants respond to our winter 2011/12 consultation process to assist us in developing our final monitor determinations in September.

It is National Grid's responsibility to keep the above 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 latest information available to it. 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 Forum meetings and information on our web site. In doing so, we must recognise that the purpose of the safety monitor is to ensure an adequate pressure can be maintained in the System at all times and thereby protect public safety.

The firm gas monitor represents the storage level required to support Uniform Network Code defined firm demand in a severe winter. They are published in accordance with UNC Section Q 5.2.2 and are for information only.

## **Background**

The Uniform Network Code (UNC) (inter alia) requires us to publish the safety monitor and firm monitor and to provide regular reporting of actual storage stock levels for comparison with these monitors. As the name suggests, the focus of the safety monitor is public safety rather than security of supply. It provides 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 the firm gas monitor based upon the forecast demands of firm consumers. The firm gas monitor is published solely for the purpose of providing further information to the market.

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## **Methodology**

There continues to be two main steps in the assessment of the safety and firm gas monitors:

- The calculation of the total storage requirement at the start of the winter
- The assessment of the way in which this initial requirement decays as the winter progresses, known as the winter profile. This second step has been expanded to include an assessment of how the total storage deliverability requirement also decays as the winter progresses.

This note only covers the first step, by providing a preliminary assessment of the safety monitor space requirement. The safety monitor requirement is highly dependent on the assumptions made regarding the aggregate non storage supply (NSS) level. In June we will be consulting on the likely non storage supplies we may see this coming winter. Once the winter consultation process is complete, we will publish the final Safety Monitor and Firm Gas Requirements in September, including the safety monitor storage space requirement winter profile and the deliverability requirement.

## **DN Exit Reform**

UNC Modification Proposal 0090: Revised DN Interruption Arrangements (Mod 0090) was directed for implementation on 1<sup>st</sup> April 2008. From October 2011 the majority of DN sites will be considered firm for transportation purposes. This has an impact on the 2011/12 Safety and Firm Monitors in that additional DN demand is now no longer contracted for interruption by the Transporter and therefore under the methodology for calculating the monitor levels there is an increase in the number of “firm” loads.

## **NTS Exit Reform**

Modification Proposal 0195AV: Enduring NTS Exit Capacity Arrangements (Mod 0195) was directed for implementation on April 2009. From October 2012 this will also have an impact on the 2012/13 Safety and Firm Monitors in that additional NTS demand will also be considered as “firm”.

## **Safety Monitor Calculation Process**

The concept behind the safety monitor 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 is summarised in the table below:

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**Table 1: End Consumer Categorisation for Safety Monitors**

<b>Protected by Isolation</b> - Sites which can be safely isolated from the network	<b>Protected by Monitor</b> - Sites which require protection under the safety monitor
NTS Interruptibles	Priority <sup>1</sup> DM
NTS Power Firm	Exports to Ireland
NTS Industrial Firm	>732 MWh NDM
DM (excluding priority customers)	73-732 MWh NDM
	0-73 MWh NDM

The safety monitor storage requirements comprise two elements:

- **Supply-demand:** Storage required to support ‘protected by monitor’ loads, assessed using a severe (1 in 50) winter load duration curve and assumed supply levels;
- **Isolation:** Storage required during the process of demand reduction, effectively to support ‘protected by isolation’ loads during the period in which these loads would be isolated from the system.

Mod 0090 has no impact on the supply-demand element as none of the additional “firm” load is classified within the ‘protected by monitor’ category. However it does have an impact on the isolation requirement as additional gas (assumed to come from storage) is required to isolate this additional “firm” load.

### Supply

There is considerable uncertainty regarding the make up and aggregate level of non storage supplies. The aggregate supply position is expected to be similar to that experienced last winter. However there is movement in the forecasts for the individual supply components. For the UKCS we are forecasting further declines. For Norway, BBL and LNG our forecast reflects winter 2010/11 performance. For IUK our forecasts<sup>2</sup> are as in previous winters dependent on demand (price) and the availability of other NSS components.

Table 2 shows the NSS assumptions used in calculating the safety monitor. The safety monitor requirement is highly dependent on the NSS level.

<sup>1</sup> Currently, priority loads represent less than 2% of protected by monitor demands.

<sup>2</sup> IUK assumed to import at increasing levels as UK demand increase

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**Table 2 – Non Storage Supply Assumptions**

	<b>2011/12 Safety Monitor: non-storage supply assumptions</b>	
	<b>mcm/d</b>	<b>GWh/d<sup>3</sup></b>
UKCS	138	1518
Norway	95	1045
BBL	30	330
LNG	80	880
IUK	20	220
Total	363	3993
<b>95% NSS</b>	<b>345</b>	<b>3793</b>

The focus of the safety monitor is public safety and hence it is prudent to ensure that the assumed level of NSS will be available throughout the winter, notably at times of high demand.

By applying a value of 95% to the aggregated total of NSS, the value of NSS used in determining the 2011/12 safety monitor is reduced from 363 to 345 mcm/d. The relationship of NSS against demand is shown in Figure 1.

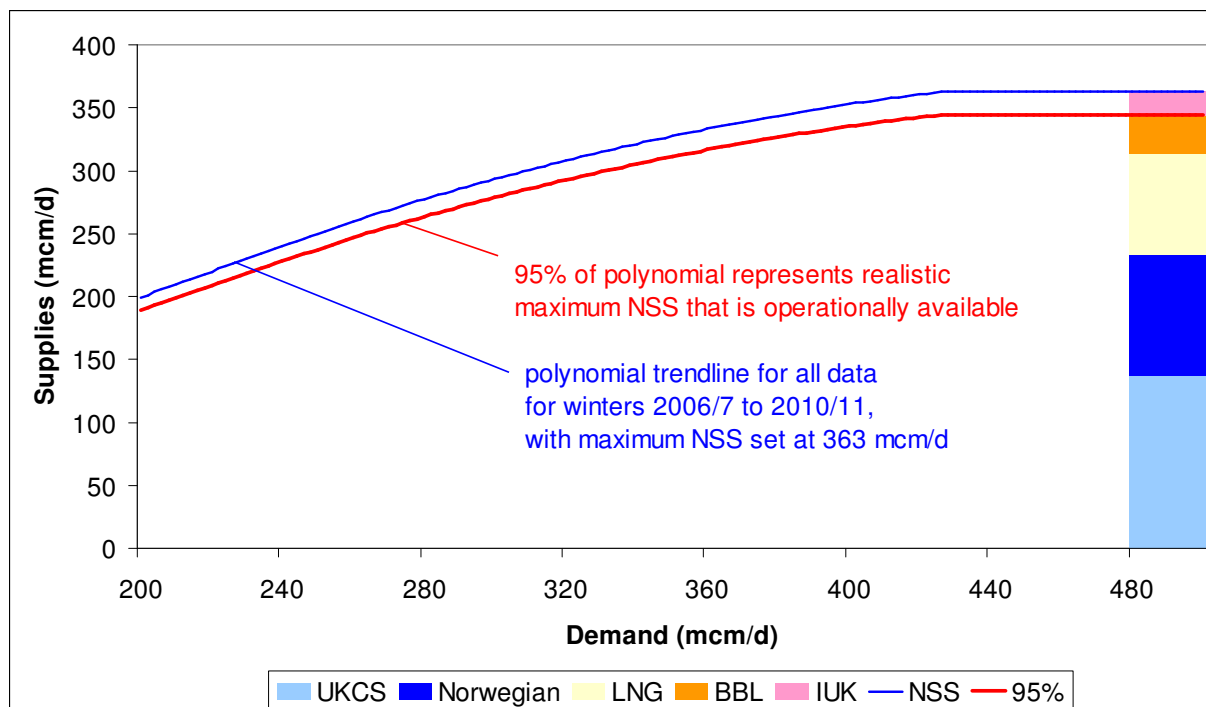
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<sup>3</sup> An assumed CV of 39.6 MJ/m<sup>3</sup> is used for all energy conversions

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**Figure 1 – Maximum non-storage supply assumptions and NSS v demand relationship**



The relationship of NSS vs demand for the last five years provides the shape (not the values) for the basis for the NSS vs demand relationship for calculating the 2011/12 Safety Monitor.

Table 3 shows the anticipated availability of storage capacity in winter 2011/12.

**Table 3 - Storage**

	Space (GWh)	Deliverability (GWh/d)	Space (mcm)	Deliverability (mcm/d)
Short (LNG) <sup>4</sup>	517	143	47	13
Medium (MRS) <sup>5</sup>	8679	467	789	43
Long (Rough) <sup>6</sup>	35585	484	3235	44
<b>Total</b>	<b>44781<sup>7</sup></b>	<b>1094</b>	<b>4071</b>	<b>100</b>

<sup>4</sup> Includes Avonmouth

<sup>5</sup> Includes Hornsea, Hole House Farm, Hatfield Moor, Humbly Grove and Aldbrough but excludes Holford and Hill Top Farm: numbers may be revised as new information becomes available

<sup>6</sup> Reflects latest information from Centrica Storage Limited

<sup>7</sup> Operating Margins space bookings are included

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### Demand

The demand background used for the analysis in this section is our demand forecasts for 2011/12 that we produced in June 2011. These are slightly lower than our 2010/11 forecasts produced in May 2010. With the overall Non Storage Supply position expected to be similar to that experienced last winter, the slightly lower levels of forecast demand should marginally decrease the safety monitor level for next winter. However the impact of slightly reduced demands has been offset by increased protected by isolation requirements.

### Safety Monitor Space Requirement

Table 4 shows the total safety monitor space requirement on the basis of the supply and demand assumptions outlined above.

**Table 4 – Total Safety Monitor Space Requirement**

	<b>Total storage capacity (GWh)</b>	<b>Space requirement (GWh)</b>	<b>Space requirement %</b>
<b>Total</b>	<b>44781</b>	<b>1337</b>	<b>3.0%</b>

### Storage Safety Deliverability Requirement

Table 5 shows the supply surplus on day 1 of the 1 in 50 winter. It should be noted that there is additional deliverability over and above that required to meet NDM and DECC defined Priority load demand on the day.

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

<b>Demand</b>	<b>GWh/d</b>
Peak <sup>8</sup> NDM & Priority Demand (A)	4167
<b>Peak Supplies</b>	<b>non-storage supply assumptions</b>
UKCS	1442 <sup>9</sup>
Imports	2351 <sup>10</sup>
Storage	1094
Total Supplies (B)	4887
<b>Supply Surplus (B) – (A)</b>	<b>720</b>

<sup>8</sup> Note that in this instance peak refers to Day 1 of the Severe (1 in 50) diversified load duration curve, as this represents the highest level of NDM and priority demand that would be supported during a severe (1 in 50) winter

<sup>9</sup> 95% of value from Table 2 to reflect maximum operationally available

<sup>10</sup> 95% of value from Table 2 to reflect maximum operationally available

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### **Firm Monitor Calculation Process**

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

The firm monitor illustrates the indicative level of gas that would need to be held in storage to supply all “firm” demand in a 1 in 50 winter. The analysis uses the same prudent demand and supply assumptions as used for the calculation of the safety monitor.

Not surprisingly, Mod 0090 has had an impact on the Firm Monitor as DN load is now considered “firm”.

### **Firm Monitor Space Requirement**

Table 6 shows the indicative total level of storage required for the Firm Monitor in a 1 in 50 winter. The total space requirement to support all firm load is 32612 GWh, ie approximately three quarters of total storage capacity of 44781 GWh (compared to approximately a third last winter). The increase is due to the impact of Mod 0090 where the majority of DN demand is effectively reclassified as firm. As detailed previously, there is little change in the supply or demand position from last winter hence the change is essentially academic rather than one that suggests a change in the level of security.

**Table 6 – Storage space Analysis**

	<b>Total storage capacity</b>	<b>Space requirement (GWh)</b>	<b>Space requirement %</b>
<b>Total</b>	<b>44781</b>	<b>32612</b>	<b>72.8%</b>

### **NB**

**National Grid will be holding a Gas Operational Forum “Live Meeting” in the week commencing Monday 13<sup>th</sup> June to discuss the Firm Monitor methodology, the implications of a Firm Monitor set at 72.8% of storage space and whether the calculation of the Firm Monitor continues to meet the needs of customers.**

**If you wish to participate in the Live Meeting, please email the account below and include the words Firm Monitor in the email title.**

[gasoperations.shipperliaison@uk.ngrid.com](mailto:gasoperations.shipperliaison@uk.ngrid.com)

### **Storage Firm Gas Deliverability Requirement**

Table 7 shows that the NSS assumptions shown in Table 2 result in insufficient deliverability to meet the 1 in 20 peak day firm demand. This is to be expected as the NSS assumptions within Table 2 reflect a prudent, winter-long assumption. A 1 in 20

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peak day would be expected to result in higher NSS levels and some degree of demand side response.

**Table 7 – Peak Firm Demand<sup>11</sup> and Peak Day Supply**

<b>Firm Demand</b>	<b>GWh/d</b>
Diversified 1 in 20 Cold Peak Day (C)	<b>4919</b>
<b>Peak Supplies</b>	<b>non-storage supply assumptions</b>
UKCS	1442
Imports	2351
Storage	1094
Total Supplies (D)	4887
<b>Supply Deficit (C) – (D)</b>	<b>32</b>

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<sup>11</sup> Diversified firm demand for a 1 in 20 cold peak day