

**STANDING RESERVE  
MARKET REPORT  
2005/2006**

**FOR STANDING RESERVE SERVICE  
FROM BM AND  
NON-BM PROVIDERS**

**FOR STANDING RESERVE MARKET AGREEMENTS  
EFFECTIVE 1 APRIL 2005**

July 2005

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## Executive Summary

This report describes the tender evaluation process carried out by National Grid Company plc for the procurement of the Standing Reserve service commencing 1 April 2005.

National Grid evaluated all the tenders received against economic and technical performance in accordance with the criteria outlined in the tender documentation. On 20 January 2005, tenderers were notified of the results of their respective tenders. The main points are as follows:

- On 5 November 2004 ('Market Day') a total of 160 tender submissions were received from 33 companies representing 127 units.
- For 2005/2006, a maximum total of 2911MW of Standing Reserve service volume was tendered.
- Tenders were received from a variety of service providers, both Non-Balancing Mechanism (Non-BM) and Balancing Mechanism (BM) participants, including provision by generation and demand-side sources.
- The tenders were assessed in terms of their economic value whilst taking account of the technical requirements of the system and the other categories of Reserve available.
- Of the tenders received and evaluated, National Grid offered to enter into Agreements with 133 tenders, 132 of which proceeded to final contract.
- The overall maximum contracted capacity of Standing Reserve is 2255MW comprising:
  - BM Participants 1469MW
  - Non-BM Participants 786MW

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## **1. Introduction**

- 1.1 This market report describes the tenders received and the subsequent selection process that led to Standing Reserve Agreements being entered into for the period 1 April 2005 to 1 April 2006.
- 1.2 This report also reviews the outcome of this tender round in the context of previous tender rounds and the service utilisation during 2004/2005.
- 1.3 Standing Reserve services for this period are based on the contract form as described in the tender documentation issued on 7 October 2004 and available on the National Grid web site at:  
[http://www.nationalgrid.com/uk/indinfo/balancing/mn\\_standing\\_02.html](http://www.nationalgrid.com/uk/indinfo/balancing/mn_standing_02.html)
- 1.4 In the 1993/1994 financial year, National Grid instigated an annual tender process for the competitive procurement of Standing Reserve services as an economic alternative to Reserve delivered from part-loaded generation. National Grid has prepared market reports for each of the Standing Reserve tenders undertaken. These can be found on our website at:  
[http://www.nationalgrid.com/uk/indinfo/balancing/mn\\_standing.html](http://www.nationalgrid.com/uk/indinfo/balancing/mn_standing.html)
- 1.5 Further information and clarification of the Standing Reserve service and the Standard Terms and Conditions can be found in last year's guidance document:  
[http://www.nationalgridinfo.co.uk/balancing/pdfs/0904\\_Explanation\\_Tender\\_Guidance\\_Document.pdf](http://www.nationalgridinfo.co.uk/balancing/pdfs/0904_Explanation_Tender_Guidance_Document.pdf)
- 1.6 Communication of the Standing Reserve tender timescales for each has been made via the National Grid Industry Information website and advertisements placed in the Utility Week publication.

## **2. Definition of Standing Reserve**

- 2.1 Standing Reserve is a manually instructed delivery of active power from generation (non-synchronised) and/or demand reduction (synchronised) plant and which is fully available within a maximum response time. It is procured on a commercial basis as part of National Grid's overall Reserve requirements.
- 2.2 Reserve is required to help manage any short term mismatch between generation and demand, for example following plant losses or shortfalls or demand being higher than forecast. It can be instructed at short notice and can effectively take over from plant providing Frequency Response, allowing that responsive plant to be available for the next plant loss or other Frequency deviation.
- 2.3 The need for Reserve varies across the year, the time of week and the time of day. It is a function of the system demand profile at that time. To reflect this, National Grid splits the Standing Reserve year into six Seasons, for both Working Days (including Saturdays) and Non-Working Days (Sundays and most Bank Holidays). In addition National Grid specifies the periods (Availability Windows) in each day that Standing Reserve is required.
- 2.4 The specified Standing Reserve Seasons and Windows have been altered for 2005/2006, when compared to previous years, by identifying six rather than five Seasons. As with 2004/2005, Working days and Non-Working Days are still separately identified. These Seasons and Windows are shown in Appendix 4.
- 2.5 Tenderers can select whether to tender for one or more Seasons by Working Days and/or Non-working Days. Tenderers can indicate that they must be fully accepted across all seasons or rejected across all seasons.
- 2.6 Non-BM service providers can choose whether to tender to provide a Committed or Flexible service, whereas BM providers can only tender for a Committed service. Once a Committed contract is entered into, providers are obliged to make the service available in all contracted service periods. In return, National Grid commits to pay for all the availability offered. With a Flexible contract, providers are not obliged to make the service available all the time and National Grid is not obliged to accept it (and payment is only made if the availability is accepted).

2.7 A Standing Reserve service provider must be able to:

- Offer a minimum active power of 3MW; this can be provided from more than one site as long as the aggregated total is more than the 3MW minimum and it can be instructed and metered from one point of control;
- Offer a Response Time from instruction to actual generation or demand reduction of the Contracted MW of 20 minutes or less;
- Provide the Contracted MW offered for at least 2 hours when instructed;
- Have a Recovery Period after the provision of the Standing Reserve service of not more than 1200 minutes (20 hours);
- Provide the Standing Reserve service at least 2 times a week for Non-Working Days or 3 times a week Working Days or both Working Days and Non-Working Days;
- Control the service delivery from a single point and provide metering to the same control point; and
- If offering a service from aggregated sites, then National Grid must agree the geographical location of the sites.

### **3. Tender Process**

3.1 This annual tender round was held to secure an appropriate level of Standing Reserve service provision for the period 05:00 hours on 1 April 2005 to 05:00 hours on 1 April 2006.

3.2 The tender process undertaken in order to facilitate securing Standing Reserve was:

- Invitation To Tender (ITT) documentation published on National Grid's Industry website on 7 September 2004.
- Tender opportunity communicated to potential providers via advertisements placed in Utility Week during October 2004.
- Market Day (deadline for tenders to be submitted to National Grid) held on 5 November 2004.
- Tender assessment was carried out between 11 November 2004 and 17 January 2005.
- Tenderers were notified of the outcome of their tenders on 20 January 2005.
- Standing Reserve Agreements were offered to all tenderers successful in the tender assessment stage.
- All Agreements were signed with providers by 31 March 2005.

#### 4. Tenders Submitted

4.1 A total of 160 discrete tender submissions were received, representing 33 companies and 127 units. This translates to a maximum tendered capacity of 2911MW, of which 900MW was from Non-BM providers.

4.2 The proportion of Committed/Flexible Standing Reserve service options tendered was as follows:

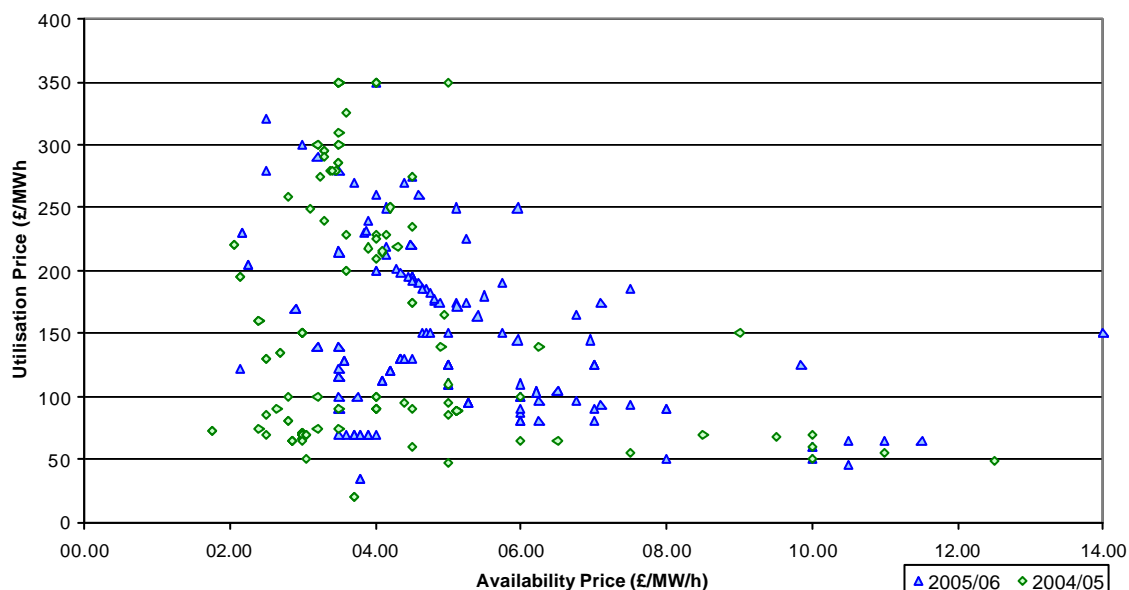
Committed Only	2337 MW
Flexible Only	574 MW
<b>Total</b>	<b>2911 MW</b>

BM participants may only provide a Committed service whereas Non-BM participants can opt to provide either a Committed service and/or a Flexible service. Only one type of service may be provided for Working Days or Non-Working Days in a single Season. Approximately two-thirds of the Non-BM tenders received were offering a Flexible rather than Committed service.

4.3 All tenders were required to comply with the tender criteria, and to provide certain information with regard to any service limitations. These parameters are discussed further in Appendix 5.

4.4 Pricing for Standing Reserve is made up of an availability payment and utilisation price. A price scatter plot of all tenders received in this tender round compared with those received for 2004/2005 is shown in Figure 1. Note that the figure below shows price data for all tenders. This means that, for some of the data points shown, the data may only represent price data for a single tendered season rather as well as other, full annual tenders that are applicable for the full annual term.

Figure 1 - Comparison of Standing Reserve Tender Prices 2005/06 and 2004/05



## **5. Tender Assessment**

5.1 All tenders were evaluated against the following objectives: -

- To identify the minimum cost solution in meeting the Short-Term Reserve requirement (availability) using the tenders received and the other alternative sources of Short Term Reserve that are available to National Grid.
- The cost of instructing (utilising) Short-Term reserve, as described above, using the tenders received and alternative sources.
- To re-optimize the minimum cost solution, if necessary, accounting for the system considerations outlined in Appendix 5.

5.2 The assessment model used to assess the economic benefits of each Standing Reserve tender took into account the following variables: -

- The forecast availability and utilisation costs of other sources of Short Term Reserve;
- The tendered data for Standing Reserve;
- The Short Term Reserve utilisation forecast;
- Any fixed costs associated with service contracts and monitoring systems;
- Manual Fast Start Start-Up payments for those units tendering into the Standing Reserve tender round that are contracted to provide a manual Fast Start service.

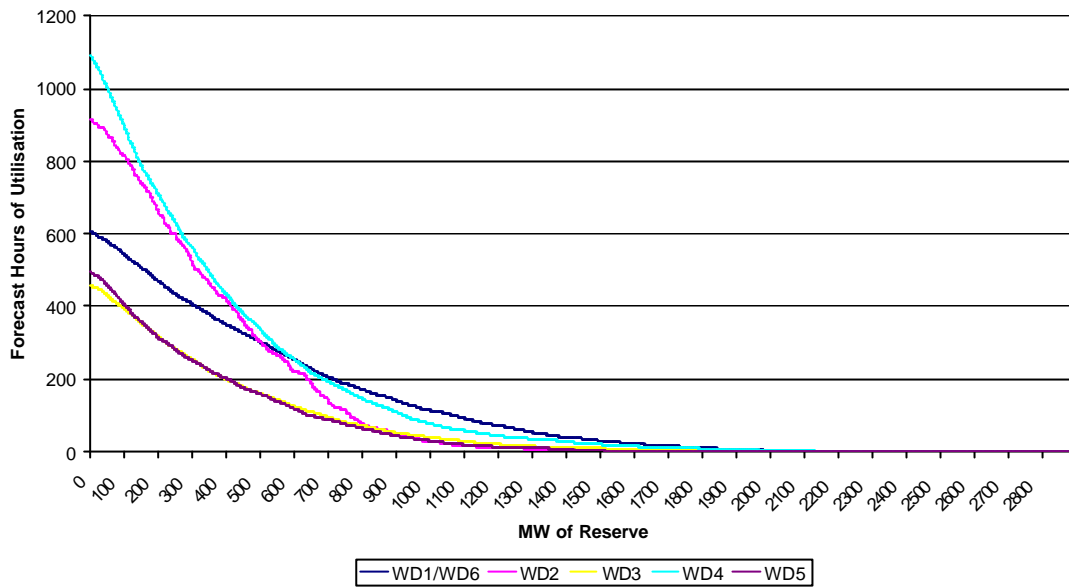
5.3 To determine the costs of securing the availability on the day of alternative sources of Short Term Reserve the historic costs of Warming and Synchronising Units (either through PGBTs or BOAs) are analysed. Through Warming and Synchronising of units that would otherwise have a PN of zero at Gate Closure, National Grid is then able to access this as Regulating Reserve within similar timescales to Standing Reserve. These historic Warming and Synchronisation Costs are then used to derive an equivalent “availability fee” against which the tendered Availability Fee of each Standing Reserve unit may be compared.

5.4 Forecast price stacks for the availability of Offers in the Balancing Mechanism are used to determine the prices of utilising any alternative source of Short Term Reserve.

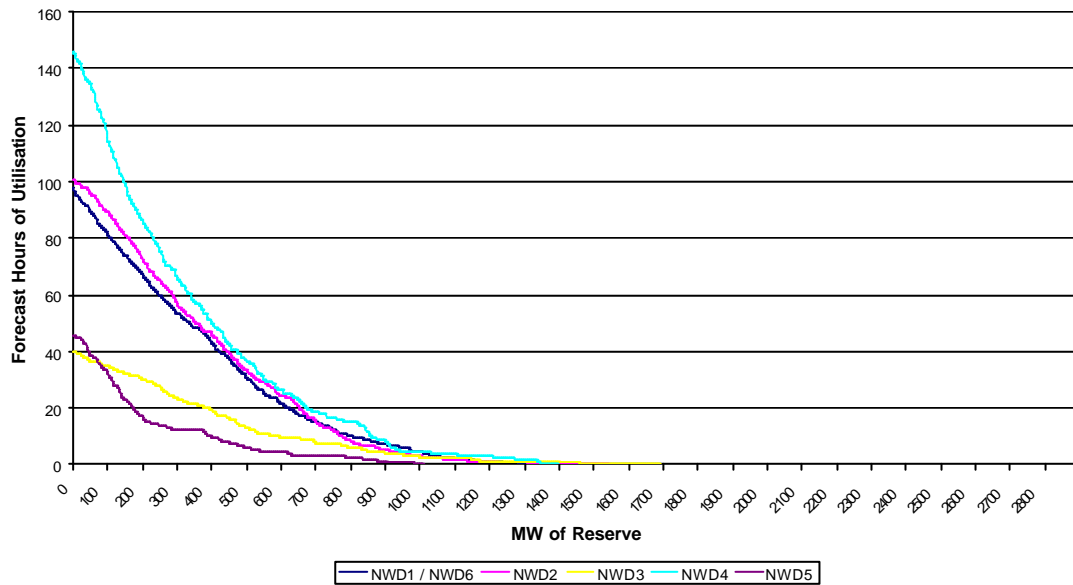
5.5 The Short Term Reserve utilisation forecast is reached by reference to historic statistics on Demand Forecasting Errors and Plant Losses/Shortfalls. Through such analysis the following Short Term Reserve Utilisation curves were derived.

5.6 All assessment elements have been aligned to account for the forecast changes resulting from the move from England and Wales to GB balancing under BETTA.

**Figure 2 - Short Term Reserve Utilisation Curves - Working Days**



**Figure 3 - Short Term Reserve Utilisation Curves - Non-Working Days**



5.7 Figures 2 and 3 show the forecast utilisation of Short Term Reserve for the total service hours in each season. For example for Season 4 Working Days, WD4, the forecast total level utilisation of the 1<sup>st</sup> MW of reserve is 1100 hours, and the 1000<sup>th</sup> MW is 80 hours. This forecast level can be considered against the total of 1271 hours of availability across the same season window, WD4.

- 5.8 For each Standing Reserve season the assessment model assesses the price of each submitted Standing Reserve tender together with any other relevant tender-specific contractual costs alongside the forecast prices (“availability” and “utilisation”) of alternative sources of Short Term Reserve. The assessment will select Standing Reserve tenders on the basis of an optimal minimum-cost solution to both the securing and utilisation of available Short Term Reserve.
- 5.8 The above analysis selects tenders purely on an economic basis. The analysis is then repeated against a range of sensitivities shown below. The final tender selection was robust against this range of sensitivities:
- Variations to the forecast holding and utilisation prices for alternative sources of Short Term Reserve
  - Levels of plant shortfalls/losses/demand forecast errors
  - Likelihood of utilisation limits for Standing Reserve tenders being breached.
- 5.9 Finally, the historic performance of previously contracted Standing Reserve providers is taken into consideration.

## 6. Assessment Results

- 6.1 Economic evaluation of the tenders took place through December 2004 and January 2005 and led to tenders proceeding to contract for the following maximum level of Standing Reserve:-

	Contracted Tenders	All Tenders
<b>BM Providers</b>	1469 MW	2011 MW
<b>Non-BM Providers</b>	786 MW	900 MW
<b>Total</b>	<b>2255 MW</b>	<b>2911 MW</b>

- 6.2 The seasonal variation of contracted Standing Reserve capacity can be seen in the table below. Since the maximum volume active in any one season is 2255MW in Season 2 (Working Days), it may be deduced that some services are only tendered (or successful) for certain seasons.

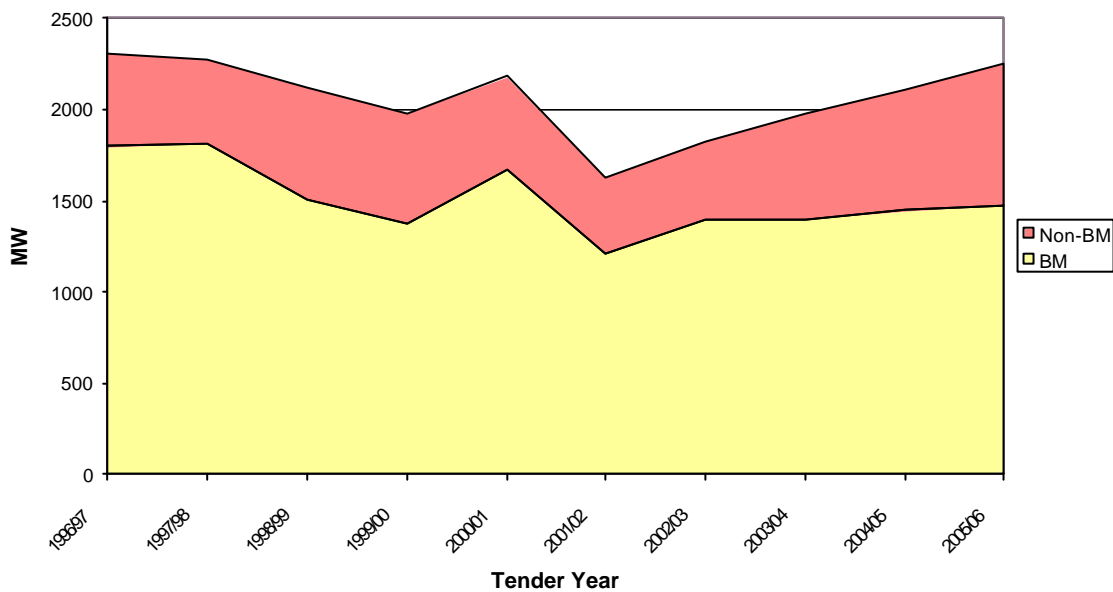
Service Season	Contracted Capacity (MW)			
	BM Working Days	Non-BM Working Days	BM Non-working Days	Non-BM Non-working Days
<b>Season 1</b>	1440	655	1417	631
<b>Season 2</b>	1469	786	1447	762
<b>Season 3</b>	1472	703	1449	679
<b>Season 4</b>	1465	641	1441	582
<b>Season 5</b>	1465	608	1441	584
<b>Season 6</b>	1464	620	1440	547

- 6.3 Generally those tenders that failed were the least economic option when assessed against the range of sensitivities listed in Section 5, above.
- 6.4 The forecast average availability payment for Standing Reserve during the period 1 April 2004 to 31 March 2005 (assuming 100% availability of all successful providers) is £4.72/MW/h for non-working days and £5.31/MW/h for working days.
- 6.5 If all contracted units were declared available for 100% of the contracted time then the total spend on availability payments during 2005/2006 for Standing Reserve would be £46.6m.

## 7. Comparison with Previous Tender Rounds

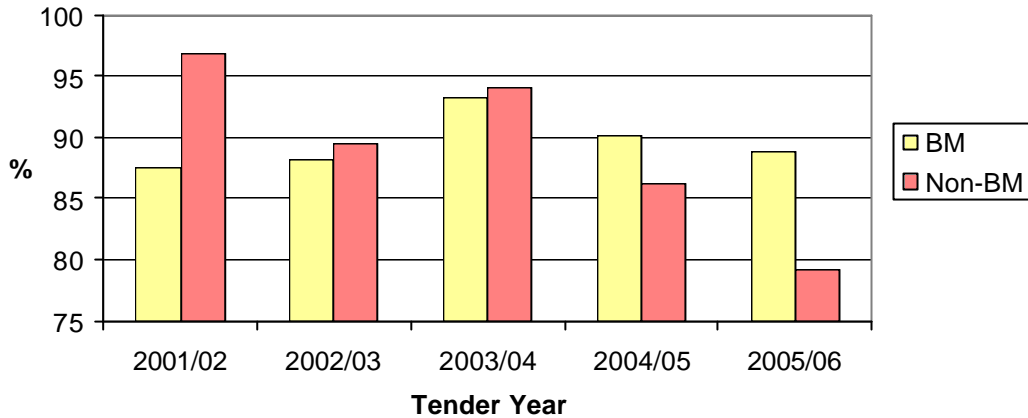
- 7.1 One of the major intentions of the Standing Reserve market tender process was to introduce competition from a broad and diverse range of service providers.
- 7.2 Figure 4 below shows how the contracted capacity of the service has changed since 1996.
- 7.3 This was the first year in which Scottish providers could participate in the Standing Reserve tender process. Of the total tendered, 150MW of capacity was tendered from Scotland, comprising 70MW from BM providers and 80MW from Non-BM providers.
- 7.4 Appendices 1 and 2 show comparisons of the number and capacity of tenders received and contracted since the introduction of NETA.

**Figure 4 - Contracted Standing Reserve Capacity**



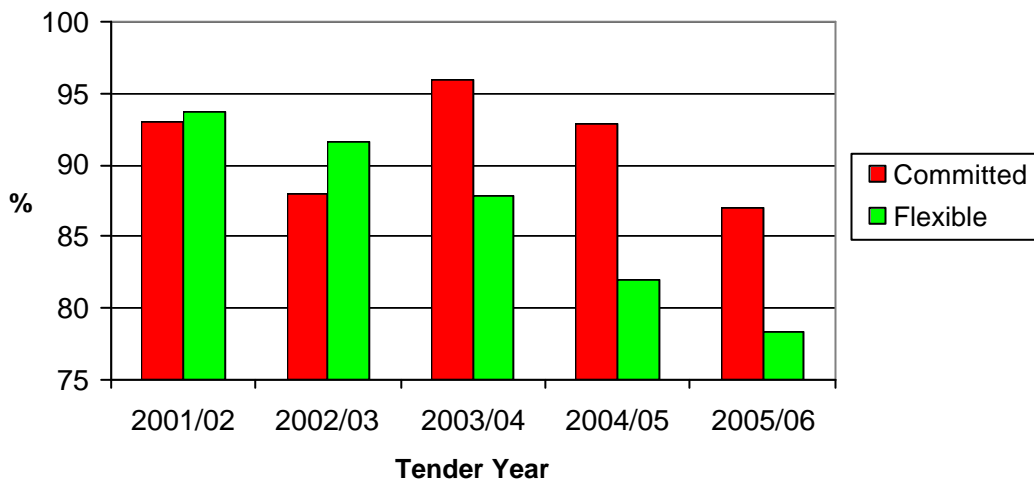
7.4 Comparing the five tender rounds for service years since the introduction of NETA – 2001/2002 to 2005/2006. Figure 5 shows the percentage success rate of tenders by number of tenders received on a BM and Non-BM basis.

**Figure 5 - % Success of Tenders by BM / Non-BM Providers**



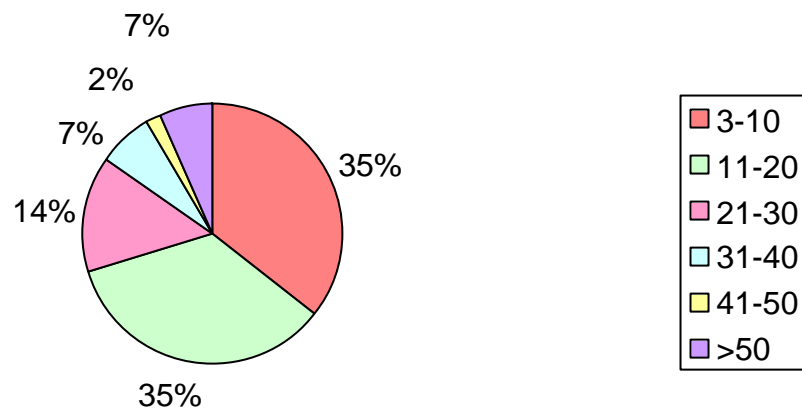
7.5 Figure 6 below shows the percentage success rate of tenders by number of tenders received on a Committed and Flexible basis since the introduction of NETA.

**Figure 6 - % Success of Tenders by Committed / Flexible Providers**



- 7.6 As of 1 April 2005 there are a total of 126 contracted units providing Standing Reserve.
- 7.7 Figures 7 and 8 below identify the proportion of sites in size ranges of 10MW blocks by number of contracted units and by the contracted MW. Further data for this can be found in Appendix 3.

**Figure 7 - Breakdown of number of contracted units by MW size providing Standing Reserve in 2005/2006**



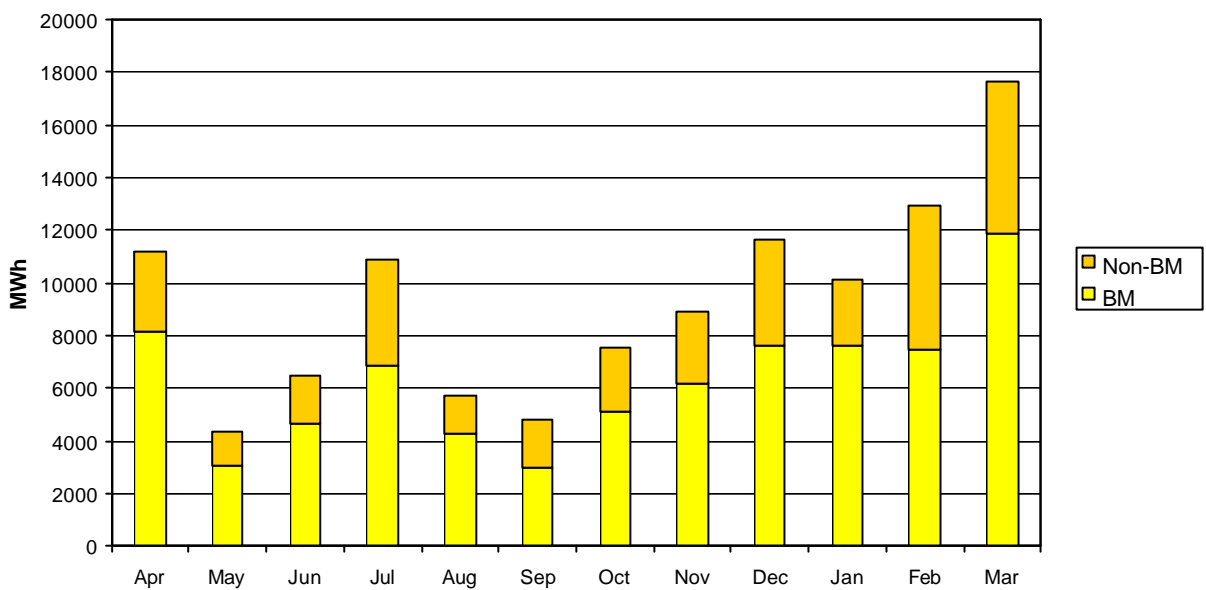
- 7.8 Figures 7 and 8 illustrate that approximately one in three providers have a contracted capacity of 3-10MW providing an aggregate 9% of the maximum standing reserve capacity. Conversely, 7% of providers have a contracted capacity of 50MW or greater providing in aggregate 34.1% of the maximum standing reserve capacity.

## 8. Standing Reserve Utilisation during 2004/2005

8.1 This section summarises the 12 month breakdown of Standing Reserve utilisation over the previous contract period (05:00 hours on 1 April 2004 to 05:00 hours on 1 April 2005).

8.2 Figure 9 below shows the volume (MWh) of Standing Reserve service utilised each month on a BM and Non-BM provider basis.

**Figure 9 - Volume of Standing Reserve service utilised in 2004/2005**



8.3 The total of availability payments for Standing Reserve during 2004/2005 was £30.99m compared with £28.25m for 2003/2004.

8.4 The payments made for Standing Reserve in 2004/2005 for BM and Non-BM for availability and utilisation on a month by month basis before reconciliation are shown in the table overleaf:

Month	BM		Non-BM	
	Avail (m)	Util (m)	Avail (m)	Util (m)
April 04	£1.798	£1.142	£0.528	£0.209
May 04	£1.789	£0.441	£0.577	£0.080
June 04	£2.156	£0.551	£0.479	£0.148
July 04	£2.313	£0.779	£0.654	£0.229
August 04	£2.160	£0.634	£0.647	£0.083
September 04	£1.574	£0.435	£0.545	£0.106
October 04	£1.489	£0.816	£0.484	£0.204
November 04	£2.176	£1.013	£0.650	£0.206
December 04	£2.243	£1.167	£0.687	£0.278
January 05	£2.218	£1.198	£0.693	£0.187
February 05	£1.941	£1.189	£0.594	£0.279
March 05	£1.987	£2.108	£0.607	£0.453
<b>TOTAL</b>	<b>£23.843</b>	<b>£11.473</b>	<b>£7.144</b>	<b>£2.462</b>

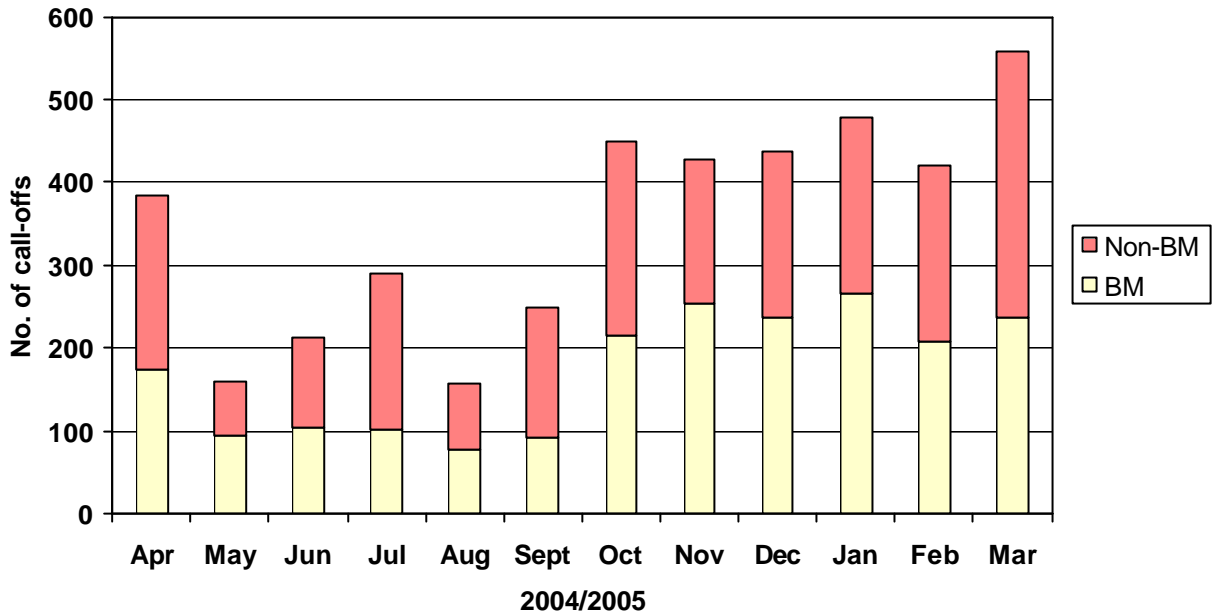
8.5 Note the above table excludes any reconciliations levied by NGC. 2004/2005 was the first year in which NGC applied reconciliations to those service providers that had failed to meet their contracted obligations (i.e. failed to meet their contracted availability and utilisation targets or had incurred an unacceptable level of events of default).

8.6 The average availability payment for Standing Reserve over the five Seasons between 1 April 2004 and 31 March 2005 is shown in the table below:

	Season				
	1	2	3	4	5
Working day £/MW/h	4.16	4.14	4.15	4.09	4.08
Non-working day £/MW/h	4.15	4.13	4.15	4.08	4.08

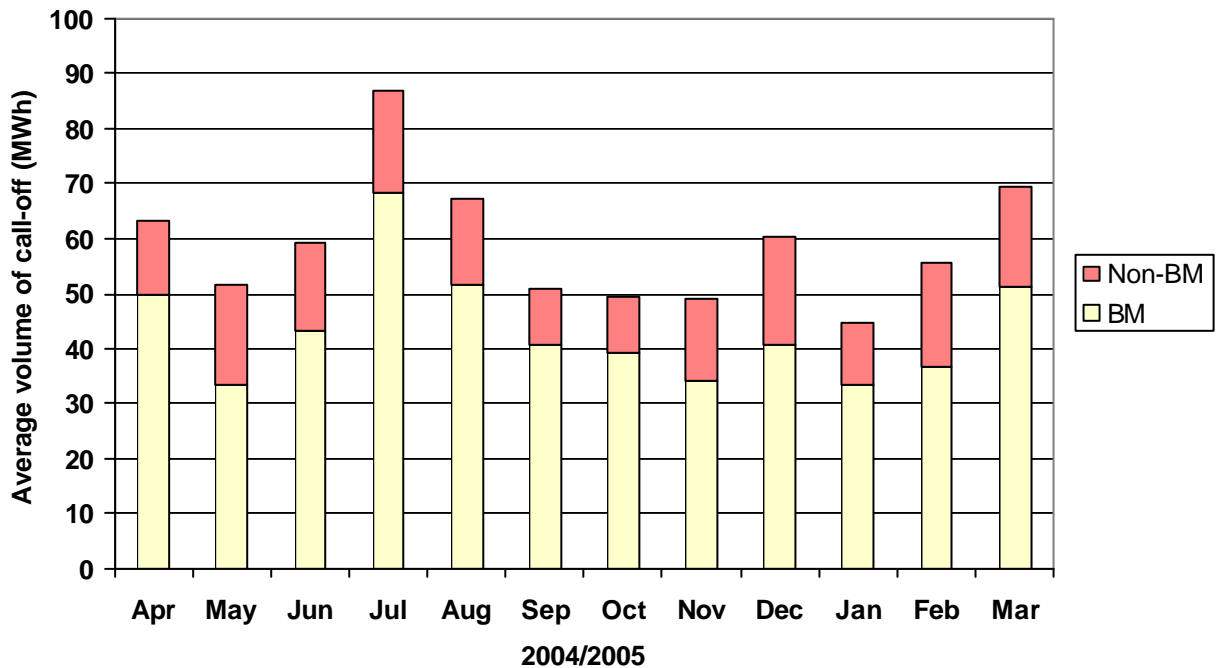
8.7 Figure 10 below shows the number of service call-offs issued to both BM and Non-BM providers on a monthly basis.

Figure 10 - Number of call-offs issues for Standing Reserve during 2004/2005



8.8 Figure 11 below shows the average volume (MWh) per call off during 2004/2005 on a month by month basis.

Figure 11 - Average volume of each call-off during 2004/2005



**9. 2006/2007 Tender Round**

- 9.1 The Invitation To Tender documentation for the next tender round (for contracts commencing 1 April 2006) will be made available on the National Grid Industry Information website during September 2005.
- 9.2 Further information and enquiries should be directed to:

**Nicholas Gardner  
Operations and Trading  
National Grid Transco  
NGT House  
Warwick Technology Park  
Gallows Hill  
Warwick  
CV34 6DA**

Telephone number: **01926 653450**  
Email: **nicholas.gardner@ngtuk.com**

- 9.2 For further Standing Reserve information please visit the National Grid website on the following address:  
[http://www.nationalgridinfo.co.uk/balancing/mn\\_standing.html](http://www.nationalgridinfo.co.uk/balancing/mn_standing.html)

# Appendices

**Appendix 1 – Number of Tenders compared with previous Tender Rounds since the introduction of NETA**

Tender Round	NUMBER TENDERED					NUMBER CONTRACTED				
	Tenders Received	BM	Non-BM	Committed	Flexible	Tenders Contracted	BM	Non-BM	Committed	Flexible
2001/02	103	40	63	71	32	96	35	61	66	30
2002/03	108	51	57	84	24	96	45	51	74	22
2003/04	111	44	67	78	33	104	41	63	75	29
2004/05	131	51	80	70	61	115	46	69	65	50
2005/06	160	54	106	77	83	132	48	84	67	65

**Appendix 2 – Capacity of Tenders compared with previous Tender Rounds since the introduction of NETA**

Tender Round	CAPACITY TENDERED (MW)					CAPACITY CONTRACTED (MW)				
	Volume Received	BM	Non-BM	Committed	Flexible	Volume Contracted	BM	Non-BM	Committed	Flexible
2001/02	2130	1649	481	1804	326	1623	1206	417	1333	290
2002/03	2337	1873	464	1989	348	1822	1400	422	1484	338
2003/04	2025	1400	625	1702	323	1971	1400	571	1702	269
2004/05	2497	1733	764	1947	550	2106	1445	661	1659	447
2005/06	2911	2011	900	2337	574	2255	1469	786	1754	501

### Appendix 3 – Standing Reserve Contracted Capacity 2005/2006

Size of Unit/Site (MW)	Total MW Contracted	Number of Units/Sites	Average MW per Unit/Site
0 – 10	203	37	5.5
11 - 20	557	36	15.5
21 - 30	398	15	26.5
31 – 40	241	7	34.4
41 – 50	88	2	44.0
>50	768	7	109.7
<b>TOTAL</b>	<b>2255</b>	<b>104</b>	<b>21.7</b>



## Appendix 5 - System Considerations for Selection of Reserve

1. The requirement for Standing Reserve varies throughout the day depending on the generation mix and demand profile. Changes in generation and demand covered by Reserve can occur at any time and therefore Reserve margin must be maintained at all times. In meeting this requirement economically, four main aspects must be considered: -
  - (a) Any inherent Reserve;
  - (b) Level of Reserve required;
  - (c) Cost of Reserve options; and
  - (d) Operating parameters of the Reserve plant.
2. The despatch of Reserve and/or Balancing Mechanism actions takes account of parameters such as:-
  - (a) System requirements;
  - (b) Dynamic parameters;
  - (c) Commercial implications;
  - (d) Minimum operating levels; and
  - (e) Contingency planning.
3. The demand profile and the parameters described above may result in times when the level of Reserve required is provided by part-loaded generation (Regulating Reserve).
4. There are times when this Regulating Reserve is not sufficient and other Reserve options need to be considered. The logic of contracting for only limited number hours of each day is borne out by actual utilisation of Standing Reserve. Sensitivity analysis shows that the benefits of extending the service windows would be outweighed by the cost of additional availability payments, although National Grid still reviews, annually, the timing and duration of service windows.
5. Tender submissions included a variety of parameters, as required, covering the technical nature of the Standing Reserve service. Information provided with the tender included technical parameters of the service offered and other factors such as the time required in order to initiate the service (Response Time), and the duration for which the service could be sustained (Maximum Utilisation Period).
6. The Standing Reserve service requires a maximum Response Time of 20 minutes. It is of greater benefit and value to National Grid to have as short a Response Time as possible. A spread of tenders results in an acceptable proportion offering 10 minutes or less.
7. Due to the limitations of a finite transmission system, there can exist geographical restrictions on the selection of Reserve providers. However, as with the issue of Response Time, the natural variance in the geographical disposition of tendered services means that this does not normally impinge heavily on the selection.

8. The minimum size of a discrete Standing Reserve tender is set at 3MW. This is considered an appropriate compromise between a sufficiently low threshold in order to permit as many providers as possible to tender, and the practicality and cost to National Grid of despatching a large number of individual providers in a short space of time. Given the large number of small Non-BM contracts that National Grid has to operate, a PC-based monitoring and despatch system called Standing Reserve Despatch (SRD) has been developed to enable National Grid to manage more efficiently service declarations, call-off of providers and monitoring performance against contracted parameters.
9. The anticipated costs incurred by National Grid in the SRD installation (at new sites) where necessary and other fixed costs (contract administration) are accounted for on a site (or tender) specific basis as appropriate.