

Firm Frequency Response (FFR)

Market Information for Tenders for September 2011

National Grid wishes to highlight to participants its requirement for Firm Frequency Response. Participants are invited to note the historic response bid and offer volumes and prices shown in Figures 6 and 7 and Table 1, and the historic response holding payments shown in Table 2.

Please note the following points about the content of the report

- In order to publish this report by the 18th business day of July 2011, figures for the last few days of July 2011 have been calculated using estimates.
- The MW/h units of payment shown in Table 2 are defined in the CUSC and do not relate to the units of the Primary, Secondary and High Response requirements provided in Figures 1a to 3c.

Frequency Response Requirements

Response requirements are higher over the weekends than weekdays since weekend demands are usually lower than weekday demands. The expected response requirements shown in the following graphs are averaged for each day of the month.

Figures 1a to 3c compare our indicative response requirement with our firm position. Requirements for primary, secondary and high response are presented in separate graphs.

Total Response Requirement

The green lines show the total response required to recover from a maximum frequency deviation of 0.5Hz. In addition the primary response requirements are set for a 1000MW loss, secondary response for a 1320MW loss and high response for an 840MW demand loss.

Minimum Dynamic Response Requirement

The orange lines show the indicative minimum dynamic response required at 0.5Hz deviation.

Firm Response already procured

The bars in the graphs show the total contracted response which is expected to be available during the periods shown on the graph. The deep blue bars indicate the firm dynamic response and light blue bars represent firm static response. Providers should note that dynamic response over the minimum dynamic level also contributes to meeting the total response requirement.

In line with the Procurement Guidelines if we consider that there is insufficient competition in the provision of a Balancing Service we shall contract for such provision on a negotiated bilateral basis. Full details are available on the National Grid website.

Settlement period requirement for September 2011

Figures 1a to 1c below show the indicative frequency response requirement compared with the firm position on a settlement period basis.

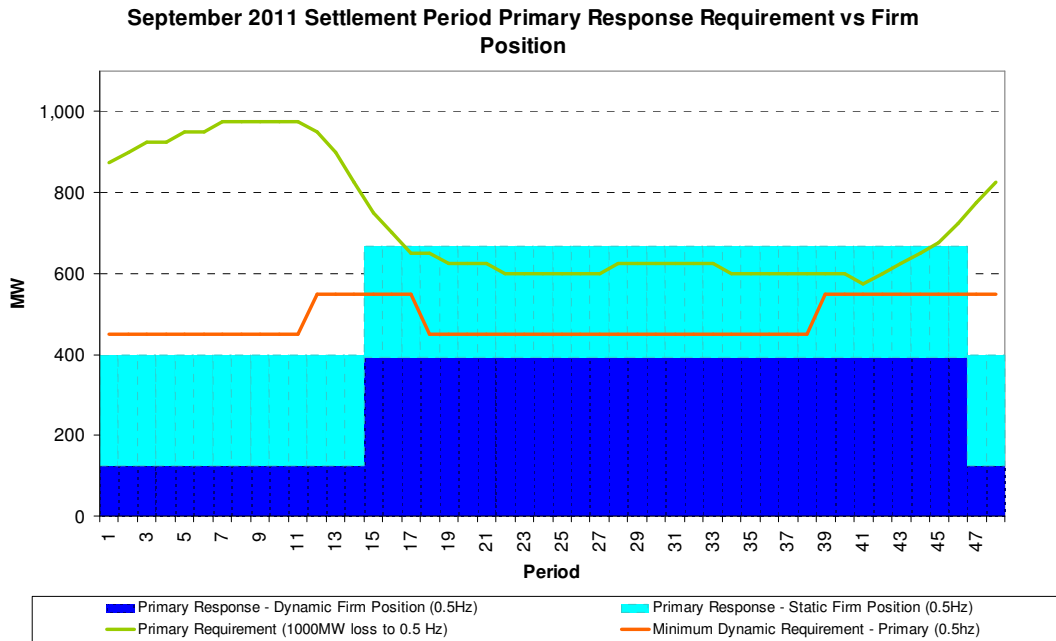


Figure 1a

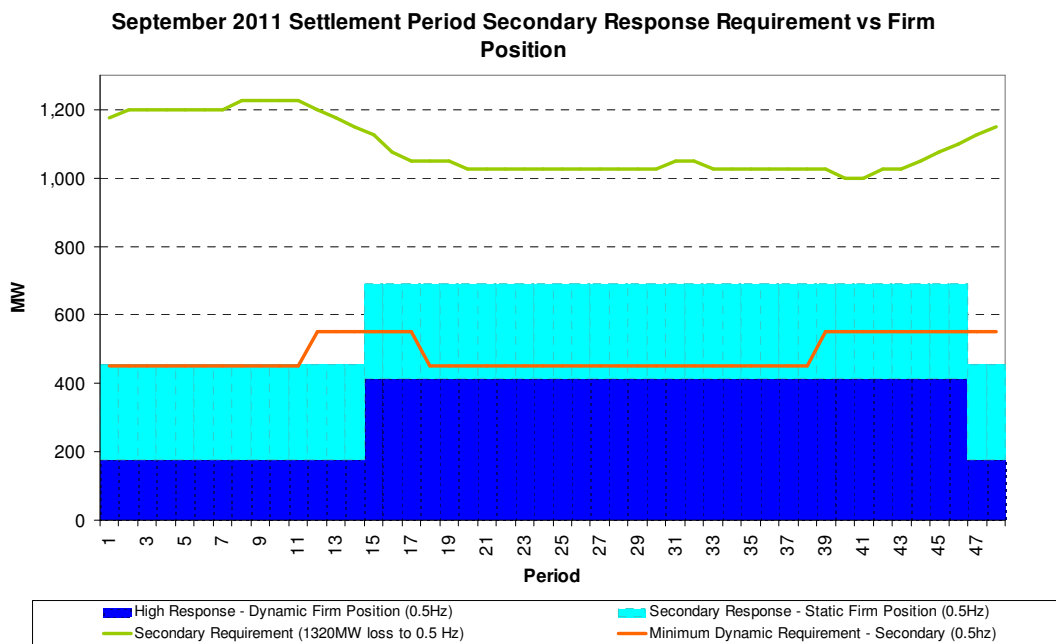


Figure 1b

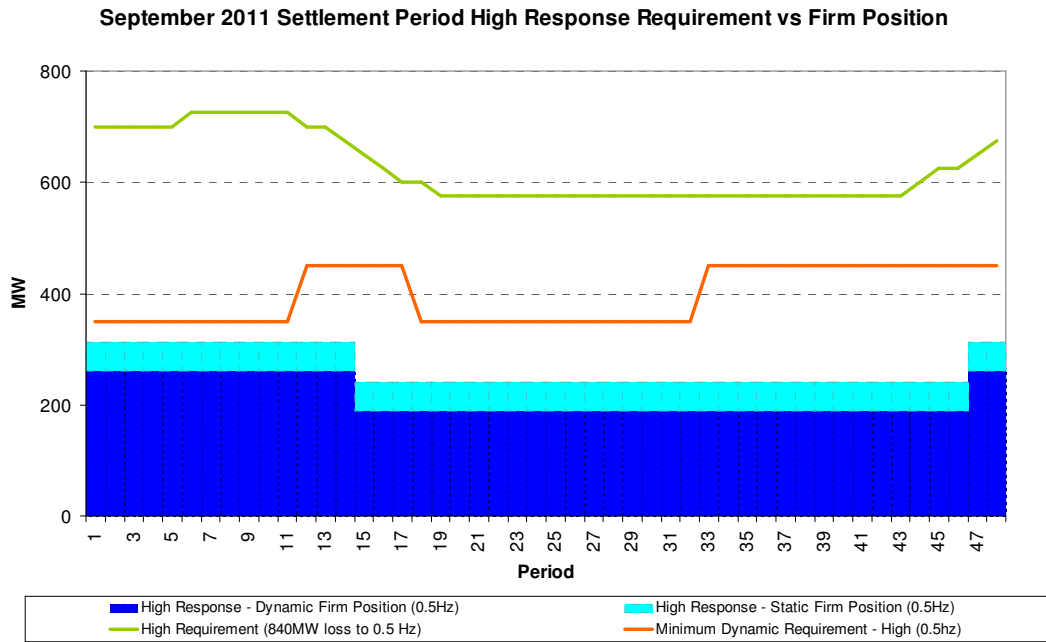


Figure 1c

Daytime monthly requirements from September 2011 to August 2012

Figures 2a to 2c show the daytime (07:00hrs to 23:00hrs) monthly response requirements for twelve months beginning September 2011.

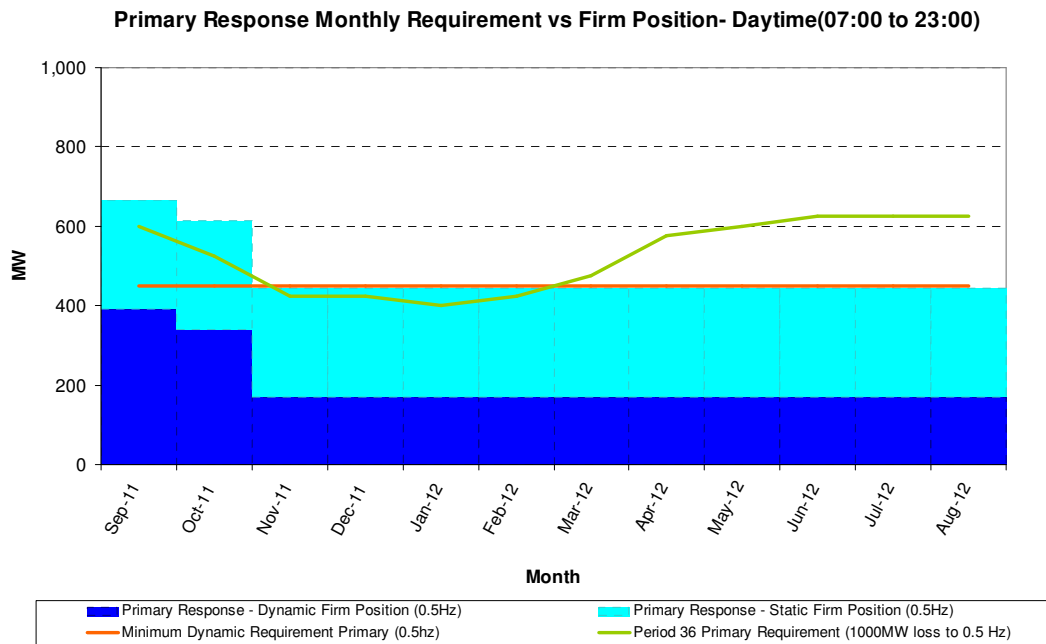


Figure 2a

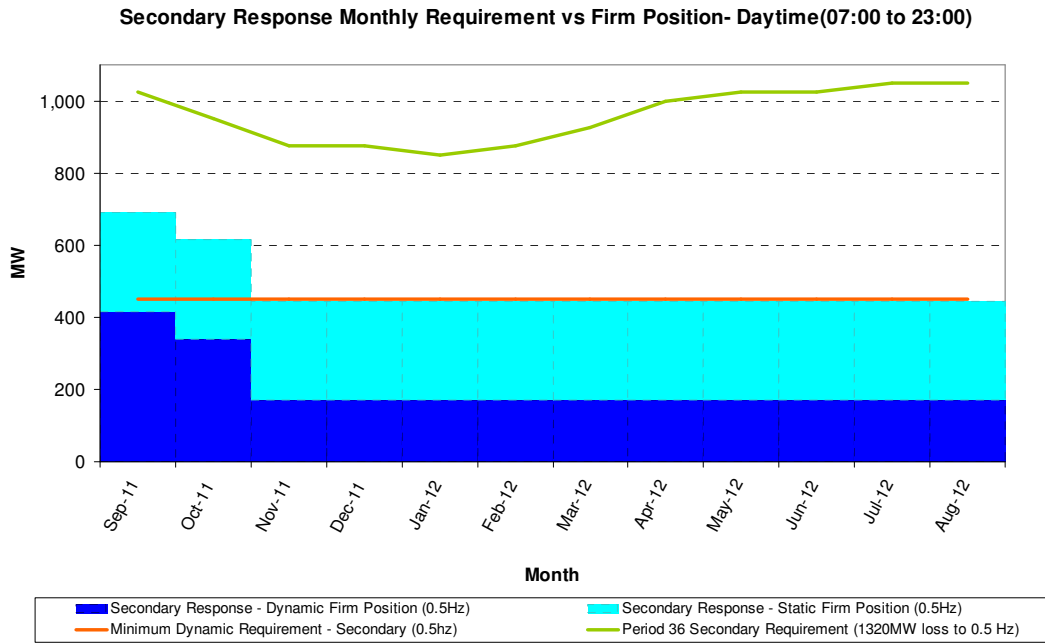


Figure 2b

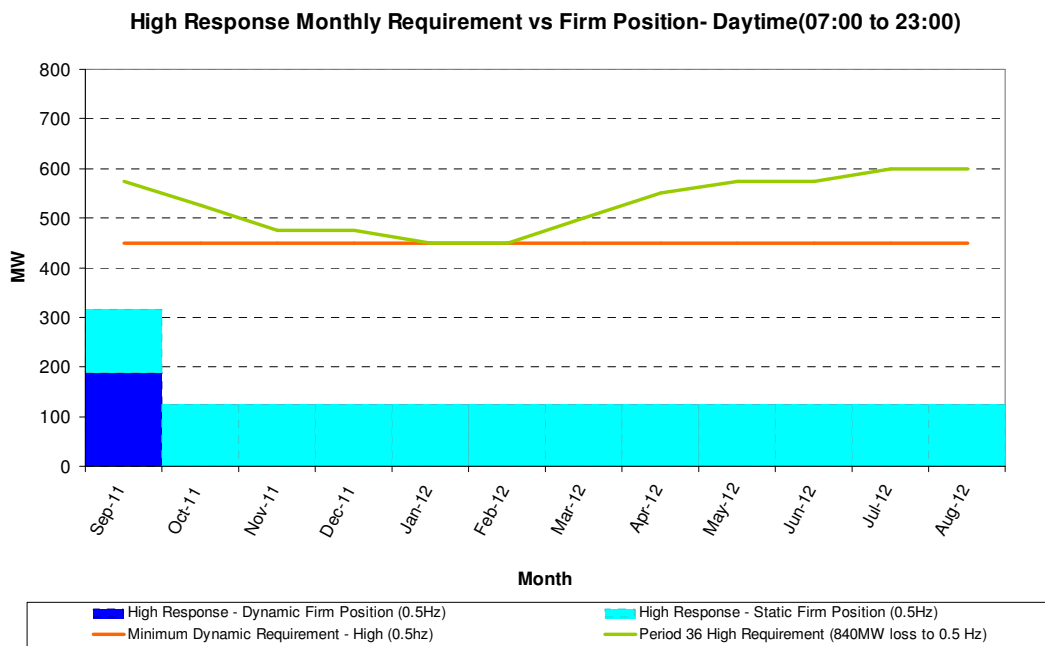


Figure 2c

Overnight monthly requirements from September 2011 to August 2012

Figures 3a to 3c show the overnight (23:00hrs to 07:00hrs) monthly response requirements for twelve months beginning September 2011.

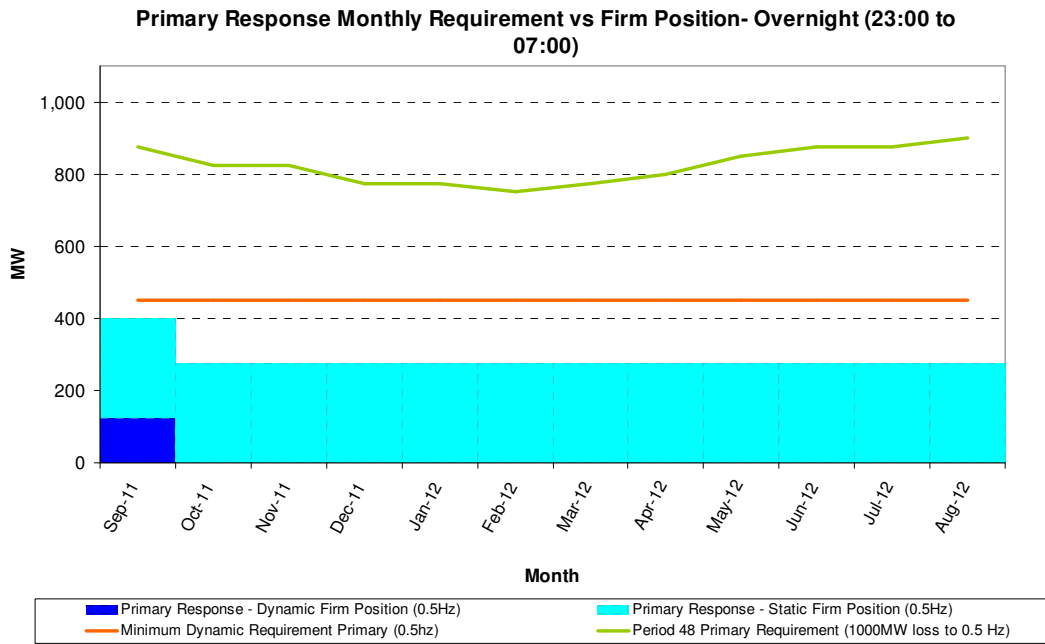


Figure 3a

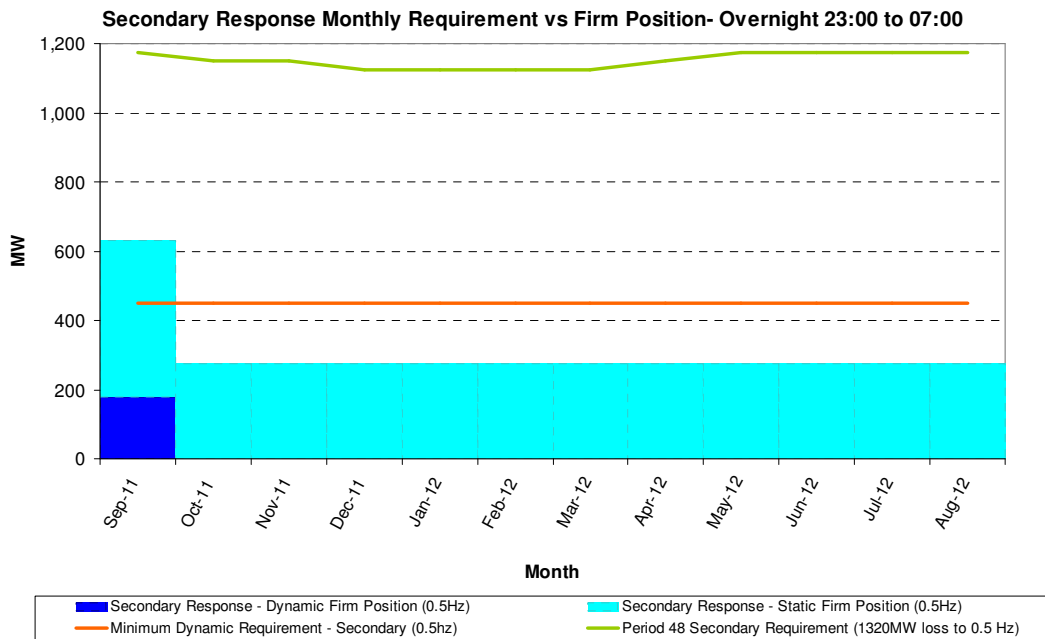


Figure 3b

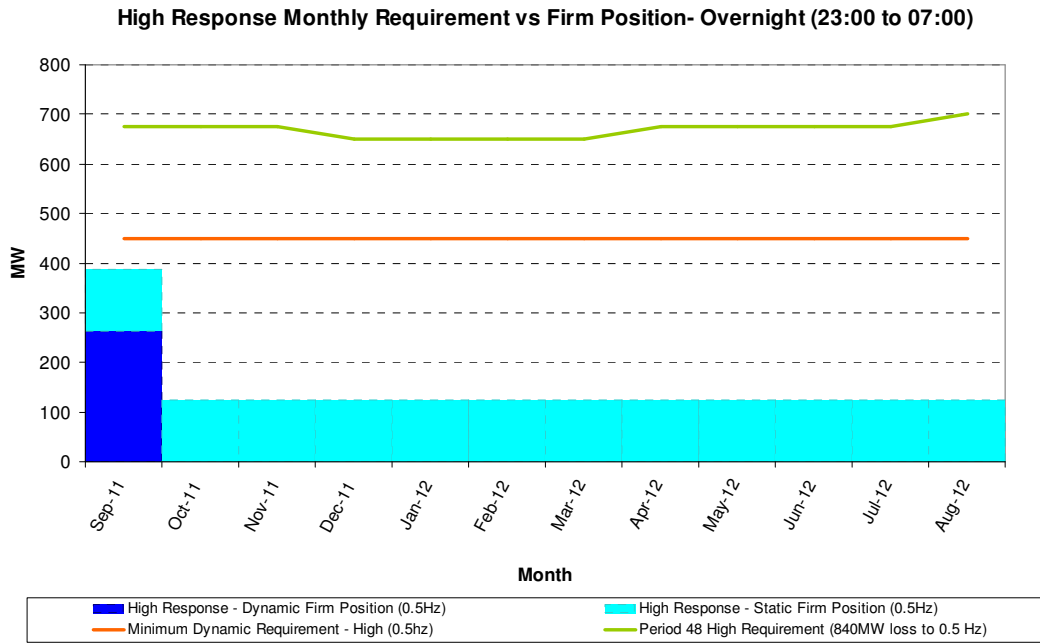


Figure 3c

Balancing Mechanism instructions on frequency responsive plant

Figure 4, shows a post-event analysis of the volume of Bid Offer Acceptances instructed on Balancing Mechanism Units that were, in conjunction with the delivery of the BOA energy, also providing Frequency Response. Figure 4 shows the volumes for June 2011 and July 2011 on a daily basis. Figure 5 provides the average volume by settlement period, giving an indication of periods during which National Grid took balancing actions which also contributed to the optimisation of the response holding in June and July 2011.

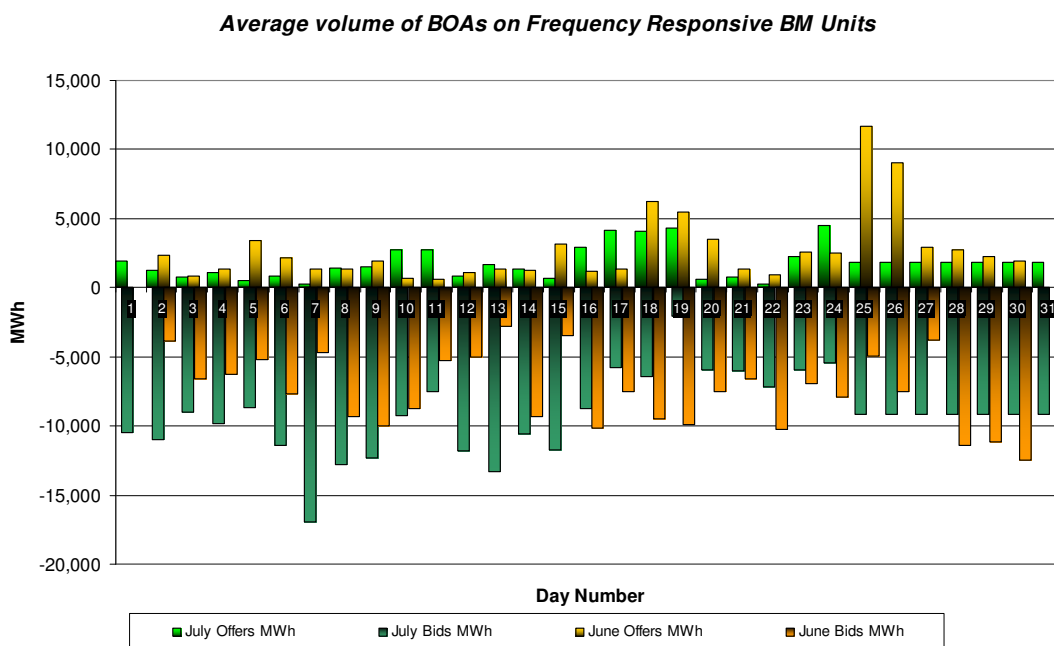


Figure 4

Average volume of BOAs on Frequency Responsive BM Units

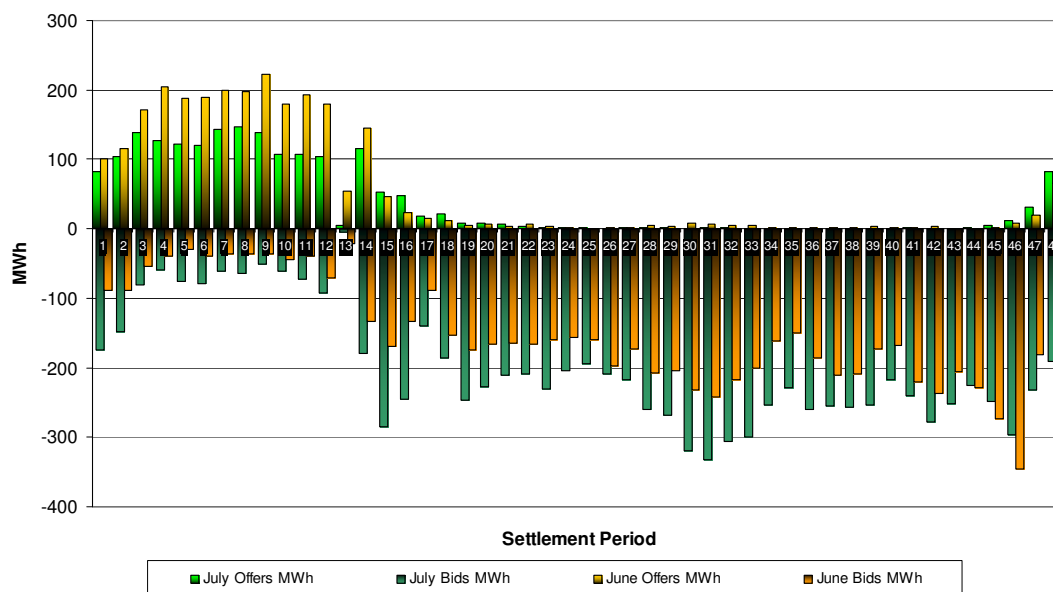


Figure 5

The BOA data presented in Figures 4 and 5 is indicative and actions have been required for other reasons apart from (or as well as) Frequency Response optimisation (such as resolving energy imbalance or transmission system constraints).

Response BOA cost calculation

The BOA costs are calculated as follows:

Response Offer Cost = Volume Offers x (Offer Price – Energy Reference Price)

Response Bid Cost = Volume Bid x (Bid Price – Energy Reference Price)

Energy Reference Price: This is the volume weighted average of the submitted bids or offers available to resolve net imbalance volume (NIV) ignoring plant dynamics. This does not include non-BM standing reserve prices, trades, PGBTS or SO-SO trades.

The Energy reference Price is calculated for each settlement period as follows:

Short Market: All submitted Offers up to the value of NIV, Capped by MEL, unconstrained by dynamic parameters

Long Market: All submitted Bids on synchronised plant down to zero, includes Demand Side Bidders and unsynchronised units (e.g. DINO/FFES pumps), unconstrained by dynamic parameters

Response BOA Summary for June 2011

	June 2011 (actual)	July 2011 (estimate)
Total Response Bid Cost	£1,514,544	£1,189,111
Total Response Bid Volume	-211,753 MWh	-289,235MWh
Total Response Offer Cost	£ 1,651,495	£ 1,213,102
Total Response Offer Volume	78,568 MWh	52,976 MWh

Table 1

Mandatory frequency response holding

The total volumes of frequency response holding on Mandatory service providers are **1,148 GWh** for **June 2011** and **929 GWh** for **July 2011**, and break down into price bands as follows:

June 2011	Primary	Secondary	High
Price band (£/MWh range)	Volume (MWh)	Volume (MWh)	Volume (MWh)
Greater than 8	14,381	2,686	37,554
6 to 8	11,184	4,443	67,067
4 to 6	55,576	1,352	317,412
2 to 4	162,408	46,189	72
0 to 2	37,162	154,761	27,793
Totals	280.7 GWh	209.4 GWh	449.9 GWh
Costs	£1.04 m	£0.41 m	£2.65 m
Total Frequency Response Holding Volume			940 GWh
Total Frequency Response Holding Cost			4.10 £m

July 2011	Primary	Secondary	High
Price band (£/MWh range)	Volume (MWh)	Volume (MWh)	Volume (MWh)
Greater than 8	24,559	5,312	44,342
6 to 8	16,496	2,311	39,620
4 to 6	65,652	6,125	309,268
2 to 4	197,501	48,685	970
0 to 2	38,200	163,643	26,068
Totals	342.4 GWh	226.1 GWh	420.3 GWh
Costs	£1.60 m	£0.46 m	£2.42 m
Total Frequency Response Holding Volume			989 GWh
Total Frequency Response Holding Cost			4.48 £m

Table 2

Key dates in August 2011

For August 2011, frequency response requirements are expected to be in line with the forecasts shown in Figures 1a – 1c. National Grid will procure in line with the principles laid out in the Assessment Principles. Tenders from eligible service providers for firm frequency response should be submitted by **Monday 1st August 2011** (1st business day) for Single month and Long term tenders or by **Wednesday 3rd August 2011** (3rd business day) for Short term tenders. National Grid will notify Service Providers of the outcome of the tender assessment by **Friday 12th August 2011** (10th business day). For successful tenders, National Grid will notify nominated windows, following assessment, by **Thursday 21st August 2011** (15th business day).

Tenders should be sent by post for the attention of:

Bea Ennim
Network Operations
National Grid plc
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA