



nationalgrid

# Procurement Guidelines Report

1 April 2013 to  
31 March 2014

As required by Standard Condition  
C16 of the National Grid's Electricity  
Transmission Licence.

# Procurement Guidelines Report

1 April 2013 to 31 March 2014

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## 1. INTRODUCTION

National Grid procures Balancing Services subject to the framework laid down in Condition C16 of the Transmission Licence. This framework obliges National Grid to "operate the transmission system in an efficient, economic and co-ordinated manner" and also requires a number of statements and reports on the procurement and use of Balancing Services to be established. The **Procurement Guidelines** is one of these statements, and sets out the principles used in our procurement of Balancing Services, the kinds of Balancing Services that we may be interested in purchasing and the mechanisms by which we do so. The Procurement Guidelines is published on National Grid's website and is subject to annual review and industry consultation. When a new Procurement Guidelines statement is published annually (covering the forthcoming relevant period), National Grid is required to produce a **Procurement Guidelines Report** ("Report") covering the preceding relevant period, having previously agreed the 'form' of the Report with The Authority.

### 1.1 Purpose of Procurement Guidelines Report

The purpose of the Report is to provide information in respect of the relevant<sup>1</sup> Balancing Services that National Grid has procured in the defined reporting period.

### 1.2 Reporting Period

In accordance with Condition C16 of the Transmission Licence, the Report will be produced within one month after the date on which each revised Procurement Guidelines Statement is to be published.

The information utilised in this report is the best available at the time of publication and may be subject to minor changes as a result of final reconciliation.

<sup>1</sup> Scope of the balancing services covered in this document can be found in section 1.3 and 1.5

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**1 April 2013 to 31 March 2014**

## **1.3 Balancing Services**

The Balancing Services National Grid has procured, either via market arrangements or bilateral contracts, throughout the period covered by the Report, are:

- Frequency Response
- Reactive Power
- Fast Start
- Black Start
- Reserve Services - Fast Reserve, STOR and BM Start-Up
- System to System Services
- Inter-trips
- Ancillary Contracts to manage System issues
- Maximum Generation Service
- All Other Services
- Energy Related Products (including PGBTs)
- BM Constraints

It is important to note that Balancing Services are procured from both Balancing Mechanism and Non Balancing Mechanism Parties.

## **1.4 Structure of Report**

This report presents the Balancing Services under four main titles:-

- Services Procured via Market Arrangements
- Services Procured via Non-Tendered Bilateral Contracts
- Other Energy Related Products
- Constraints

It is then followed by a summary section providing the high level information for all services for the financial year 2013-14.

# Procurement Guidelines Report

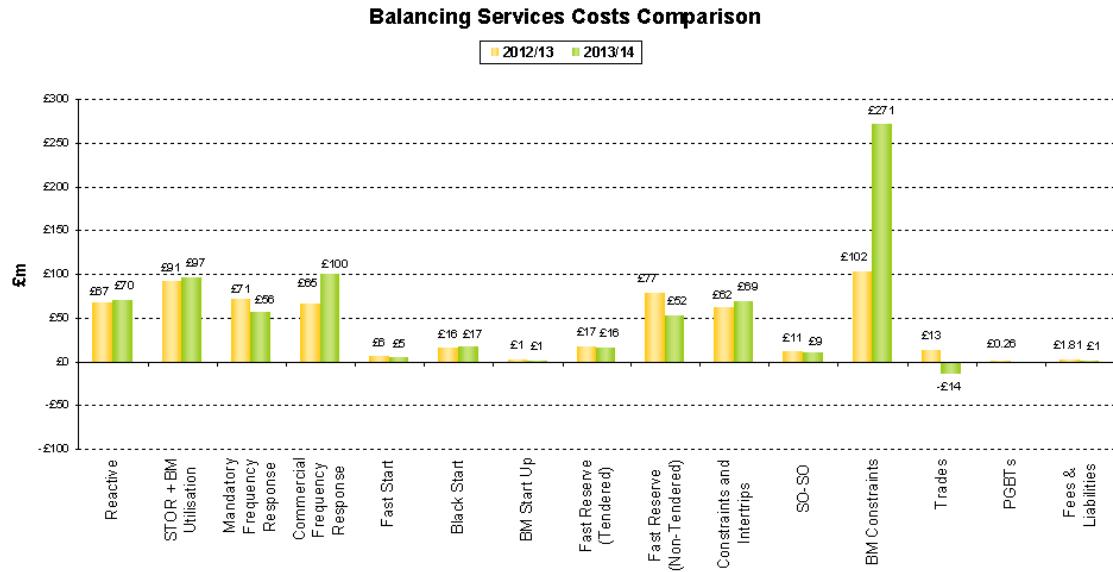
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## 1.5 Services not included in the report

The scope of the Procurement Guidelines does not include the acceptance of Bids and Offers in the Balancing Mechanism. However, Bids and Offers for Constraint management (see section 5) and BM STOR Utilisation (see section 2.7) have been included to provide an appreciation of the overall costs. Further information on Bid and Offer acceptances can be found in the Balancing Principles Statement Report.

## 1.6 Comparison with previous year

Total costs of balancing services have increased by £149m from £601m in 2012/13 to £750m in 2013/14. BM Constraints costs increased from £102m to £271m in 2013/14 whilst Non BM Constraints and Intertrips in 2013/14 decreased in comparison to 2012/13. The reasons behind the changes discussed above are analysed in more detail in the relevant sections of this report.



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## 2. Services Procured Via Market Arrangements

### 2.1 Reactive Power

National Grid manages voltage on the transmission system within statutory limits to ensure quality of supply in line with the National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS). In doing this we ensure that reactive power resources are provided on a localised basis to meet the constantly varying needs of the system, and that there is sufficient reactive power reserve available to meet contingencies.

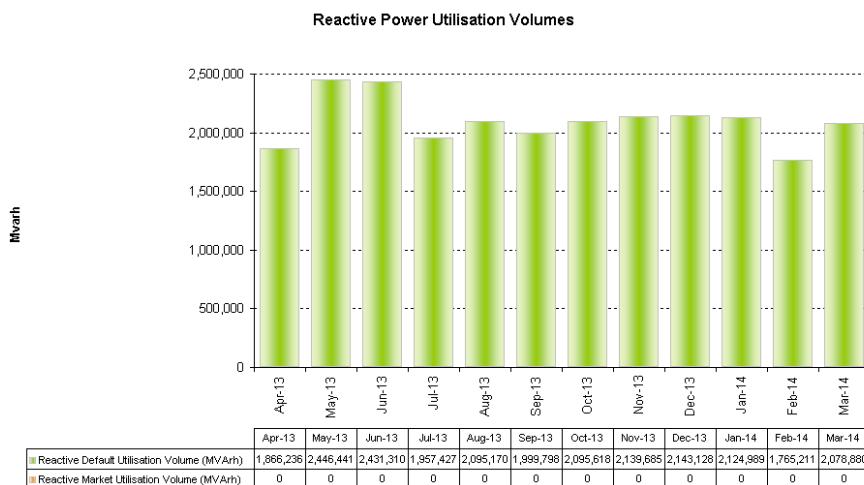
### 2.2 Market Arrangements for Reactive Power

There were two tender rounds (TR31, TR32) covering April 2013 to March 2014 period. No tenders were received for this period. Further information regarding each of these tender rounds can be found at the following website address:

<http://www2.nationalgrid.com/UK/Services/Balancing-services/Reactive-power-services/Reactive-Market-Tender/>

Utilisation volume of Reactive Power under Market and Default arrangements over the relevant period are detailed in the chart below.

There was no reactive power utilisation volumes under market arrangements as a result of no tenders being received for the period.

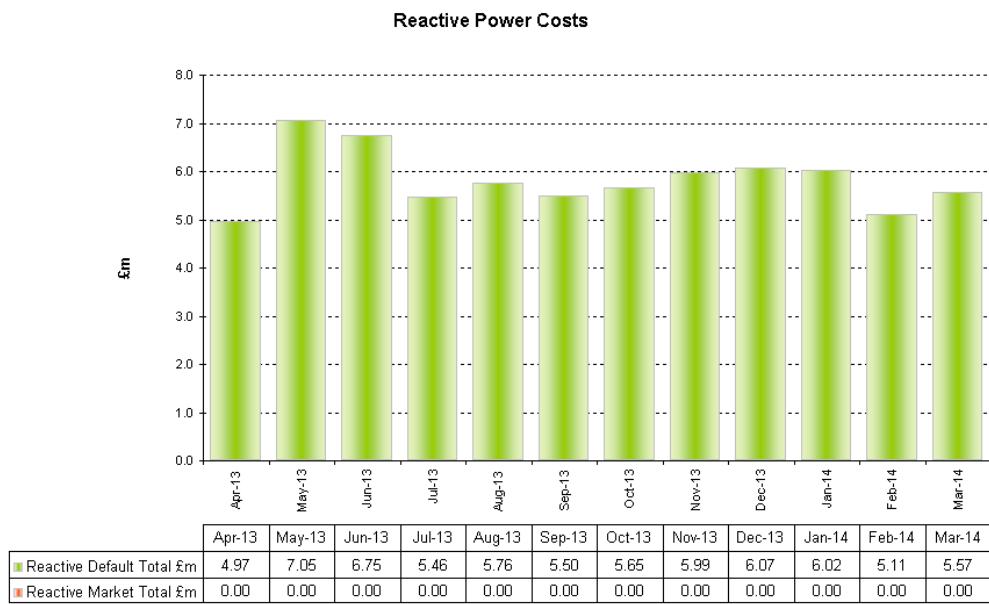


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Utilisation costs of Reactive Power under Market and Default arrangements over the relevant period are detailed in the chart below.

There were no costs associated with reactive power from market arrangements due to no tenders being received for the period.



## 2.3 Default Arrangements for Reactive Power

Further information regarding the default payment arrangements can be found at the following National Grid Website.

<http://www2.nationalgrid.com/uk/services/balancing-services/reactive-power-services/>

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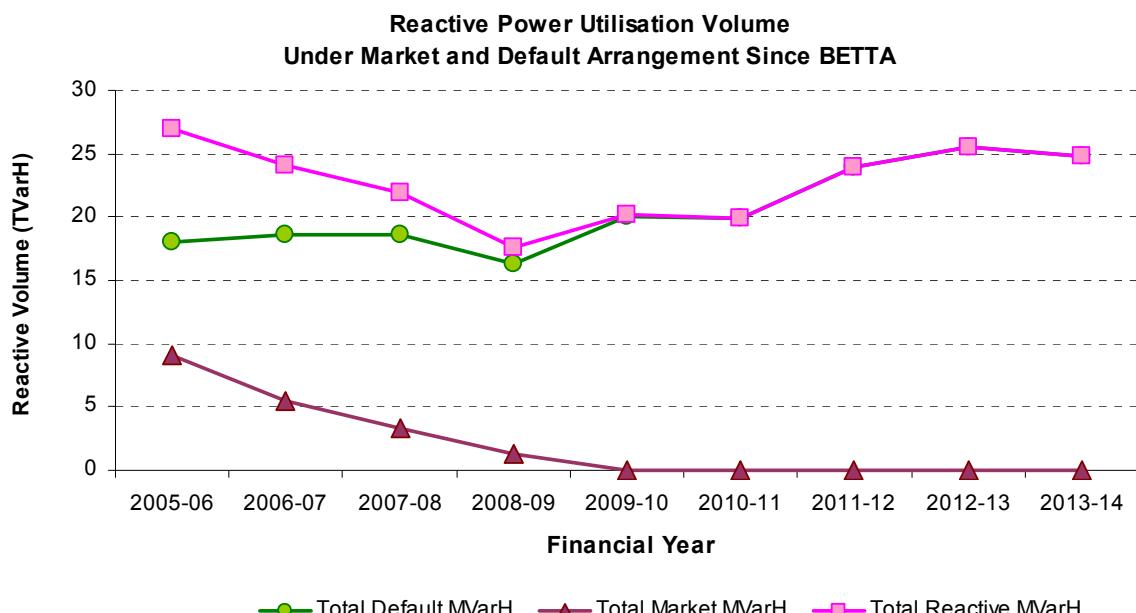
1 April 2013 to 31 March 2014

## 2.4 Reactive Power Comparison with previous year

Total Reactive costs have increased by 5% from £67m in 2012/13 to £70m in 2013/14, while the utilisation decreased by 1% from 25.4TVarH in 2012/13 to 25.1TVarH in 2013/14. The Mean Reactive Default Price in 2013/14 increased by 8% from £2.58/MVARh in 2012/13 to £2.78/MVARh.

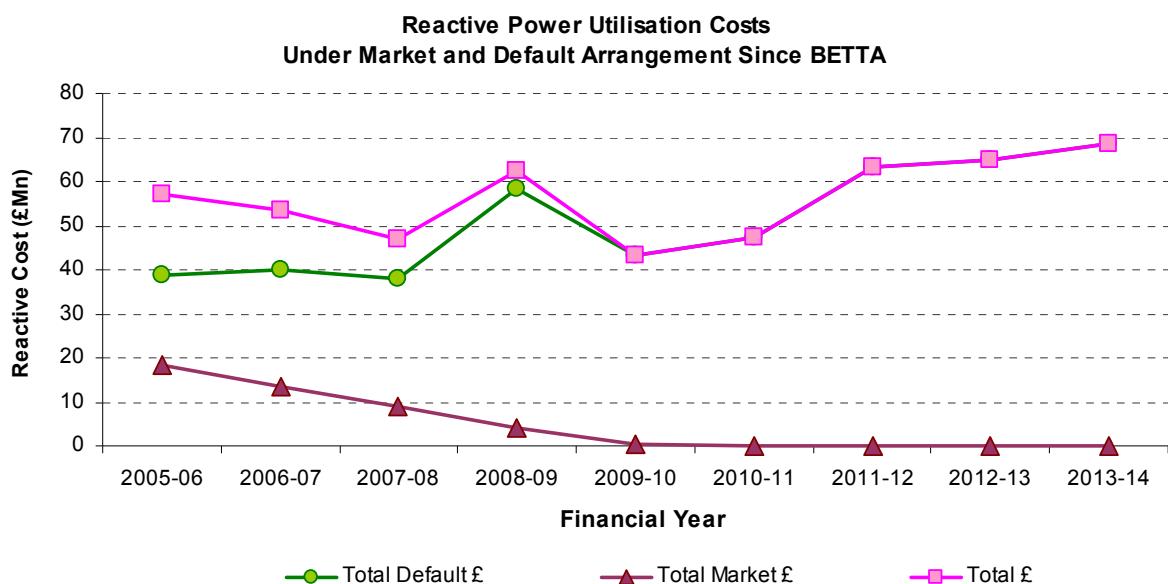
Utilisation volume and costs of Reactive Power under Market and Default arrangements for the last 8 years are detailed in the charts below. The share of reactive power utilisation under market arrangement had been shrinking; and in the previous four years, reactive power was purchased under the default arrangement. Some part of this service was managed through agreements mentioned in section 3.14.

Further information regarding the default payment arrangements can be found at the following National Grid Website:



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## 2.5 Fast Reserve (Contracted)

Further information explaining Fast Reserve and the assessment criteria of tenders can be found on the National Grid Website.

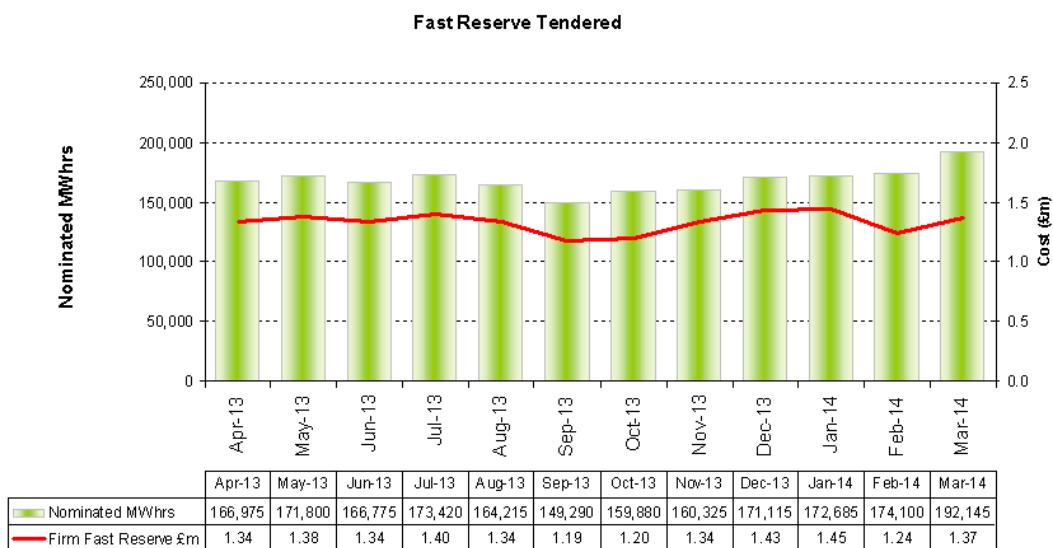
<http://www2.nationalgrid.com/UK/services/Balancing-services/Reserve-services/Fast-reserve/>

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## 2.6 Fast Reserve (Tendered) Comparison with previous year

The following graph shows the monthly variation in nomination hours from the contracted Fast Reserve Capacity.



The nominated volume of Fast Reserve in 2013/14 has reduced to 2,023GWh, from 2,284GWh in 2012/13. This was due to National Grid optimising the contracted Fast Reserve position from April 2013, through contracting a unit that was smaller in size with shorter daily windows, leading to a drop in the monthly nominated GWhrs.

Higher prices for contracted Fast Reserve were seen in 2013/14, due to a second, more expensive, pricing schedule on a Fast Reserve contract coming into effect in 2013. Despite the newly contracted unit being more expensive in absolute price terms, improved profiling of service provision, and availability, led to costs being maintained at a consistent level to 2012/13.

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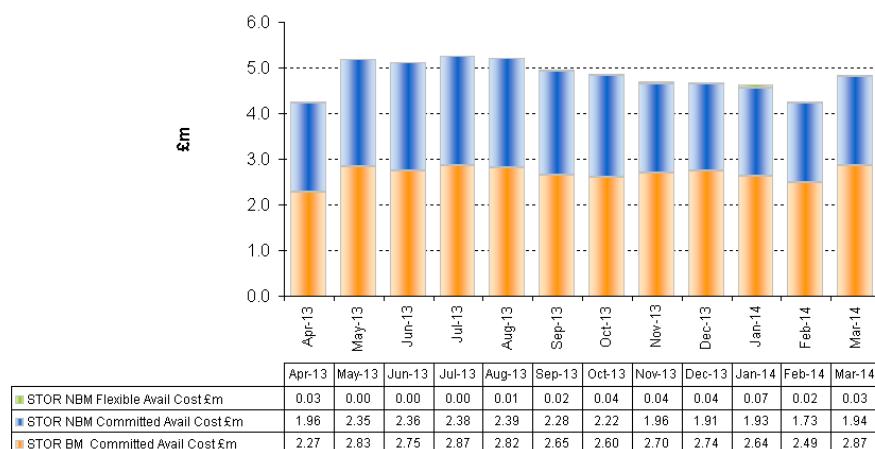
## 2.7 Short Term Operating Reserve (STOR) including Balancing Mechanism (BM) and Non Balancing Mechanism (NBM)

National Grid procures Short Term Operating Reserve (STOR) through a competitive tender process which is conducted three times per year.

Further information on STOR can be found on the National Grid website.

<http://www2.nationalgrid.com/uk/services/balancing-services/reserve-services/short-term-operating-reserve/>

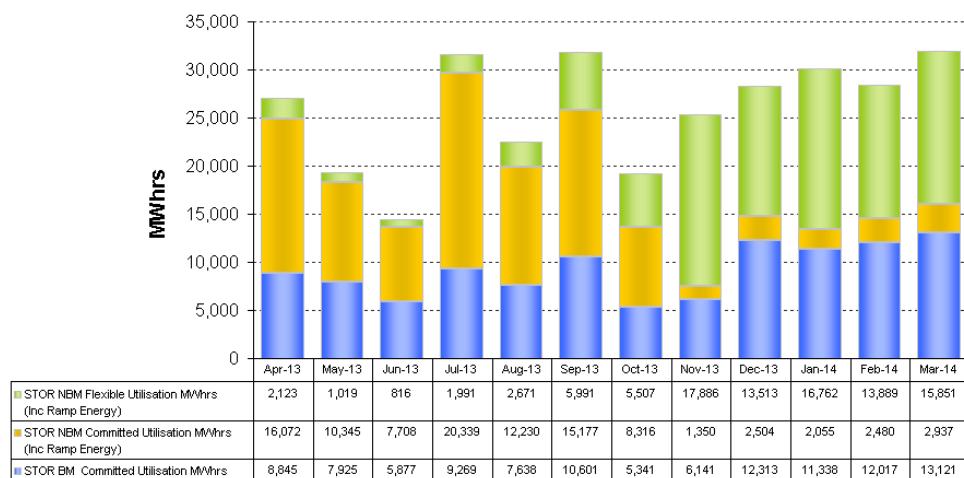
**STOR BM and NBM Availability Costs- Flexible and Committed**



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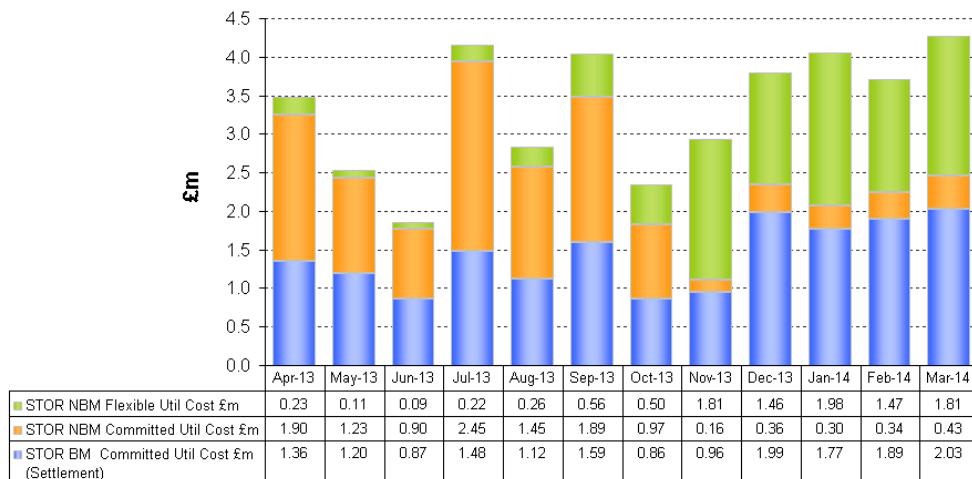
1 April 2013 to 31 March 2014

**STOR BM and NBM Utilisation MWhrs - Flexible and Committed**



The increase and fall in the proportion of STOR NBM Committed and Flexible utilisation during 2013/14 is seasonally driven by the NBM market's provision of Committed and Flexible STOR services.

**STOR BM and NBM Utilisation Cost - Flexible and Committed**



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## STOR BM and NBM Utilisation MWhrs and Costs (Data)

Month	STOR BM Committed Util Cost £m (Settlement)	STOR NBM Committed Util Cost £m	STOR NBM Flexible Util Cost £m	STOR BM Committed Utilisation MWhrs	STOR NBM Committed Utilisation MWhrs (Inc Ramp Energy)	STOR NBM Flexible Utilisation MWhrs (Inc Ramp Energy)
<b>Apr-13</b>	1.356	1.896	0.230	8,845	16,072	2,123
<b>May-13</b>	1.198	1.227	0.112	7,925	10,345	1,019
<b>Jun-13</b>	0.866	0.897	0.094	5,877	7,708	816
<b>Jul-13</b>	1.484	2.449	0.225	9,269	20,339	1,991
<b>Aug-13</b>	1.123	1.445	0.263	7,638	12,230	2,671
<b>Sep-13</b>	1.590	1.891	0.559	10,601	15,177	5,991
<b>Oct-13</b>	0.861	0.970	0.505	5,341	8,316	5,507
<b>Nov-13</b>	0.956	0.157	1.815	6,141	1,350	17,886
<b>Dec-13</b>	1.988	0.356	1.456	12,313	2,504	13,513
<b>Jan-14</b>	1.774	0.300	1.982	11,338	2,055	16,762
<b>Feb-14</b>	1.893	0.345	1.465	12,017	2,480	13,889
<b>Mar-14</b>	2.031	0.428	1.809	13,121	2,937	15,851

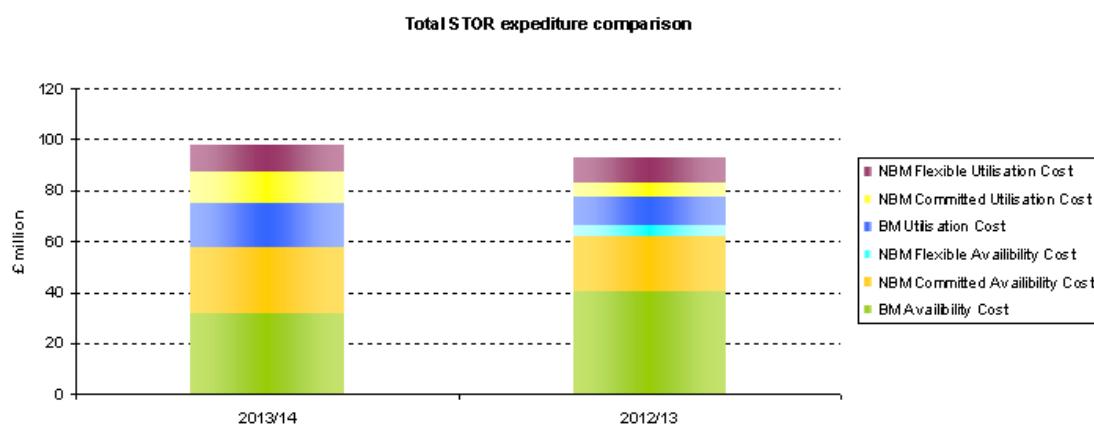
[Please note graphs and the table above do not reflect any seasonal reconciliation due to non-availability]

Non Balancing Mechanism (Non-BM) STOR Availability payments, Non-BM STOR Utilisation payments and BM STOR Availability payments are paid as Ancillary Services. BM STOR Utilisation payments are paid via the BM Bids and Offers, not as an Ancillary Service; they are included in this report to clarify the total STOR expenditure. STOR BM Utilisation costs in this report are based on actual spend (i.e. MWh Utilised x Utilisation Price for that BM STOR unit).

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## 2.8 STOR Comparison with previous year



Total STOR costs for 2013/14 were £98m - £5.6m higher than in 2012/13. This increase was driven by higher utilisation volumes, due to contracting STOR at reduced utilisation prices. The average utilisation price spend on actual synchronised STOR volumes fell from £146/MWh in 2012/13 to £129/MWh in 2013/14. Over the same period, STOR availability expenditure decreased, with the average availability price based on actual STOR turnout spend falling from £7.49/MWh in 2012/13 to £5.79/MWh in 2013/14

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## 2.9 Tendered Frequency Response.

Please see Section 3.2 Services Procured via Non-Tendered Bilateral Contracts.

## 3. Services Procured Via Non-Tendered Bilateral Contracts

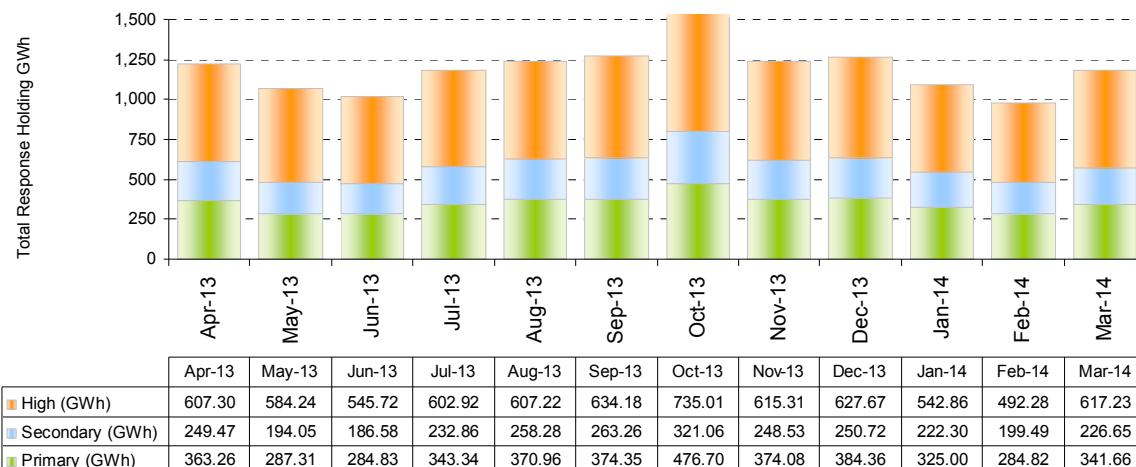
### 3.1 Mandatory Frequency Response

Mandatory Frequency Response is a compulsory service provided by large generators (>100MW) to automatically change their active power output in response to a change in system frequency. The Grid Code Connection Condition 6.3.7 and 8.1 describe the technical requirements for this service.

Payments for Mandatory Frequency Response comprise a Holding Payment (£/MW/h) and a Response Energy Payment (£/MW/h). Details on frequency response holding are given below. More information on this can be found on the National Grid Website.

<http://www2.nationalgrid.com/uk/services/balancing-services/frequency-response/mandatory-frequency-response/>

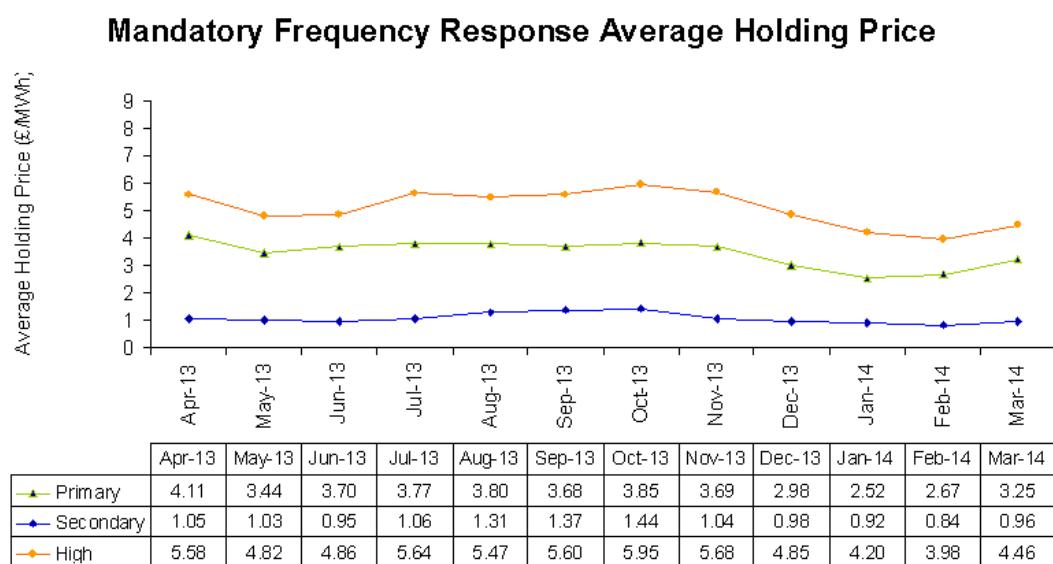
### Mandatory Frequency Response Holding



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The next chart shows the Average Holding price of Mandatory Frequency Response.



The methodology for calculating Mandatory Frequency Response payments is given in CUSC section 4.1.3.9 & 4.1.3.9A.

<http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/>

## 3.2 Commercial Frequency Response

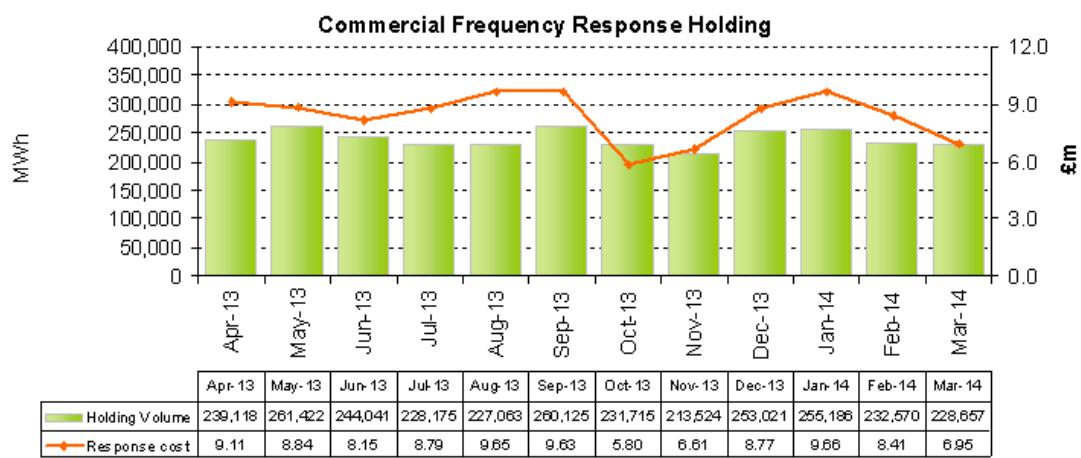
Commercial Frequency Response is a collection of services that can be provided by demand side participants and generation plant. The technical characteristics of these services are different to those required under mandatory service arrangements, and range from enhanced mandatory dynamic services through to non-dynamic services effected via Low Frequency relays. Part of the contract portfolio includes services provided by demand side participants via the Frequency Control by Demand Management (FCDM) service and through Firm Frequency Response (FFR) tender rounds.

Further information on Commercial Frequency Response is available on the National Grid Website, or specifically on firm frequency response through the tenders and reports section of National Grid's Balancing Services website.

<http://www2.nationalgrid.com/uk/services/balancing-services/frequency-response/>

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### 3.3 Frequency Response Comparison with previous year

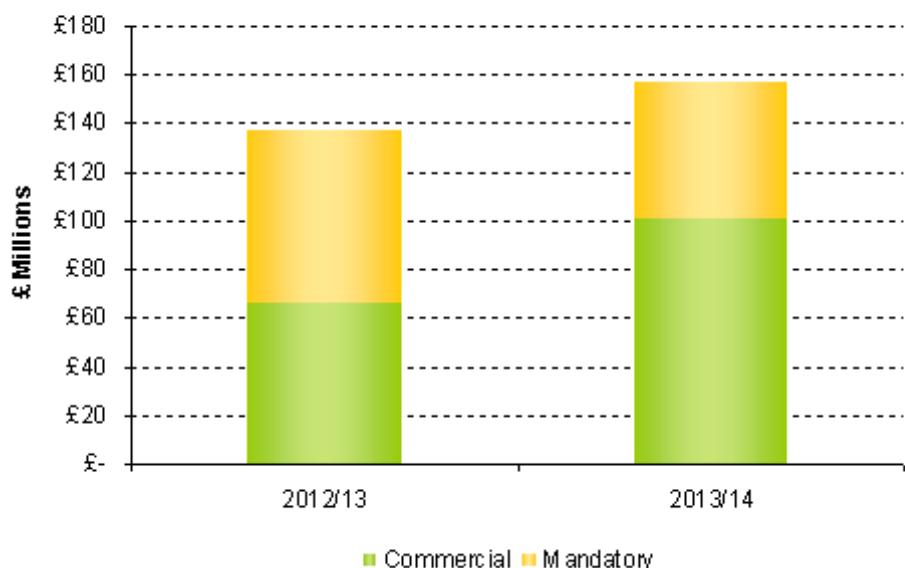
The total mandatory response volume in 2013/14 very consistent in comparison with 2012/13.

Commercial frequency response costs have increased from £65m in 2012/13 to £100m in 2013/14. The cost allocation for pumped storage units providing static frequency response was reviewed during the year. From April 2013 these costs were moved from the non-firm fast reserve category to the commercial frequency response category. This movement was related to change of use of the assets. Additionally more commercial frequency response was contracted in 2013 at prices beneficial to the BM alternative.

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**Total Response Holding Costs (Commercial/Mandatory)**



Total Response Holding Costs which include both Mandatory and Commercial costs have increased from £137 million in 2012/13 to £157 million in 2013/14.

The increase in total response costs has been driven by the increase in commercial frequency response costs as explained in the earlier paragraph. Although BM costs are not generally reported in this document, it should be noted that commercial frequency response services can reduce the BM costs associated with mandatory frequency response holding.

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## 3.4 Fast Start

Fast Start is the ability of generation to start rapidly from a standstill condition and to deliver its rated power output automatically within a defined time period.

Fast Start Capability and Utilisation Costs decreased in 2013/14 to £4.8m compared to £6.0m in 2012/13. The cost decrease was primarily driven by lower units availability as a result of plants decommissioning in 2013/14. Fast Start utilisation per month from April 2013 to March 2014 can be found below:

**Fast Start Utilisation**

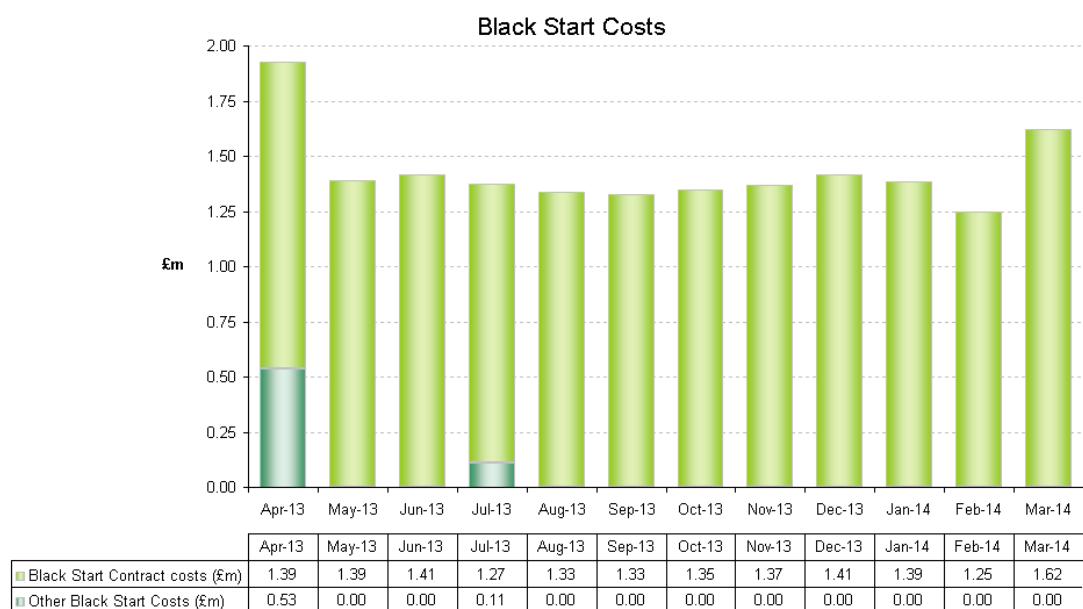


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## 3.5 Black Start

In 2013/14 the number of providers with Black Start agreements in place has decreased from 17 stations in April 2013 to 15 in March 2014. Total costs in this reporting year equal £17.2m compared to £16.2m in the year 2012/13. The increase in Black Start Costs is due to changes in supplier contracts as part of the normal review and renewal process.



[Please note that the above chart and table do not include the costs incurred in warming and running Blackstart units to maintain service availability]

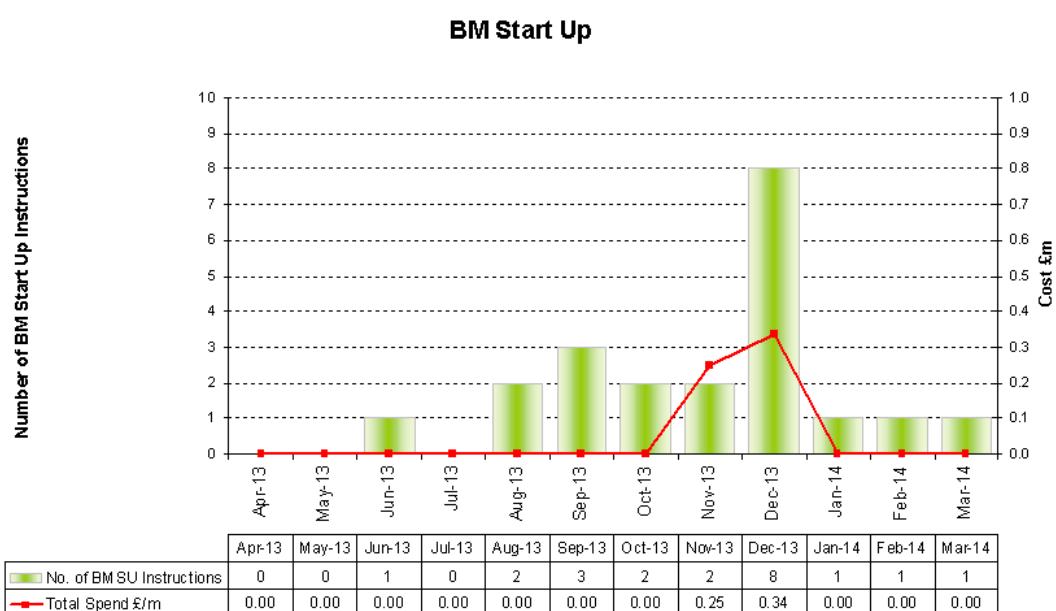
Further information on Black Start can be found on the National Grid Website.  
<http://www2.nationalgrid.com/uk/services/balancing-services/system-security/black-start/>

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## 3.6 BM Start up

The chart below contains information relating to the procurement of BM Start up Balancing Services:



## 3.7 BM Start up Comparison with previous year

The number of BM Start up instructions issued during 2013/14 was 21 compared to 51 instructions during the previous year. In terms of costs, £1.5m was spent on this service in 2012/13 compared to £0.6m in 2013/14. This year has seen coal contributing heavily to the generation mix. In 2013/14 there was less need for the BM start up service to be utilised, and generation available in BM timescales has been used instead.

Further details are available via the National Grid Website.

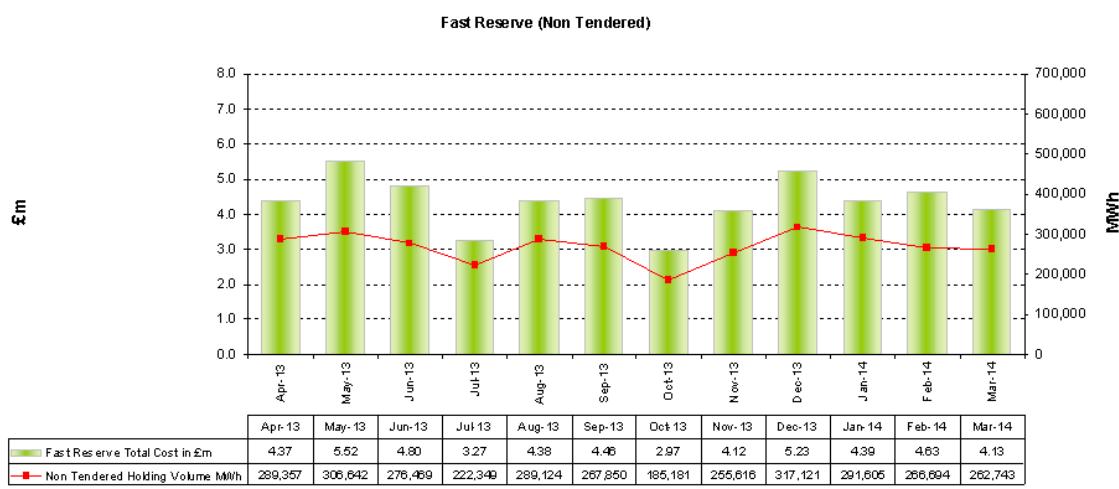
<http://www2.nationalgrid.com/uk/services/balancing-services/reserve-services/bm-start-up/>

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## 3.8 Fast Reserve (Procured on a Non-Tendered basis)

Non-Tendered Fast Reserve is a service that is contracted on a bilateral basis with service providers. The nature of the service is similar to the Firm Fast Reserve service although the payment and utilisation mechanisms differ for each service.



## 3.9 Non-tendered Fast Reserve Comparison with previous year

Non-tendered Fast Reserve costs have decreased by 32% from £77m in 2012/13 to £52m in 2013/14. This is due to the reclassification of various costs from Fast Reserve to Frequency Response (see section 3.3).

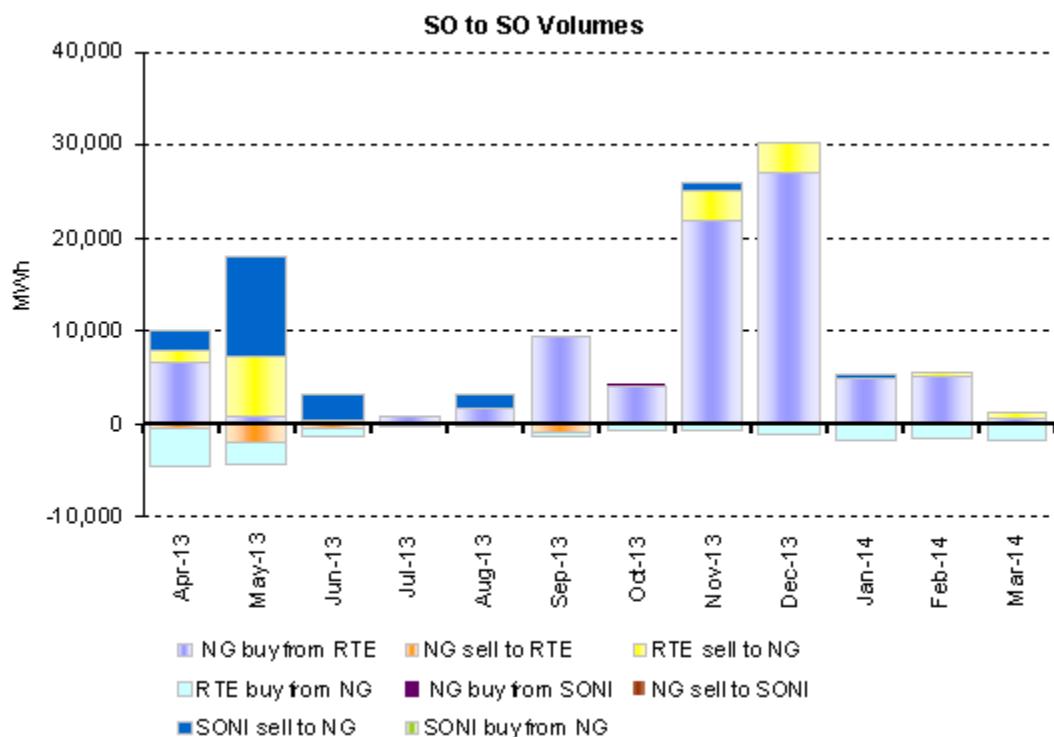
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## 3.10 System to System Services

System to System services are provided mutually with other Transmission System Operators connected to the GB system via interconnectors. Such services are typically used to manage interconnector transfer profiles and to increase or reduce power flows across an interconnector to resolve transmission constraints on either side, or provide Emergency Assistance if required.

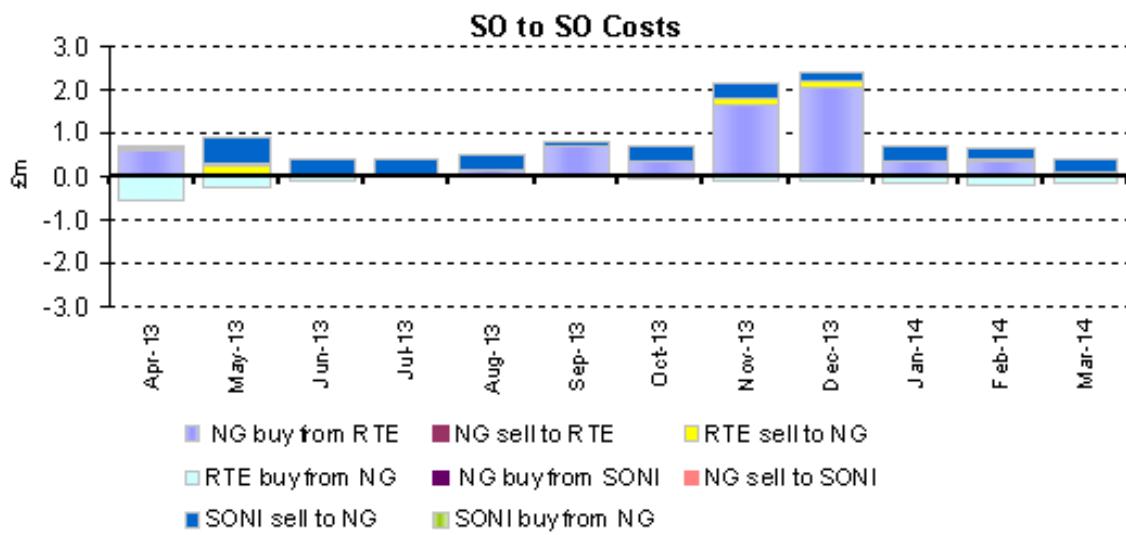
The graph below shows the total net volume imported and exported between Great Britain, France and Ireland. Please see **Appendix 1** for further clarification on System Operator to System Operator (SO-SO) services.



For definition see Appendix 1

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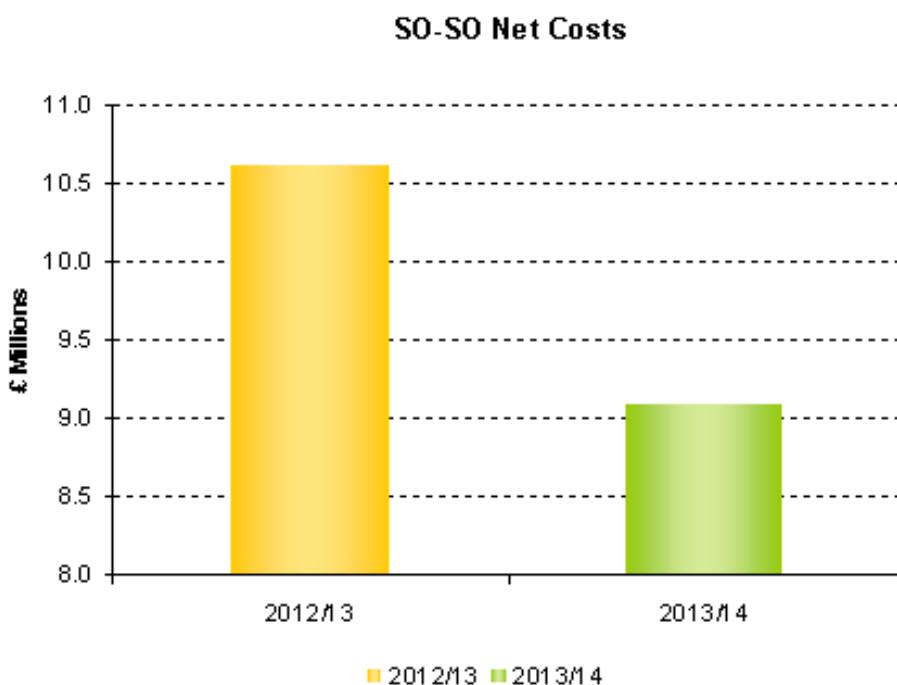
For definition see Appendix 1

## 3.11 SO-SO Comparison with previous year

Total System Operator to System Operator Costs have reduced from £11 million in 2012/13 to £9 million in 2013/14 as shown in the graph below.

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The volume of SO-SO trades undertaken decreased this year from 222GWh net in 2012/13 to 137GWh net in 2013/14.

There has been a decrease in import volume to the UK from 197GWh in 2012/13 to 117GWh in 2013/14. This was mostly driven by reduced available interconnector capacity.

Significant periods of curtailment on the French interconnector between March and July 2013 has contributed to the drop in SO-SO buy trades, this is particularly apparent over the summer months when IFA tended to import at maximum capability.

SONI represents actions on both EWIC and Moyle although a limited number of actions were taken on Moyle due to serious fault in April 2013, curtailing the capability to 50%. EWIC had full commercial capability from May 2013 and utilised the SO-SO service to sell excess wind power to GB over the summer months.

SO-SO trade services are still not available over the BritNed Interconnector due to contractual and market differences between the UK and Dutch markets.

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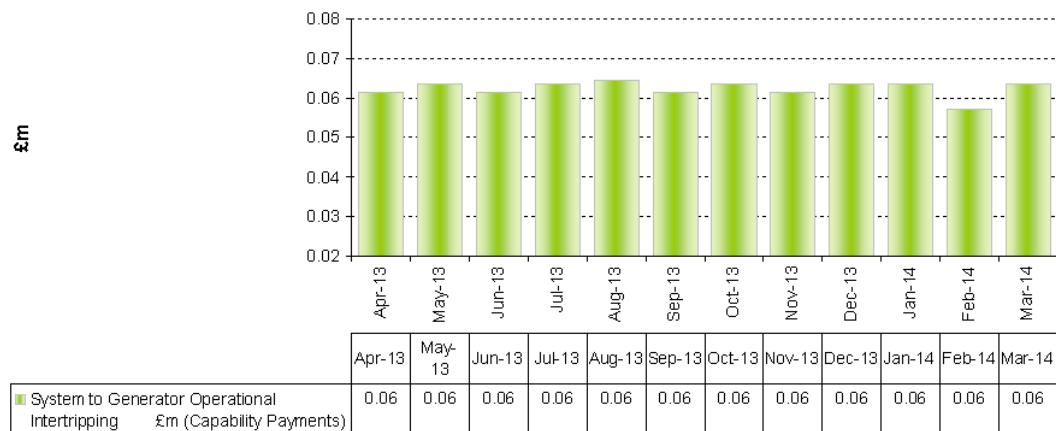
## 3.12 System to Generator Operational Inter-tripping Schemes

As a consequence of their connection conditions, certain generators are obligated to have in place operational intertrip schemes.

These schemes fall under a number of different category types as defined under section 4.2.A of the CUSC which describes the respective compensation arrangements. A proportion of these categories entitle the counterparty to payments for maintaining the capability to provide the intertrip and also following utilisation of the service.

Total costs for System to Generator Operational Inter-tripping Schemes remains reasonably constant at £0.75m for reporting year 2013/14, compared to £0.84m in 2012/13.

System to Generator Operational Intertripping - Capability Payments



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## 3.13 Commercial Intertrip Service

In addition to System to Generator Operational Inter-tripping Schemes, National Grid will seek to, where it proves economic and efficient to do so, enter into Commercial Intertrip schemes to assist with managing system issues.

**Commercial Intertrips**



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## Commercial Intertrip Monthly Summary

Month	Capability Payment £'s	Arming Payment £'s	Number of Hours of Intertrip Arming, Outside of Pre-Paid Arming Contract(s)	Contracted Pre-paid Arming £'s	Number of Hours Armed under Pre-Paid Arming Contract(s)	Number of Trips	Tripping Payment £'s
Apr-13	112,234	1,655,615	511			0	0
May-13	115,893	2,108,389	632			0	0
Jun-13	112,234	1,075,488	244			0	0
Jul-13	115,975	654,131	254			0	0
Aug-13	112,701	636,899	221			0	0
Sep-13	109,066	386,916	191			0	0
Oct-13	112,701	1,294,155	427			0	0
Nov-13	109,066	455,463	181			0	0
Dec-13	115,322	1,711,000	570			0	0
Jan-14	115,826	1,565,204	496			0	0
Feb-14	104,617	816,603	296			0	0
Mar-14	115,826	651,976	302			0	0

Under commercial intertrip agreements arming is payable either as;

1. A fixed pre-agreed sum, this may be for a fixed number of hours or unlimited hours (shown above as Contracted arming) or;
2. Payable on utilisation with the generator typically having the right to alter their payments with a short notice period (shown above as Arming Payments).
3. The "Contracted Pre-Paid Arming" column indicates the maximum firm payment that could be made assuming the intertrip is available for use for all the Contracted Arming hours during the contracted period.

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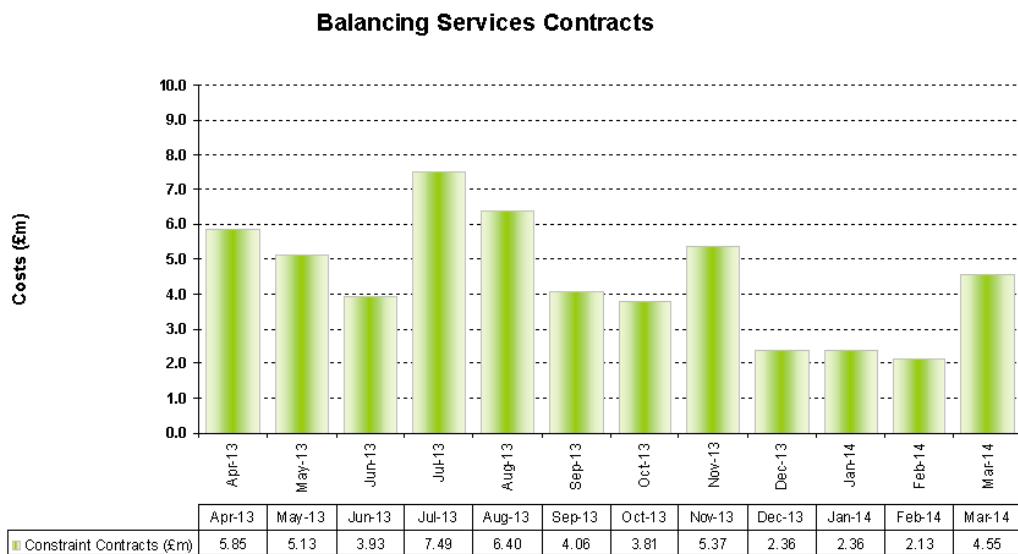
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## 3.14 Balancing Services Contracts to manage System Issues

On occasion, National Grid enters into bespoke Balancing Services contracts to manage certain transmission system issues such as voltage issues or system inertia. The contracts agreed via tender runs are available on the National Grid website, some of them however, by the nature of these contracts, remain confidential. The costs reported here include any costs of 'Transmission Related Agreements', which are entered as a consequence of certain customer choices of connection conditions.

More information related to contracts designed to economically and effectively manage forecast constraint cost and volumes, arising from declining MVar demand and low levels of expected generation overnight, can be found on the National Grid Website:

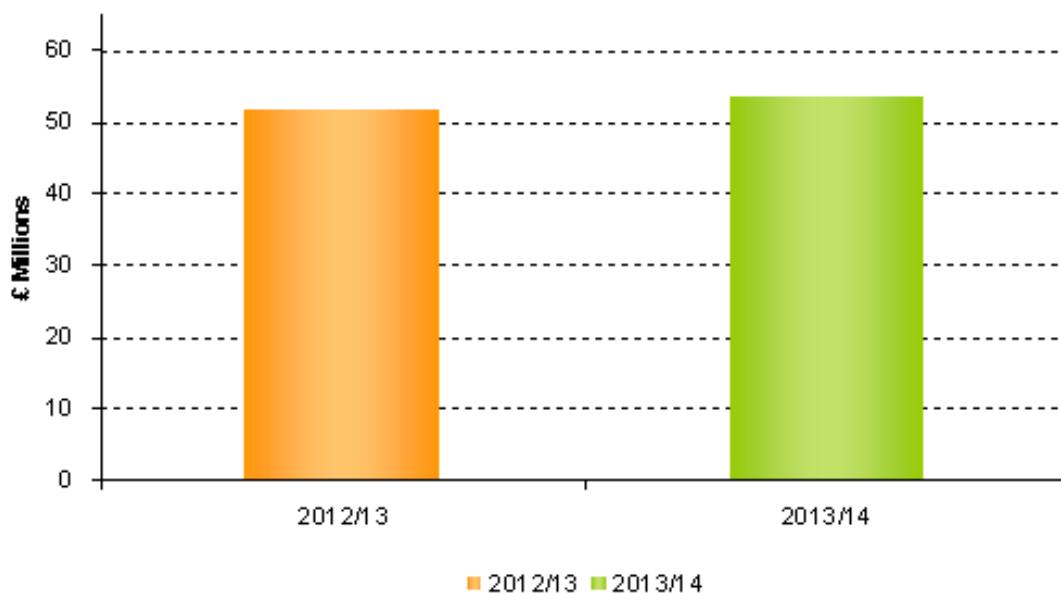
<http://www2.nationalgrid.com/UK/Services/Balancing-services/System-security/Transmission-Constraint-Management/Transmission-Constraint-Management-Information/>



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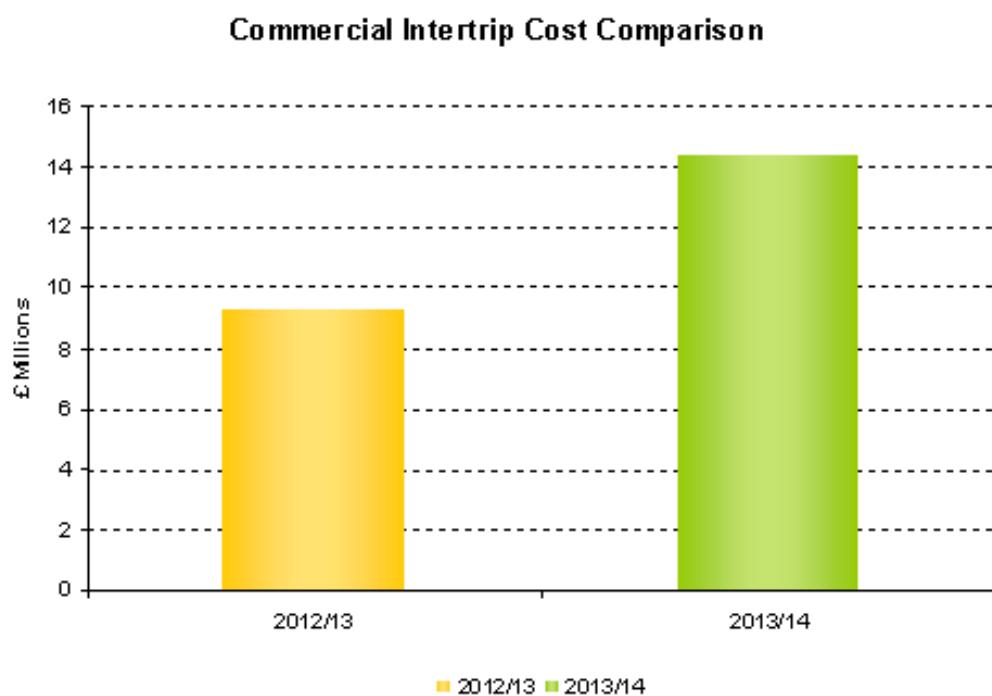
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**Constraint Contract Costs**



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## 3.15 System Issues Comparison with previous year

The costs of managing Transmission System constraints via contracts increased from £51.45m in 2012/13 to £53.43m in 2013/14. Commercial Intertrip costs have increased from £9.27m in 2012/13 to £14.36m in 2013/14.

The constraint contract costs is the amount spend on contracts with generators to manage constraint groups as economically as possible and avoid cost that would have otherwise been accrued in the Balancing Mechanism. Costs have increased since last year and this will be due to the nature of the contracts procured, which is in turn dependant on the outages that were taken in 2013. The commercial intertrip costs are the costs of arming generator intertrips to manage constraints, major contributors to this figure has been SCOTEX and SWALEX constraint boundaries.

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## 3.16 Maximum Generation Service

The Maximum Generation Service (MGS) is required to provide additional short term generation output during periods of system stress for energy balancing. This service allows access to unused capacity outside of the Generator's normal operating range. MGS will be initiated by the issuing of an Emergency Instruction in accordance with the Grid Code BC2.9.2. Details of the service are contained in the CUSC section 4.2

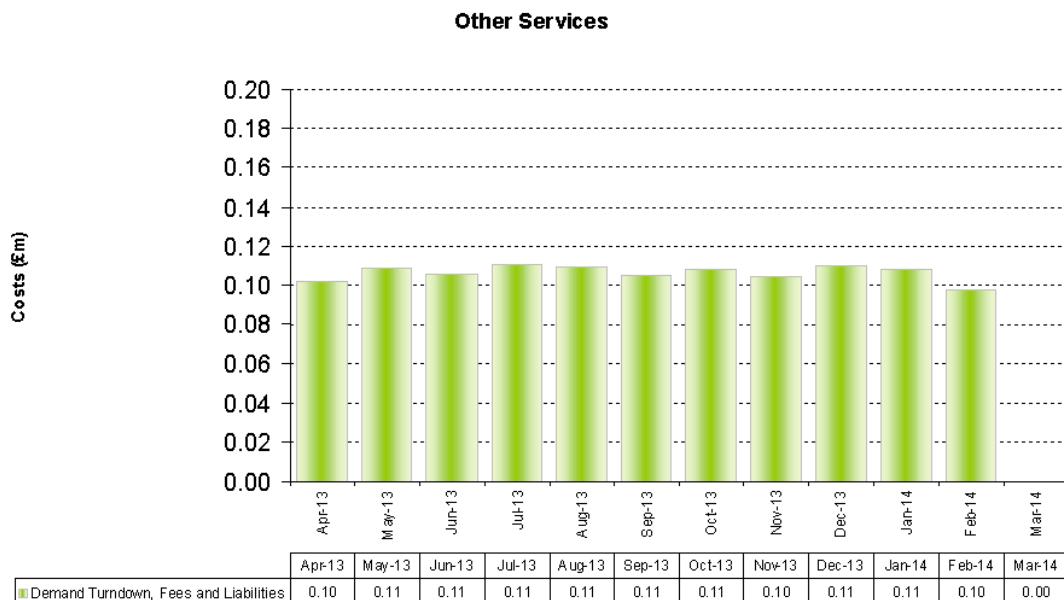
Further details on the utilisation and availability of the service are available on the National Grid Website.

<http://www2.nationalgrid.com/uk/services/balancing-services/system-security/maximum-generation/>

This service was not utilised during 2013 or during 2014.

## 3.17 All Other Services

These include costs relating to trading fees and liabilities which are expected to be paid as a result of contracts awaiting signature or unresolved disputes. In 2013/14 costs have decreased to £1.17m from £1.81m in reporting year 2012/13.



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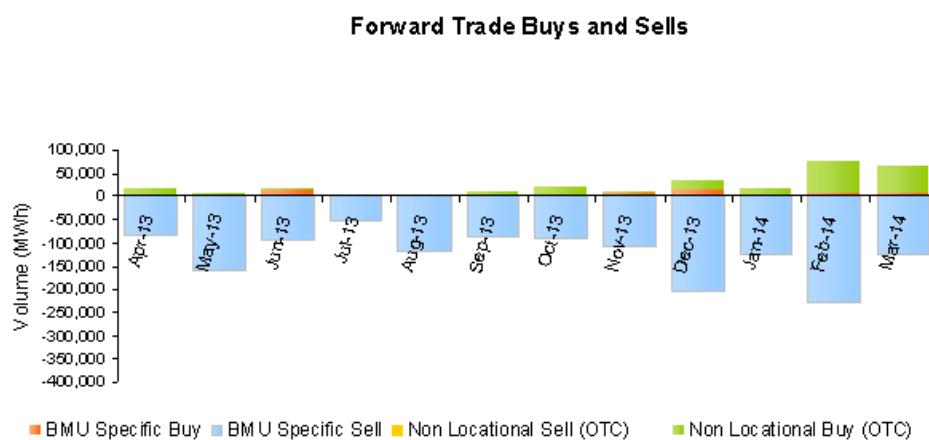
## 4. Energy Related Products

### 4.1 Forward Trading

National Grid's forward trading is undertaken to reduce the overall costs of balancing the system, and to resolve system issues as appropriate. There are a number of products and procurement mechanisms available.

Non Locational	Volume (MWh)	Cost (£)
Buy Volume	215,600	£11,307,747.1
Sell Volume	0	£0.00
BMU Specific		
Buy Volume (MWh)	68,067	£5,169,846.0
Sell Volume (MWh)	-1,476,028	-£35,797,274.83
Net Total		-£19,319,681.75

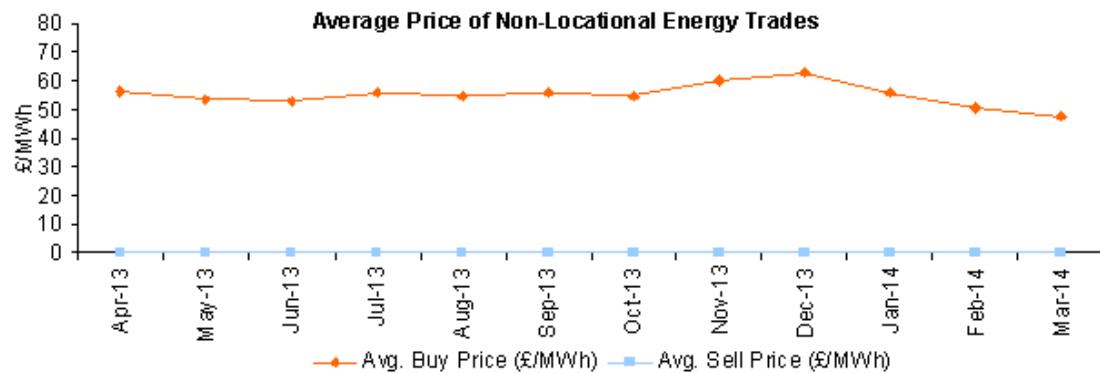
The following chart shows the monthly profile of our trading activities, both for non-locational energy trades and BMU-Specific trades.



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The following graph shows the monthly profile of our non-locational energy trading activities. It comprises all the trades undertaken by National Grid through Power Exchanges and through the use of brokerage houses for that purpose.



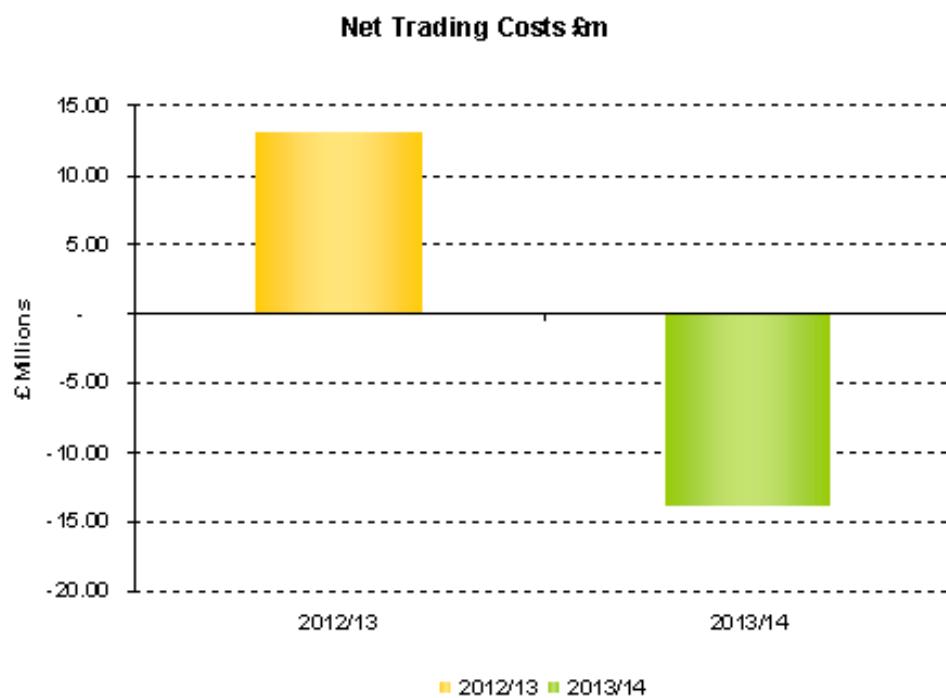
There were no non-locational sell trades undertaken in 2013/14.

## 4.2 Trades Comparison with previous year

Locational buy volume dropped considerably compare to the last year, as import constraint and voltage requirement have been managed in the Balancing Mechanism. Locational sell trading volume has increased significantly this year, and mainly driven by trading on interconnectors to reduce risks for system frequency management. Volume of locational trades for export constraint have remained a relatively low level, while bilateral contracts have been used for various localised issues, and the management of wind has predominately been carried out in the Balancing Mechanism, where no benefit was indentified when comparing trade price against BM price.

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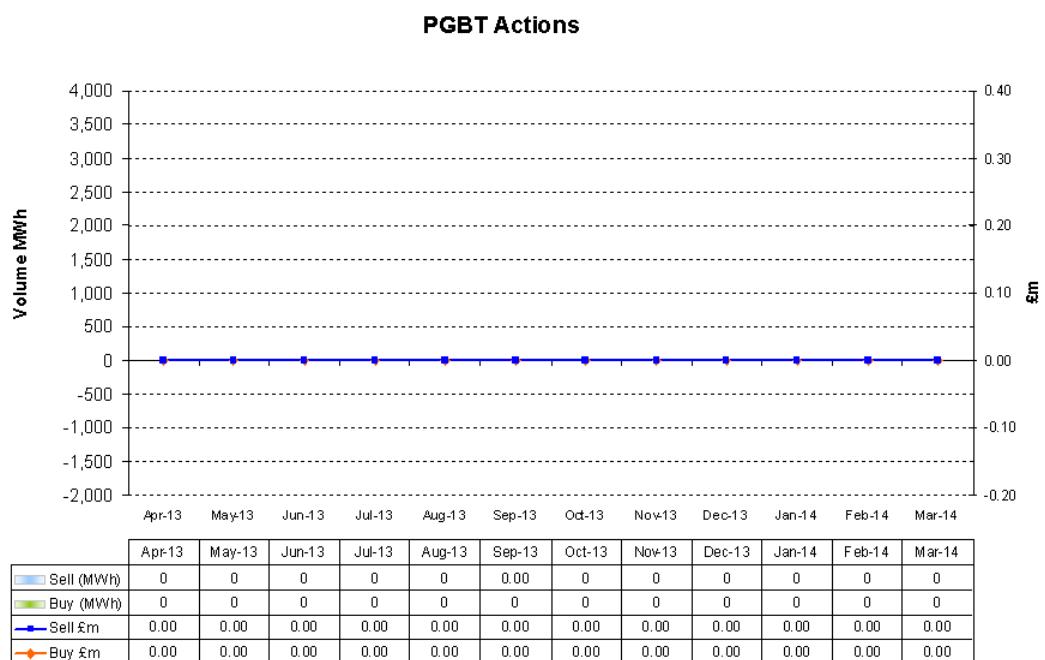
Further details are available on the National Grid Website

<http://www2.nationalgrid.com/UK/Services/Balancing-services/Trading/>

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## 4.3 Pre-Gate BMU Transactions (PGBT)



## 4.4 PGBTs Comparison with previous year

There were no Pre-Gate BMU Transactions undertaken in 2013/14.

Details on real time PGBT transactions can be found on the BMRS (system warning page) and post event, on the National Grid Website.

<http://www.nationalgrid.com/uk/Electricity/Balancing/services/energyrelated/pGBT/>

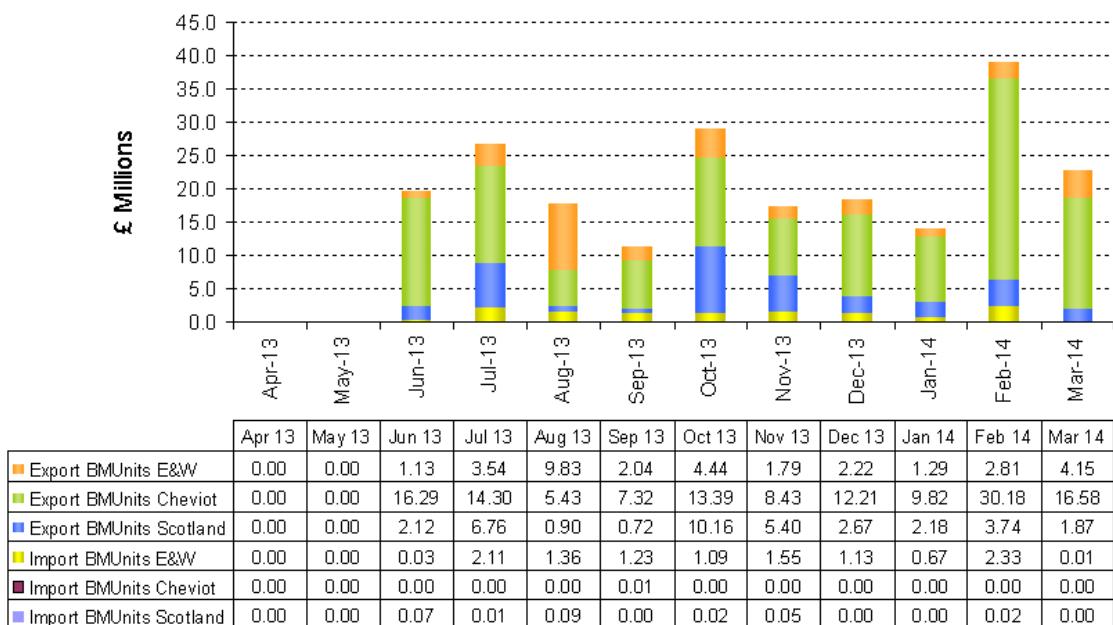
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## 5. Constraints

National Grid resolves constraints in the GB Transmission System through different mechanisms, including Bids and Offers in the Balancing Mechanism, PGBTs, Trades and System to System Services (SO-SO). The costs of resolving constraints via intertrip contracts (see section 3.13) and bilateral contracts (see section 3.14) have already been explored.

Balancing Mechanism Constraints Cost £m



### 5.1 BM Constraints Comparison with previous year

BM Constraints Costs for reporting year 2013/14 out turned at £271m compared to £102m in 2012/13. This increase is a result of large capital investment schemes in Scotland including the Beauly – Denny works and the East – West upgrade which has temporarily reduced network capacity while work was carried out. There has also been a significant expenditure on the intact network for SCOTEX and MERSCON. This has increased the volume of actions required to manage constraints.

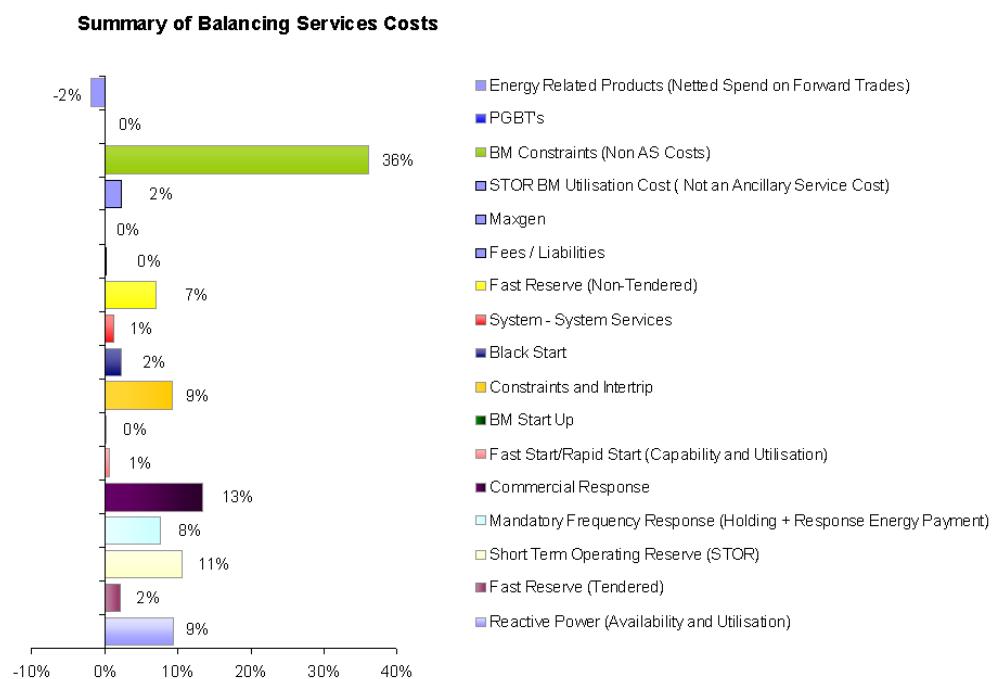
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## 6. Summary

As a summary of financial activity, the following breakdown of balancing services costs is provided by category, for the financial year 2013/14.

### 6.1 Summary Chart



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## 6.2 Further information

For further information on the types of Balancing Services that National Grid intends to procure, please refer to the prevailing **Procurement Guidelines**. Information on bid and offer acceptances in the Balancing Mechanism is contained within the **Balancing Principles Statement Report** and published via the <http://bmreports.com> website. These documents, along with the **Procurement Guidelines Report**, are published in accordance with Standard Condition C16 of the Transmission Licence and are available on National Grid's website.

## 6.3 Contact and Feedback

National Grid welcomes feedback on any aspect of this report including suggestions for future reports. For any comments please email Electricity Codes at [soincentives@nationalgrid.com](mailto:soincentives@nationalgrid.com)

# Procurement Guidelines Report

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## 7.1 Appendix 1: System to System Services Definitions

Initiator	Definition
NG buy from RTE	National Grid request to RTE for additional energy to GB
NG sell to RTE	National Grid request to RTE for reduced energy to GB
RTE sell to NG	RTE request to National Grid for additional energy to GB
RTE buy from NG	RTE request to National Grid for reduced energy to GB
NG buy from SONI	National Grid request to SONI for additional energy to GB
NG sell to SONI	National Grid request to SONI for reduced energy to GB
SONI sell to NG	SONI request to National Grid for Additional energy to GB
SONI buy from NG	SONI request to National Grid for reduced energy to GB.

RTE = Reseau de Transport de l'Electricite (*French electricity grid operator*)

NG = National Grid

SONI = System Operator Northern Ireland

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## 7.2 Appendix 2: Table of Raw Data