

# Firm Frequency Response Market Information for Jun-16

Monthly Report

Published Apr-16

## Key points

This Market Information Report is relevant for tenders submitted in **May-16** for delivery in **Jun-16**.

Tenders from eligible service providers for Firm Frequency Response should be submitted by **Tue 03-May-2016** (1<sup>st</sup> business day) for all tenders.

National Grid will notify service providers of the outcome of the tender assessment, and preliminary nominations, by **Wed 18-May-2016** (12<sup>th</sup> business day).

## Notes:

In order to reduce variations in tender submissions, our preference is to limit the term of forward contracts to a maximum of two years. In addition tenders should not start later than 2017.

A number of changes have been made to the report including the removal of the required Static characteristics pending completion of further work. Additional commercial services have been added to our contracted position to better reflect the FFR requirement, and the 12 month Primary daytime requirement has also been corrected.

## Introduction

Firm Frequency Response (FFR) is the firm provision of Dynamic or Non-Dynamic Response to changes in Frequency. Unlike Mandatory Frequency response, FFR is open to BMU and non-BMU providers, existing Mandatory Frequency Response providers and new providers alike. National Grid procures the services through a competitive tender process, where tenders can be for low frequency services, high frequency services or both.

Submitted prices are compared to the costs of alternatives to deliver the equivalent level of frequency response. More detail can be found in the assessment principles, the link can be found below.

This report provides information to current and potential providers about the volume of, and time periods over which, we are seeking to contract for frequency response services.

## Highlights

In Apr-16, we received 325 FFR tenders from 38 units. More details on the tenders accepted/rejected are available from the post-assessment tender report.

In Dec-15 NG reviewed the assessment process in response to significant market changes. This resulted in defining the response requirements in terms of services that provide a full frequency range dynamic service (referred to as **Dynamic**) and services providing a frequency set-point triggered response service whether static or dynamic (referred to as **Static**). The key principal of the Dynamic service is continuous delivery at frequencies near 50Hz to help maintain stable steady state frequency (prior to a frequency event). Static services typically have a frequency trip point that is far enough away from 50Hz to be considered post event response. In order to control steady state frequency a certain volume of Dynamic response is required, this is referred to as the **Minimum Dynamic** requirement. Dynamic units as described above can be used to meet the full response requirement but Static units cannot meet the Minimum Dynamic requirement.

## Links

Assessment Principles and Post-Assessment Tender Reports

<http://www.nationalgrid.com/uk/Electricity/Balancing/services/frequencyresponse/ffr/>

The Monthly Balancing Services Summary (MBSS) gives a monthly summary of the cost of services procured by service

<http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Report-explorer/Services-Reports/>

## Jun-16 Dynamic Requirement

The three charts on this page display the volume of frequency response to contract for the month ahead from **Dynamic** services. The blue bars represent existing contracted service provision including any optional non-FFR services routinely used that NG forecast to be cost effective for the month ahead.

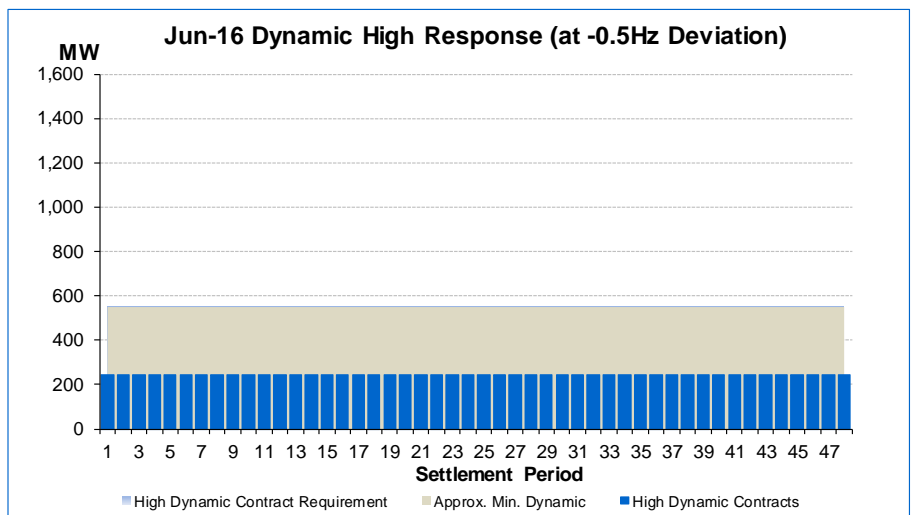
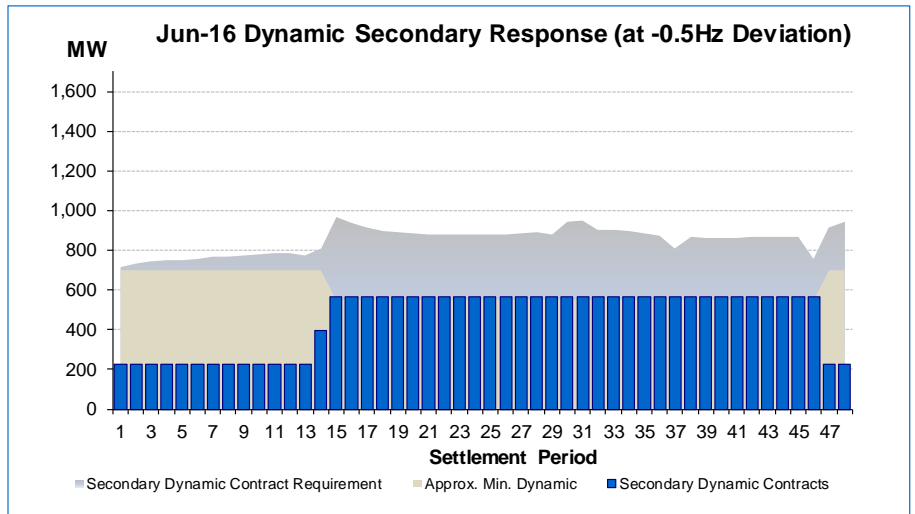
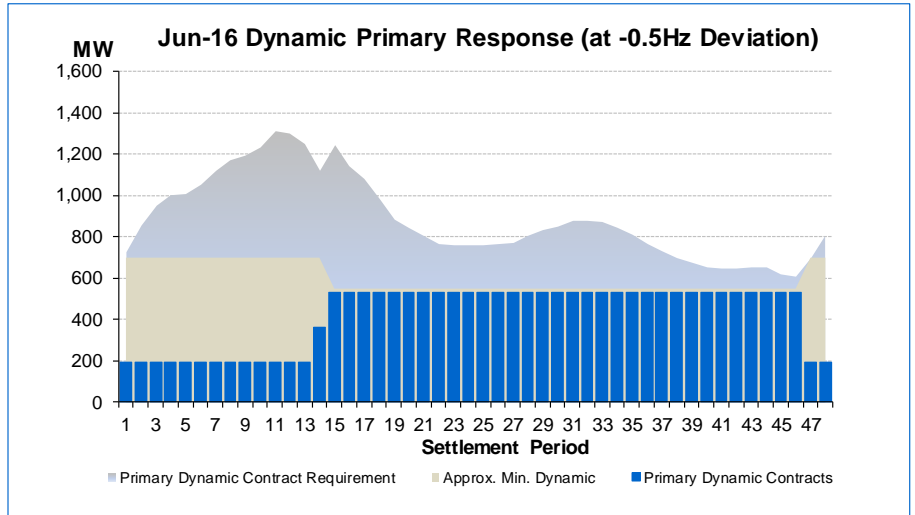
The beige shaded area represents the Minimum Dynamic Requirement.

The blue/grey shaded area is the remaining volume to contract. This volume can be met from Dynamic or Static providers. As such this volume also appears on the frequency set point charts on the next page.

Please note that the top line is not necessarily the total response requirement because volumes of Static services have been removed.

These charts represent a forecast average baseline requirement that NG would look to fill by contracting at month ahead. The actual requirement in real time will vary. Optional services and Mandatory Frequency Response will be used to make up any shortfall between contracted and real time requirement.

The approximate Minimum Dynamic Requirement is shown as well as the total response requirements.



## Jun-16 Static Requirement

The three charts on this page display the volume to contract for **Static** response services.

Static, or post-fault, response can be used to displace the non-Minimum Dynamic proportion of the response requirements. The volume to contract is the same volume that is displayed on the Dynamic service charts above. Either service can provide the volume.

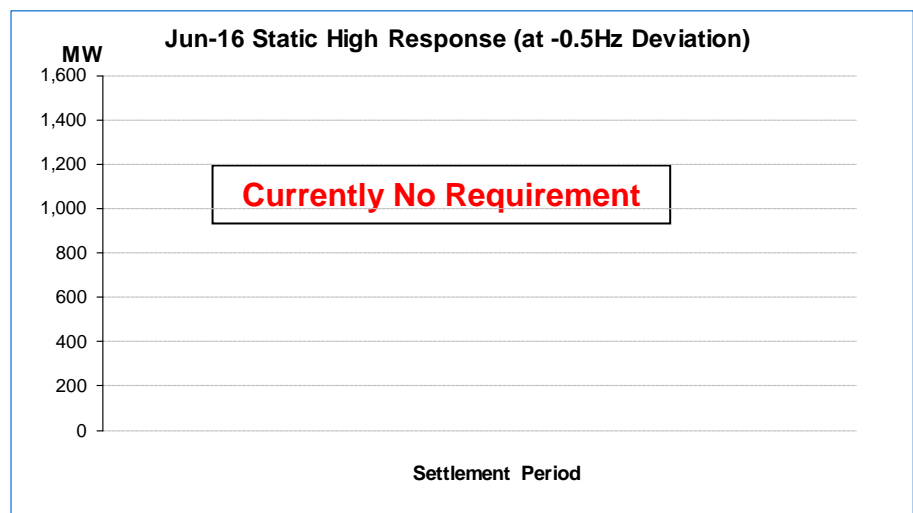
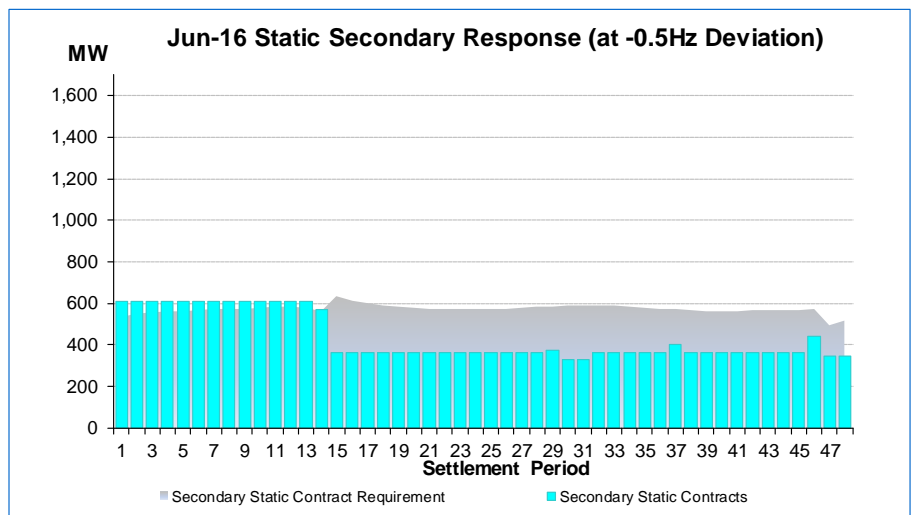
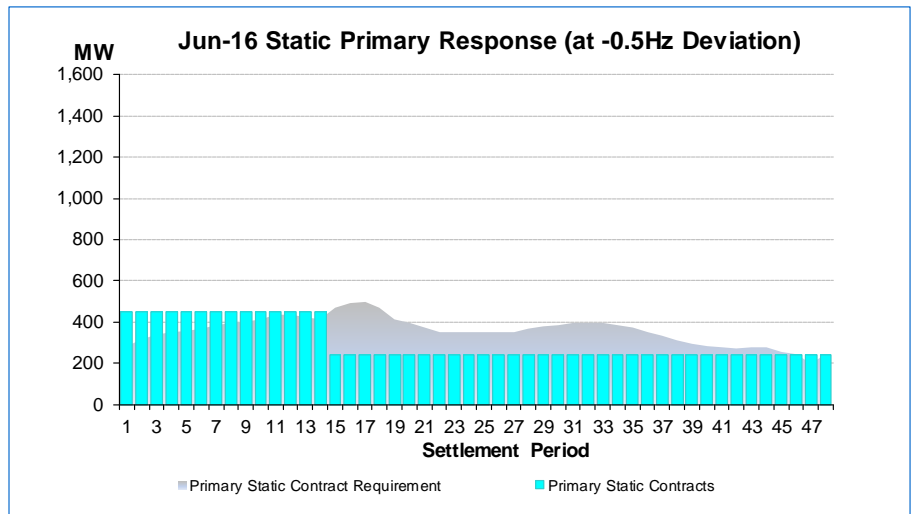
The light blue bars represent the existing contracted volume including any routinely used optional services that NG expects to be in merit in the stack for the month ahead.

The frequency response requirements are calculated to ensure sufficient response capability to contain frequency to within certain limits following a specified size of generation or demand loss. One of the assumptions used is that the starting frequency when the loss occurs is 0.1Hz away from 50Hz. The requirement is calculated assuming a generic response profile from a Dynamic service as typically provided by the Mandatory response service. At 0.1Hz deviation a dynamic provider will have already delivered part of their response capability whilst a Static provider with a frequency trigger at >0.1Hz will not have delivered anything. This means that a Static provider can offset slightly more of the non-Minimum Dynamic requirement than a Dynamic provider of the same size. The requirement shown on the chart has therefore been adjusted to display the MW of static capability that could offset the response requirement.

### Key points

The response requirement for secondary is the largest of the 3 static requirements.

There is currently no requirement for high static response due to the minimum dynamic requirement also being sufficient to secure for the normal demand loss.



## 12-Month Total Requirement

The following charts show the requirement over the next 12 months. The charts provide an estimate of the response requirements by day/night and include information on existing contracts.

The grey/blue shaded area is the approximate response that will need to be procured. The minimum dynamic assumed for primary and secondary is 550MW daytime and 700MW overnight. The minimum dynamic for High is assumed at 550MW.

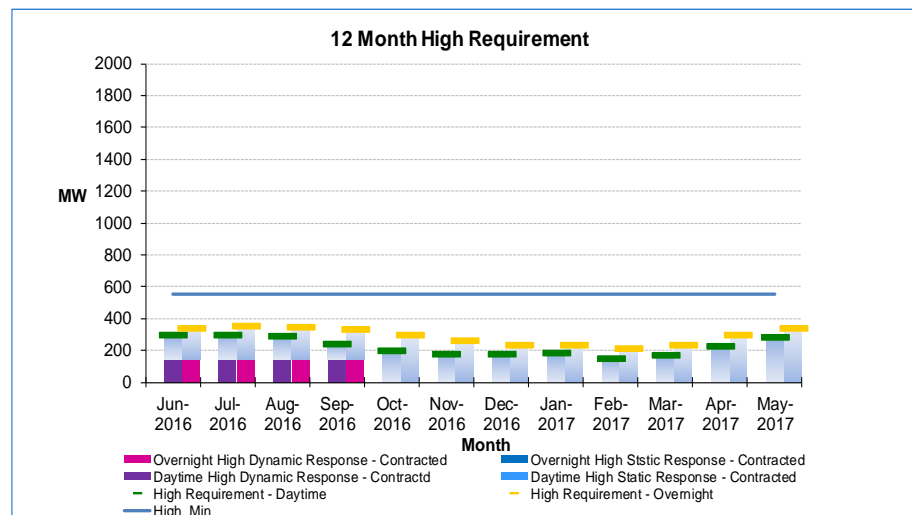
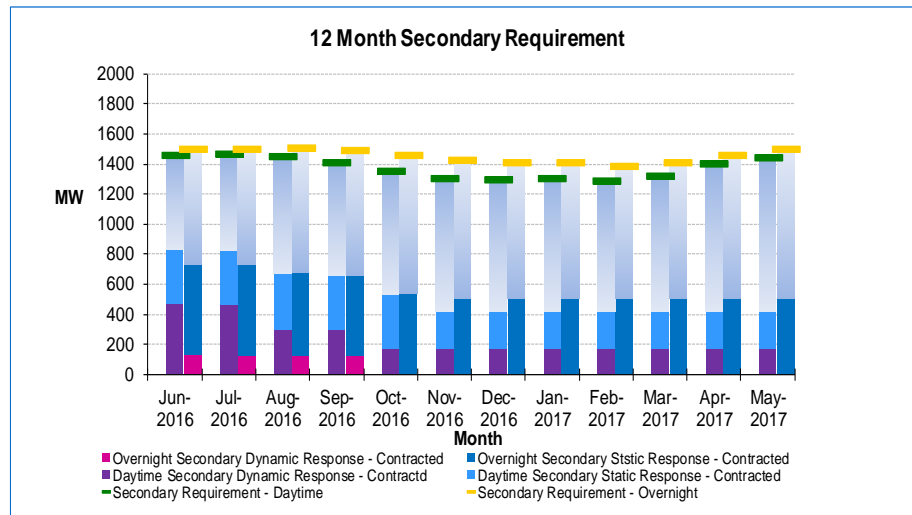
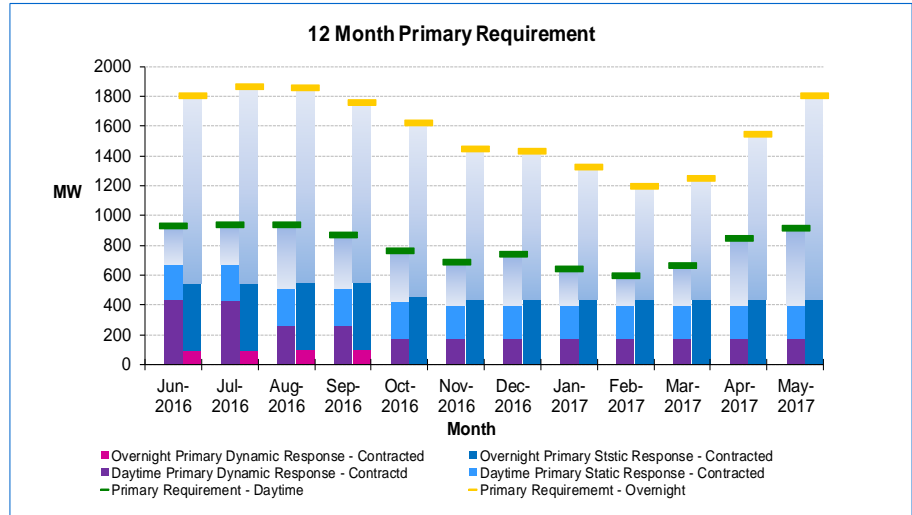
### Key points

The response requirement is greater during the summer than winter.

The response requirement is greater overnight than during the daytime

The primary and secondary response requirements are greater than the minimum dynamic throughout the year. A static response service could therefore be beneficial in meeting the total requirement.

For High frequency response, the minimum dynamic response is greater than the requirement throughout the year. A static response service would not be beneficial in meeting the requirement.



### Contract Requirement Volume Tables

Jun-16 requirement - Volumes left to procure as shown in the charts on page 2 and 3

Settlement Period	Dynamic Amount required (MW)		
	Primary	Secondary	High
1	529	486	307
2	662	506	307
3	755	519	307
4	805	524	307
5	813	525	307
6	858	531	307
7	927	538	307
8	976	544	307
9	998	546	307
10	1036	550	307
11	1117	558	307
12	1108	557	307
13	1057	549	307
14	758	412	307
15	709	400	307
16	609	370	307
17	544	350	307
18	448	332	307
19	349	322	307
20	308	318	307
21	268	313	307
22	231	311	307
23	224	311	307
24	224	311	307
25	224	311	307
26	232	312	307
27	237	316	307
28	267	322	307
29	298	312	307
30	317	378	307
31	341	382	307
32	345	338	307
33	337	335	307
34	306	327	307
35	274	317	307
36	228	309	307
37	199	244	307
38	165	300	307
39	141	296	307
40	118	294	307
41	115	296	307
42	114	298	307
43	119	301	307
44	118	301	307
45	85	302	307
46	70	187	307
47	505	689	307
48	607	719	307

Settlement Period	Static Amount required (MW)		
	Primary	Secondary	High
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	232	272	0
16	251	252	0
17	259	238	0
18	228	226	0
19	175	219	0
20	159	216	0
21	137	213	0
22	114	211	0
23	109	212	0
24	110	212	0
25	109	212	0
26	114	212	0
27	113	215	0
28	127	219	0
29	140	213	0
30	148	257	0
31	156	260	0
32	157	230	0
33	157	228	0
34	148	223	0
35	137	215	0
36	114	210	0
37	95	166	0
38	74	204	0
39	58	202	0
40	42	200	0
41	38	201	0
42	35	203	0
43	37	205	0
44	39	205	0
45	17	206	0
46	3	127	0
47	0	148	0
48	7	169	0

**12 month requirement –** Volumes left to procure as shown on page 4

Daytime	Requirement (MW)		
	Primary	Secondary	High
Jun-2016	255	627	407
Jul-2016	265	633	410
Aug-2016	424	783	410
Sep-2016	351	746	410
Oct-2016	340	821	550
Nov-2016	288	889	550
Dec-2016	338	879	550
Jan-2017	242	888	550
Feb-2017	199	865	550
Mar-2017	269	899	550
Apr-2017	450	980	550
May-2017	515	1026	550

Overnight	Requirement (MW)		
	Primary	Secondary	High
Jun-2016	1260	759	407
Jul-2016	1319	764	410
Aug-2016	1305	823	410
Sep-2016	1204	823	410
Oct-2016	1159	920	550
Nov-2016	1011	920	550
Dec-2016	997	899	550
Jan-2017	891	898	550
Feb-2017	756	878	550
Mar-2017	814	897	550
Apr-2017	1111	948	550
May-2017	1365	988	550

If you have any queries, suggestions or feedback on the content or format of the new report please contact your account manager or

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