

# Firm Frequency Response (FFR) Market Information Report

December 2017

## Key Points

This Market Information Report is relevant for tenders submitted in Jan-18 for delivery between **February 2018** and **July 2020**.

Tenders from eligible service providers for Firm Frequency Response should be submitted **Wed 03-Jan-18** (2<sup>nd</sup> business day) for all tenders.

National Grid will notify service providers of the outcome of the tender assessment, and preliminary nominations, by **Wed 17-Jan-18** (12<sup>th</sup> business day).

**From January 2018, non-compliant tenders will be rejected prior to assessment.**

Providers must use the template provided in the Ariba system to tender in for FFR. Use of any other template or submissions via e-mail will not be accepted.

We will be limiting contracts to 6 months ahead of tender month only and a maximum of two years in duration. Therefore tenders should not start later than **Jul-18**.

This Market Information Report provides information to FFR providers on the requirement for the February 2018 tender (TR 97).

## Requirements for February 2018 FFR tender round (TR 97)

### Dynamic Response:

A small daytime primary and secondary Dynamic requirement exists over the peak periods in February. A large overnight requirement remains to be satisfied.

A full 24 hour requirement still exists for high dynamic response.

### Non-Dynamic Response:

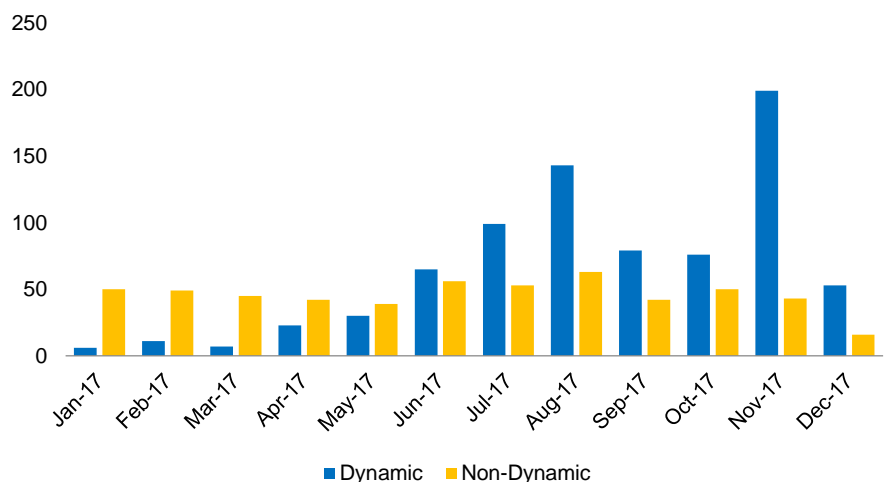
A large non-Dynamic requirement exists between settlement periods 31 to 48. There is also a requirement during the early hours of the morning.

Please note that submitted tenders must have a minimum window availability of 4 hours.

## December 2017 FFR Tender Round (TR 96) results

69 FFR tenders were received from 16 providers. 53 tenders were for dynamic FFR and 16 tenders were for the Non-Dynamic service. TR 96 marked the start of the first month ahead only tender round. Providers were able to submit volume for January 2018 delivery only. 22 contracts were awarded, to 16 units owned by 12 providers.

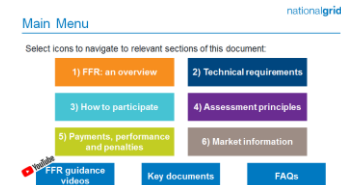
Number of FFR Tenders (2017)



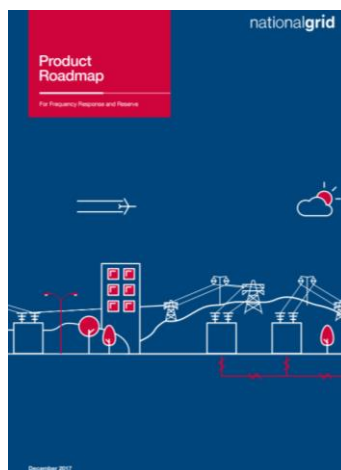
For further information please contact your account manager or:

**Andrew Rice**  
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## New!



[FFR service Overview – interactive guidance document](#)



[Product Roadmap](#) – This document sets out the actions to be taken forward for frequency response and reserve markets and details the principles that will govern the way that balancing services are procured in future.

## Coming soon



LOOK OUT for our new YouTube channel where we will be uploading a series of videos explaining how the FFR service works

## Key messages

### Tender rejection codes

The table below provides guidance as to the reasons that a tender has been rejected. They can be matched against the numbers in the 'Reason Code' section of the Post Tender Report.

No.	FFR Reason Code	Comment
1	Beneficial, but requirement already satisfied	While the price submitted was considered beneficial, on this occasion there were tenders that provided a higher benefit and were accepted first. This resulted in the requirement being satisfied.
2	Price not beneficial across tendered period	The price submitted was too high and did not provide any contract benefit against alternative actions including the mandatory and optional market.
3	Does not meet tender prerequisites	Please refer to the 'Technical Parameters' section using the following link to determine the criteria necessary to participate in the FFR market <a href="https://www.nationalgrid.com/uk/electricity/balancing-services/frequency-response-services/firm-frequency-response">https://www.nationalgrid.com/uk/electricity/balancing-services/frequency-response-services/firm-frequency-response</a>
4	Multiple tenders received for the same unit	Only the most valuable tender(s) of the total group of submitted tenders was considered.

### Enhanced Frequency Response (EFR)

Now that the first EFR battery has become operational, the volume of response that will be provided from units with an EFR contract will be included in the amount of already procured dynamic response. EFR will be considered on a 1 for 1 basis where 1 MW of EFR is equal to 1MW of dynamic FFR. These contracts begin delivering between October 2017 and March 2018. The MW provided from EFR contracts will be phased in in the information provided in the MIR charts. Between now and July 2018 EFR contracts have been assumed to provide 50% of their contracted volume. From July 2018, this assumption is amended to reflect all contracts delivering 100% of their contracted volume.

## Market Trends

- **1339** tenders were received between January 2017 and December 2017. These were divided between:
  - **791** Dynamic tenders
  - **528** Non-Dynamic tenders

and were submitted by:

- **38** different providers
- **71** different units
- There has been a significant increase in the number of Dynamic tenders received this year. From **6** tenders received in January 2017 to just under **200** tenders in November 2017.
- There was a **78%** decrease in the number of tenders submitted in the Non-Dynamic market between January 2017 and December 2017.
- In November 2017, **170** tenders were received from one single provider; the highest number to date.
- December 2017 marked the highest number of active FFR contracts at **42**.

## Appendix 1: February 2018 Requirements

### Dynamic

The three charts below display the volume of frequency response left to contract for the month ahead for Dynamic response.

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 green shaded area represents the Minimum Dynamic Requirement.

The grey shaded area is the remaining volume to contract. This volume can be met from Dynamic or Non-Dynamic 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 Non-Dynamic services have been removed.

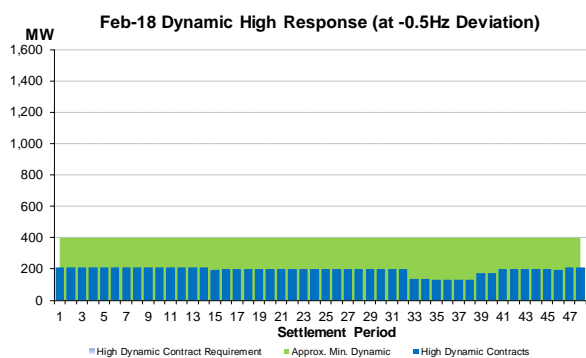
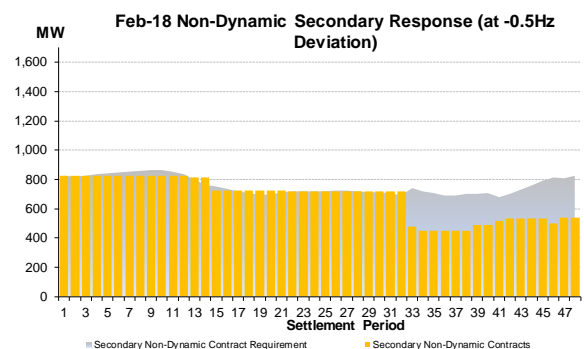
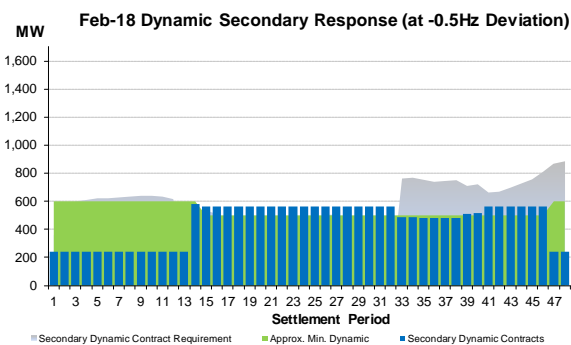
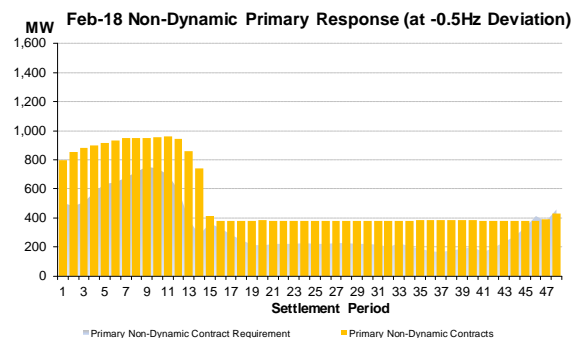
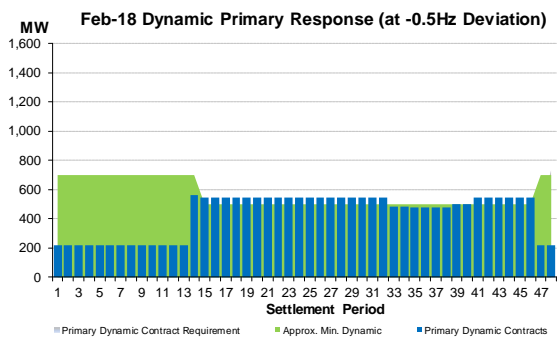
### Non-Dynamic

The two charts on this page display the volume of frequency response left to contract for the month ahead for Non-Dynamic response.

Non-Dynamic, or post-fault, response can be used to displace the remaining response requirements once the Minimum Dynamic proportion has been satisfied.

The orange 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 volume to contract represented by the blue/grey shaded area is the same volume that is displayed on the Dynamic service charts above as either service can provide this volume.



## Appendix 2: February 2018 Requirement Volume Tables

*Dynamic FFR requirements for TR 97*

Settlement Period	Dynamic response required (MW)		
	Primary	Secondary	High
1	479	359	191
2	479	359	191
3	479	359	191
4	479	359	191
5	479	359	191
6	479	359	191
7	479	359	191
8	479	359	191
9	479	359	191
10	479	359	191
11	479	359	191
12	479	359	191
13	479	359	191
14	139	19	191
15	0	0	207
16	0	0	199
17	0	0	199
18	0	0	199
19	0	0	199
20	0	0	199
21	0	0	199
22	0	0	199
23	0	0	199
24	0	0	199
25	0	0	199
26	0	0	199
27	0	0	199
28	0	0	199
29	0	0	199
30	0	0	199
31	0	0	199
32	0	0	199
33	16	14	262
34	18	15	263
35	21	21	269
36	21	21	269
37	21	21	269
38	21	21	269
39	0	0	228
40	0	0	226
41	0	0	198
42	0	0	198
43	0	0	198
44	0	0	198
45	0	0	198
46	0	0	207
47	478	357	190
48	478	357	190

*Non-Dynamic FFR requirements for TR 97*

Settlement Period	Non-Dynamic response required (MW)		
	Primary	Secondary	High
1	0	0	0
2	0	0	0
3	0	1	0
4	0	12	0
5	0	19	0
6	0	21	0
7	0	28	0
8	0	36	0
9	0	40	0
10	0	39	0
11	0	31	0
12	0	14	0
13	0	0	0
14	0	0	0
15	0	32	0
16	0	14	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	0	0	0
26	0	3	0
27	0	4	0
28	0	0	0
29	0	0	0
30	0	0	0
31	0	0	0
32	0	0	0
33	0	262	0
34	0	271	0
35	0	256	0
36	0	241	0
37	0	243	0
38	0	253	0
39	0	211	0
40	0	219	0
41	0	160	0
42	0	171	0
43	0	198	0
44	0	228	0
45	0	257	0
46	0	312	0
47	0	270	0
48	0	286	0

### Appendix 3: 12-Month Total Requirement

The following charts provide a breakdown of the Dynamic and Non-Dynamic requirements over the next 12 months. These are displayed by settlement periods within each month. The Minimum Dynamic requirement is represented by the green line and maximum Non-Dynamic is represented by the black line. Any Non-Dynamic requirement can be met by either a Dynamic or Non-Dynamic service depending on which is more economical.

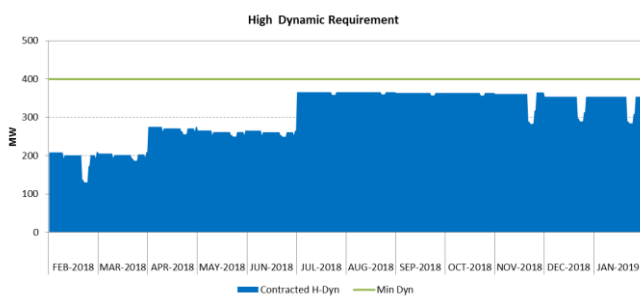
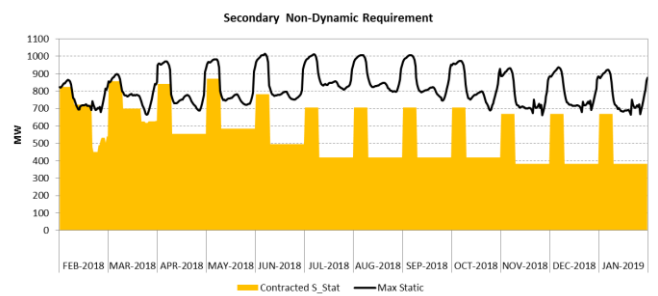
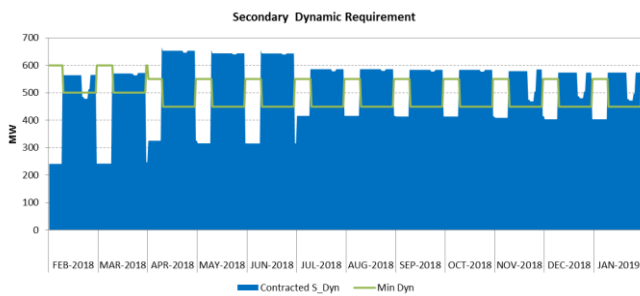
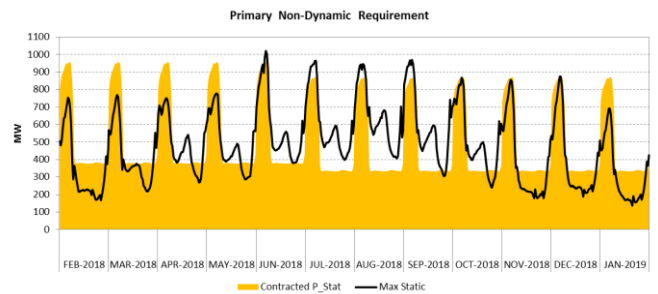
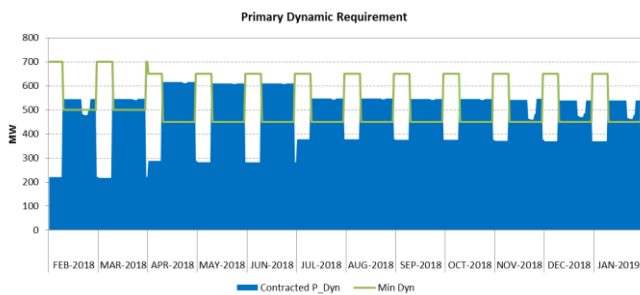
The solid area in each graph displays the total volume of contracts currently in place. This incorporates both firm and optional services procured through bilateral contracts. Historically they have been the lowest cost option compared to most tenders therefore they are instructed and also included in this report.

#### Dynamic

There is only a daytime primary and secondary Dynamic requirement against our Minimum Dynamic requirement during the peak periods in February 2018. There still remains an overnight requirement to satisfy in both markets across the full 12 months. A Dynamic high requirement still remains across the whole day. Overnight tenders would be considered where more value is observed.

#### Non-Dynamic

Non-Dynamic response can be contracted up to the black line. There is a requirement for overnight secondary Non-Dynamic response. A daytime requirement opens up from March 2018.



## Appendix 4: Historical Profile of Firm Frequency Response (FFR) Value

The following information provides a historical overview of FFR value variation during the last two years. A breakdown of the relative values of Primary, Secondary and High Response over the same two years is also provided. This study is based on historical data taken from **1 October 2015 to 30 September 2017**. It is the same data used to calculate the costs reported within the Monthly Balancing Services Summary and for the avoidance of doubt is not a forecast of future value variation.

The FFR assessment principles document highlights that the main economical assessment of the value of individual FFR tenders is based upon the following costs:

- Cost of alternative service holding fees
- Cost of alternative utilisation (Bid Offer Acceptances)
- Cost of alternative margin services (BM Offers)

As the profile across the day is different across these three alternative actions, the costs have been combined for reasons of simplicity. It is important however, to note that the assessment has to use forecasts for some of these alternative costs. The assessment therefore has to take account of the associated uncertainty with using forecasts when considering the value of any tender for any time period. From this point, the document will refer to the value of FFR.

The relative values shown in Figures 1 and 2 provide a comparison of every settlement period relative to each other.

The lower, average and upper relative values for each of the 48 settlement periods that make up the daily cost have been calculated and plotted in Figure 1 (summer) and Figure 2 (winter). Periods of low and high value are highlighted in Figure 1. Higher value periods are typically a result of the use of alternative margin services, especially notable in the winter during Settlement Periods **33-39**.

The following is an example of how FFR values are assessed. In Figure 2, for Settlement Period 17, the average relative value is approximately **2%** while for Period 35, the proportional value is approximately **4%**. The interpretation is therefore that Period 35 is **2** times more valuable than Period 17.

The breakdown of the Primary, Secondary and High Response values over the same time period are included in the Appendix in Table 1 (summer) and Table 2 (winter).

This breakdown shows that during the winter overnight settlement periods (33-41) there is a larger share of value in Secondary Response with 70-75% which reflects the value provided from margin.

Contrast this to the summer, during overnight settlement periods (3-12) there is a significant proportion of value in High Response (40-45%). This is because demand is likely to be low, resulting in a greater requirement and hence value of high response.

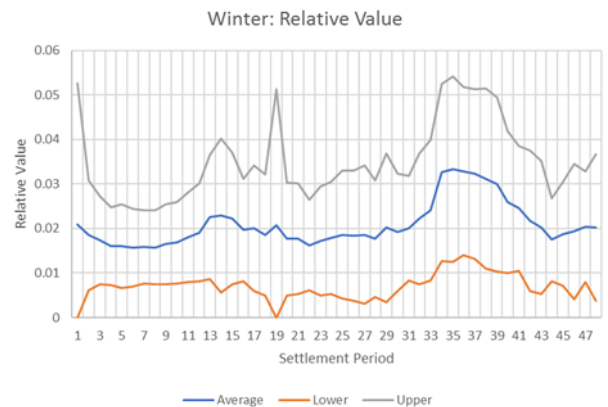


Figure 2: Relative Value of FFR by Settlement Period (Winter)

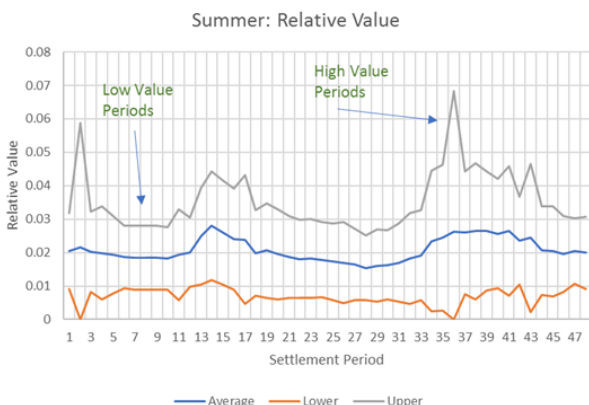


Figure 1: Proportional Value of FFR by Settlement Period (Summer)

## Appendix 5: Proportional Response value by component

Table 1: Summer (Nov – Mar)

Settlement Period	Summer		
	Share of Value		
	Primary	Secondary	High
1	29%	35%	36%
2	38%	41%	22%
3	27%	31%	42%
4	26%	28%	45%
5	25%	25%	49%
6	25%	25%	50%
7	24%	23%	53%
8	24%	23%	53%
9	24%	24%	52%
10	25%	25%	50%
11	25%	31%	44%
12	28%	33%	39%
13	31%	40%	30%
14	31%	43%	26%
15	28%	49%	23%
16	26%	51%	23%
17	25%	53%	21%
18	24%	52%	24%
19	22%	56%	22%
20	22%	54%	24%
21	23%	52%	24%
22	23%	52%	25%
23	23%	52%	25%
24	24%	51%	26%
25	24%	50%	27%
26	23%	50%	27%
27	23%	47%	30%
28	24%	44%	32%
29	21%	50%	29%
30	20%	53%	27%
31	20%	54%	25%
32	21%	55%	24%
33	21%	56%	23%
34	18%	65%	17%
35	19%	65%	16%
36	25%	62%	13%
37	17%	68%	15%
38	17%	67%	15%
39	18%	67%	15%
40	17%	67%	16%
41	19%	65%	16%
42	19%	64%	17%
43	19%	63%	18%
44	17%	62%	21%
45	18%	59%	23%
46	20%	55%	25%
47	29%	43%	28%
48	29%	40%	32%

Table 2: Winter (Apr – Oct)

Settlement Period	Winter		
	Share of Value		
	Primary	Secondary	High
1	26%	42%	32%
2	26%	41%	33%
3	27%	38%	35%
4	26%	35%	38%
5	26%	34%	40%
6	26%	32%	43%
7	25%	31%	43%
8	26%	31%	43%
9	27%	31%	42%
10	27%	32%	41%
11	29%	34%	37%
12	30%	36%	34%
13	28%	45%	28%
14	26%	46%	28%
15	27%	48%	25%
16	25%	49%	26%
17	23%	52%	25%
18	24%	50%	26%
19	25%	54%	21%
20	22%	52%	26%
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22	22%	52%	26%
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24	18%	61%	21%
25	18%	62%	21%
26	19%	60%	21%
27	19%	61%	19%
28	19%	60%	20%
29	14%	69%	17%
30	14%	69%	18%
31	14%	69%	17%
32	14%	70%	15%
33	14%	72%	14%
34	16%	73%	11%
35	16%	74%	10%
36	16%	73%	11%
37	18%	71%	11%
38	17%	71%	12%
39	19%	69%	12%
40	20%	65%	15%
41	21%	63%	16%
42	21%	60%	19%
43	22%	55%	23%
44	23%	52%	26%
45	22%	53%	25%
46	24%	48%	27%
47	27%	46%	27%
48	27%	43%	30%