

# Firm Frequency Response (FFR) Market Information Report for Jan-18

**Published**

Nov-18

## Key Points

This Market Information Report is relevant for tenders submitted in Dec-18 for delivery in **Jan-19**

Tenders from eligible service providers for Firm Frequency Response should be submitted on **Mon 03-Dec-18** (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 **Tue 18-Dec-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.

In line with the standardisation outlined in the Product Road Map, procurement of FFR will only take place across the standard 6 EFA blocks. Tenders must therefore only start, and end, at the following times: 2300, 0300 0700 1100 1500 1900. Submitted tenders must have a minimum window availability of 4 hours in line with EFA blocks.

Please note that this is a full tender. Tenders should therefore be submitted for delivery between **Jan-19** and **Mar-21**

The details regarding the dates, times and dial in details for the upcoming FFR Result WebEx can be found [here](#).

Real-time data i.e. demand and frequency data, over the last 60 minutes can now be found on the [Realtime Extranet](#) section on the National Grid website. [Historic frequency data](#) as far back as 2014 can also be accessed for GB data at 1 second resolution.

For further information please contact your account manager or:

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This Market Information Report provides information to FFR providers on the requirement for the tender (TR 108) for delivery between Jan-19 and Mar-21.

## Requirements for Jan-19 (TR 108)

### Primary Response:

*Month Ahead:* A dynamic primary requirement exists in EFA blocks 1 and 2. There is no requirement outside these blocks.

*Full Term:* The dynamic primary requirement for EFA blocks 3 to 6 has been satisfied until Summer 2019. Volume remains to be procured for EFA blocks 1 and 2 across this period.

### Secondary Response:

*Month Ahead:* A dynamic secondary requirement exists in EFA blocks 1 and 2. There is no requirement for dynamic secondary outside these blocks. A non-dynamic secondary requirement exists in all EFA blocks with larger volumes of requirement present in EFA block 5. As this requirement sits outside the minimum dynamic requirement, provision can be taken from either the dynamic or the non-dynamic market dependant on the economics of each solution.

*Full Term:* The dynamic secondary requirement for EFA blocks 3 to 6 has been satisfied until Summer 2019. Volume remains to be procured for EFA blocks 1 and 2 across this period. A non-dynamic secondary requirement exists in all EFA blocks.

### High Response:

*Month Ahead:* A dynamic high requirement is present across all 6 EFA blocks. The most prominent requirement is during EFA blocks 3 to 6.

*Full term:* There is a requirement for dynamic high in all EFA blocks in all periods.

A breakdown of the outstanding requirement for this tender round can be found in Appendix 1. A full breakdown of the long-term requirements can be found in Appendix 1 in the excel file.

## Forward Look at Requirements for Jan-18 onwards (TR 108)

In the next long term tender (TR108), we will be aiming to procure volume in specific periods. Exceptions will only be made where volume could be procured at zero cost. However, consideration will be given to the system impact of any decisions and we will not accept tenders if they are likely to have a detrimental effect, regardless of price. Any tenders with a cost greater than £0/MWh submitted for periods where no procurement requirement is indicated will not be accepted. The specific periods of procurement are shown in Appendix 8.

## Market Updates

### FCDM

As mentioned in the rationalisation of products update last October, we confirmed we would be removing FCDM from active procurement. We committed to ensuring parties could transition to an equivalent market. We can confirm that the live FCDM agreements will cease the earlier of 30 June 19 or the commencement of the fast-acting static auction trial, whichever comes first. As the IT platform and associated infrastructure for FCDM is no longer supported, and would require a system re-design and asset replacement programme, 30th June 2019 is the final deadline for the service.

The implementation plan for our new suite of frequency response products will be published on the Future of Balancing Services page in December. This report will provide more information on the products being introduced, and what the preconditions and dependencies of implementation are. It will also explore the interactions of implementing the new products with the existing FFR market.

### FFR Auction Trial

Ahead of the FFR auction trial in which weekly FFR procurement will be undertaken, a portion of the dynamic and non-dynamic FFR requirement will be transferred from the monthly tenders to the weekly auction. Please look out for updates on the [Future of Balancing Services](#) webpage.

### Response BOA and Holding Volume and Cost

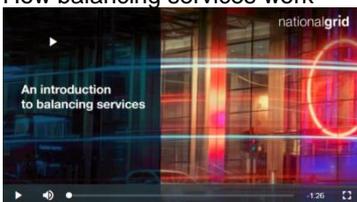
This information is in Appendix 7 of the adjoining excel file.

5 explanatory videos have been unloaded to the National Grid website. Each video focuses on a different element of Frequency Response as a balancing service, how Electricity National Control Centre makes use of it and how the Firm Frequency Response assessment is undertaken.

To view the videos, click on the linked images below.

**Video 1**

How balancing services work



**Video 2**

The National Grid electricity control room



**Video 3**

Frequency response



**Video 4**

Firm frequency response



**Video 5**

The FFR assessment process



**For providers wishing to start a tender on the last day of the previous month, these tenders cannot start earlier than 2300 or they will be deemed as non-compliant.**

The minimum requirement across each specific EFA block will determine how much volume will be procured for each of the 6 daily 4 hour blocks.

Any outstanding shape will be satisfied, where necessary, closer to real time by the Electricity National Control Centre.

*Testing*

Providers are required to have successfully passed FFR testing of their asset by the National Grid Generator Compliance Team prior to tendering in for month ahead delivery. E.g. If tendering to provide a FFR service starting on 1st Jan-19, the unit must have passed testing prior to the tender submission window closing on the 1st business day in Dec-18. Tenders that do not meet this requirement will be deemed non-compliant and automatically rejected.

*Limiting tenders*

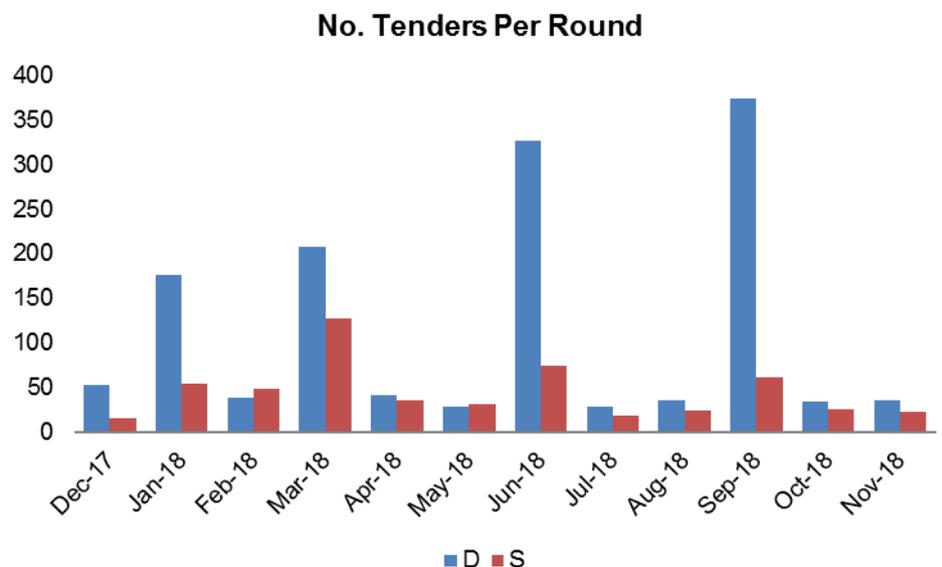
Providers are limited to submitting 2 tenders per unit, per tender period. A tender period is considered to be; month ahead, quarter ahead and per season. All-or-nothing bids will be considered as 1 tender submission.

**Dec-18 FFR Delivery**

**72** active FFR contracts are due to provide FFR in Dec-18. These contracts are made up of:

- **47** dynamic contracts
- **25** non-dynamic contracts
- **1** contracts by BMU providers
- **71** contracts by NBMU providers

The chart below displays the number of tenders submitted in the FFR market for the last 12 months by service type.



**Key messages**

*Tender rejection codes*

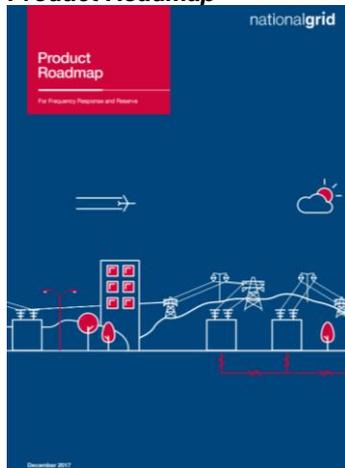
The table below provides guidance as to the reasons why a tender has been rejected. They can be matched against the numbers in the 'Reason Code' section of the Post Tender Report.

**FFR service Overview**



Interactive guidance document

**Product Roadmap**



This document sets out the actions to be taken forward for frequency response and reserve.

No.	FFR Reason Code	Comment
1	Beneficial	While the price submitted was considered beneficial, on this occasion this tender was not accepted for one of the following reasons:  <b>1.1.</b> The outstanding or desired procurement requirement has already been satisfied by more beneficial tenders <b>1.2.</b> There was no outstanding requirement <b>1.3.</b> The desired volume against the National Grid procurement strategy for future tender months had already been satisfied <b>1.4.</b> This tender formed part of an all-or-nothing group which did not collectively deliver enough benefit to be considered
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)**

100% of EFR is included in the requirements from July 2018.

**Procured Volume**

When determining which tenders to accept, National Grid will take account of its planned procurement strategy. In general, a measured approach is taken to determine the appropriate volume to procure throughout the duration of the tender

**Appendix 1:**

A breakdown of the outstanding month ahead requirement for this tender round. The full term tender round detail can be found in Appendix 3.

**Dynamic FFR requirements for TR 108**

EFA Block	Dynamic Response Required (MW)		
	Primary	Secondary	High
1	244	110	10
2	244	110	10
3	0	0	35
4	0	0	35
5	0	0	90
6	0	0	35

**Non-Dynamic FFR requirements for TR 108**

EFA Block	Non-Dynamic Response Required (MW)		
	Primary	Secondary	High
1	0	161	0
2	0	114	0
3	0	98	0
4	0	93	0
5	0	296	0
6	0	73	0

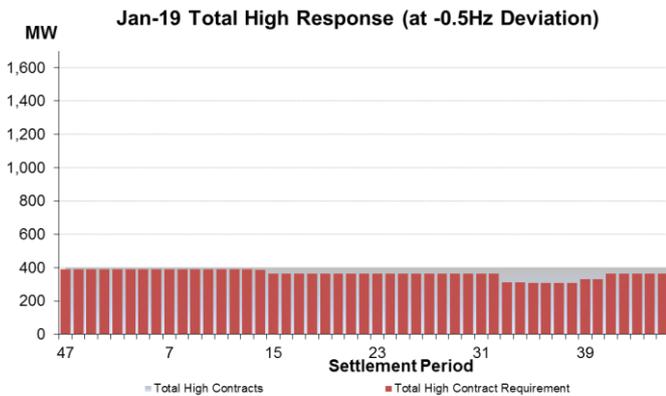
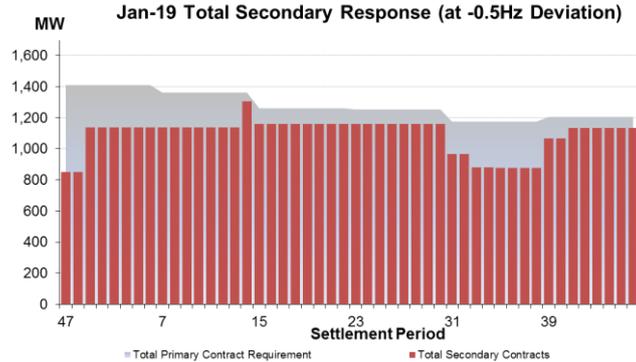
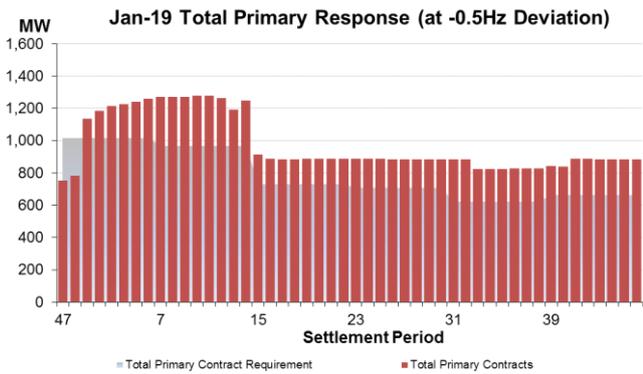
**Appendix 2:**  
**Jan-19**  
**Requirements**

The three charts below display the volume of frequency response left to contract at month ahead against the total response requirements. The red bars represent existing contracted service provision (both dynamic and non-dynamic) including any optional non-FFR services routinely used that National Grid forecast to be cost effective for the month ahead. The grey shaded area is the remaining volume to contract.

**Except for circumstances where there is a specific dynamic requirement and for month ahead, the requirement will be taken from either dynamic or non-dynamic providers where deemed economic to do so. This means that any requirement found in the non-dynamic market may be procured in the dynamic market if considered more beneficial. With no primary non-dynamic market in existence, procurement of this volume across any EFA block will instead be taken from the dynamic market.**

The breakdown of the requirement against dynamic and non-dynamic response can be seen in the tables in appendix 1.

In the move to standard EFA block window durations, the minimum of the total requirement across each EFA block outlines the level to be procured. In light of this transition, the minimum dynamic requirement remains a key component to be satisfied and outstanding volume against this will continue to be procured for operational purposes. For Jan-19, this is highlighted in the table in Appendix 1.



### Appendix 3: Full Term Requirement

The following charts provide a breakdown of the dynamic and non-dynamic requirements over the tendering period. 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.

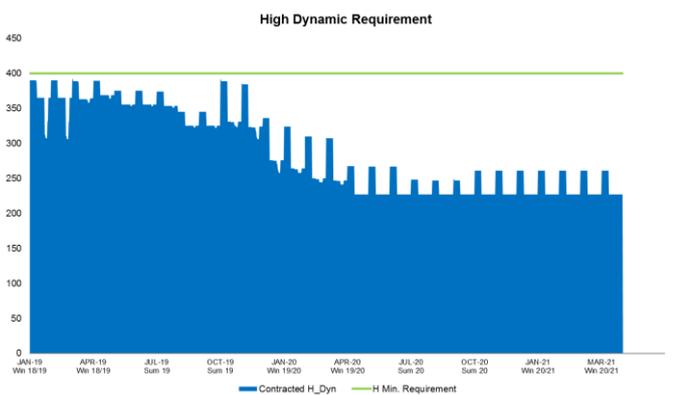
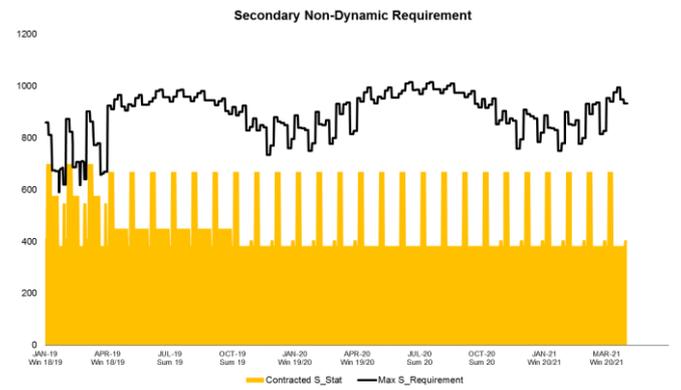
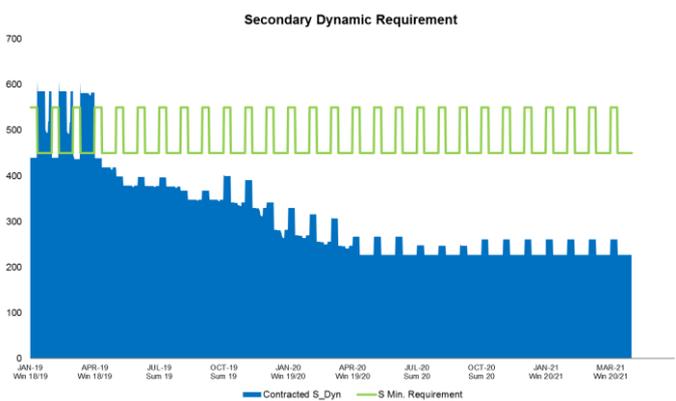
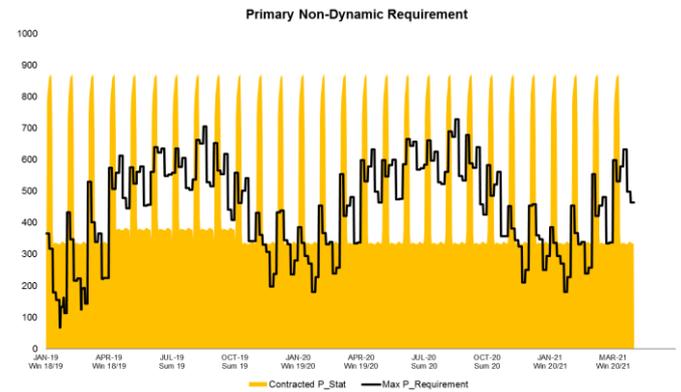
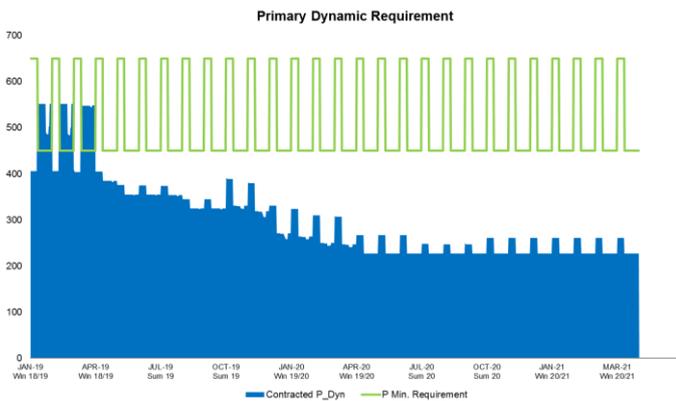
The area under each graph displays the total volume of contracts currently in place. This incorporates both firm and optional services procured through bilateral contracts. Historically they have been the lowest cost option compared to most tenders therefore they are instructed and also included in this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

#### Dynamic

There is no primary or secondary dynamic requirement in EFA blocks 3 to 6 until Summer 2019. There remains an overnight requirement to satisfy in both markets throughout the full term tender period. A dynamic high requirement remains across all EFA blocks in all tender periods.

#### Non-Dynamic

Non-Dynamic response can be contracted up to the black line. There is a non-dynamic secondary requirement for the entire tender period.. Primary non-dynamic volume will be procured from the dynamic market where economic to do so.



## 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 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**.

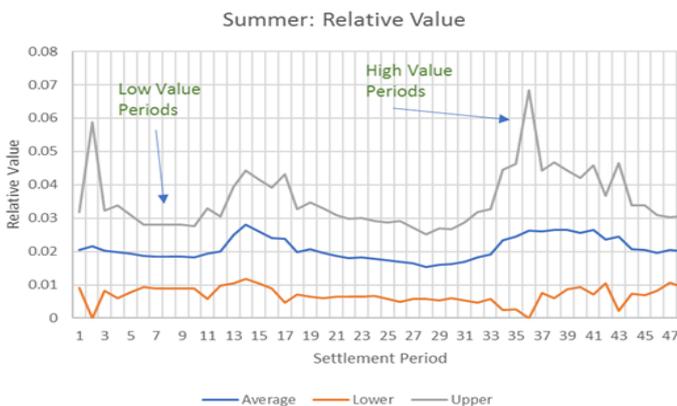


Figure 1: Proportional Value of FFR by Settlement Period (Summer)

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.

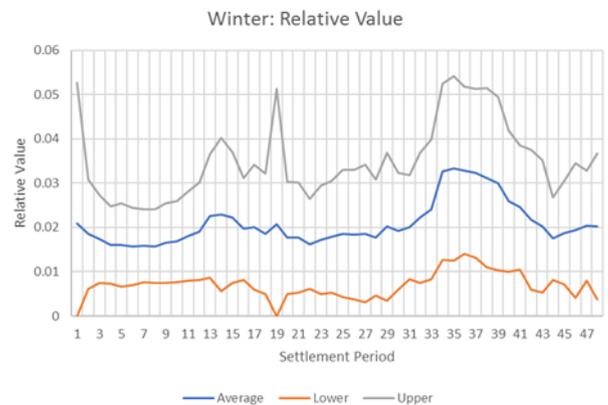


Figure 2: Relative Value of FFR by Settlement Period (Winter)

## Appendix 5: Proportional Value of FFR by Settlement Period

The tables below provide the background data to figures 1 and 2 above. This data is also contained in Appendix 5 of the excel file.

Table 1: Summer (Apr – Oct)

Settlement Period	Summer		
	Proportional Value		
	Average	Lower	Upper
1	0.020433	0.0090568	0.03181
2	0.021533	0	0.058754
3	0.02018	0.0081317	0.032229
4	0.019801	0.0058907	0.033711
5	0.019361	0.0078785	0.030843
6	0.018686	0.0094367	0.027936
7	0.018457	0.0088851	0.028029
8	0.018504	0.0089619	0.028047
9	0.018507	0.0089062	0.028107
10	0.018245	0.0088284	0.027662
11	0.019289	0.0056872	0.032892
12	0.020073	0.009725	0.030422
13	0.025019	0.0105523	0.039486
14	0.02808	0.0118922	0.044268
15	0.026033	0.0104737	0.041593
16	0.023951	0.0088068	0.039096
17	0.023892	0.0046278	0.043156
18	0.019869	0.0070425	0.032696
19	0.020594	0.0063904	0.034798
20	0.019489	0.006019	0.032959
21	0.018779	0.00655	0.031007
22	0.018075	0.0063674	0.029783
23	0.018244	0.0063993	0.030089
24	0.017886	0.0066154	0.029157
25	0.017239	0.0056884	0.02879
26	0.017	0.0048734	0.029127
27	0.016449	0.0058103	0.027087
28	0.015408	0.0056937	0.025122
29	0.01612	0.0052163	0.027023
30	0.016342	0.0059913	0.026693
31	0.016994	0.0052611	0.028727
32	0.018199	0.0046871	0.031711
33	0.019186	0.0056874	0.032684
34	0.023452	0.0024111	0.044493
35	0.024541	0.0027122	0.046369
36	0.02634	0	0.068389
37	0.025958	0.0075351	0.04438
38	0.026383	0.0060569	0.046709
39	0.026555	0.0087153	0.044395
40	0.025606	0.0092317	0.041981
41	0.026448	0.0070774	0.045819
42	0.023572	0.0103709	0.036773
43	0.024375	0.0022737	0.046476
44	0.02059	0.0073474	0.033834
45	0.020356	0.0068297	0.033882
46	0.019532	0.0082147	0.03085
47	0.020451	0.0106712	0.03023
48	0.019923	0.0091385	0.030707

Table 2: Winter (Nov – Mar)

Settlement Period	Winter		
	Proportional Value		
	Average	Lower	Upper
1	0.02098886	0	0.052636
2	0.01847584	0.0061735	0.030778
3	0.01731116	0.0074099	0.027212
4	0.01609112	0.0073866	0.024796
5	0.01599554	0.0066316	0.025359
6	0.01570355	0.0069584	0.024449
7	0.01583563	0.0075677	0.024104
8	0.01574464	0.0074063	0.024083
9	0.01646762	0.0074777	0.025458
10	0.0167957	0.0077324	0.025859
11	0.0180945	0.007994	0.028195
12	0.01912494	0.0081814	0.030069
13	0.02252939	0.0085995	0.036459
14	0.02292868	0.005685	0.040172
15	0.02227854	0.0075098	0.037047
16	0.01969832	0.0081764	0.03122
17	0.02009697	0.0060541	0.03414
18	0.01854429	0.0049941	0.032094
19	0.02077347	0	0.051282
20	0.01763538	0.0049166	0.030354
21	0.01775842	0.005324	0.030193
22	0.01627084	0.0060666	0.026475
23	0.01726167	0.0050217	0.029502
24	0.01789986	0.0053639	0.030436
25	0.01862037	0.0042198	0.033021
26	0.01841293	0.0038142	0.033012
27	0.01863923	0.0031333	0.034145
28	0.01770455	0.0045913	0.030818
29	0.02020937	0.0034979	0.036921
30	0.01915349	0.0059967	0.03231
31	0.02006174	0.0083366	0.031787
32	0.0221834	0.0075234	0.036843
33	0.02410633	0.0083769	0.039836
34	0.032578	0.0127633	0.052393
35	0.03334998	0.0124873	0.054213
36	0.03288638	0.0140503	0.051722
37	0.03228603	0.0132391	0.051333
38	0.03121332	0.0109266	0.0515
39	0.02992614	0.0103686	0.049484
40	0.0259286	0.009995	0.041862
41	0.02453442	0.0104726	0.038596
42	0.02176889	0.0060094	0.037528
43	0.02023719	0.0052538	0.035221
44	0.0174795	0.0081903	0.026769
45	0.01873756	0.0070827	0.030392
46	0.01935592	0.0042082	0.034504
47	0.02039713	0.0079027	0.032892
48	0.02023475	0.0038269	0.036643

## Appendix 6: Proportional Response value by component

This data is also contained in Appendix 6 of the excel file.

Table 1: Summer (Apr – Oct)

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 (Nov – Mar)

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%
21	22%	52%	26%
22	22%	52%	26%
23	18%	60%	23%
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%

## Appendix 8: Forward Look at Requirements for Jan-18 onwards (TR 108)

In the next long term tender (TR108), we will be aiming to procure volume in specific periods. Exceptions will only be made where volume could be procured at zero cost. However, consideration will be given to the system impact of any decisions and we will not accept tenders if they are likely to have a detrimental effect, regardless of price. Any tenders with a cost greater than £0/MWh submitted for periods where no procurement requirement is indicated will not be accepted. The specific periods of procurement are shown below.

### Dynamic Primary & Secondary:

Period:	EFA Block 1	EFA Block 2	EFA Block 3	EFA Block 4	EFA Block 5	EFA Block 6
Month ahead (Jan 19)	Yes	Yes	No	No	No	No
Quarter ahead (Jan 19 – Mar 19)	Yes	Yes	No	No	No	No
Summer 19 (Apr 19 – Sep 19)	Yes	Yes	No	No	No	No
Winter 19/20 (Oct 19 – Mar 20)	Yes	Yes	Yes	Yes	Yes	Yes
Summer 20 (Apr 20 – Sep 20)	Yes	Yes	Yes	Yes	Yes	Yes
Winter 20/21 (Oct 20 – Mar 21)	Yes	Yes	No	No	No	No

### Dynamic High:

Period:	EFA Block 1	EFA Block 2	EFA Block 3	EFA Block 4	EFA Block 5	EFA Block 6
Month ahead (Jan 19)	Yes	Yes	Yes	Yes	Yes	Yes
Quarter ahead (Jan 19 – Mar 19)	No	No	No	No	No	No
Summer 19 (Apr 19 – Sep 19)	No	No	No	No	No	No
Winter 19/20 (Oct 19 – Mar 20)	No	No	Yes	Yes	Yes	Yes
Summer 20 (Apr 20 – Sep 20)	No	No	Yes	Yes	Yes	Yes
Winter 20/21 (Oct 20 – Mar 21)	No	No	No	No	No	No

### Non-dynamic Secondary:

Period:	EFA Block 1	EFA Block 2	EFA Block 3	EFA Block 4	EFA Block 5	EFA Block 6
Month ahead (Jan 19)	Yes	Yes	Yes	Yes	Yes	Yes
Quarter ahead (Jan 19 – Mar 19)	Yes	Yes	Yes	Yes	Yes	Yes
Summer 19 (Apr 19 – Sep 19)	Yes	Yes	Yes	Yes	Yes	Yes
Winter 19/20 (Oct 19 – Mar 20)	No	No	Yes	Yes	Yes	Yes
Summer 20 (Apr 20 – Sep 20)	No	No	Yes	Yes	Yes	Yes
Winter 20/21 (Oct 20 – Mar 21)	No	No	Yes	Yes	No	No