



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

Published Aug-18

Key Points

This Market Information Report is relevant for tenders submitted in Sep-18 for delivery in **Oct-18**.

Tenders from eligible service providers for Firm Frequency Response should be submitted on **Mon 03-Sep-18** (1st business day) for all tenders.

National Grid will notify service providers of the outcome of the tender assessment, and preliminary nominations, by **Tue 18-Sep-18** (12th 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.

Please note that this is a full tender. Tenders should therefore be submitted for delivery between **Oct-18** and **Mar-21**.

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

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 Sep-18 tender (TR 105) for delivery from Oct-18.

Requirements for Oct-18 FFR tender round (TR 105)

Primary Response:

Month-Ahead: A primary dynamic requirement exists in EFA blocks 1 and 2. A non-dynamic requirement exists in EFA blocks 3 to 6. With no primary non-dynamic market in operation, procurement of this volume will instead be taken directly from the dynamic market.

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

Secondary Response:

Month-Ahead: A secondary dynamic requirement exists in EFA blocks 1 and 2. For the remaining EFA blocks in the day, the dynamic requirement for secondary response has been satisfied.

A non-dynamic requirement exists across all 6 EFA blocks. More recently, the dynamic and non-dynamic prices have begun to converge. As this requirement sits outside of the minimum dynamic requirement, this non-dynamic requirement will be taken from either the dynamic or non-dynamic market dependant on the economics of each solution.

Full Requirement: Like the primary dynamic requirement, the secondary dynamic requirement is satisfied until Summer 2019. A requirement remains during the overnight period – EFA block 1 and 2.

High Response:

Month ahead: A high response requirement is present across all 6 EFA blocks in the day. This is most prominent in EFA blocks 3 through 6.

Full requirement: The overnight requirement is largely satisfied. A daytime requirement remains to be filled.

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.

Please note that submitted tenders must have a minimum window availability of 4 hours in line with EFA blocks.

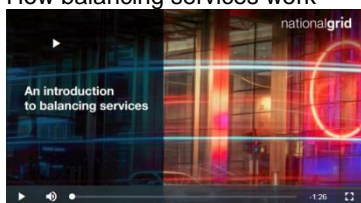
New

5 explanatory videos have been uploaded 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



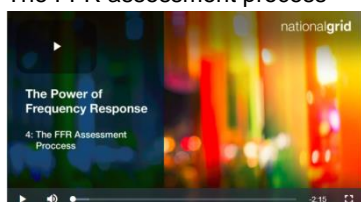
Video 4

Firm frequency response



Video 5

The FFR assessment process



Market Updates

Response BOA and Holding Volume and Cost

A high-level breakdown of the bid, offer and holding volumes and costs is available in Appendix 7 of the adjoining excel file. This data also offers aggregated view of how much response holding volume was purchased against price bands in the mandatory market.

Real Time and Historic Frequency Data

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.

Simplification of FFR

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. Updates on this will be issued at the end of July/early August. Please look out for this on the [Future of Balancing Services](#) webpage.

EFA Block Procurement

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.

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.

Contract Duration



Tenderers will only be able to make submissions for fixed monthly, quarterly and seasonal durations. The graphic to the left provides a breakdown of the possible tender structures for this round.

Please note that providers can submit tenders for any of the individual seasons in isolation (i.e. Summer 2019, Summer 2020) or for multiple seasons. Tenders must however provide a continuous service. This means that an all-or-nothing tender offering a service in October 2018 and Summer 2019 will be deemed as non-compliant as there is not a continuous service with the remaining months in the Winter 2018 period – November 2018 through March 2019 – being omitted.

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 requirements. E.g. If tendering to provide a FFR service starting on 1st October, the unit must have passed testing prior to the tender submission window closing on the 1st business day in September. Tenders that do not meet this requirement will be deemed non-compliant and will be 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.

FFR service Overview

nationalgrid

Firm Frequency Response (FFR) service overview



Main Menu

nationalgrid

Select icons to navigate to relevant sections of this document:



Interactive guidance document

Product Roadmap

nationalgrid



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.

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. Please note that reason 1 has been updated. The new commentary will apply from TR 103 onwards.

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: <ul style="list-style-type: none"> a. The outstanding or desired procurement requirement has already been satisfied by more beneficial tenders b. There was no outstanding requirement c. The desired volume against the National Grid procurement strategy for future tender months had already been satisfied d. 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 https://www.nationalgrid.com/uk/electricity/balancing-services/frequency-response-services/firm-frequency-response
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: Oct-18 Requirement Volume Tables

Dynamic FFR Requirements for TR 105

EFA Block	Dynamic response required (MW)		
	Primary	Secondary	High
1	232	94	0
2	232	94	0
3	0	0	25
4	0	0	25
5	0	0	28
6	0	0	25

Non-Dynamic FFR Requirements for TR 105

Settlement Period	Non-Dynamic response required (MW)		
	Primary	Secondary	High
1	0	199	0
2	0	167	0
3	50	157	0
4	90	182	0
5	0	254	0
6	0	100	0

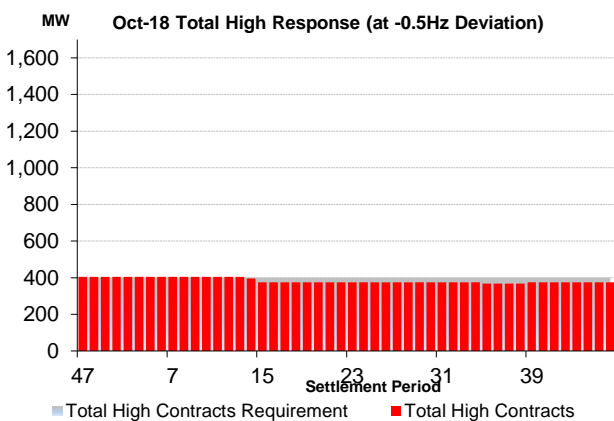
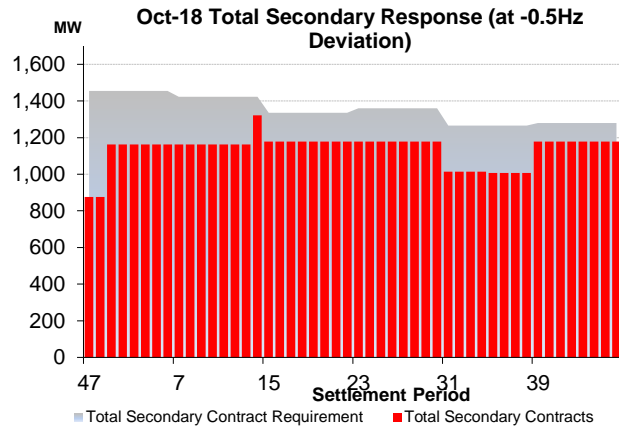
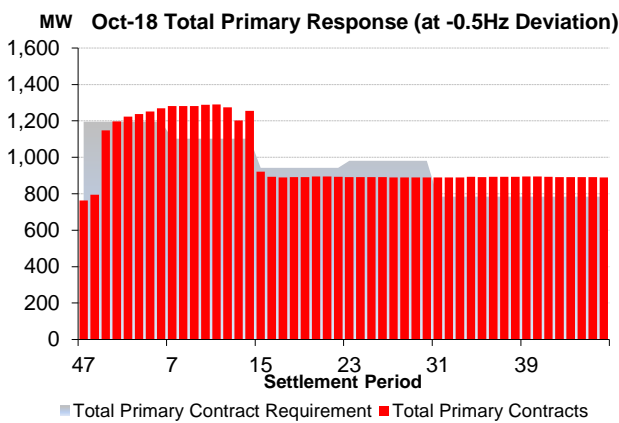
Appendix 2: Oct-18 Requirements

The three charts below display the volume of frequency response left to contract for the 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 NG forecast to be cost effective for the month ahead. The grey shaded area is the remaining volume to contract.

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 Oct-18, this is highlighted in the table above.



Appendix 3: Full Term Total 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. Any non-dynamic requirement can be met by either a dynamic or non-dynamic service dependent on which is more economical.

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.

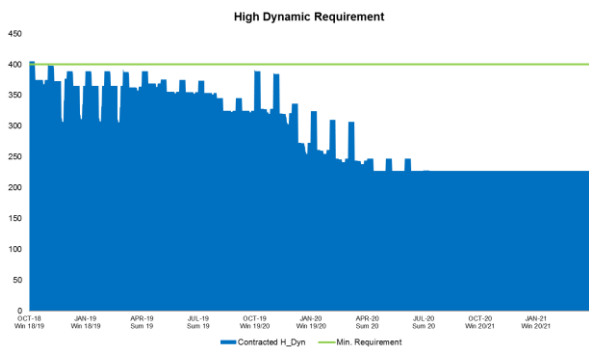
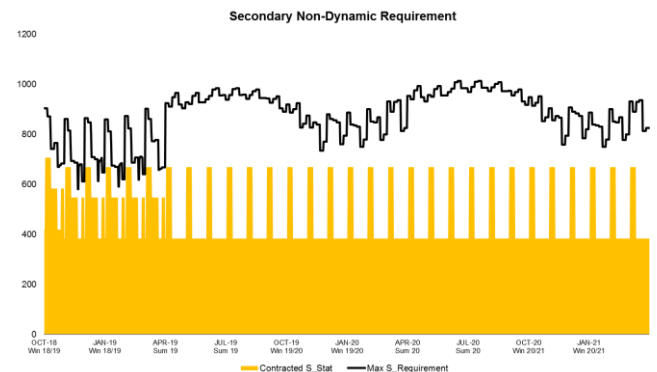
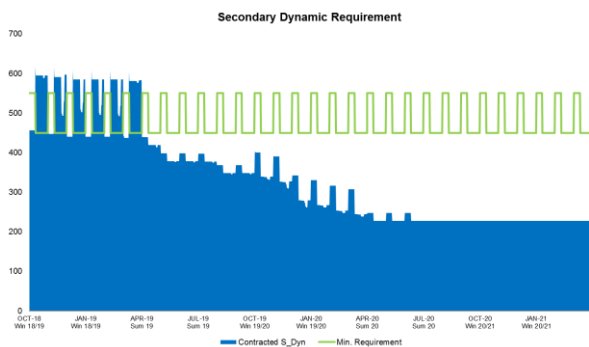
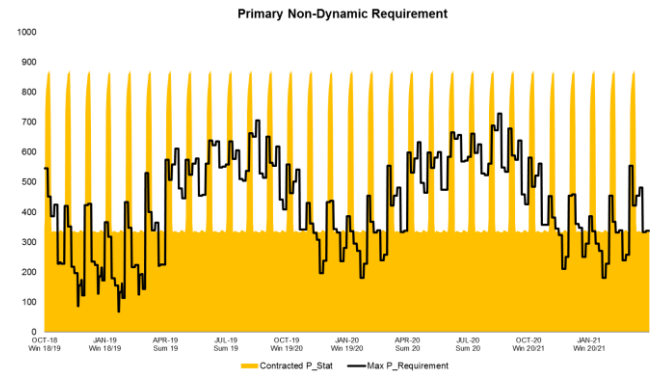
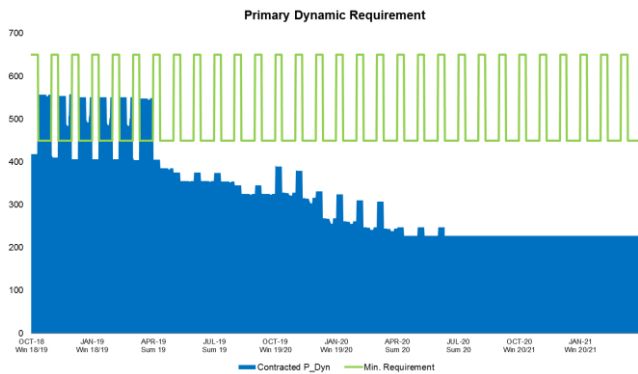
Dynamic

There is no primary or secondary dynamic requirement against our minimum dynamic requirement in EFA blocks 3 to 6 until Summer 2019. There remains an overnight requirement to satisfy in both markets across the full tendering period. A dynamic high requirement remains across many parts of the day.

Non-Dynamic

Non-Dynamic response can be contracted up to the black line. There is a non-dynamic secondary requirement for the entire daytime 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**.

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.

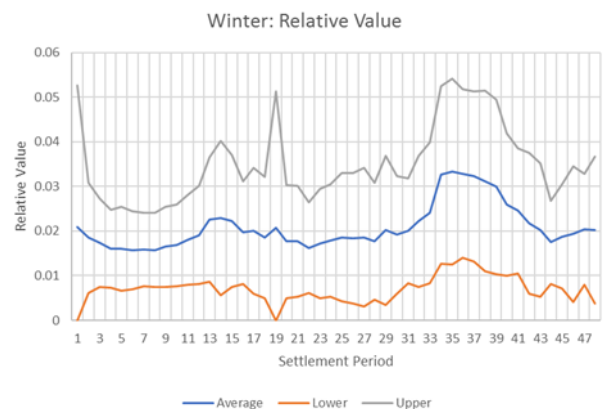


Figure 2: Relative Value of FFR by Settlement Period (Winter)

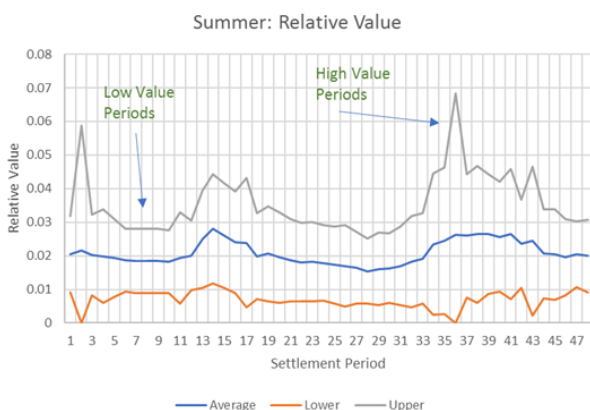


Figure 1: Proportional Value of FFR by Settlement Period (Summer)

Appendix 5: Proportional 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%