

SHORT TERM OPERATING RESERVE

ANNUAL MARKET REPORT 2009/10

Summary:

This market report is a reflection of the third year of the Short Term Operating Reserve (STOR) service between 1st April 2009 and 31st March 2010, and is designed to give a high level overview for interested parties. This market report is broken down by service type and day type to give a deeper understanding of the availability and utilisation of STOR over the last year. To see information broken down by Balancing Mechanism (BM) and Non-Balancing Mechanism (NBM) providers please refer to the Procurement Guidelines Report using the following link:

http://www.nationalgrid.com/NR/rdonlyres/BE6A7AE2-2B64-4314-9174-78F5D4F2B2A8/41027/PG_Report_0910_v2_Final.pdf

- In 2009/10 National Grid procured on average 2623 megawatts (MW) for the six seasons, at a cost of £68.3m in availability payments. This was made up on average of 2015 MW for the Committed service and 608 MW for the Flexible service. The actual MW availability provided by STOR during the peak demand of each day between 1st April 2009 and 31st March 2010, however, averaged out at 2068 MW. This represents an increase of 2.5% over the average MW availability for peak of each day during the 2008/09 term.
- There were 168 successful STOR tenders in 2009/10, of which 76 units were committed service providers and 92 units were flexible service providers.
- The average availability price for both Committed and Flexible STOR was £8.04/MW/h and the average utilisation price was £283.07/MWh. This represents an increase of 25% and 19%, respectively, on 2008/09 prices. The increase is attributed to high margin values, though current margin values are comfortably lower. Price increases of this magnitude are not expected to be observed in the foreseeable future.
- National Grid utilised STOR for 961.5 hours. This corresponds to a total of 104.7GWh of STOR, which led to utilisation payments of £23.1m; representing a reduction of 44% and 43% respectively on comparison with the total utilisation and its cost for 2008/09. The large volume of reserve that was utilised in 2008/9 could be considered exceptional when compared to 2009/10 and previous years.
- Considering both working and non-working days there were 3730 unit call offs in 2009/10, of which 2374 unit call offs were for Committed STOR units and 1356 unit call offs were for Flexible STOR units.
- The total expenditure for STOR during the 2009/10 term was £91.4m.

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1. Introduction

Short Term Operating Reserve (STOR) is the successor to Standing Reserve (SR) and this report analyses the use of STOR from 1st April 2009 to 31st March 2010. As of the published date of this report, the STOR service is serving its fourth year.

The STOR service is broken down into two distinct parts Committed and Flexible STOR. The Committed service providers (Both BMU and Non-BMU¹) provide their service for all required windows in each season, whereas Flexible service providers (Non-BMU only) can opt out of providing the service as they wish. When accepted both services receive an availability payment (paid on a £/MW/h basis) for the window they make themselves available for. On instruction by National Grid, they receive a utilisation payment paid on a £/MWh basis. Flexible STOR is assessed, in line with assessment principles, on a weekly basis and can be rejected if there is sufficient reserve/margin available to the system operator for the windows in which a service provider offers availability.

A general description of the STOR service can be found via the National Grid website at the following link:

<http://www.nationalgrid.com/NR/ronlyres/72D4386B-2027-474C-B281-2384F5B21A5E/40978/TR11STORGeneralDescriptionFinal.pdf>

The STOR year is broken down into six distinct seasons and is assessed via a tender round process. The dates of STOR seasons can be found in Appendix A of this document. The principles of assessing tenders for STOR service are found via the National Grid website at:

http://www.nationalgrid.com/NR/ronlyres/7B8CA1AB-4964-4965-B5A2-126C8C202A11/40677/STOR_Assessment_Principles.pdf

The STOR End of Year Report for 2008/09 can be found via the following link:

<http://www.nationalgrid.com/NR/ronlyres/DC24F8EF-FFC4-4681-B3F5-55B4E91ED61C/37024/STOREndofYearReport0809.pdf>

The STOR End of Year Report for 2007/08 can be found via the following link:

http://www.nationalgrid.com/NR/ronlyres/209E0BFA-17EB-4140-9CCF-3C92BE803191/27564/STOREndofYearReport0708_Final.pdf

¹ Non-BMU are generation or demand side participants (which may be individual or aggregated sites) which do not participate in the Balancing Mechanism
Balancing Services\Trading and Assessment

2. Tender Information for 2009/2010

The table below summarises all the tenders for 2009/10 by tender round, in terms of tendered MW, availability prices and utilisation prices. Generators and demand side participants (Non-BMU) competed in tendering for providing STOR service during 2009/10. The STOR service is of a twofold nature, which comprises of a committed service and a flexible service. From Table 1, we can see that no tenders were accepted in Tender Rounds 4 and 5.

Table 1: STOR Tender data

Season			3.1		3.2		3.3		3.4		3.5		3.6			
Type of Service			Flexible	Committed	Flexible	Committed	Flexible	Committed	Flexible	Committed	Flexible	Committed	Flexible	Committed		
MW	Tender Round	TR4	Tendered	-	40	-	40	-	40	-	40	-	40	-	40	
		Accepted	-	-	-	-	-	-	-	-	-	-	-	-	-	
		Rejected	-	40	-	40	-	40	-	40	-	40	-	40	-	40
	TR5	Tendered	-	843	4	826	-	830	-	712	140	580	132	580		
		Accepted	-	-	-	-	-	-	-	-	-	-	-	-		
		Rejected	-	843	4	826	-	830	-	712	140	580	132	580		
	TR6	Tendered	18	1283	18	1270	-	1127	-	1094	140	962	132	962		
		Accepted	18	1283	18	1270	-	1127	-	1094	140	962	132	962		
		Rejected	-	-	-	-	-	-	-	-	-	-	-	-		
	TR7	Tendered	434	862	448	976	292	706	281	958	389	686	389	687		
		Accepted	434	862	448	976	292	706	281	958	389	686	389	687		
		Rejected	-	-	-	-	-	-	-	-	-	-	-	-		
	TR8	Tendered	-	-	-	-	177	169	201	112	184	5	134	53		
		Accepted	-	-	-	-	139	79	162	90	172	5	122	53		
		Rejected	-	-	-	-	38	90	39	22	12	-	12	-		
	TR9	Tendered	-	-	-	-	-	-	-	-	258	145	261	145		
		Accepted	-	-	-	-	-	-	-	-	254	145	257	145		
		Rejected	-	-	-	-	-	-	-	-	4	-	4	-		
	Tendered MW for season			452	3028	470	3112	469	2872	482	2916	1111	2418	1048	2467	
	Accepted MW for season			452	2145	466	2246	431	1912	443	2142	955	1798	900	1847	
	Rejected MW for season			-	883	4	866	38	960	39	774	156	620	148	620	
	Total Accepted MW			2597		2712		2343		2585		2753		2747		
	Availability Price (average £/MWh)*	Tender Round	TR4	Tendered	-	10.00	-	10.00	-	10.00	-	10.00	-	10.00	-	10.00
			Accepted	-	-	-	-	-	-	-	-	-	-	-	-	
			Rejected	-	10.00	-	10.00	-	10.00	-	10.00	-	10.00	-	10.00	-
		TR5	Tendered	-	8.64	8.90	8.71	-	8.65	-	9.28	8.84	9.47	8.84	9.47	
			Accepted	-	-	-	-	-	-	-	-	-	-	-	-	
Rejected			-	8.64	8.90	8.71	-	8.65	-	9.28	8.84	9.47	8.84	9.47		
TR6		Tendered	6.08	8.70	6.15	8.71	-	8.79	-	9.05	8.75	9.18	8.50	9.18		
		Accepted	6.08	8.70	6.15	8.71	-	8.79	-	9.05	8.75	9.18	8.50	9.18		
		Rejected	-	-	-	-	-	-	-	-	-	-	-	-		
TR7		Tendered	6.41	7.98	6.77	8.14	7.55	8.44	7.57	8.69	8.48	8.56	8.56	8.55		
		Accepted	6.41	7.98	6.77	8.14	7.55	8.44	7.57	8.69	8.48	8.56	8.56	8.55		
		Rejected	-	-	-	-	-	-	-	-	-	-	-	-		
TR8		Tendered	-	-	-	-	7.10	7.31	7.29	8.72	8.50	8.75	8.40	8.98		
		Accepted	-	-	-	-	7.25	8.95	7.12	8.95	8.44	8.75	8.30	8.98		
		Rejected	-	-	-	-	5.82	5.87	8.23	7.77	9.20	-	9.20	-		
TR9		Tendered	-	-	-	-	-	-	-	-	8.53	7.45	8.50	7.45		
		Accepted	-	-	-	-	-	-	-	-	8.53	7.45	8.50	7.45		
		Rejected	-	-	-	-	-	-	-	-	8.90	-	8.90	-		
*Average Accepted Availability Price per Season £/MWh/h			7.29		7.44		8.20		8.27		8.52		8.50			
Utilisation Price (average £/MWh)*		Tender Round	TR4	Tendered	-	325.00	-	325.00	-	325.00	-	325.00	-	325.00	-	325.00
			Accepted	-	-	-	-	-	-	-	-	-	-	-	-	
			Rejected	-	325.00	-	325.00	-	325.00	-	325.00	-	325.00	-	325.00	
		TR5	Tendered	-	384.49	430.00	386.39	-	386.60	-	411.46	258.57	446.22	258.71	446.22	
			Accepted	-	-	-	-	-	-	-	-	-	-	-	-	
			Rejected	-	384.49	430.00	386.39	-	386.60	-	411.46	258.57	446.22	258.71	446.22	
		TR6	Tendered	325.00	317.93	325.00	318.52	-	329.63	-	329.57	268.43	338.99	268.48	338.99	
			Accepted	325.00	317.93	325.00	318.52	-	329.63	-	329.57	268.43	338.99	268.48	338.99	
	Rejected		-	-	-	-	-	-	-	-	-	-	-	-		
	TR7	Tendered	240.63	274.00	257.80	269.37	256.29	283.11	249.95	283.75	273.55	285.56	269.74	285.28		
		Accepted	240.63	274.00	257.80	269.37	256.29	283.11	249.95	283.75	273.55	285.56	269.74	285.28		
		Rejected	-	-	-	-	-	-	-	-	-	-	-	-		
	TR8	Tendered	-	-	-	-	287.05	300.12	298.52	257.86	250.45	240.00	252.73	240.00		
		Accepted	-	-	-	-	267.28	258.73	300.88	256.44	244.17	240.00	244.64	240.00		
		Rejected	-	-	-	-	460.63	336.44	285.34	263.64	320.00	-	320.00	-		
	TR9	Tendered	-	-	-	-	-	-	-	-	268.41	296.69	268.08	296.69		
		Accepted	-	-	-	-	-	-	-	-	267.44	296.69	267.18	296.69		
		Rejected	-	-	-	-	-	-	-	-	500.00	-	500.00	-		
	*Average Accepted Utilisation Price per Season £/MWh			289.39		292.67		279.01		284.12		276.85		276.37		

*Average prices are Weighted by MW and Hours Tendered

Figure 1 below shows the plots of tendered average (volume weighted) availability price data for flexible and committed STOR service. For the committed STOR service, the chart illustrates an overall trend of falling submitted average availability prices from one tender round to the next throughout the STOR year of 2009/2010. It is believed some of this trend is due to participants who have been unsuccessful in their tenders resubmitting tenders with lower availability prices ultimately in order to achieve a contract to provide STOR service.

Figure 1: Tendered Average Availability Prices for Flexible and Committed STOR Service during STOR year 2009/2010

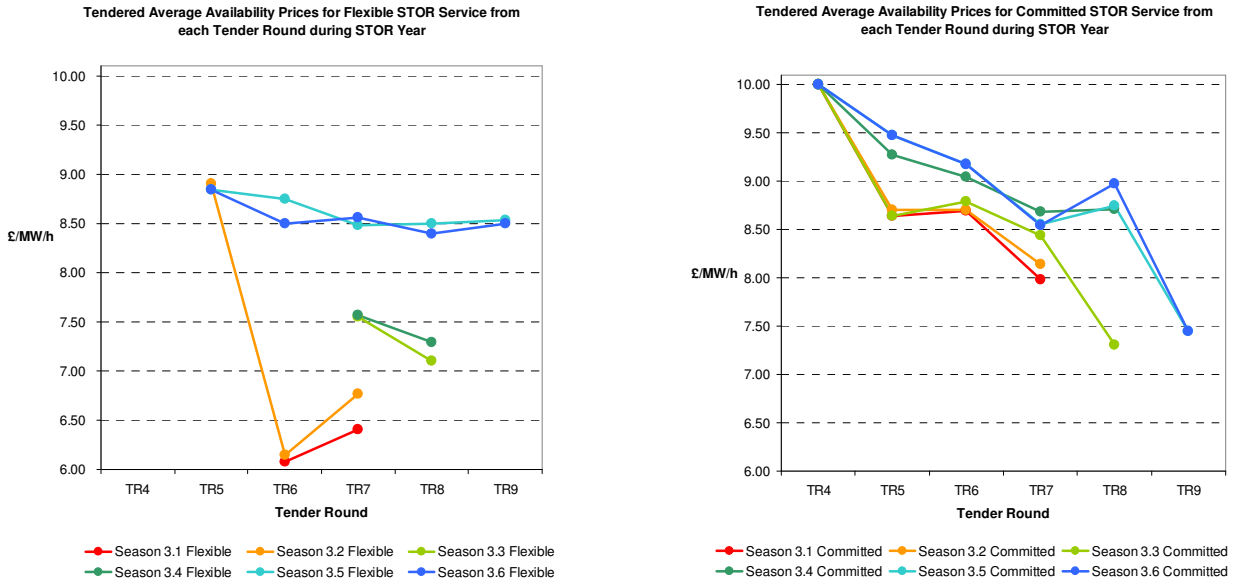


Figure 2 below shows the plots of tendered average (volume weighted) utilisation price data for flexible and committed STOR service. For the flexible and committed STOR service, both charts illustrates an overall trend of falling submitted average utilisation prices between tender rounds 5 and 7, and following the tender rounds thereafter shows rising tendered average utilisation prices to the end of STOR year 2009/2010. It is of the opinion that some of this trend is due to participants resubmitting tenders that have economically competitive utilisation prices with the aim of winning a contract to provide STOR service.

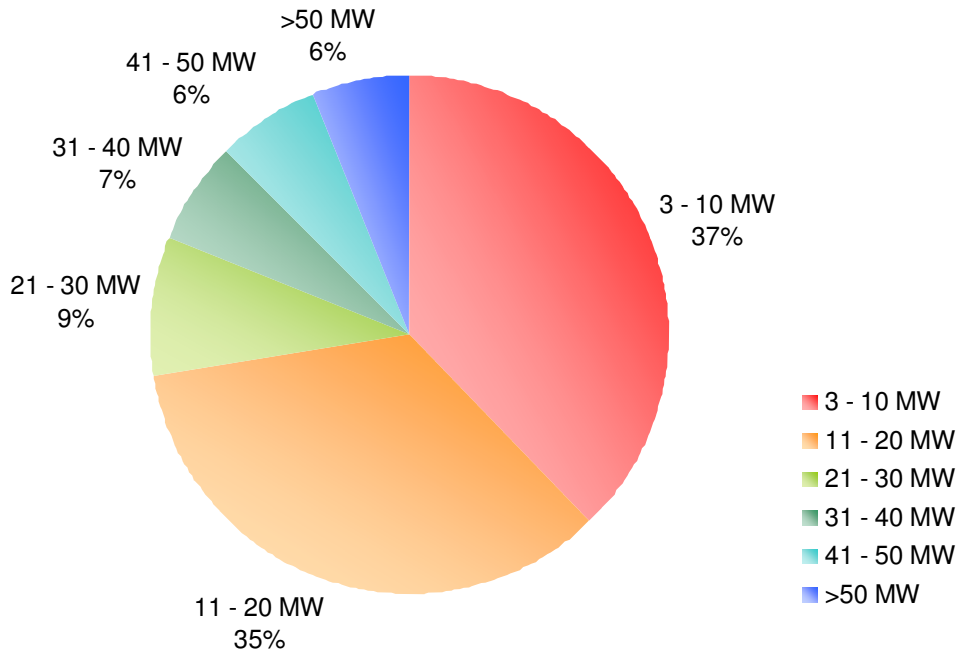
Figure 2: Tendered Average Utilisation Prices for Flexible and Committed STOR Service during STOR year 2009/2010



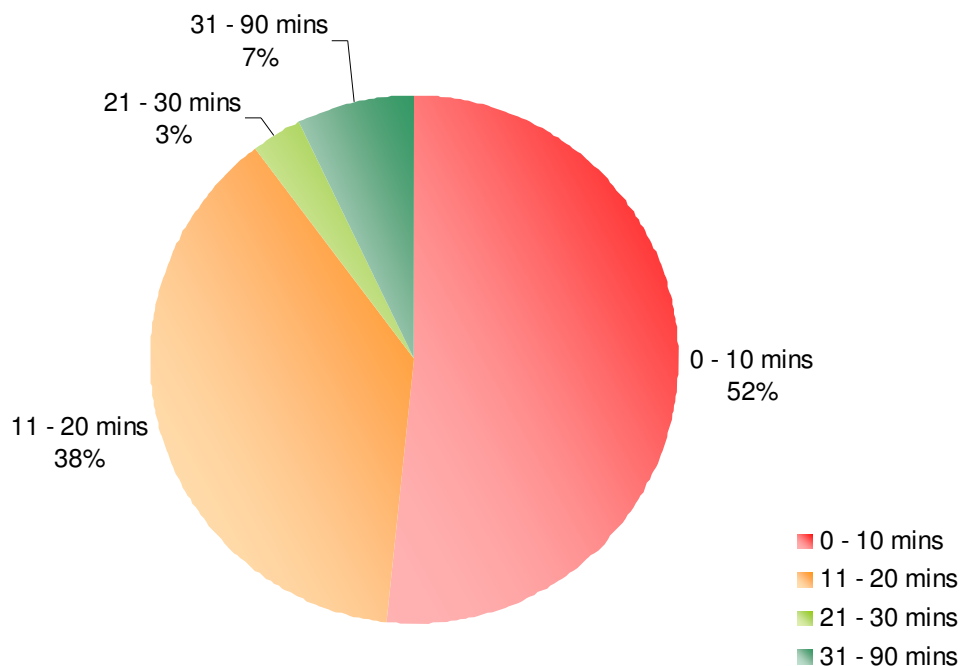
Figure 3 shows the breakdown of STOR providers by contracted parameters. Two charts are used, one chart illustrates the breakdown of STOR provision by unit size and the other chart illustrates the breakdown of STOR provision by response time. **Unit size is not taken into consideration when assessing tenders.** During the STOR year of 2009/2010, 19% of STOR units were capable of delivering more than 30MW and 90% of contracted STOR units can deliver the contracted megawatts within twenty minutes of instruction. A detailed breakdown of the number of contracted STOR units by response time and MW delivery, for each season during 2009/2010, can be found in Appendix B of this document.

Figure 3: Break down of STOR provider parameters by Size and Response Time

Breakdown of Contracted STOR Units by Size for 2009/2010



Breakdown of STOR Units by Response Time for 2009/2010



3. Utilisation and Availability

Figure 4 shows the average daily availability of STOR MW at the time of the peak demand across all months in 2009/10. Although National Grid had contracted on average 2623MW of both flexible & committed STOR, the average availability was 80% of that amount at the time of the daily peak demand across all seasons of the year. Comparing this with the average availability over the previous STOR year, the proportion of contracted STOR units available fell by approximately 5.9%, where average availability was 85% of the contracted MW in 2008/09. This drop in availability is due to National Grid contracting an increased volume of flexible STOR MW than in the previous year, which led to greater volatility in the volume of STOR MW that the National Grid has available for every week during the 2009/10 term. This volatility is also driven by the weekly flexible STOR assessment, where the week ahead economic benefits of flexible units are taken into account with the week ahead forecast margin value, leading to a flexible unit being accepted or rejected to provide STOR for the week ahead.

Hereafter, the majority of the illustrated figures use the following key: WD: Week Day, NWD: Non Weekday, F: Flexible STOR, C: Committed STOR, OW: Optional Windows.

Figure 4: STOR MW Average Availability per day

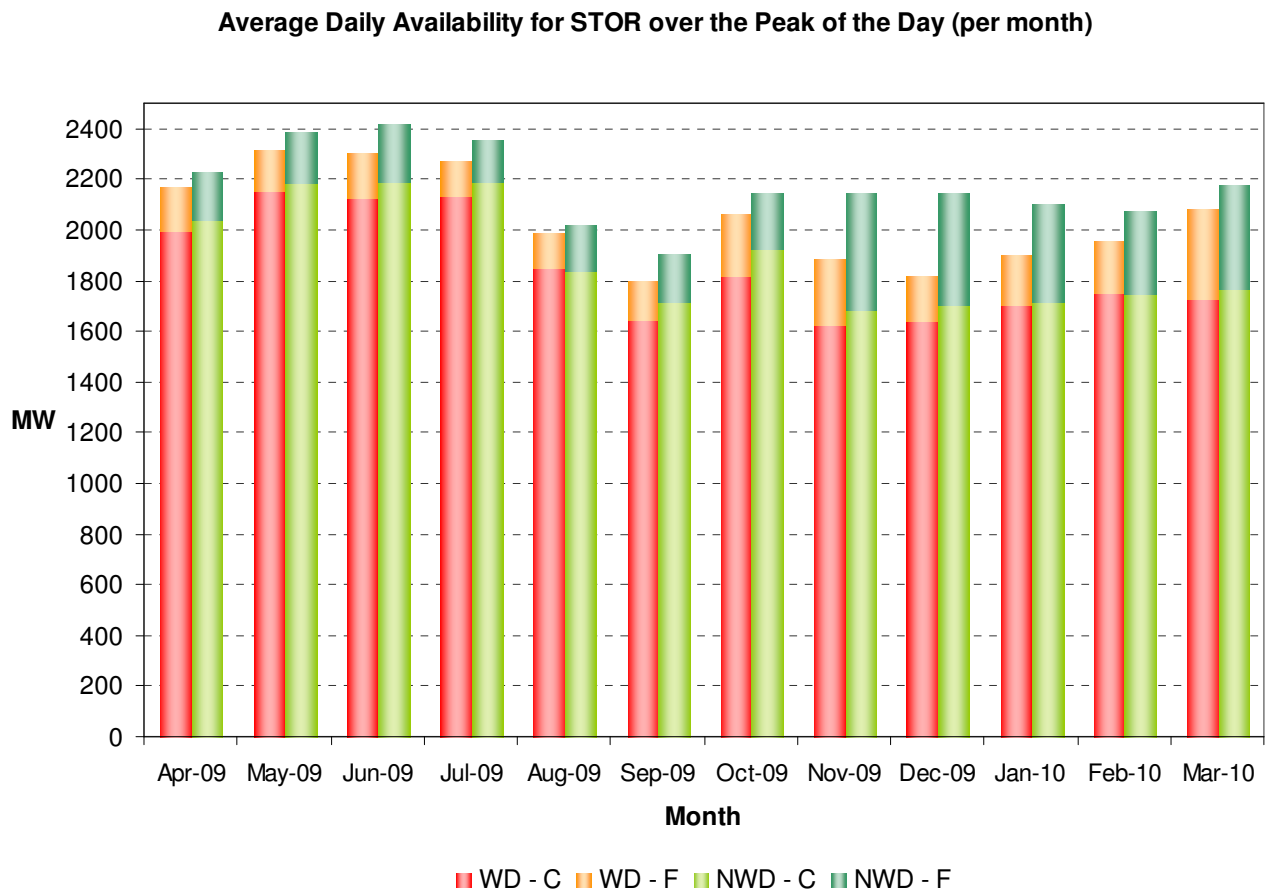


Figure 5 shows the average daily availability payments made to STOR providers on a monthly basis. The total number of STOR MWs available to National Grid over the whole year was, on average, approximately 2105MW per settlement period in any STOR window. The annual total availability payment was £68.3m.

Figure 6 shows the Average daily STOR MWh of utilisation over the year. There was no Flexible STOR utilisation during the non week days of March 2010. For the year, the average daily STOR utilisation was 424MWh for week days and 322MWh for the non week days.

Figure 5: Average Daily STOR Availability Payments

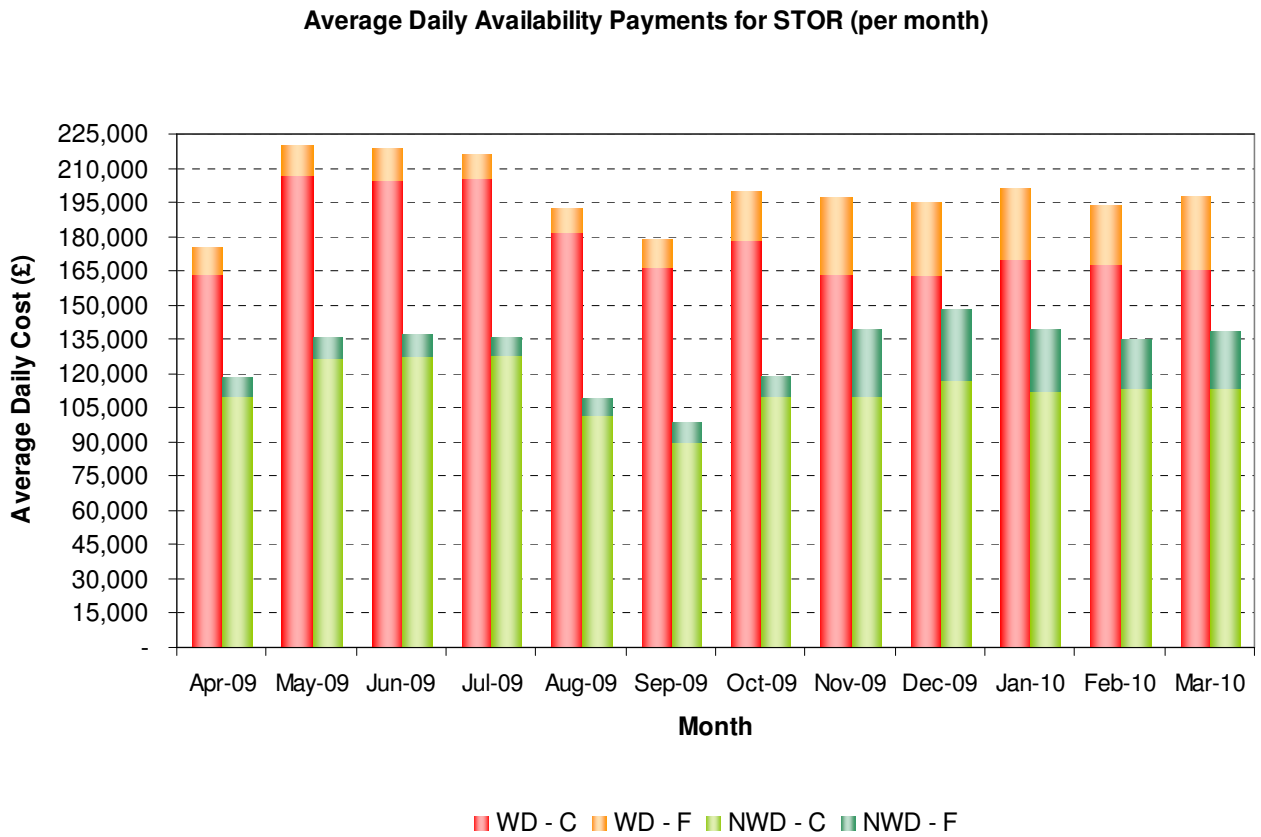


Figure 6: Average Daily STOR Utilisation

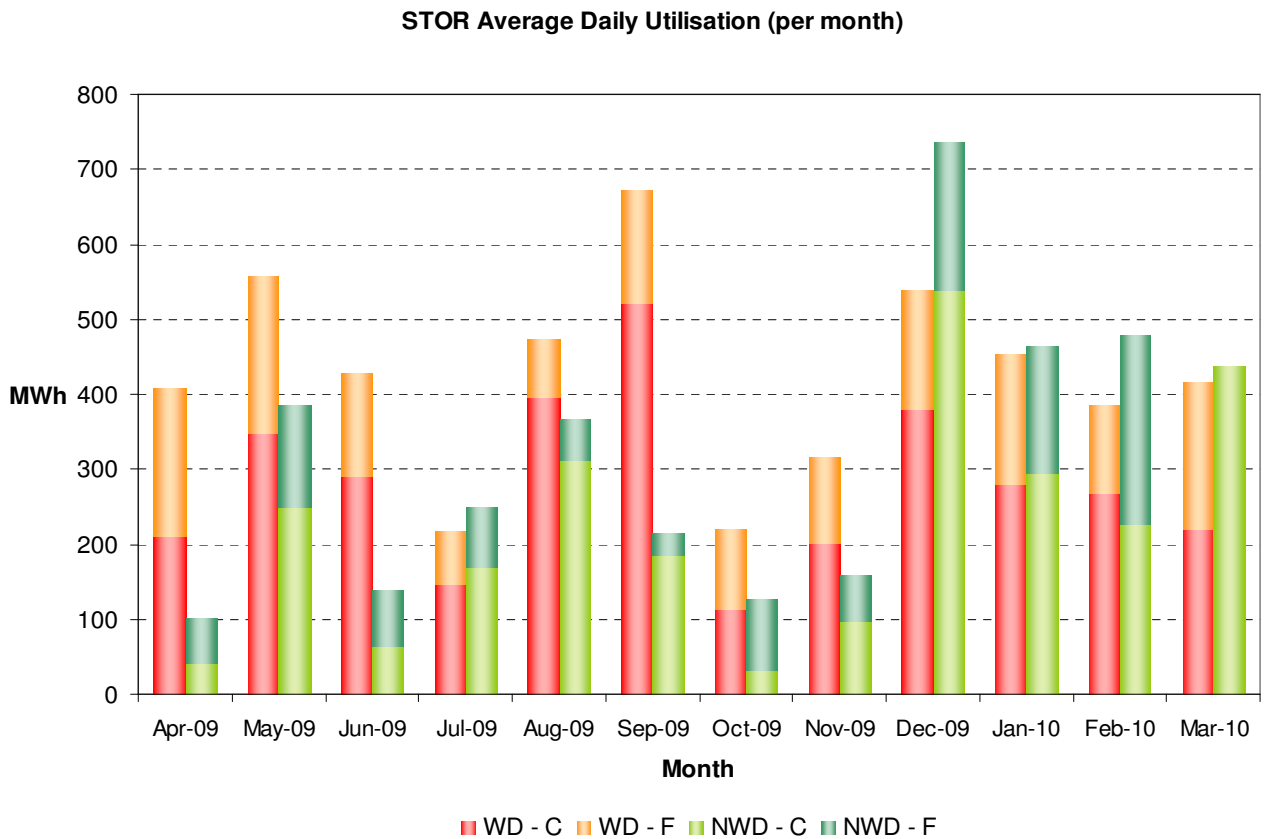
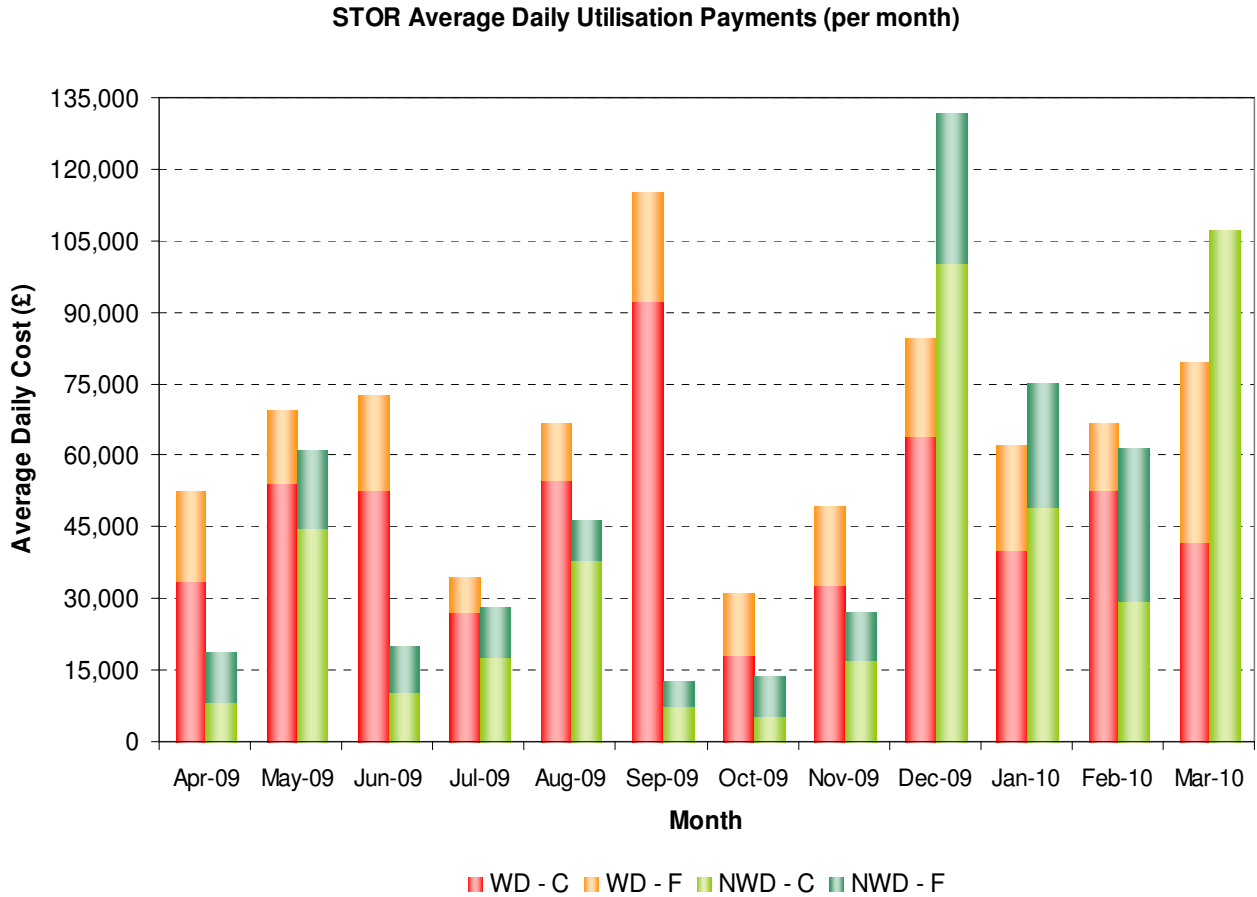


Figure 7 shows the average daily utilisation payments made to STOR providers on a monthly basis. The total number of STOR MWh utilised over the whole year was 104.7GWh at a cost of £23.1m. The utilisation costs² include optional window periods where the BM unit is paid the offer price for that particular settlement period in the BM and the Non-BMU is paid the tendered premium price.

Figure 7: Average Daily STOR Utilisation Payments

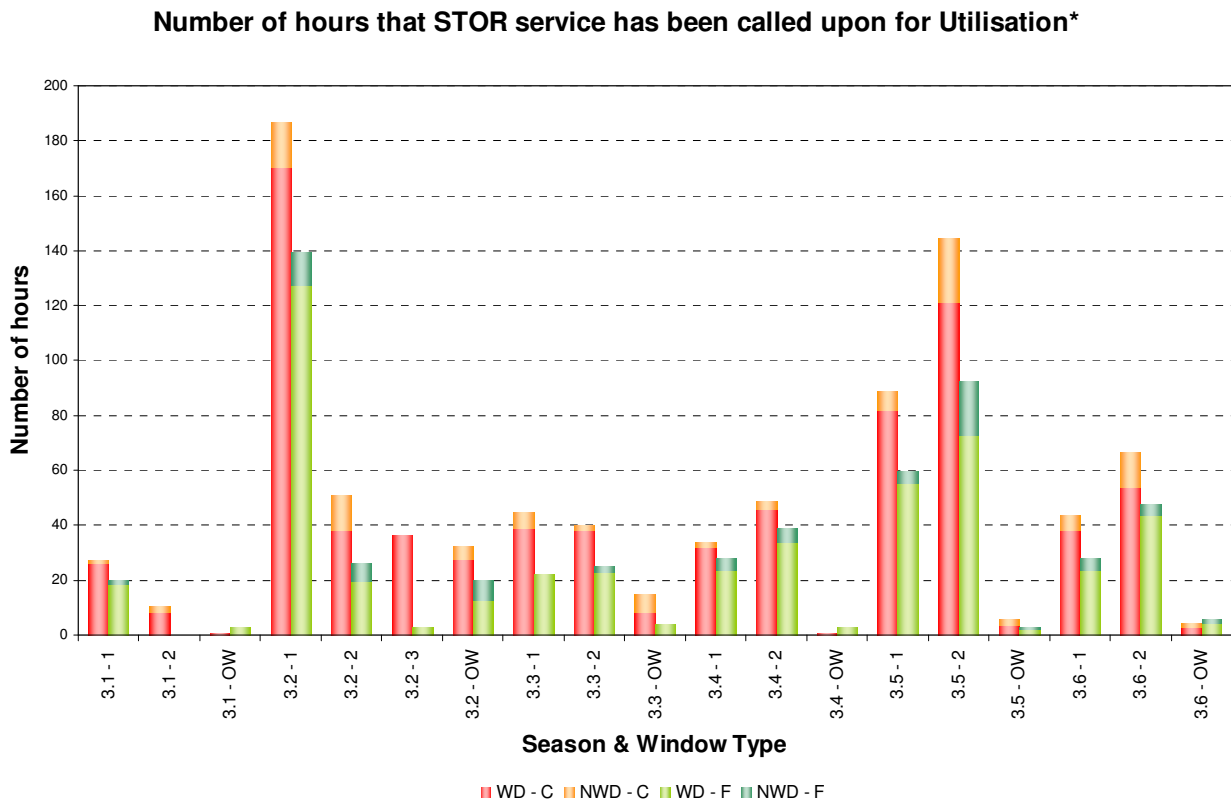


² These Costs differ from those in the Procurement Guidelines report as they include spend for BM Units both within window and optional windows and include some seasonal reconciliation.

4. Utilisation by Service Type

Figure 8 shows the total number of hours in which STOR was utilised over the STOR year (by service type). National Grid called upon providers to provide STOR for a total of 912 hours during window periods and 49.5 hours in optional window periods. For instance, if STOR was utilised during a settlement period, the whole half hourly settlement period is counted, regardless of the number of machines run and the duration of the utilisation during that settlement period. The total energy delivered in optional windows was just over 3.3GWh in total.

Figure 8: Total number of Hours of STOR Usage



*This refers to the number of hours in which the service has provided to the National Grid rather than the running time that individual units have provided

Figure 9 illustrates the total unit running time from STOR units, in hours, for each season and window type. For 2009/10 STOR units ran for 4480 hours.

Figure 10 illustrates the volume of MWh for each hour per season. This figure is intended to provide a direct season by season comparison MWh volume (as the total number of hours in each season varies) by taking the MWh volume for a season and dividing it with the total number of hours in that season. Season 3.3 provided the greatest MWh per hour, giving a volume of 38.4MWh per hour.

Figure 11 shows the total MWh of STOR utilisation by utilisation price, for the STOR years 2007/08, 2008/09, and 2009/10. The total MWh is illustrated by the volume of utilisation for each type of window. The tables provided with the charts depict the seasonal capacity of MWs provided for each utilisation price category and the number of units that provided the MW capacity for a season. For instance, it is shown from the 2008/2009 table that during Season 2.2, there were 32 units providing a capacity of 1039MW that had a utilisation price in the range £101/MWh and £200/MWh.

Figure 9: Total number of running hours by Season and window

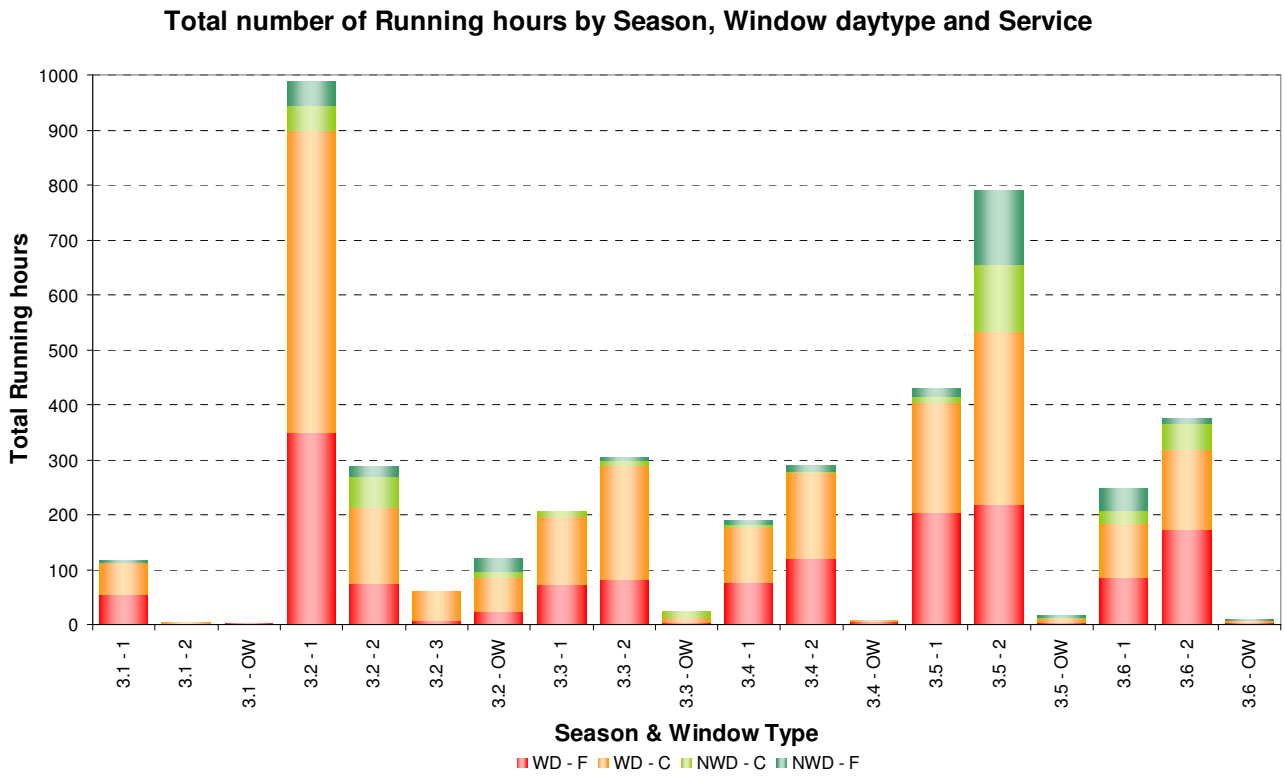


Figure 10: Total MWh utilised per hour of each season in the 2009/10 term

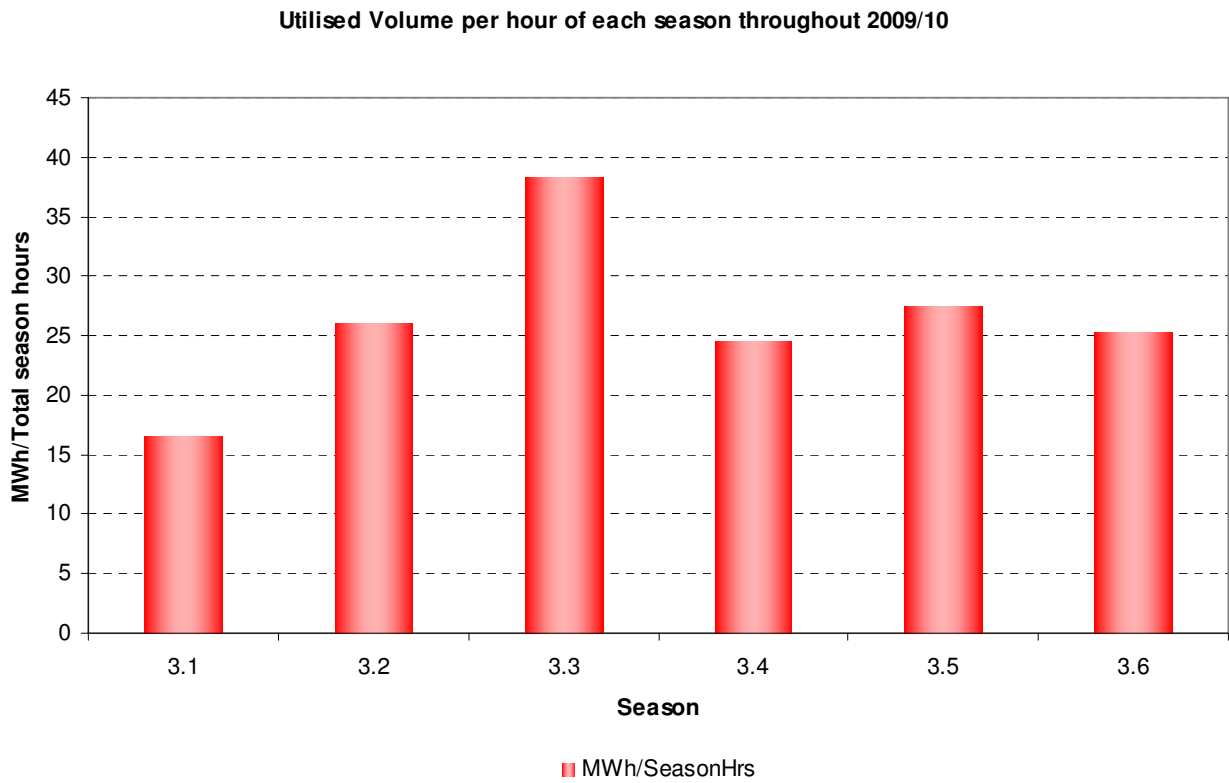
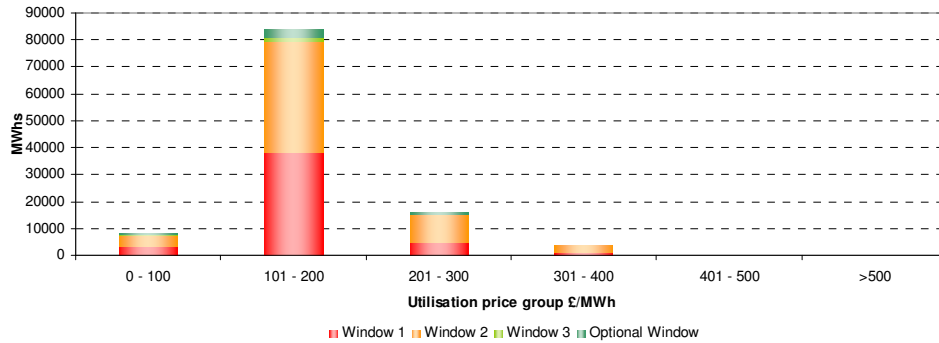


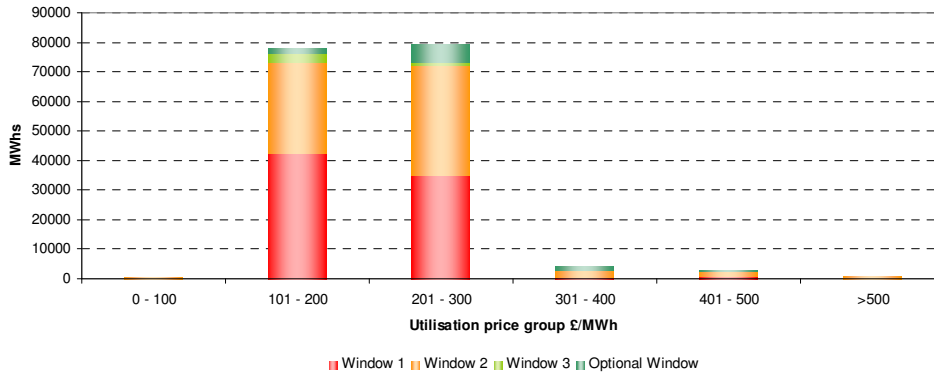
Figure 11: Total MWh STOR Utilisation by Utilisation price

Total MWh STOR Utilisation by window and Utilisation price group for STOR year 2007/08



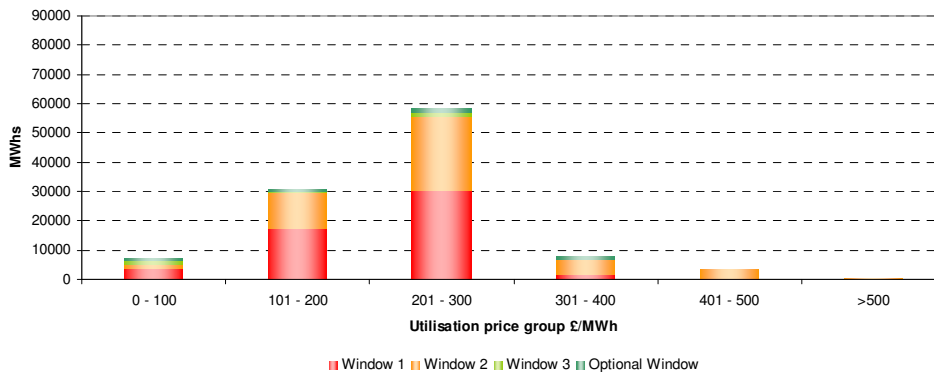
2007-2008		Season											
		1.1		1.2		1.3		1.4		1.5		1.6	
Utilisation price group £/MWh	0 - 100	Units	MWs	Units	MWs	Units	MWs	Units	MWs	Units	MWs	Units	MWs
	101-200	7	76	7	74	9	132	11	138	7	56	8	64
	201-300	36	1073	37	1098	34	958	34	989	41	1134	41	1124
	301-400	41	960	42	967	41	955	41	960	40	936	42	951
	401-500	12	232	12	232	12	232	12	232	12	232	12	232
	>500	-	-	-	-	-	-	-	-	-	-	-	-
	>500	2	11	2	11	2	11	2	11	3	18	2	11

Total MWh STOR Utilisation by window and Utilisation price group for STOR year 2008/09



2008-2009		Season											
		2.1		2.2		2.3		2.4		2.5		2.6	
Utilisation price group £/MWh	0 - 100	Units	MWs	Units	MWs	Units	MWs	Units	MWs	Units	MWs	Units	MWs
	101-200	-	-	-	-	-	-	-	-	-	-	-	-
	201-300	26	878	32	1039	26	850	24	860	17	731	19	782
	301-400	50	1078	53	1130	58	1199	58	1175	57	1163	59	1185
	401-500	2	34	3	42	3	42	3	42	10	109	8	86
	>500	10	274	10	274	11	278	11	278	12	291	12	291
	>500	4	41	4	41	1	7	1	7	2	11	2	11

Total MWh STOR Utilisation by window and Utilisation price group for STOR year 2009/10

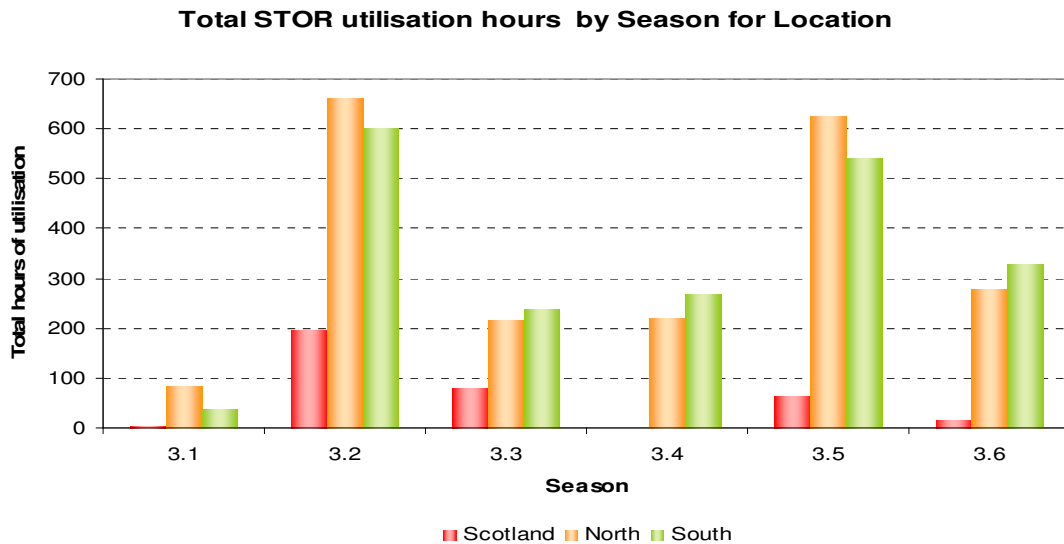


2009-2010		Season											
		3.1		3.2		3.3		3.4		3.5		3.6	
Utilisation price group £/MWh	0 - 100	Units	MWs	Units	MWs	Units	MWs	Units	MWs	Units	MWs	Units	MWs
	101-200	2	40	2	40	-	-	-	-	-	-	-	-
	201-300	14	322	14	319	24	352	25	385	24	302	24	304
	301-400	43	1164	44	1274	39	994	39	1072	64	1266	65	1258
	401-500	34	524	35	532	29	465	30	585	30	598	30	598
	>500	20	532	20	532	20	532	22	543	24	580	24	580
	>500	3	15	3	15	-	-	-	-	1	7	1	7

5. Utilisation by Location

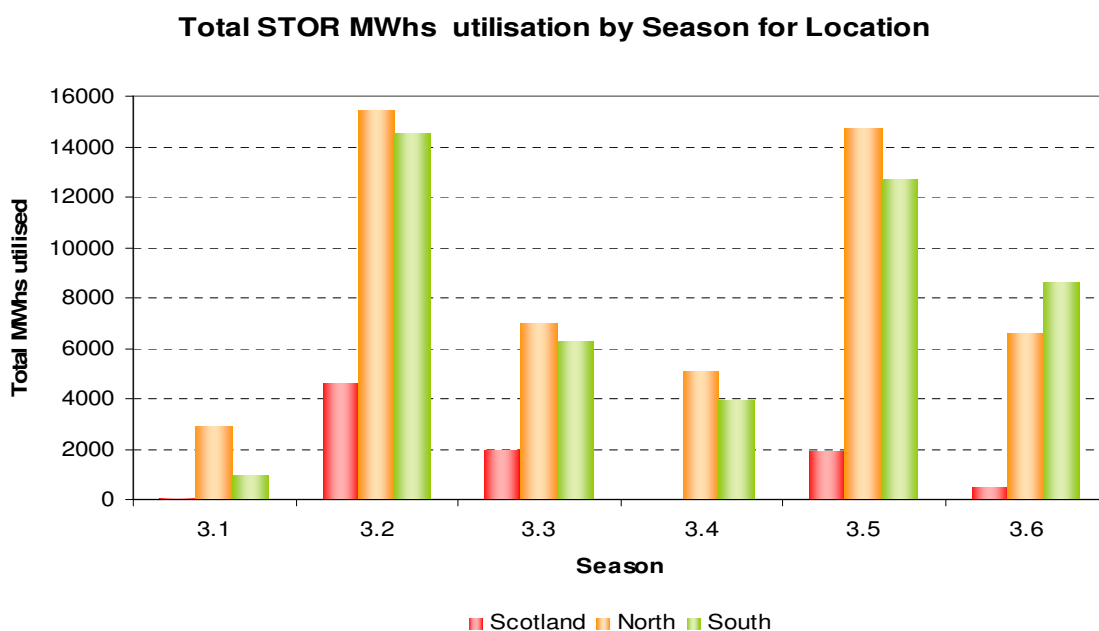
There are occasions, where as a result of congestion on the transmission system, National Grid may utilise a particular STOR unit considering its geographic location in addition to submitted prices. Figure 12 represents the total STOR utilisation hours per season by location and the table provided shows the number of STOR units by location and the sum total of the MW capacity provided by all of these units for STOR in each season. During 2009/2010, STOR was utilised for an average of 60 hours per season in Scotland, an average of 348 hours per season in the North, and an average of 336 hours per season in the South. Figure 13 shows the total STOR utilised MWh by season from a geographical location. Refer to Appendix C in this document for a map indicating the regional boundaries.

Figure 12: Total STOR utilisation hours by Season from a geographical location



Unit Location	Season											
	3.1		3.2		3.3		3.4		3.5		3.6	
	No. of units	Total MW	No. of units	Total MW	No. of units	Total MW	No of units	Total MW	No of units	Total MW	No of units	Total MW
Scotland	8	185	8	185	6	113	7	145	4	65	4	65
North	56	1311	57	1310	53	1032	55	1219	79	1385	80	1388
South	52	1101	53	1217	53	1198	54	1221	60	1303	60	1294

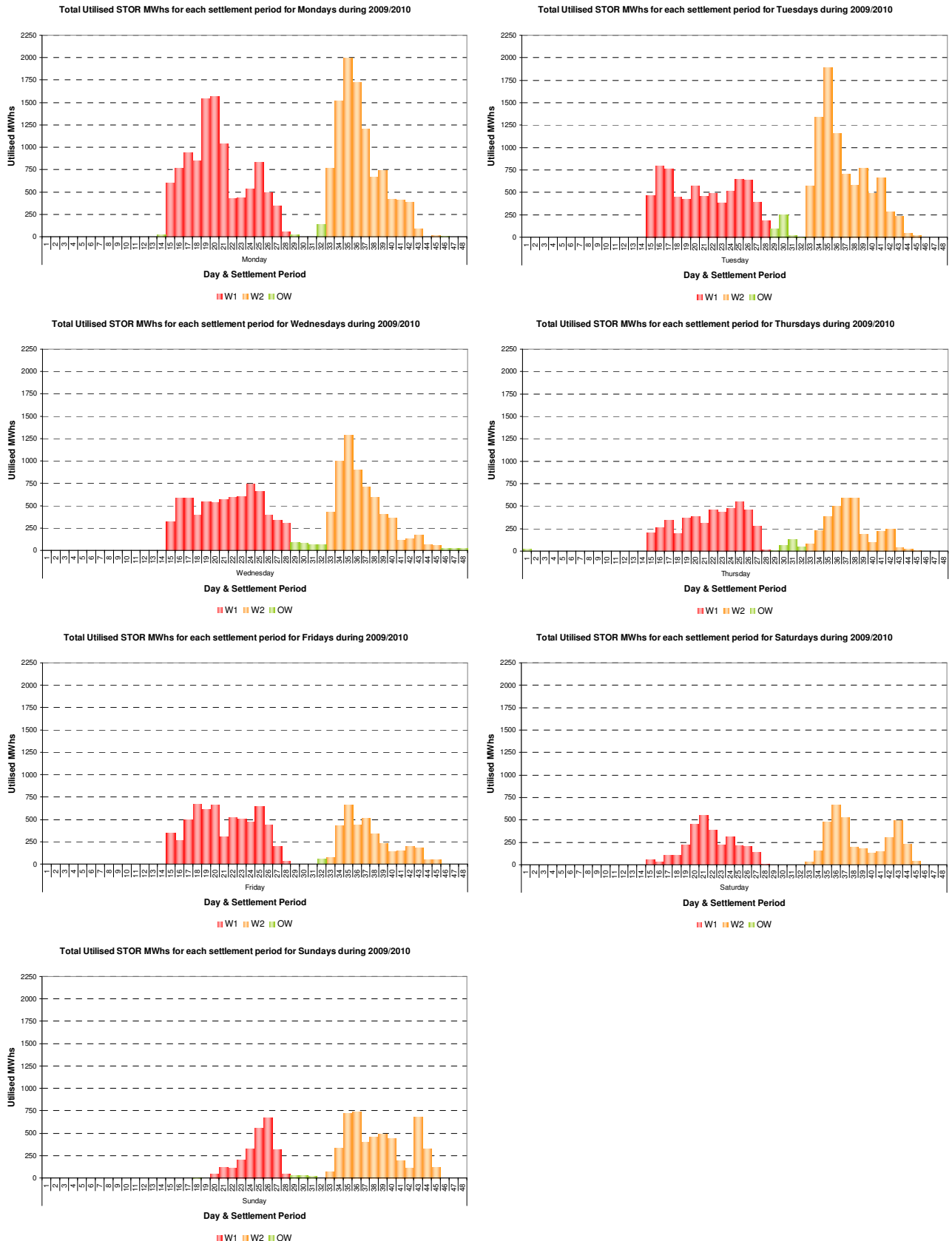
Figure 13: Total STOR MWh by Season from a geographical location



6. Utilisation by Day for 2009/2010

The following figure depicts the total STOR utilisation for each day of the week from 1st April 2009 to 31st March 2010.

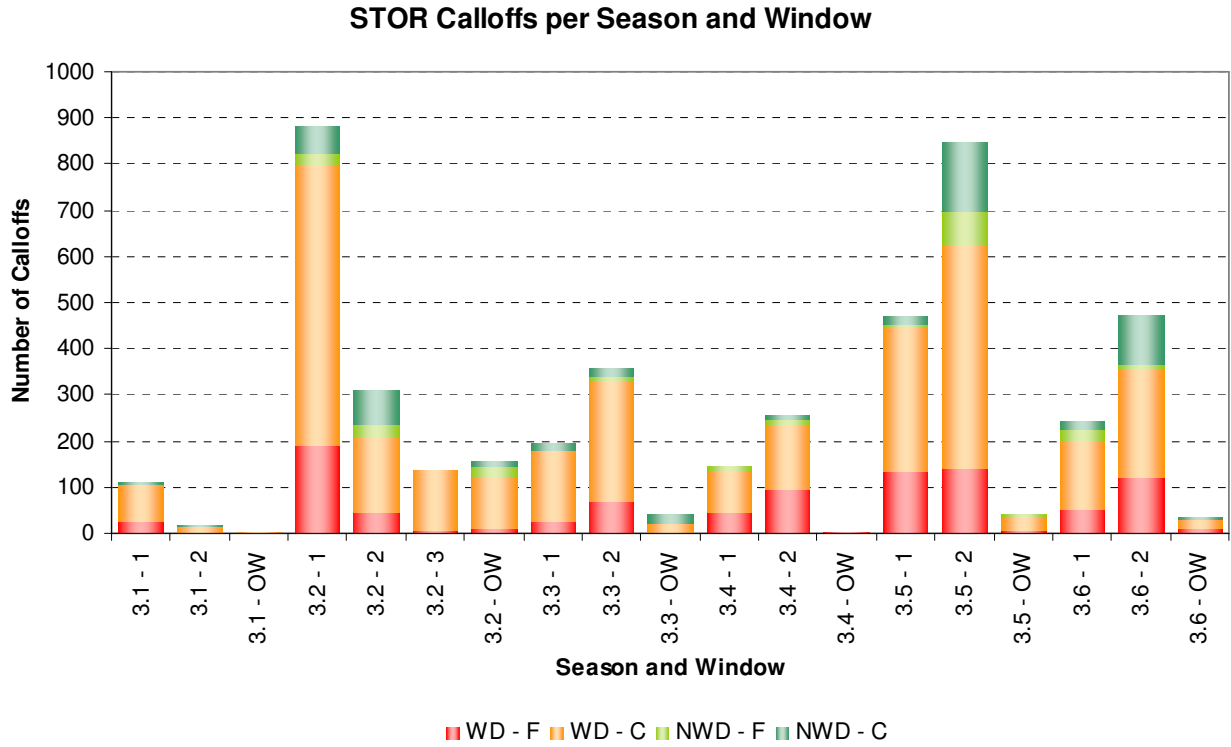
Figure 14: Total Utilised STOR for each day of the week for 2009/2010



7. Calloffs

Figure 15 shows the number of calloffs³ by season and by window. There was an average of 788 calloffs per season for the year. There was an average duration of approximately 57 minutes per calloff for the year.

Figure 15: Number of STOR calloffs per season and window

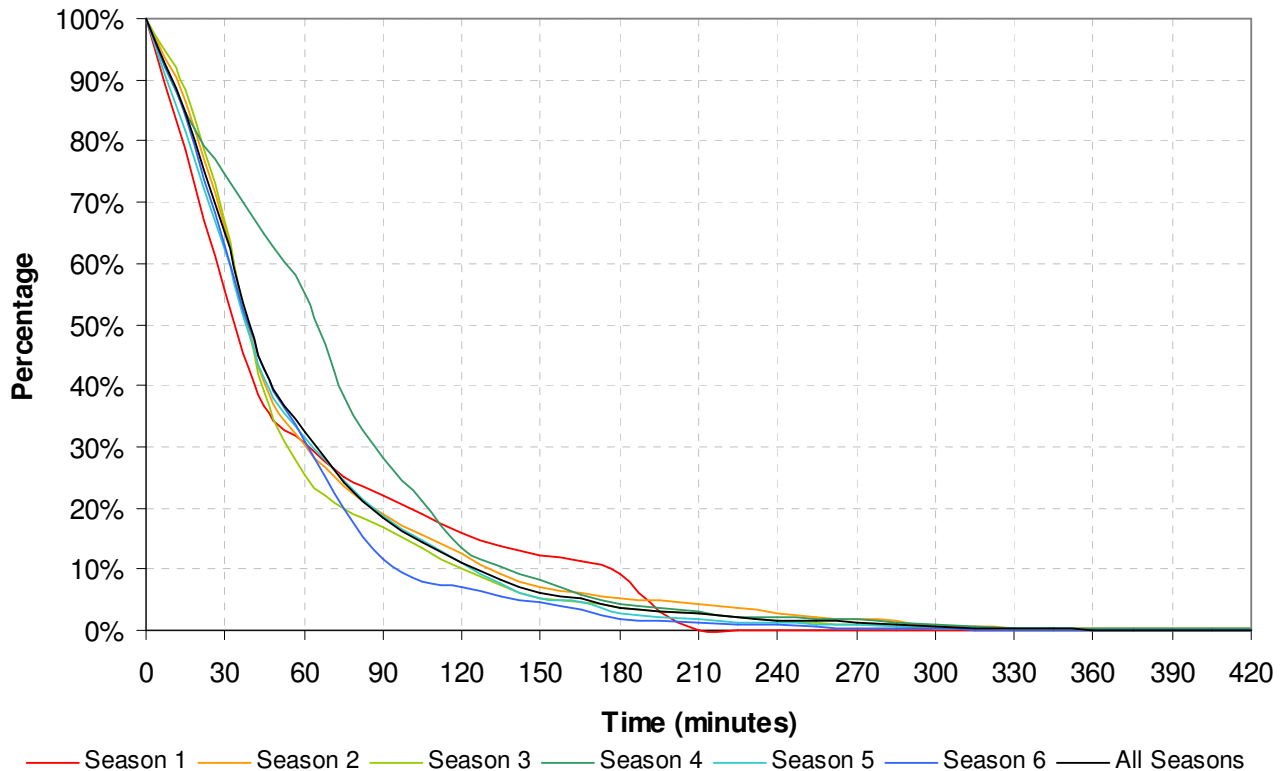


³ A calloff is when National Grid instructs a STOR provider to deliver the contracted STOR MW (generation or demand reduction)
Balancing Services\Trading and Assessment

In applying the duration of calloffs data across all types of providers for 2009/10, a duration profile is produced which illustrates the period of utilisation per instruction. Figure 16 shows that across all seasons 65% of instructions lasted at least thirty minutes, and 32% of instructions lasted at least sixty minutes. The table provided with the duration curves shows the average number of weekly instructions and the amount of MWh provided for each utilisation price group for all the seasons in the 2009/10 term. For instance, during Season 3.3, for all the units in the utilisation price group £201/MWh - £300/MWh, there is an average of 44 instructions a week and an average 1770MWh is provided from all these units in the £201/MWh - £300/MWh utilisation price range.

Figure 16: Duration Curves showing the percentage of duration time for calloffs

Percentage curves for calloff duration 2009 - 2010

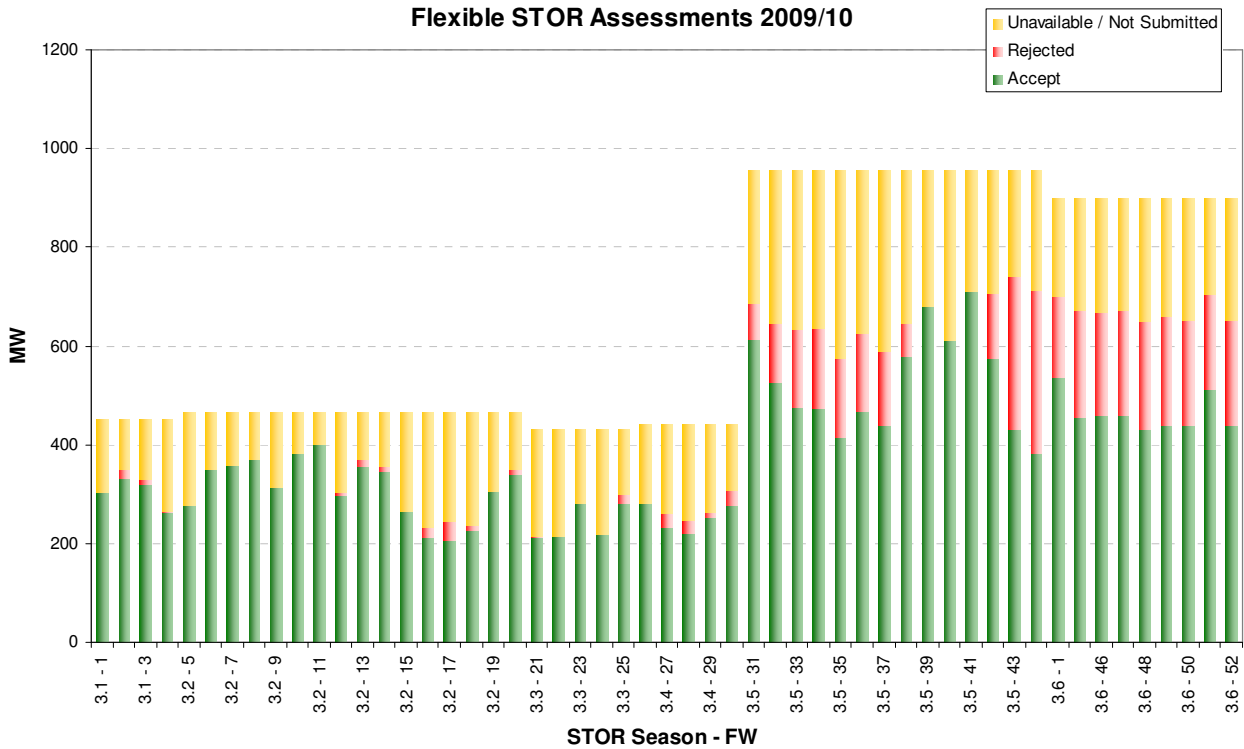


Utilisation Price Group £/MWh	Season											
	3.1		3.2		3.3		3.4		3.5		3.6	
	Ave. No. of Weekly Instructions	Ave. Weekly MWh	Ave. No. of Weekly Instructions	Ave. Weekly MWh	Ave. No. of Weekly Instructions	Ave. Weekly MWh	Ave. No. of Weekly Instructions	Ave. Weekly MWh	Ave. No. of Weekly Instructions	Ave. Weekly MWh	Ave. No. of Weekly Instructions	Ave. Weekly MWh
0 - 100	2	77	19	310	29	356	2	10	7	102	-	-
101 - 200	7	305	29	561	24	603	31	794	30	621	34	666
201 - 300	17	518	37	1138	44	1770	44	941	42	1159	31	978
301 - 400	11	144	14	208	25	368	5	36	19	243	34	319
401 - 500	6	43	7	71	13	170	3	80	16	204	23	288
>500	1	0	4	17	5	125	2	2	3	22	2	54

8. Flexible STOR Assessments

The Flexible STOR service is assessed on a weekly basis as flexible STOR providers submit their availability for the week ahead. The assessments are based on forecast system margin and forecast costs associated with alternative sources at the week-ahead stage, together with the availability window submitted by the service provider and any additional issues such as locational congestion which may be prevalent in the forthcoming week⁴. Figure 17 illustrates the amount of MW accepted each week, the amount of MW rejected each week, and the amount of MW that was unavailable for STOR each week.

Figure 17: Weekly Flexible STOR Assessments



⁴ For more details please refer to the Assessment Principles document
Balancing Services\Trading and Assessment

Appendix A

STOR windows for Year 3 (2009/10) and Year 4 (2010/11) and Year 5 (2011/12)

Seasons 2009/10																																
Season	Dates	Window	WD		NWD		Hours/Day Type		Total																							
			Start Time	End Time	Start Time	End Time	WD	NWD																								
1	05:00 Wednesday 1st Apr 2009 - 05:00 Monday 27th Apr 2009	I	07:00	13:30	10:00	14:00	199.5	32.5	232																							
		II	19:00	22:00	19:30	22:00																										
2	05:00 Monday 27th Apr 2009 - 05:00 Monday 17th Aug 2009	I	07:30	14:00	09:30	13:30	1081	126	1207																							
		II	16:00	18:00	19:30	22:30																										
		III	19:30	22:30																												
3	05:00 Monday 17th Aug 2009 - 05:00 Monday 21st Sept 2009	I	07:30	14:00	10:30	13:30	348	36	384																							
		II	16:00	21:30	19:00	22:00																										
4	05:00 Monday 21st Sept 2009 - 05:00 Monday 26th Oct 2009	I	07:00	13:30	10:30	13:30	330	32.5	362.5																							
		II	16:30	21:00	17:30	21:00																										
5	05:00 Monday 26th Oct 2009 - 05:00 Monday 1st Feb 2010	I	07:00	13:30	10:30	13:30	920	135	1055																							
		II	16:00	21:00	16:00	20:30																										
6	05:00 Monday 1st Feb 2010 - 05:00 Thursday 1st Apr 2010	I	07:00	13:30	10:30	13:30	561	60	621																							
		II	16:30	21:00	16:30	21:00																										
							3439.5	422	3861.5																							
		<table border="1"> <thead> <tr> <th>Season</th> <th>WD</th> <th>NWD</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>21</td> <td>5</td> </tr> <tr> <td>2</td> <td>94</td> <td>18</td> </tr> <tr> <td>3</td> <td>29</td> <td>6</td> </tr> <tr> <td>4</td> <td>30</td> <td>5</td> </tr> <tr> <td>5</td> <td>80</td> <td>18</td> </tr> <tr> <td>6</td> <td>51</td> <td>8</td> </tr> </tbody> </table>		Season	WD	NWD	1	21	5	2	94	18	3	29	6	4	30	5	5	80	18	6	51	8					<table border="1"> <tr> <td>Total Hours</td> <td>3861.5</td> </tr> </table>		Total Hours	3861.5
Season	WD	NWD																														
1	21	5																														
2	94	18																														
3	29	6																														
4	30	5																														
5	80	18																														
6	51	8																														
Total Hours	3861.5																															

Seasons 2010/11																														
Season	Dates	Window	WD		NWD		Hours/Day Type		Total																					
			Start Time	End Time	Start Time	End Time	WD	NWD																						
1	05:00 Thursday 1st Apr 2010 - 05:00 Monday 26th Apr 2010	I	07:00	13:30	10:00	14:00	190	32.5	222.5																					
		II	19:00	22:00	19:30	22:00																								
2	05:00 Monday 26th Apr 2010 - 05:00 Monday 16th Aug 2010	I	07:30	14:00	09:30	13:30	1081	126	1207																					
		II	16:00	18:00	19:30	22:30																								
		III	19:30	22:30																										
3	05:00 Monday 16th Aug 2010 - 05:00 Monday 20th Sep 2010	I	07:30	14:00	10:30	13:30	348	36	384																					
		II	16:00	21:30	19:00	22:00																								
4	05:00 Monday 20th Sep 2010 - 05:00 Monday 1st Nov 2010	I	07:00	13:30	10:30	13:30	396	39	435																					
		II	16:30	21:00	17:30	21:00																								
5	05:00 Monday 1st Nov 2010 - 05:00 Monday 31st Jan 2011	I	07:00	13:30	10:30	13:30	839.5	135	974.5																					
		II	16:00	21:00	16:00	20:30																								
6	05:00 Monday 31st Jan 2011 - 05:00 Friday 1st Apr 2011	I	07:00	13:30	10:30	13:30	572	60	632																					
		II	16:30	21:00	16:30	21:00																								
							3426.5	428.5	3855																					
		<table border="1"> <thead> <tr> <th>Season</th> <th>WD</th> <th>NWD</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20</td> <td>5</td> </tr> <tr> <td>2</td> <td>94</td> <td>18</td> </tr> <tr> <td>3</td> <td>29</td> <td>6</td> </tr> <tr> <td>4</td> <td>36</td> <td>6</td> </tr> <tr> <td>5</td> <td>73</td> <td>18</td> </tr> <tr> <td>6</td> <td>52</td> <td>8</td> </tr> </tbody> </table>		Season	WD	NWD	1	20	5	2	94	18	3	29	6	4	36	6	5	73	18	6	52	8			<table border="1"> <tr> <td>Total Hours</td> <td>3855</td> </tr> </table>		Total Hours	3855
Season	WD	NWD																												
1	20	5																												
2	94	18																												
3	29	6																												
4	36	6																												
5	73	18																												
6	52	8																												
Total Hours	3855																													

Seasons 2011/12																														
Season	Dates	Window	WD		NWD		Hours/Day Type		Total																					
			Start Time	End Time	Start Time	End Time	WD	NWD																						
1	05:00 Friday 1st Apr 2011 - 05:00 Monday 25th Apr 2011	I	07:00	13:30	10:00	14:00	190	26	216																					
		II	19:00	22:00	19:30	22:00																								
2	05:00 Monday 25th Apr 2011 - 05:00 Monday 15th Aug 2011	I	07:30	14:00	09:30	13:30	1069.5	133	1202.5																					
		II	16:00	18:00	19:30	22:30																								
		III	19:30	22:30																										
3	05:00 Monday 15th Aug 2011 - 05:00 Monday 19th Sep 2011	I	07:30	14:00	10:30	13:30	348	36	384																					
		II	16:00	21:30	19:00	22:00																								
4	05:00 Monday 19th Sep 2011 - 05:00 Monday 31 Oct 2011	I	07:00	13:30	10:30	13:30	396	39	435																					
		II	16:30	21:00	17:30	21:00																								
5	05:00 Monday 31 Oct 2011 - 05:00 Monday 30th Jan 2012	I	07:00	13:30	10:30	13:30	862.5	120	982.5																					
		II	16:00	21:00	16:00	20:30																								
6	05:00 Monday 30th Jan 2012 - 05:00 Sunday 1st Apr 2012	I	07:00	13:30	10:30	13:30	594	60	654																					
		II	16:30	21:00	16:30	21:00																								
							3460	414	3874																					
		<table border="1"> <thead> <tr> <th>Season</th> <th>WD</th> <th>NWD</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>20</td> <td>4</td> </tr> <tr> <td>2</td> <td>93</td> <td>19</td> </tr> <tr> <td>3</td> <td>29</td> <td>6</td> </tr> <tr> <td>4</td> <td>36</td> <td>6</td> </tr> <tr> <td>5</td> <td>75</td> <td>16</td> </tr> <tr> <td>6</td> <td>54</td> <td>8</td> </tr> </tbody> </table>		Season	WD	NWD	1	20	4	2	93	19	3	29	6	4	36	6	5	75	16	6	54	8			<table border="1"> <tr> <td>Total Hours</td> <td>3874</td> </tr> </table>		Total Hours	3874
Season	WD	NWD																												
1	20	4																												
2	93	19																												
3	29	6																												
4	36	6																												
5	75	16																												
6	54	8																												
Total Hours	3874																													

Appendix B

A breakdown of the contracted STOR units, by season, by response time and delivery of MW

No. of contracted STOR units according to response time and unit Size (MW)		Season																							
		3.1				3.2				3.3				3.4				3.5				3.6			
		0-20 Mins		>20 Mins		0-20 Mins		>20 Mins		0-20 Mins		>20 Mins		0-20 Mins		>20 Mins		0-20 Mins		>20 Mins		0-20 Mins		>20 Mins	
		F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C	F	C
No of MW	0 - 10 MW	16	13	6	-	17	12	6	-	24	12	5	-	28	10	5	-	53	5	6	-	54	5	6	-
	11 - 20 MW	19	27	-	-	20	27	-	-	16	22	1	-	15	22	1	-	18	26	1	-	18	26	1	-
	21 - 30 MW	-	11	-	-	-	11	-	-	-	11	-	-	-	11	-	-	-	10	-	-	-	10	-	-
	31 - 40 MW	-	9	-	-	-	9	-	1	-	7	-	1	-	8	-	-	-	6	1	-	-	6	1	-
	41 - 50 MW	2	-	-	6	2	-	-	5	2	-	-	5	2	-	-	6	3	-	6	-	2	1	6	-
	> 50 MW	-	7	-	-	-	8	-	-	-	6	-	-	-	8	-	-	-	8	-	-	-	8	-	-
Flexible/Committed Total Units		37	67	6	6	39	67	6	6	42	58	6	6	45	59	6	6	74	55	14	-	74	56	14	-
Total Units for Mins		104		12		106		12		100		12		104		12		129		14		130		14	
Season Total Units		116				118				112				116				143				144			

Appendix C

Map of Great Britain indicating the location boundaries.

