STOR Market Information Report: Tender Round 23
(Short-Term Operating Reserve)

Introduction

This market report is produced after each tender round and is designed to give existing and potential STOR participants an overall view of the tenders received in tender round 23 (TR23). The report provides details of tendered utilisation and availability prices and National Grid's consequent forward contracted position; together with further details on the type and dynamics of the tendered plant. For further information regarding this product, frequently asked questions, or how and when to tender please consult the STOR section found on the National Grid Balancing Services information website:

http://www2.nationalgrid.com/uk/services/balancing-services/reserve-services/short-term-operating-reserve/

Furthermore, information on the use of the STOR service can be seen at monthly resolution in the Monthly Balancing Services Statement or annually in the Procurement Guidelines Report, found on the National Grid Balancing Services information website:

http://www2.nationalgrid.com/uk/Industry-information/electricity-transmission-operational-data/

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

In assessing the benefit of a STOR tender, the value and costs of that tender are considered. The forecast cost of an accepted tender will reflect expected availability costs and utilisation costs which incorporate the Minimum Non Zero Time (MNZT) of the unit and Minimum Utilisation Period (MUP) for non-BM providers. The tender assessment further considers the response time, the location and the reliability of the tendered unit. The latest assessment principles can be found on the STOR section of the Balancing Services website:

http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=29290

This report is divided into two sections:

- Section 1 provides a summary of tendered and accepted volumes and price information across STOR seasons in 2014/15 (Year 8) and 2015/16 (Year 9). The data is broken down by response time and Flexible or Committed service providers.
- Section 2 provides an overview of the total contracted position for each season in Years 8 and 9 from TR23 and previous tender rounds.

This report is under continuous review and improvement, if you have any comments or suggestions of information you would like to see in future issues of this report, please contact your account manager or STOR service leads: Claire.Gumbley@nationalgrid.com and Owen.Zambuko@nationalgrid.com

Section 1.1 Submitted and Accepted Volumes

As National Electricity Transmission System Operator (NETSO), National Grid maintains an Operating Reserve Requirement (ORR) from 4 hours ahead of time to real time, to take account of demand forecast errors, plant losses and market imbalance. The ORR is met by headroom on market synchronised machines, additional actions taken by National Grid via the Balancing Mechanism (BM) and contracted reserve products. STOR is a contracted reserve product and as such STOR tenders can make up a finite proportion of the ORR. The amount of contracted STOR required is determined by the size of the ORR which changes due to forecast market length, market provided headroom, volume of intermittent generation and demand forecast errors. The proportion of the ORR met by STOR is determined by considering the technical system requirements and also the forecast cost of alternatives versus the cost of the tendered STOR units.

The tenders are assessed in accordance with the STOR Assessment Principles[*], which, amongst other things, consider availability prices (£/MW/h), utilisation prices (£/MWh), response times and geographical location. The accepted tenders are selected such that the total costs of maintaining the ORR and operating the system are lower than without the selection of those tenders.

STOR Volumes Procured by National Grid

National Grid aims to procure STOR tenders such that a minimum of 1800MW of contracted STOR is made available throughout the STOR seasons. The daily and seasonal optimal STOR MW level varies due to real-time and seasonal pressures on the system, but National Grid typically aims to achieve approximately 2200-2300MW of STOR available where economic to do so. This optimal STOR level can include STOR units with a response time greater than 20 minutes if the economics of those units are sufficient. A unit's tendered response time and price are, and will remain, key factors in the assessment of STOR tenders.

National Grid manages the optimal STOR MW level at a daily resolution through the week-ahead Flexible STOR assessment, refining the available portfolio in response to the forecast conditions for the week-ahead. In order to achieve the optimal level at the week-ahead stage, National Grid examines historic availability profiles from Committed and Flexible providers to help determine the volume of STOR tenders to procure at the tri-annual tender round.

At the previous tender round, for seasons 8.1 and 8.2, National Grid reduced its ORR and hence the optimal level of STOR for these seasons was reduced to 2200MW. National Grid also increased its forecast of availability levels from Committed and Flexible units for those seasons. At this tender round the optimal level for the immediate seasons was reassessed and increased back to 2300MW. The assessment is continuously being updated however the expectation for the winter seasons is that the optimal level will be 2300MW.

Following outturn availability levels in season 8.1 and 8.2 being lower than forecast (see Figure 1 and MBSS report for further details), National Grid has again revised it's forecast assumptions moving to using specific historic outturn levels for individual units where available rather than average service type levels. This together with the increase in required volume has resulted in contracted levels for season 8.3 and 8.4 ~ 200MW higher than in 8.1 and 8.2.

Premium Flexible STOR

As a consequence of the competitive STOR market, Flexible providers who tender and are accepted early in the tender round calendar, have been suffering from being undercut at later tender opportunities and thus being rejected at the week ahead stage, failing to receive any contract revenue. National Grid has worked with the market to produce a development which will provide some security to this sector of the market.

As with the Flexible option, this is open to non-BM participants and for accepted tenders provides the option to tender in their availability for the week ahead on the preceding Friday. Within the Invitation to Tender Pack for STOR Tender Round 23 National Grid has defined "premium windows" for each season and if, at the week ahead stage, a successful Premium Flexible STOR provider offers availability during these premium windows National Grid guarantees to accept the offered availability for the whole day at the week ahead assessment[†]. This essentially offers the Premium Flexible units protection from being undercut in subsequent tender rounds

[*] http://www.nationalgrid.com/NR/rdonlyres/7B8CA1AB-4964-4965-B5A2-126C8C202A11/40677/STOR_Assessment_Principles.pdf

[†] A minimum of 85% of daily tendered premium window availability will be accepted where the premium window is offered at the week ahead stage. See the STOR Frequency Asked Questions document available from the STOR service link on page 1 for further details

where they offer availability to National Grid in the windows of greatest value to National Grid. As a result of offering this additional security and accepting the additional risk, National Grid applies a devaluation to these tenders when compared to traditional Flexible tenders during the main tender assessment. Under this contract option providers also have the ability to request secondary assessment (at the main tender assessment stage) as a standard Flexible tender should their tender be rejected as a premium tender due to the devaluation.

The STOR assessment principles, which are available via the link on page 1, describe the differences in the assessment of Premium Flexible tenders compared to standard tenders. However in brief, a forecast of the level of availability is used to reduce the alternative availability cost used in the calculation of cost benefits. The definition of the alternative availability cost is slightly modified to be the minimum of the forecast cost of creating reserve via the BM or the cost of alternative firm contract options available for the same time period within this tender round.

Tenders Received in TR23

On Market Day for TR23 (23rd May 2014), National Grid received tenders from 39 separate companies for 174 different units across the two years. This includes 5 new units from two companies. These new units would represent a potential maximum of 71MW of capacity if they were all fully available at the same time.

Year 8 (2014/15)

This tender round was the final tender opportunity for seasons 8.3 and 8.4, 1414MW and 1404MW were tendered for these seasons respectively in addition to the 2417MW and 2429MW already contracted for these seasons. Two units with response times greater than 20 minutes were tendered for seasons 3 and 4 only (86MW).

The Premium Flexible product continues to be popular with approximately 250MW tendered for season 8.3 & 8.4 and 500MW for seasons 8.5 & 8.6. This represents 63% of the tendered flexible units for season 3 and 74% for season 5.

Year 9 (2015/16)

27 companies tendered 97 units for season 1, 91 for season 3 and 81 for season 5 in year 9. This represents up to 2246, 2007 and 1939MW if all were available concurrently. Based on the tenders received and accepted in year 8 there still remains 650-900MW that have yet to tender for seasons 1-4 and nearly 1150MW yet to tender for the winter seasons.

The STOR Marketplace Continues to be Competitive and Heavily Subscribed

The maximum volume of STOR tendered for year 8 so far has dropped in comparison to year 7, but excluding long term tenders and one off speculative tenders there still remains ~1500MW of tendered STOR capacity without a contract. See Figure 1 for further details.

Successful Tenders in TR23

Year 8 (2014/15)

For Year 8 seasons 3 and 4, the combined capacity of tenders received in TR23 along with the STOR already procured in previous tender rounds would result in a level of STOR availability that would exceed the optimal STOR level. Thus, the tenders that were accepted in TR23 were those that demonstrated the most cost-beneficial prices up to a level that would provide sufficient MW to deliver the optimal STOR level for these seasons. Using the revised availability forecasts and the increased optimal STOR level of 2300MW for these seasons, we have accepted a total of 372MW for season 8.3, comprising 202MW of Committed (including long notice units) and 170MW of Flexible and Premium Flexible units with similar levels for season 4.

For the winter seasons in year 8, we have used the same set of forecasts and cut-offs as used for season 3 and 4 which results in accepting 429MW for season 5 leaving some volume available for the remaining tender opportunity. As can be seen in Figure 1 and Table 1 there is approximately 300-500MW of capacity remaining to contract for in seasons 5-6.

Premium Flexible in Year 8

For seasons 3 and 4, one unit was accepted as Premium Flexible, 4 units requested secondary assessment as Flexible units and were accepted. The remaining 11 units were rejected as premium and did not request secondary assessment but they would still not have been accepted due to their prices.

For seasons 5 and 6, of 20 premium flexible tenders, 6 were accepted as Premium. The remaining units did not request secondary assessment as standard flexible units, although only 1 would have been accepted if they had were assessed as standard flexible units.

Year 9 (2015/16)

For year 9 there is already a significant proportion of the requirement contracted from the previous tender round and from the tenders received it would be possible to fully meet the existing requirement. Only the most competitive tenders were therefore accepted resulting in ~480MW for season 1 and ~ 140MW for season 5. There remains significant volume to contract at the subsequent opportunities for year 9.

Premium Flexible in Year 9

For season 1, 13 tenders for the Premium Flexible service were received, 1 was accepted as Premium Flexible units and the remaining units were rejected without secondary assessment.

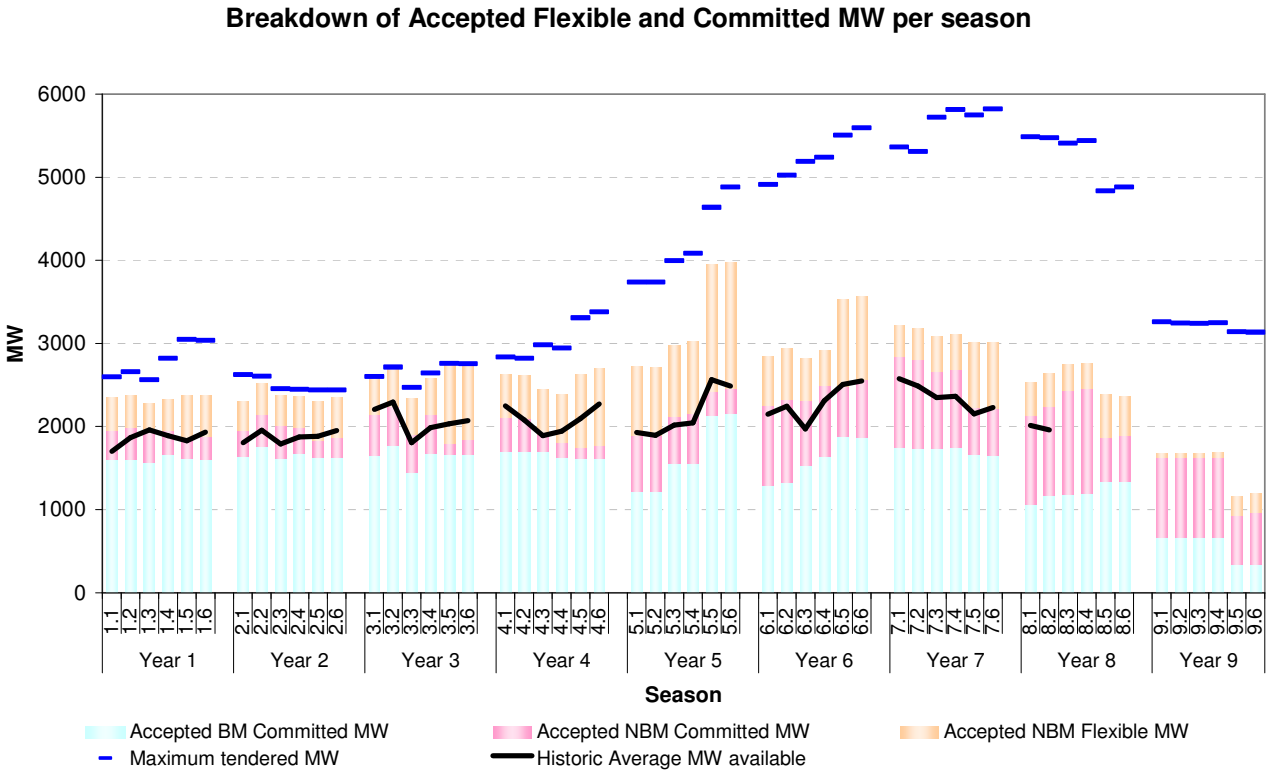
For season 3, there were 14 Premium Flexible tenders, 1 was accepted as Premium, the remaining units were rejected without secondary assessment.

For season 5, there were 24 premium tenders received, no units were accepted as Premium Flexible units, two units were rejected after secondary assessment and the remaining units were rejected without secondary assessment. In all cases the rejected units would not have been accepted as standard flexible units.

Figure 1 gives a breakdown of the accepted Flexible and Committed MW per season since the start of the STOR service. Premium Flexible tenders are included in the Flexible category for the purpose of this chart. The blue line represents the sum of the maximum tendered MW from unique units from any tender round for each season. For seasons with tender rounds still to come, this figure will increase if units that thus far have not tendered for that season, tender in. The black line on the chart represents the outturn average availability for each season (where available).

Please note this chart contains data from previous tender rounds up to and including TR23.

Figure 1



Tables 1 and 2 show the total number of MW rejected or accepted together with their respective volume weighted availability and utilisation prices for Year 8 and Year 9. The table is split into Flexible (including Premium Flexible) or Committed units with response time less than or equal to 20 minutes, and units (Flexible or Committed) with response time greater than 20 minutes.

Please note these tables contain data from previous tender rounds up to and including TR 23. Years 8 and 9 were available to tender for in tender rounds 10-12 through the long term tender options. These rows are highlighted on the tables below.

Table 1 Year 8 Summary

Season		8.1			8.2			8.3			8.4			8.5			8.6		
Service Type		C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C
Total Minimum Requirements MW			1800			1800			1800			1800			1800			1800	
TR 10 Rejected MW (LONG TERM)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TR 10 Accepted MW (LONG TERM)		68	0	0	68	0	0	68	0	0	68	0	0	68	0	0	68	0	0
TR 11 Rejected MW (LONG TERM)		424	0	0	420	0	0	422	0	0	424	0	0	426	0	0	426	0	0
TR 11 Accepted MW (LONG TERM)		116	0	0	116	0	0	116	0	0	116	0	0	116	0	0	116	0	0
TR 12 Rejected MW (LONG TERM)		587	0	0	583	0	0	585	0	0	587	0	0	589	0	0	589	0	0
TR 12 Accepted MW (LONG TERM)		273	0	0	271	0	0	272	0	0	273	0	0	274	0	0	274	0	0
TR 19 Rejected MW		1868	134	0	1638	134	0	1617	134	0	1632	134	0	1357	238	0	1467	214	0
TR 19 Accepted MW		476	0	0	577	0	0	582	0	0	580	0	0	605	14	0	602	14	0
TR 20 Rejected MW		1681	40	0	1686	40	0	1740	40	0	1670	40	0	1370	228	0	1630	168	0
TR 20 Accepted MW		607	136	0	621	138	0	621	116	0	623	116	0	318	122	0	362	118	0
TR 21 Rejected MW		1291	20	88	1248	20	82	1285	8	84	1308	8	86	780	292	0	1125	177	0
TR 21 Accepted MW		424	0	0	414	8	0	441	0	0	451	0	0	247	91	0	247	91	0
TR 22 Rejected MW		1034	209	0	1026	200	0	1040	216	0	1062	216	0	658	233	0	736	182	0
TR 22 Accepted MW		84	267	88	84	265	88	139	79	0	140	79	0	196	243	0	178	227	0
TR 23 Rejected MW		0	0	0	0	0	0	814	233	0	918	233	0	678	297	0	696	303	0
TR 23 Accepted MW		0	0	0	0	0	0	118	170	84	118	171	86	47	382	0	47	343	0
sub Total Rejected MW		6885	403	88	6601	394	82	7503	631	84	7601	631	86	5858	1288	0	6669	1044	0
sub Total Accepted MW		2048	403	88	2151	411	88	2357	365	84	2369	366	86	1871	852	0	1894	793	0
Total Accepted MW			2539			2650			2806			2821			2723			2687	
Average Rejected Availability Price (£/MW/h)	TR 10 (LT)	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
	TR 11 (LT)	£ 19.32	£ -	£ -	£ 19.28	£ -	£ -	£ 19.30	£ -	£ -	£ 19.32	£ -	£ -	£ 19.33	£ -	£ -	£ 19.33	£ -	£ -
	TR 12 (LT)	£ 12.26	£ -	£ -	£ 12.25	£ -	£ -	£ 12.26	£ -	£ -	£ 12.26	£ -	£ -	£ 12.27	£ -	£ -	£ 12.27	£ -	£ -
	TR 19	£ 5.40	£ 6.73	£ -	£ 5.63	£ 6.73	£ -	£ 5.64	£ 6.73	£ -	£ 5.64	£ 6.73	£ -	£ 5.55	£ 6.28	£ -	£ 5.58	£ 6.28	£ -
	TR 20	£ 4.16	£ 3.31	£ -	£ 4.16	£ 3.31	£ -	£ 4.19	£ 3.31	£ -	£ 4.28	£ 3.31	£ -	£ 4.35	£ 4.34	£ -	£ 4.33	£ 3.98	£ -
	TR 21	£ 2.89	£ 2.94	£ 1.10	£ 2.90	£ 2.94	£ 1.10	£ 2.94	£ 3.00	£ 1.35	£ 2.99	£ 3.00	£ 1.35	£ 3.27	£ 3.54	£ -	£ 2.98	£ 3.00	£ -
	TR 22	£ 2.45	£ 1.98	£ -	£ 2.45	£ 2.04	£ -	£ 2.51	£ 2.06	£ -	£ 2.49	£ 2.04	£ -	£ 9.59	£ 2.54	£ -	£ 3.04	£ 2.41	£ -
	TR 23	£ -	£ -	£ -	£ -	£ -	£ -	£ 2.45	£ 2.35	£ -	£ 2.60	£ 2.36	£ -	£ 9.34	£ 2.17	£ -	£ 3.05	£ 2.26	£ -
Average Accepted Availability Price (£/MW/h)	TR 10 (LT)	£ 7.00	£ -	£ -	£ 7.00	£ -	£ -	£ 7.15	£ -	£ -	£ 7.15	£ -	£ -	£ 7.45	£ -	£ -	£ 7.45	£ -	£ -
	TR 11 (LT)	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -
	TR 12 (LT)	£ 11.51	£ -	£ -	£ 11.51	£ -	£ -	£ 11.51	£ -	£ -	£ 11.51	£ -	£ -	£ 11.52	£ -	£ -	£ 11.52	£ -	£ -
	TR 19	£ 4.06	£ -	£ -	£ 3.99	£ -	£ -	£ 3.99	£ -	£ -	£ 3.98	£ -	£ -	£ 3.98	£ 4.00	£ -	£ 3.99	£ 4.00	£ -
	TR 20	£ 3.86	£ 3.59	£ -	£ 3.91	£ 3.58	£ -	£ 3.90	£ 3.62	£ -	£ 4.39	£ 3.62	£ -	£ 5.00	£ 3.74	£ -	£ 5.07	£ 3.65	£ -
	TR 21	£ 1.83	£ -	£ -	£ 1.83	£ 1.50	£ -	£ 1.84	£ -	£ -	£ 1.84	£ -	£ -	£ 1.28	£ 0.50	£ -	£ 1.28	£ 0.50	£ -
	TR 22	£ 0.51	£ 0.42	£ 0.80	£ 0.51	£ 0.42	£ 0.80	£ 0.86	£ 0.72	£ -	£ 0.86	£ 0.72	£ -	£ 0.95	£ 1.09	£ -	£ 0.94	£ 1.02	£ -
	TR 23	£ -	£ -	£ -	£ -	£ -	£ -	£ 0.44	£ 0.22	£ 0.49	£ 0.44	£ 0.22	£ 0.49	£ 0.61	£ 0.30	£ -	£ 0.61	£ 0.35	£ -
Average Rejected Utilisation Price (£/MWh)	TR 10 (LT)	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
	TR 11 (LT)	£ 187	£ -	£ -	£ 185	£ -	£ -	£ 186	£ -	£ -	£ 187	£ -	£ -	£ 190	£ -	£ -	£ 191	£ -	£ -
	TR 12 (LT)	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -
	TR 19	£ 194	£ 155	£ -	£ 199	£ 155	£ -	£ 199	£ 155	£ -	£ 199	£ 155	£ -	£ 208	£ 152	£ -	£ 204	£ 152	£ -
	TR 20	£ 207	£ 187	£ -	£ 207	£ 187	£ -	£ 206	£ 187	£ -	£ 210	£ 187	£ -	£ 216	£ 157	£ -	£ 210	£ 164	£ -
	TR 21	£ 199	£ 134	£ 90	£ 202	£ 134	£ 90	£ 199	£ 140	£ 90	£ 198	£ 140	£ 90	£ 209	£ 159	£ -	£ 208	£ 150	£ -
	TR 22	£ 195	£ 131	£ -	£ 195	£ 131	£ -	£ 195	£ 133	£ -	£ 195	£ 133	£ -	£ 224	£ 141	£ -	£ 216	£ 144	£ -
	TR 23	£ -	£ -	£ -	£ -	£ -	£ -	£ 205	£ 164	£ -	£ 198	£ 165	£ -	£ 212	£ 163	£ -	£ 210	£ 164	£ -
Average Accepted Utilisation Price (£/MWh)	TR 10 (LT)	£ 350	£ -	£ -	£ 350	£ -	£ -	£ 350	£ -	£ -	£ 350	£ -	£ -	£ 360	£ -	£ -	£ 360	£ -	£ -
	TR 11 (LT)	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -
	TR 12 (LT)	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -
	TR 19	£ 163	£ -	£ -	£ 163	£ -	£ -	£ 163	£ -	£ -	£ 163	£ -	£ -	£ 162	£ 168	£ -	£ 163	£ 168	£ -
	TR 20	£ 152	£ 136	£ -	£ 151	£ 134	£ -	£ 151	£ 130	£ -	£ 151	£ 130	£ -	£ 143	£ 136	£ -	£ 139	£ 138	£ -
	TR 21	£ 183	£ -	£ -	£ 184	£ 150	£ -	£ 185	£ -	£ -	£ 185	£ -	£ -	£ 236	£ 145	£ -	£ 236	£ 145	£ -
	TR 22	£ 170	£ 142	£ 90	£ 170	£ 142	£ 90	£ 161	£ 155	£ -	£ 161	£ 155	£ -	£ 216	£ 143	£ -	£ 223	£ 145	£ -
	TR 23	£ -	£ -	£ -	£ -	£ -	£ -	£ 102	£ 133	£ 90	£ 102	£ 133	£ 90	£ 169	£ 99	£ -	£ 169	£ 98	£ -

Average Prices are Weighted by MW Volume and Hours Tendered

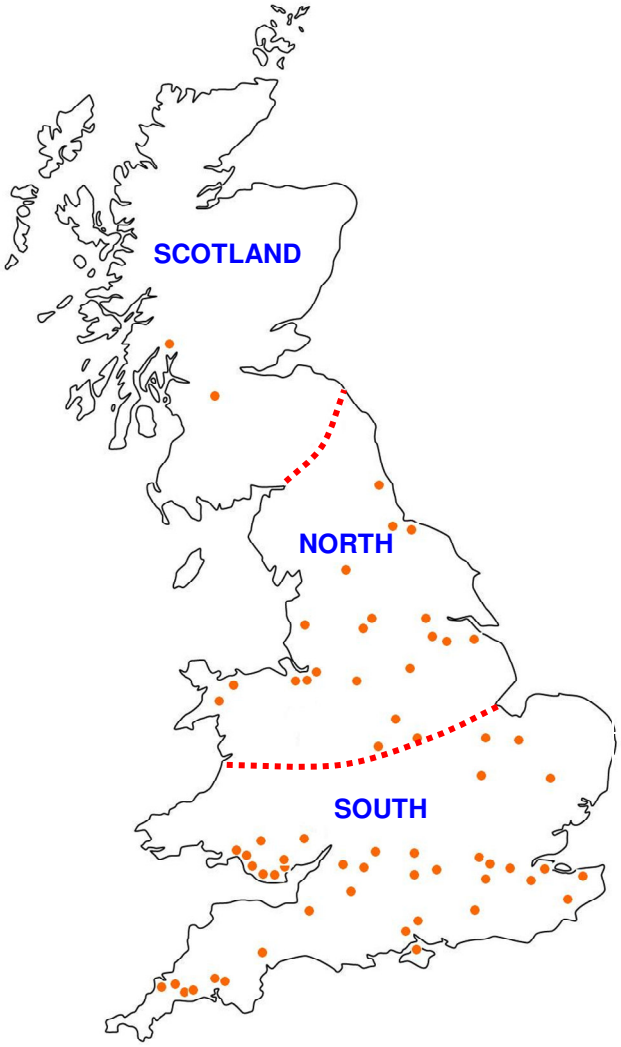
Table 2 Year 9 Summary

Season		9.1			9.2			9.3			9.4			9.5			9.6		
Service Type		C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C	C <20mins	F <20mins	>20mins F or C
Total Minimum Requirements MW		1800			1800			1800			1800			1800			1800		
TR 10 Rejected MW (LONG TERM)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TR 10 Accepted MW (LONG TERM)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TR 11 Rejected MW (LONG TERM)		424	0	0	420	0	0	422	0	0	424	0	0	426	0	0	426	0	0
TR 11 Accepted MW (LONG TERM)		116	0	0	116	0	0	116	0	0	116	0	0	116	0	0	116	0	0
TR 12 Rejected MW (LONG TERM)		587	0	0	583	0	0	585	0	0	587	0	0	589	0	0	589	0	0
TR 12 Accepted MW (LONG TERM)		273	0	0	271	0	0	272	0	0	273	0	0	274	0	0	274	0	0
TR 22 Rejected MW		1063	75	0	1051	75	0	1056	75	0	1061	75	0	1079	92	0	1074	92	0
TR 22 Accepted MW		764	186	0	769	181	0	769	172	0	767	172	0	506	286	0	508	286	0
TR 23 Rejected MW		1668	97	0	1639	104	0	1431	97	0	1439	97	0	1535	266	0	1594	211	0
TR 23 Accepted MW		475	6	0	473	7	0	473	6	0	478	6	0	40	98	0	70	98	0
sub Total Rejected MW		3742	172	0	3693	179	0	3494	172	0	3511	172	0	3629	358	0	3683	303	0
sub Total Accepted MW		1628	192	0	1629	188	0	1630	178	0	1634	178	0	936	384	0	968	384	0
Total Accepted MW		1820			1817			1808			1812			1320			1352		
Average Rejected Availability Price (£MWh)	TR 10 (LT)	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
	TR 11 (LT)	£ 19.32	£ -	£ -	£ 19.28	£ -	£ -	£ 19.30	£ -	£ -	£ 19.32	£ -	£ -	£ 19.33	£ -	£ -	£ 19.33	£ -	£ -
	TR 12 (LT)	£ 12.26	£ -	£ -	£ 12.25	£ -	£ -	£ 12.26	£ -	£ -	£ 12.26	£ -	£ -	£ 12.27	£ -	£ -	£ 12.27	£ -	£ -
	TR 22	£ 8.26	£ 3.75	£ -	£ 8.26	£ 3.75	£ -	£ 8.26	£ 3.75	£ -	£ 8.26	£ 3.75	£ -	£ 10.16	£ 3.97	£ -	£ 8.57	£ 3.97	£ -
	TR 23	£ 3.26	£ 4.10	£ -	£ 3.26	£ 4.03	£ -	£ 3.15	£ 4.20	£ -	£ 3.25	£ 4.21	£ -	£ 5.91	£ 4.06	£ -	£ 3.15	£ 4.13	£ -
Average Accepted Availability Price (£MWh)	TR 10 (LT)	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
	TR 11 (LT)	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -	£ 11.00	£ -	£ -
	TR 12 (LT)	£ 11.51	£ -	£ -	£ 11.51	£ -	£ -	£ 11.51	£ -	£ -	£ 11.51	£ -	£ -	£ 11.52	£ -	£ -	£ 11.52	£ -	£ -
	TR 22	£ 3.77	£ 2.29	£ -	£ 3.76	£ 2.27	£ -	£ 3.77	£ 2.24	£ -	£ 4.16	£ 2.24	£ -	£ 4.58	£ 2.85	£ -	£ 4.57	£ 2.84	£ -
	TR 23	£ 1.36	£ 1.50	£ -	£ 1.35	£ 2.00	£ -	£ 1.35	£ 1.50	£ -	£ 1.36	£ 1.50	£ -	£ 1.50	£ 0.71	£ -	£ 1.39	£ 0.71	£ -
Average Rejected Utilisation Price (£MWh)	TR 10 (LT)	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
	TR 11 (LT)	£ 187	£ -	£ -	£ 185	£ -	£ -	£ 186	£ -	£ -	£ 187	£ -	£ -	£ 190	£ -	£ -	£ 191	£ -	£ -
	TR 12 (LT)	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -	£ 222	£ -	£ -
	TR 22	£ 206	£ 160	£ -	£ 206	£ 160	£ -	£ 206	£ 160	£ -	£ 206	£ 160	£ -	£ 205	£ 164	£ -	£ 205	£ 164	£ -
	TR 23	£ 172	£ 133	£ -	£ 172	£ 132	£ -	£ 176	£ 132	£ -	£ 177	£ 132	£ -	£ 197	£ 163	£ -	£ 195	£ 159	£ -
Average Accepted Utilisation Price (£MWh)	TR 10 (LT)	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -	£ -
	TR 11 (LT)	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -	£ 224	£ -	£ -
	TR 12 (LT)	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -	£ 206	£ -	£ -
	TR 22	£ 161	£ 147	£ -	£ 160	£ 148	£ -	£ 160	£ 151	£ -	£ 160	£ 151	£ -	£ 159	£ 155	£ -	£ 159	£ 155	£ -
	TR 23	£ 219	£ 90	£ -	£ 219	£ 90	£ -	£ 219	£ 100	£ -	£ 219	£ 100	£ -	£ 230	£ 140	£ -	£ 204	£ 140	£ -

Average Prices are Weighted by MW Volume and Hours Tendered

Figure 2 presents the number of units and the total MW tendered and accepted for each season and each location. The orange dots on the map indicate the approximate location of the units tendered in any season (not including sites located in more than one region).

Figure 2 Map of Great Britain



SCOTLAND	Units tendered	Units Accepted	MW tendered	MW Accepted
8.1	-	-	-	-
8.2	-	-	-	-
8.3	4	-	104	-
8.4	4	-	104	-
8.5	1	-	30	-
8.6	1	-	30	-
9.1	-	-	-	-
9.2	-	-	-	-
9.3	-	-	-	-
9.4	-	-	-	-
9.5	-	-	-	-
9.6	-	-	-	-

NORTH	Units tendered	Units Accepted	MW tendered	MW Accepted
8.1	-	-	-	-
8.2	-	-	-	-
8.3	24	9	391	166
8.4	25	9	492	169
8.5	15	4	383	110
8.6	14	3	373	100
9.1	13	5	458	97
9.2	13	5	455	96
9.3	11	5	369	96
9.4	11	5	370	97
9.5	9	5	369	99
9.6	9	5	369	99

SOUTH	Units tendered	Units Accepted	MW tendered	MW Accepted
8.1	-	-	-	-
8.2	-	-	-	-
8.3	27	13	657	166
8.4	27	13	663	166
8.5	31	17	648	255
8.6	32	15	643	230
9.1	57	19	1,577	384
9.2	57	19	1,557	384
9.3	53	19	1,430	383
9.4	53	19	1,442	387
9.5	42	2	1,326	39
9.6	46	5	1,360	69

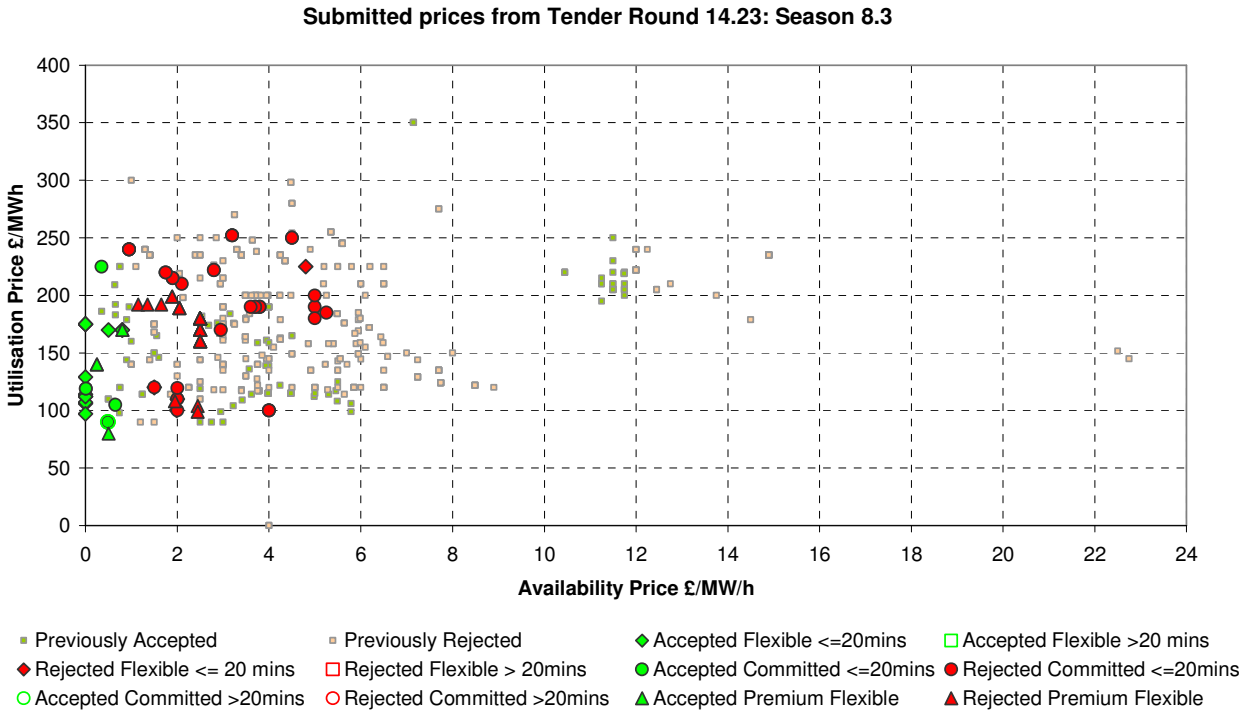
MULTIPLE LOCATIONS (Aggregated sites)

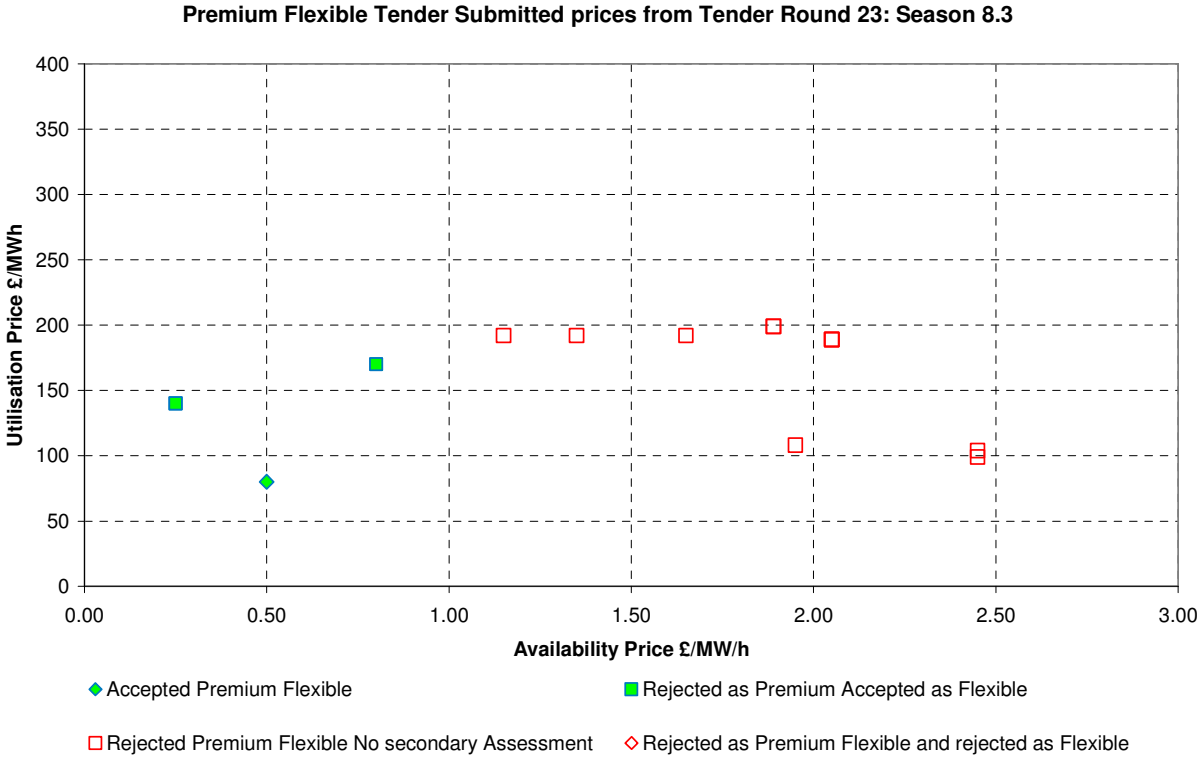
MULTIPLE	Units tendered	Units Accepted	MW tendered	MW Accepted
8.1	-	-	-	-
8.2	-	-	-	-
8.3	40	4	267	40
8.4	40	4	267	40
8.5	46	7	343	64
8.6	46	6	343	60
9.1	27	-	211	-
9.2	27	-	211	-
9.3	27	-	208	-
9.4	27	-	208	-
9.5	30	-	244	-
9.6	30	-	244	-

Section 1.2 Prices

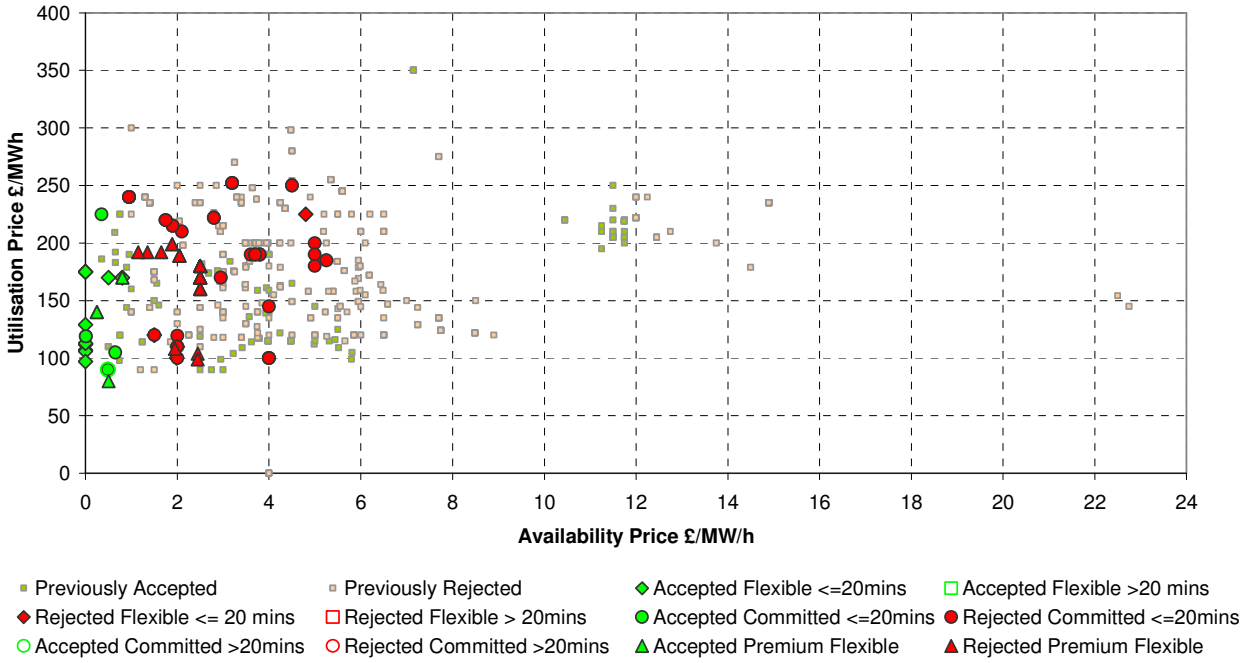
Figures 3 and 4 below show scatter plots of availability and utilisation price for each tender and for each season. The data is broken down into response time groups of >20 mins or <=20 mins, Flexible or Committed service and accepted or rejected tenders. These charts also display any units accepted as Premium Flexible, or rejected as Premium Flexible if they were not then assessed as Flexible. If a unit was rejected as Premium Flexible and then assessed as Flexible, they are represented on the chart as normal Flexible tenders. These charts also depict the accepted and rejected tenders from previous tender rounds. Additional plots displaying only the Premium Flexible tenders are included for clarity.

Figure 3 Year 8 Availability and Utilisation price charts

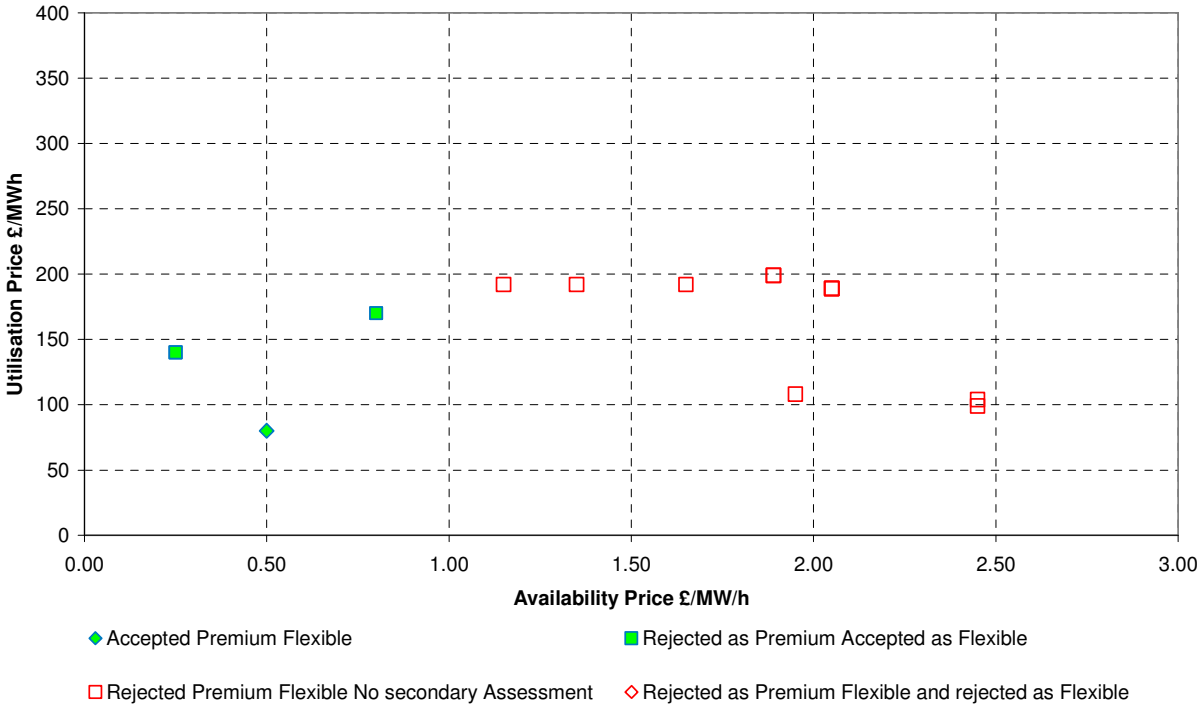




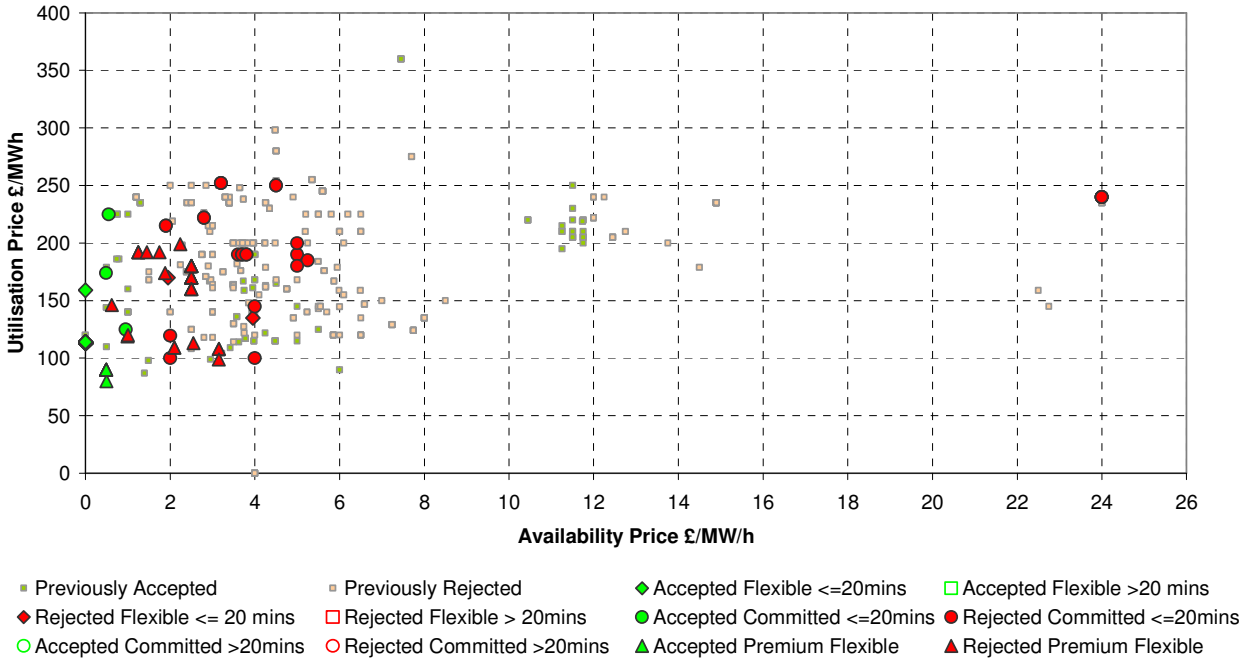
Submitted prices from Tender Round 14.23: Season 8.4



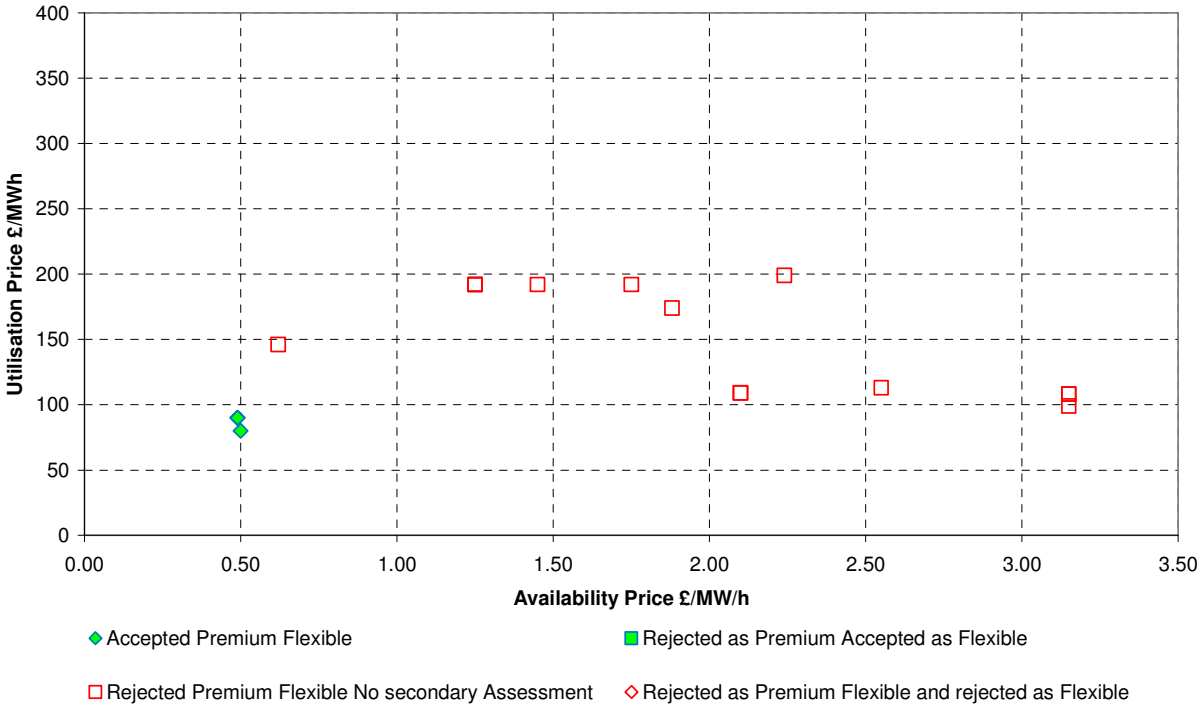
Premium Flexible Tender Submitted prices from Tender Round 23: Season 8.4



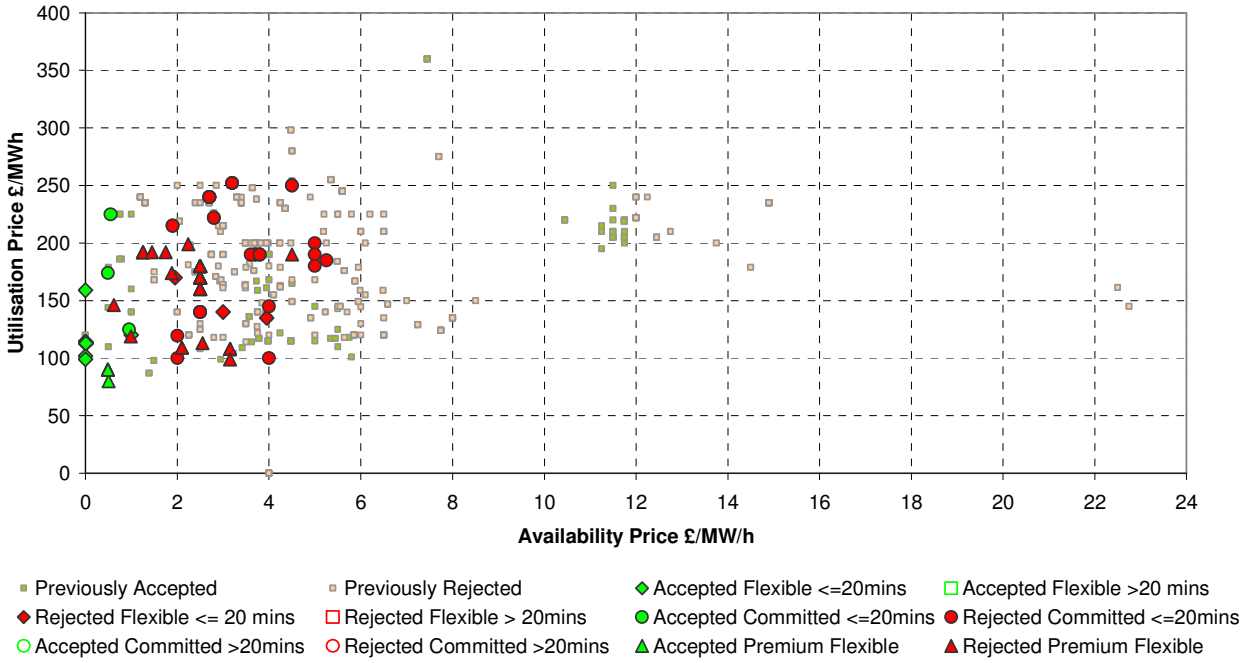
Submitted prices from Tender Round 14.23: Season 8.5



Premium Flexible Tender Submitted prices from Tender Round 23: Season 8.5



Submitted prices from Tender Round 14.23: Season 8.6



Premium Flexible Tender Submitted prices from Tender Round 23: Season 8.6

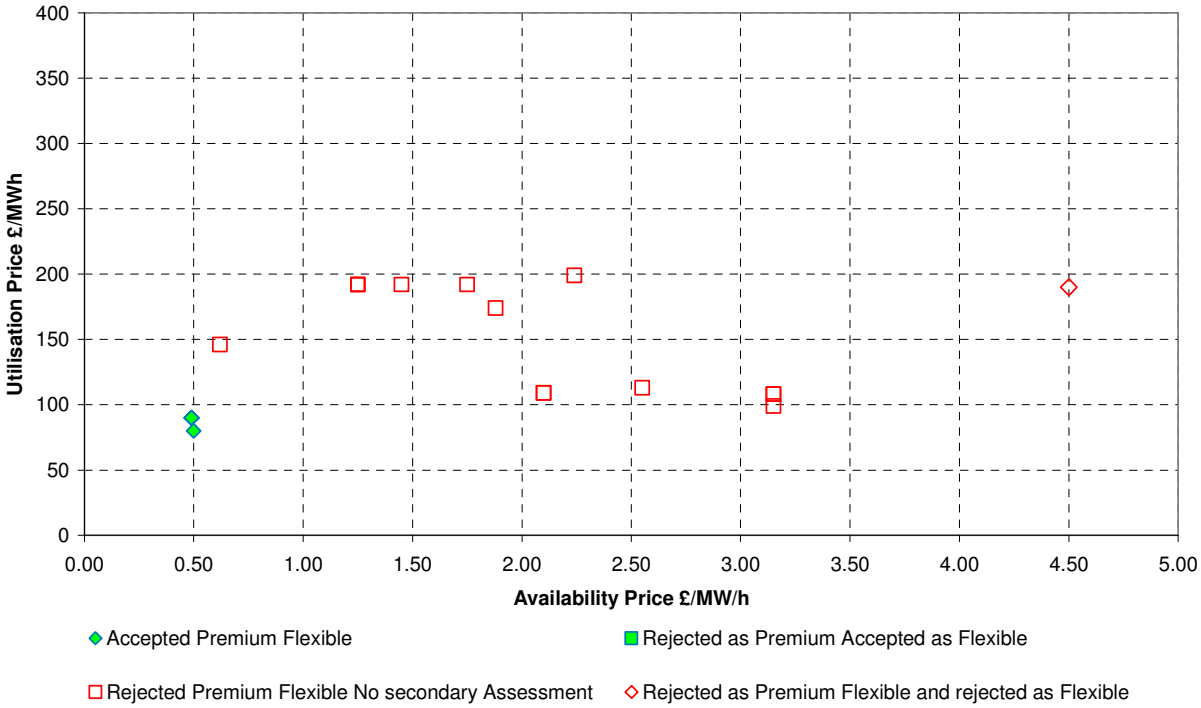
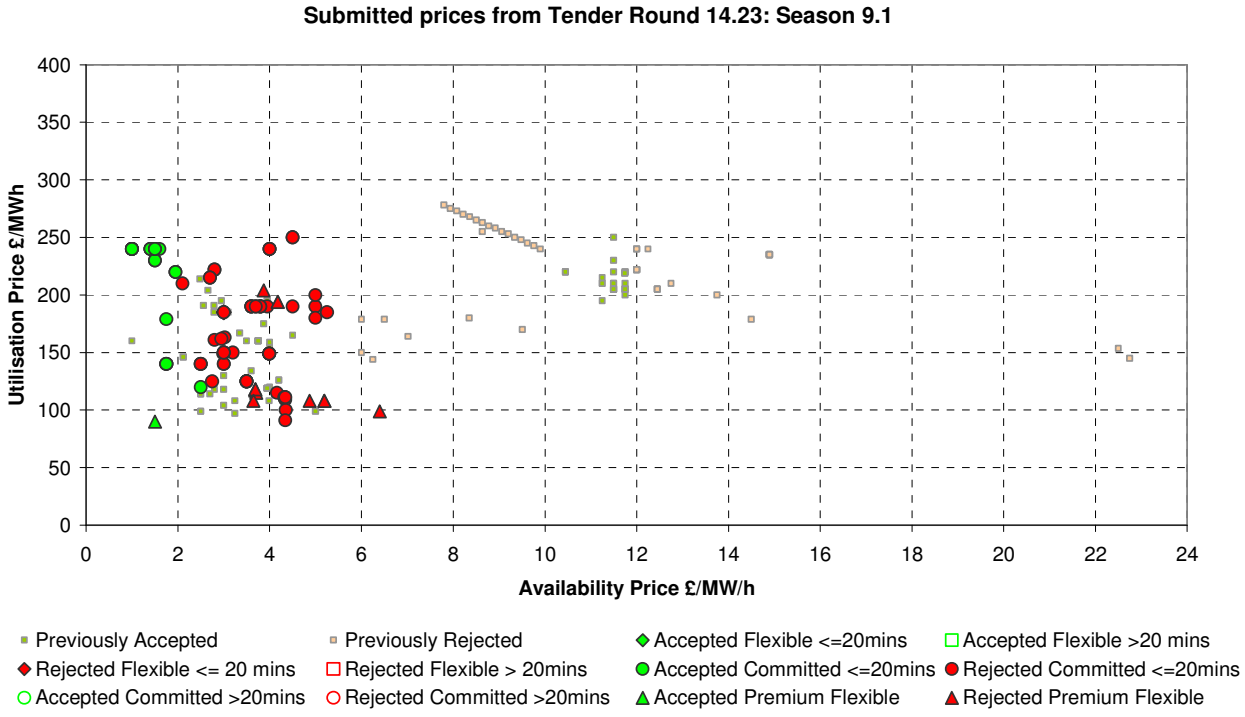
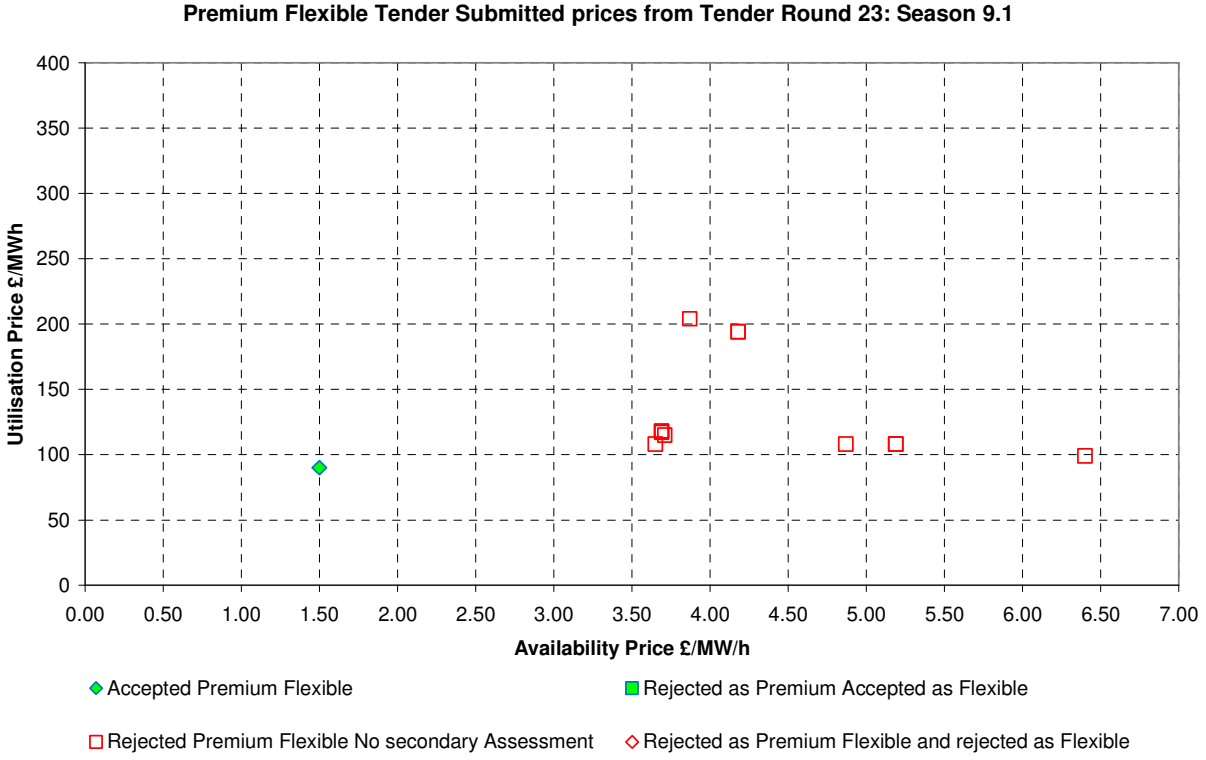
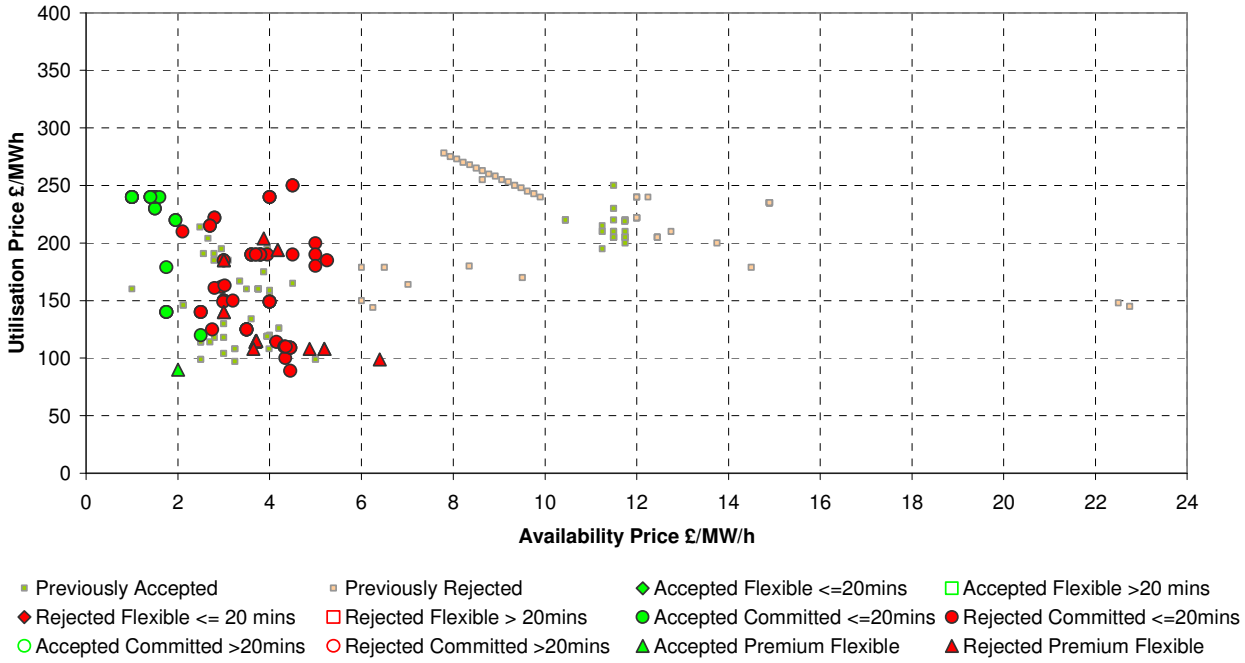


Figure 4 Year 9 Availability and Utilisation price charts

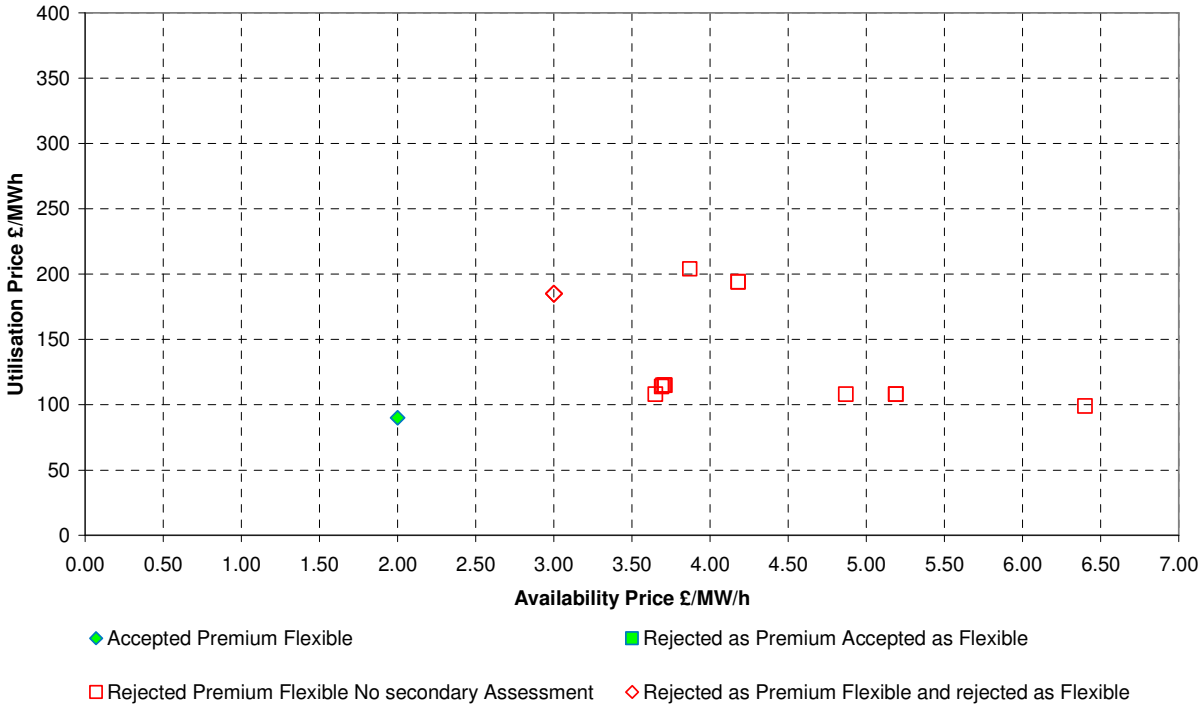




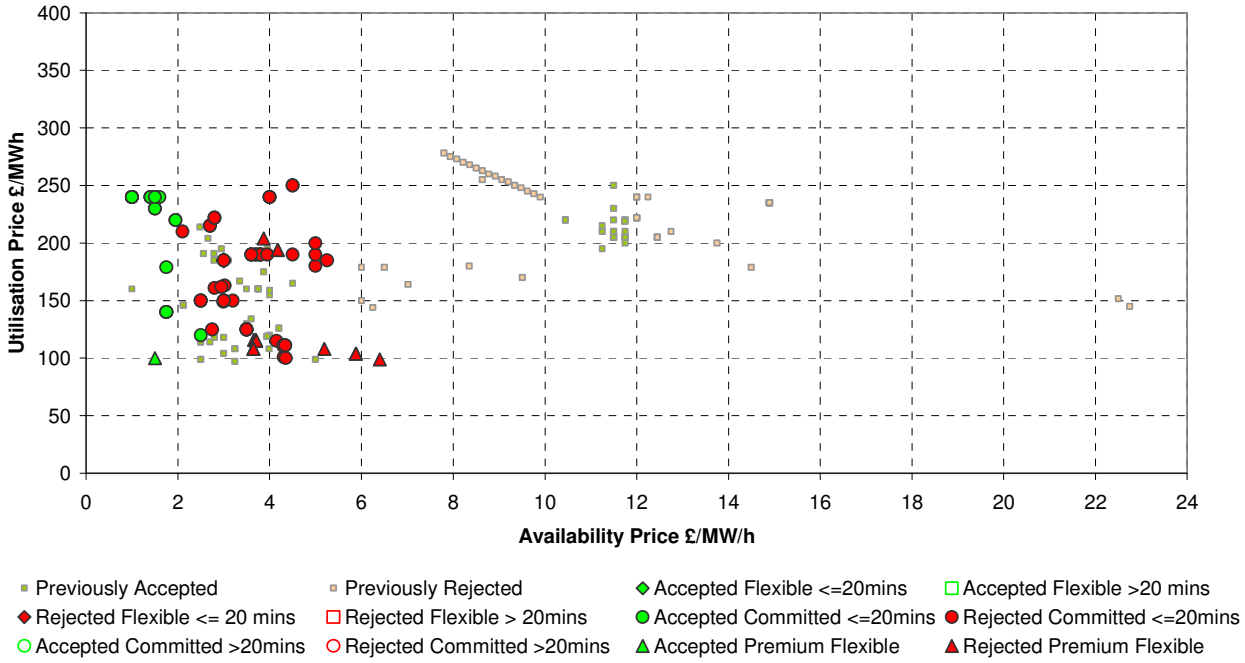
Submitted prices from Tender Round 14.23: Season 9.2



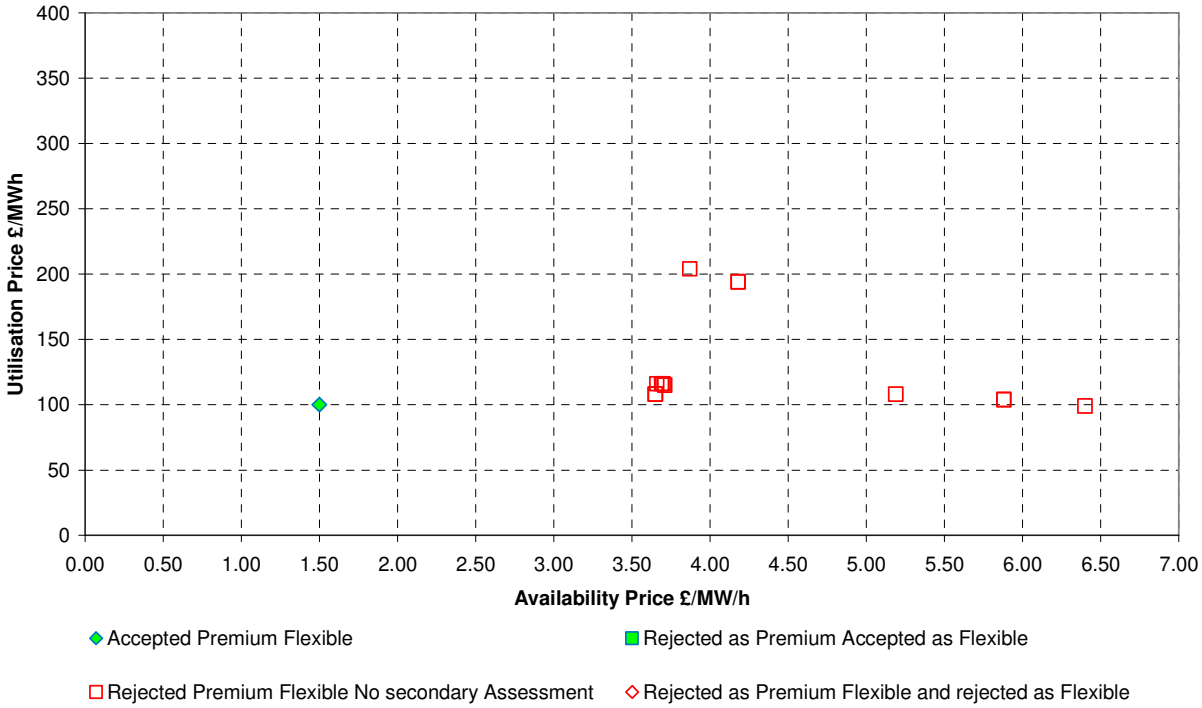
Premium Flexible Tender Submitted prices from Tender Round 23: Season 9.2



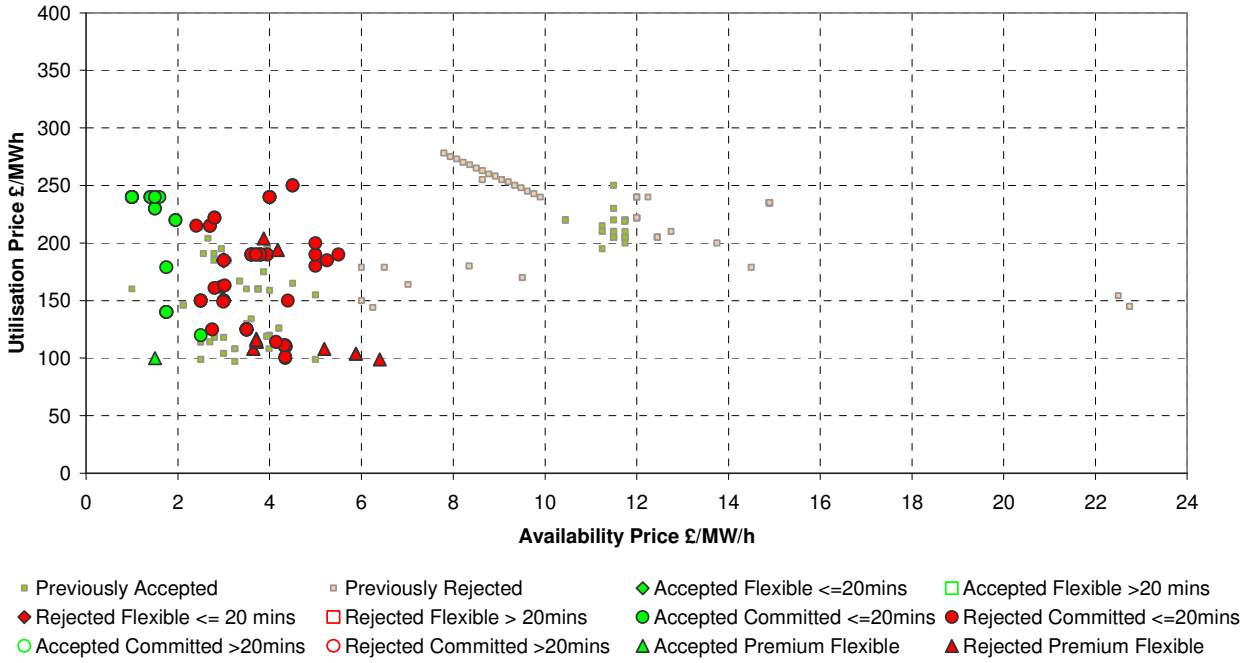
Submitted prices from Tender Round 14.23: Season 9.3



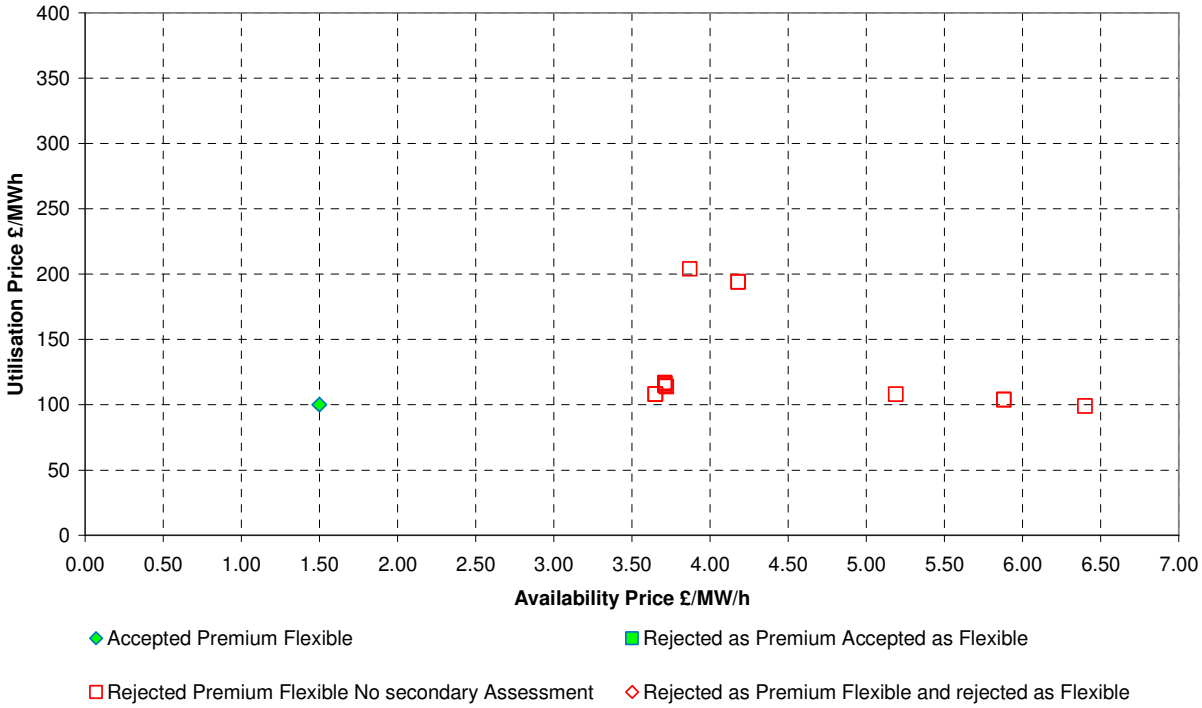
Premium Flexible Tender Submitted prices from Tender Round 23: Season 9.3



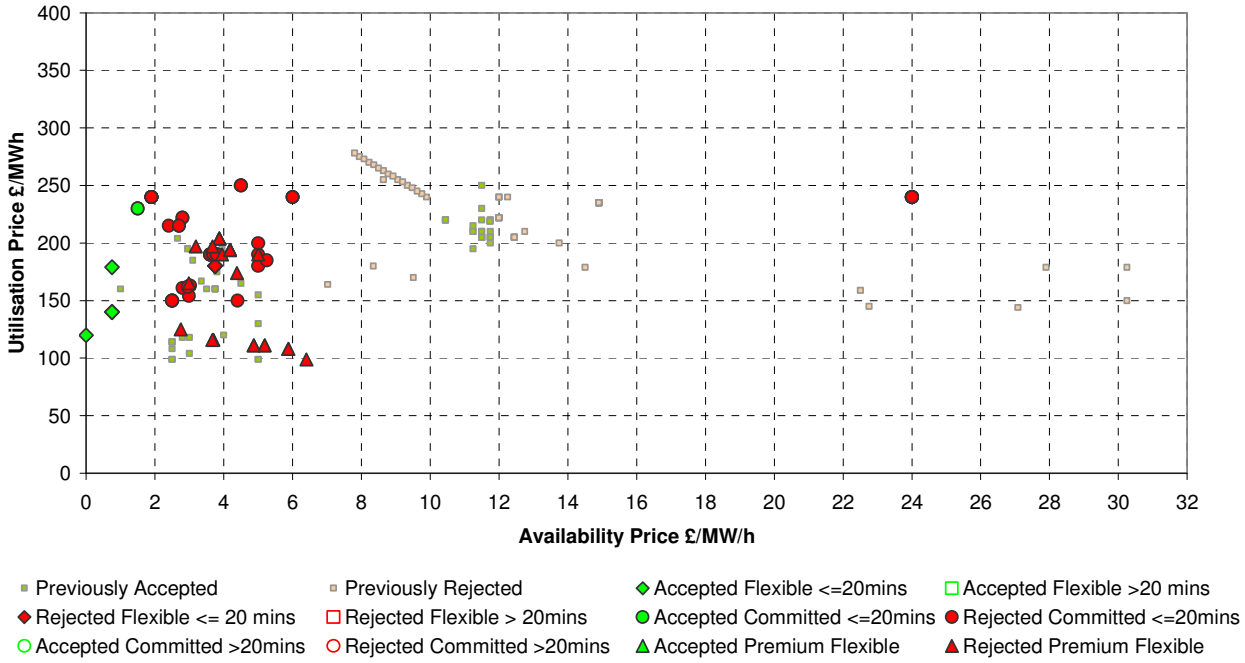
Submitted prices from Tender Round 14.23: Season 9.4



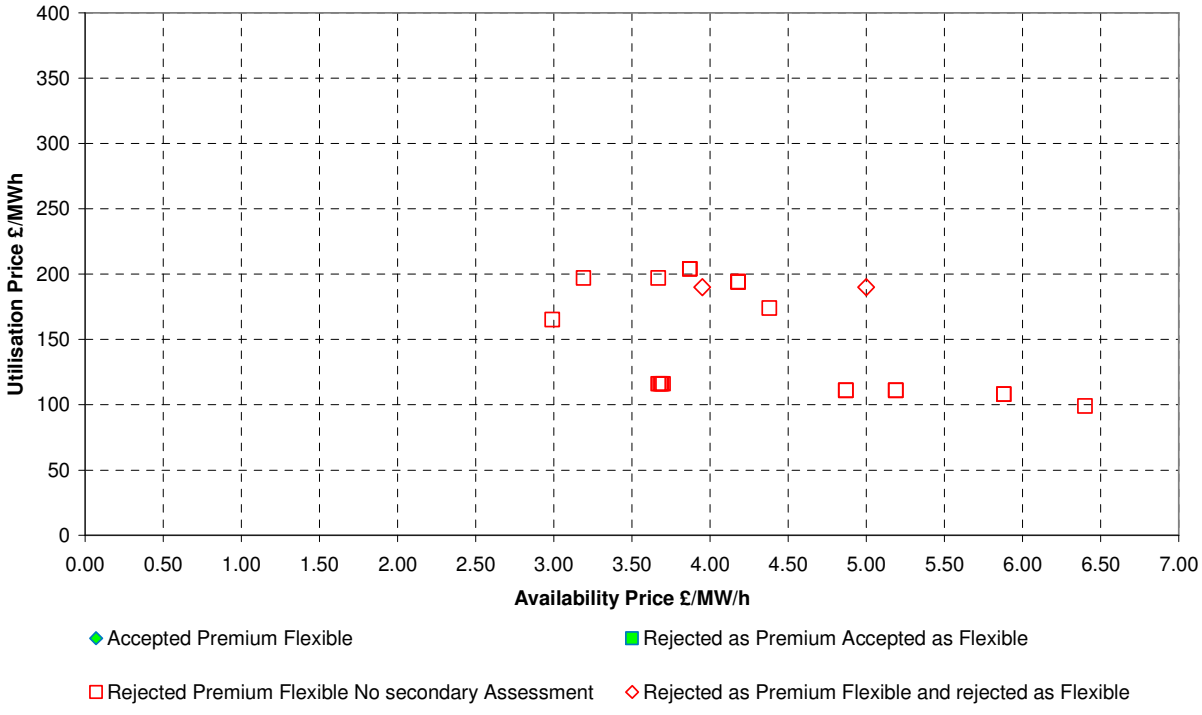
Premium Flexible Tender Submitted prices from Tender Round 23: Season 9.4



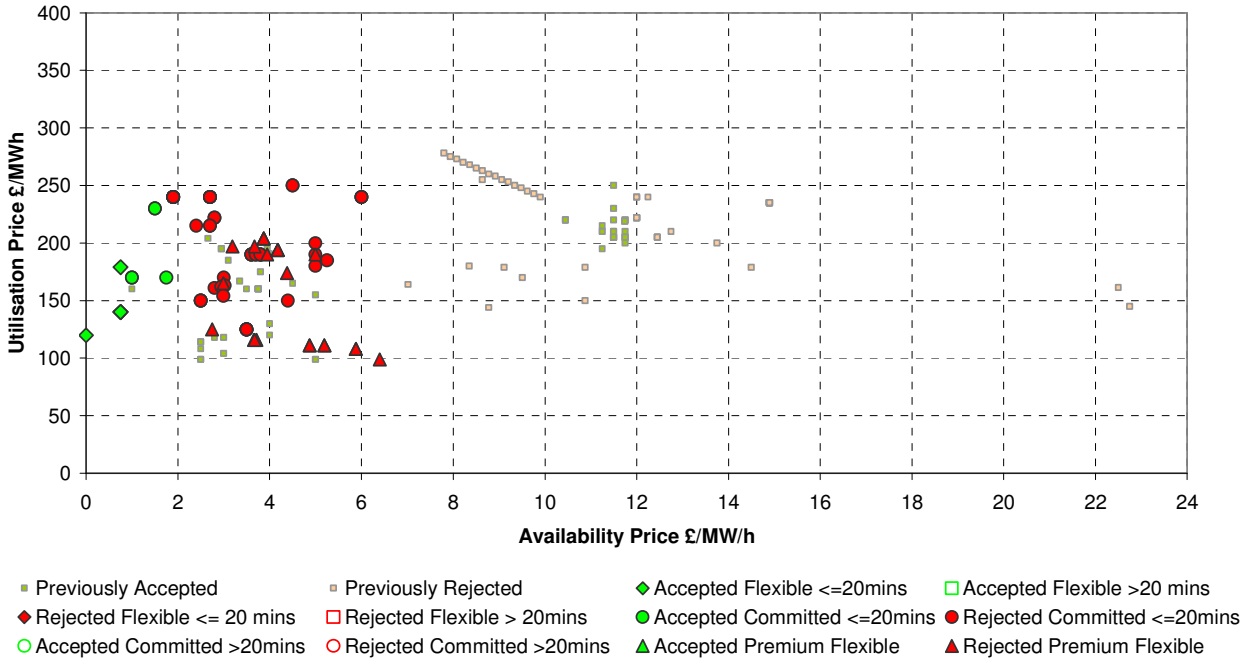
Submitted prices from Tender Round 14.23: Season 9.5



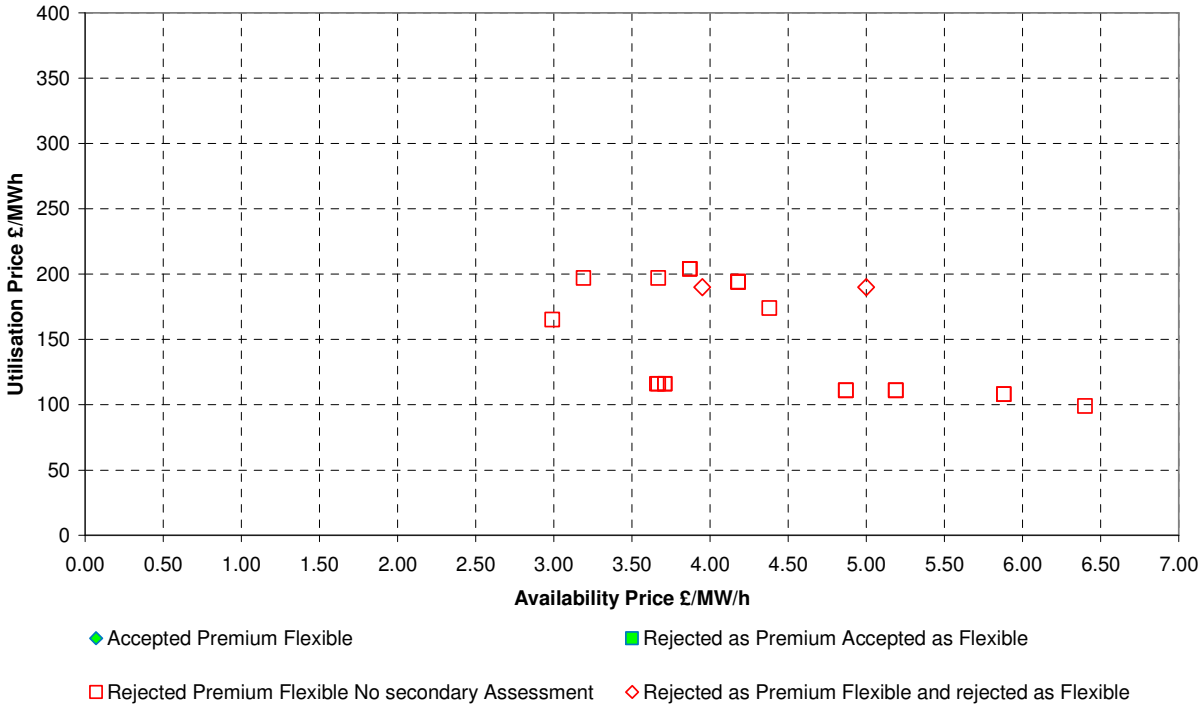
Premium Flexible Tender Submitted prices from Tender Round 23: Season 9.5



Submitted prices from Tender Round 14.23: Season 9.6



Premium Flexible Tender Submitted prices from Tender Round 23: Season 9.6



Section 1.3 MW Capacity

Figures 5 and 6 exhibit cumulative graphs. In these graphs the total accepted MW from previous tender rounds, up to and including the results from TR23, have been stacked according to two categories: **Figure 5a & 5b** is ranked according to utilisation price and **Figures 6a & 6b** according to the response time of the unit. **The utilisation prices have had indexation applied (seasonal and annual) these are final for season 8.1 & 2 but may change for the remaining seasons. Please note that the charts in this section include MW from Flexible units, which may not be available at all times. Also note that the charts contain data from previous tender rounds up to and including TR23.**

Figure 5a: Cumulative MW by Utilisation Price for Year 8

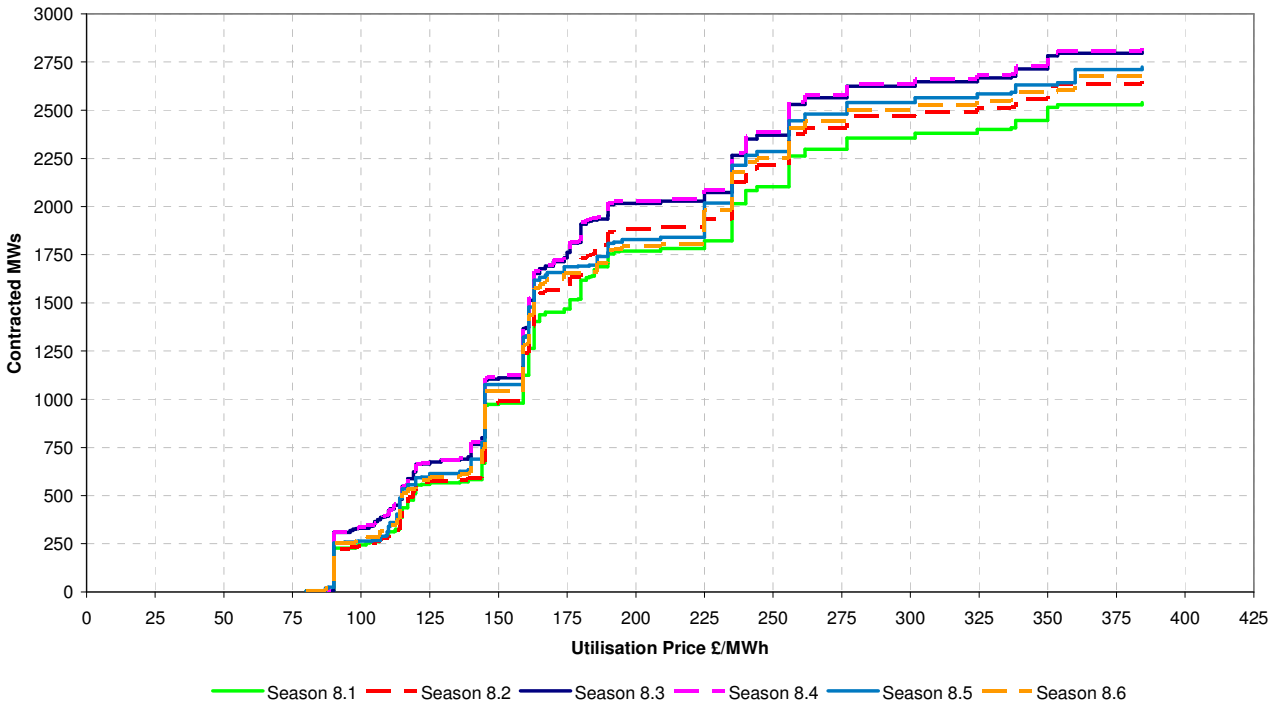


Figure 5b: Cumulative MW by Utilisation Price for Year 9

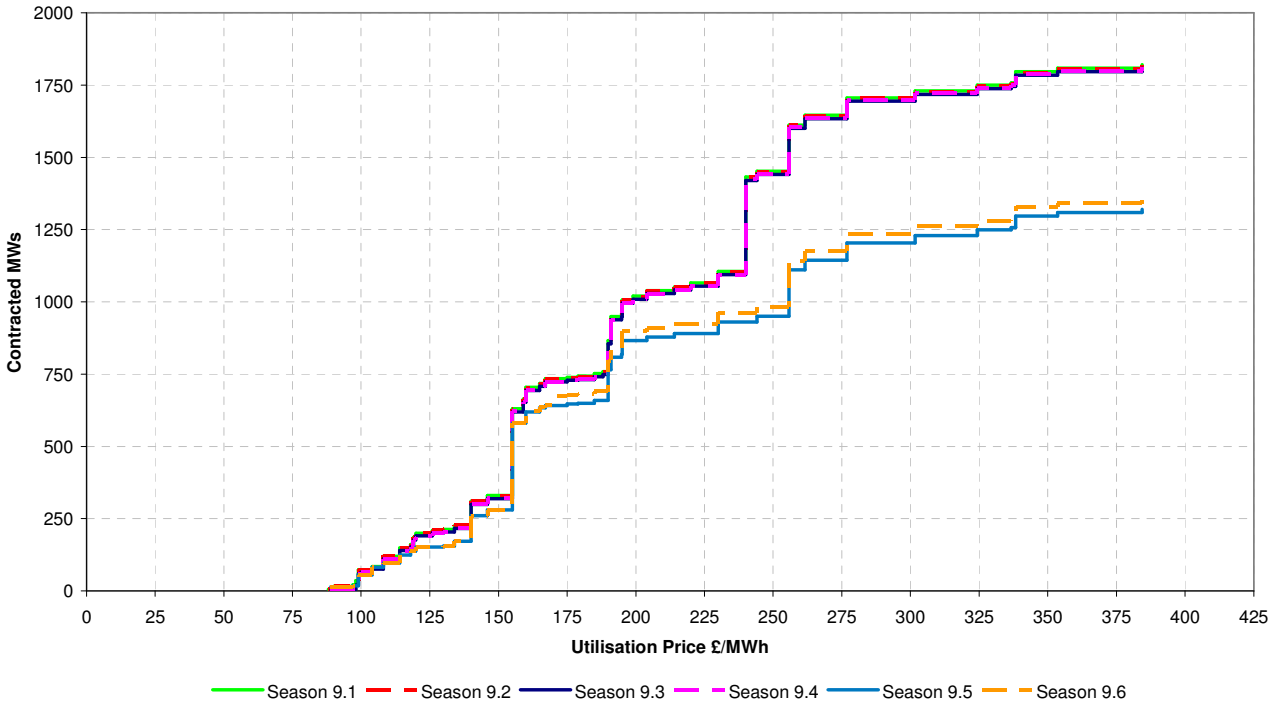


Figure 6b illustrates that for seasons 8.1 and 8.2 approximately 850MW of STOR is contracted with a response time of 10 minutes or less.

Figure 6a: Cumulative MW by Response Time for Year 8

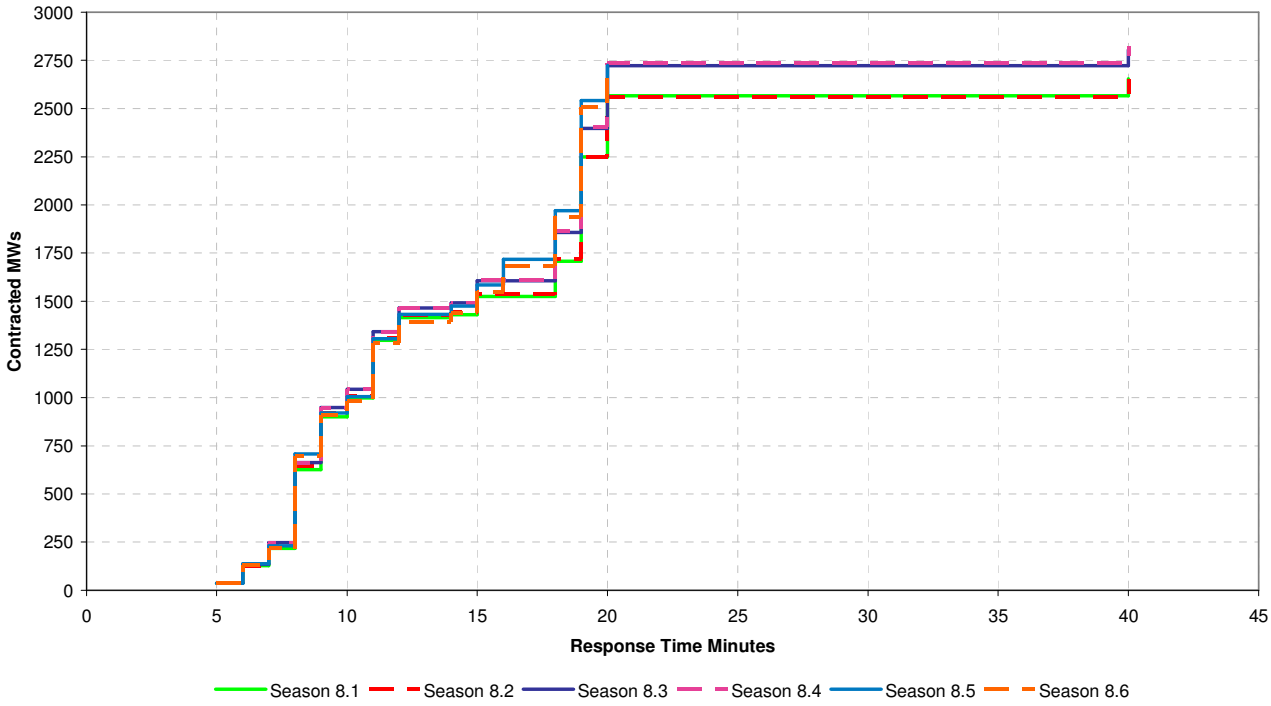
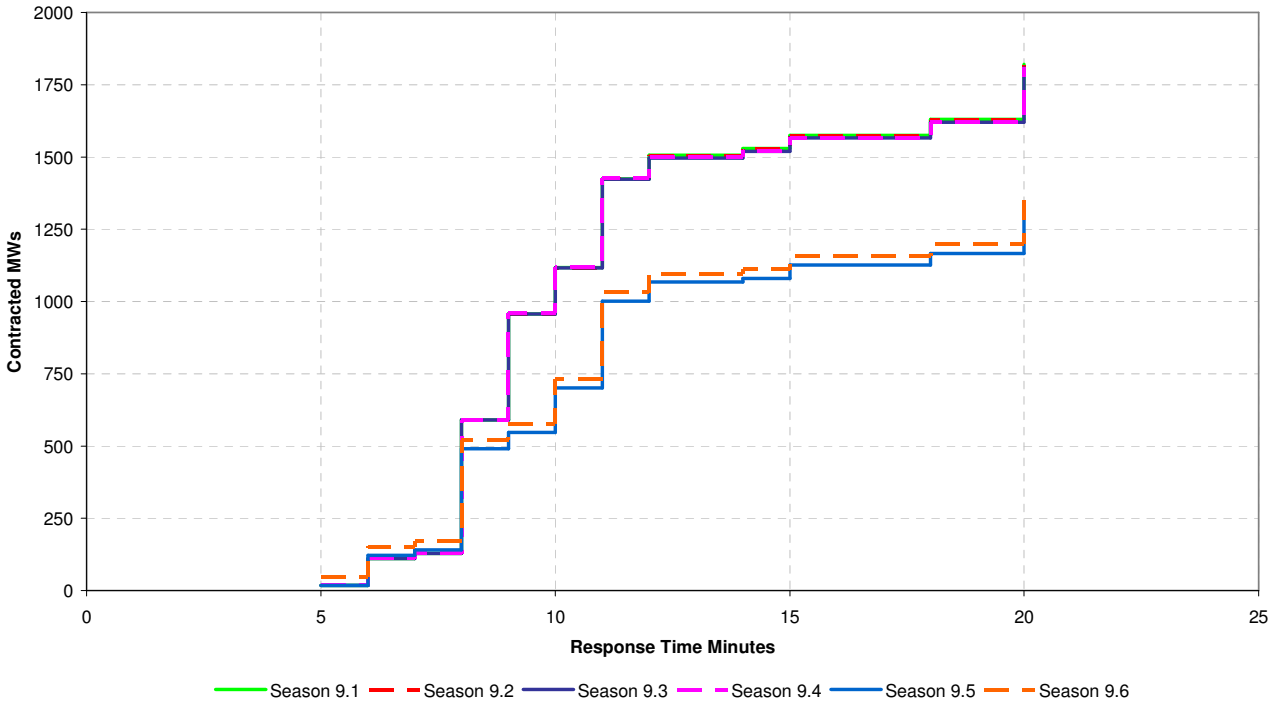


Figure 6b: Cumulative MW by Response Time for Year 9

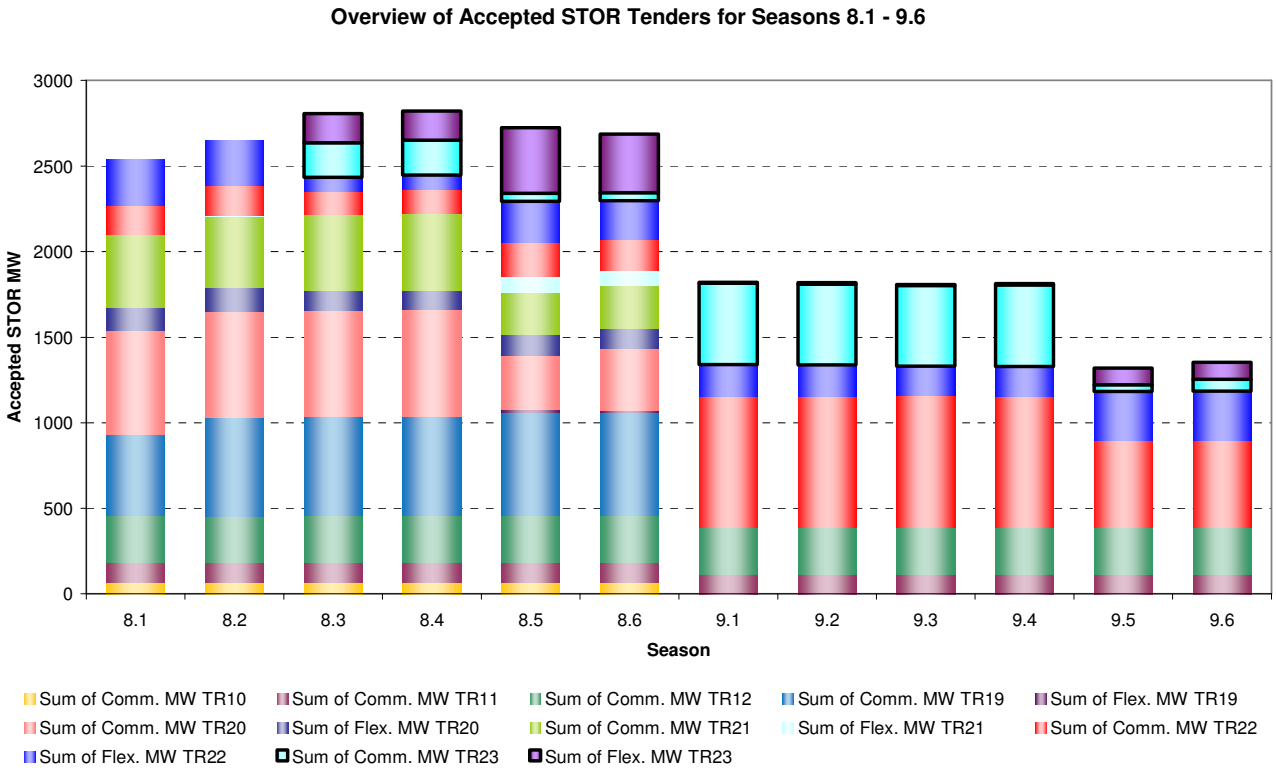


Section 2 Total Contracted Position

Figure 7 shows the breakdown of accepted volumes from all previous tender rounds across the seasons of Years 8 and 9. The table accompanying Figure 7 below displays the same data in table format split by Committed or Flexible. For purpose of this chart and table Premium Flexible units are classed as Flexible units.

Figure 7 Year 8 and 9 summaries by tender round

Please note this figure contains data from previous tender rounds up to and including TR23.



	Season	8.1		8.2		8.3		8.4		8.5		8.6	
	Service Type	C	F	C	F	C	F	C	F	C	F	C	F
Accepted MW	TR10 (LT)	68		68		68		68		68		68	
	TR11 (LT)	116		116		116		116		116		116	
	TR12 (LT)	273		271		272		273		274		274	
	TR19	476		577		582		580		605	14	602	14
	TR20	607	136	621	138	621	116	623	116	318	122	362	118
	TR21	424		414	8	441		451		247	91	247	91
	TR22	172	267	172	265	139	79	140	79	196	243	178	227
	TR23					202	170	204	171	47	382	47	343
	Total	2136	403	2239	411	2441	365	2455	366	1871	852	1894	793

	Season	9.1		9.2		9.3		9.4		9.5		9.6	
	Service Type	C	F	C	F	C	F	C	F	C	F	C	F
Accepted MW	TR10 (LT)	0	0	0	0	0	0	0	0	0	0	0	0
	TR11 (LT)	116		116		116		116		116		116	
	TR12 (LT)	273		271		272		273		274		274	
	TR22	764	186	769	181	769	172	767	172	506	286	508	286
	TR23	475	6	473	7	473	6	478	6	40	98	70	98
	Total	1628	192	1629	188	1630	178	1634	178	936	384	968	384

Appendix 1: Terminology and Definitions

High level description of STOR:

STOR is designed to give National Grid sufficient Operating Reserve to replace sudden generation losses, or unpredictable changes in demand between four hours ahead of real time and real time and requires a large proportion of units to be available within 20 minutes. STOR also recognises that other potential reserve providers who cannot meet the 20 minute response time criteria can still be of value in meeting our reserve requirement. Hence a key aspect of the definition of the STOR product is that it extends the maximum response time to 240 minutes to allow alternative providers to participate. How value is placed on these units by National Grid is different to the sub 20 minute notice units as the longer notice units compete mainly with alternative options available in the Balancing Mechanism with equivalent response times. Location, reliability and utilisation parameters are also important elements of the STOR assessment.

The Committed service applies to all providers who wish to make themselves available for all required windows nominated by National Grid. Both BM and NBM providers can tender for this service. The Flexible service applies only to NBM providers and allows the provider to make the unit available or unavailable for particular windows. This availability is assessed on a week-ahead basis and providers are notified if their service is required or not. It is at the discretion of National Grid whether a unit is accepted or rejected at the week-ahead stage and this decision will be based on the same assessment principles as the main tender assessment. The increased accuracy of the week-ahead forecast means that some factors may have more importance such as location if specific constraint issues are forecast. Both Services attract an availability payment paid on a £/MW/h basis when available within defined windows and an utilisation payment on delivery of STOR MW when instructed by National Grid paid on a £/MWh basis.

A summary of the STOR service can be found on our website at the following link:

http://www.nationalgrid.com/NR/rdonlyres/083D0D9C-1A33-4336-8FA3-1A69DCC1C903/60303/TR20_General_Description.pdf

Appendix 2:

Accepted and Rejected Tenders TR23: A list of information containing prices, response time, location and unit type of all accepted and rejected tenders from this tender round, previously found in the appendix to the market information reports, can now be downloaded, in spreadsheet format, from the tender and reports section of the National Grid Balancing Services webpage:

http://www.nationalgrid.com/uk/Electricity/Balancing/services/STOR/

Appendix 3: Season Reference

The following tables summarise the season information for the current year (Year 8) and the following year (Year 9).

Seasons 2014/15

Season	Dates	WD Start Time	WD End Time	NWD Start Time	NWD End Time	Hours/Day Type WD	Hours/Day Type NWD	Total
1	05:00 on Tuesday 1st Apr 2014 - 05:00 on Monday 28th Apr 2014	07:00	13:30	10:00	14:00	209	32.5	241.5
		19:00	22:00	19:30	22:00			
2	05:00 on Monday 28th Apr 2014 - 05:00 on Monday 18th Aug 2014	07:30	14:00	09:30	13:30	1081	126	1207
		16:00	18:00	19:30	22:30			
		19:30	22:30					
3	05:00 on Monday 18th Aug 2014 - 05:00 on Monday 22nd Sep 2014	07:30	14:00	10:30	13:30	348	36	384
		16:00	21:30	19:00	22:00			
4	05:00 on Monday 22nd Sep 2014 - 05:00 on Monday 27th Oct 2014	07:00	13:30	10:30	13:30	330	32.5	362.5
		16:30	21:00	17:30	21:00			
5	05:00 on Monday 27th Oct 2014 - 05:00 on Monday 2nd Feb 2015	07:00	13:30	10:30	13:30	931.5	127.5	1059
		16:00	21:00	16:00	20:30			
6	05:00 on Monday 2nd Feb 2015 - 05:00 on Wednesday 1st Apr 2015	07:00	13:30	10:30	13:30	550	60	610
		16:30	21:00	16:30	21:00			
						3449.5	414.5	3864

Season	WD	NWD
1	22	5
2	94	18
3	29	6
4	30	5
5	81	17
6	50	8

Total Hours	3864

Seasons 2015/16

Season	Dates	WD Start Time	WD End Time	NWD Start Time	NWD End Time	Hours/Day Type WD	Hours/Day Type NWD	Total
1	05:00 on Wednesday 1st Apr 2015 - 05:00 on Monday 27th Apr 2015	07:00	13:30	10:00	14:00	199.5	32.5	232
		19:00	22:00	19:30	22:00			
2	05:00 on Monday 27th Apr 2015 - 05:00 on Monday 24th Aug 2015	07:30	14:00	09:30	13:30	1150	133	1283
		16:00	18:00	19:30	22:30			
		19:30	22:30					
3	05:00 on Monday 24th Aug 2015 - 05:00 on Monday 21st Sep 2015	07:30	14:00	10:30	13:30	276	30	306
		16:00	21:30	19:00	22:00			
4	05:00 on Monday 21st Sep 2015 - 05:00 on Monday 26th Oct 2015	07:00	13:30	10:30	13:30	330	32.5	362.5
		16:30	21:00	17:30	21:00			
5	05:00 on Monday 26th Oct 2015 - 05:00 on Monday 1st Feb 2016	07:00	13:30	10:30	13:30	920	135	1055
		16:00	21:00	16:00	20:30			
6	05:00 on Monday 1st Feb 2016 - 05:00 on Friday 1st Apr 2016	07:00	13:30	10:30	13:30	561	67.5	628.5
		16:30	21:00	16:30	21:00			
						3436.5	430.5	3867

Season	WD	NWD
1	21	5
2	100	19
3	23	5
4	30	5
5	80	18
6	51	9

Total Hours	3867