

REACTIVE POWER MARKET

REACTIVE MARKET REPORT

TWENTY SEVENTH TENDER ROUND FOR OBLIGATORY AND ENHANCED REACTIVE POWER SERVICES

**FOR REACTIVE MARKET AGREEMENTS
EFFECTIVE 1 APRIL 2011**

11th MAY 2011

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Executive Summary

27th Tender Round

This report describes the 27th Tender Round evaluation process for Reactive Power Market Agreements for service commencement on 1st April 2011. This report would normally include the prices and reactive capability data of the successful tenders, however, as there were no successful tenders no such data is available. The report also includes metered Mvarh utilisation from all eligible service providers for the period 1st October 2010 to 31st March 2011. Estimates of the reactive contribution of the GB Transmission System for the same period are also included.

National Grid evaluated all the tenders received against both economic purchase and technical performance criteria in accordance with the agreed terms of the market mechanism.

The main points are as follows:

- Tenders were received from 4 BM Units representing 2 power stations from 1 Generating Company of which all 4 were in respect of the Grid Code Obligatory Reactive Power Service
- Tenders were offered for a duration of 24 months
- National Grid has rejected all of the 4 tenders evaluated
- There are no BM Units on Market Agreements for the period 1 April 2011 to 30th September 2011.

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Note: Monthly utilisation volume data, split by BM Unit, has been removed from this report but is available on the National Grid Industry Information website at the following address:-

<http://www.nationalgrid.com/uk/Electricity/Balancing/services/ReactivePower/ReactiveUtilisation/>

1. Introduction

- 1.1 This market report provides information on the results from the assessment process carried out for Reactive Power Tender Round 27 (for contracts that commenced 1 April 2011). This includes details on the contractual position for the provision of Reactive Power Services to the GB Transmission System as at 1 April 2011.
- 1.2 National Grid manages the voltage of the GB supergrid system to meet Transmission Licence requirements for secure and stable power transmission and to ensure quality of supply to customers. Voltages are largely determined by the flows of Reactive Power on the system. National Grid ensures that Reactive Power is provided on a local basis to meet the constantly varying needs of the system and that there is sufficient Reactive Power reserves available to meet contingencies.
- 1.3 Generating Units provide Reactive Power Capability, and are capable of varying their Reactive Power output as a requirement of the Grid Code. The power system itself has inherent Reactive Power gains and losses, which vary in accordance with changes in real power flows and voltage. National Grid installs reactive compensation plant in parts of the system where there is insufficient generator reactive capability to meet licence requirements, and where voltages cannot be regulated effectively or economically by other means.
- 1.4 Dynamic reserves of Reactive Power are essential for system operation. National Grid values capability based Reactive Power Market Agreements as this payment mechanism helps to ensure that the availability of post-fault Reactive Power reserves is maintained.
- 1.5 Tender Round 27 was undertaken to secure such capability based Reactive Power Market Agreements from 1st April 2011. The service definitions, requirements and contract terms may be found in Schedule 3 to the Connection & Use of System Code (CUSEC), the Grid Code and the ITT (Invitation to Tender) Documentation. These can be accessed via National Grid's industry website at: <http://www.nationalgrid.com/uk/Electricity/Balancing/services/ReactivePower/markettender/>

2. Tender Process

- 2.1 On 21st January 2011, National Grid Electricity Transmission plc held the Market Day for the Reactive Power Tender Round 27. This enabled any potential provider that fulfilled the qualification criteria specified in Schedule 3 of the CUSC to tender for a Reactive Power Market Agreement.
- 2.2 Tenderers could elect to choose the term of tenders from a minimum period of 12 months and thereafter in 6-month increments (12, 18, 24, 30, 36 months, etc.).
- 2.3 Tenderers who submitted tenders for periods greater than 12 months were also able to include indexation criteria on the tendered prices to be applied to any period(s) beyond the first 12 months.
- 2.4 Tenderers could tender for either the Obligatory Reactive Power Service (ORPS) and/or the Enhanced Reactive Power Service (ERPS), as defined in Schedule 3 of the CUSC.
- 2.5 Potential tenderers comprised the following:
 - Generators required to provide the minimum Grid Code ORPS and already in receipt of the Default Payment Mechanism, who wished to tender for alternative payment terms for the ORPS.
 - Generators that had a reactive capability in excess of the minimum Grid Code ORPS, known as the "Grid Code plus Enhanced Reactive Power Service" (Grid Code ERPS).
 - Any other eligible Service Provider able to offer other plant or apparatus that could generate or absorb Reactive Power, known as ERPS. The only requirement was that these Service Providers had to fulfil the market qualification criteria and have been capable of making their capability available for use by National Grid.

3. Tenders Submitted

- 3.1 A total of 4 discrete tender submissions were received, representing 1 generating company and 2 power stations. 4 tenders were for BM Units offering the Grid Code ORPS service; and no tenders were received for the Grid Code ERPS service. All tenders offered contract duration of 24 months.
- 3.2 Tenders were received from directly connected power stations. No tenders were received from non-BM providers.
- 3.3 All of the tenders received sought reactive capability based payments and utilisation payments.
- 3.4 All tenders that were evaluated were compliant with the submission criteria specified in Schedule 3 of the CUSC.

4. Tender Assessment

- 4.1 Tender assessment was carried out in accordance with the evaluation criteria specified in Appendix 5 of Schedule 3 of the CUSC. Details of this are more fully described in Appendix 5 of this report.
- 4.2 This assessment included input from the Reactive Power Capability Index updated from that shown in Appendix A of the Invitation to Tender & Guidance Notes for Completion of Tenders that was included in the ITT Documentation. The purpose of this index is to provide an indication of the Reactive Power requirement in each of the zones defined. These requirements are based on the historic need for Reactive Power in the zones and any planned changes to the GB Transmission System (or the generation and demand connected to it) that are likely to affect the zonal reactive requirement.
- 4.3 Tenders were assessed via a process, which considered the following:
 - Economics (i.e. cost of market compared with default),
 - The intrinsic capability value of the tendered reactive service (against the alternative of National Grid reactive assets);
 - A number of other criteria, for example how competitive the utilisation price was, and what incentive the Generator was placing on itself to maintain the reactive capability.

Please refer to Appendix 5 in Schedule 3 of the CUSC for full details on the qualification and evaluation criteria.

5. Tender Observations

- 5.1 In this tender round, the number of tender submissions has shrunk from the previous tender round of 16 to only 4.
- 5.2 The 4 tender submissions were return tenderers from the last tender round, TR26, and from the same generating company, with their Mvar capability banding unchanged.
- 5.3 All tenders are for the ORPS starting from 1st April 2011, for a two year period, with prices indexed to RPI.
- 5.4 Different BM Units placed different value across the payment structure of Available Capability, Synchronised Capability and Utilisation.
- 5.5 All tenders continued to seek non-zero Available Capability fees and Synchronised fees. There were significant price variations on different capability bandings within Availability and Synchronised fees.
- 5.6 Compared to last tender round, TR26, all tenders reduced their Availability and Synchronised fees.
- 5.7 In general, and especially for typical ORPS providers, Synchronised capability is more useful to National Grid than Available capability, but the valuation of the two differs, depending on the total time for which the BM Unit is synchronised and when this occurs. National Grid places higher value on tenders with high synchronised capability prices compared with Available Capability prices if the plant tends to run less frequently but at times of high system need. Conversely, National Grid places a lower value on tenders with relatively high Synchronised Capability prices if the plant is expected to run for a large part of the assessment period, as this is more likely to include significant periods when the capability is not essential to secure the transmission system.
- 5.8 This tender round, as with previous ones, has taken into account National Grid's views on expected utilisation of generating units in the energy market. The likely running under emissions trading and other market changes has been continuously factored in.

6. Assessment Results

- 6.1 Of the 4 tenders evaluated, National Grid offered Reactive Market Agreements to none (an acceptance rate of 0%).
- 6.2 Each tender was scored against the specified assessment criteria and Figure 1 below shows the attractiveness of tenders from the assessment outcome. The tenders at the rejected side of Figure 1 were assessed with a negative score indicating they should not be offered a Market Agreement. None of the tenders were assessed with a positive score indicating they should be offered Market Agreements. The tenders occurring at either end of these measures would be considered very “attractive” or “unattractive”. Those considered unattractive could, for example, have sought capability payments significantly above expectations of default payments and National Grid’s value of capability.

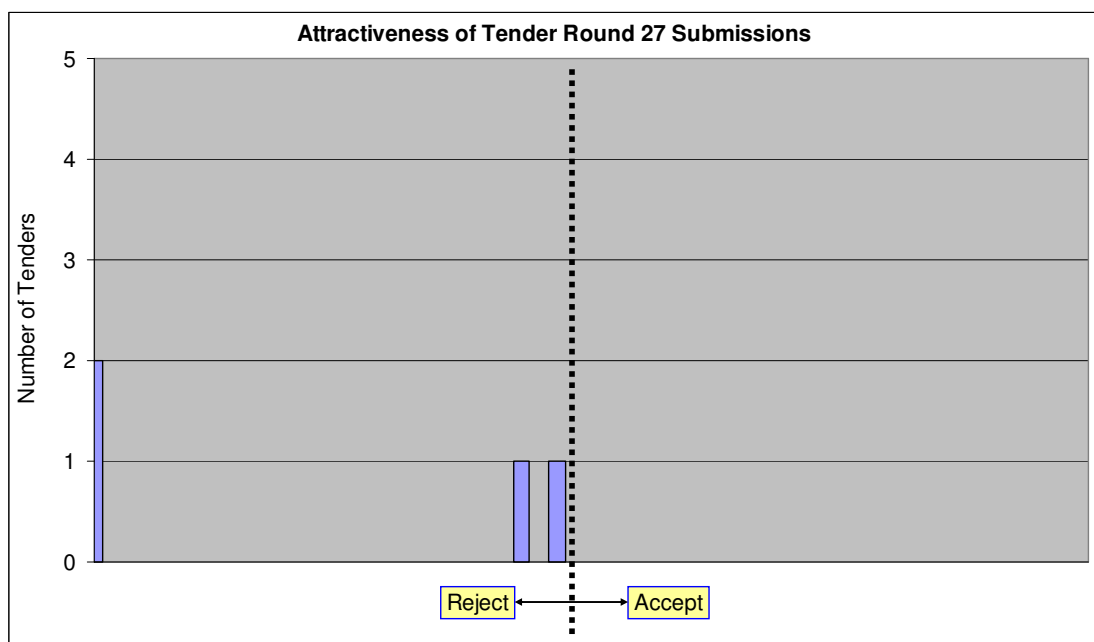


Figure 1

- 6.3 A complete list of all generator BM Units as at 1 April 2011 obliged under the Grid Code to be capable of providing the ORPS is given in Appendix 2. This list includes a record of which BM Units are on Reactive Power Market Agreements and which are on the Default Payment Mechanism (DPM).
- 6.4 Appendix 3 provides a list of BM Units on Market Agreements applicable as at 1 April 2011 showing when the agreements will terminate.
- 6.5 Appendix 6 shows the geographic distribution of BM Units on market and default agreements.

6.6 Details of the successful tenders that proceeded to contract commencing 1 April 2011 are listed in Appendix 4.

7 Comparisons with previous Tender Rounds

7.1 Figure 2 below shows the percentage participation of eligible BM Units for all Tender Rounds since the commencement of the Reactive Power Market. Tender Round 27 follows a recent trend of decreasing numbers of participants within the reactive market.

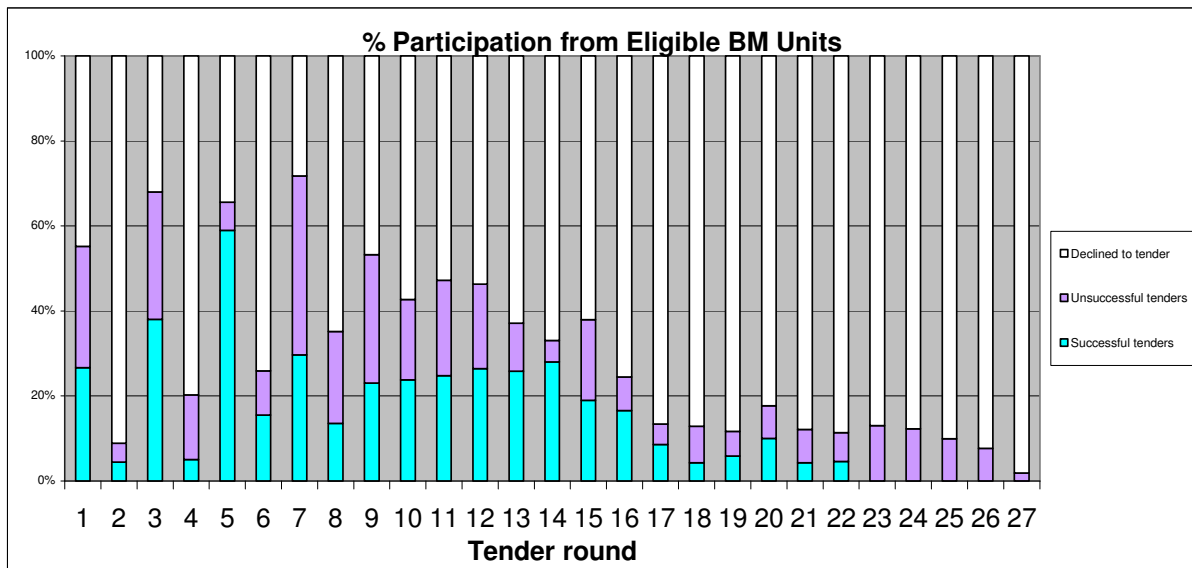


Figure 2 (Source: Appendix 1)

7.2 Figure 3 shows the acceptance rate for all Tender Rounds since the commencement of the Reactive Power Market.

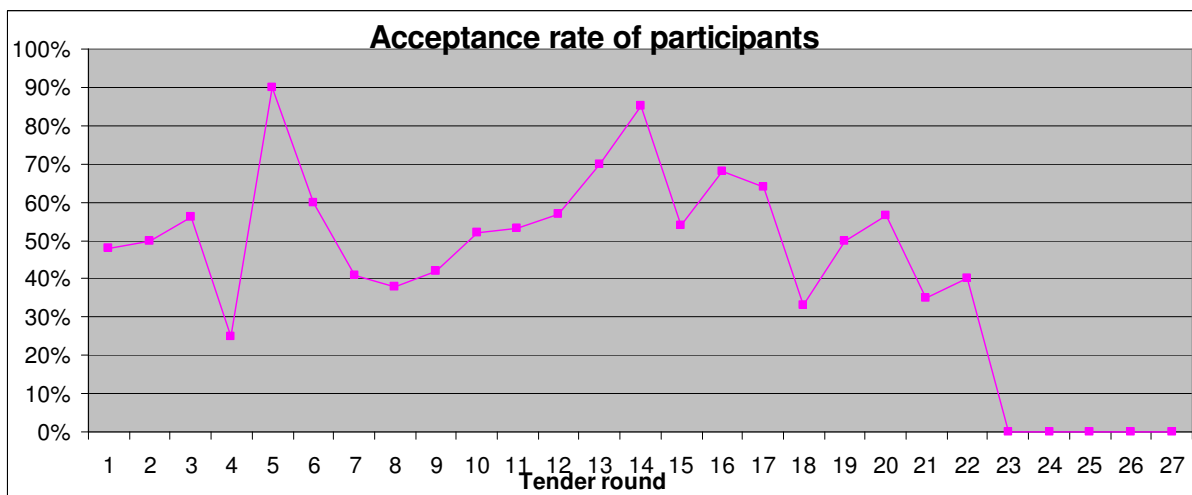


Figure 3 (Source: Appendix 1)

7.3 On 1st April 2011 there are no BM Units on Reactive Power Market Agreements.

7.4 Figure 5 shows the percentage of total available lagging capability that has been contracted via Reactive Power Market Agreements since the commencement of the Reactive Power Market.

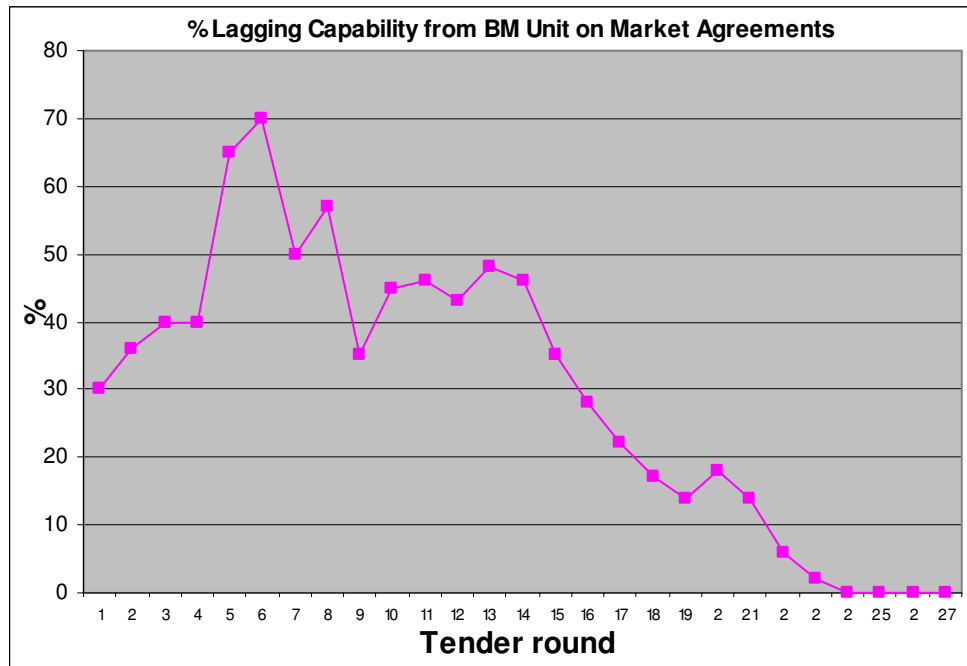


Figure 5 (Source: Appendix 1)

8. Generating Unit Reactive MVarh Utilisation

- 8.1 This section summarises a six-month breakdown of metered BM Unit Reactive Power utilisation over the period 1st October 2010 to 31st March 2011.
- 8.2 Table 1 shows the MVarh utilisation volumes (Lead plus Lag) for all eligible BM Units on a monthly basis.

Utilisation Volume (MVarh)

Month	Default Payment Mechanism	Market Agreements	Total = Market Agreements + DPM
Oct-10	1,747,756	0	1,747,756
Nov-10	1,677,404	0	1,677,404
Dec-10	1,700,797	0	1,700,797
Jan-11	1,637,319	0	1,637,319
Feb-11	1,523,406	0	1,523,406
Mar-11	1,796,505	0	1,796,505
Total	10,083,187	0	10,083,187

Table 1 – Summary of Generator Reactive Utilisation Oct 10 – Mar 11

- 8.3 Table 2, on the next page, shows six-monthly utilisation totals since 1996, sorted by the Seven Year Statement defined regions – North, Midlands and South up to March 2005 and from April 2005 onwards – Scotland, North, Midlands and South.
- 8.4 The volumes set out in Table 2 refer to all BM Units eligible for a Reactive Utilisation Payment (default plus market). MVarh lag and MVarh lead are calculated according to the aggregation methodology described within Appendix 2 in Schedule 3 of the CUSC and also within the companion document “Methodology Document for the Aggregation of Reactive Power Metering” by which reactive utilisation payments are made.
- 8.5 The general reduction trend seen over the last ten years is attributable to more distributed generation and lower power flows across the system which have resulted in a reduction in reactive losses on the supergrid and hence the reactive utilisation required from generation. Referring to Table 2, it should be noted, however, that this overall reduction is the product of a continual fall in lag TVArh and general rise in lead TVArh which has intensified over the last three years.

Table 2 – Generator Reactive Utilisation (TVArh) by region

	NORTH		MIDLANDS		SOUTH		TOTAL		
	lead	lag	lead	Lag	Lead	lag	Lead	lag	Lead + lag
Apr96 – Sep96	2.86	9.79	0.37	1.94	1.49	2.29	4.72	14.02	18.74
Oct96 – Mar97	2.72	12.71	0.36	3.07	1.74	2.72	4.82	18.50	23.32
Apr97 – Sep97	2.89	8.65	0.41	1.60	1.87	1.77	5.17	12.02	17.19
Oct97 – Mar98	2.78	10.67	0.31	3.07	1.54	2.01	4.63	15.75	20.38
Apr98 – Sep98	1.96	7.68	0.44	2.02	1.85	1.51	4.25	11.20	15.45
Oct98 – Mar99	1.71	9.54	0.36	2.07	1.65	1.66	3.76	13.48	17.24
Apr99 – Sep99	1.77	7.25	0.37	1.52	1.27	1.40	3.40	10.20	13.60
Oct99 – Mar00	1.98	10.45	0.27	2.13	1.35	2.19	3.60	14.77	18.37
Apr00 – Sep00	1.44	6.31	0.48	1.69	1.59	1.32	3.51	9.32	12.83
Oct00 – Mar01	1.52	7.40	0.40	2.72	1.48	1.73	3.40	11.85	15.25
Apr01 – Sep01	1.80	4.59	0.50	1.76	1.94	1.18	4.24	7.53	11.77
Oct01 – Mar02	1.70	5.79	0.58	3.07	1.50	1.78	3.79	10.65	14.44
Apr02 – Sep02	1.59	4.70	0.52	0.95	1.76	1.20	3.87	6.85	10.72
Oct02 – Mar03	1.71	5.73	0.47	2.51	1.53	1.78	3.71	10.02	13.73
Apr03 – Sep03	1.40	3.96	0.56	1.59	1.92	1.36	3.88	6.91	10.79
Oct03 – Mar04	2.28	5.48	0.34	1.89	1.69	2.29	4.31	9.66	13.97
Apr04 – Sep04	2.26	3.97	0.85	1.08	2.16	1.29	5.27	6.34	11.61
Oct04 – Mar05	1.89	5.26	0.66	1.84	1.85	1.99	4.40	9.09	13.49

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	SCOTLAND		NORTH		MIDLANDS		SOUTH		TOTAL		
	lead	lag	Lead	lag	lead	Lag	lead	lag	Lead	lag	Lead + lag
Apr05 – Sep05	1.32	0.39	2.07	3.28	0.83	1.04	2.07	1.03	6.29	5.74	12.03
Oct05 – Mar06	1.06	0.80	2.10	4.56	0.76	1.91	1.88	1.48	5.80	8.75	14.55
Apr06 – Sep06	1.09	0.56	2.29	3.00	0.74	0.67	1.79	0.87	5.91	5.09	11.00
Oct06 – Mar07	0.74	0.96	2.49	4.27	0.57	1.17	1.79	1.18	5.59	7.58	13.17
Apr 07 – Sep 07	1.04	0.31	2.30	2.63	0.64	0.69	1.63	0.74	5.61	4.39	10.00
Oct 07 – Mar 08	1.17	0.53	2.28	3.98	0.64	0.74	1.49	1.08	5.58	6.33	11.90
Apr 08 – Sep 08	1.27	0.31	1.84	2.15	0.59	0.44	1.24	0.61	4.95	3.50	8.45
Oct 08 – Mar 09	1.63	0.55	1.85	1.89	0.60	0.64	1.18	0.79	5.26	3.86	9.12
Apr 09 – Sep 09	1.91	0.25	2.66	1.36	0.86	0.44	1.53	0.54	6.96	2.60	9.56
Oct 09 – Mar 10	1.98	0.31	2.62	1.99	0.53	0.70	1.54	0.78	6.67	3.78	10.45
Apr 10 – Sep 10	1.88	0.23	3.55	1.10	0.53	0.38	1.67	0.50	7.63	2.18	9.82
Oct-10 – Mar-11	1.69	0.28	3.23	1.32	0.76	0.41	1.79	0.61	7.47	2.61	10.08

9. Estimates of the reactive contribution of the GB Transmission System for October 2010 to March 2011

9.1 National Grid is required by Schedule 3 of the CUSC to ‘use all reasonable endeavours’ to provide estimates of the Reactive Power absorption and generation in MVARh by the GB Transmission System for the six-month period ending 30th March 2011.

9.2 This has been approached in two stages:

- The net Reactive Power utilisation (TVArh) of the GB Transmission System has been derived from the difference between the reactive output of generating units and the Net Reactive Demand at Grid Supply Points (GSPs). This is shown in Table 3 where the accuracy of the data is consistent with the underlying meter readings. The generation figures are a national monthly summation of the Settlements figures available on the National Grid Industry Information website at the following address: <http://www.nationalgrid.com/uk/Electricity/Balancing/services/ReactivePower/ReactiveUtilisation/>. At this stage, the data in Table 3, on the next page, may be subject to amendment via accruals or any outstanding disputes.
- The net TVArh described above has been broken down by Transmission System component and is also shown in Table 3. It should be noted that this information is based on estimates and operational records only. The ‘net reactive demand at GSP’ figures have been derived from operational records. The figures shown are net, i.e. lagging demand minus leading demand, and in the case of the figures in Table 3 they show lagging demand in each month. These figures represent the net effect of the consumer demand plus the LV losses minus the LV gain.

9.3 The simple reactive balance found in Table 3 can be described by the equation:

$$|\text{Generation Net TVArh}| = |\text{Net Reactive Demand at GSPs TVArh}| - |\text{Net System TVArh}|$$

From Table 3 it can be seen that the TVArh contribution from generation is small compared with the other components of the equation.

9.4 The more detailed breakdown found in Table 3 can be described by the following equation:

- $\text{Generation Net TVArh} = \text{Net Reactive Demand at GSPs} - \text{HV network shunt gain (BV}^2\text{)} + \text{HV network series loss (I}^2\text{X)} + \text{SGT series loss (I}^2\text{X}_t\text{)} - \text{Shunt capacitor gain} - \text{net SVC output} + \text{Shunt reactor loss.}$

Table 3 - Net System Effect October 2010 to March 2011

Component (TVArh)	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11	Mar 11	6 month total
MSC	3.04	3.02	3.45	3.33	2.86	2.98	18.68
Shunt Reactor	-4.34	-4.01	-4.37	-4.40	-3.91	-4.35	-25.38
SVC generation	0.08	0.09	0.12	0.09	0.07	0.08	0.53
SVC absorption	-0.20	-0.16	-0.16	-0.20	-0.19	-0.23	-1.14
HV network shunt gain	10.05	9.99	10.55	10.35	9.03	9.97	59.94
HV network series losses	-2.14	-1.90	-2.24	-2.33	-2.19	-2.35	-13.15
SGT series losses	-2.91	-1.61	-2.06	-1.89	-1.60	-1.70	-11.77
Net System Utilisation	3.58	5.42	5.29	4.96	4.07	4.39	27.71
Generation Lead	-1.01	-1.00	-0.97	-0.91	-0.85	-1.04	-5.78
Generation Lag	0.42	0.45	0.49	0.46	0.39	0.39	2.60
Net Demand at GSPs	-2.40	-2.86	-2.73	-2.69	-2.34	-2.18	-15.20

9.5 The above values are all on an entirely GB basis, and thus include the contributions from English, Welsh and Scottish transmission systems, including all the 132kV and lower voltages.

9.6 Points to note when considering Table 3 include:

- HV gain varies due to circuit switching, outages and system operating voltage
- HV losses are driven by active power flows across the system
- Supergrid transformer series reactive losses are predominantly driven by local distribution company demand
- Switching of MSCs (Mechanically Switched Capacitors), SVCs (Static Var Compensators) and shunt reactors is determined by operational security requirements.

10. Exceptional Reactive Power Requirements

- 10.1 Paragraph 5 in Schedule 3 of the CUSC (Statutory and Regulatory Obligations) enables National Grid to contract outside of the Reactive Power Market tender process in specific circumstances for the provision of Enhanced Reactive Power Services. National Grid is required to publish details of circumstances surrounding this in the proceeding six-month period. During the period 1st October 2010 to 31st March 2011 National Grid did not require any service contracts for the provision of enhanced voltage support.

Appendices

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Appendix 1 - Comparisons with previous Tender Rounds

Tender Round	Tender Round Start date	BM Units able to tender	No. of BM/Non BM Unit tenders Received	ORPS	ORPS + ERPS	12 month duration	>12 months duration	Successful Gensets Offered Market Agreements	Successful Gensets signing Market Agreements	% total MVar lagging capability with Market Agreements
1	1 Apr 1998	154	85	76	9	85	0	41	41	~30%
2	1 Oct 1998	113	10	10	0	9	1	5	5	~36%
3	1 Apr 1999	150	102	102	0	102	0	75	57	~40%
4	1 Oct 1999	99	20	20	0	14	6	5	5	~40%
5	1 Apr 2000	151	99	98	1	97	2	98	89	~65%
6	1 Oct 2000	58	15	15	0	15	0	9	9	~70%
7	1 Apr 2001	145	104	104	0	104	0	43	43	~50%
8	1 Oct 2001	111	39	39	0	39	0	17	15	~57%
9	1 Apr 2002	138	76	76	0	68	8	32	32	~35%
10	1 Oct 2002	123	52	52	0	48	4	29	27	~45%
11	1 Apr 2003	125	59	59	0	57	2	31	30	~46%
12	1 Oct 2003	121	56	56	0	49	7	32	23	~43%
13	1 Apr 2004	126	46	46	0	41	5	32	32	~48%
14	1 Oct 2004	118	39	38	1	38	1	33	21	~46%

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Tender Round	Tender Round Start date	BM Units able to tender	No. of BM/Non BM Unit tenders Received	ORPS	ORPS + ERPS	12 month duration	>12 months duration	Successful Gensets Offered Market Agreements	Successful Gensets signing Market Agreements	% total MVar lagging capability with Market Agreements
15	1 Apr 2005	153	58	58	0	57	1	29	25	~35%
16	1 Oct 2005	151	37	36	1	33	4	25	13	~28%
17	1 Apr 2006	164	22	22	0	22	0	14	12	~20%
18	1 Oct 2006	164	21	20	1	21	0	7	6	~17%
19	1 Apr 2007	172	20	20	0	20	0	10	10	~14%
20	1 Oct 2007	170	30	30	0	30	0	17	15	~18%
21	1 Apr 2008	165	20	20	0	20	0	7	4	~14%
22	1 Oct 2008	176	20	20	0	20	0	8	3	~6%
23	1 Apr 2009	177	23	23	0	23	0	0	0	~2%
24	1 Oct 2009	180	22	22	0	22	0	0	0	0%
25	1 Apr 2010	181	18	18	0	18	0	0	0	0%
26	1 Oct 2010	209	16	16	0	12	4	0	0	0%
27	1 Apr 2011	219	4	4	0	0	4	0	0	0%

NB: Tender Round 1-14 inclusive incorporates England and Wales BM Units ONLY. Tender Round 15 onwards comprise of GB BM units.

Appendix 2 - BM Units' contractual position at 1st April 2011

Scotland					
BM Unit	Contract	BM Unit	Contract	BM Unit	Contract
1 AIGA_01Z	DPM	20 FASN_02Z	DPM	38 LOCH_01Z	DPM
2 CASH_01Z	DPM	21 FASN_03Z	DPM	39 LOCH_02Z	DPM
3 CEAN_01Z	DPM	22 FIFE_01Z	DPM	40 LUIC_01Z	DPM
4 CLUN_01Z	DPM	23 FINL_01Z	DPM	41 LUIC_02Z	DPM
5 CLUN_02Z	DPM	24 FOYE_01Z	DPM	42 MOSS_01Z	DPM
6 COCK_01Z	DPM	25 FOYE_02Z	DPM	43 NANT_01Z	DPM
7 COCK_02Z	DPM	26 GLEN_01Z	DPM	44 ORRI_01Z	DPM
8 COCK_03Z	DPM	27 GRMO_01Z	DPM	45 PEHE_01Z	DPM
9 COCK_04Z	DPM	28 GRUB_01Z	DPM	46 PEHE_02Z	DPM
10 CRUA_01Z	DPM	29 GRUB_02Z	DPM	47 QUIO_01Z	DPM
11 CRUA_02Z	DPM	30 HUNB_07Z	DPM	48 SLOY_01Z	DPM
12 CRUA_03Z	DPM	31 HUNB_08Z	DPM	49 SLOY_02Z	DPM
13 CRUA_04Z	DPM	32 INGA_01Z	DPM	50 SLOY_03Z	DPM
14 CULL_02Z	DPM	33 KIOR_01Z	DPM	51 SLOY_04Z	DPM
15 DEAN_01Z	DPM	34 LOAN_01Z	DPM	52 TORA_01Z	DPM
16 ERRO_01Z	DPM	35 LOAN_02Z	DPM	53 TORA_02Z	DPM
17 ERRO_02Z	DPM	36 LOAN_03Z	DPM	54 TORN_01Z	DPM
18 ERRO_03Z	DPM	37 LOAN_04Z	DPM	55 TORN_02Z	DPM
19 FASN_01Z	DPM				

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North

BM Unit	Contract	BM Unit	Contract	BM Unit	Contract	
56	EGGPS01Z	DPM	81	FIDL_02Z	DPM	
57	EGGPS02Z	DPM	82	FIDL_03Z	DPM	
58	EGGPS03Z	DPM	83	FIDL_04Z	DPM	
59	EGGPS04Z	DPM	84	FELL_01Z	DPM	
60	CDCL_01Z	DPM	85	SHBA_01Z	DPM	
61	LAGA_01Z	DPM	86	SHBA_02Z	DPM	
62	DEEP_01Z	DPM	87	HUMR_01Z	DPM	
63	CNQPS01Z	DPM	88	COTPS01Z	DPM	
64	CNQPS02Z	DPM	89	COTPS02Z	DPM	
65	CNQPS03Z	DPM	90	COTPS03Z	DPM	
66	CNQPS04Z	DPM	91	COTPS04Z	DPM	
67	DRAXX01Z	DPM	92	KEAD_01Z	DPM	
68	DRAXX02Z	DPM	93	ROOS_01Z	DPM	
69	DRAXX03Z	DPM	94	HEYM101Z	DPM	
70	DRAXX04Z	DPM	95	HEYM102Z	DPM	
71	DRAXX05Z	DPM	96	HEYM207Z	DPM	
72	DRAXX06Z	DPM	97	HEYM208Z	DPM	
73	DRAXX09G	DPM	98	HRTL_01Z	DPM	
74	DRAXX10G	DPM	99	HRTL_02Z	DPM	
75	DRAXX12G	DPM	100	DINO_01Z	DPM	
76	FERR_01Z	DPM	101	DINO_02Z	DPM	
77	FERR_02Z	DPM	102	DINO_03Z	DPM	
78	FERR_03Z	DPM	103	DINO_04Z	DPM	
79	FERR_04Z	DPM	104	DINO_05Z	DPM	
80	FIDL_01Z	DPM	105	DINO_06Z	DPM	
				106	FFES_01Z	DPM
				107	FFES_02Z	DPM
				108	FFES_03Z	DPM
				109	FFES_04Z	DPM
				110	KILNS01Z	DPM
				111	WYLF_01Z	DPM
				112	WYLF_02Z	DPM
				113	WYLF_03Z	DPM
				114	WYLF_04Z	DPM
				115	KILLP01Z	DPM
				116	KILLP02Z	DPM
				117	BRGG_01Z	DPM
				118	ROCK_01Z	DPM
				119	SCCL_01Z	DPM
				120	SCCL_02Z	DPM
				121	SCCL_03Z	DPM
				122	SHOT_01Z	DPM
				123	CLAC-1	DPM
				124	TESI_01Z	DPM
				125	TESI_02Z	DPM
				126	WBUPS01Z	DPM
				127	WBUPS02Z	DPM
				128	WBUPS03Z	DPM
				129	WBUPS04Z	DPM

Midlands

BM Unit	Contract	BM Unit	Contract	BM Unit	Contract	
130	KLYNA01Z	DPM	138	SIZB_02Z	DPM	
131	CORB_01Z	DPM	139	SIZEA01Z	DPM	
132	DERW_01Z	DPM	140	SIZEA02Z	DPM	
133	GYAR_01Z	DPM	141	PETEM01Z	DPM	
134	IRNPS01Z	DPM	142	RATS_01Z	DPM	
135	IRNPS02Z	DPM	143	RATS_02Z	DPM	
136	LBAR_01Z	DPM	144	RATS_03Z	DPM	
137	SIZB_01Z	DPM	145	RATS_04Z	DPM	
				146	RUGPS06G	DPM
				147	RUGPS06Z	DPM
				148	RUGPS07G	DPM
				149	RUGPS07Z	DPM
				150	SPLN_01Z	DPM
				151	SUTB_01Z	DPM

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South

BM Unit	Contract	BM Unit	Contract	BM Unit	Contract
152 ABTHB07Z	DPM	176 DIDC_04G	DPM	200 LITTD01Z	DPM
153 ABTHB08Z	DPM	177 DIDC_04Z	DPM	201 LITTD02G	DPM
154 ABTHB09Z	DPM	178 DIDCB05Z	DPM	202 LITTD02Z	DPM
155 BAGE_01Z	DPM	179 DIDCB06Z	DPM	203 LITTD03G	DPM
156 BAGE_02Z	DPM	180 DNGB_21Z	DPM	204 MEDP_01Z	DPM
157 BARK_02Z	DPM	181 DNGB_22Z	DPM	205 MRWD_01Z	DPM
158 BARK_11Z	DPM	182 DUNGA01Z	DPM	206 OLDS_01Z	DPM
159 BRWE_01Z	DPM	183 DUNGA02Z	DPM	207 OLDS_02Z	DPM
160 BRWE_02Z	DPM	184 DUNGA03Z	DPM	208 RYHPS01Z	DPM
161 BRWE_03Z	DPM	185 DUNGA04Z	DPM	209 SEAB_01Z	DPM
162 BRWE_04Z	DPM	186 EECL_01Z	DPM	210 SEAB_02Z	DPM
163 BRWE_05Z	DPM	187 FAWL_01Z	DPM	211 SHOS_01Z	DPM
164 BRWE_06Z	DPM	188 FAWL_03Z	DPM	212 TAYL_02Z	DPM
165 BRYP_01Z	DPM	189 FAWN_01Z	DPM	213 TAYL_03Z	DPM
166 COSO_01Z	DPM	190 GRAI_01Z	DPM	214 TILBB08Z	DPM
167 COWE_01Z	DPM	191 GRAI_03Z	DPM	215 TILBB09Z	DPM
168 COWE_02Z	DPM	192 GRAI_04Z	DPM	216 TILBB10Z	DPM
169 DAMC_01Z	DPM	193 HINB_07Z	DPM	217 USKM_13Z	DPM
170 DIDC_01G	DPM	194 HINB_08Z	DPM	218 USKM_14Z	DPM
171 DIDC_01Z	DPM	195 KINO_01Z	DPM	219 USKM_15Z	DPM
172 DIDC_02G	DPM	196 KINO_02Z	DPM		
173 DIDC_02Z	DPM	197 KINO_03Z	DPM		
174 DIDC_03G	DPM	198 KINO_04Z	DPM		
175 DIDC_03Z	DPM	199 LITTD01G	DPM		

Appendix 3 - Reactive Market Agreement status at 1 April 2011

Contracts Continuing on 1 April 2011			
	Company	BM Unit ID	Contract Expiry Date
1	None	None	N/A

New Contracts Commencing on 1 April 2011			
	Company	BM Unit ID	Contract Expiry Date
1	None	None	N/A

Appendix 4 - Successful tender details for contracts commencing 1 April 2011

Note: There were no successful tenderers

Appendix 5 - Tender Assessment Procedure

A5 Introduction

A5.1 National Grid assessed Reactive Power Tender Round 27 in a manner consistent with the processes applied to all previous Tender Rounds, as detailed in Schedule 3 of the CUSC. Analytical processing was conducted in six-month time periods (Summer – from 1 April to 30 September and Winter – from 1 October to 31 March) in order to consider any interaction with the overlap of contracts secured during the previous Reactive Power Market Tender Rounds and also to take into account the effects of the implementation of CUSC Modification CAP045.

A5.2 National Grid has divided the process of assessing tenders into several stages, which were addressed as follows:

- *Tender Receipt and Registration:* The tenders were opened, in the presence of a separate witness and all tender data submitted was entered into TARDIS (Transmission Ancillary Reactive Database Information System).
- *Tender Data validation:* All TARDIS entries were then separately checked back to the original tender sheets. Compliance checks within TARDIS showed that all the tenders submitted were compliant.
- *Reactive Power Service Assessment:* The tenders were assessed against forecast, taking into account the many interacting factors associated with each tender acceptance decision, as described in Appendix 6 in Schedule 3 of the CUSC. This involved, inter-alia, evaluation against projections of expenditure and availability of service against historical and forecast Mvar and Mvarh data to produce central views of the money payable under the DPM (Default Payment Mechanism) or a Market Agreement (described below). The overall assessment was supported by an examination of a number of credible sensitivities around the central assessment.

A5.3 Core Analytical Processing

- Tender assessment takes place in the context of uncertainties and interactions affecting reactive payments and transmission requirements. To initiate the assessment of the overall value of each tender, it is considered necessary to construct a central view of future payments so that the relative impact of the factors influencing the economic evaluation of tenders can be fully addressed.

For each BM Unit tendered, the processing was as follows:

- Forecast Mvarh generated, in each band by reactive Mvar breakpoints,

based on historical trends and forecast load factors. The historical observations covered the period April 2005 to December 2010 and came from the Ancillary Services records against which Reactive Power utilisation is currently being paid.

- The alternative DPM utilisation payment was forecast as the forecast Mvarh multiplied by the forecast utilisation prices. These utilisation prices were £2.68/Mvarh for summer 2011 and £2.84/Mvarh for winter 2011. The utilisation prices were derived from the calculation defined in the CUSC Schedule 3, using a forecast of indices. Utilisation prices and the associated forecasted indices were communicated to all potential service providers and published before Market Day. Default prices for second year service were also forecasted in the assessment, based on forecast RPI and power prices. These were used to compare with the RPI indexed tendered prices.
- The market agreement capability payment was forecast as tendered price multiplied by tendered capability, allowing for break-points, multiplied by forecast hours for both available and synchronised capability.
- The market agreement utilisation payment was forecast as tendered prices multiplied by the same forecast Mvarh as those used in the alternative DPM payment forecast, respecting the tendered break-point bands of Mvarh utilisation.
- The core comparison of default versus market agreement is based on the forecast payments detailed above. However, Reactive Power assessment is by no means as simple as taking the cheapest option. A full understanding of the factors influencing Reactive Power requirements on the GB Transmission System must be taken into account to provide a complete economic assessment of tender value.

A5.4 Assessment Sensitivities

- The Reactive Power market tender evaluation process is subjective in nature, based as it is on forecast assumptions. It has therefore been important to establish a framework within which this subjectivity could be exercised in a consistent fashion across all tenders.
- The principal role of tender assessment is to quantify and evaluate consistently the many factors that should be considered. These factors are referred to in 3.3(e)(ii) of Schedule 3 of the CUSC. National Grid assessment has developed and implemented a process enabling these factors and associated uncertainties to be methodically considered.
- In the light of CAP045, the variability in the DPM price will affect the balance between market and default payments. The robustness of the core contract decisions was considered against a range of Default prices from the central

forecast Default prices used. A range of +/-10% on Default prices was considered alongside historic trends.

- National Grid recognised that availability and maximum Mvarh from a BMU is affected by outage plans and unforeseen break downs. A central Mvarh forecast from each BMU was first developed considering given outage plan and historic reliability. The robustness of the central contract decisions was then tested against a range of variation on planned outage and estimated breakdown rate.

Specific questions were asked of each tender, examples of which follow:

- *Would a Market Agreement (central case assessment) give a reduction in payments?*
- *Would a Market Agreement reflect the effectiveness at providing voltage support at that location?*
- *Would a Market Agreement be robust against expected individual variations in utilisation due to any of the following:*
 - ◆ *A new station opening nearby*
 - ◆ *An existing nearby station closing*
 - ◆ *A change in local Reactive Power demand*
 - ◆ *A change to the transmission system (including planned outages)*
- *Would a Market Agreement enhance the incentive on the Generator to maintain its Grid Code capability?*
- *How would a Market Agreement affect operational despatch?*
- *To what extent might a Market Agreement potentially offset National Grid investment?*
- *Would a Market Agreement for ORPS enable a desired contract for ERPS?*
- All other criteria in CUSC Schedule 3, paragraph 3, are covered by this methodology.
- In all cases, National Grid continued to consider interaction with forecast transmission constraints. In all cases, there were insignificant interactions with the constraints identified.
- In all cases, National Grid considered possible interaction with National Grid planned investments. The commissioning of new National Grid transmission

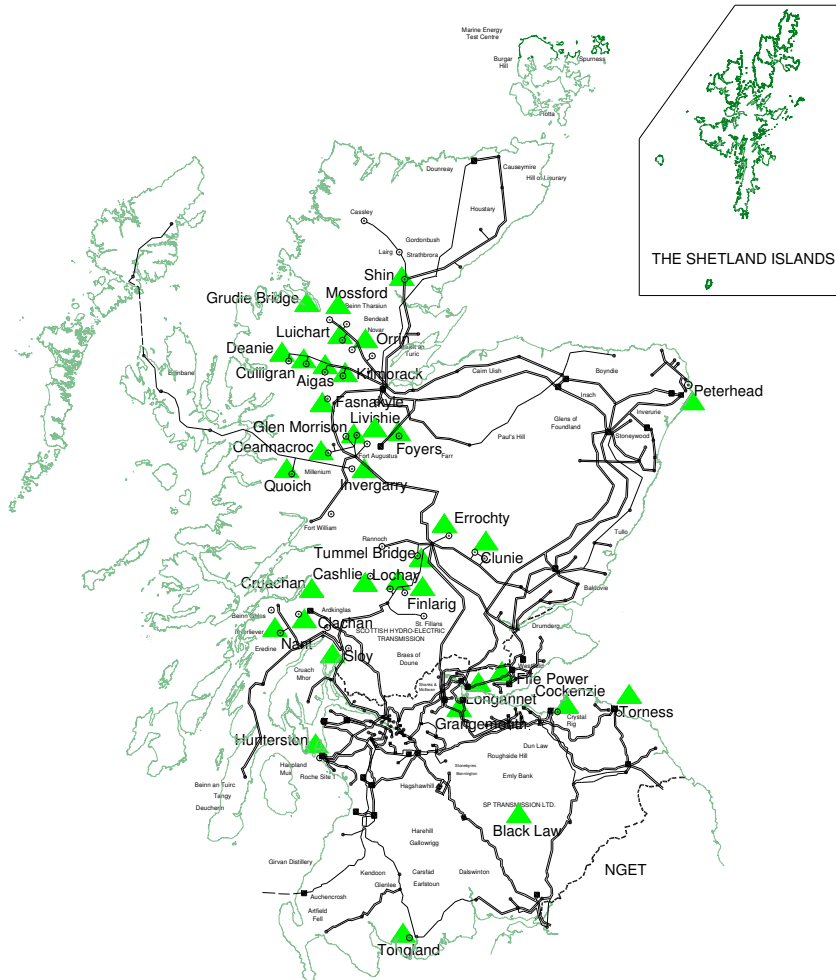
equipment, which includes some reactive compensation equipment, influenced National Grid's view of forecast MvArh. All of the commissioning equipment is required for compliance with Transmission Licence Standards, and re-phasing of planned National Grid investments within a 12-month contract period is not a practical option.

Appendix 6 - Geographic Distribution between DPM and Market Contracts

APPENDIX 6
(Fig. 1 of 2)

KEY

- 400kV, 275kV
- SUBSTATIONS
- ▲ GENERATION WITH DEFAULT CONTRACTS

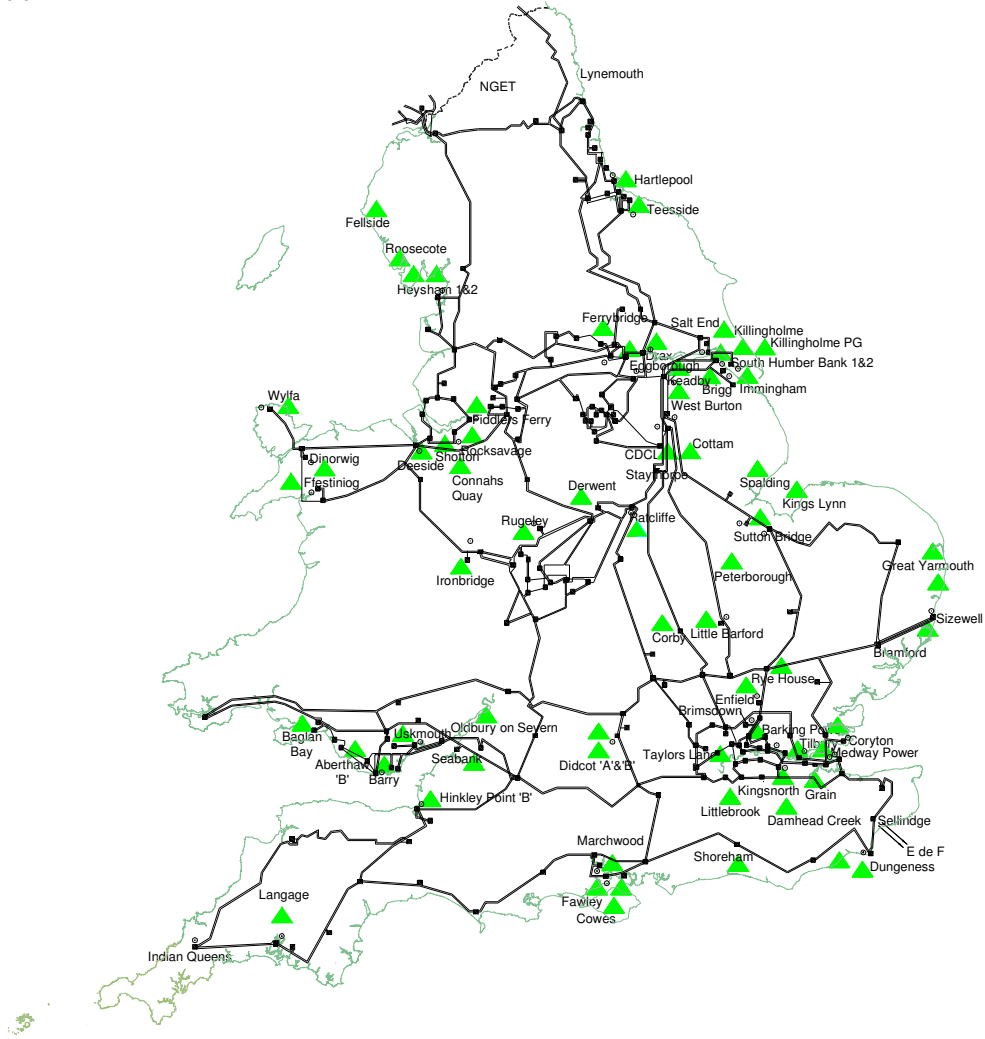


GENERATION (SCOTLAND) ELIGIBLE FOR REACTIVE POWER PAYMENTS
AS AT 1st APRIL 2011
SHOWING THE SPLIT BETWEEN DEFAULT AND MARKET CONTRACTS

APPENDIX 6
(Fig. 2 of 2)

KEY

- 400kV, 275kV
- SUBSTATIONS
- ▲ GENERATION WITH DEFAULT CONTRACTS



GENERATION (ENGLAND AND WALES) ELIGIBLE FOR REACTIVE POWER PAYMENTS
AS AT 1st APRIL 2011
SHOWING THE SPLIT BETWEEN DEFAULT AND MARKET CONTRACTS



Appendix 7 - Contact Information

A7.1 Further report information, comments suggestions and enquiries can be directed to:

**Lisa Kettle
Network Operations (B2)
National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA**

On telephone number: **01926 654308**
Email: **lisa.x.kettle@uk.ngrid.com**

A7.2 For any other information please visit the National Grid website on the following address:

<http://www.nationalgrid.com/uk/Electricity/Balancing/services/ReactivePower/markettender/>