

Obligatory Reactive Power Service

Default Payment Rates

In accordance with Appendix 1 of CUSC Schedule 3, the Default Payment Rate which is used to determine the default payment (PU) for the provision of the Obligatory Reactive Power Service (ORPS) from a BM Unit in a Settlement Period is calculated as follows:

Default Payment Rates from 1 November 2007

For all Settlement Periods from (and including) 1st November 2007, the Default Payment Rate (BP_U) shall in respect of each calendar month be determined as follows:-

$$BP_U = (46,270,000 * I_m * X) / 42,054,693$$

Where

I_m = the indexation factor (I) for the calendar month (m) determined as follows:

$$I_m = C * [(0.5 * FRPI_m / RPI_x) + (0.5 * PI_m)]$$

where

$$C = RPI_x / RPI_1$$

RPI_x is the RPI for March 2003 = **179.9**

RPI_1 is the RPI for March 1994 = **142.5**

$FRPI_m$ is the Forecast RPI for the calendar month (m) in question

PI_m is a wholesale power price index determined as follows:

$$PI_m = [(p * HPI_m / HPI_1) + (q * PAPI_m / PAPI_1) + (r * PPI_m / PPI_1)]$$

Where

HPI_m is the mean average of the OTC baseload month ahead Heren power index bid and offer prices for all days on which this index is published in the calendar month immediately preceding the calendar month in question

$PAPI_m$ is the mean average of the OTC baseload month ahead Petroleum Argus power index bid and offer prices for all days on which this index is published in the calendar month immediately preceding the calendar month in question

PPI_m is the mean average of the OTC baseload month ahead Platts power index bid and offer prices for all days on which this index is published in the calendar month immediately preceding the calendar month in question

and where

$p = q = r = 1/3$ (subject always to sub-paragraph 3.2(c) of Appendix 1 to CUSC Schedule 3)

and where

HPI_1 is the mean average of the OTC baseload month ahead Heren power index bid and offer prices for all days on which this index is published during the period from (and including) 1st October 2002 to (and including) 30th September 2003 = **17.28**

$PAPI_1$ is the mean average of the OTC baseload month ahead Petroleum Argus power index bid and offer prices for all days on which this index is published during the period from (and including) 1st October 2002 to (and including) 30th September 2003 = **17.27**

PPI_1 is the mean average of the OTC baseload month ahead Platts power index bid and offer prices for all days on which this index is published during the period from (and including) 1st October 2002 to (and including) 30th September 2003 = **17.27**

X = Utilisation Factor = 1 in the relevant Settlement Period unless:

- a. the BM Unit or a CCGT Unit comprised within the CCGT Module has failed a Reactive Test and has not subsequently passed a further Reactive Test; or
- b. The User fails to set the automatic voltage regulator on the BM Unit or a CCGT Unit within the CCGT Module to a voltage following mode (unless otherwise instructed by National Grid or where permitted by the Grid Code); or
- c. The BM Unit or a CCGT Unit within the CCGT Module fails to comply with a Reactive Despatch Instruction due to the fact that the BM Unit or CCGT Unit is unable to increase and/or decrease its Mvar output; or
- d. The BM Unit fails to have a Mvar range which includes the ability to provide zero Mvar at the Commercial Boundary.

In any Settlement Period in which any of the above cases applies X = 0.2

Therefore the ORPS Default Payment Rates are:

Month	HPI_m	$PAPI_m$	PPI_m	$FRPI_m$	I_m	BP_U (£/Mvarh)	
						X = 1	X = 0.2
November 2007*	29.9	29.9	28.94	210.1	1.8181	2.000335	0.400067
December 2007	41.56	41.55	42.19	211.0	2.2667	2.493900	0.498780
January 2008	51.97	52.06	52.09	210.5	2.6403	2.904948	0.580990
February 2008	60.17	60.22	59.89	211.1	2.9367	3.231057	0.646211
March 2008	61.41	61.40	60.98	211.7	2.9816	3.280457	0.656091
April 2008	52.61	52.61	52.75	213.1	2.6720	2.939825	0.587965
May 2008	56.96	56.95	56.58	213.7	2.8266	3.109921	0.621984
June 2008	61.32	61.32	65.08	215.4	3.0424	3.347352	0.669470
July 2008	68.06	68.25	68.12	215.2	3.2453	3.570589	0.714118
August 2008	81.44	81.53	81.53	218.0	3.7432	4.118396	0.823679
September 2008	83.70	83.70	83.33	218.4	3.8205	4.203444	0.840689
October 2008	81.08	81.08	80.99	218.7	3.7292	4.102992	0.820598
November 2008	95.49	95.22	94.47	219.3	4.2433	4.668623	0.933725
December 2008	124.83	124.84	128.52	220.2	5.3794	5.918598	1.183720
January 2009	77.82	77.88	77.16	214.7	3.5899	3.949730	0.789946

Month	HPI _m	PAPI _m	PPI _m	FRPI _m	I _m	BP _U (£/Mvarh)	
						X = 1	X = 0.2
February 2009	59.05	59.03	59.00	210.4	2.8953	3.185507	0.637101
March 2009	57.56	57.72	56.08	208.9	2.8204	3.103100	0.620620
April 2009	48.97	48.72	47.44	209.7	2.5036	2.754546	0.550909
May 2009	35.68	35.70	35.55	210.1	2.0398	2.244257	0.448851
June 2009	35.40	35.03	35.39	211.0	2.0294	2.232815	0.446563
July 2009	35.40	35.43	35.30	210.3	2.0307	2.234245	0.446849
August 2009**	35.44	35.58	35.69	211.8	2.0430	2.247778	0.449556
September 2009	35.46	31.69	31.70	213.4	1.9529	2.148647	0.429729
October 2009	33.16	33.15	33.13	213.4	1.9600	2.156458	0.431292
November 2009	35.08	35.09	34.97	214.9	2.0348	2.238756	0.447751
December 2009	38.45	38.43	38.32	215.0	2.1577	2.373975	0.474795
January 2010	37.58	37.54	36.84	216.6	2.1238	2.336677	0.467335
February 2010	35.06	35.09	35.32	217.1	2.0466	2.251739	0.450348
March 2010	37.16	37.16	37.28	217.9	2.1240	2.336897	0.467379
April 2010	34.98	34.97	35.00	219.5	2.0486	2.253939	0.450788
May 2010	33.99	33.99	33.97	219.8	2.0131	2.214881	0.442976
June 2010	35.92	35.88	35.82	220.2	2.0836	2.292447	0.458489
July 2010	40.47	40.47	40.30	223.4	2.2607	2.487299	0.497460
August 2010	42.97	43.04	43.02	224.0	2.3577	2.594022	0.518804
September 2010	42.34	42.30	42.07	224.3	2.3304	2.563985	0.512797
October 2010	39.85	39.90	39.83	225.3	2.2472	2.472446	0.494489
November 2010	41.73	41.72	41.78	225.6	2.3171	2.549352	0.509870
December 2010	44.24	44.19	44.24	226.6	2.4112	2.652884	0.530577
January 2011	44.85	44.84	44.80	226.8	2.4341	2.678079	0.535616
February 2011	51.81	51.92	51.97	227.5	2.6949	2.965020	0.593004
March 2011	49.24	49.19	49.33	228.9	2.6030	2.863909	0.572782
April 2011	46.43	49.19	46.61	230.2	2.5402	2.794814	0.558963
May 2011	52.35	49.19	51.92	231.3	2.6809	2.949617	0.589923
June 2011	52.17	52.27	51.98	235.8	2.7327	3.006609	0.601322
July 2011	50.86	52.27	50.69	235.3	2.6993	2.969861	0.593972
August 2011	50.54	50.86	50.63	236.3	2.6810	2.949727	0.589945
September 2011	47.13	47.26	47.13	237.5	2.5572	2.813518	0.562704
October 2011	47.11	46.80	47.05	237.7	2.5511	2.806807	0.561361
November 2011	52.72	52.74	52.92	238.3	2.7654	3.042587	0.608517
December 2011	53.17	53.14	53.02	239.2	2.7801	3.058760	0.611752
January 2012	50.88	51.17	50.62	238.5	2.6966	2.966891	0.593378
February 2012	45.92	45.83	45.35	239.7	2.5111	2.762797	0.552559
March 2012	42.10	42.07	42.11	240.7	2.3828	2.621637	0.524327
April 2012	44.66	44.59	44.38	242.3	2.4779	2.726270	0.545254
May 2012	45.91	46.70	46.05	243	2.5417	2.796465	0.559293
June 2012	45.03	45.04	45.13	243.2	2.5002	2.750805	0.550161
July 2012	43.03	45.04	43.23	242.8	2.4514	2.697113	0.539423
August 2012	41.80	41.81	41.82	243.8	2.3833	2.622188	0.524438
September 2012	41.64	41.63	41.68	245.3	2.3828	2.621637	0.524327
October 2012	42.36	42.26	42.28	245.1	2.4057	2.646833	0.529367
November 2012	44.06	44.05	44.13	245.6	2.4726	2.720438	0.544088
December 2012	48.79	48.48	48.42	246.4	2.6392	2.903737	0.580747
January 2013	49.59	49.58	49.49	245.7	2.6730	2.940925	0.588185
February 2013	50.78	50.79	50.70	246.9	2.7211	2.993847	0.598769
March 2013	50.31	50.25	50.21	247.9	2.7064	2.977673	0.595535
April 2013	48.16	48.26	48.19	249.6	2.6372	2.901537	0.580307
May 2013	53.39	53.25	52.80	250.3	2.8204	3.103100	0.620620
June 2013	50.25	50.18	50.19	250.5	2.7136	2.985595	0.597119
July 2013	48.58	48.63	48.47	250.1	2.6521	2.917930	0.583586
August 2013	47.46	47.55	47.38	251.1	2.6155	2.877662	0.575532
September 2013	46.68	46.80	46.84	252.7	2.5959	2.856097	0.571219
October 2013	46.68	46.67	46.73	252.5	2.5922	2.852026	0.570405
November 2013	49.11	49.10	49.19	252.9	2.6829	2.951818	0.590364
December 2013	53.09	53.13	53.05	253.7	2.8303	3.113992	0.622798

Month	HPI _m	PAPI _m	PPI _m	FRPI _m	I _m	BP _U (£/Mvarh)	
						X = 1	X = 0.2
January 2014	54.71	54.73	54.59	253.1	2.8862	3.175495	0.635099
February 2014	54.54	54.55	54.49	254.3	2.8848	3.173955	0.634791
March 2014	50.84	50.80	51.22	255.3	2.7578	3.034225	0.606845
April 2014	46.34	46.20	46.20	257.1	2.5922	2.852026	0.570405
May 2014	46.13	45.92	45.91	257.8	2.5850	2.844105	0.568821
June 2014	41.87	42.02	41.95	258.0	2.4381	2.682480	0.536496
July 2014	39.74	39.58	39.79	257.6	2.3548	2.590831	0.518166
August 2014	36.97	37.00	37.22	258.0	2.2596	2.486089	0.497218
September 2014	35.06	35.07	35.19	259.0	2.1917	2.411383	0.482277
October 2014	38.17	38.08	38.14	259.5	2.3039	2.534829	0.506966
November 2014	45.23	45.11	44.99	259.7	2.5597	2.816269	0.563254
December 2014	48.00	47.94	47.98	261.0	2.6689	2.936414	0.587283
January 2015	48.04	48.07	48.00	260.2	2.6684	2.935864	0.587173
February 2015	45.94	45.80	45.88	261.8	2.5949	2.854997	0.570999
March 2015	40.01	39.92	40.21	262.4	2.3842	2.623178	0.524636

* Due to the implementation of CAP156 in mid November 2007, National Grid invoked Appendix 1 paragraph 3.2 (c) of Schedule 3 of the CUSC and substituted the factors relating to the respective market indices to those that reflect the implementation of CAP156 for the whole of November.

** Due to an error in how the Heren data was published for the August 2009 Default Payment Rate an incorrect value was utilised. The correct value is now included in the table above. This has resulted in a £0.000220 reduction in the X=1 rate for August 2009.

Correction of OPRS Default Payment Rates – Nov 07 to May 08

An error has been identified in the calculation of the OPRS Default Payment Rate in respect of the RPI forecast figure for the period November 2007 to May 2008 inclusive. The below table shows the previously published Default Payment figures with the corrected figures shown in the table in the above section. Reconciliation of Reactive payments to Providers will be completed by the end of July 2008. If you have any queries regarding this correction then please contact Lisa Kettle on 01926 654308.

Month	Published Figures				Corrected Figures	Difference between Published and Actual (X = 1)
	FRPI _m	I _m	X = 1 (£/MWh)	X = 0.2 (£/MWh)		
November 2007	209.5	1.8160	1.998025	0.399605	See above table	£0.00231
December 2007	209.9	2.2628	2.489609	0.497922	See above table	£0.004291
January 2008	210.9	2.6417	2.906488	0.581298	See above table	-£0.00154
February 2008	210.5	2.9346	3.228746	0.645749	See above table	£0.002411
March 2008	210.9	2.9788	3.277377	0.655475	See above table	£0.00308
April 2008	211.7	2.6671	2.934434	0.586887	See above table	£0.005391
May 2008	212.1	2.8210	3.103760	0.620752	See above table	£0.006161

Default Payment Rates for the period from 1 April 2004 to 31 October 2007

Prior to the implementation of Amendment Proposal CAP156, the Default Payment Rate for the provision of the Obligatory Reactive Power Service (ORPS) was calculated as follows:

$$BP_U = (46,270,000 * I_m * X) / 42,054,693$$

Where

I_m = the Indexation factor (I) for the calendar month (m) determined as follows:

$$I_m = C * [(0.5 * FRPI_m / RPI_x) + (0.5 * PI_m)]$$

$$C = RPI_x / RPI_1 = \mathbf{1.262456}$$

RPI_x is the RPI for March 2003 = 179.9

RPI_1 is the RPI for March 1994 = 142.5

$FRPI_m$ is the Forecast RPI for the calendar month (m) in question

PI_m is a wholesale power price index determined as follows:

$$PI_m = [(p * HPI_m / HPI_1) + (q * PAPI_m / PAPI_1) + (r * PPI_m / PPI_1) + (s * DTSP_m / DTSP_1)]$$

HPI_m is the mean average of the OTC baseload month ahead Heren power index bid and offer prices for all days on which the index is published in the calendar month immediately preceding the calendar month (m) in question

$PAPI_m$ is the mean average of the OTC baseload month ahead Petroleum Argus power index bid and offer prices for all days on which the index is published in the calendar month immediately preceding the calendar month (m) in question

PPI_m is the mean average of the OTC baseload month ahead Platts power index bid and offer prices for all days on which the index is published in the calendar month immediately preceding the calendar month (m) in question

$DTSP_m$ is the mean average of the OTC baseload month ahead Deloitte and Touche Spectron power index bid and offer prices for all days on which the index is published in the calendar month immediately preceding the calendar month (m) in question

$p = q = r = 0.2$ and $s = 0.4$ (subject to sub-paragraph 3.2(c) of Appendix 1 to CUSC Schedule 3)

HPI_1 is the mean average of the OTC baseload month ahead Heren power index bid and offer prices for all days on which the index is published during the period from (and including) 1 October 2002 to (and including) 30 September 2003 = **17.28**

$PAPI_1$ is the mean average of the OTC baseload month ahead Petroleum Argus power index bid and offer prices for all days on which the index is published during the period from (and including) 1 October 2002 to (and including) 30 September 2003 = **17.27**

PPI₁ is the mean average of the OTC baseload month ahead Platts power index bid and offer prices for all days on which the index is published during the period from (and including) 1 October 2002 to (and including) 30 September 2003 = **17.27**

DTSPI₁ is the mean average of the OTC baseload month ahead Deloitte and Touche Spectron power index bid and offer prices for all days on which the index is published during the period from (and including) 1 October 2002 to (and including) 30 September 2003 = **17.32**

X is the Utilisation Factor = 1 in the relevant Settlement Period, unless:

- a. the BM Unit or a CCGT Unit comprised within the CCGT Module has failed a Reactive Test and has not passed a further Reactive Test; or
- b. The User fails to set the automatic voltage regulator on the BM Unit or a CCGT Unit comprised within the CCGT Module to a voltage following mode (unless otherwise instructed by National Grid or where permitted by the Grid Code); or
- c. The BM Unit or a CCGT Unit comprised within the CCGT Module fails to comply with a Reactive Despatch Instruction due to the fact that the BM Unit or CCGT Unit is unable to increase and/or decrease its Mvar output; or
- d. The BM Unit fails to have a Mvar range which includes the ability to provide zero Mvar at the Commercial Boundary.

In any Settlement Period in which any of the above cases applies X = 0.2

Therefore the ORPS Default Payment Rates were:

Month	HPI _m	PAPI _m	PPI _m	DTSPI _m	FRPI _m	I _m	BP _U (£/Mvarh)	
							X = 1	X = 0.2
April 2004	19.28	19.29	19.31	19.37	186.1	1.3584	1.494558	0.298912
May 2004	18.27	18.27	18.23	18.20	186.6	1.3204	1.452749	0.290528
June 2004	19.07	19.06	19.07	18.95	186.6	1.3490	1.484216	0.296843
July 2004	20.08	20.01	19.94	20.09	186.2	1.3849	1.523714	0.304743
August 2004	21.14	21.14	21.14	21.12	186.5	1.4258	1.568714	0.313743
September 2004	20.72	20.71	20.74	20.68	188.1	1.4159	1.557821	0.311564
October 2004	22.11	22.13	22.19	22.17	188.8	1.4712	1.618664	0.323733
November 2004	24.88	24.88	24.71	24.91	188.9	1.5702	1.727587	0.345517
December 2004	31.68	31.55	31.85	32.09	190.0	1.8294	2.012768	0.402554
January 2005	32.09	32.09	32.36	32.19	189.7	1.8405	2.024981	0.404996
February 2005	31.40	31.41	31.48	31.92	190.5	1.8229	2.005616	0.401123
March 2005	26.03	26.05	26.11	26.21	190.8	1.6230	1.785680	0.357136
April 2005	25.51	25.51	25.32	24.63	191.8	1.5900	1.749372	0.349874
May 2005	28.47	28.48	28.47	28.32	192.3	1.7119	1.883490	0.376698
June 2005	29.96	29.96	29.87	29.91	192.5	1.7677	1.944884	0.388977
July 2005	31.01	31.01	30.93	31.07	192.1	1.8063	1.987353	0.397471
August 2005	33.55	33.50	33.85	33.91	192.6	1.9076	2.098806	0.419761
September 2005	37.84	37.80	38.36	37.50	193.4	2.0585	2.264832	0.452966
October 2005	34.92	34.93	34.82	34.69	193.5	1.9497	2.145126	0.429025
November 2005	39.18	39.17	39.20	39.23	194.1	2.1121	2.323804	0.464761
December 2005	43.52	43.53	43.35	43.51	194.4	2.2694	2.496871	0.499374
January 2006	57.55	57.56	56.31	62.37	194.1	2.8431	3.128075	0.625615
February 2006	69.65	69.63	70.53	70.97	194.9	3.2519	3.577851	0.715570
March 2006	60.03	59.97	59.31	58.98	195.2	2.8552	3.141388	0.628278
April 2006	50.34	50.49	50.34	51.57	196.2	2.5451	2.800205	0.560041
May 2006	46.41	46.59	44.16	47.62	196.6	2.3865	2.625708	0.525142

Month	HPI _m	PAPI _m	PPI _m	DTSPI _m	FRPI _m	I _m	BP _U (£/Mvarh)	
							X = 1	X = 0.2
June 2006	41.74	41.74	41.83	41.97	197.3	2.2200	2.442519	0.488504
July 2006	33.21	33.21	32.95	33.39	197.9	1.9074	2.098586	0.419717
August 2006	35.45	35.40	35.50	35.42	198.9	1.9894	2.191116	0.438223
September 2006	40.64	40.65	40.69	40.49	199.6	2.1822	2.400930	0.480186
October 2006	36.94	36.94	36.95	36.84	200.4	2.0502	2.255700	0.451140
November 2006	37.48	37.46	37.41	37.28	200.7	2.0688	2.276164	0.455233
December 2006	43.91	43.90	43.86	44.53	201.3	2.3178	2.550122	0.510024
January 2007	50.60	50.97	50.07	51.03	201.5	2.5591	2.815609	0.563122
February 2007	41.40	41.39	41.28	41.48	202.8	2.2232	2.446040	0.489208
March 2007	31.61	31.63	31.77	31.02	203.4	1.8602	2.046655	0.409331
April 2007	22.41	22.44	22.46	22.31	205.4	1.5378	1.691940	0.338388
May 2007	20.76	20.75	20.72	20.62	206.1	1.4876	1.626806	0.325361
June 2007	20.17	20.16	20.36	20.39	206.6	1.4568	1.612723	0.322545
July 2007	24.11	24.11	24.15	24.39*	206.7	1.6098	1.771157	0.354231
August 2007	25.95	26.03	26.22	26.90*	208.1	1.6939	1.863686	0.372737
September 2007	25.53	25.52	25.42	25.41*	208.3	1.6602	1.826608	0.365322
October 2007	25.56	25.55	25.57	25.36*	209	1.6635	1.830239	0.366048

* As Spectron ceased to produce the OTC baseload month ahead Deloitte and Touche Spectron power index with effect from 1 July 2007, National Grid obtained the necessary data from Spectron to derive the mean average for each of the calendar months July to October 2007 using the same method as that employed by Spectron prior to 1 July 2007.

Default Payment Rates before 1 April 2004

Prior to the implementation of Amendment Proposal CAP045, the Default Payment Rates for the provision of the Obligatory Reactive Power Service (ORPS) was calculated as follows:

$$BP_U = (46,270,000 * I * X) / 42,054,693$$

Where I = Indexation factor (RPI₂ / RPI₁)

$$RPI_1 = \text{RPI for March 1994} = 142.5$$

X = Utilisation Factor = 1 in the relevant Settlement Period unless:

- a. the BM Unit or a CCGT Unit comprised within the CCGT Module has failed a Reactive Test and has not subsequently passed a further Reactive Test; or
- b. The User fails to set the automatic voltage regulator on the BM Unit or a CCGT Unit comprised within the CCGT Module to a voltage following mode (unless otherwise instructed by National Grid or where permitted by the Grid Code); or
- c. The BM Unit or a CCGT Unit comprised within the CCGT Module fails to comply with a Reactive Despatch Instruction due to the fact that the BM Unit or CCGT Unit is unable to increase and/or decrease its Mvar output; or
- d. The BM Unit fails to have a Mvar range which includes the ability to provide zero Mvar at the Commercial Boundary.

In any of the above cases X = 0.2

Therefore the ORPS Default Payment Rates were:

Year	From - To	Indexation Factor (I)	BP _U (£/Mvarh)	
			X = 1	X = 0.2
2000/2001	1/4/00 – 31/3/01	1.1818	1.300256	0.260051
2001/2002	1/4/01 – 31/3/02	1.208	1.329083	0.265817
2002/2003	1/4/02 – 31/3/03	1.2246	1.347346	0.269469
2003/2004	1/4/03 – 31/3/04	1.2625	1.389045	0.277809