

Electricity generation and supply figures for Scotland, Wales, Northern Ireland and England, 2004 and 2005.

Introduction

This article updates that published in December 2005. As before, there are confidentiality constraints that mean that some data for generation by fuel in Northern Ireland cannot be shown separately from those for England. The United Kingdom figures shown in the tables in this article are taken from the Digest of United Kingdom Energy Statistics (DUKES) 2006, Chapter 5 and 7 and so the definitions used are identical to those in the Digest. Tables 1 and 2 are shown in “landscape” format at the end of the main text.

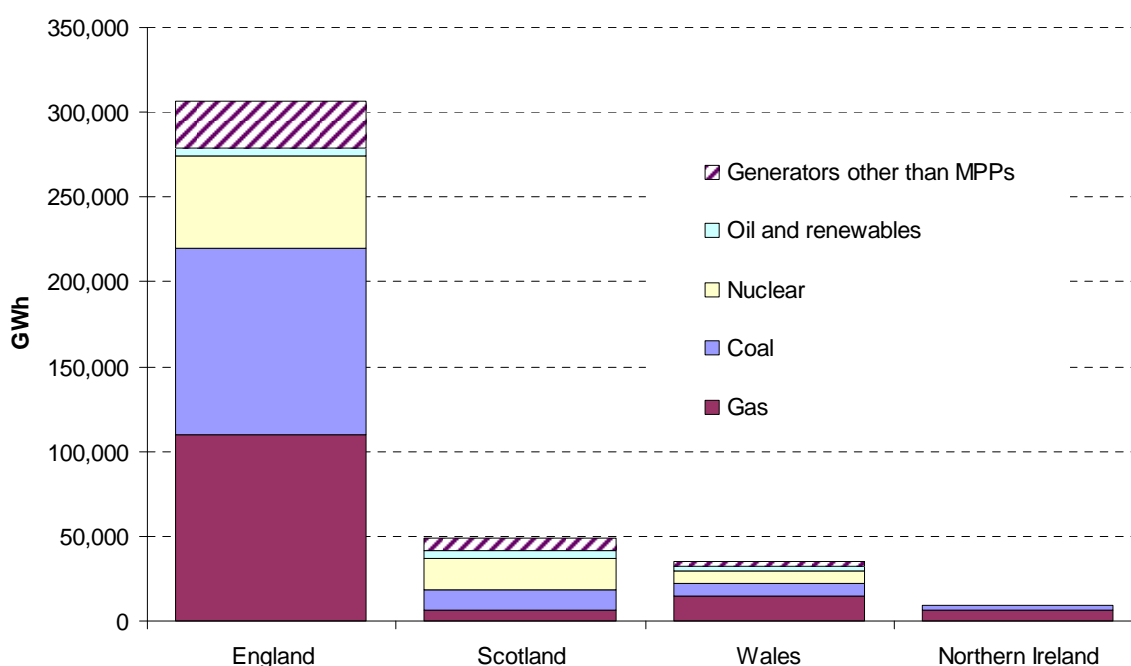
Generation and net exports

In 2004 12.9 per cent of the electricity generated in the UK was generated in Scotland, 9.0 per cent in Wales, and 1.9 per cent in Northern Ireland and 76.2 per cent in England. These percentages fell in 2005 to 12.2 per cent and 8.7 per cent respectively in Scotland and Wales but rose in Northern Ireland to 2.4 per cent and in England to 76.7 per cent (Table 1).

Both Scotland and Wales are net exporters of electricity with England importing electricity from both countries and from continental Europe. Northern Ireland trades electricity with the Republic of Ireland to which it was a net exporter in 2005. It also imports electricity from Scotland via the Moyle interconnector opened in 2002 but these imports were less than the net exports to the Irish Republic in 2005. In 2004 Scotland exported 16.8 per cent of the electricity generated there to consumers elsewhere in the UK, but this fell to 14.7 per cent in 2005. However, the reduction in Scottish exports between these two years was less than the reduction in Scottish generation. Wales exported the equivalent of 18.5 per cent of its generation to consumers in England in 2004, falling back to 12.4 per cent in 2005. The reduction in Welsh exports between these two years was greater than the reduction in generation in Wales.

The bringing together of the grid systems of England and Wales and Scotland under BETTA in 2005 has meant that data for the transmission of electricity along the two interconnecting grid lines is no longer available. As a result for 2005 these amounts are calculated based on generation and consumption data.

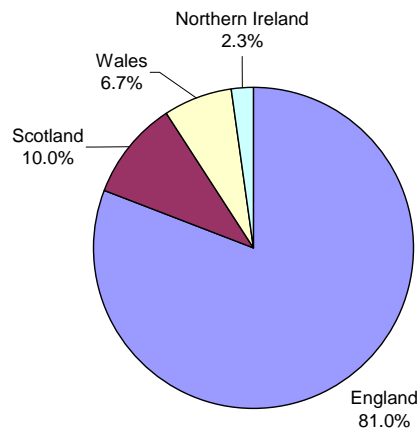
Chart 1: Generation by fuel in 2005 by major power producers and other generators



Generation by fuel

Table 2 sets out the generation of electricity by the fuel categories used in Table 5.6 of the Digest of UK Energy Statistics 2006. The position in 2005 is shown in Chart 1. Coal's share was lower in both Scotland and Wales than the approximately one third share in the UK as a whole in both 2004 and 2005 with increased coal use in 2005 by the English stations. In Northern Ireland gas accounted for over 50 per cent of generation for the first time in 2004 and moved further ahead to over two thirds in 2005 with the opening of new gas-fired capacity. In Scotland 21.6 per cent of generation was from gas in 2004, falling back to 16.9 per cent in 2005. In Wales the 48.9 per cent share of gas in 2004 fell back to 45.8 per cent in 2005 as high prices discouraged the use of gas for generation. In England the use of gas stations also declined. There was a 3½ per cent increase in nuclear output in Scotland in 2005 and a 6 per cent increase in Wales; these increases were sufficient to increase nuclear's share by 3 percentage points in Scotland and 2 percentage points in Wales. In England, although there was a slight increase in nuclear output, nuclear's share fell slightly to 18 per cent in 2005. After the "drier" year of 2003 natural flow hydro returned to its more usual share of generation in both Scotland and Wales in 2004 and 2005 (ie around 9 and 1 per cent respectively). The role of renewables is discussed in a separate section below. Combined heat and power (CHP) forms the bulk of "Other generators" generation, although some major power producers (MPPs) also operate generators that are partially CHP. CHP statistics for 2005 on a sub-national and regional basis were published in September 2006's issue of Energy Trends. The share of generation accounted for by generators other than major power producers varies across the UK. In Scotland in 2005 other generators had a 14 per cent share, while in England the share was 9 per cent, in Wales 7½ per cent and in Northern Ireland 4 per cent.

Chart 2: Electricity consumption in 2005



Consumption and sales

Transmission and distribution losses are not separately available for Scotland, Wales, Northern Ireland and England so estimates have been made using the same proportions of electricity supplied as for the UK as a whole. Consumption figures have then been calculated by deducting net transfers and losses figures from the electricity supplied figures shown in Table 1. These show (Chart 2) that in 2005 10.0 per cent of electricity consumption in the UK was in Scotland, 6.7 per cent in Wales, 2.3 per cent in Northern Ireland and 81.0 per cent in England, all little changed from the percentage shares in 2004.

Since 2001 separate data have been collected for sales of electricity from the public supply system in Scotland, England and Wales, and Northern Ireland and published as monthly Table 5.5 on the DTI Energy Statistics web site (see references at the end of the article). Because of definitional and other differences set out in the Technical Notes to Chapter 5 of the Digest of UK Energy Statistics 2006, there is a statistical difference between the calculated consumption and the sales data in Table 1. As part of its commitment to improving the quality of its statistics, DTI continues to

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examine this statistical difference and look further at the component series to see where the differences might be arising and thus where improvements to the data might be made.

Renewables

The share of renewables in electricity generation or sales is measured in two different ways in the UK¹. First there is the “headline” overall measure that shows the percentage of electricity generation accounted for by all renewables. Secondly there is the measure that is based on the Renewables Obligation (RO) (and the analogous Renewables Obligation (Scotland) - ROS) which shows the percentage of electricity sales accounted for by renewables eligible under these obligations. The main differences are the exclusion from the RO of large-scale hydro and non-biodegradable wastes². Table 3 shows the overall measure for 2003, 2004 and 2005.

Table 3: Renewables percentages

		UK	Scotland	Wales	Northern Ireland	England
Overall	2003	2.67	7.71	2.59	1.59	1.90
renewables	2004	3.58	11.56	3.10	2.03	2.33
percentage	2005	4.22	13.25	4.04	2.83	2.85

Scotland's, Wales' and Northern Ireland's hydro outputs in 2003 were all affected by the dryer weather that caused a 32.6 per cent reduction in UK hydro generation in 2003 compared with 2002.

Under the headline measure, the high proportion of natural flow hydro in Scotland has taken the 2005 to 11.56 per cent. This share is very much higher than other parts of the UK can produce. On a RO basis, the percentage measure for the UK (2.21 per cent in 2003, 3.09 per cent in 2004 and 4.00 per cent in 2005) is not meaningful at sub-national level because electricity generated in one part of the UK can be sold in a different part of the UK. The amount of electricity from renewable sources transferred from Scotland or Wales to England, or from Scotland to Northern Ireland is not known. What is known from Table 2 is that the amount of ROS eligible electricity generated in Scotland in 2005 was 35 per cent greater than in 2004 and the amount of RO eligible electricity generated in Wales in 2005 was 34 per cent more than in 2004. In England the increase was 29 per cent and in the UK as a whole 32 per cent. Renewables statistics for 2005 on a sub-national and regional basis were published in September 2006's issue of Energy Trends.

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References:

Digest of UK Energy Statistics 2006. Published for DTI by The Stationery Office ISBN 0-11-515517-1 £39.50, but also available on the DTI web site at

www.dti.gov.uk/energy/statistics/publications/dukes/page29812.html

Energy Trends monthly Table 5.5

www.dti.gov.uk/energy/statistics/publications/trends/index.html

“Combined Heat and Power in Scotland, Wales, Northern Ireland and the regions of England in 2005” – Energy Trends September 2006, page 31

www.dti.gov.uk/energy/statistics/publications/trends/index.html

“Renewable energy in Scotland, Wales, Northern Ireland and the regions of England in 2005” – Energy Trends September 2006, page 22

www.dti.gov.uk/energy/statistics/publications/trends/index.html

¹ There is also a third method used by the EU – a Renewables Directive basis – see Chapter 7 of the Digest of UK Energy Statistics 2006, paragraph 7.11.

² Specific exclusions from eligibility for the RO are existing hydro plant over 20 MW; all plant using renewable sources built before 1990 (unless re-furbished); and energy from mixed waste combustion unless the waste is first converted to fuel using advanced conversion technology.

Table 1: Generation and supply of electricity in Scotland, Wales, Northern Ireland and England, 2004 and 2005

		2004					2005					<i>GWh</i>
		UK total	Scotland	Wales	Northern Ireland	England	UK total	Scotland	Wales	Northern Ireland	England	
Generated by	Major power producers	358,405	44,552	33,020	7,141	273,692	362,379	41,998	32,273	9,239	278,869	
	Other generators	36,900	6,539	2,474	269	27,618	38,145	6,987	2,619	393	28,146	
Total generated		395,305	51,091	35,494	7,410	301,310	400,525	48,985	34,892	9,632	307,015	
Own use by	Other generators	1,499	266	101	11	1,122	1,566	287	108	16	1,156	
Electricity supplied (net) by	Other generators	35,401	6,273	2,373	259	26,496	36,579	6,700	2,512	377	26,991	
Used in pumping at pumped storage and other own use by	MPPs	19,079	3,800	4,177	284	10,819	19,973	3,403	4,601	325	11,644	
Electricity supplied (net) by MPPs		339,327	40,752	28,844	6,857	262,874	342,406	38,595	27,672	8,915	267,224	
Electricity transferred to England (net of receipts)		-	5,780	6,096	-	-11,876	-	5,519	4,311	-	-9,830	
Electricity transferred to Northern Ireland (net of receipts)		-	2,793	-	-2,793	-	-	1,689	-	-1,689	-	
Electricity transferred to Europe (net of receipts)		-7,490	-	-	1,574	-9,064	-8,320	-	-	2,073	-10,393	
Transfers from other generators to public supply		10,954	1,413	920	148	8,473	10,533	2,044	1,065	271	7,154	
Transmission losses		5,733	577	377	125	4,655	5,810	571	388	134	4,717	
Distribution losses		24,995	1,935	1,367	485	21,208	24,827	1,889	1,404	512	21,023	
Consumption from public supply [A]		327,070	31,085	21,926	7,615	266,444	330,654	30,978	22,636	8,154	268,886	
Consumption by autogenerators		24,420	4,855	1,452	110	18,003	26,015	4,651	1,445	106	19,814	
Total Electricity consumption		351,490	35,940	23,378	7,725	284,447	356,669	35,629	24,081	8,260	288,700	
Electricity sales (public supply) [B]		323,714	30,117	21,740	7,558	264,299	329,073	30,975	23,125	7,647	267,326	
Statistical difference		+3,356	+968	+186	+57	+2,145	+1,581	+3	-489	+507	+1,560	
between calculated consumption [A] and sales [B]												

Figures in this table do not sum exactly to the UK totals shown because of rounding

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		2004					2005				
		UK total	Scotland	Wales	Northern Ireland	England	UK total	Scotland	Wales	Northern Ireland	England
Major power producers:	Coal	127,827	13,002	7,234	2,711	104,880	130,894	12,092	6,772	2,455	109,576
	Oil	1,883	149	-	347	1,387	2,716	556	-	331	1,829
	Gas	140,577	8,851	16,245	4,083	111,398	137,483	6,251	14,984	6,454	109,795
	Nuclear	79,999	18,013	7,388	-	54,598	81,618	18,681	7,842	-	55,095
	Thermal renewables	1,471	-	51	-	1,420	2,746	-	176	-	2,570
	Hydro natural flow	4,000	3,752	239	-	9	3,993	3,777	212	-	4
	Hydro pumped storage	2,648	786	1,863	-	-	2,930	643	2,287	-	-
	Total	358,405	44,552	33,020	7,141	273,692	362,380	41,999	32,273	9,239	278,869
Other Generators:	Coal	3,995	53	-	-	3,942	4,024	53	-	-	3,971
	Oil	2,990	2,125	39	-	826	2,702	2,164	41	-	497
	Gas	16,761	2,182	1,118	-	13,461	15,747	2,043	967	-	12,737
	Thermal renewables	5,824	513	195	3	5,114	6,297	595	238	6	5,457
	Other thermal	4,461	26	506	-	3,929	5,492	16	588	-	4,888
	Hydro natural flow	929	792	65	8	64	968	835	69	14	51
	Non thermal renewables	1,939	848	551	140	400	2,916	1,281	715	253	667
	Total	36,900	6,539	2,474	269	27,618	38,145	6,987	2,619	393	28,146
Total generation by fuel		395,305	51,091	35,494	7,410	301,310	400,525	48,985	34,892	9,632	307,015
<i>within which:</i>											
	Renewables Hydro	4,929	4,544	304	8	73	4,961	4,612	281	14	55
	Wind, wave, solar	1,939	848	551	140	401	2,916	1,281	715	253	667
	Other	7,295	513	246	3	6,533	9,042	595	414	6	8,026
	Total	14,164	5,905	1,101	150	7,008	16,919	6,488	1,410	273	8,748
Renewables eligible under the renewables obligation		9,986	2,907	888	150	6,041	13,171	3,929	1,187	273	7,783
Percentage shares of generation:	Coal	33.4%	25.5%	20.4%	-	36.1%	33.7%	24.8%	19.4%	-	36.6%
	Oil	1.2%	4.5%	0.1%	-	0.8%	1.3%	5.6%	0.1%	-	0.9%
	Gas	39.8%	21.6%	48.9%	-	41.8%	38.3%	16.9%	45.7%	-	40.7%
	Nuclear	20.2%	35.3%	20.8%	-	17.7%	20.4%	38.2%	22.5%	-	17.4%
	Hydro natural flow	1.3%	8.9%	0.9%	-	-	1.2%	9.4%	0.8%	-	-
	Other renewables	2.3%	2.6%	2.2%	-	2.3%	3.0%	3.8%	3.2%	-	2.8%
	Other	1.8%	16%	6.7%	-	1.3%	2.1%	1.3%	8.3%	-	1.6%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Shaded areas indicate where separate figures for Northern Ireland cannot be given and the data have been merged with data for England

Figures in this table do not sum exactly to the UK totals shown because of rounding