



GB Electricity Market Summary

FIRST QUARTER 2017
JAN TO MAR

Recorded Levels of GB Generation by Fuel (based upon Ofgem & NG Embedded Forecasts & FUELHH data):

GAS: 15.4GW (40.7%)
COAL: 4.5GW (11.8%)

RENEWABLES: 8.8GW (23.4%)
INTERCONNECTION: 1.5GW (3.9%)

NUCLEAR: 7.6GW (20.1%)

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EXECUTIVE SUMMARY

The first quarter of 2017 saw demand for electricity generation climb by 2% from the previous quarter to 79.6TWh. These levels were down 5% from the first quarter in 2016 and in general the quarter saw benign market activity.

With low levels of wind generation, Q4 2016 saw some very high priced market activity, and whilst average day ahead prices during Q1 2017 remained high at an average of £47.75/MWh (up 27% from the first quarter of 2016), the market did not see the same regularity of tight margins as in the previous quarter with average prices dropping by 10% in general.

This activity came as Q1 saw new record high levels of wind generation, totaling 11.3TWh across the three months, an increase of 23% on the previous quarter and 31% from Q1 2016, with wind speeds being particularly high.

Having seen low wind speeds reduce levels of wind generation earlier across the winter period, this uplift in activity at wind farms pushed down levels of gas-fired generation, whilst general improvements in the relative costs of coal as a fuel (vs gas) led to a 21% increase in levels of coal-fired generation on Q4 2016.

Despite this rise, levels of coal-fired generation remained low and down 29% from Q1 2016, whilst gas generation continued to see an uplift of 12% over the same year-to-year period.

With the issues at French nuclear power stations now being largely resolved, the levels of electricity imports from France returned to more normal levels in the quarter and this further reduced the levels of gas-fired generation.

Gas plants continued to provide the largest share of total generation, enabling 52.6% of generation to come from fossil fueled plants (40.7% from gas and 11.8% from coal), 23.4% from renewables, 20.1% from nuclear and 3.9% from electricity imports from other countries.

Within renewables generation, 59.3% came from wind farms, 23.2% from biomass plants, 9.0% from solar farms and 8.5% from hydro plants.

Towards the end of the quarter, levels of solar picked up considerably and flattened the within-day demand shape during sunny weekend periods and this suggests that summer activity will be heavily driven by levels of solar output.

Otherwise the market largely returned to normal levels of activity after a highly volatile Q4 2016, with the end of the winter period having been notable for no intervention from National Grid's Supplemental Balancing Reserve (SBR) back-up service.

The high prices seen in the fourth quarter of 2016 came about as levels of availability were tight around the evening peaks requiring plants to be brought on at a high cost. Once plants had got online Q1 2017 did not see the same activity and this could be indicative of the impact that the Capacity Mechanism has on the market.

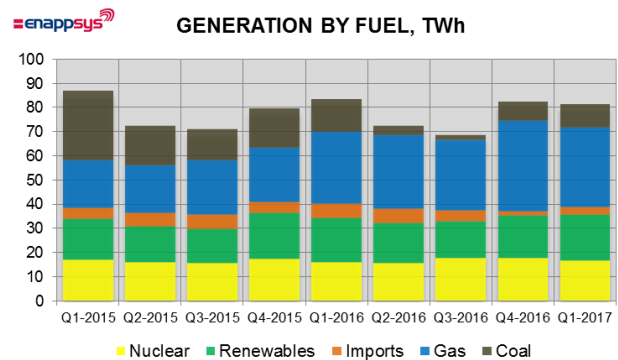
The Capacity Mechanism will incentivise availability at plants as they must be available during any potential stress periods. This should act to reduce the amount of high priced market activity noted within the wider market next winter.

FUEL ACTIVITY

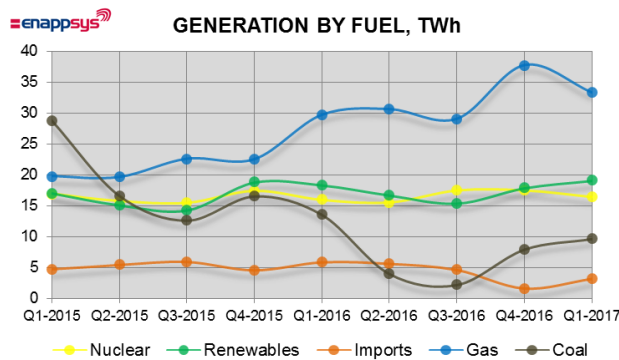
Levels of gas-fired generation fell by 12% from the previous quarter as uplift in levels of renewable generation, levels of imports and levels of coal-fired generation displaced gas-fired plants.

Despite this, gas-fired power stations remained the predominant source of electricity generation in the quarter with 33.3TWh of generation (down 12% from Q4 2016, but up 12% for Q1 2016). Gas power stations provided 40.7% of power generation in the quarter.

This activity came as gas prices rose against coal prices in the quarter and as levels of wind generation were very strong due to the stormy weather that occurred across the quarter.



Renewables provided the second largest share of electricity generation in Q4 and Q1 of



winter 2015/16 and the same feat was repeated in winter 2016/17, although with the overall share of generation from renewable sources dropping from 22.8% in winter 2015/16 to 22.5% across winter 2016/17.

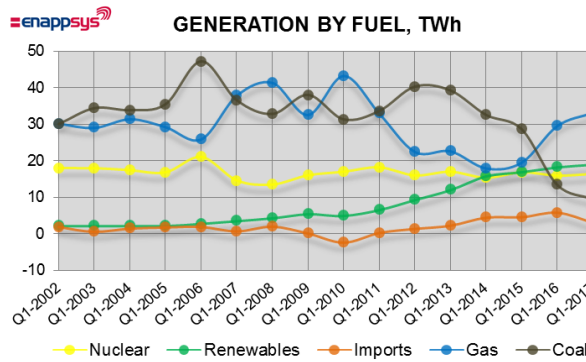
This drop came following low wind speeds in Q4 2016 and as levels of capacity growth at onshore wind farms slowed, but although levels of renewable generation dropped from the previous winter new offshore wind farms are slowly coming online to increase the renewable share.

Otherwise after rapid growth of renewables in recent years, the market does now seem to have stabilised with respect to levels of renewable capacity, simplifying the forward-looking management of power stations in the market.

In the quarter, coal-fired power stations generated 9.7TWh (up 21% from Q4 2016, but down 29% from Q1 2016). These coal generation levels are part of a continued decline in

the share of coal burn in the market, but also represent a substantial rebound from the 2.28TWh of coal-fired generation in Q3 2016 (a rise of 324%).

This rebound is likely to encourage coal plant owners, who would benefit significantly if the market turned from favouring gas to favouring coal due to the small number of coal plants which would be able to ride on a market where prices would still be dictated by gas,



potentially creating large profit margins.

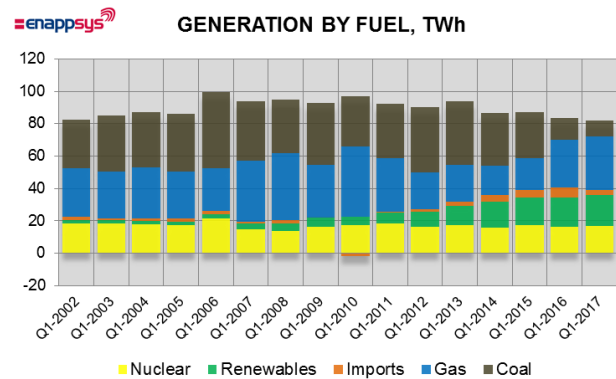
Levels of renewable generation now seem to be plateauing after some large increases in previous years and despite a very windy Q1 2017, with significant further growth in capacity currently only set to come from new offshore

wind farms.

Renewable generation levels totalled 19.1TWh in the quarter (up 7% from Q4 2016 and up 4% from Q1 2016) while levels of nuclear generation were close behind at 16.5TWh (down 6% from Q4 2016 and up 3% from Q1 2016).

Levels of imports from France, Ireland and the Netherlands totalled 3.2TWh, with this being down 46% from Q1 2016 with there having been supply issue in France this winter, but with these levels being up by over 100% from Q4 2016 as these issues were resolved during the quarter.

Since Q1 2009, the share of generation coming from fossil fuel plants has dropped from 76% to 53% in Q1 2017, but these levels rose year-on-year for the first time since Q1 2010 in the quarter.



This came as the levels of renewable seem to have now stabilised with further growth in renewable output likely to be more challenging as this fossil fuel share continues to decline.

Statistics

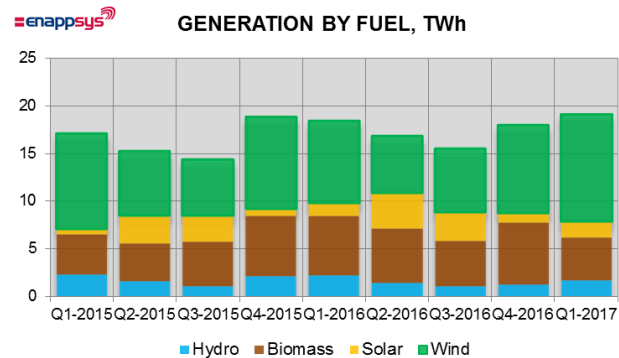
The following tables contain some of the key statistics relating to the quarter:

*GB Only (Excludes Northern Ireland)	Q1-2015	Q2-2015	Q3-2015	Q4-2015	Q1-2016	Q2-2016	Q3-2016	Q4-2016	Q1-2017
TOTAL GENERATION BY FUEL (TWh)									
Coal	28.70	16.60	12.63	16.53	13.56	4.05	2.28	7.97	9.67
Gas	19.65	19.63	22.57	22.50	29.68	30.58	29.02	37.70	33.27
Imports	4.69	5.48	5.98	4.60	5.92	5.67	4.65	1.57	3.18
Nuclear	16.90	15.81	15.51	17.45	15.98	15.57	17.51	17.52	16.46
Renewables	17.05	15.15	14.31	18.83	18.37	16.74	15.42	17.90	19.10
FOSSIL FUELS	48.35	36.22	35.20	39.03	43.24	34.63	31.31	45.67	42.95
TOTAL	86.99	72.67	71.01	79.91	83.51	72.61	68.88	82.66	81.68
Fossil Fuel Ratio	56%	50%	50%	49%	52%	48%	45%	55%	53%
SHARE OF GENERATION (%)									
Coal	33.0%	22.8%	17.8%	20.7%	16.2%	5.6%	3.3%	9.6%	11.8%
Gas	22.6%	27.0%	31.8%	28.2%	35.5%	42.1%	42.1%	45.6%	40.7%
Imports	5.4%	7.5%	8.4%	5.8%	7.1%	7.8%	6.7%	1.9%	3.9%
Nuclear	19.4%	21.8%	21.8%	21.8%	19.1%	21.4%	25.4%	21.2%	20.1%
Renewables	19.6%	20.9%	20.2%	23.6%	22.0%	23.1%	22.4%	21.7%	23.4%
				37.20				37.00	
TOTAL GENERATION BY FUEL (TWh)									
Coal	38.06	31.41	33.68	40.33	39.26	32.61	28.70	13.56	9.67
Gas	32.67	43.35	33.08	22.57	22.75	18.06	19.65	29.68	33.27
Imports	0.24	-2.27	0.37	1.49	2.36	4.56	4.69	5.92	3.18
Nuclear	16.07	17.05	18.24	16.03	17.04	15.40	16.90	15.98	16.46
Renewables	5.55	5.09	6.69	9.43	12.14	15.93	17.05	18.37	19.10
FOSSIL FUELS	70.73	74.75	66.76	62.90	62.02	50.67	48.35	43.24	42.95
TOTAL	92.58	94.63	92.07	89.84	93.57	86.55	86.99	83.51	81.68
Fossil Fuel Ratio	76%	79%	73%	70%	66%	59%	56%	52%	53%
SHARE OF GENERATION (%)									
Coal	43.8%	43.2%	47.4%	50.5%	47.0%	44.9%	41.7%	16.4%	11.8%
Gas	37.6%	59.6%	46.6%	28.2%	27.2%	24.9%	28.5%	35.9%	40.7%
Imports	0.3%	-3.1%	0.5%	1.9%	2.8%	6.3%	6.8%	7.2%	3.9%
Nuclear	18.5%	23.5%	25.7%	20.1%	20.4%	21.2%	24.5%	19.3%	20.1%
Renewables	6.4%	7.0%	9.4%	11.8%	14.5%	21.9%	24.7%	22.2%	23.4%

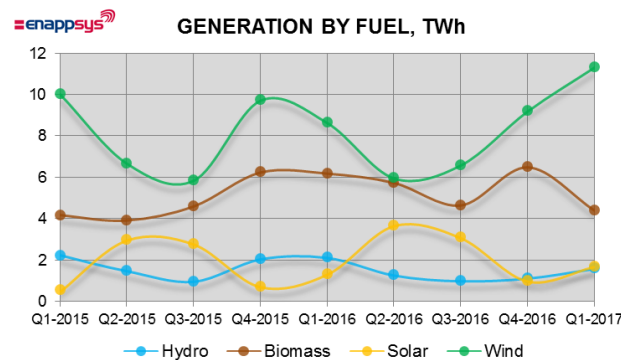
RENEWABLES

Levels of renewable generation in the quarter were up 7% from the previous quarter and were also up 4% from Q1 2016 despite low levels of biomass generation being noted. This came as levels of wind generation were very strong, hitting record levels.

The previous high for levels of wind generation stood at 10.04TWh across a single quarter and this record had stood since Q1 2015, with previous quarters having struggled to breach this level.



Q1 2017 saw levels of wind generation climb by 11% from these record levels to 11.34TWh setting a new record by some margin and this went some way to reducing the



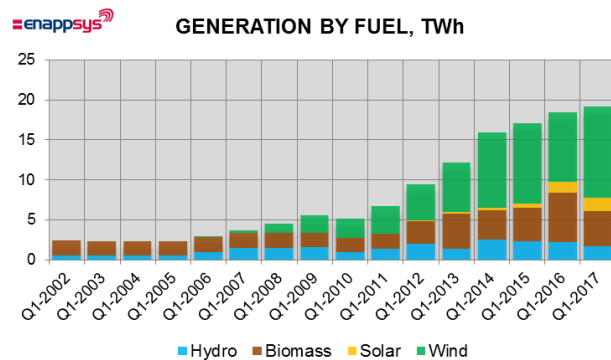
levels of gas-fired generation from the previous month. The 2.1TWh increase in levels of wind generation offset half of the 4.4TWh reduction in levels of gas-fired generation.

Biomass saw levels of generation drop 32% from Q4 2016 and from 29% in Q1 2016, but continued to

provide the second largest share of renewable generation in the quarter at 4.43TWh.

Despite the winter period favouring hydro over solar, solar generation amounted to 1.72TWh (up 69% from the previous quarter and 28% up from Q1 2016) while levels of hydro generation amounted to 1.62TWh (up 40% from Q4 2016 and down 25% from Q1 2016).

The long-term renewable generation levels for the first quarter of each year since 2002 would appear to show a plateau, although this comes in the context of the heavily reduced levels of biomass

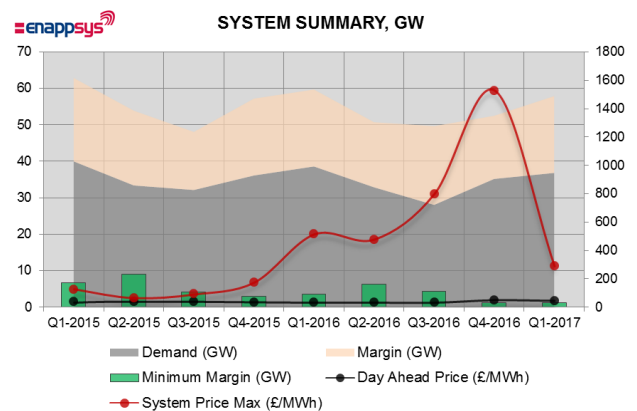


DEMAND, MARGIN AND PRICES

Levels of demand climbed 2% from the previous quarter to reach 79.6TWh, with these levels being down 5% from Q1 2016. This came as the quarter saw windier weather which typically also leads to lower levels of demand.

Levels of average margins rose from 17.3GW in Q4 2016 to 21.1GW and this led to lower average market prices, with day ahead prices dropping 9% from Q4 2016, despite a 27% rise from Q1 2016.

The periods when the margin remained tight still occurred in the quarter (although with less regularity), with minimum margin levels remaining close to Q4 2016, but with much lower peak system prices.



The system price is the price that market participants must pay for any shortfall between their traded and metered position and is a valuable indicator for the cost of balancing the system.

This drop from quarter, with peaks at £293/MWh (from £1,529/MWh in Q4 2016) shows how the system became easier to manage in Q1 2017. This is likely to be indicative of activity for winter 2017/18, with the higher levels of margin likely to match the market once the Capacity Mechanism is introduced (incentivizing availability around tight periods).

Statistics

The following table contains some of the key statistics relating to the quarter:

*GB Only (Excludes Northern Ireland)	Q1-2015	Q2-2015	Q3-2015	Q4-2015	Q1-2016	Q2-2016	Q3-2016	Q4-2016	Q1-2017
WHOLESALE PRICES (£/MWh)									
Day Ahead Price	40.88	41.97	41.41	37.74	34.63	35.07	34.59	52.25	47.75
Within Day Price (MDP)	40.47	40.80	41.19	37.33	34.28	34.06	33.36	50.45	47.23
WITHIN DAY PRICE BREAKDOWN (£/MWh)									
Off-Peak Hours	33.62	34.38	35.28	29.72	28.72	28.65	27.75	37.00	41.00
Peak Hours (excl Superpeak)	41.09	43.64	43.62	37.97	33.86	35.78	36.95	48.00	47.00
Superpeak Hours	53.91	45.33	46.06	52.37	48.26	40.28	33.36	88.00	63.00
SYSTEM BUY PRICE (£/MWh)									
Maximum	128.33	68.56	94.41	178.22	517.55	480.38	801.77	1528.72	292.55
Average	46.47	45.79	47.22	42.20	36.67	34.62	35.91	51.45	46.42
Minimum	3.65	-2.61	17.54	-73.48	-63.02	-100.00	-114.99	-153.89	-14.00
SYSTEM SELL PRICE (£/MWh)									
Maximum	128.33	68.56	94.41	178.22	517.55	480.38	801.77	1528.72	1528.72
Average	36.54	35.46	36.86	37.20	36.67	34.62	35.91	51.45	46.42
Minimum	-35.33	-61.79	0.75	-73.48	-63.02	-100.00	-114.99	-153.89	-153.89
DEMAND (MW)									
DEMAND (MW)	39,988	33,392	32,141	36,121	38,594	32,890	28,063	35,186	36,835
AVAILABILITY (MW)									
AVAILABILITY (MW)	59,986	50,122	44,769	54,271	56,430	46,968	46,133	50,859	55,672
MARGIN (MW)									
MARGIN (MW)	22,879	20,501	15,930	21,084	21,100	17,851	21,597	17,303	21,062
MIN MARGIN (MW)									
MIN MARGIN (MW)	6,638	9,125	4,217	3,007	3,482	6,259	4,439	1,213	1,287
DEMAND (TWh)									
DEMAND (TWh)	86.4	72.9	71.0	79.8	83.4	71.8	62.0	77.7	79.6
AVAILABILITY (TWh)									
AVAILABILITY (TWh)	129.6	109.5	98.8	119.8	121.9	102.6	101.9	112.3	120.3
MARGIN (TWh)									
MARGIN (TWh)	49.4	44.8	35.2	46.6	45.6	39.0	47.7	38.2	45.5
MIN MARGIN (TWh)									
MIN MARGIN (TWh)	14.3	19.9	9.3	6.6	7.5	13.7	9.8	2.7	2.8

NOTES ON THE REPORT

The figures used in the report refer to GB only, against DECC figures that refer to GB and Northern Ireland. This selection has been made since Northern Ireland is separate from GB and is more closely linked to the electricity grid of the Republic of Ireland.

Generation levels by fuel from 2009 are based upon National Grid FUELHH data, which give the operationally metered totals by fuel, down to a 5-minute resolution.

Prior to 2009, individual plant data has been aggregated from our databased matching of National Grid fuel-type relationships.

To account for embedded wind and solar, the National Grid forecasts for these generators have been used as if they were output figures. Embedded hydro and biomass have been accounted for using analysis of Ofgem data on certificate awards.

Within this report, levels of offshore wind have not been separated from the wind total. This is because this can only be reliably done using metered volumes at a generating unit level. This is not a publicly available data stream and figures can only be estimated and not distributed. FPNs at wind farms do not correlate well with metered volumes and so cannot be used reliably.

Price and demand data primarily comes from Elexon (as does the FUELHH data), with the exception of the APX day-ahead prices.

Availability levels are calculated by totaling levels of recorded availability at all plants in the market.

ABOUT ENAPPSYS

EnAppSys provides services to companies in the energy and power markets, specifically by providing data, information and consultancy services.

The company has a GB power market database stretching back to 2002 and an online platform that provides readily available information ranging from forwards market prices to historic generator operations.

EnAppSys is focused on providing information and analytical services covering the energy sector and is actively growing the business to provide products with enhanced analysis and forecasting capabilities and extending the geographic and sector coverage beyond the UK and the electricity market.

The company's business objective is to make available timely, optimal and insightful information, analysis and systems to the energy sector to ensure all sizes of company have the best available tools and information to make informed decisions and to optimise their business strategy.

To find out more about EnAppSys contact the company at about@enappsys.com or visit the company's website at www.enappsys.com.