



GB Electricity Market Summary

SECOND QUARTER 2015
APR TO JUN

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

CCGT: 9.0GW (-1%)
WIND: 3.1GW (-34%)

COAL: 7.6GW (-43%)
INTERCONNECTION: 2.5GW (+16%)

NUCLEAR: 7.2GW (-8%)
BIOMASS: 1.8GW (+1%)

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Foreword

As a specialist information business based in the GB energy markets, EnAppSys provides market participants with online market analysis, reporting and forecasting tools and regular weekly and monthly reports. EnAppSys also provides bespoke analysis and consultancy and as part of providing these services the company has built up specialist knowledge in the GB energy market.

In this report, EnAppSys has used the insights that have resulted from this analysis to produce a summary of activity in Q2 2015 for GB as a whole.

The charts in the report are produced from our online data analysis tools which we provide to market participants and stakeholders.

Within this report EnAppSys has focused on the high level activity in this period, specifically that around overall system activity and fuel type activity in the quarter, but with further details included, where of particular interest.

The aim is to provide a concise overview of the most important activity noted in the three month period, with the aim of providing an understanding of the broad trends and notable events occurring in the period.

The charts included primarily focus on activity within the GB market (excluding Northern Ireland).

Executive Summary

In Q2 2015, solar farms saw a large increase in levels of generation, partly due to the transition into the summer months, but also due to large increases in solar capacity (with GB now having ~7GW of solar farm capacity).

These increases have seen solar output jump 153% from the levels estimated to have been generated in Q2 2014, driven by the higher levels of installed capacity. This represents the first time period in which GB has seen significant levels of solar generation and the other generators in the market have had to adapt to this change.

The remaining notable changes in output by fuel categorisation occurred at wind farms, hydro plants and at coal stations with output at coal stations falling 43%, while output at wind farms and hydro plants fell 34% and 39% respectively.

The fall in levels of wind and hydro generation were part of a seasonal shift that sees much higher levels of output from these sources in the winter months. Coal output has declined partly due to summer outages at coal stations and partly due to the increased carbon price support that has boosted the relative economics of gas-fired plants.

Power prices saw no notable highs in the month, but there were periods of negative prices in the month, particularly overnight, with the system also being oversupplied during periods of high solar output.

Electrical demand was largely unchanged across the month, but overall levels of availability declined as units saw periods of prolonged outage for maintenance, taking advantage of the lower power prices that occur in the summer quarters.

In the quarter, the CCGT fleet saw 27% of the overall generation with coal plants providing 23%, nuclear plants 22%, wind farms 9%, interconnectors 8%, biomass 5%, solar 4% and hydro 2%. This represents 21% of generation from renewable sources and 43% from low carbon sources (renewables & nuclear).

System Summary in Quarter

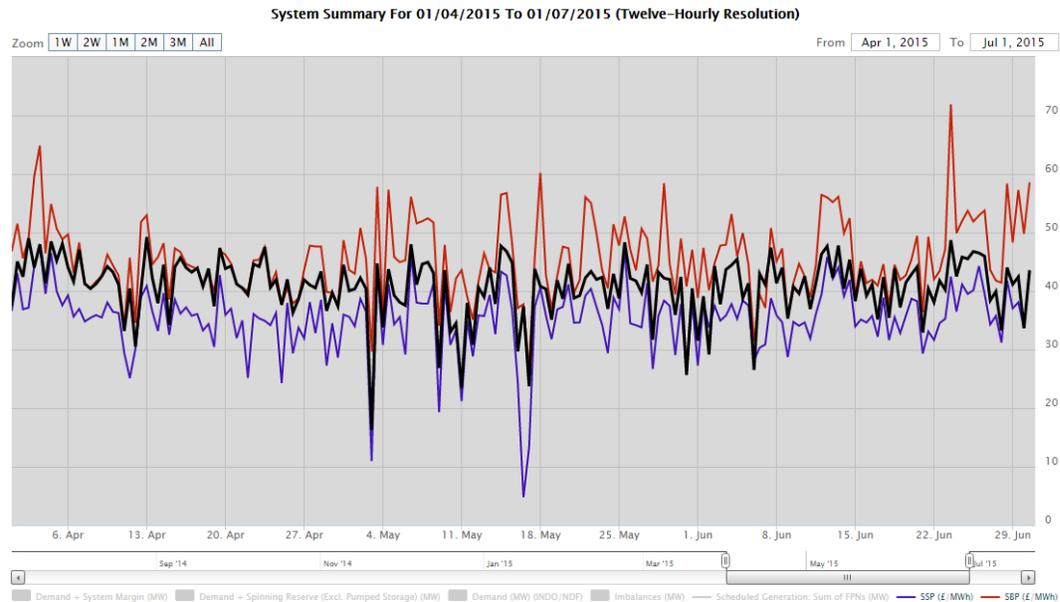
The second quarter of 2015 saw some negative prices and an overall decline in levels of availability and margin within the system as the quarter progressed; with generating unit's undergoing periods of outage during the summer months when wholesale power prices are generally lower.

Key Activity

The most notable activity saw some overnight negative power prices in the quarter when levels of wind and nuclear output were high against demand; with the system also being oversupplied during the middle of the day when solar output was highest.

Market Prices

A summary of within-day market and system prices in the quarter can be seen in the following chart:

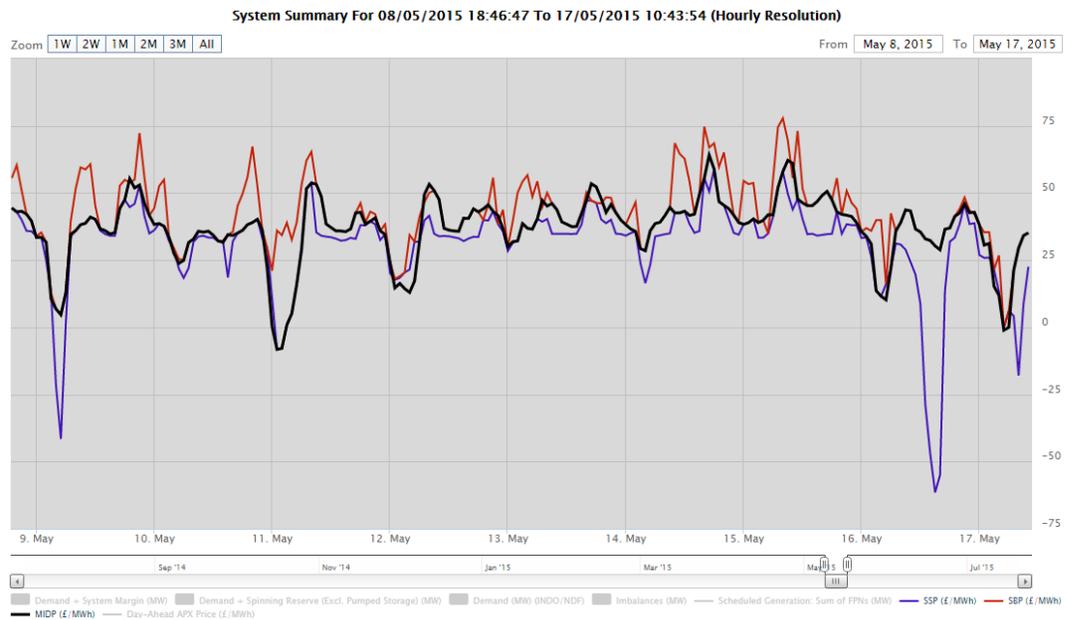


In this chart, the darker black line is the within-day power price, with the red line being the price a supplier of electricity must pay to 'buy' electricity to make up for any under-delivery of power against their contracted position. The purple price is the price a supplier will be paid to 'sell' any oversupply of electricity against their contracted position.

These last two prices are useful indicators of how over or under-supplied the GB Electricity Market is at any given time. Periods where the 'red' line is high corresponds with periods when the system was particularly undersupplied, and periods when the purple line is low implies that the system was particularly oversupplied.

Notable across the month are periods in which average daily prices were low. These were days in the month when levels of renewable generation were high resulting in oversupply within the system.

This can be seen over the following restricted view from the 8th to 17th May 2015:



In this chart there are four periods in which the system saw negative prices. Four of these periods occurred overnight (when demand for electricity generation was lowest), with high levels of wind and nuclear generation contributing to an oversupplied system, seeing within-day power prices (MIDP) being negative on two of these days.

Where participants were trading in the within-day markets they will have been paying to take on the obligation to generate whilst generators that may have already sold power ahead at a favorable price, could have sold power into the wholesale power market and earned a high value on the spread.

Thus the generation levels overnight were surprising with units at six different CCGT power stations and six coal stations remaining online overnight despite the low power prices.

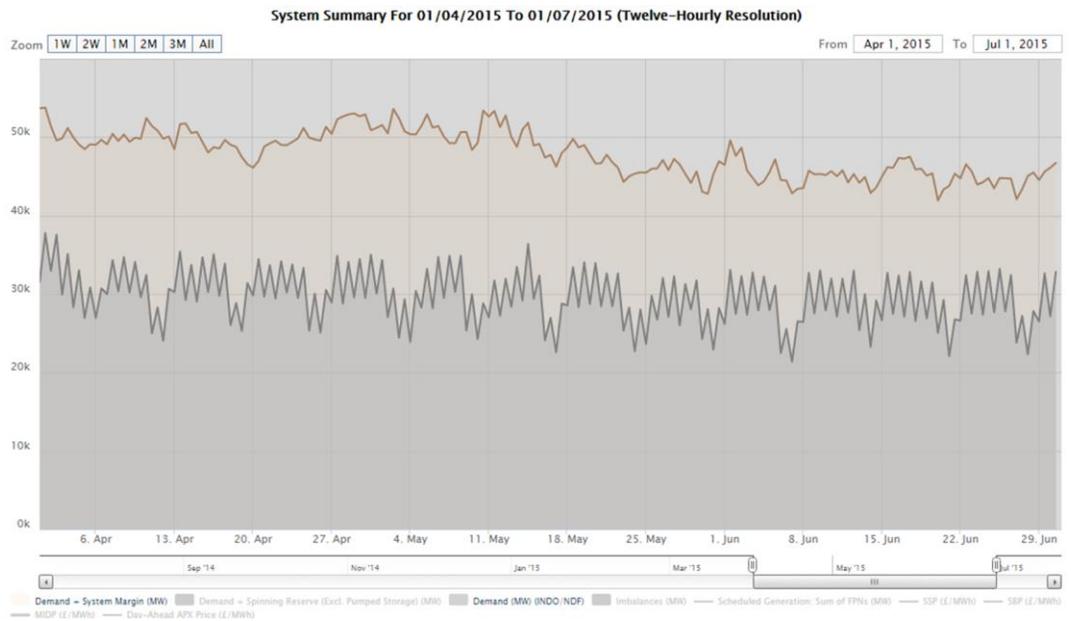
The following days saw peak prices that would have been unlikely to have compensated for the loss (or opportunity loss) overnight at all of the online plants, this activity suggests levels of price insensitivity in the market. A recurrence of negative power prices in future months seems likely.

The remaining period of negative prices came during the middle of the day when levels of solar output were high. Whilst this did not have much effect on wholesale power prices (MIDP), this did see all parties that oversupplied their contracted position be charged a hefty fee for doing so, where they would usually just get a below market value power price.

Overall the influence of the renewable fleet is increasing and this activity highlights the size of this impact on the system as a whole; as the fleet continues to grow it can only be assumed that such effects will grow in magnitude.

System Margin & Demand

A summary of key demand & margin activity may be seen in the following chart:



Levels of demand are represented by the grey area and generally demand remained at consistent levels across the month.

The orange area ('Demand & System Margin') represents the available capacity to supply power to the market. As the month went on, this available capacity reduced as units saw periods of outage.

Coal stations will frequently see long periods of outage over the summer months during which they will carry out periods of maintenance. This leads to a relatively tight margin, but with demand being low this had little impact on overall prices.

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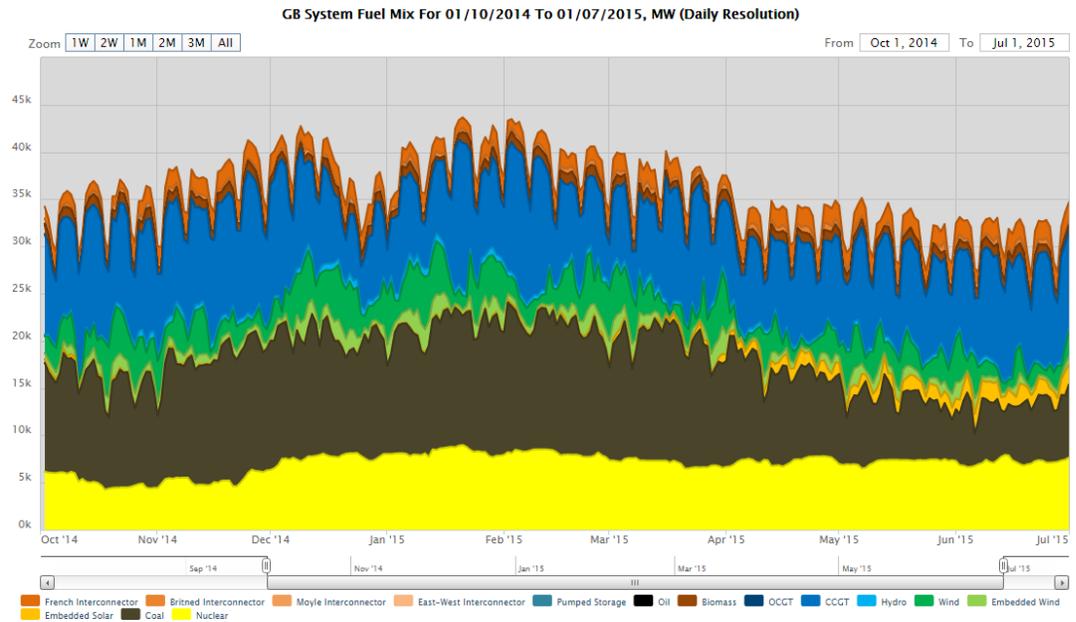
Coal stations will frequently see long periods of outage over the summer months during which they will carry out periods of maintenance and this lead to a relatively tight margin, but with demand being low this had little impact on overall prices.

Fuel Mix In Quarter

The second quarter of 2015 saw large growth in levels of solar generation with solar farms starting to have an influence on the overall system for the first time. Otherwise, levels of coal output declined across the quarter, partly due to reduced levels of availability resulting from plant outages and partly from to the doubling of the carbon price support.

Fuel Mix Activity

To give context to the fuel type activity per quarter, the following chart plots levels of generation by fuel since the beginning of Q4 2014:



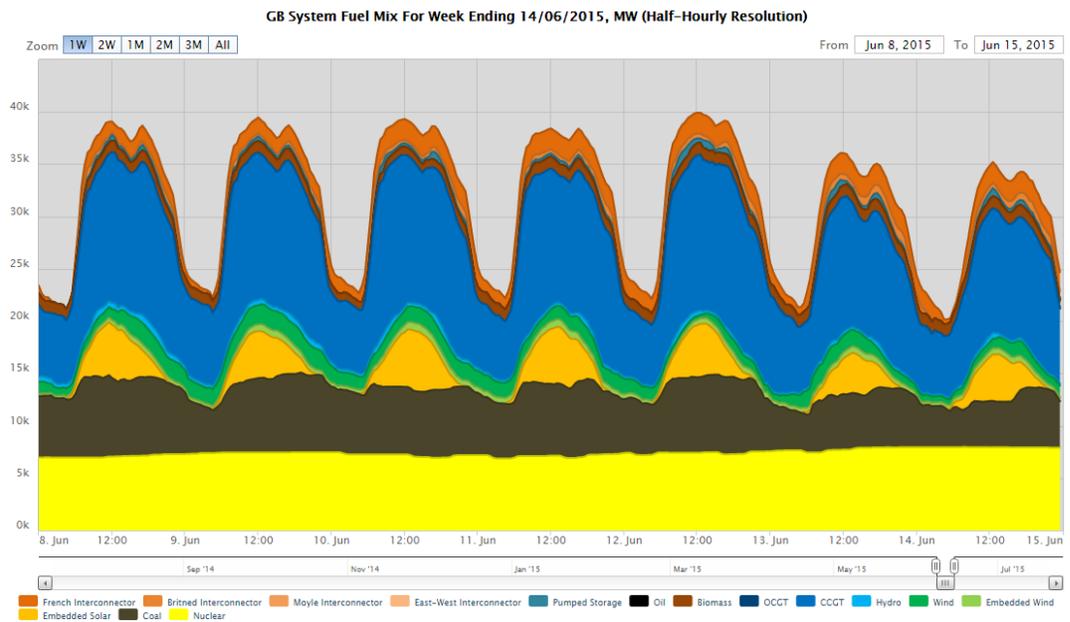
Levels of nuclear output were generally very consistent across the quarter with no major deviations having occurred since January 2015.

April saw a doubling of the Carbon Price Support, which resulted in more favourable economics at gas plants against their coal counterparts. With coal prices being at all time

lows, the impact of this change was not overwhelming with only the oldest coal stations affected¹.

Levels of wind generation were lower across the quarter, with peak levels of wind output generally occurring over shorter periods of time. By contrast, solar output levels were high in the quarter. With solar now in excess of 7GW of capacity, the impact of solar on the overall system was felt for the first time.

The following chart shows solar at its peak based upon National Grid's solar forecasts. It shows that solar displaced large volumes of generation that would otherwise have been supplied by gas-fired plants:

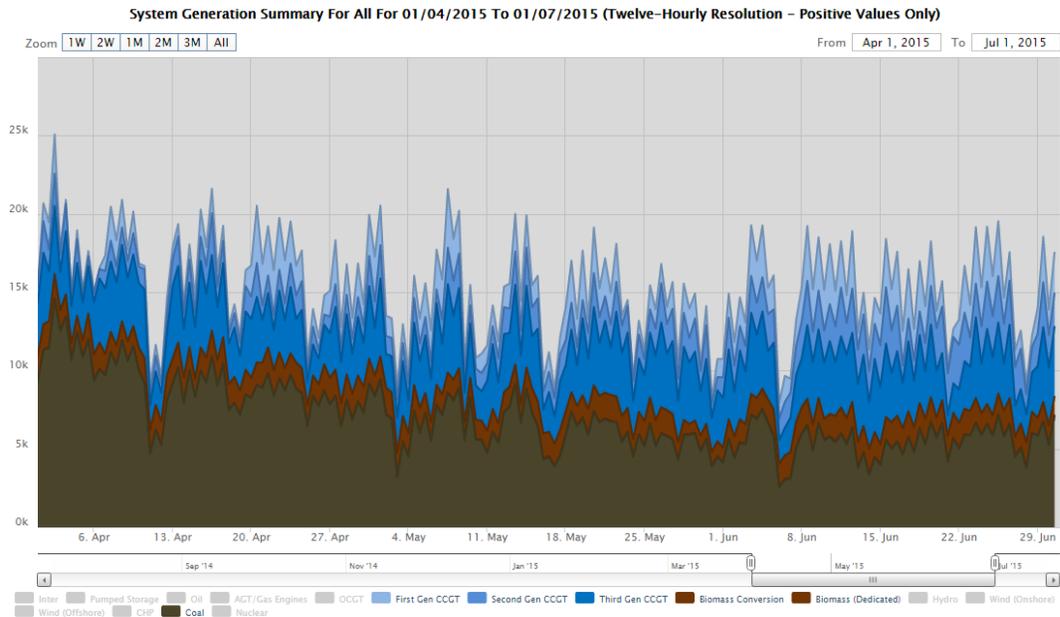


Thermal Generation

The changing levels of renewable generation and the high levels of nuclear generation contributed to a system with changeable demands for levels of generation from thermal (gas and coal) plants; despite the overall system demand being relatively consistent across the quarter.

¹ though dark spreads were diminished.

This activity can be seen most clearly by examining in detail the levels of generation at coal, gas and biomass plants only, with levels of generation at CCGGT plants broken down into the approximate generations of plants²:



This shows that as levels of coal output declined, gas plants were able to see higher levels of generation, with the oldest gas-fired plants in the market being the main beneficiaries of any large increase in levels of demand for generation from CCGT plants.

The newest CCGT plants in the market saw strong levels of generation across the quarter with levels of output generally being high against levels of availability.

² With first generation being a 1990's or early 2000's build, second generation being built in the 2000s and a third generation build being from 2010; with some deviations made for plants that utilised technology that was ahead of their time.

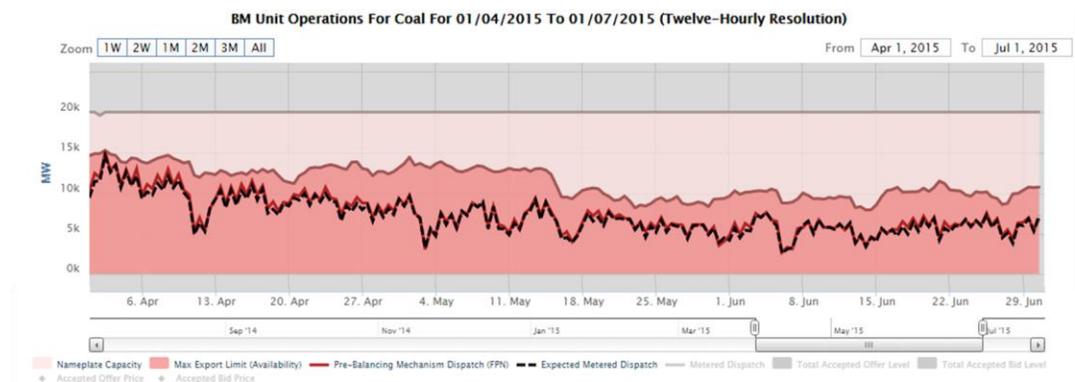
Activity by Fuel Type

Levels of generation by fuel have already been introduced in the previous section, with this section examining that activity in greater detail. Any activity of note is summarised in the following 'by fuel type' sections.

Coal Generation

Throughout the quarter, the coal fleet saw levels of availability decline, but also saw reduced levels of generation as the doubling of the Carbon Price Support provided a boost to CCGT plants against the oldest coal stations.

This activity can be seen in the following chart:

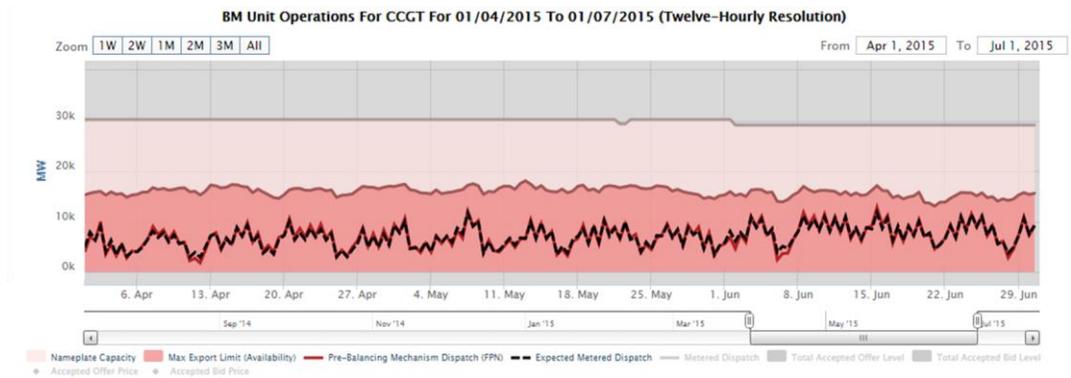


This chart shows levels of generation (black and red lines) against availability (dark pink area) and nameplate capacity (light pink area).

The reductions in levels of availability came as coal units began outages, which in some cases will last across the summer months. This reduction was the main driver in terms of overall availability reductions within the system.

Gas Generation

Generation by CCGT units (excluding CHP units) can be aggregated into the following summary chart for the quarter:

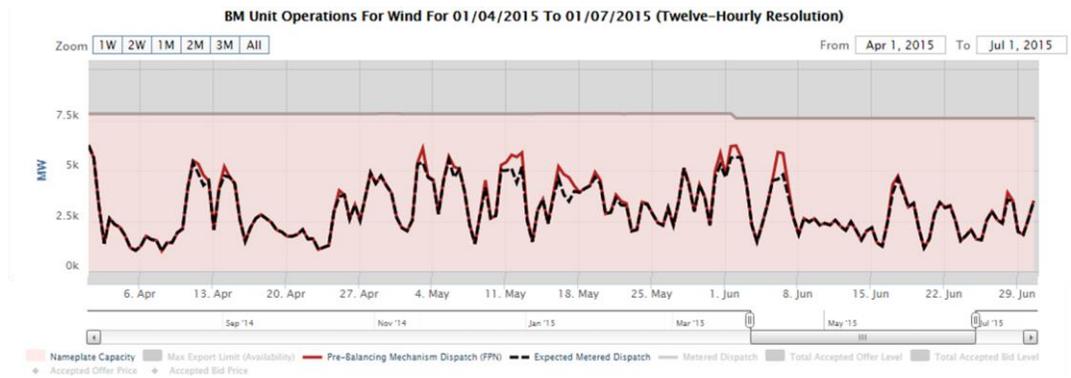


Levels of availability at gas-fired plants were generally unchanged across the quarter, but with generation levels increasing in June as levels of coal-fired output diminished.

Wind Generation

Levels of wind generation were much lower than would be typical across a winter quarter, with less consistent levels of generation also being more common.

The overall activity for the wind fleet in the period can be seen in the following chart (only including CVA-metered wind farms - some 70% of the total):



Output levels were strong across much of May, but April and June saw sustained periods in which levels of wind output were below the norm for the quarter, although with generation levels never dropping away too far.

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 2003 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.

The charts from this report have come from EnAppSys' online charting service www.netareports.com/enbm with the data provided by the company's data service at www.netareports.com.

To find out more about EnAppSys contact the company at about@enappsys.com or visit the company's website at www.enappsys.com, whilst trials can be made available on inquiry that will offer full access to the graphical interface that was used to produce the charts in this report.