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## **Analysis of the NFPA's July 2016 e-POWER auction**

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Cornwall Energy

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## NFPA e-POWER Auction Analysis

July 2016

### Headlines

The NFPA held its latest **e-POWER auction** on 12 July 2016. The auction included 32 commercial projects and accounted for 150.6MW of capacity. This report analyses these commercial contracts only.

Headlines from the latest auction are:

- **average prices in the July 2016 auction were equivalent to £/MWh values seen in previous auctions.** Prices stabilised as a fall in average value retention was offset by a sharp rise in wholesale power prices over the last six months;
- three sites were auctioned for the period from 1 August 2016 to 31 July 2017, achieving average value retention of 97.8%. Five sites were auctioned for the period 1 October 2016 to 30 September 2017, achieving average value retention of 92.1%, 24 sites were auctioned for the period 1 October 2016 to 31 March 2017, achieving average value of 94.7%;
- **overall, average value retention was 94.5%, lower than previous seasonal auctions.** This compares with 96.4% in summer 16, 98.3% in summer 15 and 97.9% in summer 14;
- **The July 2016 auction saw a distinct split in value retention between non-intermittent and intermittent sites and lower average value retention reflected the technology mix of the sites in the auction.** Over half of auctioned sites were onshore wind or solar PV and they achieved average value retention of 93.9% and 89.2% respectively, while AD and landfill gas sites achieved average retention of 105.1% and 96.7%;
- FiT sites achieved an average of 94.5% of market benchmark value, while RO projects achieved 94.0%. Higher retention for FiT projects may indicate the greater simplicity in bidding for FiT projects and implicitly indicate supplier views on Roc values for 2016-17. Cornwall Energy, as well as other market analysts, expects the Roc market in CPI5 to be oversupplied and suppliers may have priced lower Roc values into their bidding behaviour; and
- 19 suppliers participated in the auction, consistent with numbers seen in previous seasonal auctions. However, only 11 suppliers bid on projects in the auction with average bids per contract at 8.2.

### Cornwall Energy comment

The July 2016 e-POWER auction reversed recent trends of falling total £/MWh values seen over the last 24 months, following the recent uplift in wholesale power prices. Despite rising £/MWh values the retention of value against the market benchmark price was down on previous auctions and below 95% on average. This lower level may reflect the different technology and contract mix in the auction, which included higher proportions of small-scale FiT sites. Because of continued volatility in wholesale power prices, with winter 16 prices ranging from £36/MWh to £48/MWh since the January 2016 auction, generators continued to be diverse in their approach to contract length. This trend continues to reflect the wider PPA market in which generators are seeking more flexibility in their short-term PPAs.

Absolute comparisons with alternative routes to market are complex given the spread of offers across different PPA providers for different technologies, and variations between fixed and floating prices of PPAs of different maturities. However, analysis can be drawn with the auction data showing a distinct split between non-intermittent and intermittent value retention rates. Overall, non-intermittent commercial sites achieved value retention towards the upper end of market values that we are aware of for those technologies. Intermittent sites achieved values in the July 2016 auction which were equivalent to market averages seen elsewhere. This increased trend of differing values seen in the July 2016 auction and may also reflect supplier demand for certain technologies and contracts.

## I Introduction

This short report analyses the results for commercial contracts in the July 2016 e-POWER auction completed on 14 July 2016. It references the **maximum market benchmark value** a site could achieve as a £/MWh figure based on different potential sources of value. These sources of value include:

- wholesale power price – for the purposes of the benchmark prices, this is calculated using the winter 2016 baseload power price for six month contracts, at £46.6/MWh, the annual April 2016 price for 12 month contracts, at £43.4/MWh, and bespoke contracts for the three solar PV site auctioning for 1 August 2016 to 31 July 2017 at £43.1/MWh. Wholesale prices were assessed on the first day of auction;
- green certificates – Renewables Obligation Certificates (Rocs). The rate of award of these certificates varies depending on the technology used for generation;
- Generation Distribution Use of System charges (GDUoS) – these are paid by distribution network operators for localised generation and vary depending on time of day. GDUoS is the most variable of the potential benefits, as it varies by region, connection voltage, intermittency of technology, and whether it is included in the contract; and
- Balancing System Use of System charges (BSUoS) and transmission losses – because a distributed generator does not use the transmission system, distributed electricity generation can avoid associated costs such as BSUoS and transmission losses.

Triad benefits are not included in this analysis as they are paid separately in the e-POWER contract.

Typical maximum benchmark values of the above elements for the period 1 October 2016 to 31 March 2017 are summarised in Table 1 and compared with typical maximum values for front season contracts calculated on the days of recent auctions<sup>1</sup>.

**Table 1: Typical maximum benchmark values of e-POWER auction elements**

Element	Wholesale baseload power	Rocs	Lecs	GDUoS <sup>2</sup>	BSUoS	Losses
Winter 2016 value (£/MWh)	£46.6	£45.0	n/a	-£0.6 to +£7.0	£1.6	£0.4
Summer 2016 value (£/MWh)	£31.6	£45.0	n/a	£0 to £10.6	£1.6	£0.4
Summer 2015 value (£/MWh)	£41.6	£44.0	£5.5	-£1.4 to +£7.3	£1.6	£0.4
Winter 2014-15 value (£/MWh)	£46.7	£44.5	£5.4	£0 to £10.7	£1.5	£0.5
Summer 2014 value (£/MWh)	£47.5	£48.0	£5.4	£0 to £6.9	£1.6	£0.5

## 2 July 2016 analysis

Overall, 32 commercial projects were contracted in the auction. This compares to 40 in the summer 2016 auction and 41 in the summer 2015 auction. The 32 sites totalled 150.6MW in capacity, with sites ranging in size from 0.1MW (solar PV) to 43.2MW (MiW). The average size of project was 4.7MW.

<sup>1</sup> In the summer 16 and winter 16 auctions auction, new annual and bespoke monthly contracts were included, Separate power price valuations were made for these contracts and they are not shown for comparison,

<sup>2</sup> The notable changes and ranges of GDUoS are due to the site-specific nature of the benefit.

Because of the volatility seen in seasonal wholesale prices over recent months, generators continued to take different strategies on contract lengths, based on their view of future wholesale prices. Value retention varied with different contract lengths in the auction:

- three sites were auctioned for the period from 1 August 2016 to 31 July 2017, achieving average value retention of 97.8%;
- five sites were auctioned for the period 1 October 2016 to 30 September 2017, achieving average value retention of 92.1%; and
- 24 sites were auctioned for the period 1 October 2016 to 31 March 2017, achieving average value of 94.7%.

Differences in value retention between different contract lengths reflect the technology mix of each grouping, with only AD and solar PV opting for 12 month and bespoke contracts in the auction, whereas other technologies (LFG, hydro, MIW, wind and solar PV) opted for six month contracts. High value retention for AD sites under bespoke August 2016 to July 2017 contracts influenced the greater value retention for these contracts. In contrast, lower value retention for solar PV sites under 12 month agreements (October 16 to Sept 17) caused average prices for annual contracts to be lower than the average. In general, baseload sites normally achieve higher value retention in auctions, as their ability to generate over peak periods makes them attractive to suppliers. Figure 1 below details average value retention with auction contract length.

**Figure 1: Contract length by technology and average value retention**

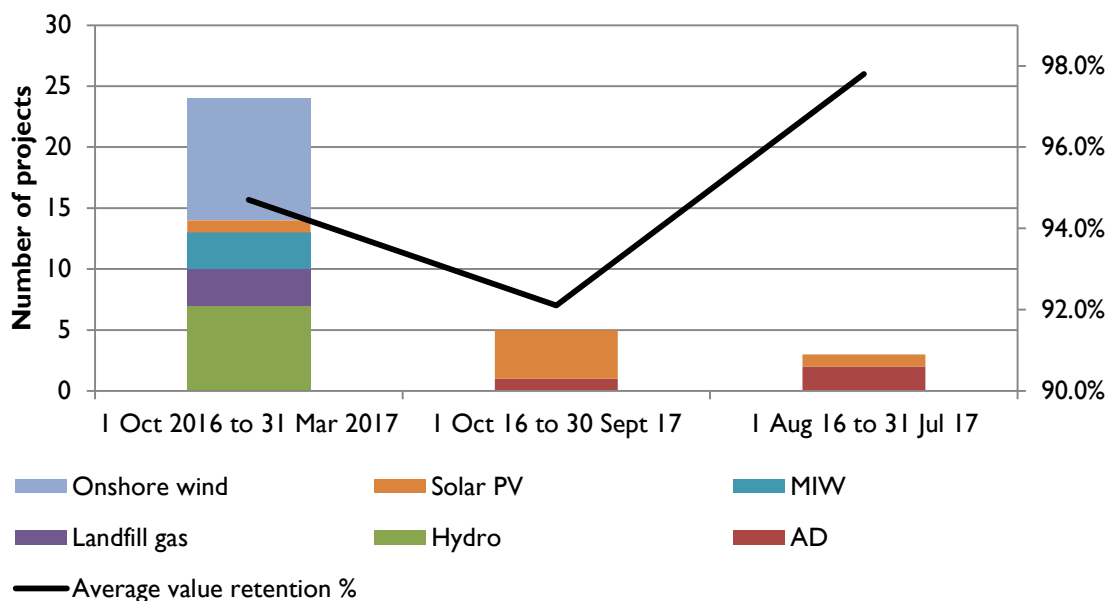


Table 2 shows the range of values achieved by different technologies against the typical maximum benchmark value. The table highlights the general trend of baseload sites achieving higher values in the auction.

**Table 2: Number of sites achieving proportion of typical maximum**

Technology	<90%	90%-95%	95%-100%	100%-105%	>105%
<b>Anaerobic digestion (AD)</b>				1	2
<b>Hydro</b>	1	3	3		
<b>Landfill gas (LFG)</b>		1	2		
<b>Municipal waste (MIW)</b>		1		2	
<b>Solar PV</b>	4		2		
<b>Onshore wind</b>	1	5	2	2	
<b>Grand Total</b>	<b>6</b>	<b>10</b>	<b>9</b>	<b>5</b>	<b>2</b>
<b>Percent</b>	<b>19%</b>	<b>31%</b>	<b>28%</b>	<b>16%</b>	<b>6%</b>

### Broken down by technology:

The latest auction saw a significant change in the capacity mix of the auction.

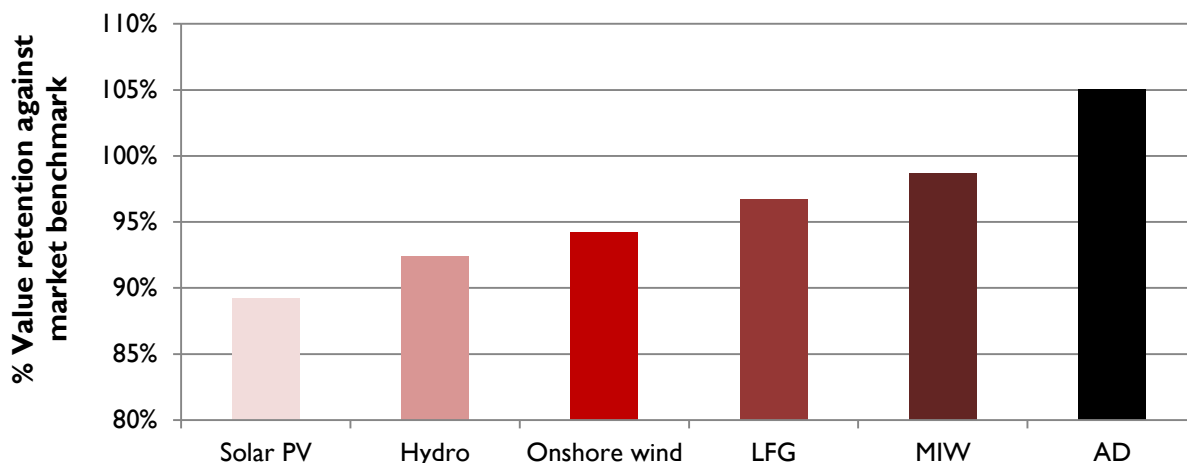
- onshore wind power had the highest number of sites in the auction (10). Its share of capacity fell to 15.8%, from 27.5% in the previous auction. Wind sites achieved a mean price of £90.1/MWh, or 94.2% of each site's maximum value;
- solar PV's share of the market fell to 3.4%, compared to 15% in the last auction. FiT solar sites (6 sites) achieved an average price of £44.8/MWh with value retention averaging 89.2%. This comparatively low value may have been due to the small scale nature of 4 of the solar PV sites which averaged 0.07MW (70kW) in size and achieved average value retention of 85%. The small-scale nature of these sites may have inhibited bidding by some suppliers looking for certain volumes of power. The two other solar sites were both above 1MW and achieved value retention of 98.4% and 96.6% respectively. No RO solar sites were present in this auction;
- landfill gas' (LFG) share of the capacity in the auction fell to 2.0% (3 sites), compared to 22.5% in the previous auction. The technology's average value retention was lower this auction at 96.7%, compared to 98.2% in the January 2016 auction, at an average price of £96.7/MWh;
- municipal waste (MIW) experienced the highest increase in share of the auction, reaching 63.6% (with three sites), compared to 15% (6 sites) in the previous auction. MIW overtook onshore wind power as the most dominant technology and achieved a mean price of £49.3/MWh, or 98.7% of the benchmark value;
- anaerobic digestion (AD) achieved a 0.6% share of the auction (3 sites), compared to 7.5% in the previous auction. FiT AD sites achieved an average price of £50.4/MWh, with value retention at 105.1%. No RO AD sites were present in this auction; and
- hydro had 14.6% share of the market (7 sites) with an average price of £90.8/MWh, 92.4% of its benchmark value. All hydro sites were 1 Roc/MWh projects.

Table 3 and Figure 2 below detail average performance by technology.

**Table 3: Average performance by technology**

Technology:	AD	Hydro	LFG	MIW	PV	Wind	Grand Total
<b>Average %</b>	105.1	92.4	96.7	98.7	89.2	94.2	94.5

**Figure 2: Average value retention by technology**



Value retention for sites also varied by support scheme as well as technology. FiT sites achieved 94.5% of market benchmark value. Although this was split between AD FiT sites which achieved average retention of 105.1% and solar PV projects which achieved average retention of 89.2%. The large difference is due to the baseload nature of the AD projects which can achieve higher wholesale power and embedded benefit values, the small scale nature of some of the solar PV projects and supplier demand for FiT projects in light of the current higher administered export rate.

AD sites achieved an average price of £50.4/MWh, above the current administered export rate of £49.1/MWh, while solar PV average prices were £44.8/MWh. AD projects may have been more sought after by suppliers in the auction as their market value is above that of the higher administered export rate and therefore more desirable under a commercial agreement.

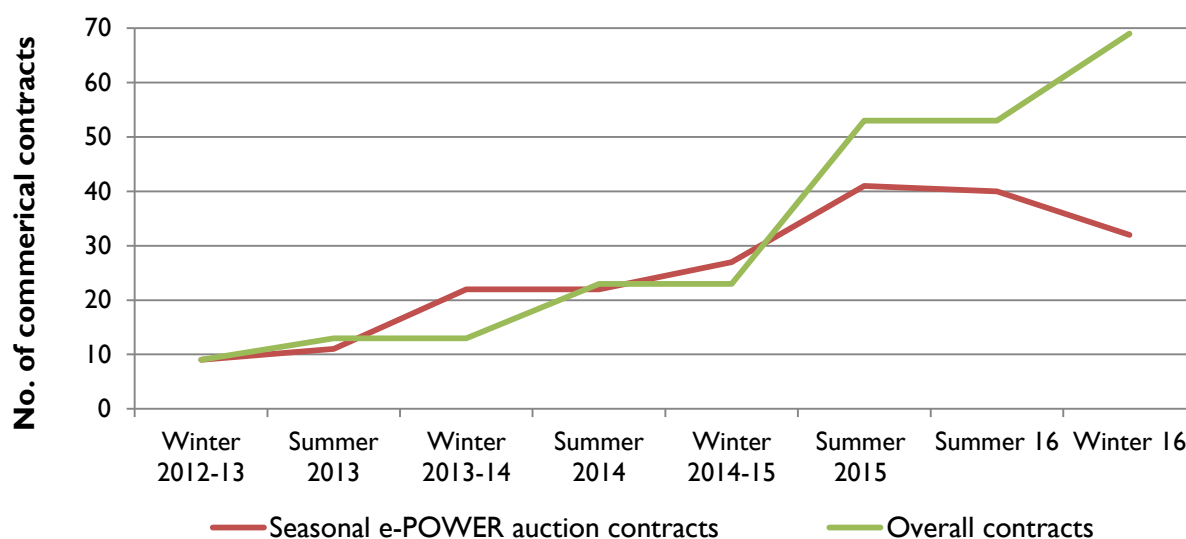
Additionally, four of the six solar PV sites in the auction were very small scale in nature (below 100kW). These sites achieved average value retention of 85%, whereas the two larger solar PV sites, at 1.2MW and 3.7MW respectively, achieved average value retention of 97.5%. The differences indicate the lower levels of demand from some suppliers for small volumes of power. In previous auctions, a number of small-scale solar PV projects did not meet their reserve prices.

Roc projects achieved lower average value retention than their FiT counterparts. 1 Roc/MWh projects achieved average value retention of 93.9%. Higher retention for FiT projects may indicate the simplicity of bidding on just wholesale power and embedded benefits and implicitly indicate supplier views on Roc values for 2016-17, Compliance Period (CP)15. Cornwall Energy, as well as other market analysts, expects the Roc market in CP15 to be oversupplied and suppliers may have priced this lower Roc value into their bidding behaviour. However, the one 0.9 Roc/MWh project in the auction achieved higher average value retention at 96.1%.

Projects not accredited under the RO or FiT regimes (MiW projects) achieved average value retention of 98.7%. This trend of above auction average values may be due to less risk being associated with these projects, which are not subject to certificate fluctuations (Rocs) or guaranteed export prices (FiT).

The number of commercial contracts in the auction fell by 20% to 32 contracts, down from the 40 auctioned in the summer 2016 auction and the 41 recorded in the summer 2015 auction. This reduction may have been due to a number of 12 months contracts being signed in the January 2016 auction and the more frequent nature of e-POWER auctions over the past 18 months, with more bespoke monthly auctions taking place for contracts outside of the regular January and July auction windows. The e-POWER auctions now contract for 69 projects to October 2016, up from 23 contracts in April 2014 when all contracts were auctioned through the standard seasonal auction process. Figure 3 below details the trend for a higher percentage of contracts to be auctioned outside of the traditional seasonal January and July auction periods. The move to monthly auctioning arrangements highlights the greater degree to which generators are looking for flexible terms in the market.

**Figure 3: Trends in the number of commercial contracts**



19 suppliers took part in the auction, including some first time users, although bids were received from 11 of these. The average number of bids was 8.2 per contract, similar to levels seen in the summer 2015 auction.

### 3 Comparison with previous auctions

The July 2016 auction saw a drop in value retention against maximum benchmark values compared to the previous three auctions. The average value share retained by generators was 94.5%, compared with 96.4% in summer 16, 98.3% in summer 15 and 97.9% in summer 14.

However, average value on a £/MWh basis was equivalent summer 2015 and previous auctions, owing to rises in wholesale power prices over the last six months. Going into the auction, the winter 16 power prices was £46.6/MWh, 21% higher than its level in January 2016 and 14% higher than its level at the start of June 2016. The price is also £15/MWh higher (+47%) than auction prices for summer 16. This rise in wholesale prices reversed the downward trend seen in the four previous seasonal e-POWER auctions.

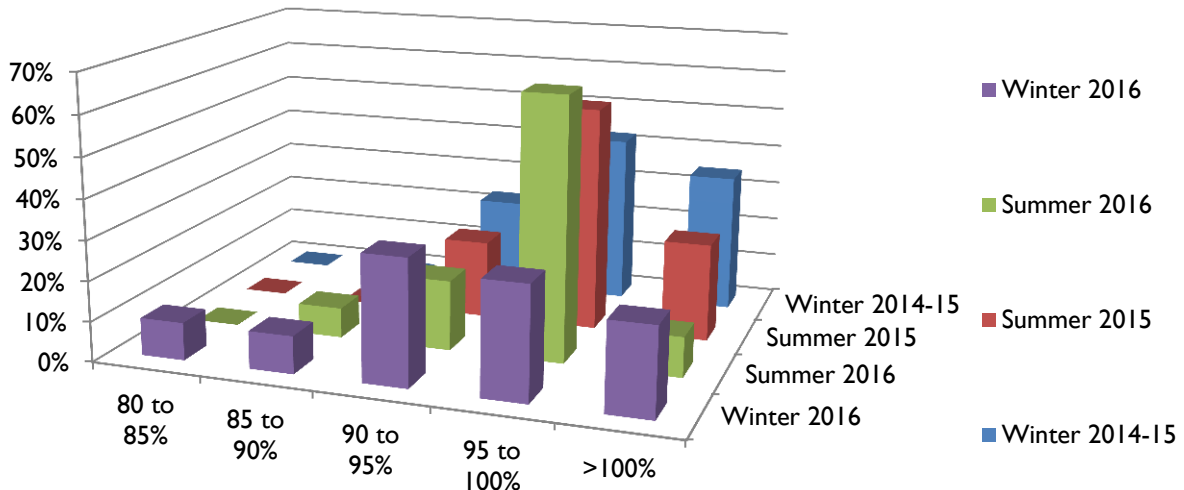
Wholesale power prices have risen from their seven-year lows of January 2016 owing to a slight recovery in commodity markets, notably oil and coal, exchange rate impacts following the UK's decision to vote to leave the European union and a sharp rise in gas prices over June and July. Gas prices have risen sharply recently following Centrica's announcement that the Rough storage facility, around 75% of UK gas storage, would not be injecting gas until August 2016 at the earliest. Winter 16 prices for gas rose sharply following this, feeding into winter 16 power contracts.

A chart displaying historical seasonal wholesale price movements can be found in Appendix I.



When comparing the distribution of values achieved to previous auctions, performance in the winter 2016 shows a less concentrated cluster of projects gaining 95%-100% value retention (28%) when compared to summer 2016 (65%), summer 2015 (56%) and winter 2014-15 (42%). The spread of the remaining contracts was slightly larger with a higher proportion of sites achieving 90%-95% and 85%-90% value retention than in previous auctions. However, the spread also saw 22% of contracts in the auction gain over 100% of typical market benchmark values, up from the 10% seen in the summer 2016 auction and close to the summer 2015 levels (24%). Figure 3 details these trends below.

**Figure 3: Distribution of values achieved compared to maximum**



The winter 16 auctions also show a greater divergence in value retention than previous auctions. This divergence can generally be split into smaller intermittent sites receiving lower value retention and larger more predictable sites receiving higher value retention. This may be due to the ability of baseload sites to generate reliable during of peak demand. These sites are beneficial to suppliers as they can take advantage of higher peak prices, which previously were £4/MWh to £5/MWh above baseload prices but recently have increased to £6/MWh to £10/MWh higher. The higher value retention recorded for AD projects in particular indicates this trend.

#### 4 Cornwall Energy comment

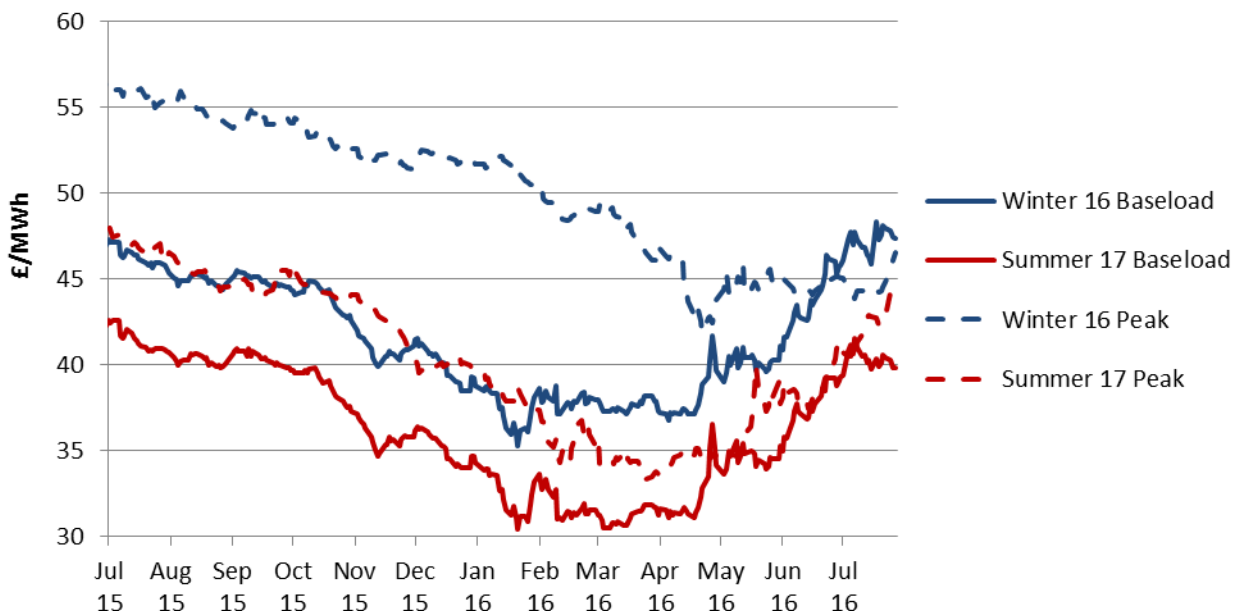
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## Appendix A: Trends in wholesale power prices

Table A-1: Wholesale power price movements



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