

# Analysis of the e-POWER January 2018 auction

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## About Cornwall Insight

Getting to grips with the intricacies embedded in energy and water markets can be a daunting task. There is a wealth of information online to help you keep up-to-date with the latest developments, but finding what you are looking for and understanding the impact for your business can be tough. That's where Cornwall Insight comes in, providing independent and objective expertise. You can ensure your business stays ahead of the game by taking advantage of our:

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# 1 e-POWER Auction Analysis

## 1.1 Headlines

This e-POWER auction was held over three days, from 23 to 25 January 2018. The auction sold contracts of six and 12 months, for 65 projects, a new record high for the auction.

Headlines from the latest auction are:

- The January 2018 auction saw average value retention rise to 102.1% against post-auction maximum benchmark values. This was the second auction in succession where value retention was over 100%, with the July 2017 auction averaging 100.8%. This compares to 97.2% in January 2017, 94.5% in July 2016 and 96.4% in January 2016. Cornwall Insight analysis suggests the 100% benchmark was breached again for two reasons:
  - Suppliers bidding in the auction are placing a higher premium on sites able to generate baseload output profiles (landfill gas, biomass, anaerobic digestion (AD) and municipal waste (MIW)<sup>1</sup>. These sites are also able to earn more lucrative embedded benefits revenues from TRIAD and GDUoS red rates which suppliers may have priced into bids
  - A continuation of high bids for Roc sites in the auction. The post auction assessment of maximum benchmark values uses the Roc buy-out price to value certificates, allowing a more direct comparison with previous auctions. The auction results suggest that offtakers were pricing in an expected recycle value into their bids in addition to the buy-out price, with recycle values of over £5/Roc expected for 2018-19 (CP17)
- A record number of 65 projects participated in the auction and gained contracts. This was the highest number of contracts in a single e-POWER auction, rising 53% from July 2017
- Generators are continuing to opt for 6 month (1 April 2018 to 30 September 2018) and 12 month (1 April 2018 to 31 March 2019) contracts. 34 generators opted for 6 month contracts, which achieved average value retention of 103.1%. 31 generators opted for 12 month contracts, which achieved an average value retention of 101.0%. The slightly higher values for six month contracts were likely due to a higher proportion of Roc sites
- 11 FiT sites were contracted in the auction achieving an average value retention of 101.6% (£52.4/MWh). Value retention was split between higher values for AD projects (104.1%/ £53.3/MWh) and lower values for solar PV (97.2%/ £50.3/MWh) and wind (99.4%/ £52.2/MWh)
- While most FiT AD plant achieved values higher than Ofgem's administered export rate, a greater number of wind and solar projects were below this level, indicating the continued challenging conditions for commercial PPAs in the FiT market
- Roc projects continued to achieve higher average value retention than their FiT counterparts. 1 Roc/MWh projects achieved average value retention of 102.8% (£100.8/MWh). Higher values for Roc projects represents the demand from suppliers for certificates in a short market for 2018-19
- Baseload sites continued the trend of higher value retention, with AD, landfill gas, biomass and MIW sites all achieving average value retention of 100.0% and above. One biomass project achieved a value retention of 108.6% against its post-auction maximum benchmark value
- Average retention for intermittent sites was lower, but still averaged over 100%. 47 wind, solar and hydro sites were present in the auction with Roc projects attracting high bidding volumes

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<sup>1</sup> Energy from waste (EfW) is the process of generating energy in the form of electricity and/or heat from the primary treatment of waste (other than a fuel produced by means of anaerobic digestion, gasification or pyrolysis). This category includes municipal waste (MIW).

## 1.2 Cornwall Insight Comment

The January 2018 auction saw continued average prices above the 100% post-auction benchmark. The average of 102.1% is the highest observed since Cornwall Insight began assessing the auctions. We believe this is for a number of key reasons.

Firstly, suppliers placed a higher premium on controllable technologies able to generate to baseload output profiles. These technologies were landfill gas, biomass, AD, and MIW. This higher premium could be due to increasing wholesale power market volatility seen over recent months. Additionally, baseload generation is less risky to manage and can also access greater embedded benefit values, including TRIAD.

Secondly, high value retention for Roc projects is likely due to ambitious RO targets set by BEIS for CP17 (2018-19). It is currently forecast that the Roc market for CP17 will be over 10% undersupplied. We have also observed a reduction in discount levels on buy-out and recycle values across the PPA and traded Roc market, which we believe has been reflected in the auction.

Thirdly, the renewables PPA market is becoming increasingly competitive with nearly 40 active offtakers. e-POWER auctions are a key route to market for short-term deals for many offtakers and rising competition has translated into more aggressive bidding behaviour.

The latest auction achieved a record number of awarded contracts at 65, a 53% increase on the July 2017. Both generators and suppliers have facilitated this increase. Generators are looking for shorter-term deals in light of backwardation<sup>2</sup> in the power market, a rising number of project financed sites rolling-off long-term deals and an increasing incentive for FiT projects to seek commercial PPAs. For suppliers, e-POWER auctions remain attractive through offering a straightforward route to green power and fixed price products.

Overall, 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. Analysis can be drawn with the auction data continuing to show a distinct premium placed on non-intermittent sites and Roc projects owing to underlying market conditions. This trend of peak power and Roc pricing premiums is something Cornwall Insight has observed across the market for short-term PPAs. Overall, sites achieved value retention in line with competitive short-term PPA market values that we are aware of.

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<sup>2</sup> Backwardation for wholesale power contracts is a market phenomenon when contracts further in the future are priced lower than those closer to delivery.



## 2 Introduction

This short report analyses the results for contracts awarded in the January 2018 e-POWER auction completed over three days, from 23 to 25 January 2018. It compares the actual value that sites achieved in the auction against a maximum market benchmark value that sites can potentially achieve. Project values and maximum benchmark values are presented as a £/MWh figure based on different potential sources of value. These are assessed post-auction, where sources of value include:

- Wholesale power price
  - For the purposes of the benchmark prices, the summer 18 baseload power price has been taken for six-month contracts at £43.63/MWh, and the annual April 18 baseload price for 12-month contracts at £46.85/MWh. All contracts sold in the auction were for PPAs commencing from 1 April 2018
- Green certificates
  - Renewables Obligation Certificates (Rocs). The confirmed buy-out price for 2018-19 has been taken as the benchmark price for Rocs at £47.22. However, the rate of award of these certificates varies depending on the technology used for generation (i.e. Roc banding)
- 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 differs by region, connection voltage, intermittency of technology. GDUoS is always built into the contract price, whether it is a cost or a benefit
- Balancing Service Use of System charges (BSUoS) and transmission losses
  - As BSUoS and transmission losses are accounted and paid for against volumes on the transmission system, distribution connected generators can avoid these charges and offer them as a benefit to suppliers
- 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 April 2018 to 30 September 2018 (summer 18) are summarised in Figure 1 and are compared with typical maximum values for front season contracts on the days of recent auctions<sup>3</sup>.

**Figure 1: Typical Maximum Benchmark Values (£/MWh) of e-Power Auction Elements (six-month season-ahead prices)**

Element	Wholesale Baseload Power	Rocs	Embedded Benefits (excluding TNUoS)
January 2018 value	£43.6	£47.2	£0.4 to £13.9
July 2017 value	£46.1	£45.0	-£2.0 to +£7.4
January 2017 value	£46.1	£45.0	-£0.6 to +£7.4
July 2016 value	£46.6	£45.0	-£0.6 to +£7.0
January 2016 value	£31.6	£45.0	£0 to £10.6

Source: e-Power

<sup>3</sup>In the January 2016, July 2016, January 2017 and July 2017 auctions, new annual and bespoke monthly contracts were included. Separate power price valuations were made for these contracts and they are not shown for comparison



# 3 January 2018 analysis

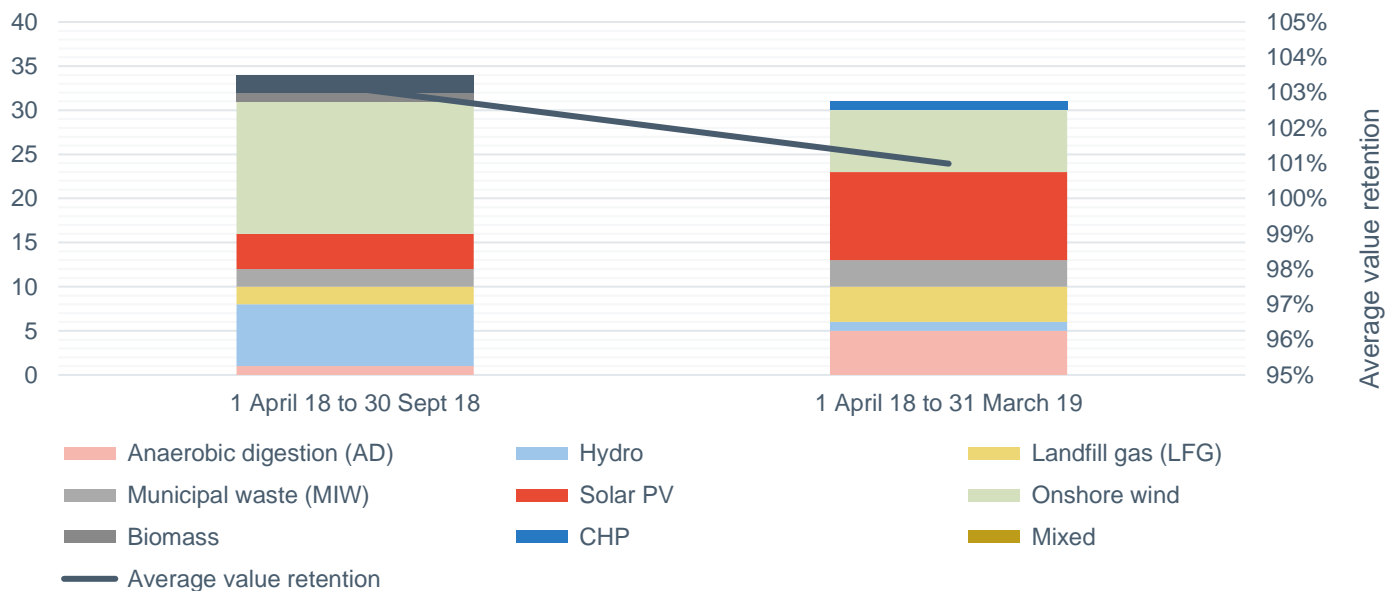
## 3.1 Auction Summary

Overall 65 projects entered into the auction. This was the largest e-POWER auction to date and compares to 43 sites sold in the July 2017 auction and 36 in January 2017.

Seasonal wholesale prices rose from the period of spring 2017 to the date of the auction, leading to an increased incentive to lock in higher wholesale power prices. The power market has also remained in backwardation and is continuing to incentivise generators to opt for shorter-term deals at one year or less.

Figure 2 below details average value retention with auction contract length. Figure 3 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.

**Figure 2: Contract length by technology and average value retention**



## 3.2 Broken Down by Technology

**Figure 3: Number of sites achieving proportion of typical maximum benchmark value**

Technology	<90%	90%-95%	95%-100%	100%-105%	>105%	Total
Anaerobic digestion (AD)	0	0	0	5	1	6
Hydro	0	0	2	5	1	8
Landfill gas (LFG)	0	0	0	5	1	6
Municipal waste (MIW)	0	0	0	5	0	5
Solar PV	0	0	10	3	1	14
Onshore wind	0	0	3	18	1	22
Biomass	0	0	0	0	1	1
CHP	0	0	1	0	0	1
Mixed	0	0	0	2	0	2
<b>Total</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>43</b>	<b>6</b>	<b>65</b>
<b>Percent</b>	<b>0.0%</b>	<b>0.0%</b>	<b>24.6%</b>	<b>66.2%</b>	<b>9.2%</b>	<b>100.0%</b>

The January 2018 auction saw a rise in participation from all technologies compared to the July 2017 auction, with the exception of biomass – showing an unchanged number of sites – and landfill gas – showing a decline in participation. Onshore wind had the highest number of sites awarded contracts in the auction at 22, followed by solar PV with 14. There was a large number of AD sites in the auction at six, up from just one in the July auction:

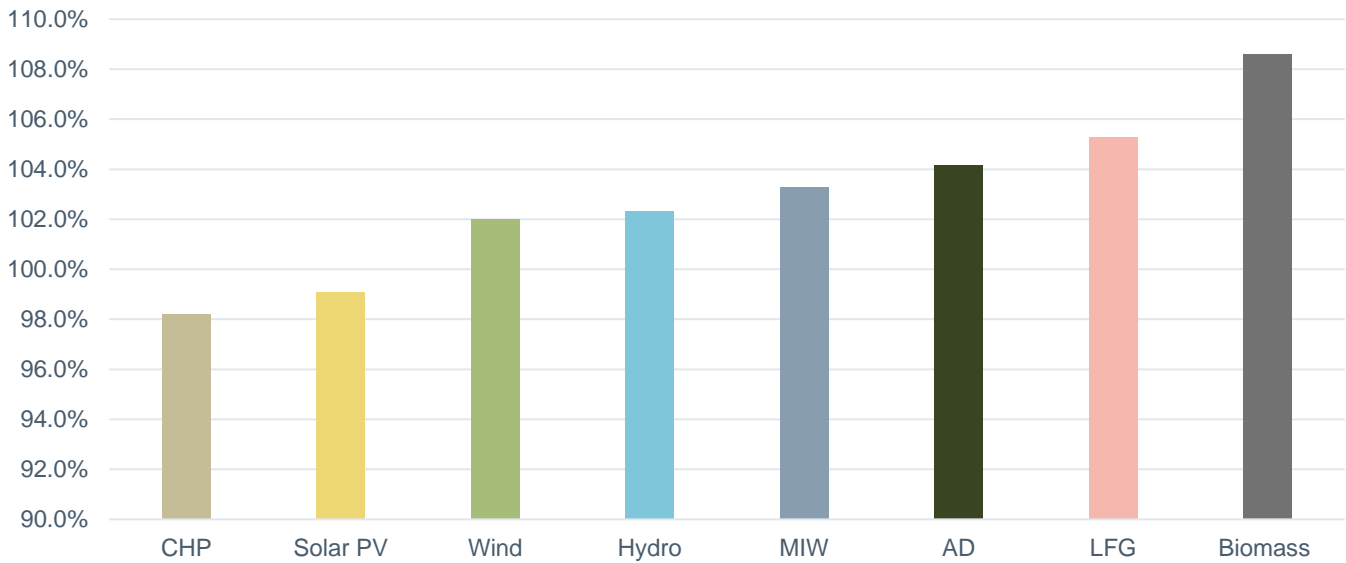
- Onshore wind sites continued to have the highest number of sites in the auction at 22, which was also the case in the previous auction which had 14 sites. Average value retention was 102.0% against maximum market benchmarks, in line with the July 2017 auction average of 102.9%
- Solar PV was the second highest technology by number of sites with 14. This was a significant rise from the five in the July 2017 auction, reflecting a move back to commercial PPAs from a number of FiT generators. Solar PV 2 Roc projects achieved an average value retention 105% (£146.1/MWh), FiT sites averaged 97.2% (£51.8/MWh), and other sites (i.e. contracts excluding subsidies) achieved an average of 98.4% (£48.0/MWh) against typical market benchmarks
- Hydro technologies represented 8 sites, with an average value retention of 102.3%, up from the 100.7% of the July 2017 auction
- AD represented six sites, up from one in the July 2017 auction, and continued the trend of higher value retention seen in previous auctions. AD sites averaged 104.2% value retention overall. FiT sites averaged 104.2% (£53.9/MWh) and 2 Roc/MWh sites averaged 104.6% (£152.7/MWh). All FiT sites in the auction achieved values above the FiT higher administered export rate of £52.4/MWh
- LFG technologies represented 6 sites, up from 4 in the July 2017 auction. Value retention continued at high levels, with LFG sites showing the second highest average value retention of any technology at 105.3%
- There were 5 MIW sites in the auction, up from the 3 in the July 2017 auction. Average value retention was 103.3%, down on the 106.3% achieved in the last auction
- Biomass, CHP and mixed technologies represented 4 sites in total. The biomass project had individually the highest value retention of any in the auction at 108.6%. The mixed sites had average value retention of 103.4% (£54.4/MWh). The CHP site averaged 98.2% (£54.0/MWh)

Figure 4 and Figure 5 detail average performance by technology against market benchmark prices.

**Figure 4: Average value retention by technology**

Technology:	CHP	Solar PV	Wind	Hydro	MIW	AD	LFG	Biomass
Average %	98.2%	99.1%	102.0%	102.3%	103.3%	104%	105.3%	108.6%

Figure 5: Average value retention by technology



### 3.3 Summary by Support Scheme

Value retention for sites varied by support scheme as well as technology.

11 FiT sites were contracted in the auction achieving an average value retention of 101.6% (£52.4/MWh). Value retention was split between higher values for AD projects (104.1%/ £53.3/MWh) and lower values for solar PV (97.2%/ £50.3/MWh) and wind (99.4%/ £52.2/MWh)

The vast majority of AD plant achieved values above the Ofgem higher administered export rate of £52.4/MWh i.e. the commercial PPA in the e-POWER auction created additional value above the current guaranteed floor price. Wind projects achieved equal to or lower values than the administered export rate, indicating the continued difficulty for commercial PPAs for intermittent plant to achieve higher values. For solar, it is difficult to assess against export rate as some projects are subject to the lower export rate of £37.2/MWh. All projects achieved higher than this value, but none achieved above the higher rate.

Roc projects continued to achieve higher average value retention than their FiT counterparts. 1 Roc/MWh projects achieved average value retention of 102.8% (£100.8/MWh), 2 Roc/MWh projects achieved higher at 104.9% (£148.3/MWh), the only 0.9 Roc/MWh onshore wind project achieved 102.3% (£92.9/MWh) and the 0.2 Roc/MWh LFG project achieved 103.8% (£65.6/MWh).

High value retention for Roc projects is likely due to ambitious RO targets set by BEIS for CP17 (2018-19). The obligation for CP17 was set by BEIS in October at 129.7mn Rocs, an uplift of 9% on the previous compliance period. It is currently forecast that the Roc market for both CP16 and CP17 will be undersupplied by more than 10%, which has supported expected recycle values. In addition, it is understood that discounts for Rocs in Power Purchase Agreements have been falling over recent months. Consequently, Rocs have been trading at their highest levels in six years.

### 3.4 Auctioned contract numbers

The number of contracts sold in the auction increased by 51% to 65. This continued from the rise seen in the last auction, which rose from 36 to 43. The latest e-POWER auction is the largest by MW capacity and site numbers we have seen since our analysis of the auctions started.

Both the legacy e-POWER auctions and the other monthly auctions have seen increased participation from generators. We believe this is due to:

- The large volume of projects that have entered the market since 2015 on the back of early closure orders to elements of the RO and FiT schemes

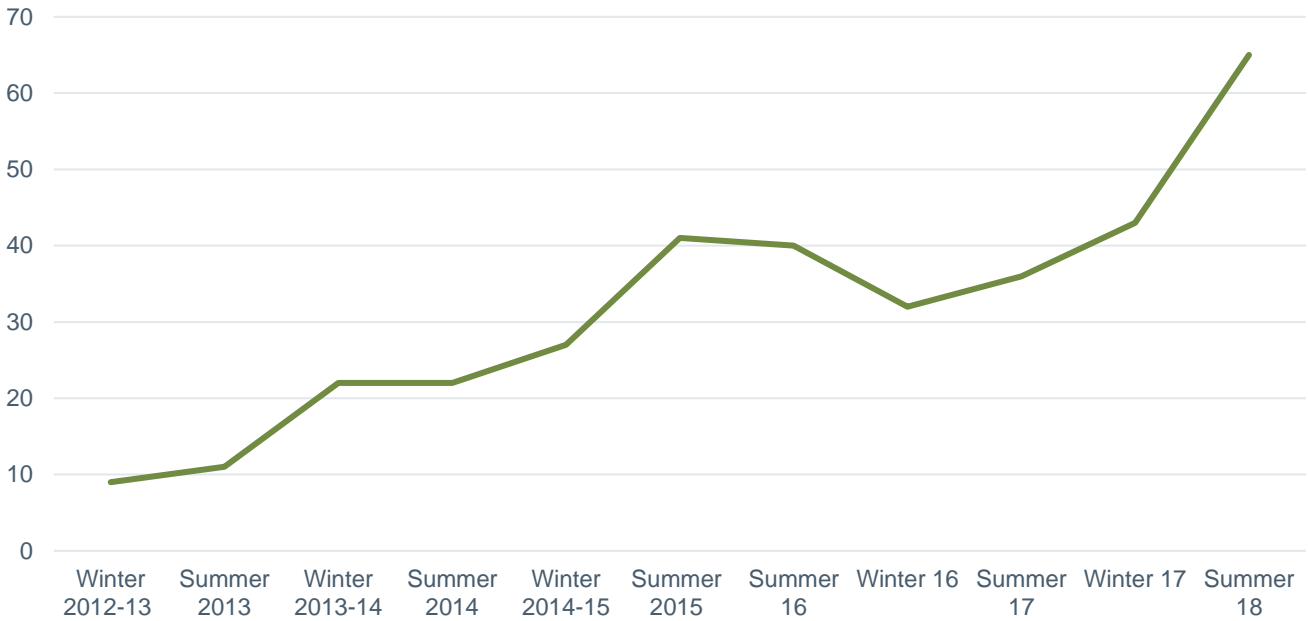




- The drive towards short-term PPA contracts for some generators<sup>4</sup> in light of previous Roc and wholesale market price falls. Typically, short-term PPAs see a higher value retention than long-term contracts
- A rise in the number of suppliers entering the e-POWER auctions as a route to market for green power. This has created high levels of bidding and liquidity
- Greater exposure and awareness of e-POWER auctions and competitive pricing in line with the wider short-term PPA market

Figure 6 below details the trends of contracts to be auctioned at the legacy January and July auctions as well as the other monthly auction.

**Figure 6 Trends in the Number of Contracts**



### 3.5 Comparison with Previous Auctions

The January 2018 auction saw a rise in value retention against maximum benchmark values compared to the previous three auctions. The average value share retained by generators was 102.1%, compared to 100.8% in July 2017, 97.2% in January 2017 and 94.5% in July 2016.

Like-for-like £/MWh values of Rocs and embedded benefits were slightly higher going into this auction as these have risen going into the new financial year.

Going into the auction, the front season (summer 2018) baseload power price was assessed at £43.6/MWh. Wholesale baseload power prices have experienced sustained growth since the July 2017 auction, with the summer 18 contract rising by more than 10% over this period.

Growth in wholesale power prices have been caused by a rise in underlying commodity prices. The gas market experienced some notable price rises following the closure of the UK's largest gas storage facility, Rough, as well as due to several gas supply disruptions and strong gas demand in Asia. Other commodities

<sup>4</sup> Many other generators who have built through project finance backing are generally secured into long-term 10 to 15 year PPAs to satisfy lending criteria. Therefore, they cannot generally change strategy to secure short-term contracts

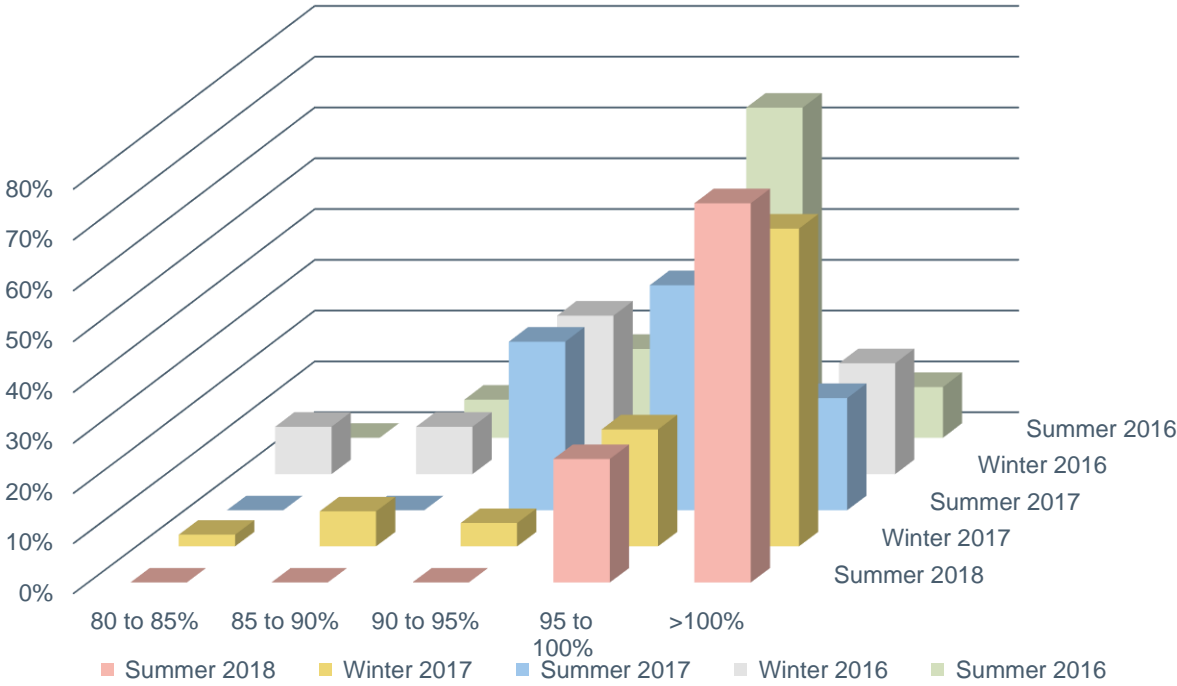


hit fresh multi-year highs in the run up to the auction. Coal prices reached a four-year high, oil prices a two-year high, and carbon prices a two-year high.

A chart displaying historical seasonal wholesale prices can be found in Appendix A.

When comparing the distribution of values achieved compared to previous auctions, performance in the January 2018 auction shows increased clustering at the higher end of value retention, with 75% of projects achieving value retention of over 100%. In the previous auction, 63.8% of projects achieved value retention over 100% and in the January 2017 (Summer 2017) auction 22.6% of sites achieved value retention over 100%.

Figure 7 Distribution of Values Achieved Compared to Maximum



# 4 Appendix A

Figure 8 Wholesale Power Price Movements

