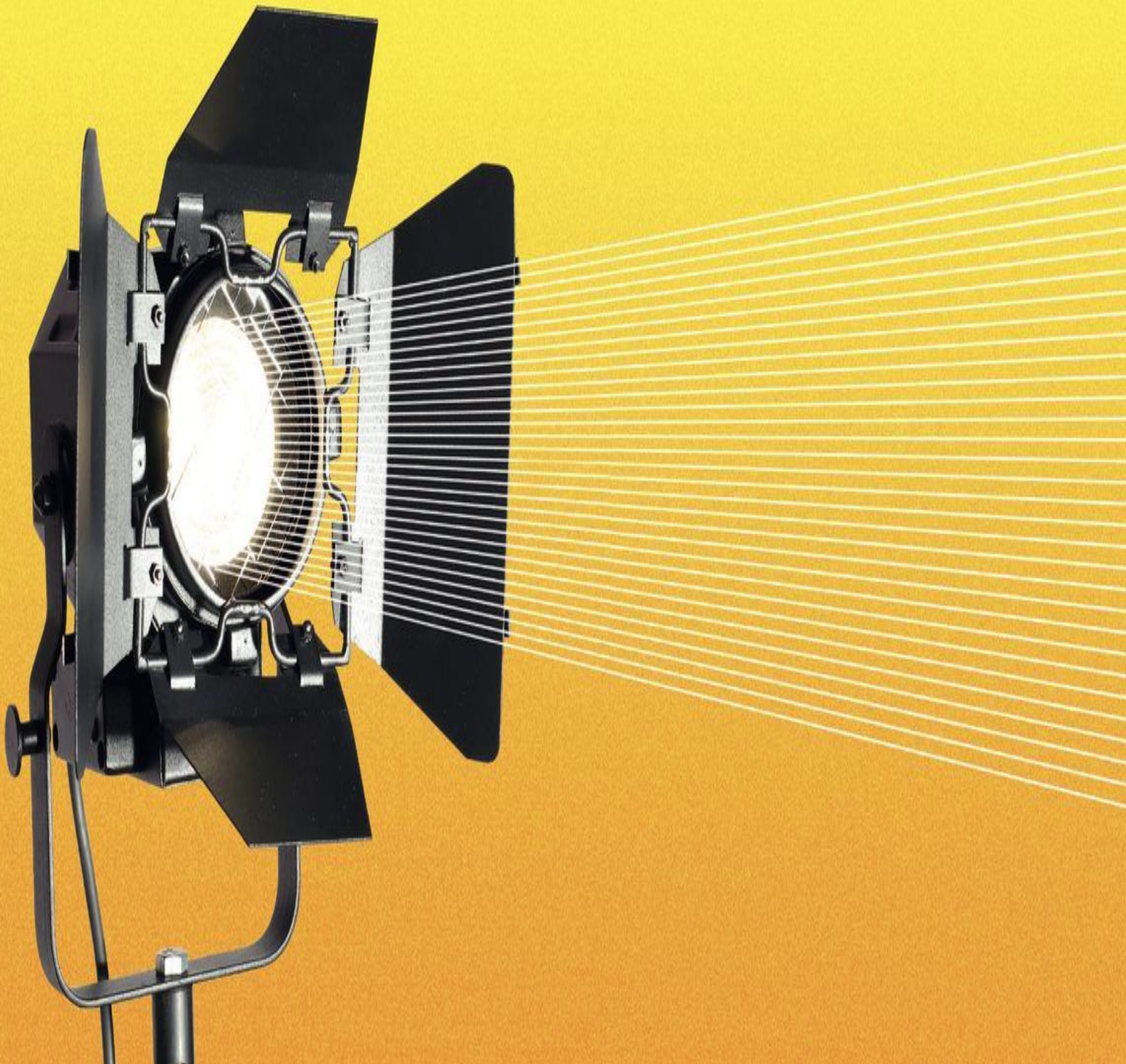


Balancing Costs

Hotspots

December 2018

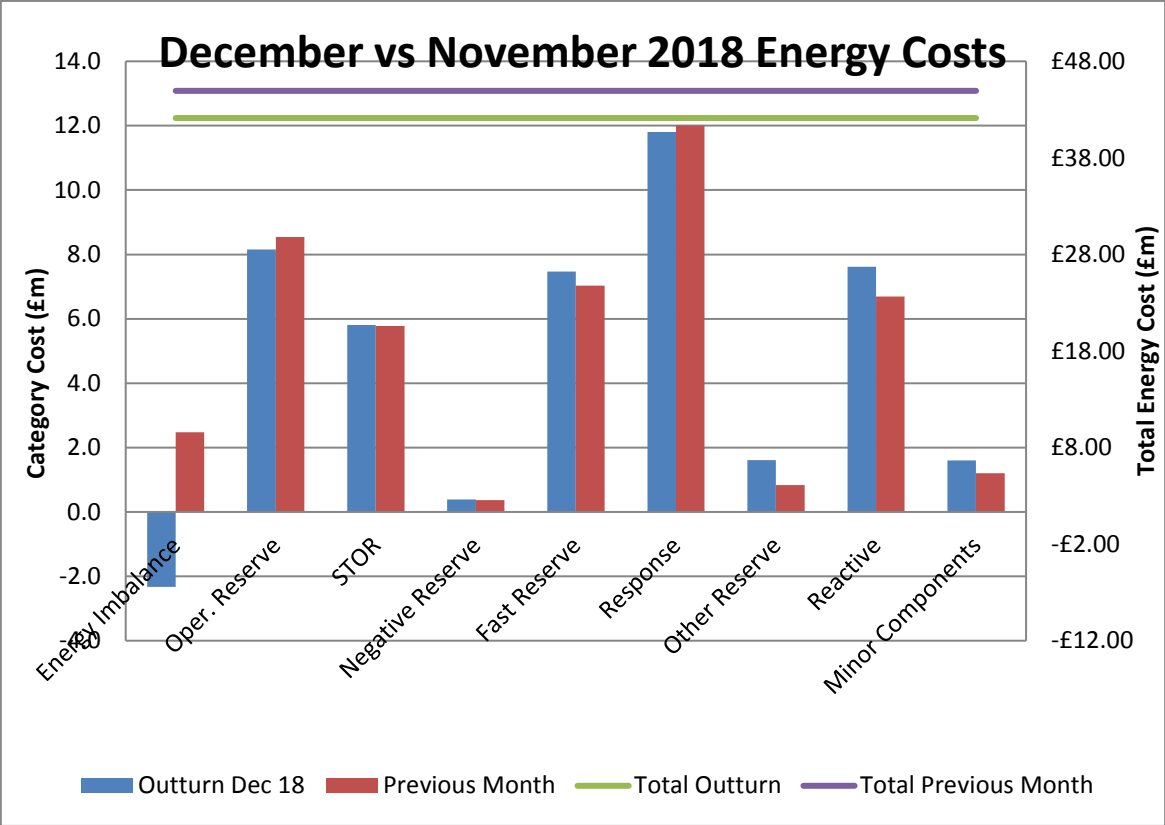


Contents

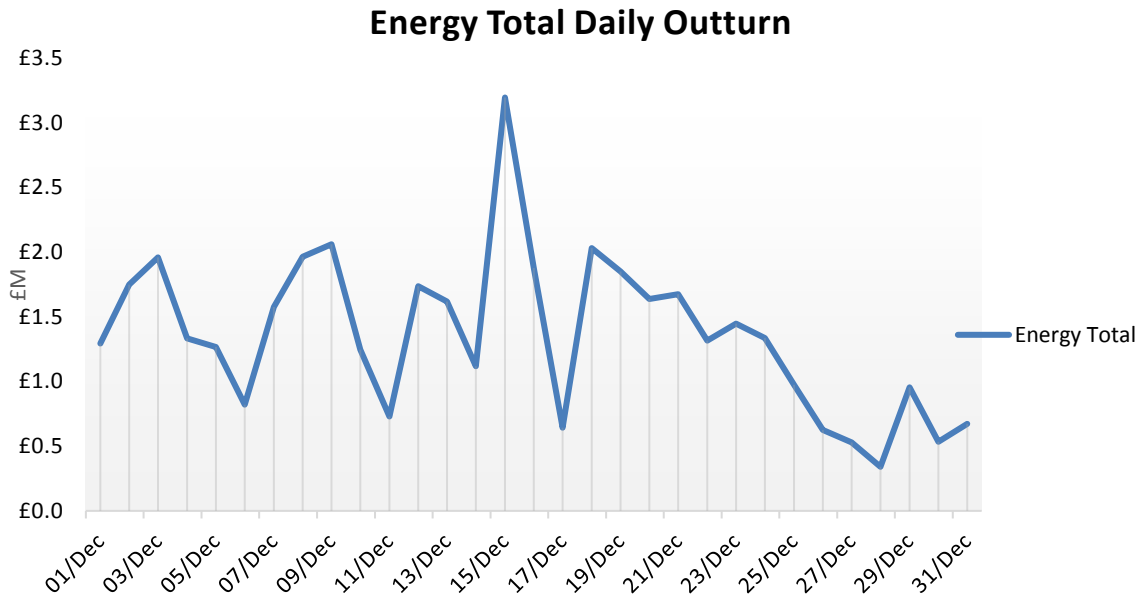
Contents.....	1
Energy Costs	2
1. Energy Total Daily Outturn	3
2. Operating Reserve	3
3. STOR	4
4. Margin Price	4
5. Frequency Response	4
6. Fast Reserve	5
7. Negative Reserve	5
Constraints Costs.....	7
8. RoCoF	7
9. Voltage	8

Energy Costs

Energy costs (including energy imbalance) for December 2018 out-turned down £2.8m lower than November at £42.19m. The main driver was a £4.8m pound swing from £2.5m to -£2.3m for Energy Imbalance. The decrease was largely due to a longer market particularly through the Christmas to New Year period. There were small increases on Reserve and Reactive components but relatively little variance from the November figures.



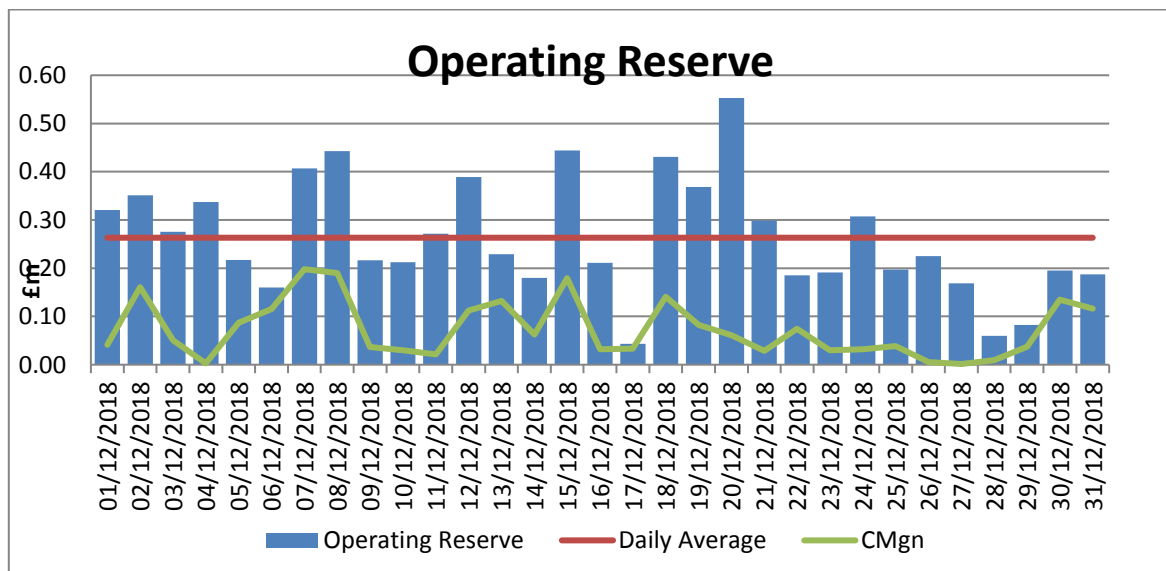
1. Energy Total Daily Outturn



The average daily cost for December 2018 was around £1.4m. The most expensive day by far was Saturday 15th with a cost of £3.2m, which was over £1m higher than the next highest day of Sunday 9th. The market was very short through the day caused by storm Deirdre taking out a number of circuits in addition to some generation loss left the market up to 1700MW short. Numerous plant had to be synchronised to cover the shortfall with prices in excess of £100. Response positioning actions were also required to cover for potential wind cut out.

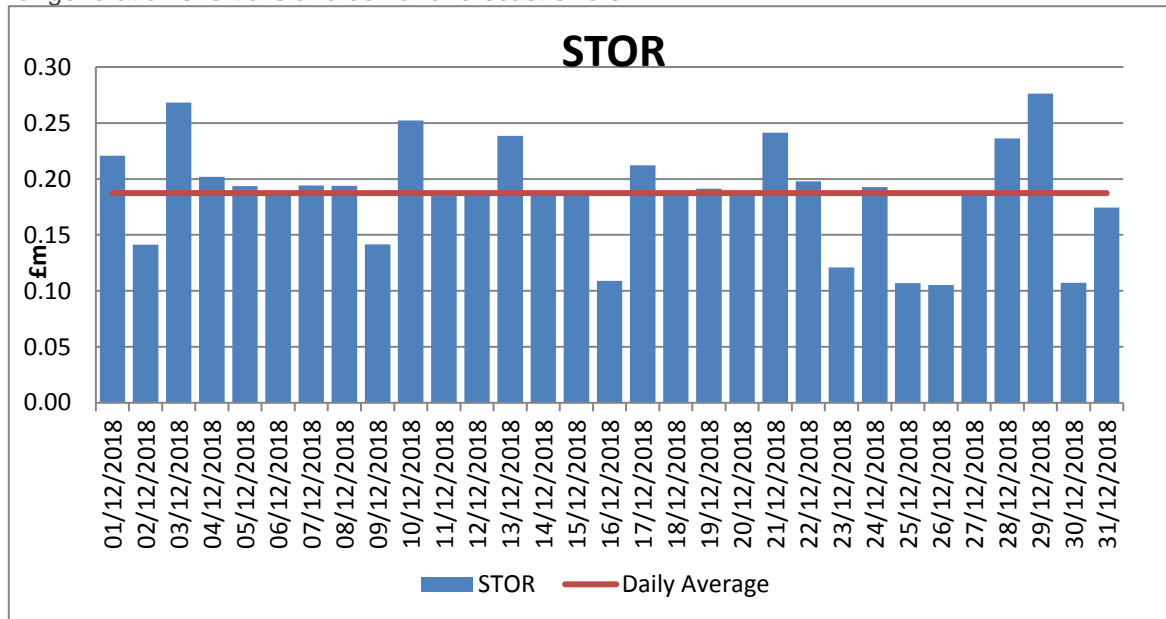
2. Operating Reserve

Operating Reserve out-turned at around £8.2m which is in line with the November figure of £8.3m. The average daily cost was around £0.26m in December 2018. The highest daily spend for this category was recorded on Thursday 20th outturning at around £0.55m. Wind volatility appears to be the main driver along with an unpredictable system that was swinging between long and short through the day.



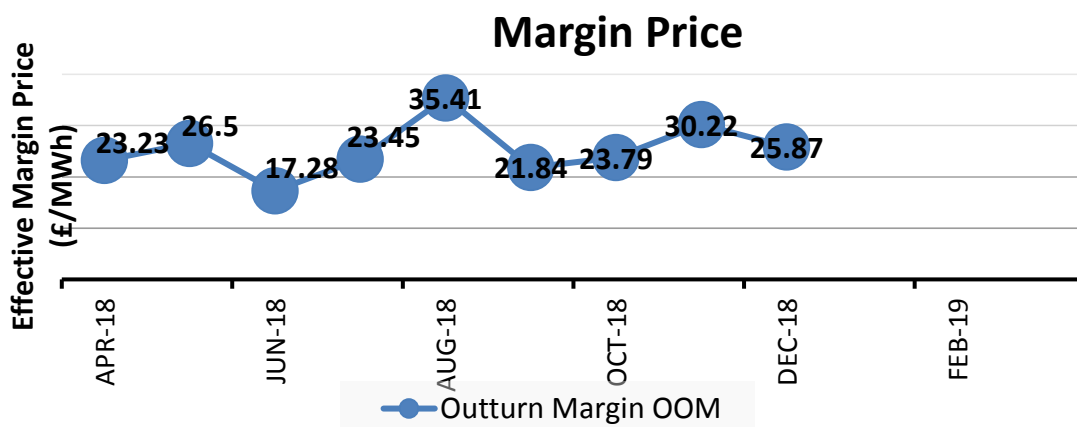
3. STOR

STOR cost for December 2018 was around £5.8m showing almost no change from November with an average STOR daily cost of £0.2m. Monday 3rd and Saturday 29th were the most expensive days for this category with spends of £0.27m and £0.28m respectively. On the 3rd STOR was required for the darkness peak when the market was short, whilst on the 29th STOR was required for generation shortfalls and demand forecast errors.



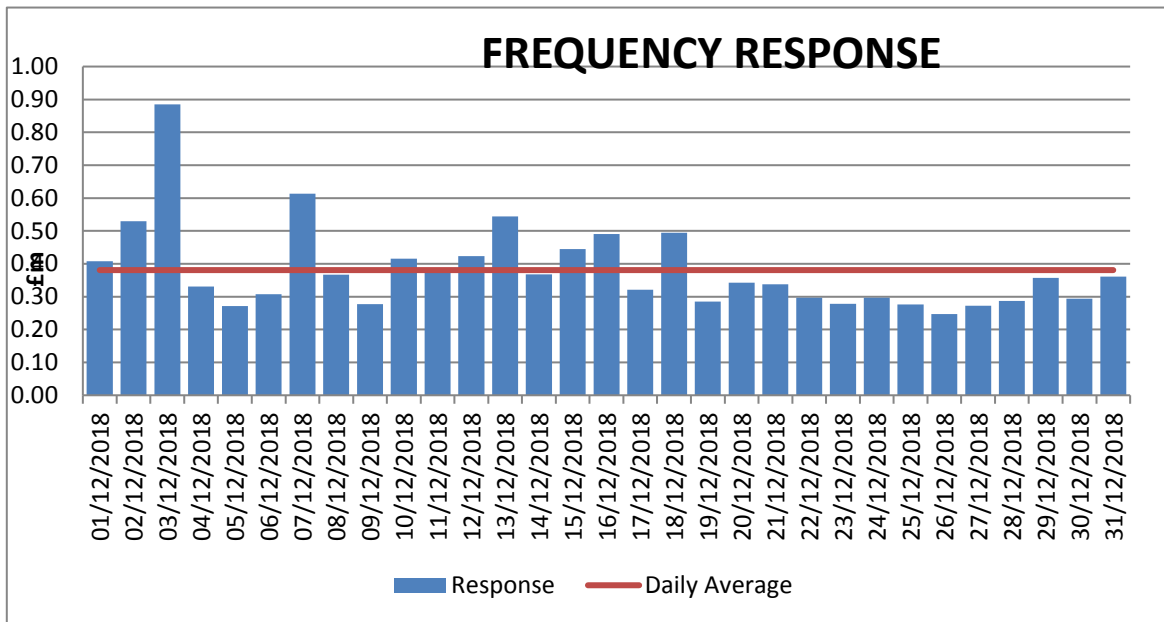
4. Margin Price

The Average margin price in December 2018 fell after 2 successive monthly increases out-turning at £25.87/MWh.



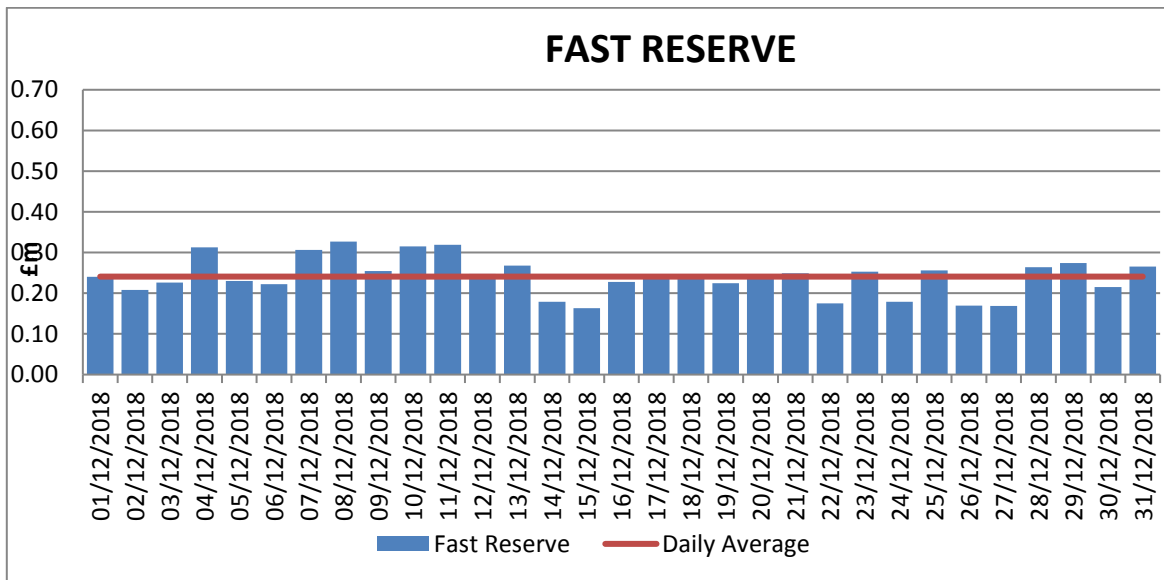
5. Frequency Response

Frequency response in December 2018 out turned at £11.8m in line with last month. Monday 3rd of December was significantly higher than other days at £0.89m. This is largely due to wind uncertainty as we transitioned from high levels of wind to low levels of wind and the associated difficulty with forecasting during this period.



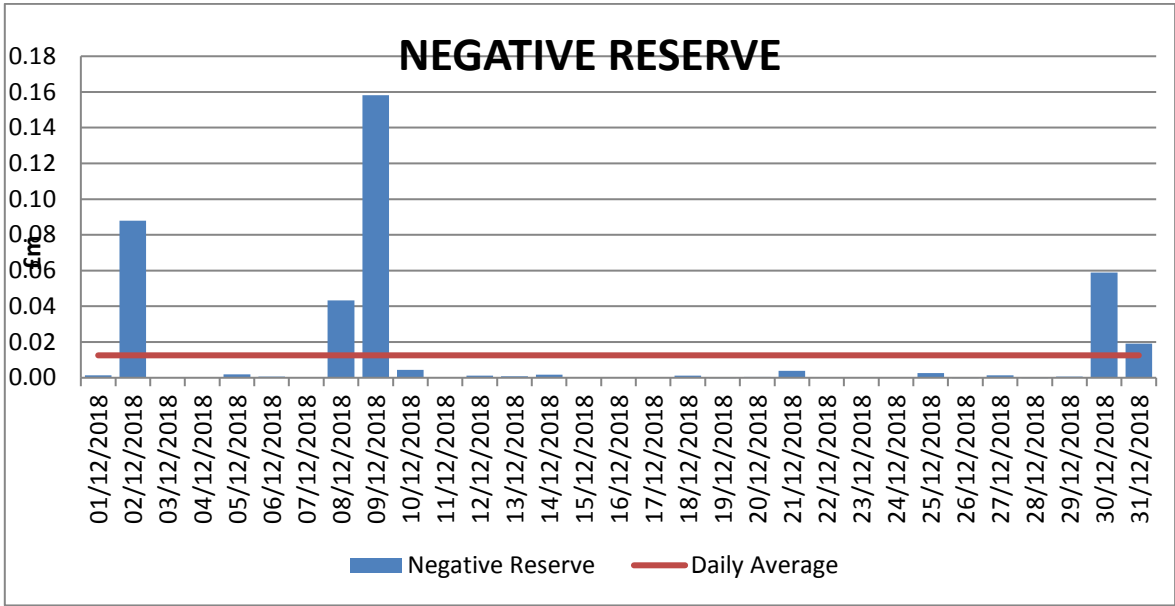
6. Fast Reserve

Fast reserve out turned at £7.46 in December 2018, which is up roughly £0.5m from November 2018 costs. Throughout the month, the average daily cost was around £0.24m and the ancillary costs made up around 88% of the total costs, most of which is incurred on the SpinGen service.



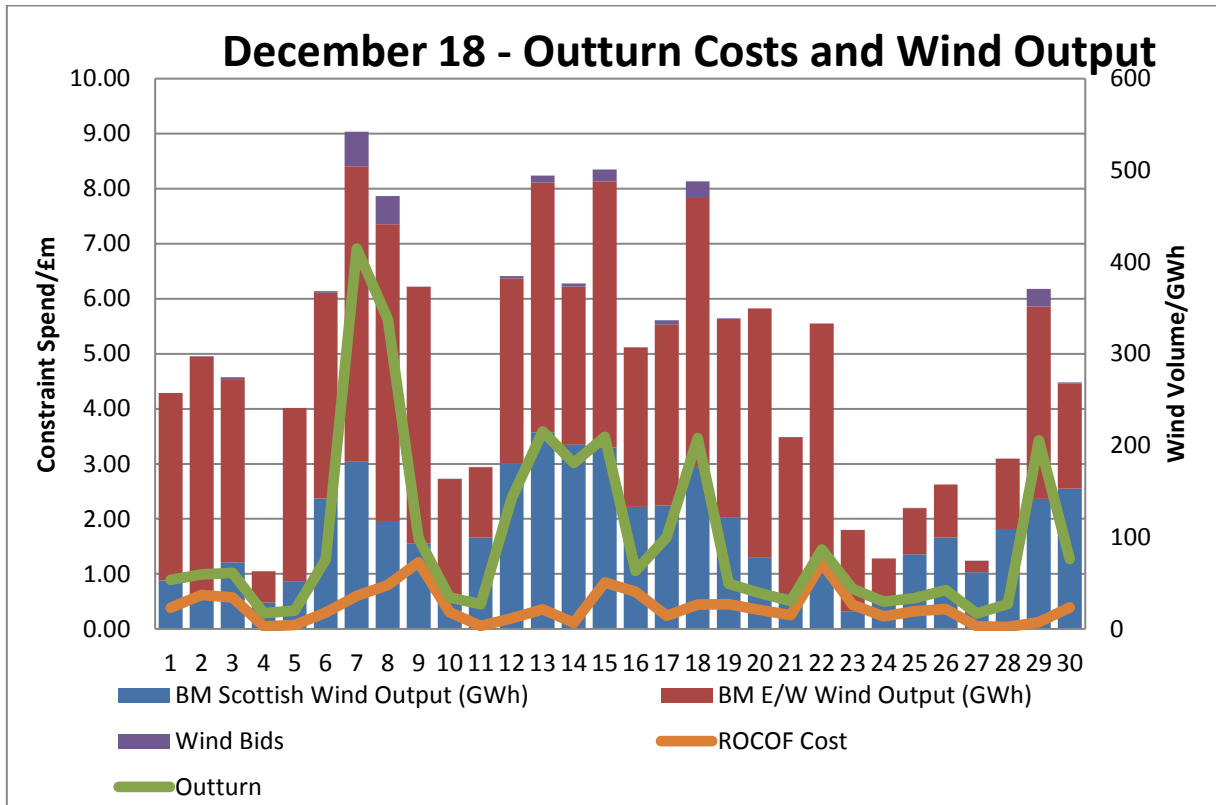
7. Negative Reserve

Negative Reserve out-turned at £0.4m, showing little variance from the past month. The costs for this category were nil or below £0.01m for most of the days with the 2 highest days contributing over 50% of the monthly total.



Constraints Costs

The total constraints cost for December 2018 was £52.75m; £7m for England and Wales, £1.3m for Cheviot, £13m for Scotland, £11.4m for Sterilised Headroom, £12.4m on ROCOF, and £7.7m on Ancillary Services costs.



The graph above shows the daily outturn costs and the portion made up by ROCOF. It also shows output levels of BM wind and volume of wind bids (including trades) to indicate the extent to which wind output drives constraint costs.

The constraint daily spend remained below £4.0m for most of the days in December 2018, only exceeding this level on the 7th and 8th December. On 7th constraint costs peaked at £6.91m, followed by £5.63m on 8th. High levels of wind generation coupled with planned outages exacerbated transmission constraints in both Scotland and North of England, resulting in large volume of BM actions taken throughout the 24 hours on hydro, wind and conventional units to solve the constrains.

There was also a 3 day period with sustained costs of over £3m from 13th to 15th December. Again this was largely due to high winds coupled with transmission constraints in the North and South East.

8. RoCoF

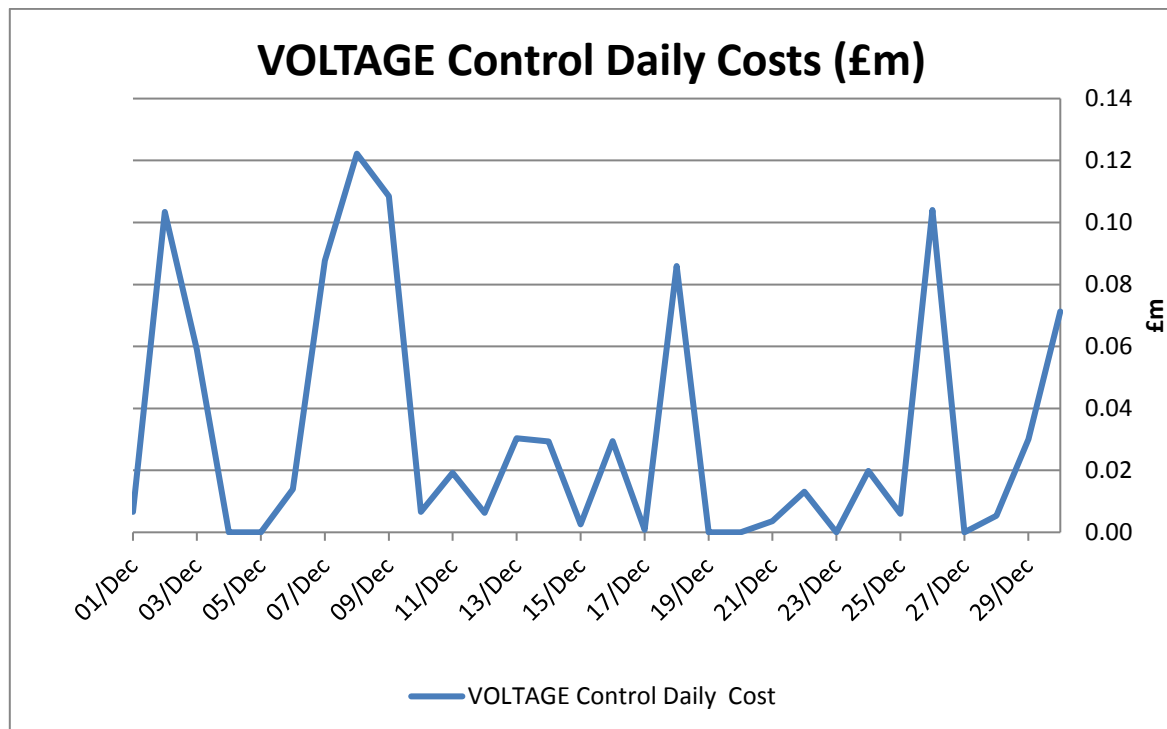
The RoCoF outturn for December 2018 was £12.4m, with virtually no change from November. Wind and demand levels are the main drive behind high costs days for this category, requiring large volumes of trades on the interconnectors and on generating units, sometimes with the support of BM actions, to limit the largest generation loss on the system. The highest daily costs occurred on 9th and 22nd December which are both weekend days when RoCoF constraints are likely to persist through the day due to lower system demand.

9. Voltage

These costs relate to the buying of energy in order to access the voltage capability on the generating units. The costs for voltage are reported in the Reactive Power category.

Voltage costs in December 2018 out-turned at around £1m to deliver 129.7GWh of energy with voltage supporting capabilities, of which around 85% of volumes were solved with forward trading.

The highest daily cost for this category occurred on Friday 8th December when actions were required to support voltage control across 6 regions.



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