NOTE:
This re-issue was due to data errors relating to STOR, Fast Reserve and Response forecast costs for April 2020 onwards.
These have now been corrected.

In addition, the report now has more outturn data for September 2018, therefore the forecast costs for the month have changed to reflect this extra data.

BSUoS Outturn

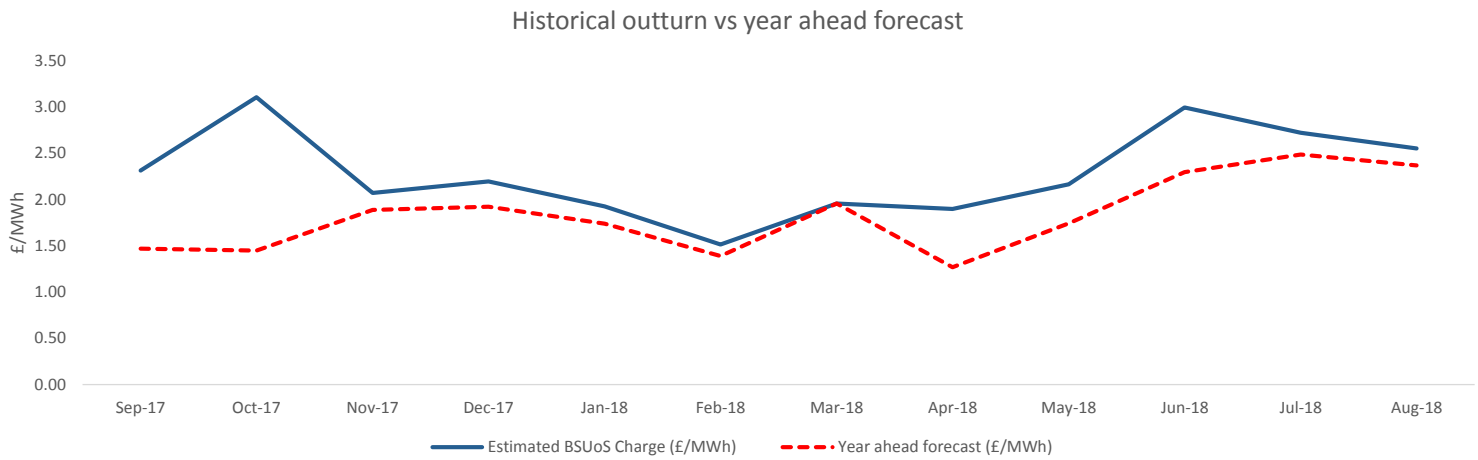
National Grid

Average BSUoS charge	£/MWh
Aug-18	2.55
Past 12 months	2.25
2017/18	2.31

Outturn costs for August were lower than forecast by ~£10m. Despite the Western Link being unavailable, constraint costs were £5m lower than forecast. Continuation of low wind and stable weather contributed to low constraint costs except for 1st/17th/18th where constraints in the North of England required significant volumes of bids to solve. Additional low inertia issues required ROCOF actions. Constraint costs were ~£14m across those 3 days. Operating Reserve and Response costs were under-forecast by ~£6m.

NOTE: Cost categories have been adjusted to align with the daily cost reports and MBSS.

The blue line on the chart shows the estimated monthly average BSUoS charge for the past 12 months. The red line shows our forecast for each month, made at year ahead. The table shows a breakdown of the elements that make up the BSUoS charge



Month	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18
Energy Imbalance	-1.3	-2.8	-3.1	5.1	-1.9	-3.0	3.3	-5.7	-6.8	-2.8	-1.1	-3.9
Operating Reserve	5.8	6.0	6.1	9.0	8.6	9.2	15.9	4.1	4.4	3.6	4.8	4.7
STOR	6.0	6.2	8.9	9.4	9.4	8.6	8.1	6.1	7.0	6.6	7.4	6.7
Constraints - E&W	9.1	10.0	16.3	9.8	12.3	4.0	14.2	9.1	20.4	33.3	37.3	32.3
Constraints - Cheviot	17.2	54.6	15.5	19.2	11.9	5.4	2.3	13.2	1.5	7.8	1.4	1.6
Constraints - Scotland	0.1	2.9	7.1	5.2	5.4	2.8	1.4	0.4	2.1	6.3	0.2	1.3
Constraints - AS	2.3	1.7	2.7	1.9	0.5	0.4	3.7	2.7	0.6	3.8	0.2	0.3
Negative Reserve	0.7	0.8	0.6	0.1	0.9	0.1	0.4	0.4	2.1	0.4	0.6	0.4
Fast Reserve	6.4	7.6	7.0	7.7	8.1	6.9	7.8	6.4	6.4	6.1	7.5	8.2
Response	11.7	11.4	10.3	11.4	10.4	9.3	11.6	11.0	12.2	11.4	10.5	10.6
Other Reserve	1.3	1.6	1.2	1.3	1.6	1.2	1.1	0.8	0.9	0.8	1.2	1.2
Reactive	6.2	6.3	6.2	6.7	6.6	5.7	5.9	6.3	7.0	7.4	6.6	6.7
Minor Components	1.9	3.3	0.9	2.1	1.8	1.6	1.2	1.6	1.1	1.2	1.2	2.0
Black Start	5.8	4.6	3.5	4.5	3.8	3.4	3.7	3.4	3.7	3.2	2.9	3.4
Total BSUos	73.2	114.0	83.4	93.4	79.4	55.3	80.7	59.8	62.6	89.0	80.6	75.5
Estimated BSUos Vol (TWh)	37.8	41.5	47.2	49.2	48.9	45.4	48.7	40.4	37.0	35.3	36.0	36.4
Estimated Internal BSUos(£m)	13.5	14.0	13.5	14.0	14.0	12.6	14.0	15.6	16.1	15.6	16.1	16.1
Estimated NGET Profit/(Loss)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.2	1.3	1.2	1.3	1.3
Estimated BSUoS Charge (£/MWh)	2.32	3.11	2.07	2.20	1.93	1.51	1.96	1.90	2.16	3.00	2.72	2.55

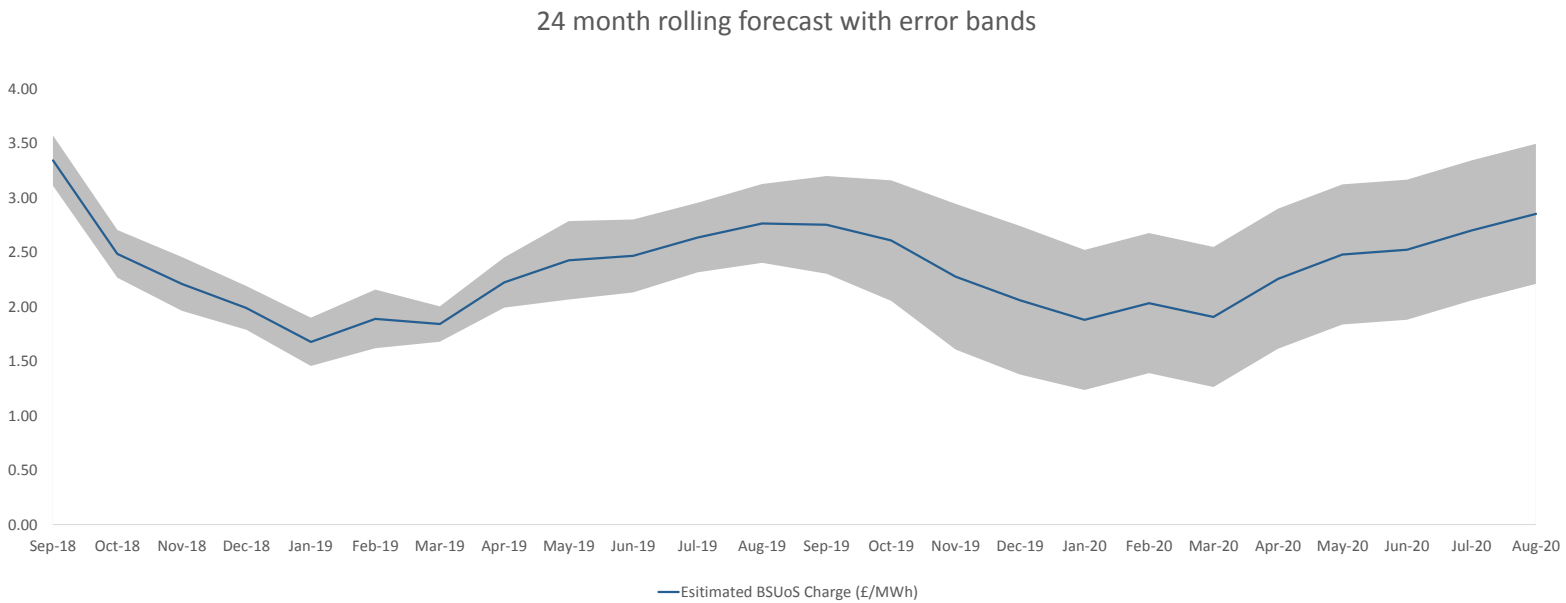
BSUoS Forecast

National Grid

Average BSUoS charge	£/MWh
Sep-18	3.34
2018/19	2.27
2019/20	2.30
Next 12 months	2.28

Based on the HVDC update of 12th September; an issue during commissioning has delayed the cable operation beyond September, so we have updated constraint costs to reflect the reduced North to South capacity.
Following a consistent over-forecast of Operating Reserve and Response costs, we have reduced Operating Reserve over September and October and are waiting to see what the Winter may hold before updating November onwards. Response has been reduced particularly over the next 7 months and then allowed for a steady increase beyond Apr 2019.

The chart shows the average monthly BSUoS forecast for the next 24 months. The grey band shows the upper and lower range of the forecast based on historical forecast accuracy. The forecast is done using a combination of forecast models and historical data. Constraint costs are adjusted in line with major changes to the outage plan, system faults, and commissioning programmes. The other energy cost categories are forecast using a baseline of historical trends with adjustments for expected changes in system operation or balancing services markets.



Month	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20
Energy Imbalance	-1.3	-1.5	-1.5	-1.7	-0.9	1.1	-1.9	-6.9	-4.9	-4.2	-3.5	-4.1	-2.3	-1.5	-1.5	-1.7	-0.9	1.0	-2.0	-6.9	-4.9	-4.2	-3.5	-4.1
Operating Reserve	6.2	10.2	16.1	11.7	9.8	12.8	13.1	8.2	8.9	5.8	7.0	8.2	14.1	16.3	16.1	11.8	10.0	13.0	12.9	8.3	9.0	5.8	7.0	8.2
STOR	6.0	6.2	7.4	7.5	7.6	6.5	7.4	5.2	5.6	5.4	6.0	5.8	6.3	6.2	7.4	7.5	7.6	6.5	7.6	5.2	5.6	5.4	6.0	5.8
Constraints	68.6	35.8	33.6	28.2	14.8	16.8	22.1	21.3	25.2	23.7	27.5	31.6	29.6	28.6	30.5	26.5	19.9	19.1	19.5	21.3	25.2	23.7	27.5	31.6
Negative Reserve	0.9	1.2	0.5	0.5	0.6	0.1	0.2	0.4	0.9	1.6	1.8	1.7	1.8	1.2	0.5	0.5	0.6	0.1	0.2	0.4	0.9	1.6	1.8	1.7
Fast Reserve	7.1	9.1	9.4	10.0	10.3	8.7	9.7	9.0	9.0	8.8	9.1	9.6	8.8	9.1	9.4	10.0	10.3	8.7	9.9	9.0	9.0	8.8	9.1	9.6
Response	10.6	11.7	11.3	12.1	11.9	12.3	11.4	11.8	11.6	11.2	11.8	11.6	11.5	11.7	11.3	11.4	11.2	11.1	11.6	11.8	12.6	11.9	12.6	13.1
Other Reserve	1.3	1.6	1.2	1.3	1.6	1.2	1.1	1.1	0.9	1.0	1.2	1.3	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.1	0.9	1.0	1.2	1.3
Reactive	6.2	6.1	5.8	6.4	6.3	5.1	5.4	6.0	6.8	6.4	6.2	6.1	5.9	6.1	5.8	6.4	6.3	5.1	5.4	6.0	6.8	6.4	6.2	6.1
Minor Components	-0.9	0.3	-1.1	-0.3	-2.0	1.1	-0.8	1.8	2.1	1.4	1.1	0.1	-0.3	0.9	-0.8	0.0	-1.6	1.3	-0.6	3.0	3.0	2.6	2.6	1.5
Black Start	3.5	3.8	3.7	3.8	3.8	3.5	3.8	3.7	3.8	3.7	3.8	3.8	3.7	3.8	3.7	3.8	3.8	3.5	3.8	3.7	3.8	3.7	3.8	3.8
Total BSUos	108.2	84.6	86.4	79.6	63.8	69.2	71.5	61.8	69.8	65.0	72.1	75.7	80.1	83.4	83.3	77.2	68.2	70.4	69.3	63.0	71.7	66.9	74.2	78.6
Esitmated BSUos Vol (TWh)	37.4	41.0	46.7	48.7	48.4	44.9	48.3	35.3	35.8	33.1	33.8	33.6	35.1	38.6	43.9	45.8	45.4	42.2	45.3	35.3	35.8	33.1	33.8	33.6
Estimated Internal BSUos(£m)	15.6	16.1	15.6	16.1	16.1	14.5	16.1	15.6	16.1	15.6	16.1	16.1	15.6	16.1	15.6	16.1	16.1	14.6	16.1	15.6	16.1	15.6	16.1	16.1
Esitmated NGET Profit/(Loss)	1.2	1.3	1.2	1.3	1.3	1.2	1.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.0
Esitimated BSUoS Charge (£/MWh)	3.34	2.49	2.21	1.99	1.68	1.89	1.84	2.22	2.43	2.47	2.64	2.77	2.75	2.61	2.28	2.06	1.88	2.03	1.91	2.26	2.48	2.52	2.70	2.85

High Error Band (£/MWh)	3.57	2.70	2.46	2.19	1.90	2.16	2.00	2.45	2.79	2.80	2.96	3.13	3.20	3.16	2.94	2.74	2.52	2.68	2.55	2.90	3.12	3.17	3.34	3.50
Low Error Band (£/MWh)	3.11135	2.26643	1.96288	1.78878	1.45673	1.61991	1.67911	1.99237	2.0667	2.13172	2.3161	2.40334	2.30293	2.05428	1.60761	1.37787	1.23642	1.39107	1.26352	1.61469	1.83788	1.88088	2.05765	2.21028

BSUoS Volatility and Forecast Accuracy

National Grid

The spike in Constraint costs during August was during a period (17th/18th)of high wind in Scotland and the North of England, whilst the HVDC was unavailable and low inertia was prevalent, causing high constraint, ROCOF and Voltage spend.

The first chart shows the volatility of the cost categories that make up BSUoS. Constraint costs shown in red are the most variable and difficult to predict, mainly driven by the output of wind generation combined with the transmission outage plan at the time. A fault on the transmission system can add to the underlying volatility and cause large unforeseen increases in constraint costs. Reserve, shown in yellow, is generally stable but can have large deviations when the cost of generator margin increases significantly when generation is short. Predicting increases in the cost of reserve is difficult at long timescales, and can have a significant impact on the average BSUoS charge. Energy Imbalance is the other category that contributes to BSUoS volatility, which is the cost of residual balancing when the energy market is long or short. The other cost categories are relatively stable across the year, although there may be longer term trends that we consider.

The second chart shows the annual outturn BSUoS charge compared with the forecast made at 12 months ahead, and the absolute percentage error for each year.

The third chart shows the month ahead forecast compared with outturn and absolute percentage error.