

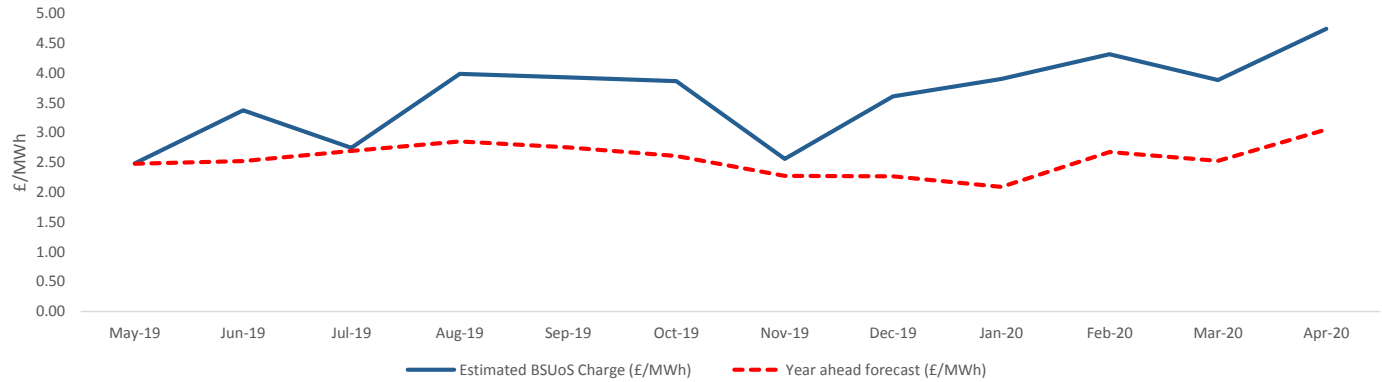
BSUoS Outturn

Average BSUoS charge	£/MWh
Apr-20	4.74
Past 12 months	3.60
2019/20	2.88

Costs were slightly lower than March but higher than would normally be expected for April especially with benign weather experienced. However volume was down significantly due to Covid-19 as industrial and business demand dropped as workers were furloughed or worked from home.

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 (including volume), broken down by cost category. The total cost divided by the volume gives the estimated average charge.

Historical outturn vs year ahead forecast



Month	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
Energy Imbalance	0.0	2.1	-0.4	2.4	2.5	7.4	6.0	8.8	8.8	10.7	4.4	10.4
Operating Reserve	4.8	4.3	4.4	6.3	7.4	7.6	9.7	12.2	8.5	7.4	5.3	4.7
STOR	4.0	4.7	4.4	4.4	3.8	6.3	3.9	3.9	4.1	3.3	6.0	2.2
Constraints - E&W	15.8	43.0	24.0	41.7	35.1	47.4	20.5	43.7	33.0	21.8	38.3	63.1
Constraints - Cheviot	0.4	0.1	1.6	1.8	10.5	18.3	5.9	10.4	22.7	17.9	22.0	1.5
Constraints - Scotland	4.9	1.1	3.2	11.6	8.8	8.6	6.0	19.0	36.4	57.8	16.9	5.1
Constraints - AS	2.4	1.4	2.4	1.9	2.9	1.2	2.3	2.3	2.1	2.1	0.3	0.3
Negative Reserve	0.1	0.7	0.1	1.4	2.0	0.3	0.1	0.2	0.4	0.3	0.4	0.6
Fast Reserve	7.4	7.6	7.6	6.9	8.2	8.4	8.1	7.7	7.4	8.5	8.9	8.1
Response	11.0	10.5	10.1	13.6	15.9	15.1	14.6	13.9	13.9	12.6	11.2	13.3
Other Reserve	1.5	1.4	1.2	2.2	1.5	1.4	1.3	1.1	1.2	1.8	1.4	1.8
Reactive	6.7	6.1	5.7	5.7	5.8	5.5	4.9	5.4	4.9	3.8	4.5	6.3
Minor Components	1.6	2.7	2.8	5.5	2.9	2.8	3.3	1.6	1.5	1.2	2.5	4.4
Black Start	3.8	3.3	3.8	3.4	3.6	3.7	3.6	4.7	5.3	3.4	9.8	3.1
Total BSUoS	64.5	89.0	71.1	108.7	111.1	134.1	90.1	134.8	150.3	152.6	131.9	125.0
Estimated BSUoS Vol (TWh)	36.7	34.1	35.6	34.0	34.9	41.6	44.9	44.5	45.1	40.2	40.0	30.2
Estimated Internal BSUoS (£m)	25.7	24.9	25.7	25.7	24.9	25.7	24.9	25.7	25.7	23.2	25.7	18.3
ESO Incentive	1.0	1.0	1.0	1.0	1.0	-1.4	-2.5	-2.5	-2.5	-2.3	-2.5	0.0
ALoMCP	0.0	0.0	0.0	0.0	0.0	2.4	2.4	2.4	2.4	0.0	0.0	0.0
Estimated BSUoS Charge (£/MWh)	2.48	3.37	2.75	3.99	3.93	3.86	2.56	3.61	3.90	4.32	3.88	4.74
Year ahead forecast (£/MWh)	2.48	2.52	2.69	2.85	2.75	2.61	2.28	2.27	2.09	2.67	2.53	3.05

BSUoS Forecast - No new services



Average BSUoS charge	£/MWh
May-20	6.18
2020/21	3.51
2021/22	3.09
Next 12 months	3.39

A new cost forecast has been produced which includes the additional costs brought about by managing the system during this COVID-19 period with lower demands for extended periods. The forecast does not include the benefit of the commercial services the ESO has developed and hence shows an overall higher cost during the COVID-19 period. Due to the way this forecast has been created, the numbers are not included in the normal categories and are hence detailed separately.

The Covid-19 lockdown has suppressed demand with industrial demand in particular much lower than we would normally expect. An adjustment has been made to the demand figures up to the end of August to reflect this.

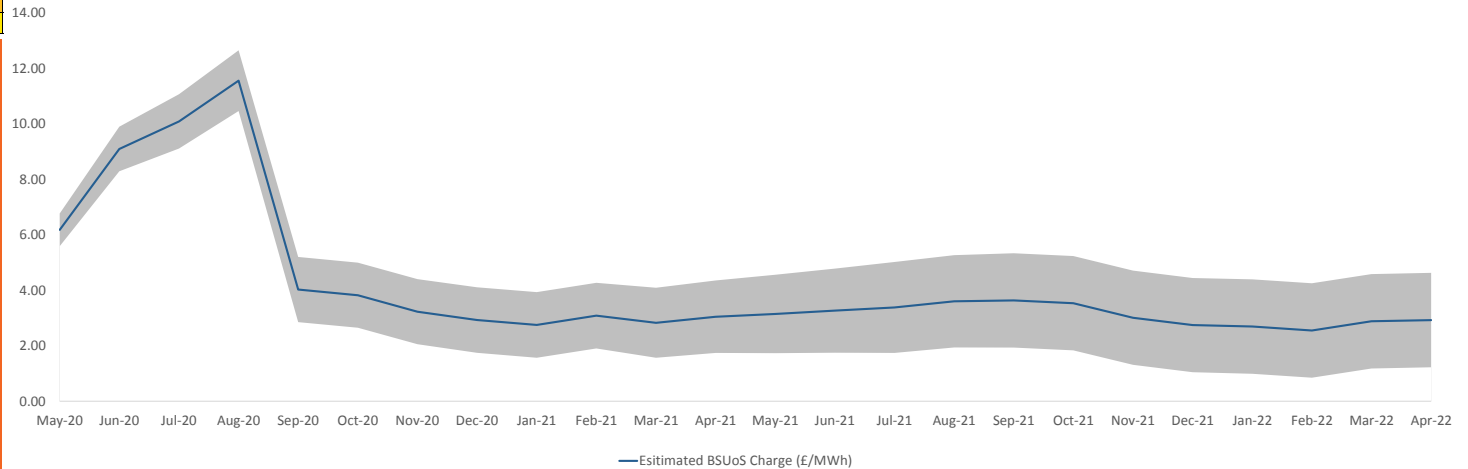
Accelerated Loss of Mains Change Programme: the cost recovery process for the Accelerated Loss of Mains Change Program has been paused as per the following update from the last TCMF:

With £4m recovery in FY19/20 covering the cost of works completed to date, we'll continue to hold-off charging until costs surpass this level

The forecast charge has been removed until July but this is subject to change based on the progress of the work.

Changes have been made to the ESO incentive scheme element of the BSUoS charge, details can be found in the Ofgem letter: https://www.ofgem.gov.uk/system/files/docs/2019/10/authoritys_consents_new.pdf

24 month rolling forecast with error bands



Month	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	
Energy Imbalance	9.3	6.1	7.2	6.5	8.1	9.3	8.9	9.1	9.9	11.0	9.0	5.5	7.9	8.2	9.3	8.7	10.1	11.3	10.9	11.1	11.9	12.8	-1.2	5.5	
Operating Reserve	6.6	4.4	5.5	6.7	9.2	11.3	11.2	6.7	5.0	8.3	8.1	8.3	9.0	5.8	7.0	8.2	14.1	16.4	16.1	11.9	10.1	12.9	13.2	8.3	
STOR	6.0	2.5	2.9	2.8	3.3	3.2	4.5	4.4	4.5	3.8	4.3	5.2	5.6	5.4	6.0	5.8	6.3	6.2	7.4	7.5	7.6	6.5	7.4	5.2	
Constraints	51.3	39.9	41.2	50.2	58.3	61.4	57.8	51.9	45.2	50.2	47.0	38.9	39.5	39.2	40.5	49.5	53.1	56.0	52.6	46.5	39.8	45.3	41.6	38.9	
Negative Reserve	1.0	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	1.8	1.2	0.5	0.5	0.6	0.1	0.2	0.4	
Fast Reserve	7.7	8.8	9.1	9.6	8.8	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	9.7	9.0	
Response	12.9	13.9	14.6	15.1	13.3	13.3	13.1	13.3	13.1	12.3	13.4	11.8	12.6	11.9	12.6	13.1	11.3	11.2	11.2	11.3	11.1	10.5	11.4	11.8	
Other Reserve	1.0	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	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.1	
Reactive	6.5	5.8	5.7	5.5	6.6	6.7	6.5	7.1	7.0	5.7	6.1	6.7	7.5	7.0	6.9	6.8	6.6	6.7	6.5	7.1	7.0	5.7	6.1	6.7	
Minor Components	2.4	2.6	2.6	1.5	1.1	2.1	0.6	1.0	-0.6	2.3	0.3	3.0	3.0	2.6	2.6	1.5	1.1	2.1	0.6	1.0	-0.6	2.3	0.3	3.0	
Black Start	3.8	3.7	3.8	3.8	3.7	3.8	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	
Total BSUoS	174.0	268.1	272.7	324.7	115.1	122.2	117.1	108.8	99.8	107.0	103.1	93.7	99.5	95.5	100.7	110.0	117.9	125.0	119.9	111.6	102.6	109.5	93.6	93.8	
Estimated BSUoS Vol (TWh)	31.2	31.5	29.4	30.1	34.7	38.6	43.9	45.8	45.4	42.2	45.3	38.7	39.5	36.6	37.1	37.4	39.1	42.4	47.9	49.7	45.5	50.1	39.4	38.7	
Estimated Internal BSUoS (£m)	18.9	18.3	18.9	18.3	18.9	18.9	18.3	18.9	18.9	17.1	18.9	18.4	19.0	18.4	19.0	18.4	19.0	18.4	19.0	18.4	19.0	17.2	19.0	18.4	
ESO Incentive	0.0	0.0	0.0	0.0	1.4	1.5	1.4	1.5	1.5	1.3	1.5	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	
ALoMCP	0.0	0.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	0.0	0.0	0.0	0.0
Estimated BSUoS Charge (£/MWh)	6.18	9.09	10.09	11.56	4.03	3.82	3.23	2.93	2.75	3.08	2.83	3.05	3.14	3.27	3.38	3.60	3.63	3.53	3.01	2.74	2.69	2.55	2.88	2.92	

High Error Band (£/MWh)	6.77	9.90	11.07	12.65	5.20	5.00	4.40	4.11	3.93	4.27	4.09	4.35	4.56	4.78	5.02	5.27	5.34	5.23	4.71	4.44	4.40	4.25	4.58	4.63
Low Error Band (£/MWh)	5.59	8.29	9.11	10.46	2.85	2.65	2.05	1.74	1.57	1.90	1.57	1.74	1.73	1.75	1.74	1.94	1.93	1.83	1.31	1.05	0.99	0.85	1.18	1.22

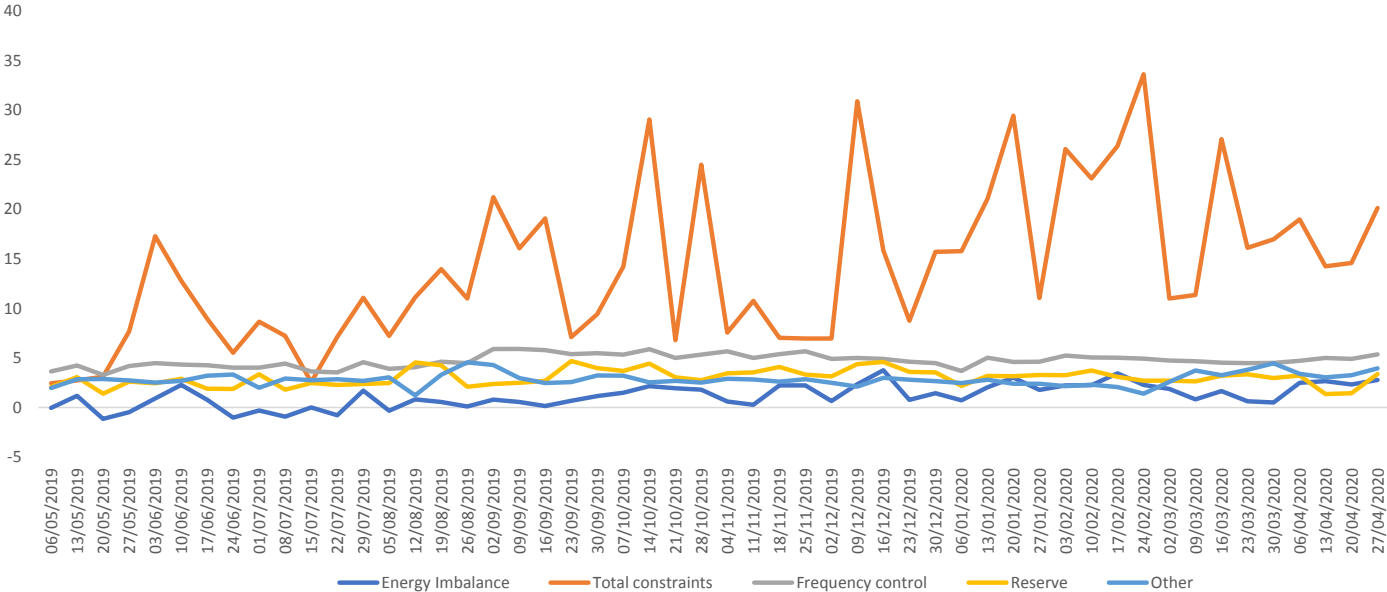
BSUoS Volatility and Forecast Accuracy

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.

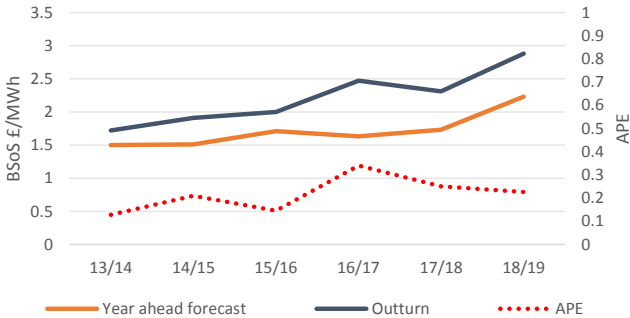
The second chart shows the annual outturn BSUoS charge compared with the forecast made at 12 months ahead, and the absolute percentage error for each year.

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

Cost volatility by category over past 12 months



Yearly History and APE



Month ahead forecast vs actual and APE

