

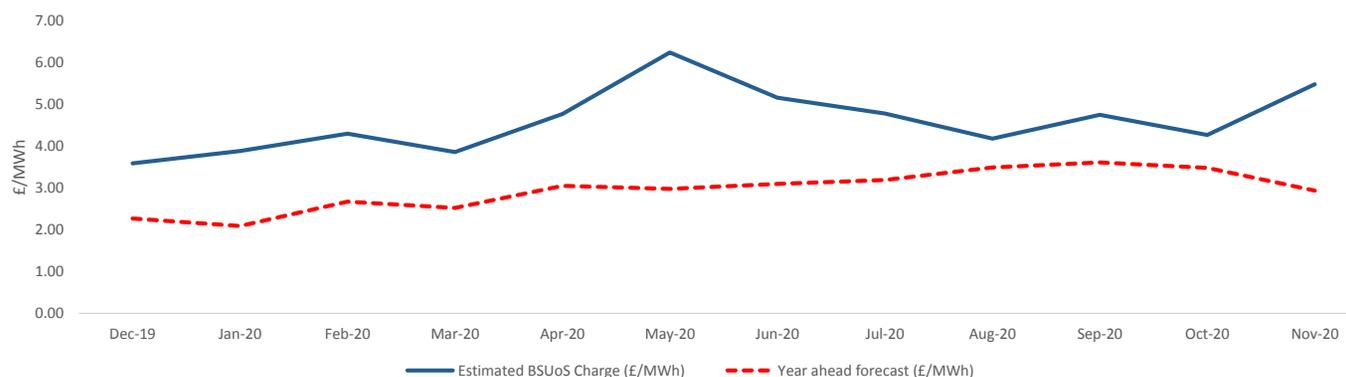
BSUoS Outturn

| Average BSUoS charge | £/MWh |
|----------------------|-------|
| Nov-20 | 5.48 |
| Past 12 months | 4.53 |
| 2019/20 | 2.88 |

The outturn BSUoS for November was significantly higher than forecast. This was driven by both increased Balancing Costs and decreased demand. Balancing Costs were driven by constraint costs. These were largely incurred managing the B7 boundary with capacity reduction of over 2GW coupled with high wind, outturning 19% higher than November 2019 after control room action. Demand outturned lower than forecast due to the November lockdown effect.

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 | Dec-19 | Jan-20 | Feb-20 | Mar-20 | Apr-20 | May-20 | Jun-20 | Jul-20 | Aug-20 | Sep-20 | Oct-20 | Nov-20 |
|--------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Energy Imbalance | 8.8 | 8.8 | 10.7 | 4.4 | 12.5 | 12.3 | 7.6 | 5.7 | 6.8 | 8.5 | 10.9 | 7.7 |
| Operating Reserve | 12.2 | 8.5 | 7.4 | 5.3 | 4.9 | 4.8 | 3.8 | 3.1 | 4.8 | 8.7 | 11.1 | 13.8 |
| STOR | 3.9 | 4.1 | 3.3 | 6.0 | 2.4 | 3.9 | 2.9 | 3.2 | 2.7 | 2.5 | 3.1 | 3.7 |
| Constraints - E&W | 43.7 | 33.0 | 21.8 | 38.3 | 59.4 | 67.5 | 74.6 | 69.4 | 41.9 | 43.1 | 59.5 | 119.9 |
| Constraints - Cheviot | 10.4 | 22.7 | 17.9 | 22.0 | 1.5 | 17.4 | 0.5 | 0.5 | 0.6 | 10.8 | 8.0 | 0.9 |
| Constraints - Scotland | 19.0 | 36.4 | 57.8 | 16.9 | 5.1 | 3.1 | 5.7 | 7.9 | 13.1 | 19.0 | 17.3 | 15.9 |
| Constraints - AS | 2.3 | 2.1 | 2.1 | 0.3 | 0.6 | 19.0 | 13.7 | 21.8 | 22.3 | 17.9 | 0.9 | 1.8 |
| Negative Reserve | 0.2 | 0.4 | 0.3 | 0.4 | 0.6 | 0.6 | 0.2 | 0.2 | 0.5 | 0.5 | 0.5 | 0.4 |
| Fast Reserve | 7.7 | 7.4 | 8.5 | 8.9 | 7.4 | 7.8 | 8.7 | 7.1 | 8.5 | 9.7 | 9.0 | 10.0 |
| Response | 13.9 | 13.9 | 12.6 | 11.2 | 13.3 | 8.7 | 7.0 | 8.1 | 7.2 | 8.2 | 12.7 | 11.7 |
| Other Reserve | 1.1 | 1.2 | 1.8 | 1.4 | 1.9 | 2.6 | 1.8 | 2.5 | 1.9 | 1.9 | 1.6 | 1.6 |
| Reactive | 5.4 | 4.9 | 3.8 | 4.5 | 6.3 | 5.8 | 4.8 | 4.6 | 4.5 | 4.1 | 4.5 | 5.1 |
| Minor Components | 1.6 | 1.5 | 1.2 | 2.5 | 6.6 | 5.5 | 4.0 | 1.9 | 2.6 | 2.0 | 3.5 | 1.2 |
| Black Start | 4.7 | 5.3 | 3.4 | 9.8 | 3.5 | 3.8 | 3.6 | 3.4 | 3.3 | 8.9 | 7.6 | 6.8 |
| Total BSUoS | 134.8 | 150.3 | 152.6 | 131.9 | 125.9 | 163.0 | 139.2 | 139.4 | 120.8 | 145.8 | 150.0 | 200.4 |
| Estimated BSUoS Vol (TWh) | 44.5 | 45.1 | 40.2 | 40.0 | 30.2 | 29.1 | 30.5 | 33.1 | 33.4 | 34.5 | 39.6 | 39.9 |
| Estimated Internal BSUoS (£m) | 25.7 | 25.7 | 23.2 | 25.7 | 18.3 | 18.9 | 18.3 | 18.9 | 18.9 | 18.3 | 18.9 | 18.3 |
| ESO Incentive | -3.3 | -3.3 | -3.0 | -3.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| ALoMCP | 2.4 | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Estimated BSUoS Charge (£/MWh) | 3.59 | 3.88 | 4.30 | 3.86 | 4.77 | 6.24 | 5.16 | 4.78 | 4.18 | 4.75 | 4.27 | 5.48 |
| Year ahead forecast (£/MWh) | 2.27 | 2.09 | 2.67 | 2.53 | 3.05 | 2.98 | 3.10 | 3.19 | 3.49 | 3.61 | 3.48 | 2.94 |

BSUoS Forecast



| Average BSUoS charge | £/MWh |
|----------------------|-------|
| Dec-20 | 4.12 |
| 2020/21 | 4.52 |
| 2021/22 | 3.75 |
| Next 12 months | 4.00 |

As we move towards winter and naturally higher demand levels, we don't expect to see the same types of additional costs brought about by managing the system during extremely low demand periods. We are therefore returning to producing a single best view of BSUoS per month.

We have added an additional line to the forecast from Apr 21 to Mar 22 to account for the deferred BSUoS as per CMP345/350.

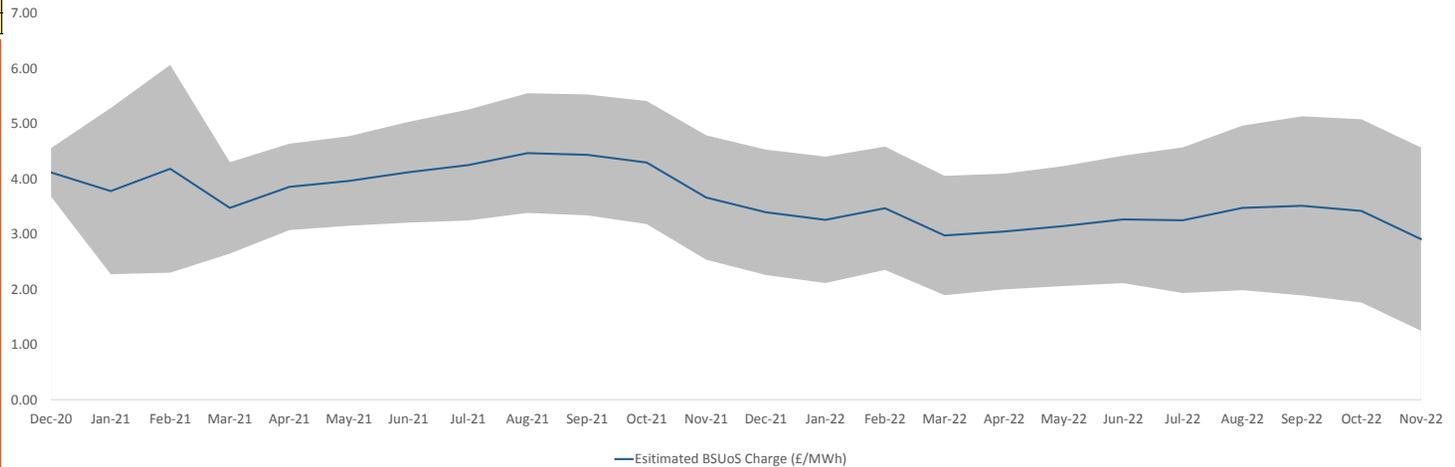
Accelerated Loss of Mains Change Programme: the cost recovery process for the Accelerated Loss of Mains Change Program has been paused as per the following update from the last TCMF:

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 January 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/authorities_consent_new.pdf

24 month rolling forecast with error bands



| Month | 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 | May-22 | Jun-22 | Jul-22 | Aug-22 | Sep-22 | Oct-22 | Nov-22 |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Energy Imbalance | 9.4 | 10.8 | 11.8 | 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 | 7.9 | 8.2 | 9.3 | 8.7 | 10.1 | 11.3 | 10.9 |
| Operating Reserve | 17.9 | 9.4 | 9.4 | 9.2 | 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 | 9.0 | 5.8 | 7.0 | 8.2 | 14.1 | 16.4 | 16.1 |
| STOR | 5.9 | 3.5 | 2.8 | 3.3 | 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 | 5.6 | 5.4 | 6.0 | 5.8 | 6.3 | 6.2 | 7.4 |
| Constraints | 88.5 | 83.4 | 84.6 | 77.3 | 68.5 | 70.1 | 68.8 | 71.1 | 80.0 | 82.7 | 86.5 | 82.2 | 77.1 | 70.4 | 72.9 | 72.2 | 38.9 | 39.5 | 39.2 | 40.5 | 49.5 | 53.1 | 56.0 | 52.6 |
| Negative Reserve | 0.4 | 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 | 1.8 | 1.2 | 0.5 |
| Fast Reserve | 9.0 | 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 | 9.0 | 8.8 | 9.1 | 9.6 | 8.8 | 9.1 | 9.4 |
| Response | 12.5 | 12.1 | 11.4 | 12.4 | 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 | 12.6 | 11.9 | 12.6 | 13.1 | 11.3 | 11.2 | 11.2 |
| Other Reserve | 1.0 | 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 | 0.9 | 1.0 | 1.2 | 1.3 | 1.0 | 0.9 | 0.9 |
| Reactive | 6.9 | 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 | 7.5 | 7.0 | 6.9 | 6.8 | 6.6 | 6.7 | 6.5 |
| Minor Components | 2.7 | 1.0 | 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 | 3.0 | 2.6 | 2.6 | 1.5 | 1.1 | 2.1 | 0.6 |
| Black Start | 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 | 3.8 | 3.9 | 3.9 | 3.9 | 3.9 | 3.9 | 3.9 |
| Total BSUoS | 158.0 | 142.7 | 141.4 | 132.4 | 123.3 | 130.1 | 125.1 | 131.3 | 140.6 | 147.5 | 155.5 | 149.5 | 142.2 | 133.2 | 137.1 | 124.2 | 93.8 | 99.5 | 95.5 | 100.7 | 110.0 | 118.0 | 125.0 | 119.9 |
| Estimated BSUoS Vol (TWh) | 43.0 | 44.4 | 39.3 | 45.3 | 38.7 | 39.5 | 36.6 | 37.1 | 37.4 | 39.1 | 42.4 | 47.9 | 49.7 | 49.0 | 46.6 | 50.7 | 38.7 | 39.5 | 36.6 | 37.1 | 37.4 | 39.1 | 42.4 | 47.9 |
| Estimated Internal BSUoS (£m) | 18.9 | 18.9 | 17.1 | 18.9 | 18.4 | 19.0 | 18.4 | 19.0 | 19.0 | 18.4 | 19.0 | 18.4 | 19.0 | 19.0 | 17.2 | 19.0 | 18.4 | 19.0 | 18.4 | 19.0 | 19.0 | 18.4 | 19.0 | 18.4 |
| ESO Incentive | 0.0 | 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 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| ALoMCP | 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 | 4.8 | 4.8 | 4.8 | 4.8 |
| CMP345/350 Deferred Costs | | | | | 1.7 | 1.8 | 1.7 | 1.8 | 1.8 | 1.7 | 1.8 | 1.7 | 1.8 | 1.8 | 1.6 | 1.8 | | | | | | | | |
| Estimated BSUoS Charge (£/MWh) | 4.12 | 3.78 | 4.18 | 3.48 | 3.86 | 3.96 | 4.12 | 4.25 | 4.47 | 4.44 | 4.30 | 3.66 | 3.40 | 3.26 | 3.47 | 2.98 | 3.05 | 3.15 | 3.27 | 3.25 | 3.48 | 3.51 | 3.42 | 2.91 |

| High Error Band (£/MWh) | 4.56 | 5.28 | 6.07 | 4.30 | 4.64 | 4.77 | 5.03 | 5.26 | 5.55 | 5.53 | 5.41 | 4.79 | 4.53 | 4.40 | 4.59 | 4.06 | 4.10 | 4.23 | 4.42 | 4.57 | 4.97 | 5.14 | 5.08 | 4.57 |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Low Error Band (£/MWh) | 3.68 | 2.27 | 2.30 | 2.65 | 3.07 | 3.15 | 3.21 | 3.25 | 3.38 | 3.34 | 3.18 | 2.54 | 2.26 | 2.11 | 2.35 | 1.89 | 2.00 | 2.06 | 2.11 | 1.93 | 1.99 | 1.89 | 1.76 | 1.25 |

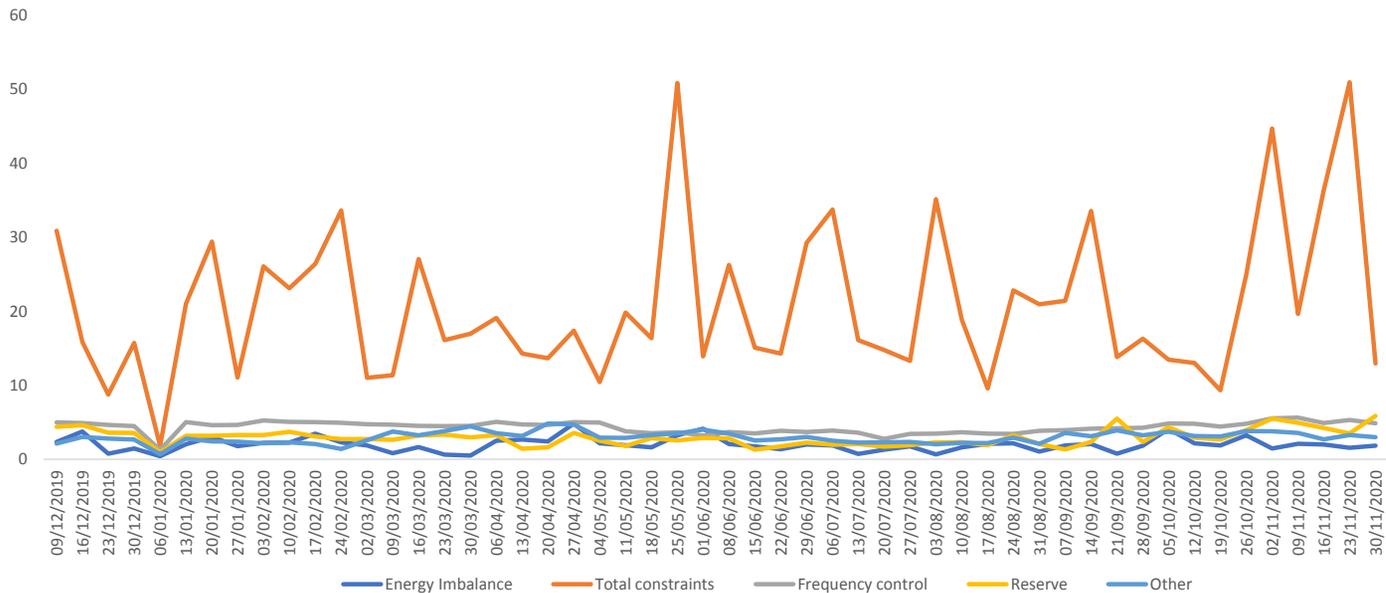
BSUoS Volatility and Forecast Accuracy

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.

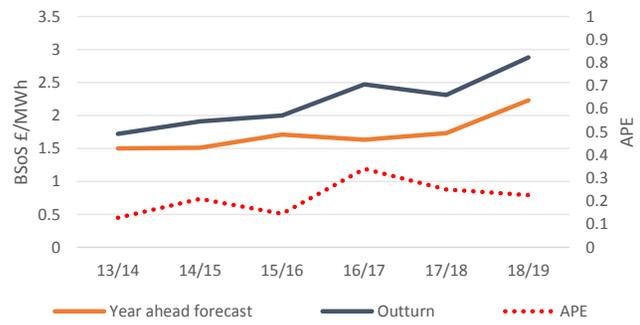
The second chart shows the annual outturn BSUoS charge compared with the forecast made at 12 months ahead, and the absolute percentage error for each year.

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

