

Q3 Market Report

November 2021

Executive summary

It would be fair to say that Q3 2021 was potentially the most volatile quarter the UK market has ever experienced. The 'gas crisis' impacted the power market to such an extent that the UK's grid heavily relied on both gas and coal to keep the lights on, not to mention the demise of a number of energy suppliers. Limejump's stance on how this can and will be avoided in the future is clear: the UK must prioritise investment in more battery storage in order to move reliance away from coal when the system is tight, but also ensure that the system is flexible as more and more renewables connect to the grid.

There were a number of factors that played a role in the chaos that the market witnessed, most of which our team of experts will highlight in this quarter's report. There has also been a flurry of regulatory consultations and reports that came out just before the summer recess and COP26.

Market update

During Q3, the UK (and some of Europe) experienced the transition from an 'energy industry phenomenon' to the brink of an energy supply crisis. The use of 'unprecedented' no longer feels appropriate as something unprecedented occurs every week, at times every day and we are guilty of diluting the meaning a little. This typifies how Q3 played out and the current state of the energy industry; we have never seen market conditions this volatile but it won't be too surprising if we see even bigger extremes across Q4.

Forward market

Gas

With continued bullish fundamentals, there has been an unstoppable squeeze on the price of gas. The UK's low storage levels of gas is a leading contributor to this, but further exacerbated by the low renewables output (September), increased Liquid Natural Gas (LNG) demand in Asia and numerous asset outages (most notably a fire at an interconnector between France and the UK). Together, these created an imperfect storm.

European Gas Storage was lower than any Q3 since the EnAppSys records began in 2015, and approximately 25% lower than this time last year. Despite their major exporting status, Russia had also struggled to increase their domestic storage. This meant that in late September, the anti-monopoly federation in Russia ordered Gazprom to increase their domestic gas flow, highlighting that even Russia is experiencing a gas crisis. Gas prices in the UK have been notably volatile due to our lack of long range storage facilities, with the last one closing in 2017, and because we are one of Europe's biggest users of gas. Although the UK only receives circa 5% of its gas from Russia, it provides the majority to the rest of Europe, hence the knock-on effect to the UK. The UK gets more than half of its imported gas from Norway, who have seen a few major disruptions among their own gas supplies which always coincided with a further price spike.

Usually, the UK can rely on a steady flow of LNG cargo ships to boost supply, but even bigger demand for gas in Asia led to higher prices, so they capitalised. As flows from Gazprom remain at their minimum 'contractual volumes' and very few LNG arrivals, there has been no genuine opportunity to refill European storage levels.

Wind generation for July, August and September was down from 2020, dropping by 45%, 14% and 33% respectively - equating to an overall reduction of 28%. The first two weeks of September were notably still and drove the prompt market to new record high prices which has given the markets cause for concern if the winter is to be a cold one. In mid-August we did see a gas price crash, caused by data seemingly showing that Nord Stream 2 had begun flowing. This was quickly highlighted as an error and we saw prices rebound

and accelerate as Winter 21 trading began to come to an end. In the last week of Winter 21 trading, the price of gas shot up by 27% as all parties were scrambling to secure gas contracts. This resulted in gas prices trading 409% higher year on year. With no clear solution in sight, the market will remain volatile especially if we see similar winter conditions to last year.

NBP Winter 21 (p/therm)



Power

The volatility and price rise in the gas markets brought the power market along with it. With increasing gas prices, power prices follow suit as gas assets are the dominant source in the generation mix, therefore a key driver of power prices. Before Q3 and since its inception in 1990, the existing energy market had never passed £100/MWh. With increasing carbon prices driving gains for the first half of the year, it has been the aforementioned gas price volatility that has driven power prices to the astronomical level that the UK Baseload Winter 21 reached. The market saw consistent gains throughout July, August and September with a few notable price spikes. On the 15th of September, there was a fire at IFA 2, a 2GW interconnector between the UK and France. The market responded with the largest ever increase day-on-day price spike, with contracts jumping £45/MWh between the 14th and 15th of September. As was the case with gas prices, extreme low winds in September caused prices to continue on their meteoric rise as all parties scrambled to secure contracts to try and cover themselves in case we are heading for a turbulent winter.

UK Baseload Winter 21 (£/MWh)



Carbon

The UK carbon allowance scheme (UKA) is still in relative infancy. Those trading are still getting to terms with how it behaves, therefore, the first half of Q3 has borne no major movements. However, the seismic impact of September, resulted in a major spike in prices towards the end of Q3. There had been a general upward trend throughout the quarter due to the illiquid nature of the UKA, which is being drip fed new allowances in bi-monthly auctions that haven't been bringing in enough supply to match demand. With low winds

experienced in September, the market saw a sudden demand crunch as the carbon intensity of the grid suddenly grew. This was due to an increased reliance on gas and certain coal plants (the most carbon intensive form of generation). These were called upon to cover the lack of wind in the generation stack. As demand shot up for the UKA's, supply stayed at relatively similar levels which explains the sudden spike in late September. Unlike the UKA, the European carbon allowance scheme (EUA) has been around since 2005 and has been oversupplied for many years, meaning there have always been sufficient reserves to suppress any price spikes. As a result the UKA became the premium carbon credit scheme in the world, trading over £20/mt, peaking at £75/mt. Significantly, this price is way above the Cost Constraint Mechanism that was introduced in order to regulate the price of the UKA - there is a high chance of Government intervention to reduce the price of the UKA. One way this may occur is by pulling in supply from future auctions to try and increase supply and hope the increased volume will reduce these prices. However, this won't have any effect until December (at the earliest) so we should expect to see these premium prices remain.

UKA (£/mt)

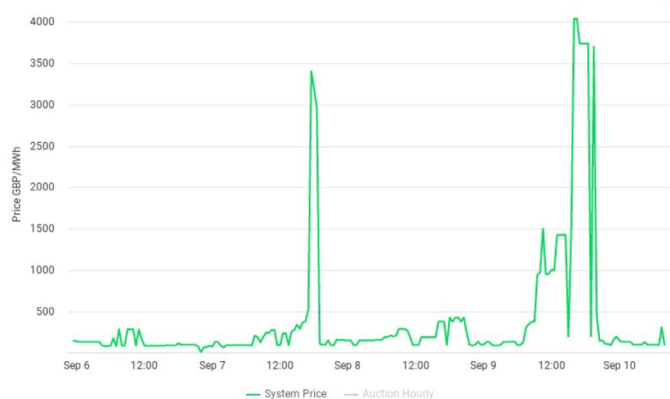


Prompt market

As mentioned above, the market experienced a two-week period of severe low wind, dropping as low as 0.4GW, which is over 6GW below seasonal expectations. This led to extreme volatility, and high prices, and the de-rated margin dropped concerningly low. The de-rated margin measures the amount of excess supply above peak demand, and any time this drops below 5GW, concern grows. Alongside the almost non-existent winds there were also a number of trips and overperformances of demand which added further stress to the system.

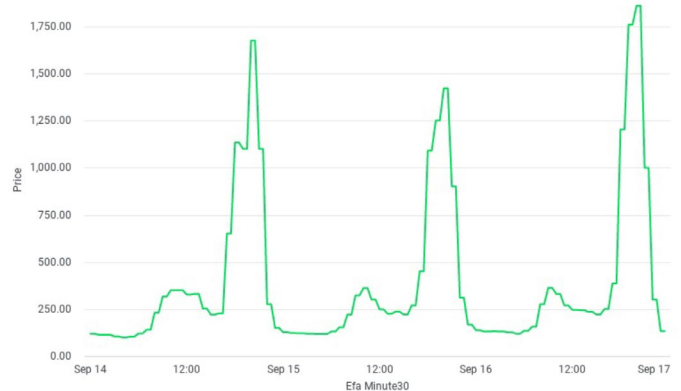
Additionally, there were ongoing tests on the new Norwegian electricity interconnector, which saw the UK exporting over 1GW despite imbalanced prices well over £3,000/MWh. This saw the average system price set a new record at £126.14/MWh, an increase of 69% from the previous record of £74.85/MWh in Q2 2021. On the 7th and 9th of September, the de-rated margin dropped below 2GW and therefore the market reacted extremely bullishly. The market saw the highest system price since 2001, peaking at £4,037.80/MWh on the 9th, while coal stations West Burton 1 + 2 were called in the balancing mechanism at £4,000/MWh.

System prices 6th- 10th September



The following week experienced record Day Ahead spreads in the EPEX auction, reaching £1,721/MWh on 16th September. Since then, the wind has returned and prices have been relatively settled but due to the high gas prices, Day Ahead, Intra Day, and Balancing Mechanism prices have been consistently above £200/MWh during the evening peaks. Across Q3, Day Ahead wholesale prices averaged £128.59/MWh, a 78% increase from the previous record of £72.20/MWh which was only set in Q2 2021.

Day Ahead prices 14th - 16th September

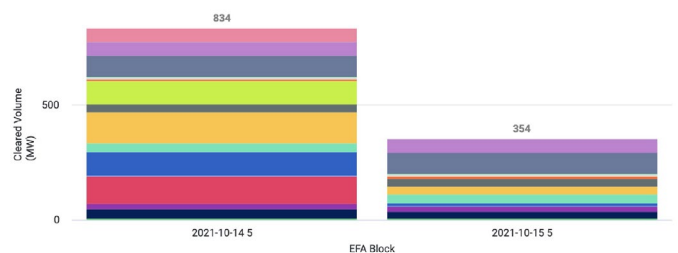


Ancillary services

Dynamic Containment (DC)

The market has experienced a genuine upgrade with regards to the DC market. This quarter DC transitioned away from a daily cleared auction to EFA block cleared, which now takes place on the EPEX platform as opposed to over email.

There were a number of interesting cases of extreme spreads (as highlighted previously) in the wholesale market, and battery optimisers reacted by exiting the DC market (**Limejump** included) to capitalise on greater revenue.



Limejump is keen to see whether DC participants will see National Grid flex their DC price in days seeing extreme wholesale pricing. If they do not, they may be left with very few DC providers to call upon in the event of sudden changes in frequency.

Limejump is looking forward to DCH procurement which is set to start in November, albeit with very little volume initially. DCH is the High Frequency service, where batteries will on charge up in order to balance the system when the frequency is getting too high.

Firm Frequency Response (FFR)

FFR prices remain strong as battery providers continue to receive more value in the DC market. The question on many market commentators is what will owners of <1MW batteries do when FFR ceases next year. National Grid receives great value from smaller batteries in FFR, removing their access to the markets could ultimately cost National Grid as they will have to pay more for the service.



Q4 sees the weekly FFR auction trial set to end, **Limejump** had great success taking part in this product. National Grid and participants gained valuable experience using the EPEX platform, whilst delivering a useful service to NG

Regulation update

This quarter has been incredibly busy on the Regulatory front. Before the Government summer recess, it published a series of key consultations with a focus on managing flexibility and the transition to net zero carbon emissions. These included a consultation on whether funding was needed for large-scale long duration storage and an overview of the Smart Systems and Flexibility Plan. We have seen a further series of Government consultations in preparation for the global climate change conference, COP26, taking place over the first half of November, as well as a new commitment to deliver clean energy production by 2035 for GB.

Government regulations have recently been under the microscope with the level of suppliers going bust this year now reaching 16 and impacting 2.4m customers. In response, OFGEM published an open letter to suppliers setting out short- and longer-term initiatives to address the key issues, including a review of the price-cap methodology and possibly pausing new market entry for at least six months.

There is considerable momentum from the high prices, failing suppliers and the desire for agreement at COP26, to support innovation and the delivery of net zero.

Network charges

As discussed last quarter, there are delays to changes in network charges. The Regulator has now shared an update and will be issuing its view in a consultation in Q1 2022.

They will take forward their planned changes to distribution connection charges, whereby parties seeking connections will need to make less contribution towards reinforcement works. They also plan to make connections firmer. Both of these changes support deployment of distributed connected assets, such as electric vehicles, and are expected to come into force from April 2023.

OFGEM had planned to Introduce a transmission connected charge (TNUoS) for distribution connected assets greater than 1 MW. Instead, they have been delayed so as to be considered as part of a wider TNUoS review. They also plan to consult on changes to the forward-looking Distribution Use of System Charges (DUoS). These charges will take effect after April 2023.

North Sea Link (NSL), the interconnector with Norway goes live

The NSL interconnector between Norway and GB went live on the 1st of October at half of its 1,400MW capacity with the full output expected from January 2022. This now brings the GB interconnector capacity to 7.4GW with a further 8GW scheduled for delivery by 2025. This provides an additional source of flexibility to managing the GB power requirements.

National Grid Product Development

National Grid is still planning to launch their other Dynamic Frequency products, Moderation and Regulation, in March 2022. These products aim to address 'pre-fault' frequency variations. Once fully operational, National Grid will retire the monthly Firm Frequency Response product. **Limejump** envisages that Dynamic Moderation, which has a similar response time to Dynamic Containment of 1 second, will be a valuable product for batteries. Dynamic Regulation is likely to have a response time of 10 seconds and requires a constant hold.

National Grid has delayed the start of all of its new 'Reserve Products', called in the event of a large supply issue or demand change. They will now retain the Day Ahead STOR (Short Term Operating Reserve) until late 2022/23 before replacing it with 'Positive Slow Reserve'. They will, however, introduce in March 2022 the 'Negative Slow Reserve' product which requires participants to turn-down if called upon within 15 minutes and to hold for up to 120 minutes.

There is also a delay to the fast-responding reserve products which will now be defined in 2022. These are likely to include a 30-response time and a 2-3-minute response time.

Consultation on re-coupling of Day Ahead auctions

When GB left the EU at the beginning of 2021, we were no longer part of the European Market Coupling Mechanism. As a result, the Day Ahead power auctions run by N2EX and EPEX Spot were de-coupled and instead run as two separate auctions. As a result, the market has seen significant price variations between the exchanges. After much campaigning, the Government is now consulting on re-coupling of the Day Ahead power auctions which if approved will remove auction price differences. This will still leave the interconnector capacity decoupled from power prices. Under the Trade and Co-operation Agreement with the EU, there is a requirement to re-couple under a different mechanism by April 2022.

Capacity Market

The Capacity Market eight-week Pre-qualification period closed on the 14th of September, with results due to be published on the 24th of November. The auctions will take place in February 2022, when participants will compete for a contract to start in October 2022 and October 2025. This product is open to all technologies, including wind and solar and we recommend it for unsubsidised wind and solar over 30MW. If you did not enter this summer but would like to register your interest for next year, then please get in touch.

The Capacity Market is also being consulted on in the context of delivering net zero. As a result of this we would expect to see some changes to the rules from summer 2023.

Large-scale, long duration electrical storage consultation

As part of its plans for delivering net zero, the Government launched a review to consider if funding is required to deliver large-scale, long dated electrical storage (LLES) i.e., 100MW+ with a duration of 4+ hours. One point we have raised is that this could cause issues if the LLES tries to compete with unsubsidised power across other products.

Conclusion

The market is now already in the midst of Q4 and concerns of a challenging winter continue to echo through the press and commentary. In the short term, an improved gas supply is key to ensuring the events of September aren't repeated, and mid term, the UK must continue to encourage investment in clean technologies, through exciting commercial opportunities via sophisticated market mechanisms.

If you have any questions or comments about our report, please get in touch with us at info@limejump.com