

## Q2 2017: TTF volatility commentary

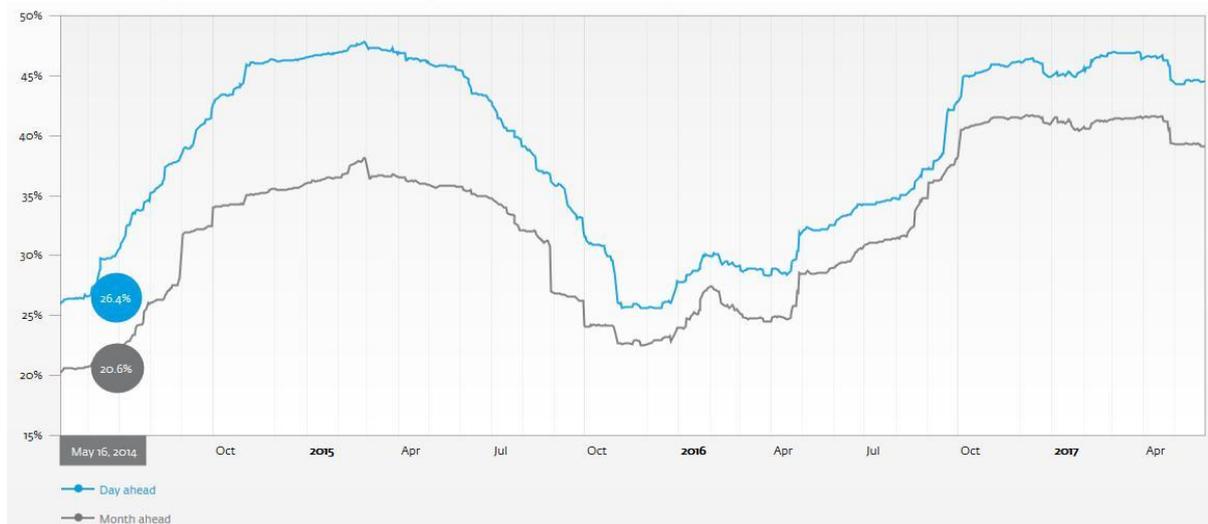
The second quarter of 2017 has been relatively quiet in the European gas market. Strong demand in Asia and Europe at the start of the year has subsided into a warm spring. This has resulted in both:

1. Weaker gas demand from the heating and power sectors
2. A steady increase in LNG imports into North West European hubs

These factors have combined to exert downward pressure on both TTF prices and price volatility across the second quarter.

As a result, the recovery in spot price volatility across 2016, has taken a pause in 2017. This can be seen in Chart 1, showing the evolution of the Energystock rolling annual TTF volatility benchmark over the last three years. In today's commentary we take a look at two of the factors that are likely to determine whether the recovery in TTF spot volatility continues in 2017. Firstly we look at the potential loss of further gas supply flexibility. Then secondly we look at power sector switching dynamics.

Chart 1: Energystock historical rolling annual TTF volatility (Q2 2014 - Q2 2017)



### More bad news for UK Rough storage

Centrica Storage Limited (CSL) announced that the Rough facility would remain on full injection outage until at least Q2 2018. This effectively leaves the Rough facility, which accounts for more than 70% of UK storage working volume, crippled for the coming winter.

The Rough facility also provides around 25% of the UK's daily deliverability, meaning the Rough outage should also act to support spot volatility at NBP. Strong levels of interconnection between the UK and Dutch gas markets means that this NBP volatility impact should also be felt at TTF.

A knock-on impact of the Rough outage is a significantly reduced summer storage injection demand in the UK. That is having a negative impact on NBP summer prices and means that the UK net exports to the Continent are set to be higher this summer as Rough is not available to absorb UKCS production.

Beyond 2018, the future of Rough looks more and more uncertain. Current levels of NBP seasonal price spreads are unlikely to support lifetime renewal capex required to ensure Rough's future viability. As a result, the UK gas market is coming to terms with the possibility that Rough may not

return from the current outage. This would mean a substantial reduction in domestic UK gas supply flexibility.

The issues facing Rough have been behind some recovery in seasonal price spreads at NBP. The 2018 price spread started the year near 5.0 p/th (1.5 €/MWh) and has rallied towards 6.5 p/th (1.9 €/MWh) in Q2.

### **Further losses of supply flexibility in North West Europe**

The UK seasonal price spread recovery has not been mirrored at TTF where spreads remain stubbornly below 1.5 €/MWh. This is despite further loss of supply flexibility from Groningen and Bergermeer.

A 24 bcm annual production cap on the Groningen field was set by the Dutch government in 2016, as a result of ongoing earthquake issues. In April 2017 the government announced its intention to reduce this cap by a further 10% for 2017.

TAQA's large Bergermeer facility in the Netherlands has been plagued with technical issues and outages. These have included compressor problems that are currently restricting Bergermeer's injection capability this summer.

The more structural issue for Bergermeer and a number of other seasonal storage providers has been a prolonged period of seasonal hub price spreads below 2 €/MWh. This makes it very difficult for owners to recover fixed costs, let alone any additional maintenance capex and return on capital invested.

This environment has led to a string of storage related impairment charges across European utilities. As a result a number of Europe's storage operators are undertaking strategic reviews of their assets. This is likely to lead to further mothballing and closure of seasonal storage capacity. This is explored in more detail in the article "[Options confronting gas storage owners](#)".

The closure of a significant volume of seasonal storage capacity in Europe would likely have an important knock-on effect on spot price volatility. The current overhang of seasonal storage capacity and low price spreads has seen seasonal facility flexibility focusing more on responding to shorter term price volatility. In other words seasonal assets have been competing with faster cycle assets to capture value from spot volatility.

The closure of seasonal storage capacity will not necessarily drive a significant recovery in seasonal TTF price spreads, given alternative sources of seasonal flexibility such as Norwegian flexibility and LNG imports. But closure of slower cycling assets could well be an important factor supporting a recovery in TTF spot price volatility.

### **Power sector demand**

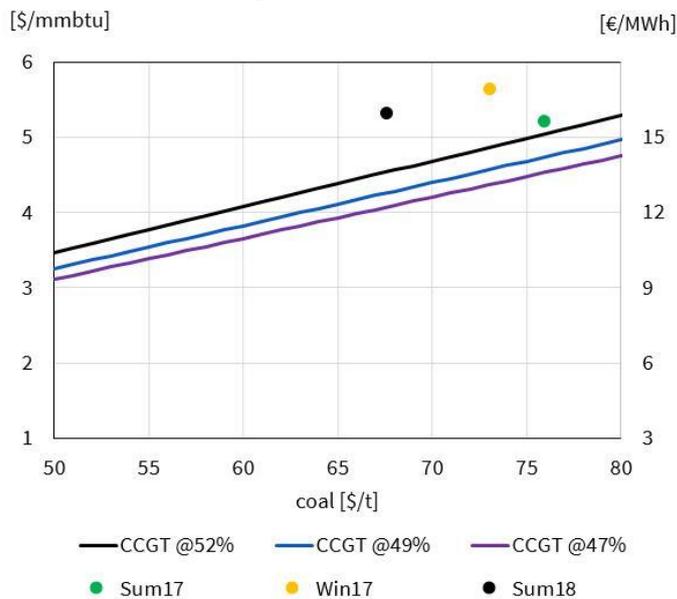
One of the key factors that supported a recovery in TTF spot price volatility across 2016 was an increase in power sector gas demand. As gas prices fell relative to coal prices, CCGT load factors increased. Higher CCGT output also translates into higher demand for gas supply flexibility as plants ramp up and down in response to intermittent wind and solar generation output.

Power sector gas demand is predominantly driven by the switching dynamics of coal-fired for gas-fired power plants, given the relative level of gas vs coal prices. Switching dynamics vary across Europe's power markets. Switching happens most readily in the UK power market given the carbon price floor and large volumes of CCGT capacity. The German power market on the other hand is much

less responsive given high volumes of relatively low variable cost lignite and newer black coal capacity.

It is interesting to use current forward price curves to analyse how switching dynamics may evolve in 2017 and 2018. In 2016, weak gas prices across the summer months saw German CCGTs come back into merit, displacing less efficient coal stations. Chart 2 shows the German power market switching boundaries at current levels of forward gas, carbon and coal prices.

**Chart 2: German switching boundaries for CCGT (49% efficient) vs coal plant (36% efficient)**



The coloured dots on the chart show current forward market combinations of gas and coal prices across the next three seasons (Sum 17 to Sum 18). The diagonal lines show the switching boundaries for different efficiencies of CCGT plants (52% for new plants to 47% for 1990s plants).

If the dots sit above the diagonal switching boundaries then market prices favour coal generation over gas. This is currently the situation in Germany, as it has been for most of the last 5 years. But it is interesting to note that forward fuel prices for this summer are close to a level where newer German CCGTs start to displace less efficient coal plants.

The German power market is important to watch given the relative scale of its switching potential. But if fuel prices support switching in the German market, they also support switching in neighbouring markets including France, Netherlands and Belgium. It is the combination of power sector demand across all of these markets that impacts TTF hub price dynamics.

The main factor which may cause switching boundaries to be breached this year is rising LNG imports. Cargo volumes into North West European hubs have been steadily rising in 2017, exerting downward pressure on gas hub prices. Asian LNG demand is typically weaker across the summer months. If the surplus of LNG cargoes flowing into liquid North West European hubs continues to rise over the summer months we may again see switching supporting TTF spot price volatility in 2017.