

Wholesale Energy Markets in 2015

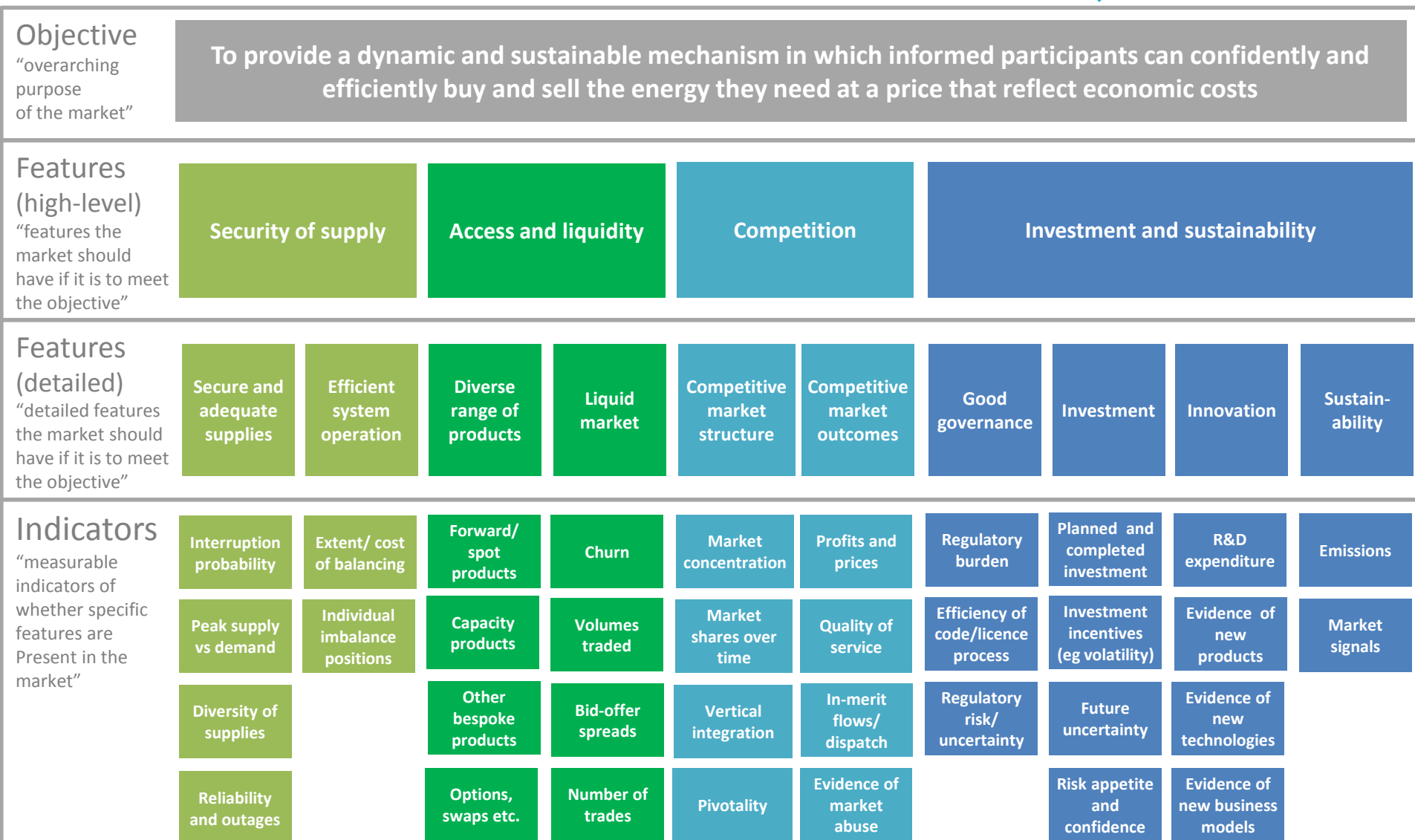
Tom Corcut

27/10/2015

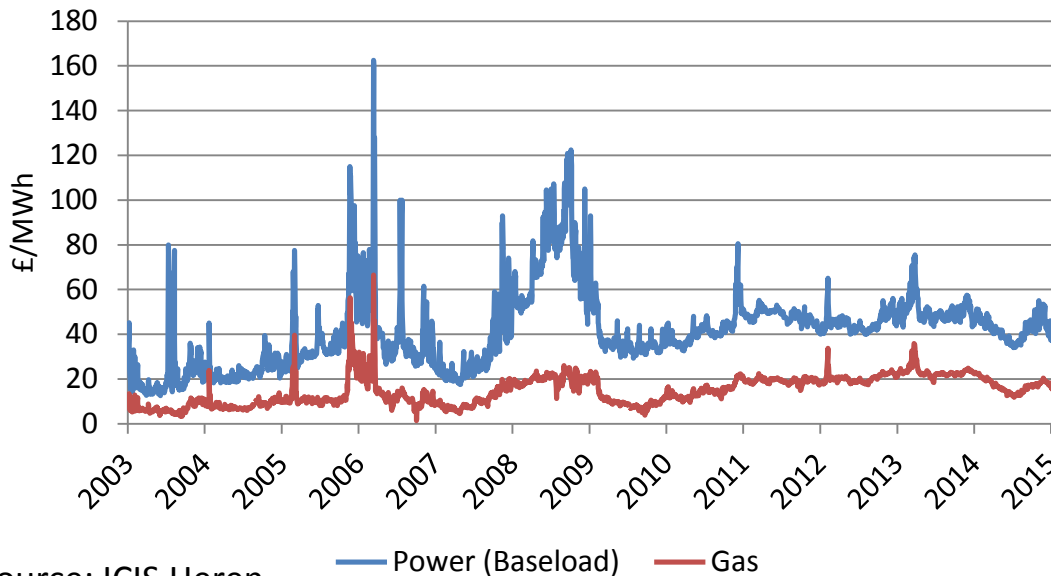
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Wholesale gas and electricity prices, 2003 to 2015

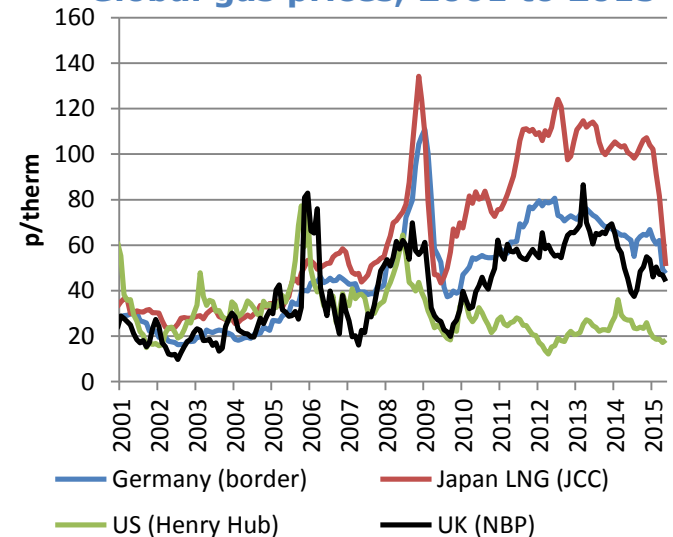


Source: ICIS Heren

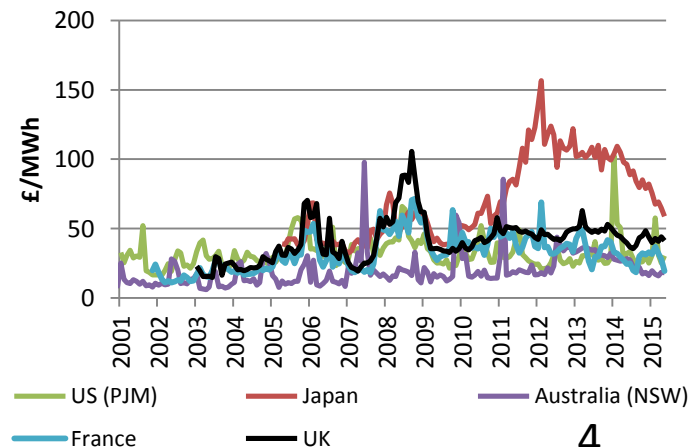
Rising gas prices since early 2000s have been driven by the move away from self-sufficiency, rising oil prices and having to compete globally for our imports. Recent declines in prices has been driven by falling oil prices and a loosening of global gas supply and demand.

Electricity prices have largely followed gas prices due to gas usually being the marginal source of generation. Electricity prices have also been pushed up by the UK CPF increasing carbon costs.

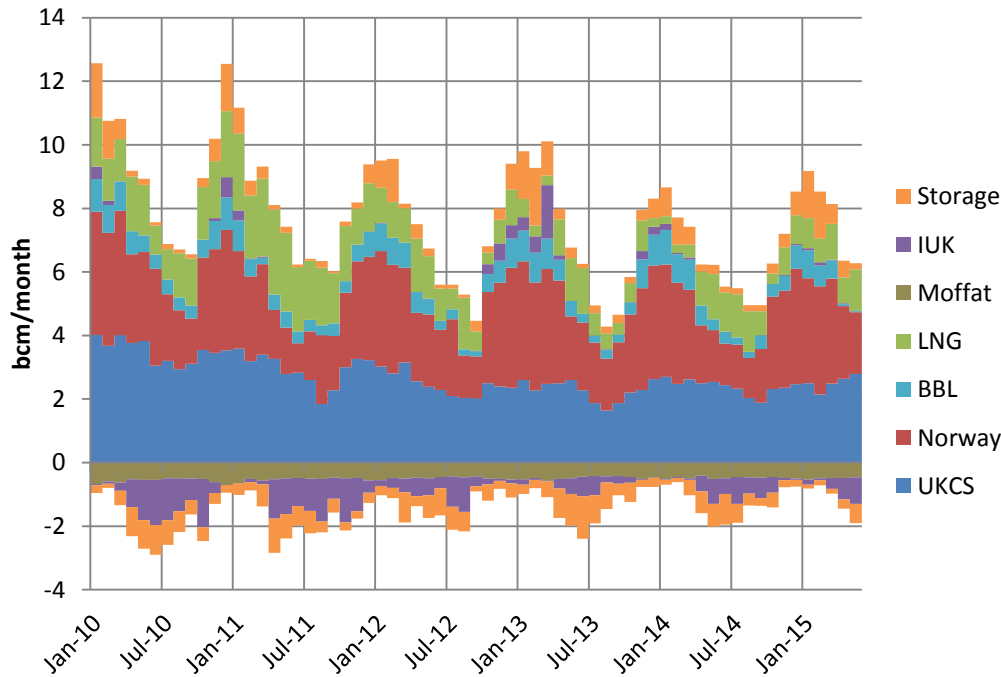
Global gas prices, 2001 to 2015



Global electricity prices, 2001 to 2015



Gas supply mix, 2009/10 – 2014/15

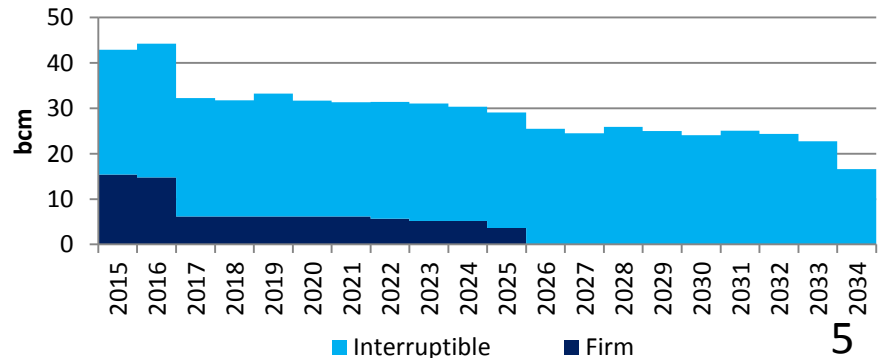


- ↑ Gas supply mix continues to change:
- Declining domestic UKCS production
 - Strong role for Norwegian imports
 - Fluctuating LNG/Continental imports
 - Growing role for Medium Range Storage
 - Falling demand

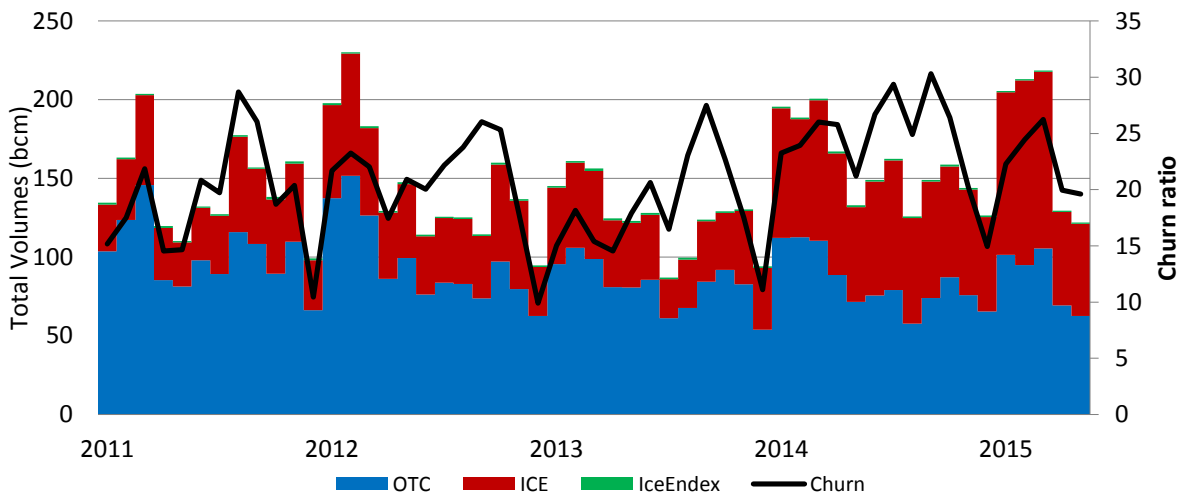
Gas supply outlook continues to look strong with existing capacity expected to be able to meet annual and peak demand well into the future. Diverse supplies mean GB is resilient to all but the most extreme events.

↓ Long-term contracts play a much smaller role in the GB market than is the case elsewhere (eg Germany, Japan). Significant number of interruptible LNG contracts – flows are dependent on global market conditions.

Gas import long-term supply contracts



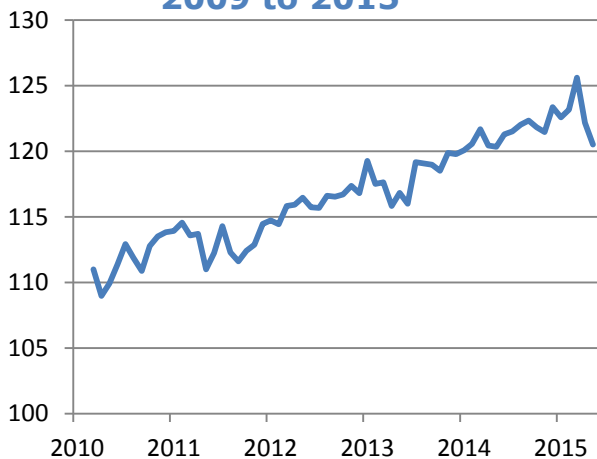
NBP trading volumes by platform and churn, 2011 to 2014



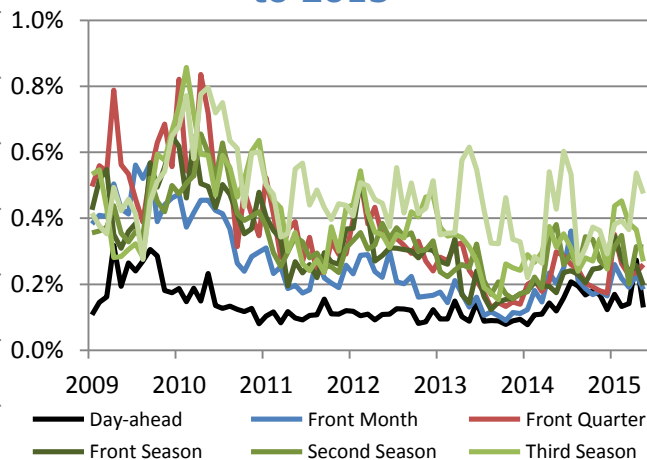
✓ NBP continues to be a mature, liquid market as measured by a diverse range of indicators:

- High levels of churn,
- Narrow bid-offer spreads
- Growing number of active participants
- Growing number of trading platforms (CME, EEX)
- Diverse range of tradable forward products

Active market participants, 2009 to 2015



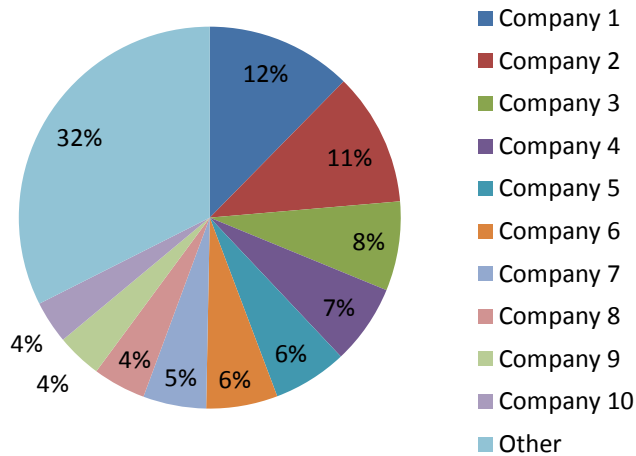
NBP OTC bid-offer spreads, 2009 to 2015



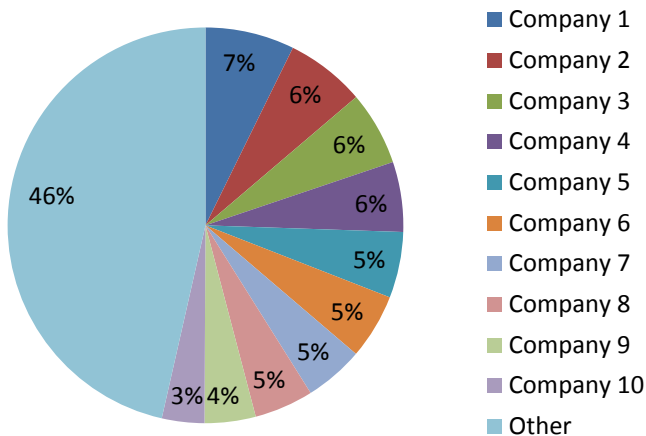
Growing liquidity at TTF does not appear to be adversely affecting NBP.

Recently there has been a sizeable shift from OTC to exchange trading.

Upstream supply market shares, 2013/14



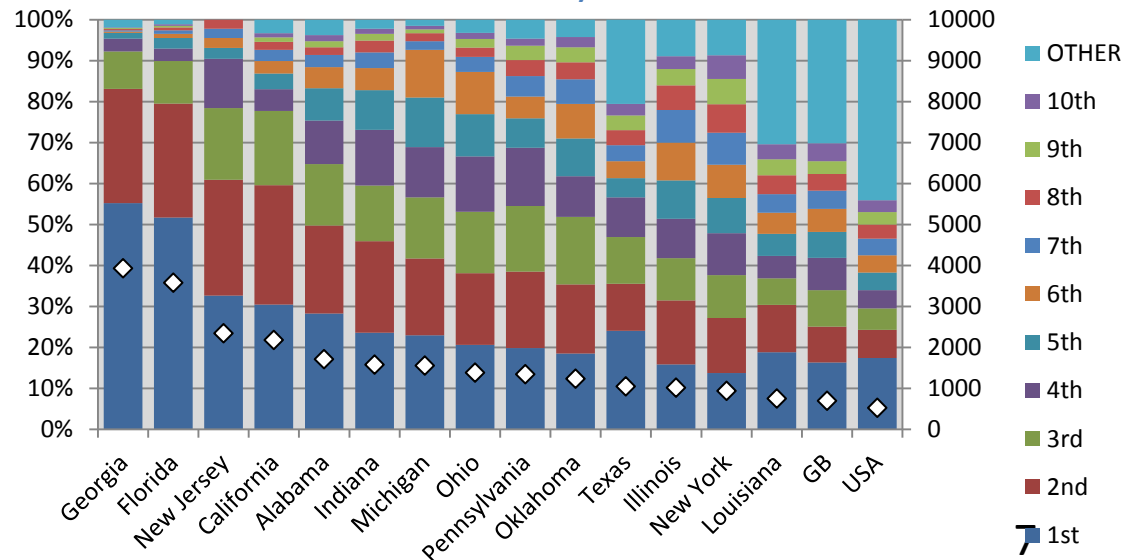
NBP traded market shares, 2013/14



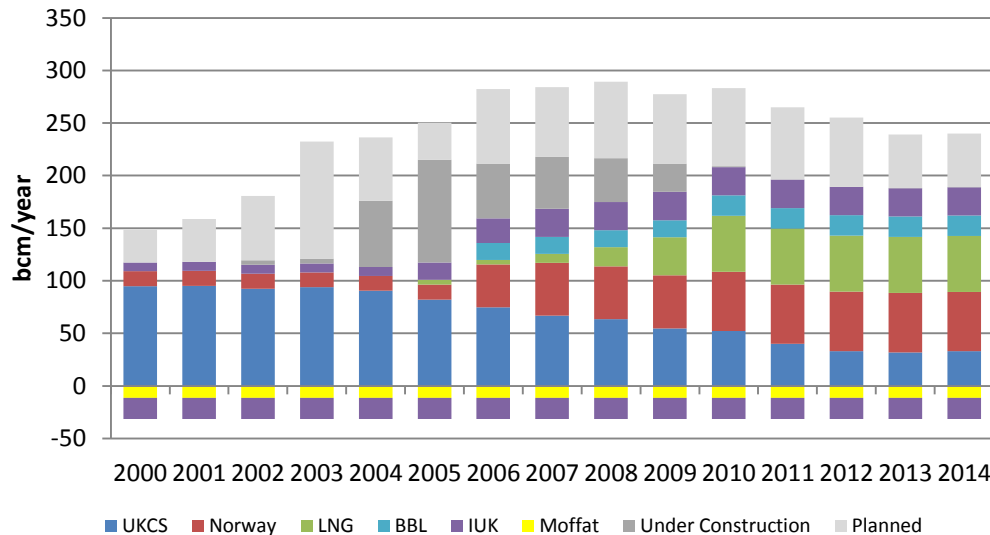
↙ The GB market appears to be very competitive. When looking at market concentration GB outperforms against virtually all relevant European and US benchmarks. Pivotality analysis also fails to flag up any serious concerns.

↓ upstream gas supplies in the GB market are less concentrated than all comparable US states. Even when looking at the US as one homogenous entity, GB still compares relatively favourably.

HHIs and top 10 market shares of upstream supplies by US state, 2012

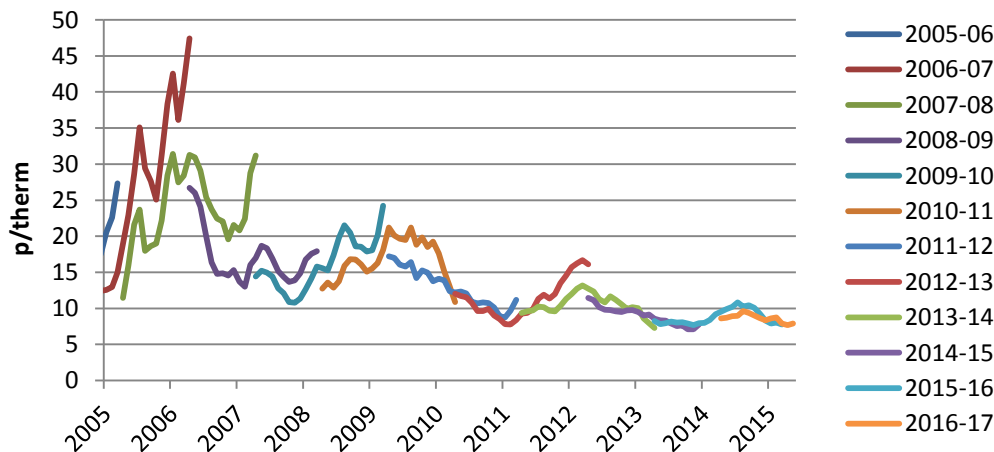


GB gas supply infrastructure, 2000 to 2014



← There has been a substantial expansion of import infrastructure to plug the gap from declining UKCS. Investment has been driven by the market signals. Existing infrastructure is now more than sufficient to meet demand well into the future. There has been a comparatively modest increase in gas storage. This is in line with market signals, most notably declining summer-winter spreads and falling price volatility.

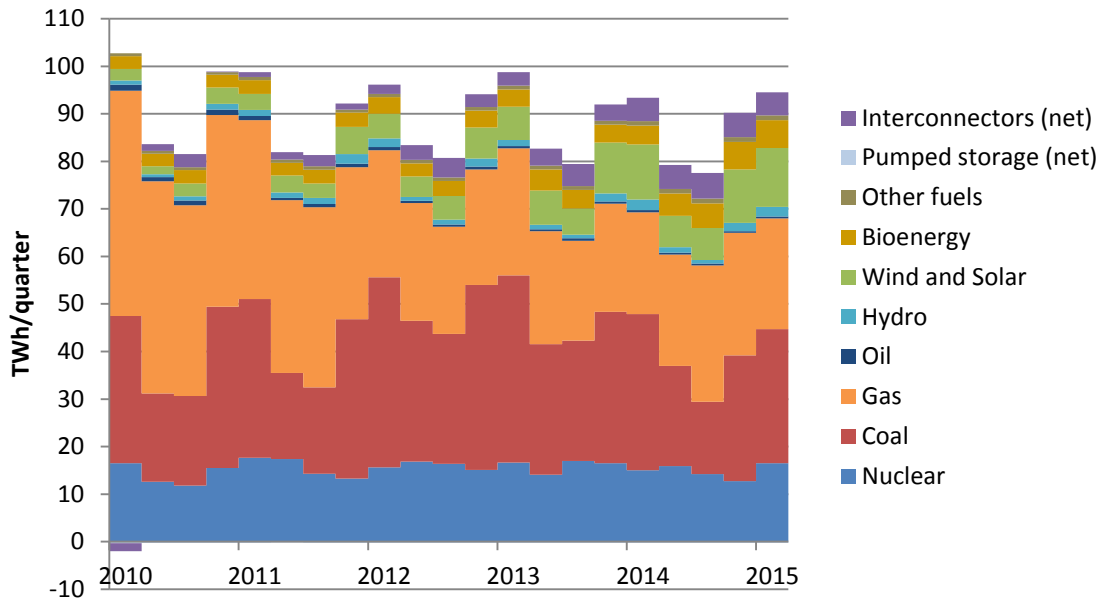
Summer-winter spreads, 2004 to 2015



On the regulatory aspects, our analysis has not flagged up many serious issues. However, the overall size and complexity of the various policies and codes in the market is a possible area of concern.

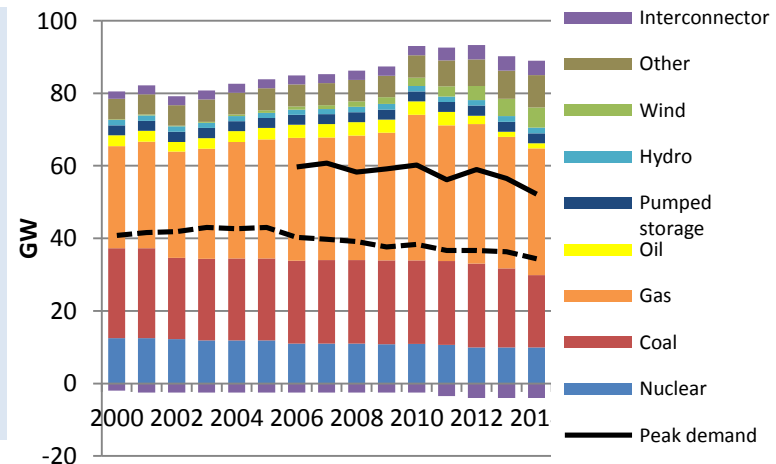
Declining demand indicates energy efficiency measures are having an impact, although there are other factors at work too.

GB generation mix, 2010 to 2015

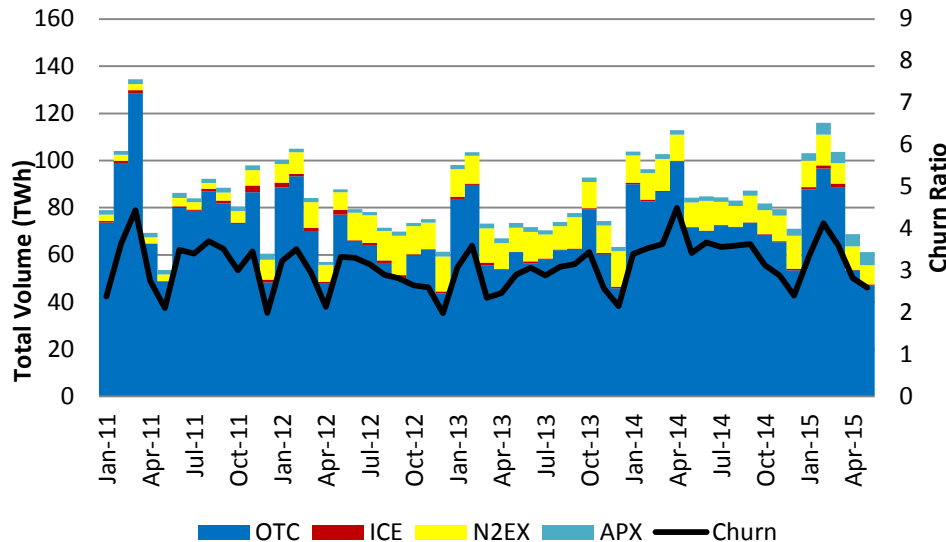


Rising wind and interconnector capacity has seen a growing role for these sources in the generation mix. Coal output has increased despite plant closures due to favourable economics vs gas-fired generation. The changing supply mix (ie more intermittent wind) has also brought new system balancing challenges, with constraints costs rising. Despite this, market participants' ability to balance has not suffered.

Total capacity has been steady over recent years whilst demand has fallen slightly. However, the capacity mix has changed as wind, gas and interconnectors have replaced coal and oil. The intermittent nature of much of this new capacity has meant capacity margins have tightened. Weak investment signals from the energy only market have also been holding back replacement of lost plant. The New Balancing Services have been introduced as a short-term fix.



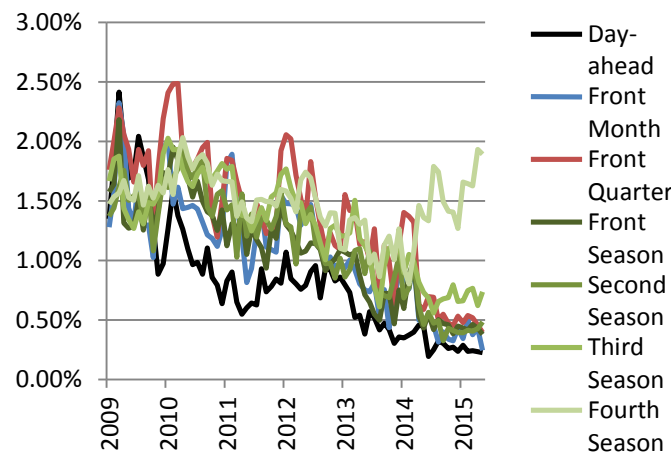
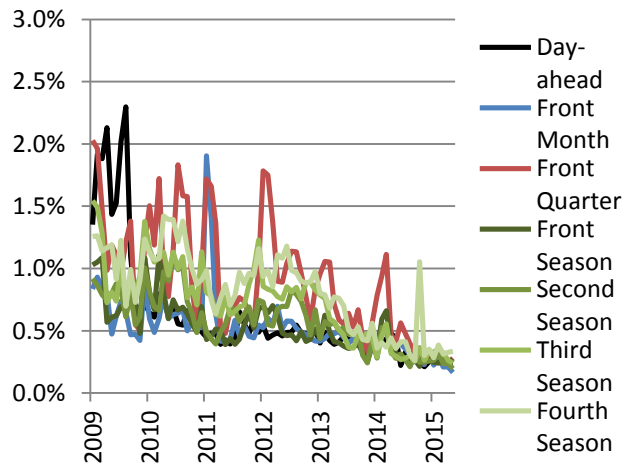
Trading volumes by platform and churn, 2001 to 2015



← When assessed across a suite of metrics, the GB market appears relatively illiquid. Churn has been low over the last decade, although it has started to increase slightly. The majority of trading is conducted OTC, but there has been a slight movement towards exchanges recently.

Liquidity tends to be clustered in near term markets and baseload contracts dominate for forward hedging. There is limited availability of products beyond a year ahead.

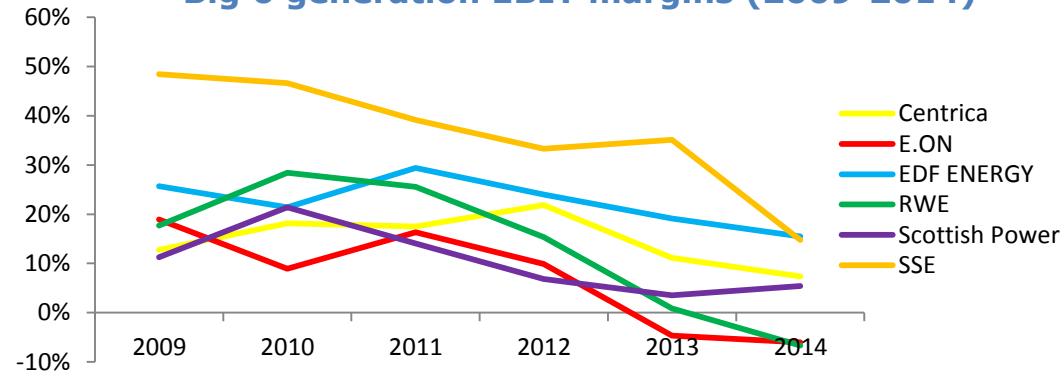
OTC bid-offer spreads, baseload (left) and peak (right), 2009 to 2015



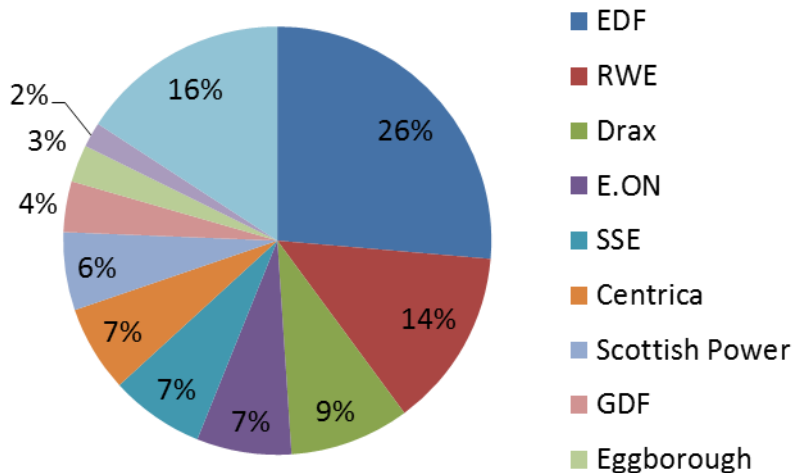
← Bid-offer spreads have tightened in recent years. Spreads are typically wider for peak products and further dated products, reflecting the lower volume of trading in these contracts.

↓ The wholesale market appears to be relatively competitive, and compares well with many other international markets. No firm has an overly concerning market share in generation. Market entry and exit in recent years has been positive but the costs of credit and collateral may present a barrier to entry for smaller players.

Big 6 generation EBIT margins (2009-2014)



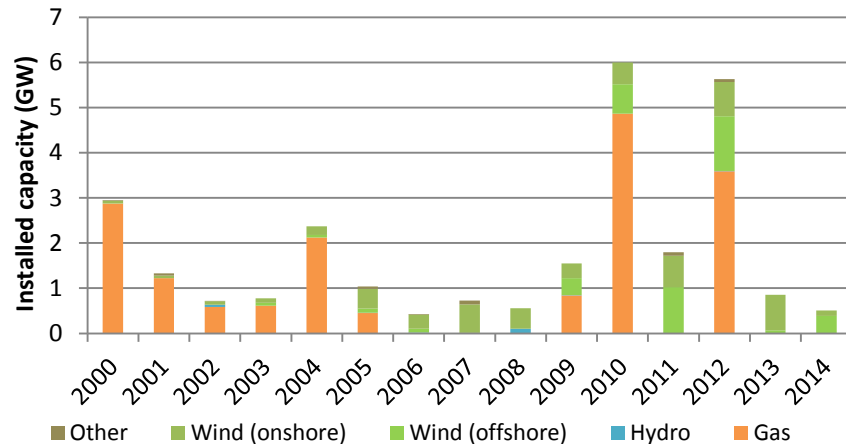
Generation output by owner (2014)



↑ Generation profit margins show a range across the Big 6, with an average of around 15%. The key driver of this looks to be the profitability of renewables and nuclear generation, with limited current profitability in thermal plant. Our analysis on profits has been limited, and will be a key area to develop for future assessments.

In looking at specific periods and system conditions we found high shares for certain plants that are dispatched downwards for system reasons. This is consistent with pivotality analysis we have conducted. We continue to actively monitor TCLC compliance.

Annual installation of new capacity, 2000 to 2014



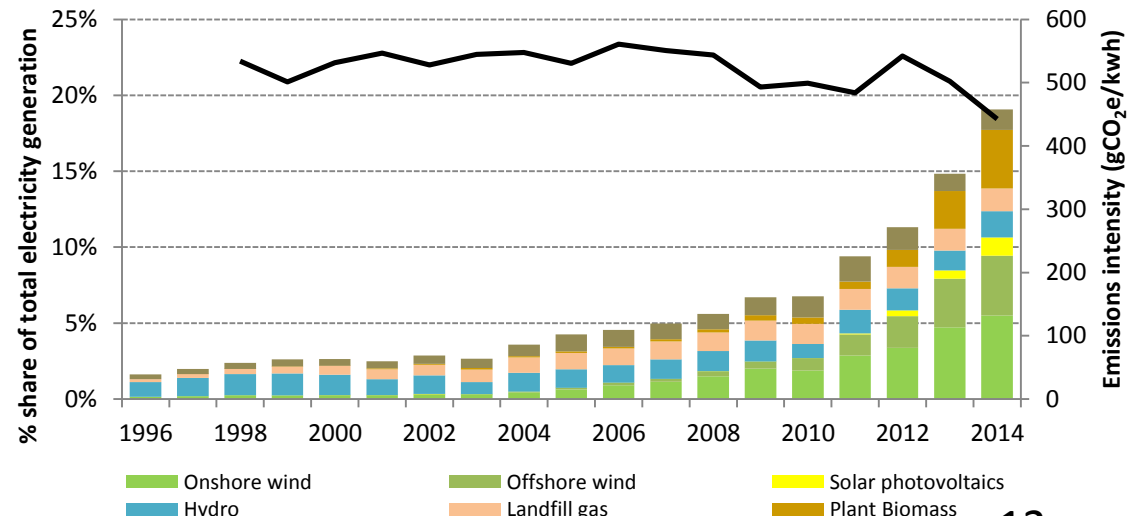
← Market signals from the energy only market have not encouraged investment to replace lost capacity. While 27GW has been added since 2000, margins have still narrowed.

A range of policy changes have been introduced to resolve this “missing money” problem, including the CM, CPF and EBSCR. Uncertainty over the timing and nature of these reforms has likely delayed or discouraged investment in the short-term.

As with gas, regulatory indicators show a mixed picture. Whilst modifications to key industry codes have declined, the overall complexity of compliance with various policies and codes is a potential concern.

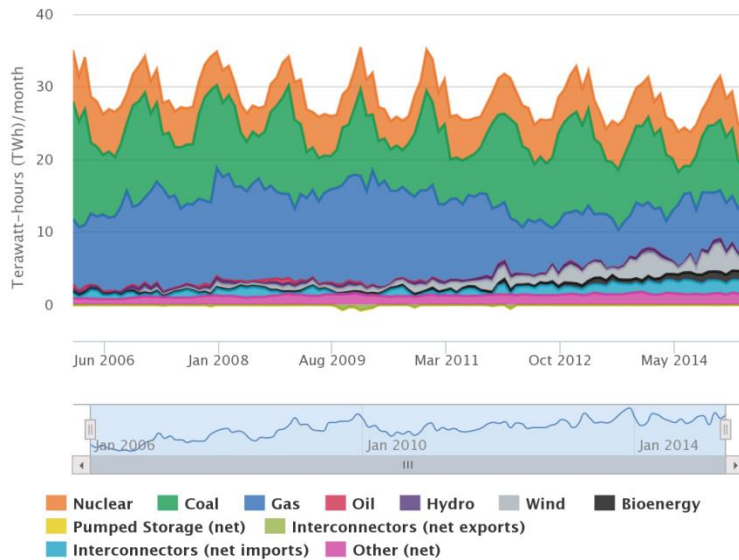
→ Renewables continue to rise as a share of total output, reaching 15% in 2013. Emissions intensity has been stable due to increased use of coal.

Share of renewables and emissions intensity, 1996 to 2014



Source: DECC DUKES, DECC Energy Trends, Committee on Climate Change

Electricity generation mix by year and fuel source (GB)

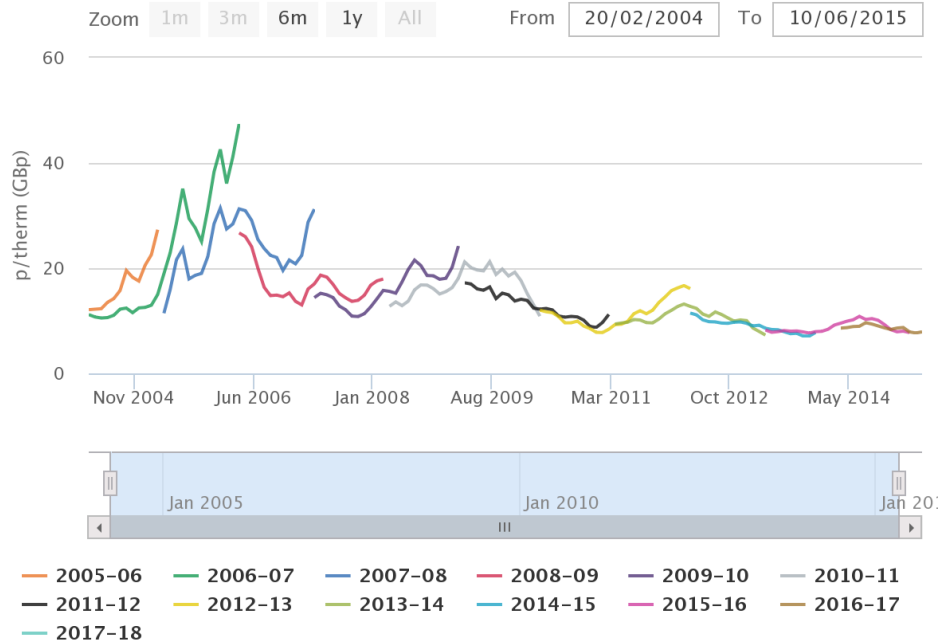


Prices: Gas and power day ahead
Security of supply: Gas and power demand & supply, Gas Long-term contracts
Access and liquidity: Gas and power bid offer spreads, gas and power trade volumes and churn
Competition: Power market shares and generation profitability (gas coming soon)
Investment and sustainability: Spark & dark spreads, price volatility, summer-winter spreads

We've published 14 indicators on our website which will be updated on a quarterly basis, these charts allow you to:

- Select data period you are interested in
- Download data
- Save a copy of the chart

Gas summer-winter spreads at the National Balancing Point (GB)



Key points on elec

- GB has one of the most reliable electricity systems in the world
- More renewable capacity is being added to the system. But older power stations have closed faster than new, cleaner conventional generation has been built.
- We are strengthening incentives on suppliers and generators to buy or produce enough power to cover the demand of their customers
- Government incentives introduced through the electricity market reforms will also encourage more generation to be built and older generation to remain operational in the longer term

Key points on gas

- GB has one of the most reliable gas systems in the world
- We get our gas from a diverse range of sources. Around half of it comes from the North Sea, the remainder is imported from Europe and across the world - we are not reliant on any one country for supplies.
- The GB wholesale gas market is one of the most competitive and liquid markets in the world.
- Significant market-led investment has been made in gas import capacity to help provide this diversity.
- In future we will have enough gas to maintain secure supplies in all but the most extreme circumstances.

Next Steps:

1. **Wholesale Energy Market Report** annual process.
2. **Indicators** updated Regularly. Hoping to continually improve and add to.
3. **Feedback** – keen to get views and make improvements.
4. **Process** - improve data collection and ‘putbacks’ - aim to minimise burden.

Feedback via email to:

WholesaleMarketIndicators@ofgem.gov.uk.

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We work effectively with, but independently of, government, the energy industry and other stakeholders. We do so within a legal framework determined by the UK government and the European Union.