



The wholesale electricity market in GB

Neil Bush, Head of Energy Economics and
Analysis

July 2014



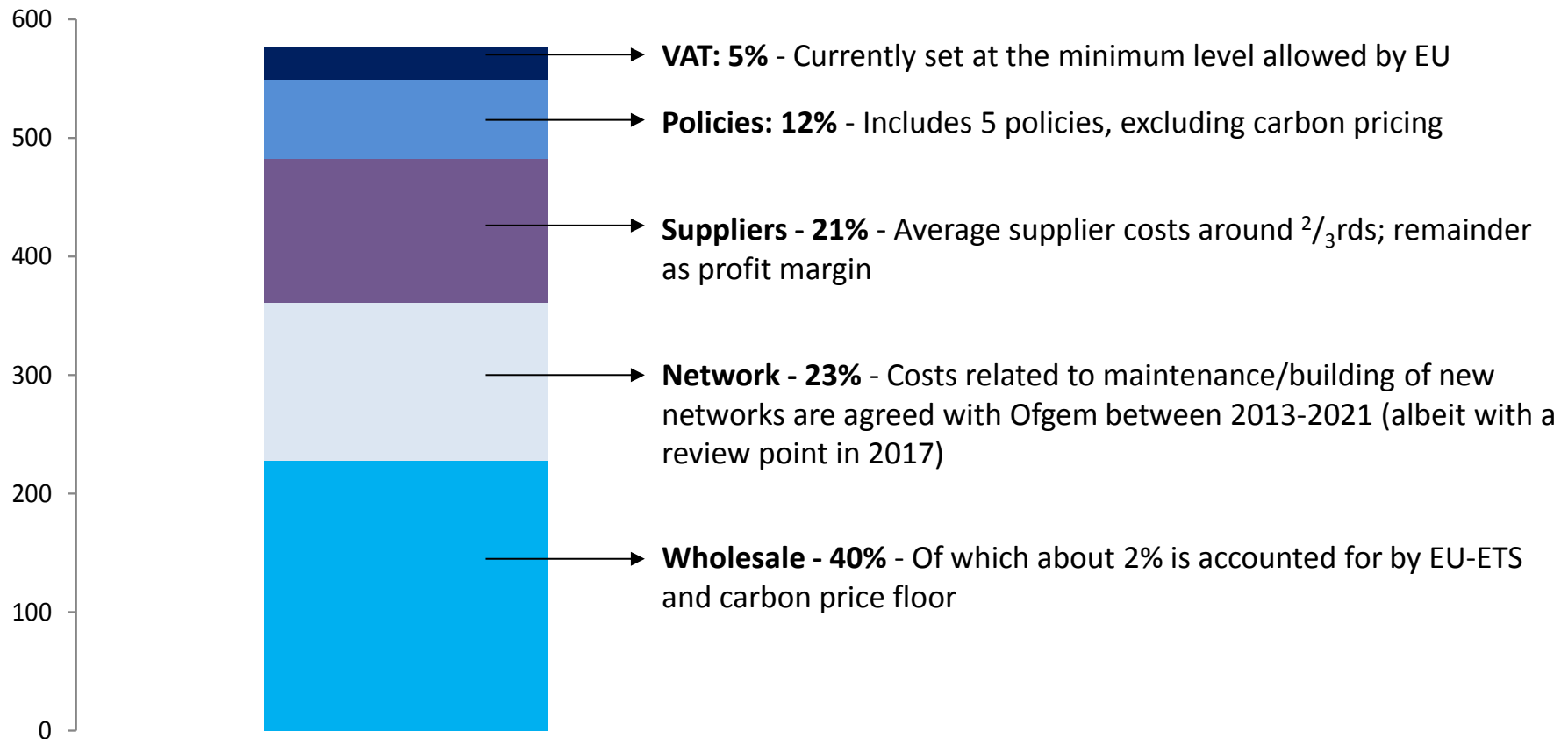
Overview

- 1 Drivers of wholesale electricity prices**
- 2 Current and future role of wholesale electricity markets**
- 3 Future challenges**



The wholesale market constitutes around 40% of the current household bill

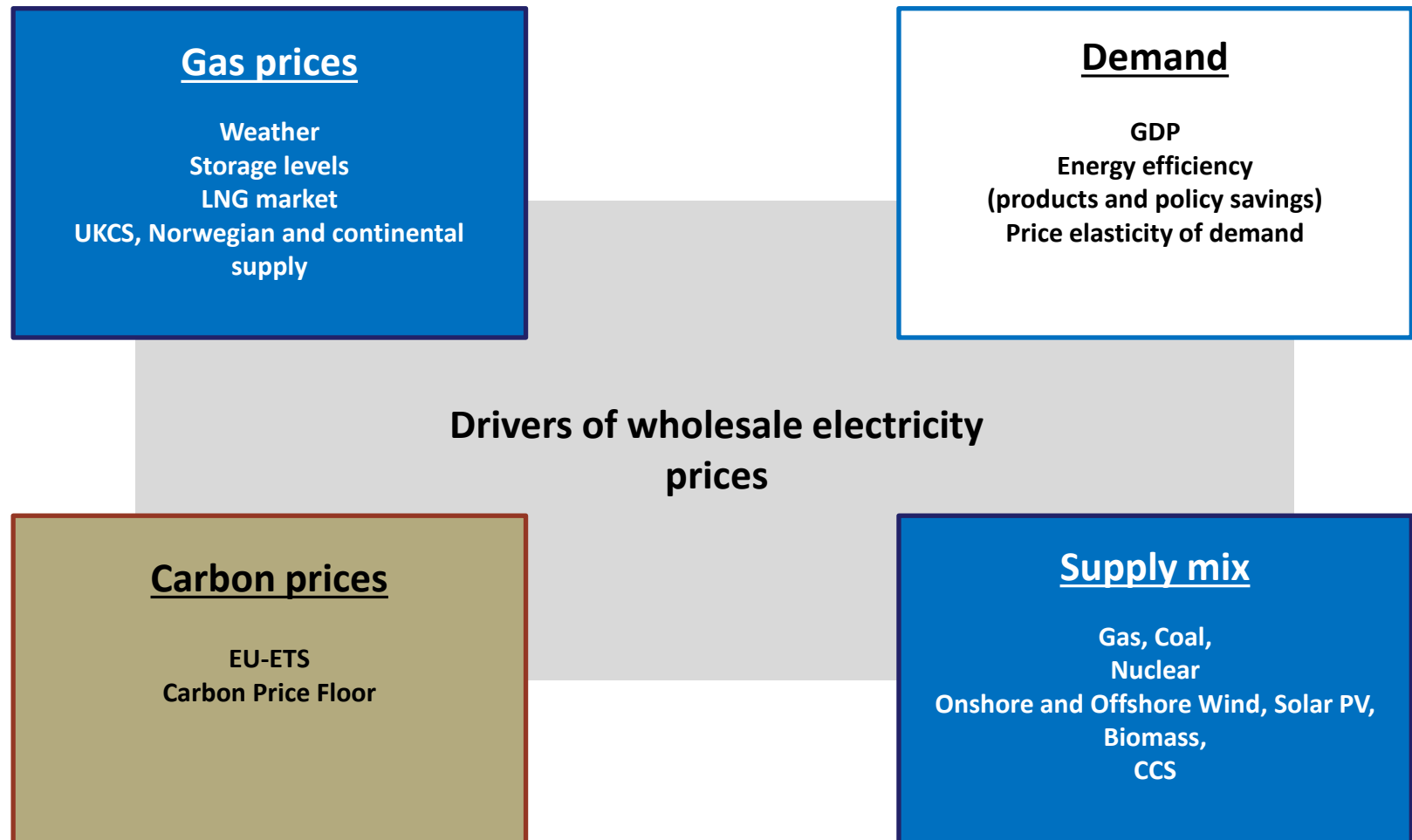
Proportion of average household electricity bill in 2013 split by component (£/year)



Source: DECC Price and Bills Report 2013. Bill taken before Warm Home Discount rebate



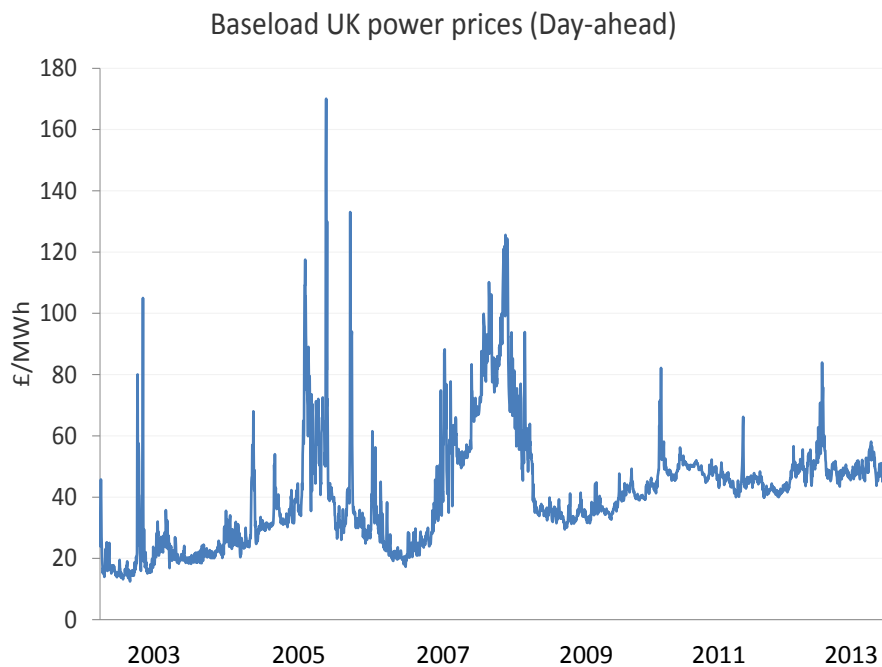
Gas and carbon prices, as well as demand and the supply mix are key drivers of wholesale prices



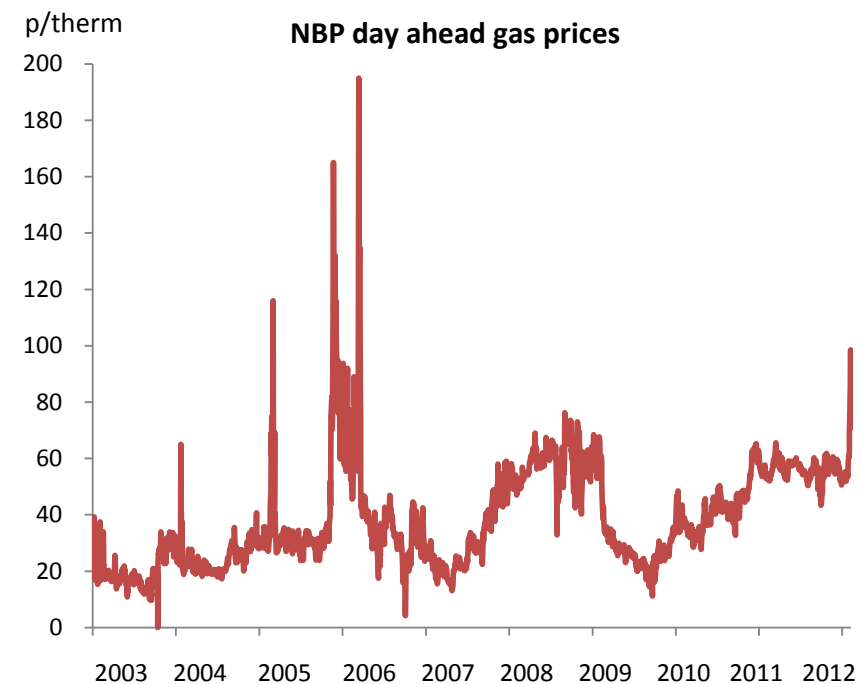


To date GB wholesale electricity prices have mainly tracked gas prices...

Wholesale electricity prices, 2003-13



Wholesale gas prices, 2000-12



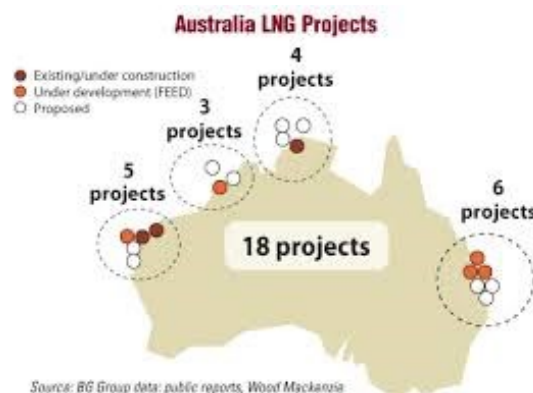
...which in medium/long term will increasingly be influenced by the LNG market

Short term



- Weather – mild winter 2013/14
- Storage levels high
- Asian demand?
- Russia-Ukraine

Medium term



- LNG supply – Australia, Qatar, US?
- Asian demand
- Extent of oil-indexed contracts

Long term



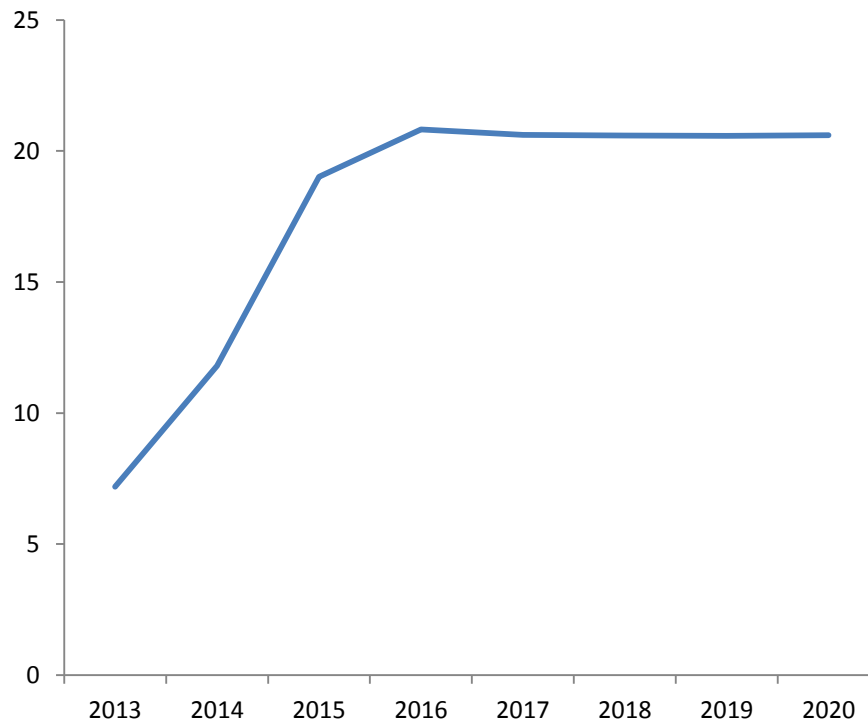
- Henry Hub plus liquification plus transportation costs
- Demand for gas in heating and electricity generation
- Demand, part. in Asia
- Other sources of supply



However, carbon prices are playing an important and growing role in GB wholesale prices

Estimate of UK carbon price trajectory, 2013-2020

£/tonne in real 2013 prices



Impact of EU-ETS and carbon price floor on wholesale prices

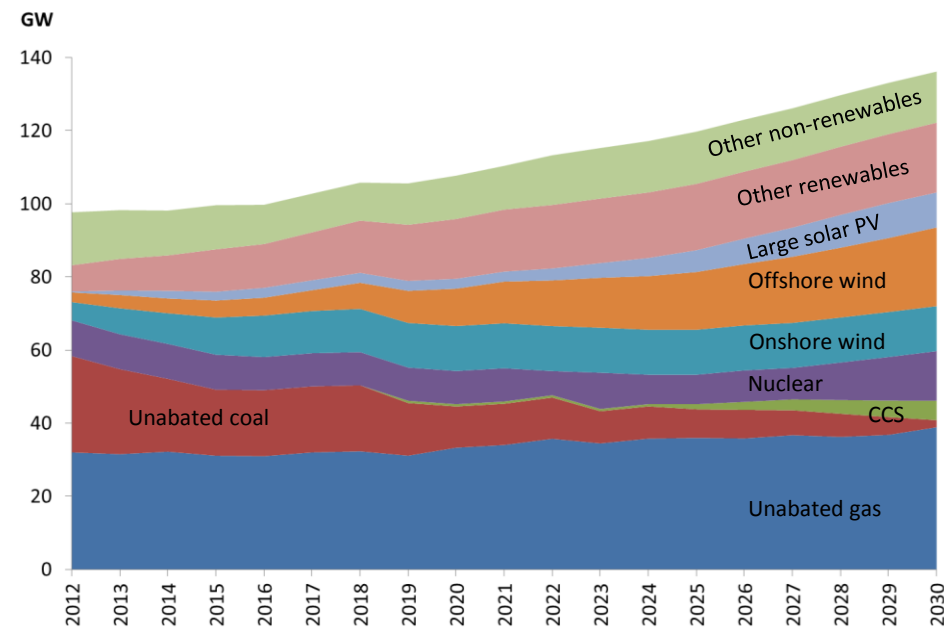
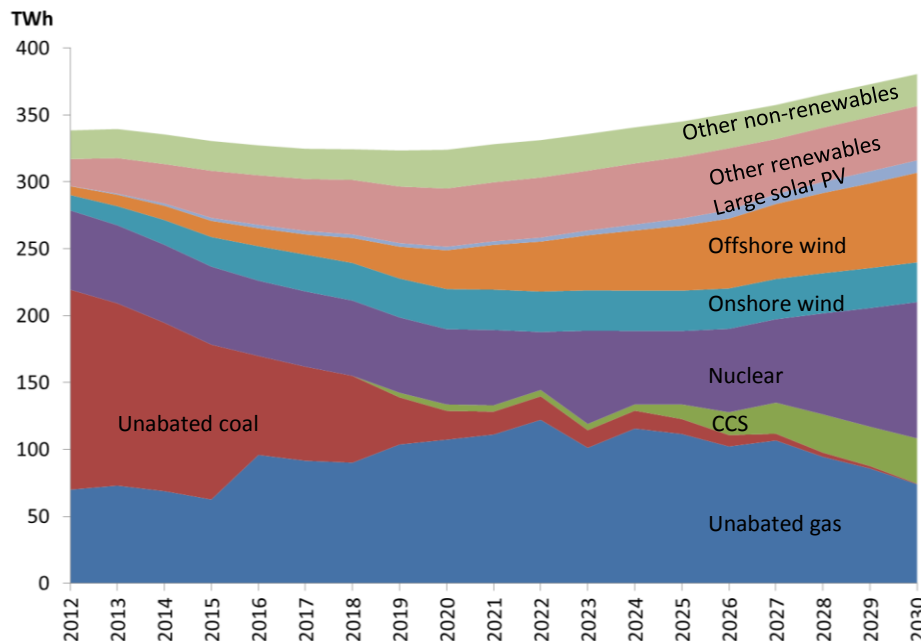
- As proportion of wholesale electricity price, carbon is around 5% in 2013
- Estimated to increase to around 14% by 2020
- Question of future direction of EU ETS prices



A key question is how this will interact with the future supply mix

Projected future generation, 2012-30

Projected future capacity, 2012-30

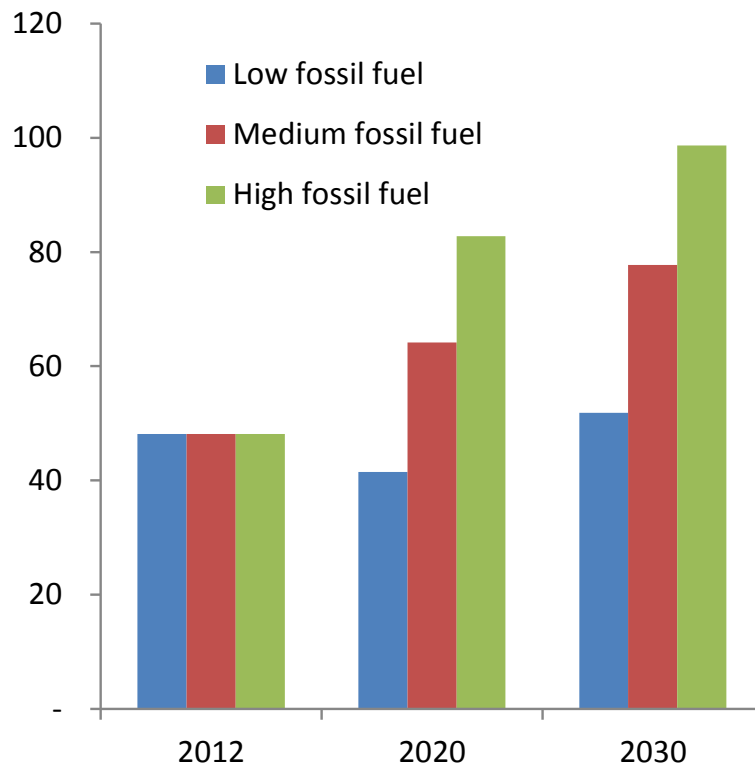


Source: DECC, December 2013 "EMR Delivery Plan", 100g 2030 scenario with central fossil fuel price projections and demand



With these drivers we still expect the wholesale electricity market to play a central role

Projected future wholesale electricity prices, 2012-30 (£/MWh)



Estimated proportion of wholesale electricity/total household electricity prices

2013 ≈ 40%

2020 ≈ 40%

Driven by carbon price floor and supply mix by 2020 with gas still being main price setting unit

Source: DECC EMR Delivery Plan adjusted for Budget 2014 announcements



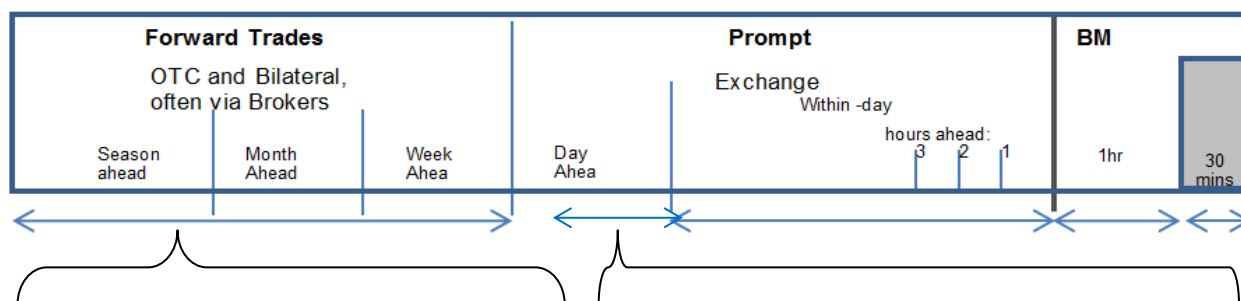
Overview

- 1 Drivers of wholesale electricity prices
- 2 **Current and future role of wholesale electricity markets**
- 3 Future challenges



PPA arrangements dominate the GB market but liquidity does exist and has been growing...

GB wholesale electricity markets and balancing mechanism through to real time dispatch



- Since NETTA – bilateral trading and PPA market is key
- Imbalance market has two different cash out prices – a System Buy and Sell Price – not at VoLL
- Liquidity growing in day ahead market; Ofgem implementing reforms to improve forward liquidity up to 2 years ahead
- Balancing mechanism role likely to grow

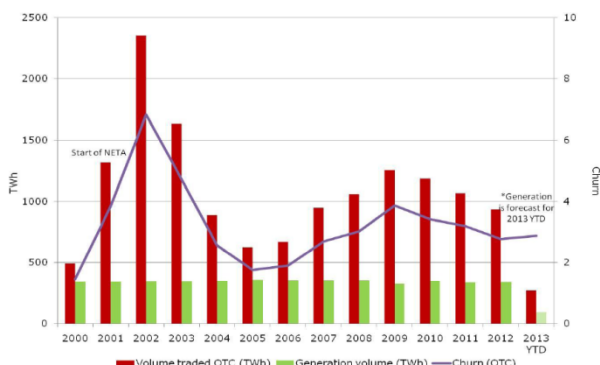


Figure: Forward market churn (Ofgem, 2013)

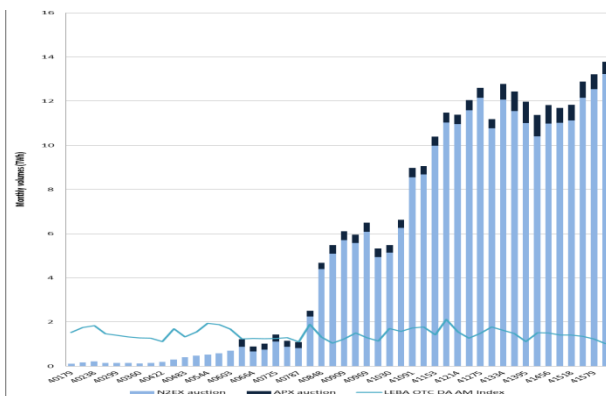


Figure: Day-ahead volumes (DECC, 2014)



...and there are multiple attempts to strengthen competition in these markets

- **Ofgem liquidity reforms**

- In April 2014 Ofgem brought into force its 'Secure & Promote' (S&P) reform package to improve wholesale market liquidity
- The package required the six largest utilities to 'market make' in the forward markets. Obligated parties are required to quote bids and offers in a range of baseload and peakload products up to 2 years ahead of delivery
- In addition, there are rules that require larger participants to treat smaller participants equally and report on traded volumes in the day-ahead markets

- **Competition and Markets Authority**

- On 26th June Ofgem formally referred the gas and electricity markets to the UK competition authorities (Competition and Markets Authority (CMA))
- The investigation is likely to centre on competition in the gas and electricity retail markets and the links with the wholesale electricity market

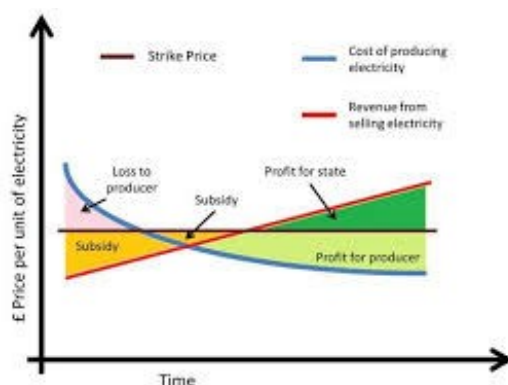
- **REMIT**

- UK Government has given the national regulator (Ofgem) the powers to ensure market participants comply with the requirements of REMIT (market abuse, insider trading etc.)
- Government is planning on going further by consulting on additional criminal sanctions in relation to market manipulation and insider dealing



There will be a continued and important role for the wholesale electricity market

Reference market for CfDs



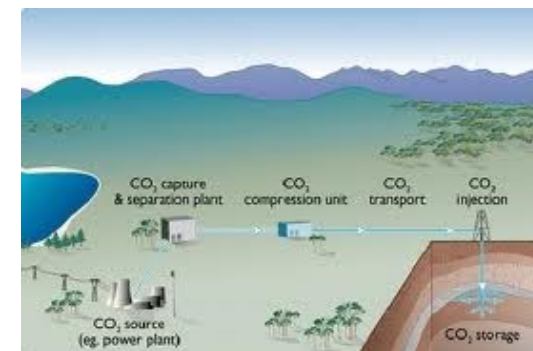
- Day ahead is reference market for intermittent renewables
- Season ahead is reference market for baseload low carbon generation
- Will strengthen liquidity in both markets

Key revenue source existing plants



- Together with capacity market will be key revenue source
- Capacity market will split revenue streams

Future revenue source post CfDs



- Particularly important once exit from CM (through cash out, DSR, etc.)
- Still will be costs to recover for low carbon (O&M, refurbishment, decommissioning, etc.)
- Role of CCS in supply mix one to watch



Overview

- 1 Drivers of wholesale electricity prices
- 2 Current and future role of wholesale electricity markets
- 3 Future challenges



Incorporating high levels of intermittent, low or zero SRMC plants is the key challenge

Downward pressure on wholesale prices

- Shifts merit order
- Increases risk of periods of low or zero SRMC plants setting price
- Pressure on traditional/higher SRMC plants

More volatile prices

- Higher SRMC plants need to recover fixed costs in fewer periods – higher scarcity rents

Key potential impacts

More pressure on balancing and system operation arrangements

- Greater expected call on and role of ancillary service markets and balancing mechanism

Impact on forward market prices

- Question of how pricing closer to real time will impact on forward market prices and liquidity levels

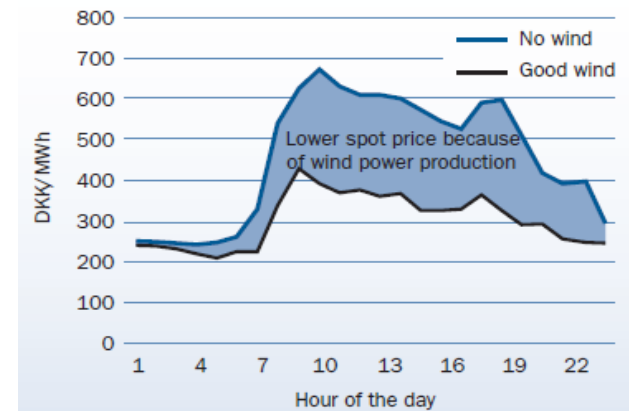
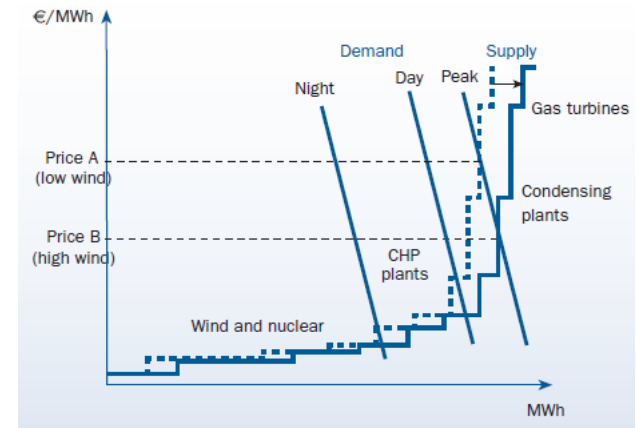


Figure: Impact of wind on the merit order and spot prices (Source: Poyry, 2010)



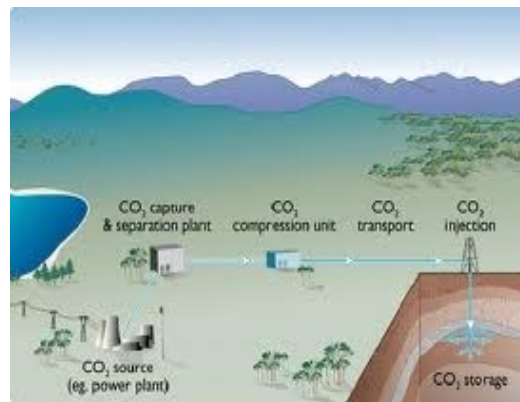
Storage and CCS can assist in this movement to a low carbon future

Storage as solution



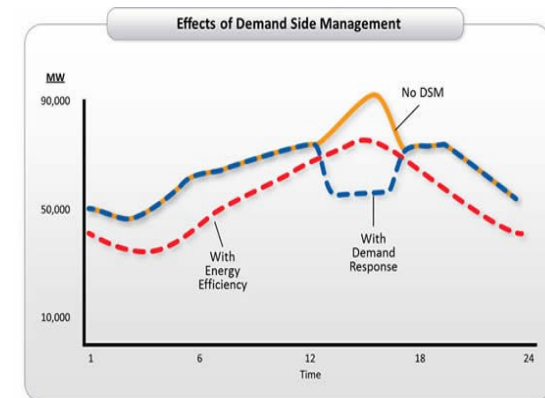
- Able to respond to fluctuations in wholesale electricity price
- Will create higher demand during periods of low wholesale prices
- Mitigate volatile price and balancing concerns

CCS



- Non-zero or low SRMC plant tied to fossil fuel prices
- If part of supply mix which foresees system costs, able to set price in wholesale market

Facilitating DSR



- Able to help in balancing and system operations



In conjunction, a robust European carbon price and steps to improve liquidity are vital

Carbon pricing

- Important driver of wholesale electricity prices in future
- Key part of market exit away from CfDs

Capacity markets

- Provides capacity providers with more revenue stability and solves “missing money” problem
- Does however put downward pressure on wholesale prices
- Exit - more DSR and cash out reform

Improve liquidity where can

- CfDs require reference price (day ahead and season ahead) – improve liquidity
- Other measures taken by Ofgem (liquidity reforms, REMIT, CMA)

Review Future Trading Arrangements

- Ofgem ongoing project to address some of key challenges
- Looking at longer term trading arrangements