GB Balancing Arrangements

25th April 2014

Mike Edgar
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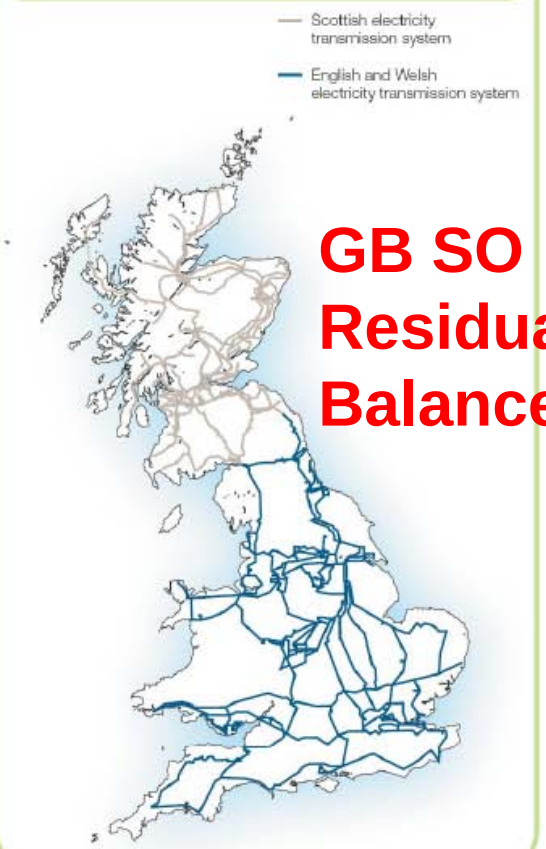
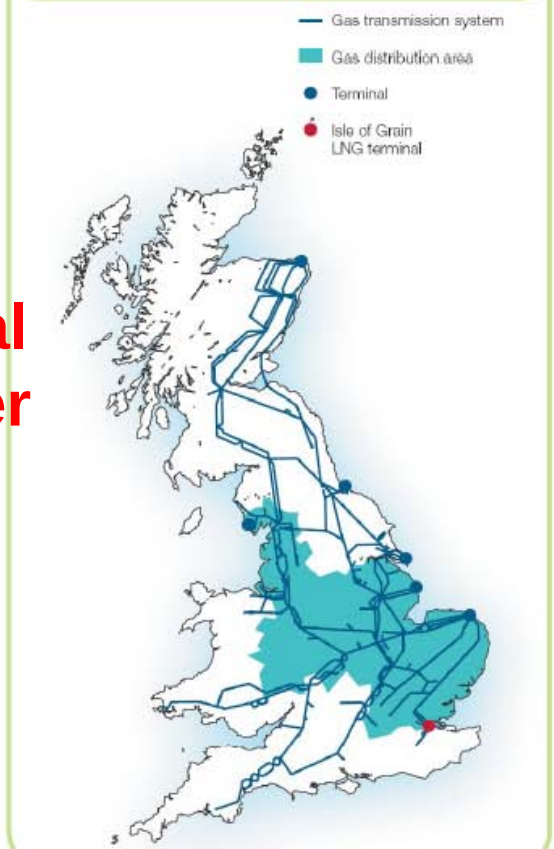
National Grid

nationalgrid

Electricity – UK

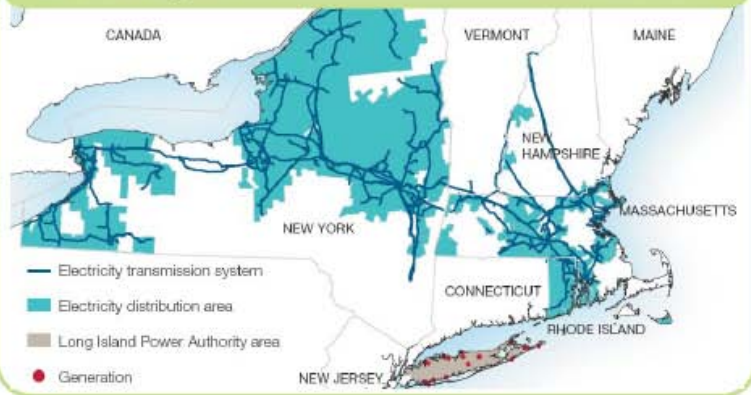


Gas – UK



GB SO Residual Balancer

Electricity – US

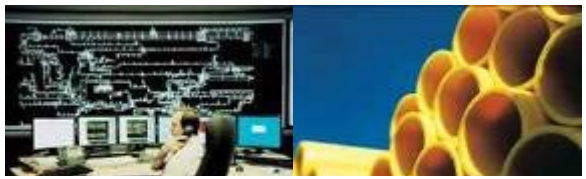


Gas – US

UK and US

Electricity and Gas

Transmission & Distribution



GB Market Arrangements

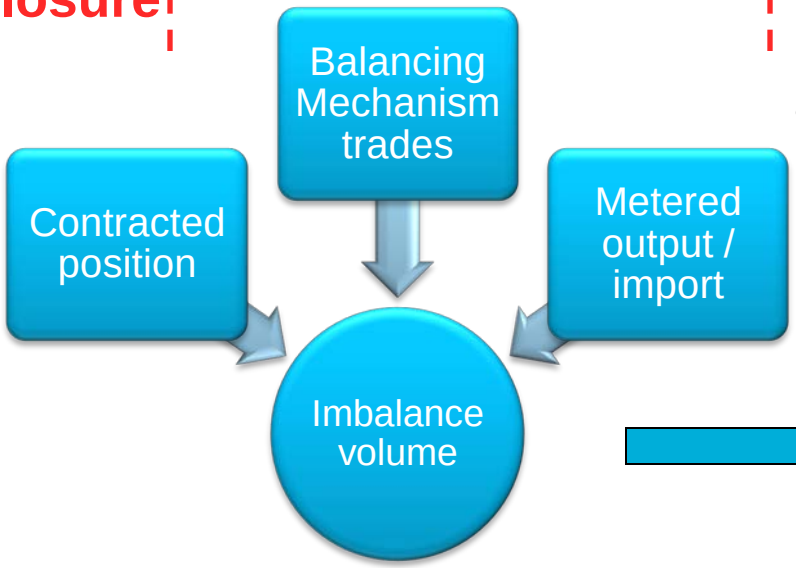
Forwards Market

- Power Exchange
- Bilateral trades
- ~98% by volume balanced
- by ½ hr

Gate Closure (1hr)

Balancing Mechanism

- Bids and Offers to dec or inc output offered by participants
- SO sole counterparty
- ~2% by volume balanced
- sec by sec



Settlement

- ½ hr settlement periods
- Payment ~ 1 month in arrears
- Imbalance cashed out via dual price mechanism:
  - Aid balance=more favourable, forward market price
  - Worsen balance = harsher, more marginal price

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GB Balancing Arrangements Review

Ofgem Objectives

- To incentivise an efficient level of security of supply
- To increase the efficiency of electricity balancing
- Compliance with regulatory changes (EU Target Model and Elec Market Reform Capacity Market)

Observations

- Insufficient value in maintaining supplies
- Value of Flexibility inadequately captured when system margins tight
- Market response to future insufficient margins / Intermittent generation

Proposals

- More marginal pricing
- Dual to single cashout
- Reserve pricing
- Demand control pricing

Marginal Pricing (1) and inclusion of Reserve Scarcity (2) and Demand Control (3)

Demand Control Pricing: Demand Control action added to the stack, priced at Value of Lost Load (VoLL)

VoLL: Win 15/16 = £3/MWh

VoLL: Win 18/19 = £6/MWh

More Marginal Price: Phased reduction of Price Average Reference (PAR) volume over which the weighted average of the most expensive actions are taken

Demand Control @ VoLL

Buy Action E (most expensive)

Buy Action D

Buy Action C

Buy Action B (Reserve)

Buy Action A (least expensive)

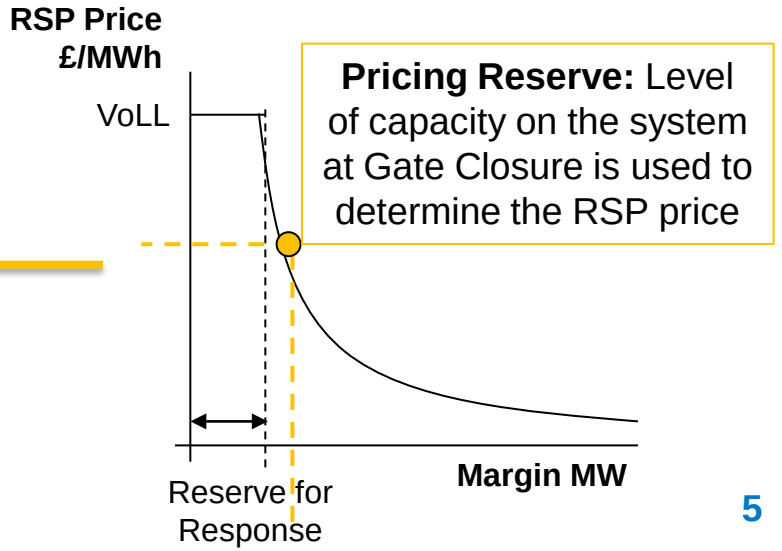
Actions stacked in price order

Win-18/19 PAR1

Win-15/16 PAR50

Win-14/15 PAR250

Current PAR500



Pricing Reserve: Level of capacity on the system at Gate Closure is used to determine the RSP price

Balancing Package and Timescales Summary

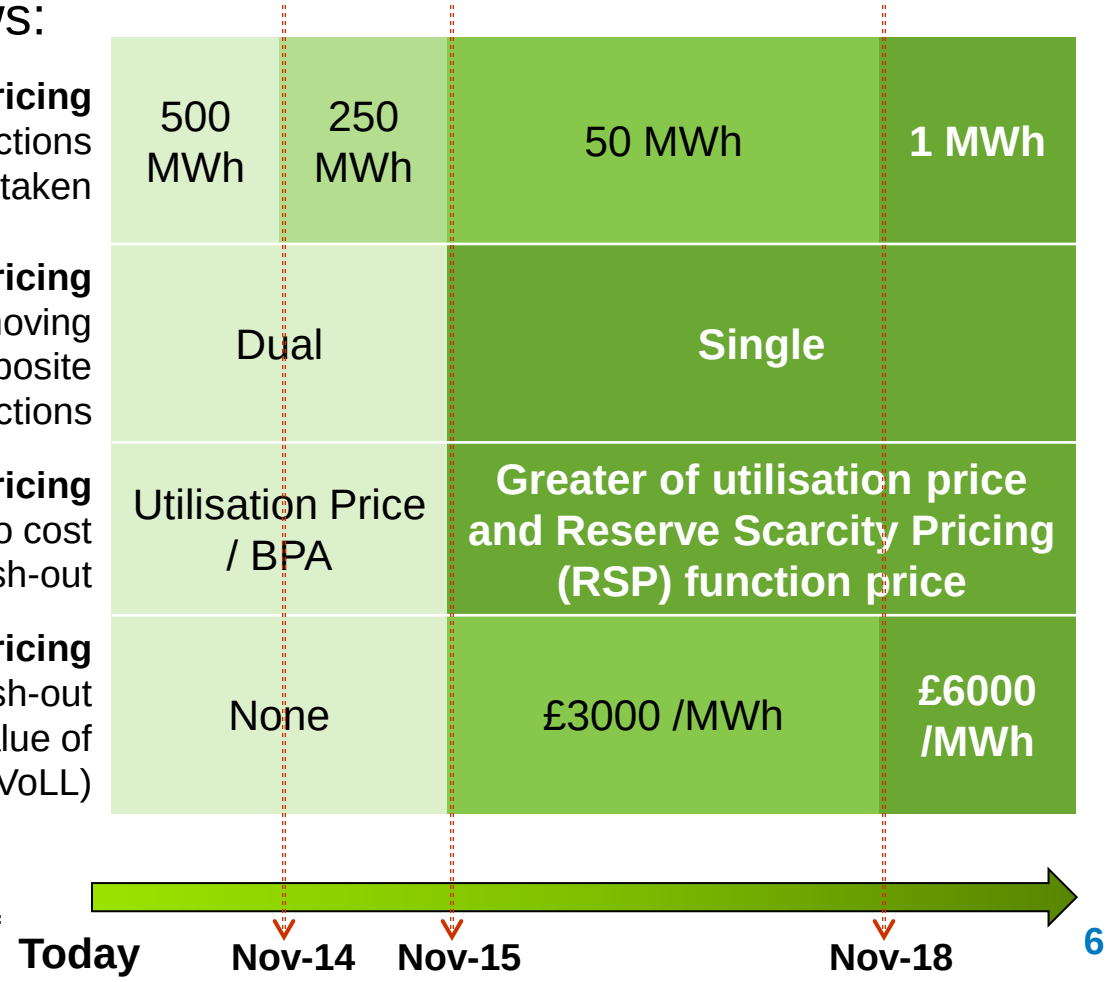
The full EBSCR policy package and recommended* timescales are as follows:

More Marginal Pricing
Reducing the volume of balancing actions over which the weighted average is taken

Dual to Single Pricing
Single cash-out pricing system, removing the price spread for imbalances in opposite directions

Reserve Pricing
Use a scarcity based approach to cost reserve actions in cash-out

Demand Control Pricing
Price demand control actions into cash-out based on an administratively set Value of Lost Load (VoLL)



*** Ofgem have 'strongly urged' industry to these delivery timescales however actual implementation depends on progress of the relevant Code Modifications**

Demand and Smart Meters

- Non Half Hourly demand is split into 8 profile classes (no TOU)
- All demand >100kW HH metered.
- Current incentives on demand (~50% of demand has no TOU).

Metering changes

- Advanced meter roll out by April 2014 for classes 5-8 (Non domestic <100kW) capable of HH settlement
- Smart meters rolled out to all other classes (small business and domestic) 2015 to 2020

Commercials

- Proposal to make Half Hourly Settlement mandatory for Profile Classes 5-8 from 1 April 2015 (subject to consultation)
- Further proposals to consider settlement for all other classes....

Political

- Trilema...affordability (peak pricing), sustainability and security

Outcomes……

- Market incentivised to balance their positions more closely
- Sharper market incentives to forecast generation and demand and trade “accurately”
- Market better able to value flexibility from generation and demand
- Market can incentivised to respond to scarcity

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Thank you