

Network Governance in Changing Circumstances - Energy

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ofgem

Overview

- Basic model
- Developments to date
- Future changes

Basic model

- Transmission and distribution networks separate from generation and supply
- Competition in generation and supply
- Separating Transmission into network asset business and System Operator (SO)
 - Core SO: real-time balancing
 - Wider SO: market facilitation
- Transmission and Distribution both subject to incentive-based price controls, increasingly focussed on delivering what customers and network users want

Selected developments to date/current

- Locational signals
- Competition in connections
- Offshore transmission
- Strategic Wider Works
- Interconnection
- Onshore competition
- Enhanced SO vs ISO
- ENTSOs
- Code governance

Extensive development of price control methodology to align shareholder and customer interests, eventually leading to RIIO – not covered here

Do locational signals affect generation investment?

CCGT build in England and Wales (illustrative)

1991-1994



1998-2002



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Transmission network planning decisions

- Transmission decisions take account of projections about generation and demand (including location)
- Difficult to predict: GB experience with “user commitment”, auctions for gas transmission capacity, strategic wider works
- On a European scale, market coupling gives us zonal prices
- Current price signals don't (can't) tell us where to build transmission – timing mismatch

Can we use future price signals?

Example of interconnection

- Why?
 - regulation is an imperfect substitute for competition
 - competition rewards value, regulation traditionally based on costs
 - price differences tell us value => use the information
- We recognise:
 - congestion rents \neq value; but we could calculate value, could address incentive to under-size
 - keeping down cost of capital is important for value for money infrastructure; but making good decisions is vital
 - if the developer captures full value, no value for consumers (value > economic costs)

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Enhanced SO or ISO

- Work in 2013/14 identified enhancements to SO role
 - Stronger coordination in planning (onshore/offshore/interconnection)
 - Broader system considerations
 - More proactive/forward-looking
- Lesson from introducing competition – structural separation works better, but not essential
- Conflicts of interest
 - current separation isn't seen to be effective

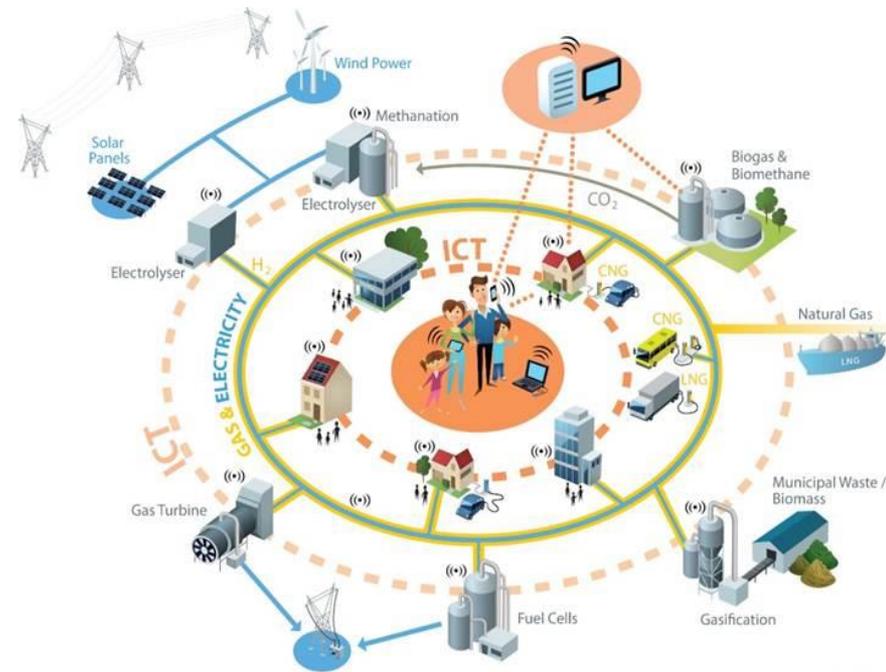
Future changes

- Increasingly decentralised energy system
- Different technologies becoming lower cost
 - up to approx 20% per year cost reductions – halving every 3 years
- Active DSO, interacting with TSO
- Key regulatory role to ensure pricing of system benefits and costs, so as to facilitate entry/innovation and competition/investment
- Inter-modal competition, potential stranding

Networks are changing...

Energy system transformation means networks won't operate in the same way as today:

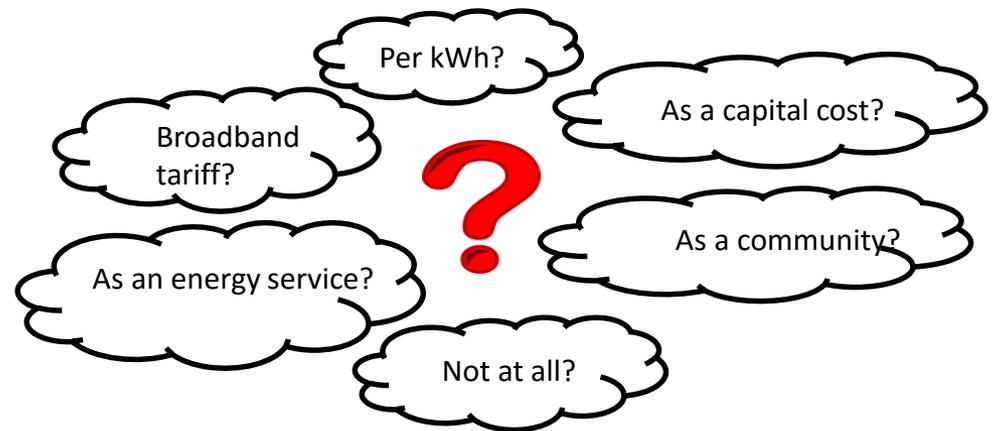
- Two-way flows and gas-elec interactions
- May see a blurring of transmission and distribution networks
- Electrification of heat and transport? Not so simple a solution...
- Predictions that the gas network will become obsolete seem premature
- Predictions that the electricity network will be obsolete are even more premature but not totally impossible....



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Findings from our work on new business models

- Most action at distribution level (Distributed Generation and active citizenship)
- Lots of activity around solar
- Need for much greater flexibility, including the flexibility that heat networks can provide through thermal storage
- ICT important in smart grids but also to enable new data driven business models e.g. peer to peer
- As well as technology drivers, there are also social drivers e.g. consumer engagement, community energy

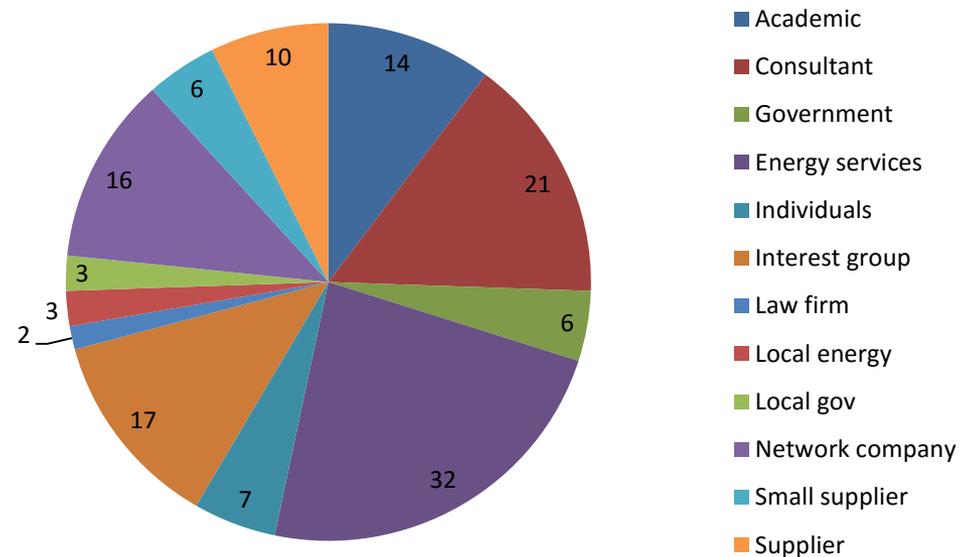


**How might we pay for energy?
Winners and losers?**

Things to think about...

1. Need for systems thinking as energy market becomes more complex
 - Unpacking “flexibility” - focus on services not technologies and level playing field not separate treatment
 - Need to understand the heat/transport interactions with the power sector
 - Energy efficiency and Demand Side Response are still low regret options
 - Differential impacts on different groups
 - Single buyer, systems architect or decentralised decisions?
2. Future of network infrastructure
 - Gas decommissioning/repurposing
 - Scale of future electricity transmission network – “peak transmission”?
 - Convergence/confusion of transmission and distribution networks/services
3. Regulating new business models
 - Distinguishing regulatory barriers from arguments for support
 - Customer engagement with sufficient consumer protection eg information
 - Does decentralised energy provide the exit government seeks?
4. Cybersecurity (Individual data protection and System security)

- Launched 23rd March
- Intent: draw from a broad review of existing work and engagement with stakeholders, to help steer future Ofgem actions
- Initial response:
 - 200+ interested parties (first 138 shown)



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