

Distributed ReStart



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energy futures lab

An institute of Imperial College London

www.imperial.ac.uk/energy-futures-lab

What next for GB policy?

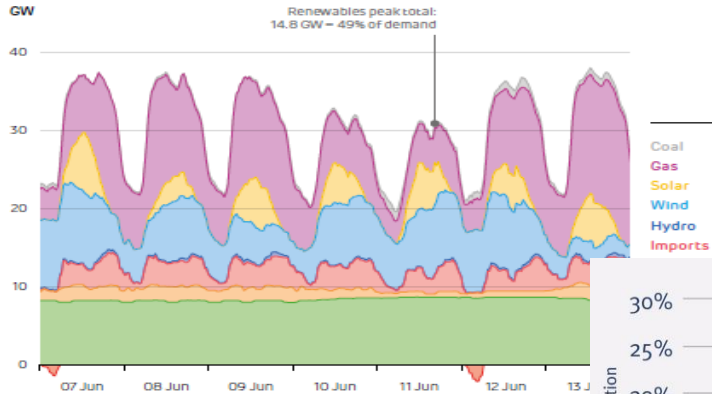
Distributed Restart event January 2020

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The UK electricity system is changing.....

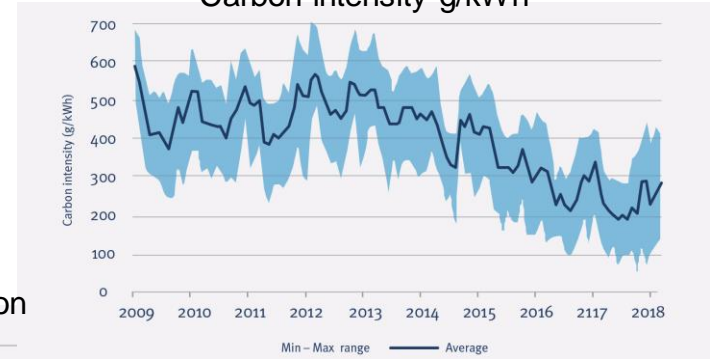
all data from www.electricinsights.co.uk

Generation mix surrounding the weekend with the highest share of lowest-carbon electricity

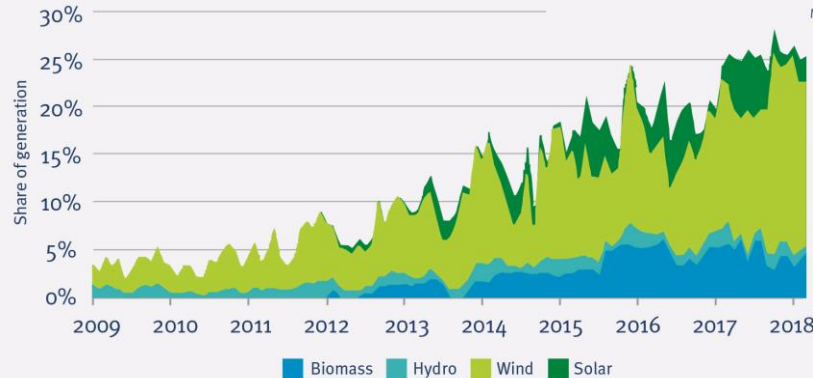


Summer 2017 data

Carbon intensity g/kWh



RE share of generation





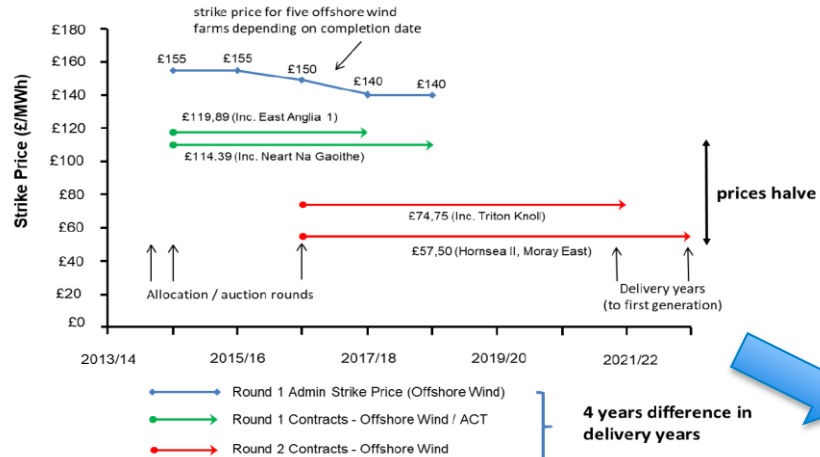
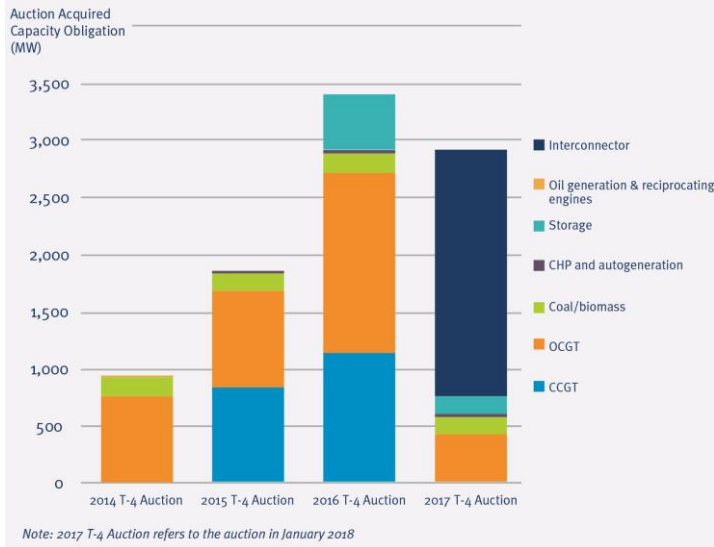
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The 'Clark Principles' – remember them?

- **The market principle:** wherever possible market mechanisms should be used to that take full advantage of innovation and competition;
- **The insurance principle:** given intrinsic uncertainty about the future, government must be prepared to intervene to provide insurance and preserve optionality;
- **The agility principle:** energy regulation must be agile and responsive if it is to reap the great opportunities of the smart, digital economy;
- **The "no free-riding principle":** consumers of all types should pay a 'fair share' of system costs

Has EMR worked?

Judged on its own terms the simple answer is 'yes', despite the law of unexpected consequences

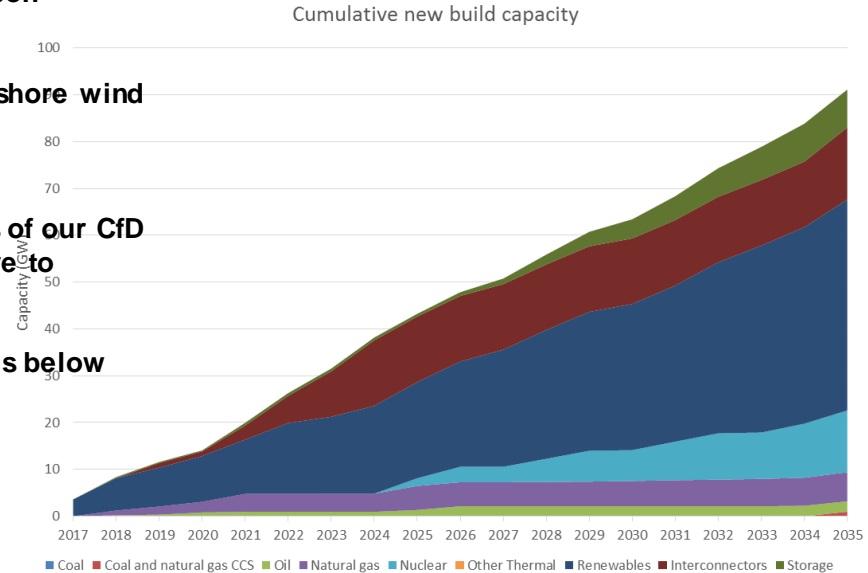


Grubb and Newbery, 2018, UK Electricity market reform and the energy transition; emerging lessons MIT CEEPR Working paper

Round 3
clears at
£39.60

What we know and don't know

- **Renewables expansion will be very large if carbon budgets to be met...**
- **BEIS projections envisage a large roll out of offshore wind in particular**
- **“Over the coming years, we will look to reforms of our CfD mechanism to make generators more responsive to market signals”**
- **Unclear what this means now that CfD bid prices below £40/MWh**



What is going forward?

- **The insurance principle:** given intrinsic uncertainty about the future, government must be prepared to intervene to provide insurance and preserve optionality
 - 'Insurance principle = interventionism where we want it = (mainly) nuclear
 - Government has consulted on putting [nuclear and CCS onto the RAB](#)
 - Sector deals for nuclear and offshore wind
- **The market principle:** wherever possible market mechanisms should be used to that take full advantage of innovation and competition
 - Government has consulted on reform to the RETAIL market [Flexible and responsive energy retail markets consultation](#)
 - Ofgem's [call for evidence on future supply market arrangements](#).
 - Nothing in consultation about future of CfD (note also sector deal for OSW)
- **The agility principle:** energy regulation must be agile and responsive if it is to reap the great opportunities of the smart, digital economy
 - This and no free riding appear to be subject of overlapping initiatives, status generally unclear:
 - Ofgem published statement of principles on DSO
 - [Smart Data consultation](#) and the [Energy Data Taskforce report](#)
- **The "no free-riding principle":** consumers of all types should pay a 'fair share' of system costs
 - [consultation on reforming the energy industry codes](#)
 - [Flexible and responsive energy retail markets consultation](#) also relevant here
 - Ditto Ofgem's [call for evidence on future supply market arrangements](#).

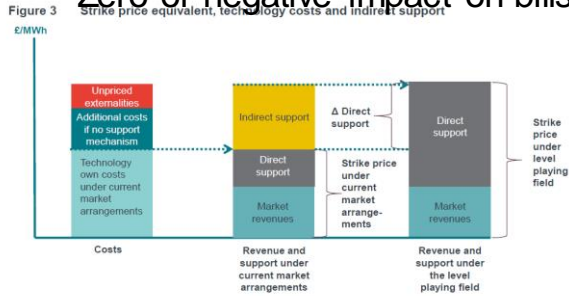
Where this leaves the market for onshore wind and solar – and decentralised options generally – is unclear

- Sector deal focus suggests that offshore wind and nuclear will be priorities
- CCS (with a 'U' added) is being rehabilitated
- Committee on Climate Change net zero report argues CCS is essential due to need for negative emissions and to decarbonise industry and heat
- No indication that Govt. intends to run any Pot1 CFD auctions anytime soon
- This suggests a subsidy free future for distribution connected renewables

What does zero subsidy mean?

Many ideas on the table and a semantic discourse about 'subsidy'

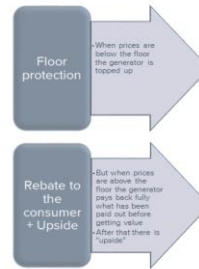
- Pure merchant only?
- No net payments through CLCL?
- At or below capture price plus value stack minus system costs?
- Zero or negative impact on bills?



Source: Frontier Economics
Note: The sizes of the blocks are illustrative only. For example, indirect support may be close to zero under the level playing field arrangements.

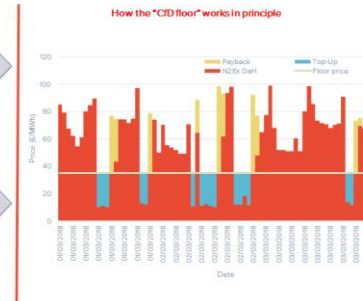
Providing zero-subsidy Contract for Difference (CFD):
Stabilising offshore wind market revenues via the Government guaranteeing a per MWh price at the level that results in no net payments either from or to the asset over a 15-year period (a 'zero-subsidy' CFD)

Enabling revenue stacking:
removing barriers that currently preclude offshore wind from participating in the Capacity Market, Balancing Mechanism and ancillary services, thus leveling the playing field to create genuinely technologically-neutral and more efficient markets



Source: Cornwall Insight

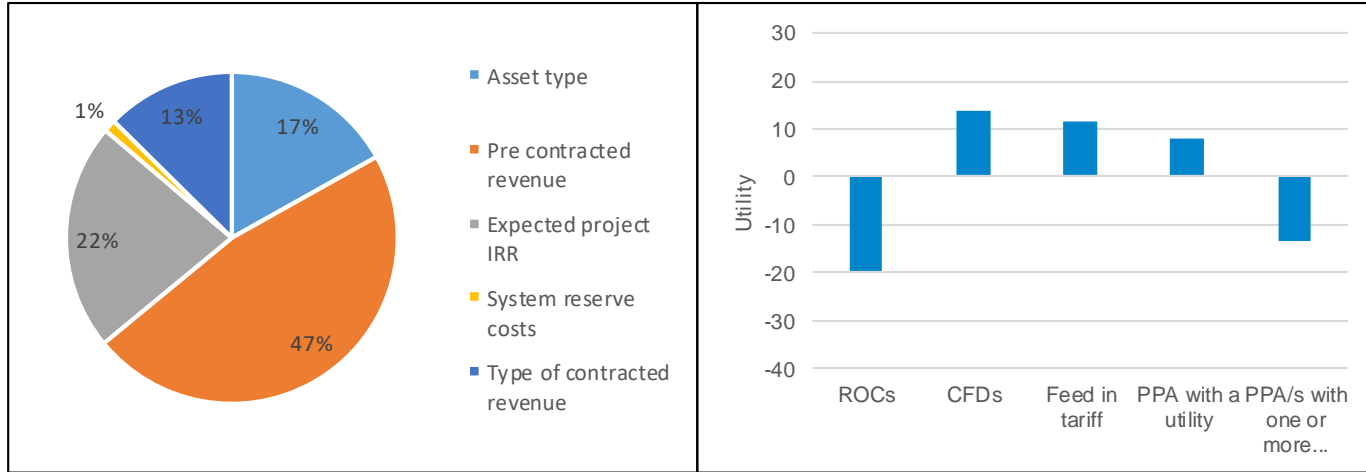
Illustrative example of the CFD Floor



What about pure merchant?

- Some wholly unsubsidised schemes are happening but...
- Corporate long term PPA market is still small for good reasons
- Not enough demand customers – large consumers with appetite for long run contracts not numerous enough
- PPAs do not remove or ameliorate wholesale market risks, including price cannibalisation – they just shift it. Hence
- Not enough PPA and/or PPA terms can never be as good as regulated price
- In the GB context – highly liberalised and unbundled, no single buyer, no tradition of corporate PPA, relative de-industrialisation... a very tall order

Investors prioritise revenue stability



Relative Importance of Criteria

Utility associated with type of contracted revenue

Revenue stability is most important project characteristic

System Costs: Is action needed?

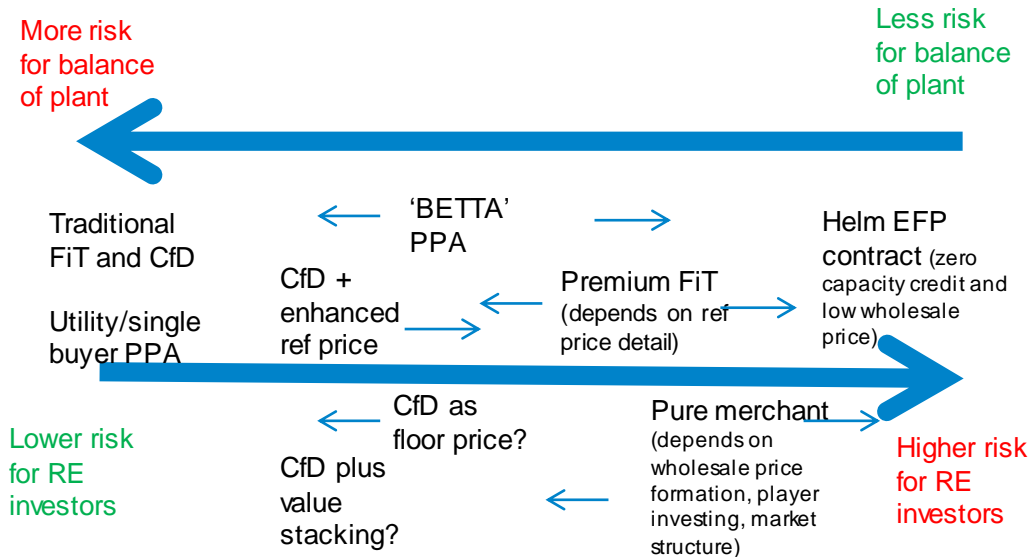
- Helm Review claims system costs were too high due to renewable integration, recommending an Equivalent Firm Power (EFP) auction – dedicated backup capacity
- But reserve and response is a system level service – requiring individual generators to procure reserve capacity is not efficient and will lead to over-procurement
- System integration costs are modest and the evidence is they are being managed well and falling as a share of variable renewables
- It is far from clear that the UK is overpaying for system costs, that system costs are large or rising, or that the shift to a model such as the EFP would bring significant system cost savings

UK/GB market needs to

- Attract investment – mainly project finance with high levels of debt
- In competitive global market
- Whilst disadvantaged by politics
- At minimum/zero/negative cost to consumers
- Maximising UK benefits/value added
- Minimising system costs/innovating system management/balancing

- With the least cost options on a pure merchant basis?

This is largely a question of risk allocation



Thoughts for discussion

- Policy remains uncertain but there is a direction of travel for offshore wind and nuclear and increasing support for CCS
- Will probably stick with CfDs given low bids and industrial policy gains
- Onshore wind and solar – lowest cost – but likely to rely on merchant schemes and this involves risk reducing overall share
- Market reform focus as yet on retail market reform
- But this opens up possible changes on DS (storage, aggregation etc.)
- Other activity has focused on data and digitalisation

- There is a pull for digitalisation and decentralisation – but also strong support for large scale options and this is where principal policy levers are focused

Thank You!