Department of Energy & Climate Change

Financing a changing UK power sector

Neil Bush

Deputy Director and Head Energy Economist, DECC

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Overview

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1 **The changing UK power market – problems facing investors**

2 **Investment levels – past and future**

3 **Policy design – impact on investor risks**

4 **Next steps**

The UK electricity market faces significant long-run challenges

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Fifth of existing fossil-fuel plant due to close over next decade

Long-run electricity demand could double by 2050

Weak price signals in the wholesale market for low-carbon generation

Need to create right incentives for low-carbon and flexible generation

Investment risks in low-carbon generation differ from those in fossil-fuel plant …

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- UK is **on target** to reduce its greenhouse gas emissions in 2020, in line with carbon budgets and the EU
- From 2020, **further cuts in emissions from the power sector** are likely to be necessary to keep us on a cost-effective path to meeting our 2050 commitments
- Differences in cost structures between low-carbon and conventional generation, combined with price-setting role of flexible fossil-fuel plant, means that the **electricity price is more highly correlated with the costs of fossil-fuel plant**
- While **non price-setting plant** can benefit from increased input costs for price-setting plant, they are **exposed to lower fuel** prices that price-setting plant are not
- This **increases the risk of investment** in low-carbon capacity relative to investment in conventional capacity

… while more low carbon generation changes the economics of existing and new fossil-fuel plants

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- Increasing evidence of **'missing money' problem** in energy-only market, may be mitigated by Ofgem plans on cash-out reform
- Likely **tighter future capacity margins and price spikes** in wholesale prices exacerbate perceived risk of 'missing money' among investors
- Two key factors increasing demand for flexible generating capacity:
  - **Increasing retirements** due to impact of environmental regulations on existing plants
  - **Increasing intermittency** on system as a result of increased wind and solar generation
- But remuneration for flexible capacity increasingly uncertain in future as it is increasingly **displaced in the merit order by low-carbon generation**
- Therefore, flexible plant will run less frequently and hence become increasingly **reliant on scarcity rents** at times of high demand/system stress to recoup costs

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The scale of future power sector investment requirements is considerable…

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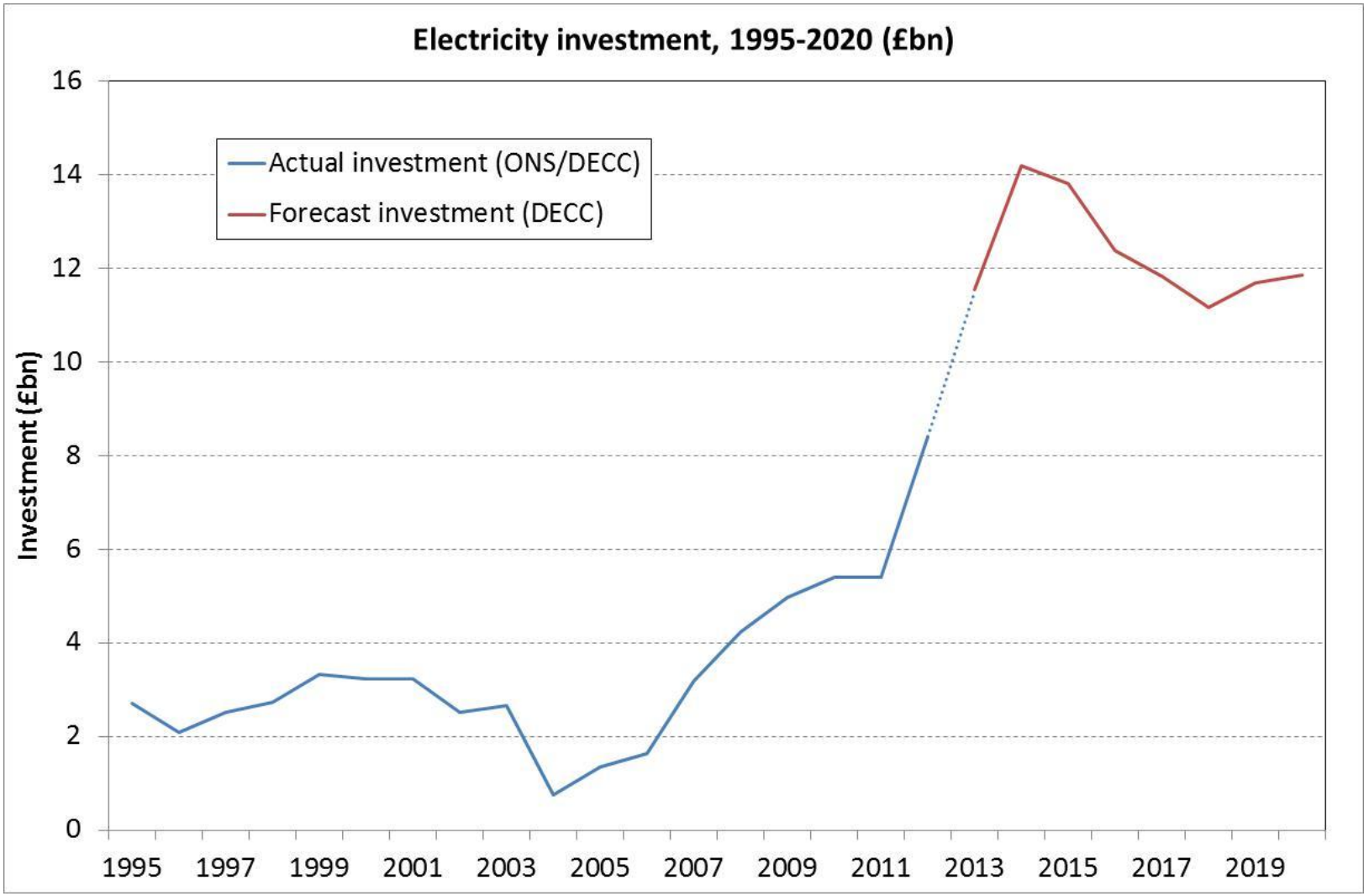

…but investment to date suggests we are on track to meet challenging targets (£bn)

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Source	Latest data	Actual investment	2010	2011	2012	2013 (YTD)
Generation		**21.6**	**5.4**	**5.4**	**8.4**	**2.4**
Renewables	2013 Q1	16.1	2.5	4.7	6.4	2.4
Biomass	*2013 Q1*	*1.4*	*0.1*	*0.7*	*0.2*	*0.5*
Wind – onshore	*2013 Q1*	*4.6*	*0.9*	*1.0*	*2.0*	*0.7*
Wind – offshore	*2013 Q1*	*6.2*	*1.0*	*1.3*	*3.0*	*1.0*
Other	*2013 Q1*	*3.8*	*0.5*	*1.8*	*1.2*	*0.3*
Non-renewables	2012	5.5	2.9	0.7	2.0	N/A
Networks		**11.9**	**3.3**	**3.6**	**5.0**	**N/A**
Distribution	2012	4.9	2.3	2.3	2.4	N/A
Transmission	2012	7.0	1.0	1.3	2.6	N/A
TOTAL		**33.5**	**8.7**	**9.0**	**13.4**	**2.4**

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EMR introduces a package of measures to increase certainty for investors

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Contract for Difference	Feed-in Tariff with Contracts for Difference (CfD) will provide **long-term electricity price certainty** and **reduced revenue volatility**
Capacity Market	Capacity Market (CM) will convert **unpredictable scarcity rents** into more **predictable capacity payments**, helping to put adequate reliable capacity in place and protect consumers against the risk of supply shortages
Carbon Price Floor	The Carbon Price Floor (CPF) will provide **long-term certainty about the cost of carbon** in the UK electricity generation sector
Emissions Performance Standard	An Emissions Performance Standard (EPS) will provide further **certainty on the regulatory environment for fossil fuel plant** by providing clarity on the emissions cap from new non-abated thermal plants

CfDs offer significant potential for de-risking relative to current arrangements

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Type of risk	Comparison with current arrangements	Impact on investor risk
Revenue variability	While off-take and forecasting/balancing risks remain with generators, long-term wholesale price risk is removed, **stabilising revenues** and helping reduce cost of capital	
Change in support levels	In contrast to the Renewables Obligation (RO), **early certainty on allocation and price setting levels** in the project development process.	
Credit risk	Although not tradable like RO, CfD counterparty will establish a **framework of backstops to ensure CfD payments** (e.g. collateral, mutualisation, Supplier of Last Resort/Energy Company Administration scheme)	-

CfDs offer significant potential for de-risking relative to current arrangements (cont'd)

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Type of risk	Comparison with current arrangements	Impact on investor risk
Change in law	In contrast to RO, some **contractual protection** for both specific and discriminatory changes, and for general changes in law that have discriminatory effects without objective justification exists.	
Indexation	Annual RO price linked to RPI, **CfD strike price fully indexed to CPI**; no material change in risk, with any differentials in inflation rates reflected in strike price	-
Refinancing	No change to current arrangements (no refinancing clause in CfD contract)	-
Duration	RO support provided for RO for 20 years (except biomass conversions), **CfD support for 15 years** (except biomass conversions); no clear net effect on risk, but differential support duration reflected in strike price	-

The levy control framework provides an affordability envelope and sighting to investors

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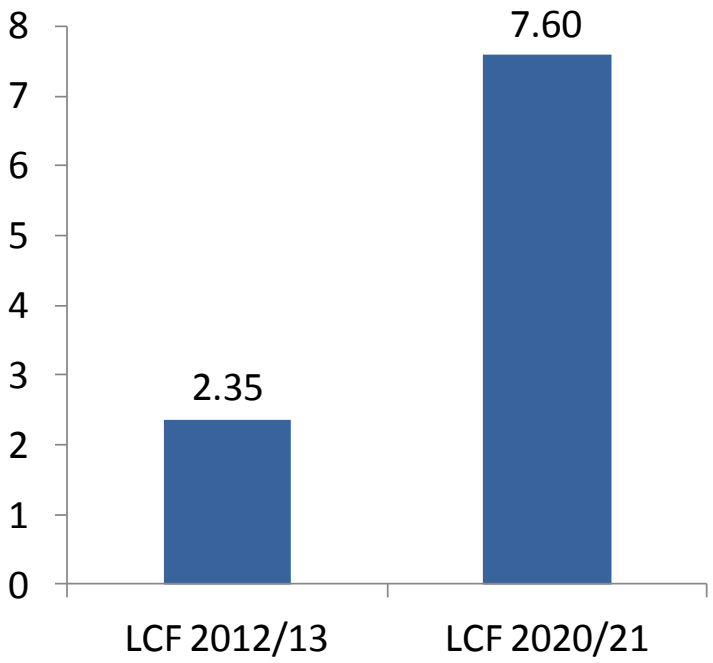
Evolution of the Levy Control Framework (£bn, real 2012 prices)



Source: DECC

- The EMR package will allow the UK to meet its 2020 renewables and carbon budget targets
- Coalition government reached an agreement on the amount of support available to low carbon projects: £7.6bn (2011/12 prices) in 2020/21
- Long-term commitment and transparency on the amount of support available will ensure affordability and sustainability of the proposed measures

The capacity market is designed to reduce investor risks

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- **Capacity market will help in turning scarcity rents into fixed capacity payments:** capacity market will allow resources to obtain fixed revenue stream rather than relying on scarcity rents in wholesale market.
- Helps **tackle perceived regulatory risk**, e.g. that government will intervene to prevent spiky prices in energy only market or regulator will investigate parties that price to recover fixed costs
- **OECD quote**: *“”In the future, dispatchable technologies….will require that a portion of their revenues be derived from other sources than “energy-only” electricity markets if they are to stay in the market and provide the necessary back-up services. Capacity payments or markets with capacity obligations will play an important part in addressing this issue” (OECD Nuclear Energy Agency, “Nuclear Energy and Renewables”).*

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We are working towards implementation in 2014

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Jun/Jul 2013

- Key CfD terms & strike prices
- Capacity Market design & timing of first auction
- Consult on draft EMR Delivery Plan (closes 25 Sept)

Aug 2013

- Details on CfD allocation and contract drafting
- Update on Supplier Obligation

Oct 2013

- Consult on EMR secondary legislation (closes Dec 2013/Jan 2014)

Dec 2013

- Royal Assent for Energy Bill (subject to Parliament scrutiny)
- Final EMR Delivery Plan published
- Final CfD contract published

Mar/Apr 2014

- Final secondary legislation for EMR published

Mid 2014

- First CfDs signed under enduring regime

Late 2014

- First Capacity Market auction