

ELECTRICITY MARKET REFORM – SHAPING THE FUTURE GB POWER MARKET

A Pöyry briefing note

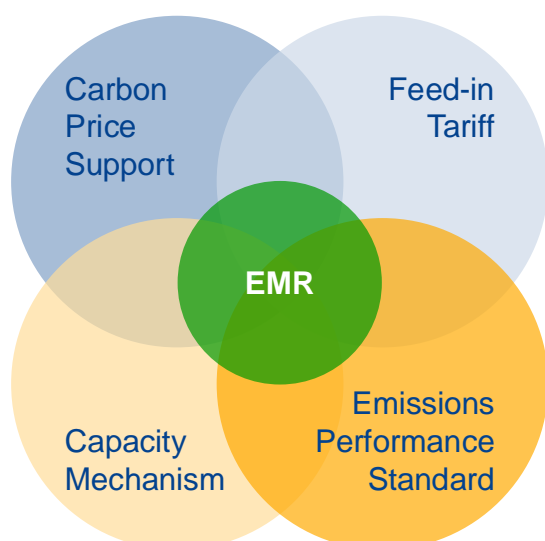
Electricity Market Reform (EMR) proposals, intended to deliver the transition to a decarbonised electricity sector, have now been outlined by the Government. Whether the proposals will create an investment environment that can support deployment of a sustainable generation mix will depend on the detailed design and interaction between the key elements - carbon price support, feed-in-tariffs for low carbon generation, a targeted capacity mechanism and an emissions performance standard.

In this note we summarise the Government’s reform package, consider the impact of the EMR proposals and outline the remaining uncertainties.

Why change?

While the current market design has delivered investment in thermal generation, notably CCGTs seeking to operate at baseload, there is general agreement that it will not deliver the blend of investment required to ensure a sustainable, low-carbon generation future. The economic characteristics of thermal and low carbon plant differ, as does the risk-reward balance for investment. The risk-reward balance offered by the existing market may not be sufficiently attractive for investors in low carbon generation or flexible/peaking plant. Pricing of capacity, flexibility and/or firmer pricing of carbon is required to improve this balance.

What are the main policy instruments?



Carbon Price Support (CPS)

A carbon price underpin to reduce downside carbon price volatility, making low carbon investments more attractive.

Feed-in Tariff (FIT)

Long-term contracts to remunerate low carbon generators at a defined tariff (in addition to, or instead of, energy market revenue).

Capacity Mechanism

To remunerate capacity providers based on the availability of their capacity.

Emissions Performance Standard (EPS)

To set a regulated limit upon CO₂ emissions allowed from power stations.

Carbon Price Support

Headline: A carbon tax on fossil fuel used to generate electricity

Much has been made about the need to address uncertainty surrounding the carbon price to improve the economics of investment of low-carbon generation relative to high-carbon alternatives. The CPS mechanism will reinforce the incentives in the EUA price, set via the EU Emissions Trading Scheme (ETS), and reduce carbon price risk.

CPS will be delivered by extending the climate change levy (CCL) and fuel duty to all fossil fuels (coal, gas, LPG, oil) used to generate electricity in the UK. All types of generation using fossil fuels will be covered, including conventional power stations, CHP plants and auto-generators, although CCS plant may have partial relief.

Tax rates will be set taking into account the average carbon content of the fuel in question. Rates are expected to be set annually to deliver the government's desired overall carbon price. In this context, the government has three indicative carbon price scenarios with prices rising from £20/tCO₂, £30/tCO₂ or £40/tCO₂ in 2020 to £70/tCO₂ in 2030.

Questions arising include:

- what will the target carbon price be and how will it be determined?
- how will CPS affect different technologies?
- how will CPS interact with the EU ETS?

Feed-in Tariff

Headline: Long-term feed-in tariffs for low carbon capacity

Low carbon generators will be able to enter into long-term contracts which provide partial or total revenue certainty via feed-in tariffs. This is intended to increase certainty for investors in low-carbon generation, improving the incentives to undertake investment. This is expected to include investment in renewables, nuclear and CCS plant.

The government considers three possible FIT structures:

- **Premium FIT:** the low-carbon generator receives a top-up payment to supplement revenue obtained from selling output into the wholesale market;
- **Fixed FIT:** the low-carbon generator does not receive any revenue from the wholesale electricity market and instead receives a fixed tariff under the contract; and
- **FIT with Contract for Difference (CfD):** the low-carbon generator receives revenue from the wholesale market for its output and either receives or makes a payment based on the difference between the average market price and the tariff agreed in its contract.

The government's preference is for a FIT with CfD. A Premium FIT is the second option.

Questions arising include:

- what form will contracts take, how will they be allocated and who is the counterparty?
- how does the contracted power impact upon the wholesale market and dispatch?
- what average wholesale price will CfD use as the reference price and what are the implications for generators ability to capture more or less than this average?

Capacity Mechanism

Headline: Targeted capacity mechanism to incentivise peaking plant

A capacity mechanism attaches an explicit value, with an associated revenue stream, to the availability of capacity. This provides a more certain route for recovering the value of capacity than relying upon capturing peak energy prices. Capacity payments are intended to provide incentives for the retention and construction of flexible capacity to improve security of supply as the proportion of intermittent and inflexible low carbon generation increases.

A quantity-based capacity mechanism will be developed, meaning that the desired volume (and possibly mix) of capacity will be determined centrally. The capacity price will be common to all, rather than set through bilateral trade.

The mechanism will be targeted upon specific types of capacity that have peaking and/or flexibility capabilities (demand side, storage and interconnection capacity may be eligible alongside generation capacity). Consequently, a subset of capacity on the system will be eligible for capacity payments. Capacity providers are likely to be selected through a tender process.

Questions arising include:

- how will the capacity requirements (and mix) be set, over what timescales and by whom?
- what form will capacity contracts take and how will they be awarded?
- what plant types will be eligible to offer capacity services and will the mechanism be an effective route to encourage greater demand side response (DSR)?

Emissions Performance Standard

Headline: To be applied to new unabated coal stations only

The EPS will set a regulatory limit upon the quantity of CO₂ emissions that are allowed to be released during the generation process. It will be applied to new unabated coal-fired stations only and will not be applied retrospectively or to other technologies. It will operate as an annual emissions limit, enforced at an individual plant level. Two EPS level options are being considered:

- at 450g CO₂/kWh with exemptions for CCS demonstration plants; or
- at 600g CO₂/kWh, consistent with demonstrating post-combustion CCS on a new supercritical coal-fired station.

Questions arising include:

- when will the EPS apply from and will the date be linked to consenting, construction or operation timescales?
- will the EPS level change (reduce) over time?
- will the scope of EPS policy widen in future to include other plant types (e.g. CCGT)?

What are the policy packages?

		Package			
Policy instrument		1	2	3	4
Carbon Support		✓	✓	✓	✓
	Premium	x	✓	x	x
FITs	CfD	x	x	✓	x
	Fixed	x	x	x	✓
Capacity Mechanism		✓	✓	✓	✓
EPS		✓	✓	✓	✓

The government has compiled four policy packages.

All packages include CPS, a capacity mechanism and EPS.

The only variation is the presence and/or basis of low carbon generation support. Package 1 has no FIT support, while Packages 2 to 4 incorporate Premium, with CfD and Fixed FIT contracts respectively.

Package 3 is the Government's preference, followed by Package 2. Packages 1 and 4 are effectively ruled out.

What does this mean for the Renewables Obligation?

Renewables Obligation

Headline: RO to be phased out by 2017 for new projects

The RO is the principal renewable support mechanism in the UK at present. However, the Government's EMR proposals will make long-term FIT contracts the prime support mechanism for low carbon generation, including renewables, in the future.

The RO will remain open to new projects until 31 March 2017. The Government is consulting on whether the FIT-based support mechanism:

- a) is introduced in 2013/14, providing a choice of support scheme to generators commissioning before April 2017; or
- b) follows on from the RO accepting projects from 1 April 2017.

Any project that is accredited under the RO (currently or at any point until the cut-off) will continue to be eligible for up to 20 years of support under the RO. The RO will continue to provide support to existing projects to 2037.

Questions arising include:

- will new projects have a choice of support scheme during the transition period?
- how will grandfathering work for technologies not already grandfathered?
- how will the obligation and ROC price be set from 2017 onwards?
- will the Devolved Administrations follow a consistent renewables policy?

What are the implications for investors in different technologies?

The aim of the reforms is to alter the risk-reward balance to encourage more low-carbon generation, while providing incentives for flexible/peaking capacity too. While many of the details remain to be defined, high-level inferences can be made regarding the potential implications upon different generation technologies. Below is an initial assessment of the impact of EMR variants **upon investor risk** (✓ = positive impact, ✗ = negative impact, ↔ = neutral impact):

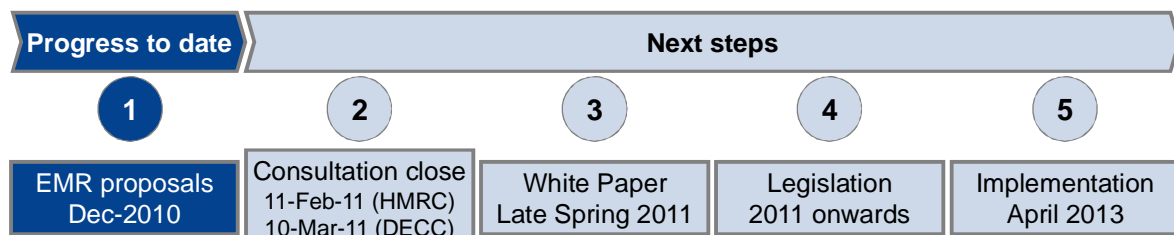
	CPS	FIT	Capacity Mechanism	EPS
Renewables	✓	✓	↔	↔
Nuclear	✓	✓	↔	↔
Coal CCS	✗*	✓	↔	✗**
Gas CCS	✗*	✓	↔	↔
CCGT	✗	✗	(✓)	↔
OCGT	✗	✗	✓	↔
CHP	✗	✗	↔	↔
DSR	✓	✗	✓	↔

* depends upon extent to which CCS gets partial relief from CCL.

** depends upon level of EPS and potential for exemption as a CCS demonstration plant.

- **CPS:** The CPS makes investment in fossil fuel-fired generation less attractive (including CHP and CCS), while improving prospects for low carbon technologies.
- **FIT:** In generic terms, a FIT should enhance investor certainty for low carbon investments. The benefit will vary depending upon the FIT approach adopted (e.g. a Fixed FIT provides greater revenue certainty than alternatives) and by technology.
- **Capacity Mechanism:** Remunerating flexible/peaking capacity via an explicit revenue stream will improve investment prospects for OCGTs and DSR. CCGTs may also benefit, depending upon the definition of capacity requirements.
- **EPS:** This restricts new unabated coal build, potentially including CCS plant depending upon the EPS level selected.

What next?



Investors and market participants must understand the implications of the Government's EMR proposals. Pöyry can help you to cut through the detail and influence the debate.

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